

Implementing MAPP (Mobilizing for Action through Planning and Partnerships)
in the New River Valley, Virginia:
A Planning Approach to Improve the Community's Health and Quality of Life
through Mobilized Partnerships and Strategic Action

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ABSTRACT

The present study implemented *Mobilizing for Action through Planning and Partnerships* (MAPP)—a comprehensive, multi-component, strategic planning model and tool—in the New River Valley (NRV), Virginia to mobilize the NRV community to improve its own health status and the quality of life of its residents. The current mixed methods study represents one of the first to utilize MAPP in southwest Virginia and Virginia and is the most comprehensive community health needs assessment and strategic planning effort to date in the NRV. Through MAPP, the NRV community strived to determine the most effective ways to achieve optimal community health by considering its unique circumstances and needs, prioritizing public health system issues, identifying resources, and then developing integrated plans and forming effective partnerships for strategic action. The NRV MAPP process provided a solid framework for creating a community-driven needs assessment and strategic planning approach and initiative that brought together diverse public, private, non-profit, and voluntary organizations/agencies, businesses, faith communities, academia, local government, community members, and others who shared the commitment to and had a role in the NRV community's health and overall well-being. The current study also reviews the specific findings, summarizes the benefits and successes, and highlights lessons learned (including challenges and limitations) from the NRV MAPP experience, as well as makes recommendations for current practice and future research. Additionally, it provides a step-by-step overview of the entire MAPP process for potential users as applied to a real-world community, specifically the NRV.

Dedication

Coming together is the beginning.

Keeping together is progress.

Working together is success.

Henry Ford

I dedicate this dissertation to the New River Health District leadership team and staff; the Partnership for Access to Healthcare (PATH); and all private, public, non-profit agencies, organizations, and other entities providing health, human, and educational services to the residents of the New River Valley (NRV). Your unending professionalism, dedication, commitment, and compassion continue to positively impact the holistic health and quality of life of the NRV.

It has truly been an honor and a pleasure serving as the Public Health Director of the New River Health District for the past 15+ years. The New River Health District has an outstanding leadership team and an excellent local health department staff that routinely surpass expectations in their delivery of public health services to the NRV community. They are some of the most dedicated, passionate, and compassionate public health professionals with whom I have ever worked. The New River Health District team continues to meet numerous, complicated public health challenges with spirit and vigor. There cannot be enough recognition and praise bestowed upon them!

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Working with PATH to establish and sustain innovative partnerships across the NRV to maximize access to holistic healthcare has certainly been a labor of love. We can certainly celebrate OUR successes and be very proud of OUR many accomplishments, including NRV MAPP! What a joy it has been to work with Vicky Collins, Co-convenor, and other PATH Steering Committee members—Harvey Barker, Cathy Callahan, David Cashwell, Patrick Earnest, Bill Finley, Amy Forsyth-Stephens, Raymond Linville, Susan Marmagas, Beth O'Connor, Lori Rakes, Les Saltzberg, Terry Smusz, Ward Stevens, and Wanda Wylam—to coordinate meeting agendas and do the upfront work for NRV MAPP, as well as our various projects. Your professional and personal support has meant a great deal to me. Thank you; you have my deepest appreciation.

Over the years and most recently during the NRV MAPP process, my Public Health Director position has also afforded me the rewarding opportunity to work collaboratively across every sector of the diverse NRV community to promote, protect, and improve the health of our citizens. The New River Valley has been my professional home and extended family for over 15 years, and during that time, many individuals have become not only my colleagues, but also friends. I will always value and cherish those colleagues and friends that I have made along the way.

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Ode to Jody's PhD

We await with such bated breath this time,
You can finally dissert and dazzle sublime,
Your panel of peers, whose questions and cheers,
Mark welcome to Valhalla, another great mind!

Pronounce your new thoughts and your streams of tied data,
Climb the tall cliffs, ascend the Horn, Mata,
The course has been tough, the angle so steep,
But higher you piled, conclusions so deep!

Salute you we will, when all this is done,
Present your last Word on a silvery tongue,
The panel will gasp and finally hand over,
Your parchment, PhD, and your future in.....Clover!

--J. Lane 3/22/11

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Finally, I lovingly dedicate this doctoral degree to Harry Edward Murray, Jr., my great Uncle, whose memory and love remain in my heart and thoughts. Uncle Bill—a father, mentor, and friend--was one of the wisest, kindest, and most gentle, humble, and noble men that I have been blessed to have in my life.

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There is no limit to what you can accomplish if you don't care who gets the credit.

Ronald Reagan

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List of Acronyms and Abbreviations

| | |
|----------|---|
| AAHE | American Association for Health Education |
| ACIP | Advisory Committee on Immunization Practices |
| AI | Assessment Initiative |
| AIDS | Acquired Immunodeficiency Syndrome |
| AIAN | American Indian/Alaskan Native |
| ALS | Amyotrophic Lateral Sclerosis |
| API | Asian/Pacific Islander |
| APEX-CPH | Assessment and Planning Excellence for Community Partnerships in Health |
| APEX-PH | Assessment Protocol for Excellence in Public Health |
| APHA | American Public Health Association |
| AQU | Air Quality Index |
| ASTHO | Association of State and Territorial Health Officials |
| BLL | Blood Lead Level(s) |
| BMI | Body Mass Index |
| BPHC | Bureau of Primary Health Care |
| BRFSS | Behavioral Risk Factor Surveillance System |
| BT | Blacksburg Transit |
| CAPM | Community As Partner Model |
| CAM | Community Action Model |
| CAP | Community As Partner Model |
| CATCH | Comprehensive Assessment for Tracking Community Health |
| CBO | Community-Based Organization |

| | |
|-------|--|
| CBPR | Community-Based Participatory Research |
| CDC | Centers for Disease Control and Prevention |
| CHA | Community Health (needs) Assessment OR Community Health Action Model |
| CHSA | Community Health Status Assessment |
| CFRHC | Committee on the Future of Rural Health Care |
| CHA | Community Health Assessment |
| CHD | Coronary Heart Disease |
| CHIP | Community Health Improvement Process |
| CHP | Comprehensive Health Planning or Community Health Profile |
| CHSA | Community Health Status Assessment |
| CHSI | Community Health Status Indicators |
| CKD | Chronic Kidney Disease |
| CO | Carbon Monoxide |
| COFC | Container on Flat Car |
| COPC | Community Oriented Primary Care |
| COPD | Chronic Obstructive Pulmonary Disease |
| CPM | Community Persuasion Model |
| CWA | Clean Water Act |
| CWS | Community Water Systems |
| DC | District of Columbia |
| DHHS | U.S. Department of Health and Human Services |
| DM | Diabetes Mellitus |
| DSS | Department of Social Services |

| | |
|--------|---|
| DEQ | Department of Environmental Quality |
| EPA | U.S. Environmental Protection Agency |
| EPHS | Essential Public Health Services |
| FedEx | Federal Express |
| FHMO | Fentanyl, Hydrocodone, Methadone, Oxycodone |
| FQHC | Federally Qualified Health Center |
| FTZ | Foreign Trade Zone |
| GBS | Guillain-Barre Syndrome |
| HAMPIC | Health Action Model for Partnership In Community |
| HAP | Hazardous Air Pollutants |
| HAV | Hepatitis A Virus |
| HBV | Hepatitis B Virus |
| HCV | Hepatitis C Virus |
| HIP | Health Improvement Plan |
| HIPAA | Health Insurance Portability and Accountability Act |
| HIV | Human Immunodeficiency Virus |
| HPSA | Health Professional Shortage Area |
| HRSA | Health Resources and Services Administration |
| IDU | Injection Drug Use |
| IMR | Infant Mortality Rate |

| | |
|---------|--|
| IOM | Institute of Medicine |
| IRS | Internal Revenue Service |
| LBW | Low Birth Weight |
| LHD | Local Health Department |
| LPHA | Local Public Health Agency |
| LPHS | Local Public Health System |
| LPHSA | Local Public Health System Assessment |
| MAPP | Mobilizing for Action through Planning and Partnerships |
| MATCH | Multilevel Approach To Community Health |
| MBCDC | Montgomery, Blacksburg, Christiansburg Development Corporation |
| MCL | Maximum Contaminant Level |
| MMR | Measles, Mumps, Rubella Vaccine |
| MMWR | Morbidity and Mortality Weekly Report |
| MOA | Memorandum of Agreement |
| MRSWA | Montgomery Regional Solid Waste Authority |
| MSM | Men who have Sex with Men |
| MUA/MUP | Medically-Underserved Area/Medically-Underserved Population |
| NACCHO | National Association of County and City Health Officials |
| NALBOH | National Association of Local Boards of Health |
| NCHEC | National Commission for Health Education Credentialing |
| NCHS | National Center for Health Statistics |
| NCTPP | New Century Turning Point Project |
| NH3 | Ammonia |

| | |
|-----------------|---|
| NIH | National Institutes of Health |
| NO ₂ | Nitrous Oxide |
| NO _x | Nitrous Oxide |
| NPHLI | National Public Health Leadership Institute |
| NPHPS | National Public Health Performance Standards |
| NPHPSP | National Public Health Performance Standards Program |
| NRCA | New River Community Action |
| NRCC | New River Community College |
| NRHD | New River Health District |
| NRRA | New River Resource Authority |
| NRV | New River Valley |
| NRVHHSNA | New River Valley Health and Human Services Needs Assessment |
| NRVPDC | New River Valley Planning District Commission |
| NS | Norfolk Southern Railway |
| NSSF | National Shooting Sports Foundation |
| OCME | Office of the Chief Medical Examiner |
| OMB | U.S. Office of Management and Budget |
| O ₃ | Ozone |
| PACE-EH | Protocol for Assessing Community Excellence in Environmental Health |
| PAT | Pulaski Area Transit |
| PATCH | Planned Approach To Community Health |
| PATH | Partnership for Access to Healthcare |
| Pb | Lead |

| | |
|-------------|--|
| PCB | Polychlorinated Biphenyls |
| PHF | Public Health Foundation |
| PMC | Performance Management Collaborative |
| PM10, PM2.5 | Particulate Matter consisting of particles smaller than 10 and 2.5 micrometers |
| POE | Port of Entry |
| PRECEDE | Predisposing, Reinforcing, Enabling, Causes in, Educational Diagnosis and Evaluation |
| PROCEED | Policy, Regulatory, Organizational Constructs in Educational and Environmental Development |
| PSA | Prostatic Specific Antigen OR Public Service Authority OR Public Service Announcement(s) |
| QOL | Quality of Life |
| RSVP | Retired and Senior Volunteer Program |
| RU | Radford University |
| SAM | Social Action Model |
| SARS | Severe Acute Respiratory Syndrome |
| SCT | Social Cognitive Theory |
| SDA | Safe Drinking Water Act |
| SEM | Social Ecology Model |
| SLT | Social Learning Theory |
| SMART | Social Marketing Assessment and Response Tool |
| SOP | Standard Operating Procedure |
| SOPHE | Society for Public Health Education |

| | |
|-----------------|--|
| SO ₂ | Sulfur Dioxide |
| STI | Sexually-Transmitted Infection(s) |
| SUID | Sudden Unexpected Infant Death |
| SWOT | Strengths, Weaknesses, Opportunities, Threats Analysis |
| TB | Tuberculosis |
| TDI | Telephone-Delivered Intervention(s) |
| TDML | Total Maximum Daily Load |
| TIA | Transient Ischemic Attack |
| TOFC | Trailer on Flat Car |
| TPB | Theory of Planned Behavior |
| TPC | Tailored Print Communication(s) |
| TRA | Theory of Reasoned Action |
| UPS | United Parcel Service |
| US | United States |
| USA | United States of America |
| USDA | U.S. Department of Agriculture |
| USGS | United States Geological Survey |
| VA | Virginia |
| VA BRFSS | Virginia Behavioral Risk Factor Surveillance System |
| VA DEQ | Virginia Department of Environmental Quality |
| VA-MD | Virginia-Maryland |
| VCOM | Virginia College of Osteopathic Medicine |
| VDH | Virginia Department of Health |

| | |
|----------|---|
| VEC | Virginia Employment Commission |
| VIC | Virginia Interfaith Council |
| VICAP | Virginia Insurance Counseling and Assistance Program |
| VICPP | Virginia Interfaith Center for Public Policy |
| VOC | Volatile Organic Compounds |
| VPI & SU | Virginia Polytechnic Institute and State University (also known as Virginia Tech) |
| VT | Virginia Tech |
| WIC | Well Infants and Children |
| WV | West Virginia |
| YMCA | Young Men's Christian Association |

Preface

Power, encouragement, empowerment, responsibility. It is with these words that I introduce this dissertation about implementing MAPP in the NRV to mobilize the NRV community to improve its own health and the quality of life of its residents. Far from an end in itself, this dissertation is a formidable advocacy tool detailing the implementation of MAPP in the NRV. Hopefully, for the NRV and other communities in Virginia and across the U.S., this document and its information and data will serve as a resource and contribute to more effective community needs assessment and strategic planning, as well as community-improvement programs and activities.

Each of our communities has unique challenges and opportunities; some challenges cut across county and city lines and regions. In the NRV, numerous efforts have been and are continually made by both public and private health and human service providers, local governments, and others to address our leading health problems and causes of death to make the NRV a better and healthier place to live. Many of our localities have invested significant resources into a more holistic concept of community planning such as the development, provision, and maintenance of excellent recreational opportunities that are free to NRV residents—walking/biking trails, recreational centers, and state/public parks. Discussions and progress are continuing toward developing a regional transportation system, as well as establishing two Federally Qualified Health Centers in the NRV. In addition to the provision of healthcare services, many prevention efforts/programs focus on increasing awareness and proactively modifying personal risk factors/behaviors that directly impact and prevent health problems.

There are also many enduring and effective collaborative efforts in the NRV—such as PATH and NRV MAPP--that address the complex “health” issues facing our community and focus on making improvements in our community’s holistic health and quality of life. These innovative, on-going community efforts have improved and increased (and will continue to improve and increase) access to and availability of services to many NRV community residents through targeted projects and the development of regional, state, and national award-winning model community programs. Ultimately, these successful partnering efforts make the NRV a healthier place to live! By continuing to utilize and leverage these partnerships across multiple sectors and engaging private/public decision-makers, the NRV community can build on its strengths and make improvement in areas of concern.

Many people are working in the NRV to make it a healthier place to live, and everyone’s assistance is needed to help promote healthy lifestyles, prevent chronic and communicable disease and injury, and protect the environment. This calls for increased accountability, not only for the health of the community and others, but also for one’s personal health. Increased attention to the elements of personal and community responsibility in making positive changes to preserve holistic health and protect the environment is important for any community improvement effort.

It is my belief that significant progress in prevention activities can be achieved most effectively only when a community organizes itself and establishes clear and specific priorities based on its needs, collects baseline data for its starting point, undertakes a community-wide education and action program to accomplish the goals, and measures progress in future years. That is essentially what MAPP is all about!

It is with great hope that I encourage anyone who reads this dissertation to bring your dreams for your community to fruition. We cannot attain our objectives if we ignore the importance of family and community as determinants of health status. It is within the context of family that attitudes and behaviors are learned and maintained. Families need and deserve the support of their communities in achieving and maintaining standards of good health.

I am pleased to pass a bit of the torch to others interested in improving the holistic health of their communities. I hope that you will use your dynamic energy to support each other and your communities as you press toward your dreams. We have the power, responsibility, and ability to ensure that our families, neighborhoods, and communities are healthy, environmentally safe, and economically sound. Work and dream together, and we will succeed in creating the healthiest communities possible.

Our deepest fear is not that we are inadequate.

Our deepest fear is that we are powerful beyond measure.

It is our light, not our darkness that most frightens us.

We ask ourselves, “Who am I, to be brilliant, gorgeous, talented, and fabulous?”

Actually, who are you not to be?

From Nelson Mandela’s Presidential Inaugural Address

IMPLEMENTING MAPP (MOBILIZING FOR ACTION THROUGH PLANNING AND PARTNERSHIPS) IN THE NEW RIVER VALLEY, VIRGINIA: A PLANNING APPROACH TO IMPROVE THE COMMUNITY'S HEALTH AND QUALITY OF LIFE THROUGH MOBILIZED PARTNERSHIPS AND STRATEGIC ACTION

Chapter 1

Introduction

Southwest Virginia and the New River Valley (NRV)

The focus of the present study is the New River Valley (NRV)--1,458 square mile (3,776 kilometers) multi-jurisdictional Region designated as Planning District IV (one of 21 planning districts) in Virginia. Located in Southwest Virginia and considered a part of Appalachia, the NRV is formed from the bisection of the New River, the Nation's oldest and the world's second oldest river, and bordered on the north by West Virginia and the Alleghany Mountains and on the south by the Blue Ridge Mountains. This region takes its name from the New River and includes the counties of Floyd, Giles, Montgomery, and Pulaski, and the City of Radford, and the Towns of Floyd (in Floyd County); Glen Lyn, Narrows, Pearisburg, Pembroke, and Rich Creek (in Giles County); Blacksburg and Christiansburg (in Montgomery County); and Dublin and Pulaski (in Pulaski County) (NRVPDC, 2009, 2010) (see Appendix A). The Region's estimated population was approximately 173,000 in 2009 with about 35,000 of those being students at Radford University and Virginia Tech (Weldon Cooper Center for Public Service, 2010).

Since 1995, the principal investigator has served as the Public Health Director of the New River Health District (NRHD)--the governmental (state and local) presence of public health in the NRV and one of 35 designated public health Districts in Virginia--and provides leadership

and direction within the Virginia Department of Health overseeing all public health promotion, disease prevention, and environmental protection activities. The NRHD encompasses the exact same geographical and political boundaries as Planning District IV.

No matter what rural versus urban definition is used (see Appendix B), the majority of localities in the NRV are considered rural. For example, based on the U.S. Bureau of Census (2000) definition, most of Montgomery (except the Town of Blacksburg) and Pulaski (except the Town of Pulaski) counties, as well as Floyd and Giles counties are classified as rural areas (Virginia State Office of Rural Health, 2008, p. 35). Based on the Isserman geographical classification, the NRV includes two rural counties (Floyd and Giles), two mixed rural (Montgomery and Pulaski counties) and a mixed urban locality (Radford City) (Virginia State Office of Rural Health, 2008, pp. 37-38).

The region's terrain is characterized by long, parallel ridges with intervening valleys—national forest lands blanketing the ridges and picturesque farms and farming areas dotting many of the valleys—and, hence, the area is called the ridge and valley province of Virginia. As part of Appalachia, the NRV has an abundance of natural beauty and opportunities for outdoor activities available on the Blue Ridge Parkway, the Appalachian Trail, the New River, and in the Jefferson National Forest. Yet, the NRV—like all of Appalachia—is widely diverse in the cultural diversity of its faith communities (with over 20 different denominations) and its “community make-up” (that includes a university town, blue-collar towns, upper-income neighborhoods, areas of extreme poverty, isolated homes, a designated city, and friendly small to large towns (NRVPDC, 2009).

There is a diverse and strong ethnic culture, focusing on family, faith, and community. These ethnic and cultural backgrounds serve as the primary frame of reference by which many community members make decisions about health behavior and healthcare. However, the beauty of the NRV and strong ethnic culture do not guarantee a high standard of living or quality of life, and much of its diversity is not readily apparent, nor is it adequately understood by community leaders. Consequently, barriers to quality health and healthcare and community health improvement may not be addressed (Dwyer et al., 1999).

Historically and prior to 1995, an overall plan to reduce duplication, increase efficiency, and reach under-served populations in the NRV had been lacking. New community health networks and systems to address specific community health issues and resolve problems were formed in a piece-meal fashion due to categorical funding streams and a collection of previously successful methods of solving community health problems which were programmatic, task-oriented, or short term solutions. However, this piece-meal approach has often left localities to address community health issues in a fragmented fashion, which has proved unsatisfactory (Dwyer et al., 1999).

Over the past 15 years, there have been many challenges to improving the holistic health of the NRV community--including economic, demographic, as well as changes in the health of NRV citizens and in the traditional healthcare institutions. Costs of medical care and operational costs of health and human service agencies and other businesses continue to escalate; public hospitals became private, for-profit corporations; shifts in policy and funding curtailed some services traditionally provided through local health departments; there have been economic downturns; and the population has aged and youth have become less healthy. In an effort to improve the health status and quality of life for the citizens in the NRV, it has been and

continues to be a blessing to have a wealth of community resources and strengths and a history of past accomplishments. Current strengths of the NRV include expertise, knowledge, skills, abilities, and un-tapped resources that endure. The NRV has quality healthcare resources and a health system that is community-based, not linked to an academic, university setting. The Region includes the NRHD with five local health department facilities, two major hospital systems represented by four community hospital facilities, numerous proactive health and human service agencies and non-profits and faith communities with committed leaders, and two major universities and a community college providing health professional education as well as the additional resources that institutions of higher education bring to a community. Other strengths of our Region include the genuine interests of local governments, elected officials, primary and secondary schools, and citizens in making the NRV a better place to live and work. Investment at each locality, through cooperative agreements, that commit funding and human capital for programming and services is another strength. From higher education institutions to businesses to local governments and non-profits, the NRV has a diverse citizenry, each of whom wears many hats on any given day, and is committed to their community.

Additional background information on defining and describing the rural landscape, southwest Virginia and Appalachia, and a more detailed history and highlights of major community health improvement efforts (such as needs assessment and strategic planning) and accomplishments in the NRV can be found at the end of this Chapter. Despite NRV's strengths and past accomplishments, the holistic health and healthcare needs of the NRV community—particularly the under-/uninsured--still have not been adequately addressed.

Mobilizing for Action through Planning and Partnerships (MAPP)

The principal investigator partnered with Audrey Kemp, a Tech graduate student at the time (now Audrey Kemp Burnett is Assistant Professor in Health Sciences at James Madison University) and a long-standing community partnership (PATH [Partnership for Access to Healthcare]) to conduct the present study across the NRV. The specific framework utilized for this study was MAPP—a comprehensive, multi-component, strategic planning model and tool developed by the National Association of County and City Health Officials (NACCHO) and the Centers for Disease Control and Prevention (CDC) in 2001—with the goal to improve community health. The present study will fully implement MAPP in an effort to mobilize the entire NRV community to improve its own health status and the quality of life of its residents. MAPP is typically facilitated by local public health leaders as a means to assist communities with prioritizing public health issues and identifying resources for addressing needs and issues. Community ownership is key to the MAPP process, as community participation results in collective brainstorming and effective solutions to the community's problems. Given that the community's strengths, needs, and desires drive the overall MAPP process, the tool provides a community-focused initiative. Hence, community participation from and collaboration among public, private, and voluntary organizations, stakeholders, and individuals, including community residents, is crucial in positively affecting the public's overall health (McKenzie et al., 2009; NACCHO, 2001, 2004).

Purpose of the Study

The purpose of the present study was to mobilize the NRV community to improve its own health status and the quality of life of its residents. In addition, the present study was designed to fully implement MAPP—a comprehensive, multi-component, strategic planning

model and tool—in the NRV, Virginia to qualitatively and quantitatively prioritize public health issues, identify resources to address those issues, and take actions for improving the community’s health status and quality of life for NRV residents (see Chapter 2 for a complete description of MAPP). In order to develop new health services and improve on existing services, Huttlinger, Schaller-Ayers, and Lawson (2004) suggested that continued studies of the integration of perceptions of quality of life and health care systems in rural communities will be of great value to a comprehensive community health needs assessment. However, needs assessment is more encompassing and includes additional qualitative and quantitative approaches, as well as a strategic planning component, as defined by Altshuld and Witkin (2000)—“process of determining, analyzing, and prioritizing needs, and in turn, identifying and implementing solution strategies to resolve high-priority needs” (p. 253).

The MAPP tool has been implemented across the U.S. (e.g., Columbus, OH; Lee County, FL; Mendocino County, CA; Nashville, TN; Northern Kentucky; San Antonio, TX) (NACCHO, 2001, 2004). However, the current mixed methods study represents one of the initial implementation processes of the MAPP tool in Southwest Virginia and in Virginia. It is the principal investigator’s hope that other communities across the country will implement the MAPP tool to assist in determining and addressing their communities’ most pressing holistic health needs in order to develop new services and improve on existing services such as access to and availability of healthcare services, mental health, substance and drug abuse, smoking, oral health, chronic disease (e.g., hypertension, diabetes), environmental health and safety, and spiritual health.

Primary Research Question

How can the New River Valley community be mobilized to improve its own health status and the quality of life of its residents?

Research Questions Specific to MAPP

- *Phase 2: Visioning*
 1. What does a healthy NRV mean to you?
 2. What are the characteristics of a healthy community?
 3. Where do you see the local public health system in the next five to ten years?
- *Phase 3—Local Public Health System Assessment (LPHSA)*
 1. What are the components, activities, competencies, and capacities of the NRV local public health system?
 2. How are the ten Essential Public Health Services being provided to the NRV community?
- *Phase 3—Community Themes and Strengths Assessment*
 1. What is important to the NRV community?
 2. How is quality of life and the local health care system perceived by NRV community residents?
 3. What assets does the NRV community have that can be used to improve community health?
- *Phase 3—Community Health Status Assessment (CHSA)*
 1. How healthy are NRV residents?
 2. What does the health status of the NRV community look like?

- *Phase 3—Forces of Change Assessment*
 1. What is occurring or might occur that affects the health of the NRV community or the local public health system?
 2. What specific threats or opportunities are generated by these occurrences?
- *Phase 4: Identify Strategic Issues*
 1. What factors identified in the assessments must be addressed in order to achieve the vision?
 2. What are the consequences of not addressing this?
- *Phase 5: Formulate Goals and Strategies*
 1. *Goals:* What do we want to achieve by addressing this strategic issue?
 2. *Strategies:* How do we want to achieve it?, What action is needed?

Significance of the Study

As the first structured study on the utilization of the MAPP model/tool/process in the NRV and as the most broad-based, comprehensive, structured community needs assessment and strategic planning process done in the NRV and Southwest Virginia, this assessment will expand the current community assessment efforts in the NRV providing the principal investigator, PATH, and the NRV community with essential information on the most pertinent community health needs (particularly those of the under-/uninsured population), and the plans and resources to address those needs. Three data/information sets that have been lacking in previous local and regional assessment efforts in the NRV are a focus on asset building and a strong emphasis on quality of life, as well as identifying trends, factors, and events that are occurring or might occur (and threats and opportunities generated by these occurrences) to affect the community's health or the local public health system. The MAPP tool includes all three. MAPP also provides a

structured process that requires NRV citizen involvement to gain understanding of the issues they feel are important and provides an opportunity to re-energize the involvement of NRV grassroots organizations and individuals. Moreover, since this is one of the first studies reporting on the utilization of MAPP in Virginia, the results of this assessment are intended to inform best practices and guide other communities—both rural and urban—that desire to implement MAPP as part of their community health improvement efforts.

Delimitations

Since the current study was conducted in the NRV and on both under-/uninsured and insured NRV community residents, the findings are specifically applicable to the NRV and those specific populations in the NRV. However, given the comprehensive nature of the present community health needs assessment and strategic planning process, the findings from the current study may be applicable – with some caution – to target populations such as the under-/uninsured population in rural communities where such populations seek services, as well as to the general population with the specific needs that are addressed in the qualitative and quantitative components of the assessment.

Limitations

The limitations of the current assessment are that it focused on one public health/planning District in Southwest Virginia--the NRV. Therefore, a very different set of community health needs and strategic plans to improve health status and quality of life may be indicated, given the differing characteristics among, for example, Northern Virginia/Washington, DC or other urban area versus a more rural area such as Southwest Virginia. Additionally, the proportion of under-/uninsured individuals residing in Southwest Virginia is higher than the rest of the State, which may not be the norm for another locality in the State with a higher annual income overall.

Consequently, an area with a higher annual income may experience a better range of available holistic healthcare services, improved access to such services, as well as affordable services or those sufficiently covered by health insurance.

Background Information

Defining and describing the rural landscape.

Rural definitions.

The term *rural* often brings to mind large areas of open land and activities such as farming, ranching, logging, and mining, as well as scenic mountain views, panoramic landscapes, and a quaint atmosphere. However, the term *rural* has become increasingly difficult to characterize and define because there are conflicting definitions. Several definitions have been proposed for the concept of *rural*--including low population density, sparse settlement, and remote location from urban resources (Berkowitz, 2004; Eberhardt & Pamuk, 2004; Elder, Ayala, Zabinski, Prchoaska, & Gehrman, 2001; Leight, 2003; Letvak, 2002; Williams & Cutchin, 2002). The most common *rural* definitions (including definition descriptions and geographic units for measurement) that are currently used throughout the U.S. are noted in Appendix A. As can be seen in Appendix B, the U.S. Bureau of Census (2000) defines rural as consisting of all territory, population, and housing units outside an urbanized area (UA) or urban cluster (UC) (defined as block groups with a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile), and having less than 2,500 total residents.

For the purposes of this dissertation and in consensus with Virginia's Center for Rural Health Policy, Education, and Research and the Virginia State Office of Rural Health, the Isserman rural definition seems to be one of the most acceptable to describe the rural and urban

characteristics of Virginia's unique governmental entity of counties and cities divided into Planning and Health Districts. The definition can be used to identify rural and urban health related disparities. It is also a definition favored by the Center and Council for Rural Virginia, an organization that deals with rural economic development in Virginia (Isserman, 2005; Virginia State Office of Rural Health, 2008). It should be noted the Dr. Andrew M. Isserman, Professor of Urban and Regional Planning at the University of Pennsylvania was contracted by the U.S. Department of Agriculture (USDA) in 2005 to create a new definition that integrated the 2000 census tract population into the OMB county based definition and the Census rural/urban continuum codes (Isserman, 2005; Virginia State Office of Rural Health, 2008).

The Isserman definition uses four county geographical classifications: (1) rural, (2) mixed rural, (3) mixed urban, and (4) urban. A rural county is one in which the county's population density is less than 500 people/square mile, and 90 percent of the county population is in a rural area or the county has no urban area with a population of 10,000 or more. An urban county is one in which the county's population density is at least 500 people per square mile, 90 percent of the county population lives in urban areas, the county's population in urbanized areas is at least 50,000 or 90 percent of the county population. A mixed rural county is one that meets neither the urban nor the rural county criteria, and its population density is less than 320 people per square mile. A mixed urban county is one that meets neither the urban nor the rural county criteria, and its population density is at least 320 people per square mile.

Describing the rural landscape.

The rural population in the U.S. reached over 59 million in 2003, comprising approximately 21% of the total population and residing on about 97% of U.S. land (Economic Research Service, 2003; Tarmann, 2003; U.S. Bureau of the Census, 2000). Rural locales are

divided into rural farms and rural non-farms. Rural farms consist of places from which \$1,000 or more of agricultural products are sold. Rural areas differ greatly based on their geography, climate, history, and how their inhabitants make a living. Furthermore, rural areas typically include a higher proportion of individuals who are younger than 15 and older than 64 years of age. The imbalance in age may be due to the migration of highly educated young adults to urban locales (e.g., Washington, DC and Charlotte, NC) to obtain higher wage positions within the American workforce and corporate offices (Elder et al., 2001; Huttlinger et al., 2004).

Rural America is generally correlated with a higher rate of poverty, substandard housing, increased prevalence of health problems, a lack of doctors or medical facilities, inadequate caregiving, inadequate or lack of transportation, and greater distrust toward the health care system. These factors—many of them related to a lower socioeconomic status (SES)—contribute to the health status of rural Americans in many ways. Issues related to health insurance, transportation, limited education, cultural norms, age, and the day-to-day struggle for survival make access to holistic healthcare, health information, and the ability to make healthy lifestyle choices difficult. Poverty is inextricably related to health status. Those with limited financial resources often are unable to pay for healthcare services. Consequently, they are less likely to participate in preventative healthcare services such as annual physicals, immunizations, screenings, etc. and may delay early intervention. When they finally seek diagnosis and treatment, their illness may be more advanced and more difficult to treat. Prescription drug costs often compete with paying for other basic personal and household needs such as groceries, heat, and clothing. To make ends meet, individuals may limit their use of medications, skipping or

halving doses or even choosing not to fill prescriptions. The negative impact of income on health is most problematic in the working poor who are unable to participate in state and federal healthcare programs (Elder et al., 2001; Haber, 2007; Huttlinger et al., 2004; Kemp, 2008).

Furthermore, rural Americans are usually in poorer health than their city-dwelling counterparts for other reasons as well. Many times, those living in rural areas engage in harmful health behaviors, such as smoking, drinking, and have limited activity levels due to chronic conditions. Older rural Americans also are living with a larger number of medical problems that are often more severe in nature than elders living in urban locales. Therefore, when instituting needs assessment and strategic planning activities, health promotion programs, and community health improvement plans for rural-dwellers, it is important to carefully consider the above discrepancies among rural and urban residents and their unique needs. Professionals should strive to engage the entire community--all residents and community organizations, businesses, etc.--in any of the aforementioned activities and gain their trust to help residents become more aware of their community and individual holistic health needs and find ways to improve their health status and quality of life (Elder et al., 2001; Haber, 2007; Huttlinger et al., 2004; Kemp, 2008).

There are seven classes of non-metropolitan U.S. counties, including farming-dependent, manufacturing-dependent, mining-dependent, specialized government, persistent poverty, federal land, and retirement. Distinguishing rural areas from the larger topography and taking into consideration the role that mass media, transportation, and technology play in modernizing these areas assists in the development and implementation of health promotion programs that best suit rural communities. Additionally, socio-demographic variables such as age, education, and ethnicity should be considered in the design and planning of health behavior change strategies.

More specifically, rural areas are typically less diverse when compared to urban areas; the one exception being the large African-American population within cotton, peanut, and tobacco-growing southern regions (Elder et al., 2001; Kemp, 2008).

Given the various dimensions of rural America, which includes a relationship to nature, community members, and family and community history, Elder and colleagues (2001) suggest a multilevel approach to health promotion and improvement of a community's health status and quality of life. Rural-dwellers have a deeper relationship with nature and a greater sense of appreciation for its vast resources, given the lengthier periods of time rural residents work and recreate outdoors, as compared to urban-dwellers. Individuals in rural communities generally develop close support networks and display a mutual sense of trust, dependence, and reciprocity on which they rely for quality of life. Moreover, individuals residing in rural areas are linked to the larger community via personal and family history, with many older generation rural residents living and dying in the same area in which they were born. Therefore, health care and health education and community health improvement approaches must consider the various aspects of the individual, both within the family and within the community, among rural residents (Elder et al., 2001; Kemp, 2008). This is an important to keep in mind when looking at Southwest Virginia, Appalachia, and the NRV.

Southwest Virginia and Appalachia.

Southwest Virginia, home to approximately 400,000 people, is the center of Appalachia, which encompasses the large geographic area in the eastern U.S. that is associated with the Appalachian Mountains, a 200,000-mile region extending from southern New York to northern Mississippi. Appalachia includes all of West Virginia and parts of Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina,

Tennessee, and Virginia. Common characteristics of the area include a mountainous topography that is over 4,000 feet. The surrounding valleys are 2,000 feet or higher, making rural Appalachia very distinct from its urban counterparts. While these valleys are home to many extended families seeking peacefulness, solitude, and independence, there are transportation challenges due to very limited – if available at all – public transportation services. Consequently, the Appalachian population is frequently isolated from mainstream health care services and faced with scarce state resources and a poorer economy, as compared to other parts of the state, such as Northern Virginia and Washington, D.C. (Huttlinger et al., 2004; Kemp, 2008). The community health needs associated with the aforementioned areas vary and include mental health, substance and drug abuse and smoking, oral health, chronic illness (e.g., hypertension, diabetes, obesity, HIV/AIDS), gun safety, environmental health, and spiritual health—to name a few. The community health needs of Southwest Virginians are similar, yet unique to those of U.S. citizens in general, as service availability and access to meet health needs is a challenge for many rural residents, particularly the under-/uninsured.

Diversity.

The 1999 Institute of Medicine (IOM) report, *The Unequal Burden of Cancer: An Assessment of NIH Research and Programs for Ethnic Minorities and the Medically Underserved*, identified that “common threads that may tie one to an ethnic group include skin color, religion, language, customs, ancestry, occupational, and/or regional features” (p. 35). Understanding the interrelationship of culture and ethnicity is important in appreciating the Appalachian regional population. Culture, as the fabric of meaning through which individuals interpret their experiences and guide actions, provides cues about the environment and the broader social system. Most commonly defined as a set of shared beliefs, assumptions, and

values, culture links individuals to other members of a group, provides meaningful rituals, and influences an individual's behavior throughout their life. An individual's life events are conducted, understood, shared, and communicated within the cultural patterns set by families and communities (Dwyer et al., 1999; IOM, 1999; Julia, 1996; Spector, 1985).

Wood (1989) says that ethnic groups may be “distinguished on the basis of race, religion, or national origin” (p. 143). She makes the distinction between ethnicity and culture, defining one within the other: “culture refers to socially transmitted beliefs, institutions, and behavior patterns” (p. 144), while ethnicity describes “a common history, a shared culture, a sense of peoplehood” (p. 144). Persons belonging to the same ethnic group share a unique (but not identical) history that is different from others. A combination of features identifies an ethnic group. For example, physical appearance alone does not consistently identify one as belonging to a particular ethnic group; individuals belonging to certain ethnic groups may vary widely in physical appearance (e.g., skin color and hair texture), but they share a common ethnic identity.

Our individual perceptions about the world, attitudes about human nature, and sense of self or identity are defined, determined, valued, and respected within the ethnic group. While through culture, ways for solving problems and adjusting to the external realities of daily life are established. By acknowledging and attempting to understand the influence of ethnicity and culture on individual identities and the significance that culture plays in people's lives, the implication for holistic health and helping processes can be seen (Dwyer et al., 1999; IOM, 1999; Julia, 1996; Spector, 1985).

In southwest Virginia, the Appalachia public is typically of European ancestry—descendants of immigrants from the British Isles who settled the area in the 1700s. English-Welsh, Scots-Irish, and German distinct and ongoing customs and practices are evident in the

rural lifestyle and are part of the Appalachian subculture. Historically, residents have been characterized by strong values of individualism and personalism; traditional religious beliefs; regionally unique arts, crafts, and music; language variation with dialectal qualities; a strong extended family system; a fierce sense of personal independence, and a suspicion of “outsiders” (anyone living in the area for less than 100 years). These subculture characteristics contribute to the multiple sources that define health, wellness, and healthcare, especially for those experience cultural and technologic lags, geographical isolation, and insufficient resources (Dwyer et al., 1999; Keefe, 2005; Julia, 1996; Obermiller & Maloney, 2002; Russ, 2010; Sue & Sue, 2003; Spector, 1985; Welch, 1999; Wood, 1989).

The area is widely diverse. There are university and college towns, blue-collar towns, farming areas, upper-income suburbs, areas of extreme poverty, isolated homes, and friendly small towns and urban communities. There is also cultural diversity in its faith communities, with over 20 different denominations represented in the region. Southwest Virginia is a part of the “Bible Belt” and faith is one primary frame of reference by which many community members make decisions about health behavior and healthcare. Health beliefs and information is shared between family generations and a mix of natural, home-based remedies is common. Historical tensions between regional industries, such as tobacco, coal mining, textile manufacturing, and the health of employees are often at play. These industries, for many generations, meant the only source of income and “food on the table.” Traditionally, the health of the individual employee was secondary in importance. Many Appalachian residents continue to share values that reflect their traditional belief systems and strive to retain and honor a regional identity in spite of, but also in junction with, the changing world around its geographic

boundaries (Dwyer et al., 1999; Hayden, 2004; Keefe, 2005; Julia, 1996; New River Valley Planning District Commission [NRVPDC], 2009; Obermiller & Maloney, 2002; Russ, 2010; Sue & Sue, 2003; Spector, 1985; Welch, 1999).

Regions within Appalachia are not homogenous. However, statistical descriptions of diversity are difficult because the Appalachian population is an ethnic minority indistinguishable by skin color or facial characteristics from the dominant population and ill-defined by education and income. All social classes are found in the population. Even within extended family networks, individuals may have widely different income and social status. Sometimes called the “forgotten” or “invisible minority” (Hayden, 2004, p. 298; Russ, 2010, p. 1), the Appalachian population has maintained unique qualities of regional lifestyles. Language, art, music, and personal characteristics—similar but different from the mainstream population—constitute a subculture which is reflected in the lifestyle of many residents in the region (Dwyer et al., 1999; Hayden, 2004; Keefe, 2005; Julia, 1996; Obermiller & Maloney, 2002; Russ, 2010; Sue & Sue, 2003; Welch, 1999).

This is not to say that this Region of Appalachia does not have people of color, although minority populations have historically comprised a small percent of the population. In recent years, however, Bosnian, Vietnamese, and Cuban refugees have settled in the region, and the region has witnessed an influx of immigrants from Honduras, China, Columbia, and Mexico. In the more rural counties, minorities may view themselves as wearing two ethnic hats. For example, Blacks may view themselves as part of the African-American culture and as part of the Appalachian culture with roots in the coal mining, tobacco, and railroad communities (Dwyer et al., 1999; Hayden, 2004; Keefe, 2005; Obermiller & Maloney, 2002).

History of the NRV.

The New River Valley has a rich and varied history. This part of southwestern Virginia was first explored in 1671 when an expedition discovered the New River. Pioneers from Pennsylvania and eastern Virginia began settling the region in the early 1700s. These early settlers were predominantly of German, French, Scotch-Irish, and English descent (Dwyer et al., 1999; Keefe, 2005; NRVPCD, 2010; Russ, 2010).

Montgomery County is the oldest County in the New River Valley, formed from Fincastle County in 1777. The County was named for General Richard Montgomery, a Revolutionary War hero. The first settlement was near what is now Blacksburg, the frontier of Virginia's Southwest at the time. Christiansburg, the County seat, was incorporated in 1792 and was an important post on the Wilderness Road. Blacksburg was incorporated as a Town in 1871 (NRVPCD, 2010).

Floyd County, which was formed in 1831 from Montgomery County, was named for John Floyd, Governor of Virginia at the time. The County consists of 382 square miles and is situated in the Blue Ridge uplands. The traditional agricultural economy of Floyd County is well adapted to the local topography. The town seat, originally known as Jacksonville for President Andrew Jackson, changed its name to Floyd in 1896. The Town of Floyd consists of approximately 384 acres and is located in the central section of the County (NRVPCD, 2010).

Giles County, formed in 1806 from Montgomery, Tazewell, and Monroe (WV) Counties, was named in honor of William B. Giles, Governor of Virginia from 1827-1830. The County was the site of several battles during the Civil War. The County seat is

Pearisburg, which was incorporated in 1914. Giles County originally comprised a territory of about 100 miles in length and 20 miles in width, giving it an area of approximately 3,000 square miles. The present land area is 362 square miles (NRVPDC, 2010).

The area presently known as Pulaski County was explored by Abraham Wood in 1654, but it was not settled until 1745 by a group of German settlers known as Dunkards. This settlement became known as Dunkard's Bottom and is presently covered by Claytor Lake. This territory was under the jurisdiction of the County of Fincastle until 1777, when Montgomery and Wythe Counties were partitioned from Fincastle. Pulaski County was formed in 1839 from Montgomery and Wythe counties. The County was named in honor of Count Casimir Pulaski, a Polish patriot and an American Revolutionary War hero. From 1756 until 1895, Newbern was the location of the County seat. In 1895, the County seat was moved to the Town of Pulaski where it remains today (NRVPDC, 2010).

Radford, formerly called Ingles Ferry, was incorporated as a Montgomery County town in 1885 and was named after Dr. John B. Radford. The Town achieved City status in 1892. The City consists of 9.63 square miles and is centrally located between the four counties that comprise the New River Valley (NRVPDC, 2010).

History of community health improvement efforts, needs assessment, and strategic planning in the NRV.

The New Century region and Turning Point.

The New Century Council and its citizen-based, multi-regional visioning process was initiated in 1992 to address growing concerns for the economic health and to address regional change in the Roanoke and New River Valleys. Defense cutbacks, corporate mergers, and downsizing resulted in an excess of 8,000 lost jobs within an 80-mile radius of Roanoke in the

early 1990s. These changes brought together, for the very first time, business and community leaders and citizen volunteers from the 12 county, five city, and 34 town “super region” to develop a vision and strategic plan outlining a preferred future. Over 1,100 citizens, including this principal investigator, participated in the visioning process, making it the largest visioning effort known in the county at that time. The two recurring themes that emerged were “quality of life” and “economic growth”. The final document, adopted on February 15, 1994, called for the creation of 33 teams of volunteers that met for several months (Dwyer, Glenn, Hershey, March, Rutledge, Webster, et al., 1999).

In June 1994, the New Century Council held a meeting to launch the work of the New Century Council Teams. With over 1,000 citizens actively participating, 52 teams had designed an implementation plan, reporting their results in May 1995. More than 150 strategies were recommended for implementation. Each team designated a time-line for action, suggested what current organization in the region should lead the effort, and prioritized each project. Emerging from the overall visioning process were two key community health visions that centered on: 1) converting the health care system to one based on wellness and prevention, and 2) promoting a “Fit for Life” philosophy. The two recurring themes that emerged were “quality of life” and “economic growth” (Dwyer et al., 1999).

In January 1997, the New Century Council moved from visioning to implementation and six projects were selected but never materialized, mainly due to the unwillingness of participants to reduce efficiencies and duplication if it entailed the loss of job(s) and also due to lack of funding. At the same time, the Board of Directors of the New Century Council formed a sister organization called The Foundation for Regional Excellence whose mission was to raise the funds required to implement and sustain any future efforts (Dwyer et al., 1999).

In the spring of 1998, this principal investigator (representing the New River Health District) and the Public Health Director of the Roanoke/Alleghany Health District, Dr. Molly O'dell, collaborated with the New Century Council and The Foundation for Regional Excellence to jointly apply for and successfully receive funds for a public health initiative--*Turning Point: Collaborating for a New Century in Public Health* sponsored by the Robert Wood Johnson and W. K. Kellogg Foundations--to strengthen and transform the area's public health infrastructure to meet the challenges of the 21st century. This prestigious three-year planning grant award—one of only 41 to be awarded to community partnerships nationwide by the W. K. Kellogg Foundation—was to serve as a catalyst not only for the development of innovative partnerships that bring non-traditional partners (such as academia, businesses, managed care organizations, etc.) to the table to increase the diversity of constituency participation in setting a public health agenda, but also for identifying specific areas of measurable and sustainable change and improvement in the public health system of southwestern Virginia. The development of these new, collaborative approaches at the local community level would ultimately result in a Community Health Improvement Plan to improve the health status and quality of life of the communities involved in the process. Virginia—one of only 14 states—was also awarded a complementary grant by the Robert Wood Johnson Foundation with the intent that the community and State partners would develop complementary strategic plans allowing both a unique opportunity to step back from a categorical program perspective and examine alternative models of population-based service delivery (including an assessment of environmental health issues and targeted improvements needed to strengthen the link between public health and

medicine)—on a systems level—by sharing responsibility across organizations. Once completed, state and local awardees would submit proposals to receive additional grant funding for implementation (Bella, 2001).

It should be noted that *Turning Point* was one of the approved projects and emerged as the truest regional project that the New Century Council had undertaken to date. Importantly, the Board of Directors of the Council determined to utilize the Turning Point initiative to establish the regional model by which other regional projects would be implemented from the New Century Vision. With the intent of forming and strengthening networks, the New Century Turning Point Partnership (NCTPP) was established to rethink existing practices and structures, as well as envision new community health system approaches that would serve the health of the Roanoke and NRV communities, families, and children (Dwyer et al., 1999).

As a result of the *Turning Point Initiative*, an Executive Committee—that included this principal investigator—was identified and, in turn, a very powerful Steering Committee (co-chaired by this principal investigator and the Public Health Director of Roanoke/Alleghany) was selected to insure a broad representation of citizens and secure the needed expertise to move the project forward. Five working groups were named to involve even more citizens in the initial planning process and included:

- Work Group 1: Community Health Data Systems,
- Work Group 2: Access to Health Care,
- Work Group 3: Environmental Health Integration,
- Work Group 4: Community Health Training and Education, and
- Work Group 5: Community Health Promotion.

These Work Groups individually and collectively developed detailed plans with select objectives and actions steps (along with responsibilities, time-frames, projected resource needs, and current status) as related to the *mission* and three identifiable *goals*:

- *Mission*—To transform and strengthen the culture of community (the public’s) health to improve the quality of life for all citizens through a dynamic Community Public Health System Improvement Plan;
- Three *Goals* to achieve the mission--
 - To improve system integration for a holistic approach to address community (the public’s) health issues.
 - To develop a citizen sense of stewardship and self-responsibility for community (the public’s) health, and
 - To engage a diverse representation of citizenry in the decision-making processes that impact on their quality of life (Dwyer et al., 1999).

The well-intended NCTPP planning effort worked to identify and successfully bring together a collaborative and diverse network of stakeholders, organizations, and individuals in the planning phase, and engaged numerous individuals and organizations by providing a setting for collective problem solving and development of an outstanding Community Health Improvement Plan. However, voices of the underserved and disenfranchised were not as well represented as was envisioned or intended, and there was a definite need to focus substantial future efforts on increasing the breadth and depth of community representation. Unfortunately, the NCTPP *Community Public Health System Improvement Plan* was a “never-realized” effort since it was not funded by the W. K. Kellogg Foundation, and additional resources were not secured to move forward with the Plan.

Partnership for access to healthcare (PATH).

Background.

In the late 1980s and 1990s, the NRV was plagued with economic difficulties--the downsizing of one major manufacturer and the closing of another--which led to increased unemployment, increase citizen needs for health and human services, and decreased funding available for the organizations providing these services. By 1994, shrinking health and human services budgets, as well as increased competition for local dollars, accentuated the need to make the most efficient use of funds available and to target additional funding from outside sources. Consequently, financial and programmatic constraints of government at all levels compelled NRHD and other health and human service organizations to aggressively seek partnerships, coalitions, and share resources whenever possible to achieve community improvement efforts and objectives, rather than rely on hierarchical, bureaucratic approaches that may have previously worked in a different political and budget environment.

Access to affordable, quality holistic healthcare for the under-/uninsured has always been a major problem in the NRV, and access issues are often the greatest for vulnerable populations. Southwest Virginia has always had a greater percentage of under-/uninsured residents than any other parts of the State, and the working poor have been the largest segment of the uninsured population. Access and prevention are intimately linked.

1994 New River Valley health and human services needs assessment (NRVHHSNA).

A 1994 *New River Valley Health and Human Services Needs Assessment (NRVHHSNA)* examined a continuum of human needs from a public and a private perspective. The needs assessment process developed by the United Way of America—COMPASS—and used in communities nationwide was modeled in the *NRVHHSNA*. COMPASS provided sample

questionnaires, suggested a structure for partners involved, and highlighted potential difficulties. Two surveys, based on the COMPASS model were used for the *NRVHHSNA*. First, a random sample using an identical telephone and door-to-door survey asked questions concerning life in their household and community. The results of the door-to-door and the telephone surveys were combined and analyzed as one unit. Second, a mail-out survey of publicly- and privately-funded human service providers in the NRV asked questions about services, community concerns, and problems that existed in their clients' households (United Way of Montgomery, Radford, and Floyd, 1994).

The 1994 *NRVHHSNA* confirmed the adverse impact of being uninsured and revealed that the number one concern and most pressing problem of residents in the NRV community was access to affordable health care. Thirty-four percent (34%) of survey respondents cited a lack of affordable medical insurance as a major or moderate problem in their household and thus obtaining needed medical care; 31% reported that having enough money to pay for the doctor or to buy prescription medicine was a major or moderate problem; and 31% cited that stress, anxiety, and depression occurred at the major or moderate level, as well as getting special transportation for a disabled, sick, or elderly person. Basic needs, such as housing and food were also cited as problems. While medical/access problems were reported as the most significant problem facing surveyed residents in most of the NRV in 1994, 43% of Giles County reported the occurrence of stress, anxiety, and depression as the most significant problem reported. In Montgomery County, 36% reported moderate to major difficulties in dealing with anxiety, stress, or depression, as compared to Radford where 29% reported this problem. In Floyd County, 20%

reported major to moderate problems in dealing with anxiety, stress, or depression, while 19% of Pulaski County residents reported this problem (United Way of Montgomery, Radford, and Floyd, 1994).

Establishment of PATH.

In 1995, this principal investigator, as the new Public Health Director in the NRV, and his NRHD leadership team became concerned about issues of access to holistic healthcare for the under-/uninsured and committed to addressing local problems related to access in the NRV. Many NRV organizations and groups, having reviewed the results of the 1994 *NRVHHSNA*, had already begun fragmented efforts to address aspects of the access issue for the under-/uninsured; however, there was no overall coordinate effort. Three NRV local agencies dedicated to serving the uninsured—NRHD, Free Clinic of the NRV, and the Program for Special Medical Care (previously established by NRHD and expanded to include NRV Physicians' Association)—and their leadership teams combined forces to advance access to healthcare through collaboration and coordination between themselves and, thus, became visionary and founding partners leading this effort. Because these three agencies were limited in what they could accomplish individually, they recognized the importance of involving the community, envisioning that significant progress could be made in addressing the issues of access in affordable holistic healthcare, especially for the under-/uninsured, by bringing interested NRV organizations and providers together in a broad, community-based collaborative partnership.

Months before the organizational meeting of the NRV Partnership for Access to Healthcare (PATH), the directors of the three leading agencies began recruitment and support efforts among multiple local private, public, and non-profit individuals and entities, including the

NRV's four community hospitals. A call/invitation to action to the entire community was issued, and the first PATH meeting was convened in the fall of 1995. This principal investigator and the Executive Director of the Free Clinic of the New River Valley, Mark Cruise, served as co-convenors of this new partnership. Through a series of brainstorming sessions, community forums, and focus groups, PATH emerged with an overall goal and broad objectives:

Goal: To improve the community's health by increasing access to holistic healthcare for all residents of the NRV, especially the under-/uninsured, through optimization of community communications and resources.

Objectives:

- To heighten the awareness/visibility about public health, access to holistic healthcare, and the challenges facing low-income people as they seek to obtain quality, affordable healthcare;
- To promote organizational and individual efforts and strategies to increase access to holistic healthcare in the NRV;
- To increase the capacity of the healthcare system to provide free or discounted care to indigent patients/consumers;
- To encourage and support partnerships between the community and private/public healthcare providers to deliver comprehensive, community-based healthcare services;
- To develop new sources of support (including financial) to strengthen existing programs and services, and where necessary, to develop new programs and services; and
- To recruit other interested organizations and individuals to participate in building a healthier community.

PATH began immediately addressing the access to healthcare issue for the target population of those “falling through the cracks,” all of whom were under-/uninsured. PATH members collected data and identified barriers and gaps to adequate healthcare in the NRV (barriers such as lack of or inadequate insurance benefits, reductions in public/private funding and reimbursement, transportation, geographic, cultural, lack of childcare, lack of health education, restrictions on access to public inpatient facilities for psychiatric care, lack of pro bono providers; gaps such as transportation, medications, preventive, mental health, dental), as well as researched possible grant funding opportunities and proposals. Subcommittees were formed to address these issues and unmet needs. A series of community visioning and planning meetings was facilitated by the PATH co-conveners to identify and prioritize the top three health-related issues in the NRV, develop a work/communication plan with “ownership” activities, and define steps for the future direction of PATH. The top three issues identified were access to “holistic” primary healthcare (including medications, healthcare providers, mental health, dental health, spiritual care); education, communications, and marketing (prevention, case management, families and children); and systems coordination (assessment of initiatives, advocacy, networking and partnering, accountability/evaluation, decreasing duplication). Work groups were then formed to address these three priority areas, and each work group developed problem statements, objectives, strategies, and communication plans.

PATH continues to build on its successes by expanding its membership and recruiting other interested organizations and individuals to participate as partners in building a healthier community. One of the most enduring, effective, successful collaborative efforts to address the complex community “health” issues facing the NRV, this partnership of volunteers continues to be an ongoing broad-based, collaborative, community-focused alliance that has grown to over 50

public and private health and human service organizations, other community organizations and agencies, faith communities, academia, hospitals/healthcare providers, businesses, and citizens (see Appendix C). This principal investigator has served as co-convener of PATH for 10 of the 15 years that PATH has been in existence and is presently serving as the co-convener of PATH with Vicky Collins, Executive Director, Radford City Department of Social Services.

As its present mission statement emphasizes, PATH is “committed to enhancing communications, optimizing resources, and increasing access to healthcare for all residents of the NRV” and has the following broad objectives:

- To increase collaborative and individual efforts and strategies to increase access to healthcare in the NRV, and
- To heighten awareness about barriers to low-income people as they seek to obtain quality, affordable healthcare.

Major accomplishments of PATH.

Capitalizing on NRV’s unique assets—a visionary group of seasoned leaders—PATH has collaborated on program and resource development and sustainability from the NRV community. This innovative, on-going community effort has improved and increased access to and availability of services, especially to the under-/uninsured, through targeted projects, public/private collaborations, and the development of regional, state, and national award-winning model community programs such as:

- *Med-Ride*, PATH’s first initiative that began January 1996, addresses the documented transportation gap in NRV’s healthcare delivery system and enhances access to primary care for the low-income under-/uninsured by offering non-emergency transportation to all healthcare services. Developed in cooperation with area transportation providers and community volunteers

and with grant funding from several entities (Virginia Health Care Foundation; United Way of Montgomery, Radford, and Floyd; and the Carilion Community Health Fund), it has been overseen by NRV Agency on Aging and Senior Services, Inc. In 1998, *Med-Ride* was one of five projects featured and honored by the Virginia Health Care Foundation as a “Model That Made It” and has been replicated in other U.S. communities.

- *Council of Community Services Directory*, a directory of information on health and human services available from public and private providers in Southwest Virginia, was developed by PATH partners in collaboration with the Council of Community Services. This effort was intended to link citizens with public and private agencies and organizations. The Council’s Information and Referral Center of Southwest Virginia maintained the comprehensive information on-line for more than 2,000 human services programs in Southwest Virginia. The Virginia Department of Health, The Virginia Department of Social Services, and the Carilion Community Health Fund have supported this collaborative effort through grant funding.

- *Pro-Bono Counseling Program*, based on the “free clinic model” for the delivery of mental health care, began serving clients in May 1998. Coordinated by the Mental Health Association of the New River Valley, the program addresses the problem of access by providing free mental health counseling for low- to moderate-income uninsured. Licensed mental health professionals provide counseling, psychiatric evaluations, check-ups, and medications (as needed) to adults, families, and children. This program has been supported with grant funding from the United Way of Montgomery, Radford, and Floyd; the Carilion Community Health Fund; the Carilion St. Albans Foundation; and the Virginia Health Care Foundation. The Pro-Bono Counseling Program has received the following awards and recognitions: 1998 Mental Health Association of Virginia *Best Service Program*; 2000 Monroe E. Trout *Premier Cares*

Award; 2001 National Mental Health Association *Innovation in Programming Award*; 2001 American Psychiatric Association *Gold Community Award*; 2001 Virginia Senate *Joint Resolution No. 391*; 2002 Virginia Health Care Foundation *Models That Made It*; 2004 featured in *Rural Healthy People 2010 Volume 3*.

- *ARMS* (Access to Rural Mental Health Services) *Reach*, a rural mental health outreach program, was funded through a three-year federal grant and expanded the Pro-Bono Counseling Program allowing the free mental health clinic to double in size through an extensive outreach component. The collaborative project of four network organizations—the Mental Health Association of the New River Valley, Virginia Rural Health Resource Center, NRHD, and New River Valley Agency on Aging—along with primary care physicians and school guidance counselors arrange for delivery of outpatient mental health services to uninsured low-to-moderate income and medically underserved populations including residents in senior centers, homes of older adults, health department clinics, physicians’ offices, and schools. *ARMS Reach* has been recognized as a successful and unique model for delivering mental health services to rural areas and has received the 2006 *Wachovia Alumna Achievement Award* presented by the Virginia Health Care Foundation and was featured in *Rural Roads*, a publication of the National Rural Health Association.

- *New River Valley Community Needs Assessment*--conducted in 1999/2000 under the leadership of the Janet McDaniel, Ph.D. Radford University, and this principal investigator to obtain a current health profile of the NRV community--was the first standardized and nationally comparable assessment ever done in the region. The assessment was coordinated with the NCTPP in conjunction with Carilion and Health Care of America (HCA) community hospitals in

an effort to look at needs assessment on a regional basis in southwest Virginia. This assessment model was replicated throughout the New Century Region. A summary of key findings can be found in the next section.

1999-2000 PATH New River Valley community health needs assessment.

PATH determined the need for a community health needs assessment in 1998 and partnered with Carilion Health System, a healthcare corporation in the region that provided funding for the project, to complete the assessment in 1999-2000. The assessment consisted of a five-component data collection process that included focus groups, provider surveys, review of secondary health indicator data, citizen mail-out surveys, and personal interviews with individuals in targeted groups and areas who were unlikely to respond to the written survey. Community health surveys containing behavioral risk factor questions on lifestyle behaviors and medical history were distributed to 6,500 randomly selected households in the NRV, and 118 individuals (who might not respond to mail-out surveys) completed a similar, but shortened, version of survey through personal interviews done by Radford University undergraduate students (Glass, 2000).

The assessment revealed several pertinent issues such as cost of medications, lack of insurance/affordable healthcare, lack of work skills, mental health/treatment, poverty, abuse/family violence, chronic health conditions and their management, drug abuse, lack of knowledge, services for older adults, and transportation. The major findings identified areas that the community was doing relatively well in and opportunities for improvement, all clustered under four general areas--chronic conditions/prevention, access, healthy behaviors, and knowledge/education--with a wide variation in findings across the NRV. The focus group component of the needs assessment involved a variety of representatives from all NRV counties

such as healthcare providers, service agencies, police, and retirees. The focus group findings revealed that the greatest needs--which were mostly among children, older adults, and the working poor--included chronic health conditions (i.e., perceived high rates of cancer and diabetes), dental health, mental health, teen pregnancy, home health/personal care services, drug abuse, services for older adults, transportation, cost of medications, and unhealthy behaviors (i.e., sedentary lifestyle). Barriers indicated by focus group participants included lack of knowledge, lack of insurance, lack of transportation, affordability of services, geography, illiteracy, economics, cultural, and compliance issues. Focus group participants also made several recommendations such as increased and improved community health promotion/education, efforts to increase awareness of existing services, interventions via schools (e.g., school nurses), provision of adequate personal care services, employment/training, and attention to housing and water quality (Glass, 2000).

The provider survey included 156 returned and completed surveys from healthcare providers in all localities and revealed that the most serious health needs revolved around alcohol abuse, poverty, depression, drug abuse, teen pregnancy, family violence, lack of work skills, substandard housing, families lacking stable support, and illiteracy. Needs that were not being met at the time of the survey included the following: access to medical care for Medicare patients, children, and all ages; emergency healthcare services; access to immunizations for children; handicap accessible facilities; and, physician care during evening/weekend hours (Glass, 2000).

The mail-out survey, which was designed to obtain a health profile of the community, included behavioral risk factor assessment questions on lifestyle behaviors and medical history. Of the 6,500 surveys distributed to randomly selected households in the NRV, 830 surveys were

returned (response rate of 13%). An interview group of 118 individuals completed a similar, albeit shortened, survey via the interview method. The data was analyzed after sampling adjustment (weighting) was done to more truly represent the actual population, and CHAID analyses were also completed, based upon the predictors of age, household income, gender, education level, and race (Glass, 2000). For the chronic conditions/prevention category, the NRV was doing well in keeping a check on high blood pressure rates, getting blood pressure and cholesterol levels checked, and receiving flu shots. However, areas needing improvement included more regular cholesterol checks, regular checkups with the doctor, dental care, arthritis, diabetes, and sexually transmitted diseases. CHAID analyses revealed that respondents:

- most likely to be told they have high blood pressure or heart problems were those over age 60 and 70, respectively;
- most likely to be told that they had overweight problems were females between ages 30 and 70;
- most likely to be told they have mental/emotional problems were those with household incomes under \$10,000;
- most likely to have a family history of being overweight were females under age 60;
- most likely to have been to the dentist in the past two years were those with more than a high school education with incomes greater than \$35,000;
- most likely to have seen the eye doctor in the past two years were those with incomes of \$40,000 or more; and
- most likely to have cholesterol checked within the past two years were males age 50 and above (Glass, 2000).

Regarding access to care, the NRV was doing well in terms of the percentage of residents that had a primary care doctor and health insurance, as well as child immunizations. Areas for improvement, however, included the following: percentage of residents that were unable to pay for medications and eyewear (i.e., 36% could not pay, their insurance did not cover services, or the deductible/co-pay was too high), children not receiving adequate physical and/or dental services; and, getting treatment for mental health problems. CHAID analyses revealed that respondents:

- most likely to have a primary care doctor were over 60 and either married or had been married;
- least likely to have a primary care doctor were never married males;
- most likely to use late or weekend doctor hours were those with incomes between \$20,000 and \$35,000;
- least likely to use late or weekend doctor hours were male respondents with incomes less than \$20,000;
- most likely not to be able to afford prescription medicine were those with household incomes under \$10,000;
- most likely to be unable to afford eyewear were those with household incomes between \$10,000 and \$15,000;
- most likely to say someone in the home had mental/emotional problems affecting daily activities in the past year were those with household incomes between \$10,000 and \$20,000 and never married;
- most likely to be treated for mental/emotional problems were either married or have been married;

- most likely to say that someone in the household had tried to kill themselves in the past five years were women;
- least likely to report their children had a dental check-up in the past year were never married; and
- most likely to report children who always/nearly always use a seat belt were men.

The three most common problems cited by survey respondents for not getting needed healthcare services included not being able to pay for health services, inadequate health insurance coverage, and insurance deductibles or co-payments that were too high (Glass, 2000).

The healthy behaviors component of the survey revealed that the NRV was doing well in terms of prenatal care, seatbelt use (i.e., both children and adults), smoking, and the percentage of residents who exercise. However, areas for improvement included encouraging residents to exercise three or more times per week, discouraging drinking and driving and domestic violence, and emphasizing the danger of loaded and unlocked firearms in the home. CHAID analyses revealed that respondents:

- most likely to exercise were those with more than a high school education and with household incomes over \$10,000;
- most likely to exercise three or more times per week were those age 50 and older who had more than a high school education;
- most likely to currently smoke were those with incomes below \$10,000 and with a high school education or less;
- most likely to always/nearly always use a seat belt were those with incomes of \$50,000 or more;

- most likely to say that someone in their home had been abused by someone else were those with less than a high school education; and
- most likely to have a loaded, unlocked firearm around the home were those with a high school education or less (Glass 2000).

Knowledge/education concerning available services, knowledge of women's health and birth control information, as well as immunizations, were areas in which the NRV was performing well. Areas needing improvement were the percentage of individuals who could not find employment due to lack of skills and the lack of knowledge regarding services for older adults (Glass, 2000).

Comparing the analyzed data from the interview group to the mail-out group, a higher percentage of interviewees had less than a high school education, earned less than \$15,000/year, received Food Stamps, were unemployed, and were unable to work due to a disability. Additionally, those interviewed were less likely to have a primary care provider, insurance, children covered by insurance, children who went to a dentist in the past year, and visited a dentist in the past year themselves. Alternatively, interviewees were more likely to have taken children for a physical in the past year, needed help with routine needs, needed help with personal care needs, trouble paying for medications, someone in the home with mental health problems, and attempted suicide. Interviewed individuals also experienced more problems than the mail-out survey respondents in getting healthcare services because of not being able to pay, insurance not covering necessary services, inadequate office hours, not getting an appointment, lacking transportation, not knowing where to go for services, and not liking or trusting the healthcare service provider(s) (Glass, 2000).

Overall, the findings of the *1999/2000 PATH New River Valley Community Health Needs Assessment* showed that those individuals with the more dire need for community health services were also those residents least able to access and/or pay for necessary services. As a result of these findings, PATH established six teams directed at some of the identified opportunities—child health, chronic health conditions (including elderly/disabled), dental health, faith and health, medications, and mental health (Glass, 2000).

Summary

Looking back over the twentieth century, there has been much progress made in the health and life expectancy of Americans, including residents of the NRV. The increased interest in personal and community health, in the holistic sense, and the wealth of new health information have created a need for coordinated community health improvement efforts based on a systematic planning model(s). Improving the health of a community such as the NRV is a continuous process of identifying, analyzing, and prioritizing the needs of the community (needs assessment) and identifying resources to meet those needs and taking action by planning, implementing, and evaluating (strategic planning).

Although many successful community health improvement efforts have been accomplished in the NRV, there is still much to be done to adequately address the holistic health and healthcare needs of residents of the NRV, particularly the under-/uninsured. The current study focused on implementing MAPP—a comprehensive, multi-component planning model/tool—to improve the holistic health and quality of life of the entire NRV community through mobilized partnerships and strategic action.

Chapter 2

Review of the Literature

The purpose of this chapter is to review the current literature on community health needs assessment; rural community health needs and quality of life; theories and models of health assessment; as well as to present an overview of the Mobilizing for Action through Planning and Partnerships (MAPP) framework. First, a review of the history of community health assessment (CHA) and evolution of planning in public health practice will be reviewed. Next, a discussion of the history and development of the MAPP Community Health Improvement Tool/Model and the National Public Health Performance Standards Program (NPHPSP) for Local Public Health Systems Program will be provided. A summary of community health needs among rural residents—including mental health, substance and drug abuse and smoking, oral health, chronic illness (e.g., hypertension, diabetes, obesity), gun safety, environmental health, and spiritual health—and a discussion of the quality of life and health care system in rural versus urban settings will also be summarized. Additionally, a review of theories and models of health assessment will be presented. Finally, an overview of the MAPP framework will be discussed.

History of Community Health Assessment

Assessment gained a prominent place in the field of public health following the release of the 1988 Institute of Medicine's (IOM) landmark report titled *The Future of Public Health*. The report defined *assessment* as the regular and systematic collection, assembly, analysis, and communication of “information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems” (IOM, 1988, p. 7). The IOM report further defined assessment as including “all the activities involved in the concept of community diagnosis, such as surveillance, identifying needs, analyzing the

causes of problems, collecting and interpreting data, case-finding, monitoring and forecasting trends, research, and evaluation of outcomes” (IOM, 1988, p. 44). According to Friedman and Parrish (2009), this report characterized assessment as one of the three major functions of public health and highlighted the need for increased emphasis on assessment to provide a sound basis for the two other major functions of public health--policy development and assurance.

The 1988 IOM report also defined the “assessment” responsibilities of local, state, and federal governments--the federal government should support “knowledge development and dissemination through data gathering, research, and information exchange”; each state should assess the “health needs within the state based on statewide data collection”; and local public health units should assess, monitor, and conduct surveillance for “local health problems and needs and of resources for dealing with them” (Friedman & Parrish, 2009; IOM, 1988, pp. 143-145). Although state and federal governments provide information and support, the point at which the “rubber meets the road” and the focus of assessment efforts are at the community level. Therefore, *Assessment* is a set of activities that produces information on the community’s health, and when focusing on the community level, it is appropriately called “community health assessment” (Friedman & Parrish, 2009, p. 4).

Other definitions of *community health (needs) assessment (CHA)* include:

- “A planned process that identifies the reported needs of an individual or group.” (Gilmore & Campbell, 2005, p. 7)
- “Systematic, planned collection of information about the health knowledge, perceptions, attitudes, motivation, and practices of individuals or groups and the quality of the socioeconomic environment in which they live.” (National Commission for Health

Education Credentialing, Inc. [NCHEC], Society for Public Health Education [SOPHE], & American Association for Health Education [AAHE], 2006, p. 20)

- A process of collecting and analyzing information to develop an understanding of the issues, resources, and constraints of the priority population, as related to the development of health promotion program (Anspaugh, Dignan, & Anspaugh, 2000).
- “Process of determining, analyzing, and prioritizing needs, and in turn, identifying and implementing solution strategies to resolve high-priority needs.” (Altschuld & Witkin, 2000, p. 253)
- Community health assessment is the ongoing process of regular and systematic collection, assembly, analysis, and distribution of information on the health needs of the community. This information includes assets, health status statistics, and community health needs/gaps/problems. The sharing of findings with key stakeholders enables and mobilizes community members to work collaboratively toward building a healthier community (Friedman & Parrish, 2009; New York State Department of Health, 2006).
- A process by which community members gain an understanding of the health, concerns, and healthcare systems of the community by identifying, collecting, analyzing, and disseminating information on community assets, strengths, resources, and needs. A CHA usually culminates in a report or a presentation that includes information about the health of the community as it is today, as well as the community’s capacity to improve the lives of residents. A CHA can provide the basis for discussion and action (Friedman & Parrish, 2009; North Carolina Department of Health and Human Services, 2008).

- Community health assessment is the work of collecting, analyzing, and using data to educate and mobilize communities, develop priorities, garner resources, and plan actions to improve public health (Friedman & Parrish, 2009; Washington State Department of Health, 2008).
- Peterson and Alexander (2001) suggest that a needs assessment should answer the following questions: (1) Who is the priority population?, (2) What are the needs of the priority population?, (3) Which subgroups within the priority population have the greatest need?, (4) Where are these subgroups located geographically?, (5) What is currently being done to resolve identified needs?, and (6) How well have the identified needs been addressed in the past?

No matter how needs assessment is defined, the overall concept is the same—identifying the needs of the priority population and determining the degree to which the needs are being met (McKenzie et al., 2009).

Assessment does not occur in isolation, but is part of a larger, more comprehensive process of community health improvement; however, the distinction between these two processes has become unclear. Myers and Stoto (2006) have noted that current definitions of assessment include various aspects of process, product, or both--including activities such as primary and secondary data collection, setting intervention priorities, and planning and implementing interventions (Friedman & Parrish, 2009).

Friedman and Parrish (2009) indicate that since 1988, both the concept and the practice of assessment have evolved with experience at the local, state, and national levels. In order to facilitate and guide this evolving concept and practice of assessment, a variety of tools and frameworks have been developed including the Assessment Protocol for Excellence in program

and workbook (APEX-PH), the community health improvement process (CHIP), and Mobilizing Action through Planning and Partnership (MAPP) (IOM, 1988; IOM, 1997; National Association of County and City Health Officials [NACCHO], 1991; NACCHO, 2001; NACCHO, 2004)

These and other important historical milestones/accomplishments in assessment (1983 – present) have been summarized by Friedman and Parrish (2009) and are outlined below:

- 1983 Emergence of Planned Approach to Community Health (PATCH) concept and program at the Centers for Disease Control and Prevention (CDC) to “strengthen state and local health departments’ capacities to plan, implement, and evaluate community-based health promotion activities targeted toward priority health problems.” Realization of the fact that communities were unable to routinely collect data to plan and evaluate health promotion programs (Kreuter, 1992).
- 1988 Publication of *The Future of Public Health*, highlighting the need for increased emphasis on assessment to provide “information on the health of the community” and a sound basis for the two other major functions of public health—assurance and policy development (IOM, 1988).
- 1991 Development and release of the APEX-PH program and workbook for assessing local health departments. APEX-PH focuses on the role and ability of local health departments to conduct community assessment (NACCHO, 1991).
- 1992 Review article addressing assessment within the context of the objectives of *Healthy People 2000* and emphasizing the need for meaningful measures of “individual and community health status to guide public health policy development and priorities” (Stoto, 1992, pp. 59, 61).

- 1992 Launch of the CDC Assessment Initiative (AI) to provide support to state health departments for assessment-related activities (German, Janes & Romaguera, 2001).
- 1995 Publication of an article by the CDC AI emphasizes the role and importance of assessment in public health (Keppel & Freedman, 1995).
- 1997 Publication of *Improving Health in the Community* that describes the community health improvement process (CHIP) and identifies assessment as a cornerstone of that process (IOM, 1997).
- 2001 Release of MAPP (Mobilizing for Action through Planning and Partnerships), the successor to the APEX-PH process and tools. Building on APEX-PH and the IOM's CHIP, MAPP is a strategic planning tool for use in the CHIP and utilizes assessment of four "areas" to accomplish its goals: (1) community themes and strengths, (2) the local public health system, (3) community health status, and (4) forces of change (NACCHO, 2001; NACCHO, 2004).
- 2002 Publication of *The Future of the Public's Health in the 21st Century*, a document that updates the 1988 IOM's report. This document demonstrates a change from emphasis on the public health system to emphasis on the public's health and on population health. The report relates assessment to the infrastructure, capacity, and funding of the public health system rather than to information on community health (IOM, 2001).
- 2006 Review of literature by Meyers and Stoto on CHAs to "identify factors and criteria for a useful CHA process." In their review, the authors found no systematic reviews of CHAs; however, they developed a list of 21 criteria for assessing the usefulness of CHAs (Myers & Stoto, 2006).

Evolution of Public Health Planning

Planning has a long history with local public health agencies (LPHAs); however, only since the 1988 IOM report has planning been utilized in a strategic manner like it has been used in other sectors for many years. There are many reasons for this including public health's viewpoint and perception of planning as part of public health practice, the nature of planning itself as a discipline, the evolution of health planning in the U.S., as well as changes in public health practice and the numerous challenges that LPHAs have faced. The evolution of planning within public health and the continual changes in the public health field have led to the development of MAPP (Lenihan, 2005).

The origins of public health planning.

Planning dates back to the original roots of public health--some of the earliest control measures undertaken by local government were planned epidemiologic responses to mysterious communicable diseases (Blum, 1974; Lenihan, 2005). Public health planning has been described as multidimensional--from the comprehensive health planning (CHP) demanded by federal health planning legislation of the 1960s and 1970s to the narrower "managerial" planning that occurs internally in most public health agencies as an administrative process (Lenihan, 2005; Pickett & Hanlon, 1990). Throughout most of this long history, planning in the field of public health has been more of a support activity rather than an important strategic process. However, the 1988 IOM report emphasized the importance and raised the status of planning in public health practice and suggested planning as a key activity of the governmental role of public health at the local level. Lenihan (2005) clarifies the point that this concept has been reinforced and reemphasized over the past 15 years as public health practice has been further defined, and planning has been identified as a key capacity for public health agencies to function in a changing environment. He notes that developing plans is one of the ten Essential Public Health

Services (EPHS), and planning has become a part of the organizational capacity base of the public health infrastructure (Baker, Melton & Strange, 1994; CDC, 2001; Roper, Baker & Nicola, 1992). However, even with this increase in importance, public health planning has just recently started to develop a well-defined role enabling and guiding practitioners to use it as intended in the 1988 IOM report and subsequent recommendations (Lenihan, 2005).

Public health professionals who wish to utilize planning approaches that have been successful in other sectors have not found the planning literature to be very helpful. This is further complicated by the lack of a generally accepted definition of planning (Lenihan, 2005; Hyman, 1982). Unlike other public health disciplines such as epidemiology, planning is a “practice-based discipline without a well-developed theoretical foundation” (Lenihan, 2005, p. 382). The dozens of definitions and approaches to planning from the field tend to be practice-based and vary tremendously because they emphasize a particular feature(s) of those specific practice situations—ultimately, resulting in definitions that suggest very different types of planning (Blum, 1981; Lenihan, 2005; Mintzberg, 1994). But, according to Lenihan (2005), “most writers agree that the seemingly different approaches are related and involve a similar set of activities conducted as part of a cohesive process and differ more in focus, emphasis, and how the elements are carried out” (p. 382).

The comprehensive rational model that dominated most early planning is the basis for the majority of planning approaches (Benveniste, 1989). According to Lenihan (2005), this model relies on “quantifiable information and systematic analysis to clarify goals, generate alternatives, and establish criteria to make choices in an attempt to rationalize decision-making and minimize the role of politics” (p. 382). Public health has incorporated and integrated this approach into its planning efforts because of its compatibility with “strongly held public health values of

professional judgment, expert knowledge, and the use of science to inform decision-making” (p. 382). Most public health planning incorporates “the strong influence of the comprehensive rational approach as evidenced by the heavy reliance on the technical aspects of planning in the use of data, epidemiology, and quantitative analysis to inform the planning process” (p. 382).

Three eras of public health planning.

There are many models or approaches to planning. However, Lenihan (2005) notes that three models—problem/program planning, CHP, and strategic planning—best represent planning in public health practice and can be thought of as “eras” in the evolution of public health planning.

Problem and program planning.

Problem/program planning is probably the oldest form of public health planning, and most practitioners are familiar with problem and program planning conducted as part of the community health education process. Both program planning and community assessment are well-established components of health education, and they focus on improving the health of targeted population groups through programmatic services (Dignan & Carr, 1992; Lenihan, 2005). Examples of programs that utilize problem/program planning include many of our present federal grant programs such as maternal and child health and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) (Lenihan, 2005).

A “bottom-up” variation of problem/program planning that combines community organizing with technical analysis is advocacy planning (Benveniste, 1989; Lenihan, 2005). When using this approach, the planner becomes a “change agent” who raises awareness and mobilizes a targeted population group to develop a program or solve a community problem. For example, epidemiologic findings from a community needs assessment can serve as the basis,

infrastructure, and “springboard” for a health planner to organize community representatives around solving a specific health problem (Dignan & Carr, 1992; Lenihan, 2005). Lenihan indicates that advocacy planning adds the element of community participation to the planning process, but health educators, planners, or other professionals often control the process through the technical aspects of planning.

CHP and the national perspective.

According to Spiegel and Hyman (1978) and Lenihan (2005), CHP evolved from the federal health planning legislation of the 1960s and 1970s, and national health planning legislation existed in several forms during the period 1946 to 1986. The 1946 Hill-Burton Act marked the beginning of federally-sponsored health planning where states were given the responsibility for assessing the need for hospital services and establishing statewide priorities for allocation of funds for hospital construction (Barnett, 1996; Lenihan, 2005). In 1962, regional health planning agencies were created, as amendments to Hill-Burton, for the purpose of advising states on hospital growth needs and priorities. The Partnership for Health Act of 1966 expanded federally-sponsored health planning in breadth--by establishing approximately 200 regional CHP agencies nationwide with some local advisory councils at the county level--and in scope--by broadening planning beyond hospital construction to include other health services (Lenihan, 2005).

The federal government’s role in health planning was subsequently expanded by the National Health Planning and Resource Development Act of 1974, commonly known as P.L. 93-641. This Act replaced the CHP agencies with a federally designated network of local and regional health systems agencies authorized to develop comprehensive health plans under more rigid federal guidance (Lenihan, 2005). Lenihan (2005, p. 382) emphasizes that P.L. 93-641

defined CHP during this period, and much of the health planning methodology developed was in response to this legislation. P.L. 93-641 also prompted local hospitals and other providers to do more frequent planning to protect themselves against the somewhat regulatory powers of the local and state planning agencies. By 1980, the effectiveness of health systems agencies and the entire federal health planning program was being questioned, and it was repealed by Congress in 1986 during the Reagan administration. Today, most states (at the state level) still have bits and pieces of federally sponsored health planning, and there are still some local health planning agencies in operation (Barnett, 1996; Lenihan, 2005).

During its 40-year evolution, federally sponsored health planning continued to focus on resources rather than health status. However, as Lenihan (2005) describes, there was a considerable shift of intent from initially encouraging and guiding the expansion of hospital services during Hill-Burton to cost containment. Also, with additional legislation, it became more prescriptive and regulatory (Barnett, 1996). Although many question the usefulness and effectiveness of federally sponsored health planning, according to Lenihan (2005), “its legacy includes local involvement and awareness of the value of health planning, an array of health planning techniques and methods, and an appreciation for planning by organizations including hospitals and LPHAs” (p. 383).

CHP and public health.

Health planning in the U.S. has always remained decentralized for a number of reasons. Although federal legislation led to the majority of health planning initiatives, because of the fear of federal control of healthcare, states were given the responsibility for planning. Ironically, even though the Public Health Service has been responsible for administering many of these legislative initiatives, it never had the authority or capacity to actually perform planning or

develop a national planning agenda. The exception to this decentralization was 93-641 that established a set of very explicit national health planning guidelines (Blum, 1974; Lenihan, 2005).

Although state public health agencies served as the core of state planning efforts, LPHAs remained minimally involved in federally sponsored health planning (Turnock, 1997). Lenihan (2005, p. 383), referencing other researchers, suggests several reasons for this lack of involvement:

- Delegating these duties to the states rarely resulted in an official delegation to LPHAs to perform the functions prescribed in national health planning legislation (Blum, 1974).
- Special purpose planning agencies at the local or regional level were frequently established to perform the planning mandate to rationalize the healthcare system with no prescribed role of LPHAs (Hanlon & Pickett, 1984).
- Medical services and the healthcare system were the main focus with little to no emphasis on traditional public health issues and concerns (Koplin, 1993; Rohrer, 1996).
- LPHAs were suspicious of this style of health planning because of their view of the politics of the planning process, and therefore, they chose to follow program planning and needs assessment activities that were more familiar to them and closer to their data-driven style of planning (Hanlon, 1984).

During this period for these reasons, even though LPHAs had an interest and expertise in population-based health status analysis and the main focus of planning legislation at the federal level was on making the healthcare system more responsive to community needs determined by population-based health status analysis, there is not much evidence that LPHAs took on the

responsibility and role of local health planning (Blum, 1974; Lenihan, 2005). However, as Lenihan (2005) has noted:

the limited experience appears to have influenced the public health approach to health planning in the late 1980s and 1990s as public health planning approaches during this period exhibited elements of federally-sponsored CHP. CHP has left a legacy of community participation in health planning that has become a key ingredient of public health planning activities today. (p. 383)

CHP also paved the way for the business sector style of strategic planning by public health to be extended to populations and problems. Examples of this can be seen in the public health planning approaches to HIV/AIDS and other areas (Valdiserri & West, 1994).

Unfortunately, the CHP program failed to reduce healthcare costs, and this fact probably led to renewed public health interest in CHP during the Carter Administration. The first *Healthy People* report—that had both health status and health systems improvement goals--was published during this Administration in an attempt to contain healthcare costs through the advancement and integration of health promotion and disease prevention into the national health planning program. During the 1980s, federally-sponsored CHP failed, and luckily, the public health community gradually assumed the planning efforts that were outlined in *Healthy People*. Three health planning models--PATCH, Model Standards, and APEX-PH--that were developed and originated in public health during this period clearly demonstrate the evolution from a more traditional, narrowly-focused program planning approach to a more comprehensive approach (Bosworth, 1996; Lenihan, 2005; Turnock, 1997).

PATCH--developed by CDC in the early 1980s to improve the capacity of communities to plan, implement, and evaluate health promotion programs--emphasized direct community

participation in the analysis of health needs data for priority-setting and program planning (Bosworth, 1996). Essentially, PATCH can be viewed, in both its focus and approach to planning, as an extension of public health's interest in health education as a community health improvement strategy and with program planning as the most familiar planning approach (Lenihan, 2005).

Model Standards were developed around the time period as PATCH and represented a more technical approach to planning. These Standards called for the involvement of LPHAs in a community planning process and relied on gap analysis to compare local health data and information to *Healthy People 2000* objectives in an effort to establish targets for local plans. While community involvement was encouraged, its role was more to understand what had to be done to close the gap than to set community-derived local objectives (Bosworth, 1996; Lenihan, 2005). As Lenihan (2005) points out,

The emphasis was clearly on applying national objectives to the local level similar in intent to the national health standards of P.L. 93-641 a decade earlier. Model Standards is perhaps closest to the rational planning model as applied in a public health setting since its emphasis is more on the search for alternatives in reaching objectives that have already been set at a higher level. (p. 384)

Strategic planning.

As mentioned earlier, public health strategic planning was brought into vogue by the 1988 IOM report that recommended its importance--“Public Health agencies must have the capacity for an . . . organizational evaluation in response to changes in the agency environment and its social milieu” (IOM, 1988). Like other organizations in the field of health during this time period, public health agencies were facing unprecedented external challenges and critical

events that called for much more than the usual programmatic or operationally-driven responses of the past—events such as decreasing revenues and budget shortfalls, drastic changes in local economies, government reorganization, demands for greater accountability, diminished public support, shifting demographics, political shifts, changing financial status and market orientation of medical care collaborators (Lenihan, 2005). At the same time, elected officials', the public's, and others' perception of the tremendous potential and benefit of managed care and national healthcare reform threatened to weaken the basic need for public health agencies; and nationwide, LPHAs were beginning to assess the impact of these events and forces on their core functions (Lenihan, 2005; Miller, Moore & Richards, 1993).

Because the 1988 IOM report raised questions about the effectiveness of public health agencies in this new environment, much attention has been paid to defining core functions and practices of public health and assessing LPHA's functions and performance since then (Turnock & Handler, 1996). One crucial aspect of public health effectiveness identified by these new challenges was strategic effectiveness—the degree to which public health agencies respond to the demands of their environments (Lenihan, 2005; Strudnicki et al., 1994). As characterized by the IOM report, strategic effectiveness was viewed by some as the core of the “disarray” of public health because it relates to how relevant public health is in its environment (Ginter, Duncan & Capper, 1992; Lenihan, 2005).

Since these same external influences and concerns about effectiveness and strategic planning, that had become issues for public health, were similar to those faced by private sector corporations and other organizations several decades earlier, LPHAs began to rely on private sector management techniques to improve their management potential (Ginter et al., 1992; Lenihan, 2005). At this point, strategic planning was beginning to be unequivocally

recommended for dealing with the new certainty facing LPHAs that were seen as too internally driven and too focused on operational concerns and urged to think strategically about their missions and roles (Duncan, Ginter, Reeves, Samuelson & Fleenor, 1998; Hatzell, Williams, Halverson & Kaluzny, 1996; Nelson, Rasking-Hood, Galvin & Essian, 1998; Strudnicki et al., 1994). To develop more externally-focused mission and vision statements, strategic planning techniques, such as macro-environmental and scenario analysis, were being recommended (Ginter, Duncan & Capper, 1991; Lenihan, 2005; Pratt, McDonald, Libbey, Oberle & Linge, 1996; Venable, Li, Ginter & Duncan, 1998). Additionally, strategic planning was encouraged to engage the community in collaborative efforts, partnerships, and strategic alliances—decision-making efforts that involve the entire community in a consensus-building process to determine service delivery needs that ultimately lead to changes in the service delivery system (Mays, Halverson, & Kaluzny, 1998; Rohrer & Dominguez, 1998; Valdiserri, 1994).

Adapting strategic planning--the evolution of MAPP.

As noted in the earlier history, during the 1980s and 1990s, private- and corporate-sector strategic planning and methods were a timely topic and were being recommended, embraced, and utilized by public health agencies (Dievler, 1997; Evans & Margolis, 1992; Ginter et al., 1991; Ginter, Swayne & Duncan, 1998; Lenihan, 2005; Leviss & Hurtig, 1998; Marine, 1997; Reid, 1998). This was certainly evident in sessions on strategic planning at American Public Health Association Annual meetings during this period (American Public Health Association, 1995, 1996, 1998, 1999).

Because of public health's prior experience with planning and since several of their prior planning approaches (i.e. APEX-PH, Model Standards, PATCH) had strategic planning elements, public health agencies appeared to have the basic skill set infrastructure to adapt

strategic planning to a public health context. Although APEX-PH, Model Standards, and PATCH were not intended to be strategic planning tools per se, they were designed to link LPHAs to key aspects of their surroundings--a primary role of most strategic planning tactics. For example, Model Standards required LPHA strategic planning as the first step to delineate the role of the LPHA in the community and further recommended that APEX-PH (or some other strategic planning process) be used for this purpose. APEX-PH, in particular, demonstrated potential since it contained internal organizational capacity and external assessments—assessments that are fundamental, key elements of strategic planning approaches that are used frequently (Bryson, 1990; Lenihan, 2005; Turnock & Handler, 1996).

In using strategic planning, LPHAs faced many challenges including difficulty moving from concept to practice. Strategic planning analysis is not as precise and accurate as needed by LPHAs, and there are not many available methods for assimilating “fuzzy” issues into the planning process itself. Epidemiology, as a public health practice, is very quantitative and has little to no respect for “softer,” qualitative information. If a public health strategic planning process is not highly structured, it can easily deteriorate into operational planning and lose its effectiveness (Ginter et al., 1992; Lenihan, 2005). Strategic planning is a complex process that is not well understood, and it cannot be simplified by making the process perfunctory, reducing the process into fewer steps, or putting emphasis on a single, key element (e.g., participation or application of a generic strategy.). For example, public health planners may only focus on the short-term, relatively quantitative aspects of public health management--such as clinic operations or immunizations (Lenihan, 2005). A common reason for public health strategic planning failure was that too much emphasis was placed on one aspect at the expense of a more balanced process (Spiegel & Hyman, 1978; Lenihan, 2005). Therefore, effective guidance and a structured

approach for public health agencies to use in their strategic planning efforts were seen as essential for the successful adoption of MAPP (Ginter et al., 1991, 1992; Lenihan, 2005).

According to Lenihan (2005),

Success in doing strategic planning requires a clear understanding of its purpose, rationale behind why it works and how, and a familiarity with the steps to put together a planning process that fits the organization. Until the development of MAPP, there was little guidance that was directly informed by public health practice on what to include in a public health strategic planning process-- especially one focused on a local public health system. MAPP was developed to provide structured guidance resulting in an effective strategic planning process that is relevant to public health agencies and the communities they serve. One particular challenge for MAPP, which brings together conceptual elements of CHP and strategic planning, is the development of local public health systems. But systems thinking and using planning to connect parts into a cohesive whole are central to both types of planning. MAPP has a solid pedigree that is rooted in the experience that public health agencies have with planning over the past quarter century along with carefully selected elements of strategic planning that have proven to be useful by other sectors that have turned to strategic planning to deal with a changing world. The success of MAPP as a planning tool is based on both building on the history of planning in public health and on introducing new approaches that connect public health agencies to the challenges of today and to the partners they will need to meet those challenges. (p. 385)

History and Development of the MAPP Community Health Improvement Tool—A Groundbreaking Effort

The existing landscape.

In 1997, NACCHO partnered with CDC to develop a strategic planning tool for community health. This was during a time period when the nation's public health and healthcare system were facing unprecedented changes that challenged local health departments (LHDs) to re-evaluate and reorganize their activities and roles around a more clearly defined set of functions. These functions were originally defined as the three core functions of public health--assessment, assurance, and policy development--in the 1988 Institute of Medicine (IOM) report, *The Future of Public Health*. The three core public health functions were more fully described and defined in the following decade as the ten Essential Public Health Services (EPHS) (also known as the Essential Services). Public health leadership throughout the nation recognized that LHDs must operationalize the core functions and EPHS to become responsive, relevant, and successful representatives for healthier communities (Corso, Weisner & Lenihan, 2005).

As noted earlier, public health and LHDs had a history of demonstrating considerable strengths to externally and internally plan in areas such as health programs and the operations. However, it was becoming obvious that a new type of method(s) and tool(s) were needed to assist LHDs and their communities in a planning process that took into account the dramatic changes in the practice environment of public health. It was obvious that for communities to achieve optimal health through a strategic process, they must use their resources wisely, take into account their unique situations and conditions, and form effective partnerships. Therefore,

NACCHO and CDC responded to this need and embarked on a methodical, systematic, and broadly inclusive process to develop a new community-wide strategic planning tool—*Mobilizing for Action through Planning and Partnerships* (MAPP) (Corso et al., 2005).

Concept development.

Concept development of MAPP began in the fall of 1996 when NACCHO convened a work group to look at ways that the *Assessment Protocol for Excellence in Public Health* (APEX-PH) could be improved to address the new challenges facing LHDs. APEX-PH had been utilized successfully by LHDs to assess both their community's health status and their internal capacity since 1991. However, in 1995, NACCHO launched a study that found approximately 74 percent of respondents requesting a revised and improved APEX-PH tool that more completely addressed “community linkages and networks” and “evaluating community resources” (Corso et. al., 2005; NACCHO, 1996).

Corso et al. (2005) noted that, in late 1996, the project was officially initiated when CDC's Public Health Practice Program Office released a request for proposals (RFP) for a new cooperative agreement focused on strengthening public health practice by effectively translating the Essential Services into practice. NACCHO successfully responded to CDC's RFP with a proposal suggesting that the original APEX-PH tool needed to be “refocused” to incorporate newer concepts by:

- developing practice definitions for and realigning the APEX-PH Organizational Capacity Assessment indicators with the ten EPHS;
- expanding the concept of community capacity to address the public health system, so that the contributions of all organizations in improving the community's holistic health would be recognized;

- adopting principles of strategic planning as the means for focusing the resources and actions of the public health system; and
- creating a learning environment that encouraged and cultivated continued discussion and information flow among the work group, stakeholders, experts, and others because successful development of this new practice tool would depend on a practice-driven process and input from the field.

The work group's vision for the new tool—"a robust tool of public health practice to be used by communities with effective local health department leadership to create a local system that ensures the delivery of health services essential to protecting the health of the public"—captured these key features (Corso et al., 2005, p. 388).

The initial development effort focused on integrating the ten EPHS and performance measurement, as well as incorporating strategic planning concepts that would be relevant for public into the new MAPP tool. During this initial endeavor, the work group conducted a comprehensive literature review for each of these topics. The EPHS literature review provided essential information for understanding how the MAPP framework could serve as the infrastructure for an assessment of the local public health system (Corso, Wiesner, Halverson & Brown, 2000). The strategic planning literature review was extensive and entailed approximately 50 years of research and information from the private, corporate, governmental, and not-for-profit sectors (Corso et al., 2005).

Corso, Wiesner, and Lenihan (2005) emphasized that, from the beginning, NACCHO and CDC intended to create a "learning environment," and they purposely sought extensive input from the field during development of the tool. A MAPP Work Group—that included nine health officials serving diverse jurisdictions, representatives from the CDC, and liaison members of

related initiatives, including the Center for the Advancement of Community-Based Public Health and the new Turning Point initiative¹ --provided official oversight to the project.

Throughout the development process, the MAPP Work Group divided into subgroups to focus on critical elements of the MAPP new tool (i.e., strategic planning, performance measurement, and/or health status assessment). Broad input was also solicited from other stakeholders such as roundtable discussions, public health practitioner focus groups, and state and national conferences. Also, a 45-member Advisory Committee--that included subject experts (in areas such as planning, healthy communities, and performance measurement issues), as well as representatives from different sectors (such as business, faith institutions, philanthropy, academia, and the medical community) was instituted and provided recommendations to the MAPP Work Group regarding the entire process. Corso et al. (2005) points out that

An important conceptual linkage occurred in early 1998 when the CDC proposed that the five national public health organizations², funded through the common cooperative agreement mechanism initiated the previous year, join forces to develop national performance standards for public health practice. NACCHO, recognizing that the development of standards could closely align with the already-underway effort to integrate the Essential Services into MAPP, addressed both activities in a concurrent manner by utilizing the same Work Group and staff for the joint effort. (p. 388)

¹ The Turning Point initiative was initiated in 1997 and funded by the W. K. Kellogg Foundation and the Robert Wood Johnson Foundation. The program funded state and local collaborative projects to meet the vision of “transforming and strengthening the public health system in the United States by making it more community-based and collaborative.”

² The five funded organizations included the American Public Health Association (APHA), Association of State and Territorial Health Officials (ASTHO), National Association of Local Boards of Health (NALBOH), NACCHO, and the Public Health Foundation (PHF).

Framework development.

After a year of outlining and defining the concepts, a framework for the new MAPP Community Health Improvement Tool materialized. The MAPP Work Group provided brief overviews of the new tool at state and national conferences to obtain feedback and included Advisory Committee members with specific areas of expertise to participate in the biannual Work Group sessions. Early on, according to Corso et al. (2005), a “healthy tension developed between the goals of developing performance standards and the goals of a community health improvement process. The work group debated whether the local performance standards assessment should focus on the local public health system or a single agency like an LHD” (p. 389). Finally, after many discussions and deliberations, the Work Group reached a consensus that a system performance assessment could “serve as an implementation element within an overall strategic planning effort focused on health improvement” (Corso et al., 2005, p. 389). Furthermore, a systems approach acknowledged that LHDs had both independent leadership responsibilities to their communities, but also relied on community partners to achieve success. From these discussions, a critical decision emerged that supported the Local Public Health System Assessment (LPHSA) as a component within MAPP and the National Public Health Performance Standards Program (NPHPSP) as a “stand-alone” tool.

Relying upon their strategic planning literature review, the MAPP Work Group examined numerous strategic planning frameworks and finally selected a public sector model that had been successfully adapted within the public sector (Figure 1).

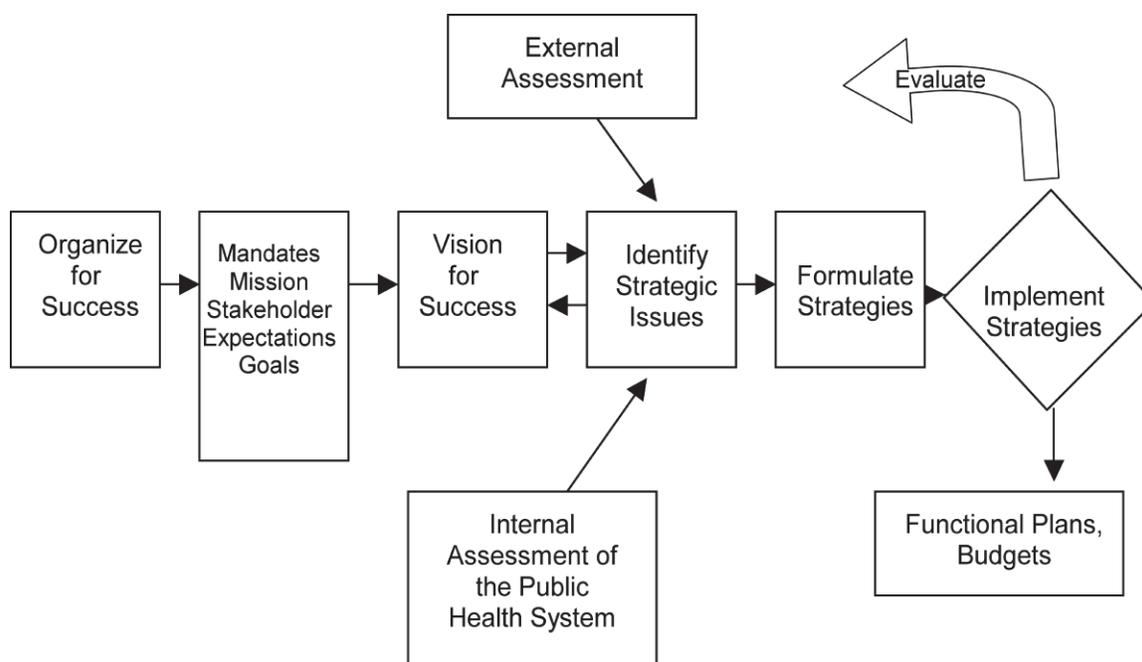


Figure 1. Strategic planning model as of February 1999 (Corso et al., 2005, p. 389), used under fair use guidelines, 2011

The MAPP Work Group then developed a position paper, to accompany the model that discussed the role, value, benefits, and challenges of strategic planning in public health. Also, to “further operationalize the application of strategic planning in public health settings, case study research was conducted to ensure that the strategic planning model was solidly grounded in practical experiences from the field” (Corso et al., 2005, p. 389). The Work Group developed and fielded a questionnaire identifying LHDs that had experience using strategic planning, and selective five case study sites from those who responded to the questionnaire. Subsequently, a project team visited these selected sites to gain an understanding of their utilization of strategic planning and translate their experiences into relevant and usable guidance for MAPP development and use in the field (Corso et al., 2005).

To ensure that the MAPP planning model and tool had a holistic view of health and was an effective process for community health status improvement, the MAPP Work Group strived to identify community health indicators that were practical and helpful (Corso et al., 2005). The

Word Group further developed and expanded the APEX-PH community assessment indicators and also integrated knowledge and experiences from other initiatives (Corso et al., 2005)

including:

- Health Resources and Services Administration (HRSA)–funded Community Health Status Indicators Project (Association of State and Territorial Health Officials [ASTHO], Health Resources and Services Administration [HRSA], National Association of County and City Health Officials [NACCHO] & Public Health Foundation [PHF], 2000),
- Comprehensive Assessment for Tracking Community Health (CATCH) developed by the University of South Florida (Studnicki, Steverson, Myers, Hevner & Berndt, 1997),
- health status categories discussed in the IOM report, *Improving Health in the Community* (IOM, 1997),
- John McKnight’s asset-mapping approaches (Kretzmann & McNight, 1993),
- CDC’s work on health-related quality of life (CDC, 2000), and
- NACCHO’s concurrent development of the environmental planning tool, *Protocol for Assessing Community Excellence in Environmental Health* (PACE-EH) (NACCHO, 1999).

Finally, the MAPP Work Group recognized the increasing role of information technology and computerization in public health practice, assessed the viability and practicality of an electronically-based tool, and reviewed several existing electronic tools (including APEX-PH ’98, the University of Kansas’ Community Toolbox, and the Healthcare Forum’s Outcomes Toolkit). This detailed examination of the other programs and tools, especially the exploration of possible linkage opportunities with the Outcomes Toolkit, provided ideas that helped in developing the final Web-based tool (Corso et al., 2005).

Guidance development.

Corso et al. (2005) further explain that once a framework for the tool was established, “the focus shifted to writing a conceptual rationale and step by-step guidance for each component of the model” (p. 390). A draft of this evolving application product was developed through a process that involved small writing teams and numerous review sessions. During this process, the original model was changed and developed into a more “intuitive flow diagram depicting the four assessments as arrows around a dynamic five-step process, to illustrate that the assessments inform all aspects of MAPP” (see Figure 2).



Figure 2. New MAPP Arrow Model as of September 2000 (Corso et al., 2005, p. 390), used under fair use guidelines, 2011

This evolution also led to a more focused articulation and better description of the four assessments including:

- The Local Public Health System (LPHSA) and Community Health Status Assessment (CHSA) were kept, but renamed.
- Attention to the contextual environment became a new “Forces of Change Assessment.”

- A separate assessment devoted to “Community-generated Themes” emerged, using ideas generated for healthy community approaches and the new PACE-EH tool.
- The creation of an Action Cycle to highlight the critical need to move from planning to implementation through a continuous circuit of implementing, evaluating, and celebrating success (Corso et al., 2005).

Desktop review process.

After the MAPP Community Health Improvement Tool was completely developed, the MAPP Work Group used a desktop review process to test the field-applicability and practicality of the draft guidance. In the fall of 1999, 40 desktop review LHDs were selected—of which 29 would review the tool with community partners and then be eligible to apply and be selected as demonstration sites. The New River Health District (as part of the NCTPP) was one of those sites. Since some of these LHDs (such as the NRHD) were already Turning Point sites, MAPP’s value to LHDs and communities that had undergone a public health system development and improvement process could be tested and evaluated. Interestingly, as Corso et al. (2005) point out, “the common links with Turning Point were underscored by one work group member from Chicago who also represented a Turning Point site; the community implemented the MAPP phases as they evolved and served as a learning laboratory for MAPP implementation” (p. 390). Also during this same time period, NACCHO and CDC began separate comprehensive statewide field-testing of the local public health system assessment instrument (see previous section on “Developing National Performance Standards for Local Public Health Systems”).

The four-month desktop systematic review began with an orientation meeting for selected review sites with the MAPP Work Group providing a protocol and standard questionnaires for these sites to provide monthly input. At the end of the process, NACCHO staff examined and compiled the comments into a comprehensive summary (Corso et al., 2005).

Tool refinement.

The overall response to the draft tool was very positive with selected review sites commending the comprehensiveness of the draft, the appropriateness of the components, and the “state of the art” of the product. They also offered suggestions for improvement, particularly in how the content was presented since some reviewers found the document to be “long, cumbersome, and jargon-laden” (Corso et al., 2005, p. 390). The MAPP Work Group utilized this feedback to significantly edit the full draft and develop a second shorter and more user-friendly “Field Guide.” The original document was also edited and improved to provide facilitators and others a more detailed technical version and understanding of the MAPP tool and process.

Review sites also found the name (which at this point was called *Assessment and Planning Excellence for Community Partnerships in Health [APEX-CPH]*) to be confusing, clumsy, and unable to clearly communicate the new tool’s identity. So, the work group created the name *Mobilizing for Action through Planning and Partnerships* or MAPP, which better reflected the concept of the new tool and was perceived to be easier to remember. There were mixed reactions from reviewers about the model diagram with some noting that it was not “community-friendly” (Corso et al., 2005, p. 390). Therefore, the work group revised the current arrow model and developed a second graphical depiction of the same steps showing movement along a road to “a healthier community” (see Figures 3 and 4).



Figure 3. The final MAPP Model (Corso et al., 2005, p. 391), used under fair use guidelines, 2011

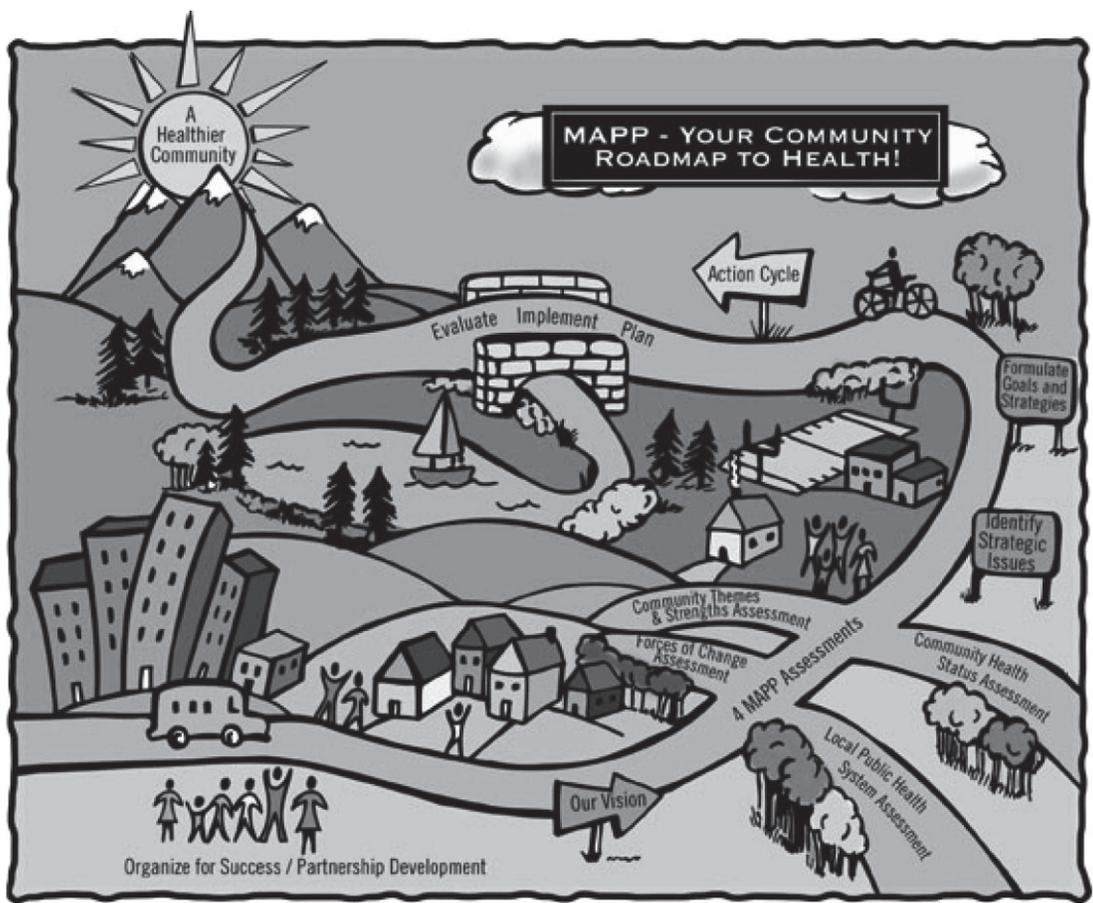


Figure 4. The final MAPP "Community Roadmap" (Corso et al., 2005, p. 391), used under fair use guidelines, 2011

Finally, the work group decided that the seven major themes, found throughout the tool, could be more effectively emphasized. These were highlighted in the final MAPP introduction as “guiding principles” for conducting all phases of MAPP--systems thinking, dialogue, shared vision, data, partnerships and collaboration, strategic thinking, and celebration of successes (Corso et al., 2005).

During 2000, the MAPP Work Group completed editing and refining the full guidance, developed a shorter Field Guide, created a Web-based home for the tool, and designed a logo. On February 14, 2001, the Field Guide and Web-based tool was released by NACCHO along with a new vision statement emphasizing the intended implementation outcomes for MAPP: “Communities achieving improved health and quality of life by mobilizing partnerships and taking strategic action” (Corso et al., 2005, p. 391). Nine demonstration sites were then selected from among the review sites to implement MAPP, and these demonstration sites would provide an ongoing opportunity for monitoring and learning from a diverse set of early adopters (Corso et al., 2005).

From the beginning, the learning environment established during the MAPP development and implementation process provided significant momentum for a successful outcome. Corso et al. (2005) detail some of the successes since MAPP’s release including the facts that it has been discussed in significant national policy documents (IOM, 2002); incorporated into the implementation of newly enacted legislation, regulations, or administrative rules of states (Illinois Department of Public Health, 2004; New Jersey Department of Health and Senior Services, 2003); and cited in federal guidance for cooperative agreements (CDC, 2004). Most importantly, MAPP users indicate that it has been successful in building new partnerships and leveraging limited resources.

History and Development of the National Performance Standards for Local Public Health Systems (NPHPS)

The existing environment.

Ushered in by the 1988 publication of the Institute of Medicine (IOM) report *The Future of Public Health* and the astounding conclusion that “public health is in disarray” (IOM, 1988), the 1990s brought tremendous challenges and change for public health. As mentioned earlier, many local health departments faced a significantly changing healthcare landscape with their decreasing role in healthcare delivery, and public health struggled with transitioning to measuring their performance and capacity to carry out the IOM-recommended core functions of public health (assessment, assurance, and policy development). In 1993 and 1994, the topic and issues of national healthcare reform dominated U.S. healthcare and policy discussions. As Bakes-Martin, Corso, Landrum, Fisher, and Halverson (2005) describe, public health leaders in the U.S. at this time realized that they needed to clearly articulate public health roles and responsibilities so that they could more effectively participate in these national healthcare discussions. To address this urgent need, the DHHS convened the Core Public Health Functions Steering Committee. This committee, composed of representatives of major national public health organizations and the federal agencies in the U.S. Public Health Service, produced *Public Health in America*—a document that established a national public health vision, mission, and goals and identified the ten Essential Public Health Services³ (also referred to as the Essential Services) as the national consensus on the scope and range of public health practice. The group

³ Ten Essential Public Health Services: (1) Monitor health status to identify health problems, (2) Diagnose and investigate health problems and health hazards in the community, (3) Inform, educate, and empower people about health issues, (4) Mobilize community partnerships to identify and solve health problems, (5) Develop policies and plans that support individual and community health efforts, (6) Enforce laws and regulations that protect health and ensure safety, (7) Link people to needed personal health services and ensure the provision of healthcare when otherwise unavailable, (8) Ensure a competent public health and personal healthcare workforce, (9) Evaluate effectiveness, accessibility, and quality of personal and population-based health services, and (10) Research for new insights and innovative solutions to health problems.

also clarified that, through the wording of the EPHS, the infrastructure for public health service delivery must be developed within a community and not just within a public health department.

However, these efforts to more effectively define the responsibilities and measure the performance of public health were not new! As far back as 1989, a committee of public health professional organizations had developed a list of ten organizational practices (Dyal, 1995) that were subsequently used by Turnock and colleagues (at the University of Illinois in Chicago) and Miller and colleagues (at the University of North Carolina in Chapel Hill) in their early, descriptive work of public health agencies (Bakes-Martin et al., 2005; Handler et al., 1995; Miller et al., 1993; Miller, Moore, Richards & McKaig, 1994; Miller, Moore, Richards & Monk, 1994; Miller, Richards, Christenson & Kock, 1995; Turnock, Handler & Dyal, 1994; Turnock et al., 1994). Using these ten organizational practices as a framework, researchers then established lists of activities most frequently associated with successful health agencies. Public health practice in a variety of settings was then modeled using evaluative inquiries.

Subsequent studies by Richards, Miller, and Turnock detailed the use of composite indicators to rate agency performance using the organizational practices and the core functions framework (Bakes-Martin et al, 2005; Handler & Turnock, 1996; Miller et al., 1995; Miller, Richard, Christenson & Kock, 1995; Richards et al., 1995; Richards, Rogers, Christenson & Miller, 1995; Turnock, Handler, Hall, Lenihan & Vaughn, 1995). Further research by Halverson and colleagues broadened the agency-related measurement and quantified the extent of public health activity undertaken outside the governmental public health agency setting—an event that laid the foundation for what is now described as the public health system (Bakes-Martin, 2005; Halverson et al., 1996; Halverson, Mays, Kaluzny & Richards, 1997; Keener, Baker & Mays, 1997; Mays, Halverson & Miller, 1998; Turnock & Handler, 1997). Ultimately, collaborative

research between the Miller and Turnock groups resulted in a consolidated 20-item survey that was widely used by researchers to describe the performance of public health agencies (Bakes-Martin, 2005; Turnock, Handler & Miller, 1998). The research methods and findings outlined above strongly influenced development of the National Public Health Performance Standards Program (NPHPSP).

NPHPS development—translation into practice.

In 1997, in an effort to strength public health practice by effectively translating the Ten Essential Public Health Services into practice, three-year cooperative agreements were awarded to each of five public health organizations by CDC’s Public Health Practice Program Office. Those organizations included the American Public Health Association (APHA), Association of State and Territorial Health Officials (ASTHO), National Association of County and City Health Officials (NACCHO), National Association of Local Boards of Health (NALBOH), and the Public Health Foundation (PHF). By early 1998, Bakes-Martin et al. (2005) states that “CDC and the five organizations determined that the best way to meet their collective goal was to collaboratively develop a national set of performance standards for public health practice” (p. 419). Subsequently, NACCHO decided to address both of these important needs through a simultaneous and linked development process so as not to lose the momentum in developing their new community health improvement tool (*Mobilizing for Action through Planning and Partnerships* [MAPP]) (Bakes-Martin et al., 2005). (See previous section on “Developing the MAPP Community Health Improvement Tool”).

According to Bakes-Martin et al. (2005), in the initial years of developing the standards, two key issues were identified and decisions resolved that were integral to the final structure of the NPHPSP. First, CDC and its partner organizations decided to focus on the “whole” public

health system, rather than the governmental public health agency alone. This “systems approach” supported the growing understanding of community-based public health and the important role of systems partners in overall performance of the public health system. Participant organizations agreed that the framework of the EPHS provided a common and basic understanding of those public health activities that should be present and expected in any community. However, the agencies, organizations, and other entities that provide these services may differ from community to community--due in great part to differences in the structure and organization of local and state governmental public health departments. “Therefore, the NPHPSP partnership developed standards that focused on *what* should be accomplished, rather than *who* should be accomplishing each public health responsibility” (Bakes-Martin, 2005, p. 419).

A second critical and defining issue was the decision to focus on the “gold standard” of public health practice. In early 1998, a “strawman” model was developed by staff from CDC, ASTHO, and NACCHO. This model provided a set of written scenarios, ranging from low-level to ideal, perfect performance, for activities in each EPHS. When the scenarios were presented to public health practitioners in the field, they noted that comparison to the highest level (the “gold standard”) was critical in attaining the best performance improvement. Learning from this field-based, practice-driven input, the partnership kept the “gold standard” scenarios of the model and redesigned the instrument using model standards followed by a series of questions designed to assist local communities in determining what extent their performance meets the model (Bakes-Martin, 2005, p. 419).

The local instrument and the parallel instruments for state public health systems and local governing bodies were developed and refined by CDC, ASTHO, NACCHO, and NALBOH. These partner organizations were very successful in attaining a high level of diverse participation

through the formation of active member work groups and by taking advantage of numerous opportunities for sharing progress and soliciting input at annual conferences and other venues. Similar to the MAPP development process, input from subject matter experts was solicited in key areas (such as workforce development, laboratory capacity, and epidemiology) to ensure that the standards encompassed the most recent information for public health practice. Also, the PHF coordinated a September 2000 special issue of the *Journal of Public Health Management and Practice* focusing on performance standards to strengthen the scientific research and evidence-based foundation for these efforts (Bakes-Martin et al., 2005).

Pilot and field testing of the NPHPSP instruments.

Bakes-Martin et al. (2005) emphasize, that from 1999 to 2001, the NPHPSP instruments underwent comprehensive and iterative pilot and field-testing. Texas was the first state to do pilot and field testing, followed by Florida, Ohio, and Missouri, then by Minnesota, Mississippi, Hawaii, and New York, and finally by Massachusetts. Texas jurisdictions reviewed the earliest version and were asked primarily to comment on the face validity of the instruments, the Web-based format, and data entry mechanisms. Subsequently, other states provided significant input that addressed the format and content of the assessment instruments. Information obtained from these pilot and field tests led to the following significant changes in the NPHPSP instruments:

- instrument questions were rewritten,
- model standards were added, deleted, or merged,
- response options expanded to a four-point scale, and
- questions were added to determine the involvement of the local health department in the direct delivery of each Essential Service.

However, the basic concepts--a “gold standard” measurement and a public health system focus--remained the same. The first real indication of the true benefit of using performance standards as an educational and community mobilization tool were revealed in these pilot and field tests. Most respondents from the pilot and field tests felt that the educational value for the public health system of learning what every community can expect from their local public health agency was the greatest benefit of the process. Communities also reported that the results they obtained from these NPHPSP assessments were instrumental in their quality improvement efforts.

According to Bakes-Martin et al. (2005), an important component of the field tests was the multiphase validity and reliability testing conducted by the University of Kentucky (UK) through surveys of field-site participants to test content and criterion validity. Response validity was also tested by reviewing written documentation of relevant activities to verify the accuracy of assessment responses. These studies confirmed that content and response validity of the proposed instrument were high, but assessment of criterion validity was hampered by lack of a true external measure for performance. The researchers noted that the new performance standards, if ultimately integrated into a national quality standards program for public health, would probably become the accepted benchmark (Bakes-Martin et al., 2005; Beaulieu & Scutchfield, 2002; Beaulieu, Scutchfield & Kelly, 2003a; Beaulieu, Scutchfield & Kelly, 2003b; Scutchfield & Beaulieu, 2000; <http://www.turningpointprogram.org/Pages/perfmgt.html>).

NPHPSP current status and future implications.

The final local and state instruments, with incorporated changes from field-testing and recommendations from the validity and reliability studies, received approval for data collection from the Office of Management and Budget in July 2002 (Bakes-Martin et al., 2005; Beaulieu, Scutchfield & Kelly, 2003a; Beaulieu, Scutchfield & Kelly, 2003b). According to Teresa Daub, Public Health Advisor, Performance Standards and Accreditation, Office of State, Tribal, Local, and Territorial Support, at CDC (personal communication, June 8, 2010), as of December 2009, there were 42 states in which one or more of the three NPHPSP Instruments had been used (State, Local, and/or Governance). Twenty-seven states had used the State Instrument, almost 900 local public health systems had used the Local Instrument, and over 250 boards of health had completed the Governance Instrument. Many have used the local and state instruments in their bioterrorism planning activities to identify statewide strengths and priorities for improvement (www.cdc.gov/od/ocphp/nphpsp/).

Other strategic linkages have occurred and include:

- The incorporation of the NPHPSP into MAPP encourages the use of local performance standards within the context of a broader health improvement effort;
- The Turning Point Performance Management Collaborative (PMC), funded by the Robert Wood Johnson Foundation, emphasized the role the NPHPSP standards can play in improvement efforts;
- Objective 23-11 in the Public Health Infrastructure chapter of *Healthy People 2010* promotes the use of the performance standards. This objective cites the NPHPSP as its sole data source and seeks to monitor and provide targets for local and state public health systems using the national standards;

- National public health stakeholders are expressing a growing interest in public health agency accreditation and accountability. The NPHPSP is seen as a potential stepping-stone and building block for accreditation. In fact, one of NACCHO's most recently important and successful efforts (which occurred during my presidency)—the development of an operational definition of a local public health agency--used the performance standards to clarify agency roles and responsibilities with respect to the EPHS.

The NPHPSP partnership is interested in ensuring the standards continue to embody the “gold standard” of public health and will continue to seek opportunities to periodically update these instruments (Bakes-Martin, 2005; DHHS, 2000;

<http://www.naccho.org/topics/infrastructure/accreditation/opdef.cfm>).

In regards to the future implications of the NPHPSP, Bakes-Martin et al. (2005) states that:

The true value of the national performance standards rests with the ability of public health leaders to use these tools to strengthen system capacity to effectively deliver the Essential Services ultimately improving the quality of the public health system in the United States. Like any tool, its use is made optimal through expert application in a practice setting. To this end, public health leaders who are committed to continuous improvement will find the performance standards an invaluable reference for assessment and planning, while educators will find the standards critical in planning curriculum and in assessing relevance to contemporary public health practice. (p. 421)

Holistic Health Needs of Americans Residing in Rural Communities

Mental health needs.

Residents in rural communities face a number of stressful circumstances placing them at considerable risk for mental health issues--including isolation, limited resources, and the stigma attached to mental illness. Because of the aforementioned stressors and cultural beliefs, these residents are also less likely to seek mental health services as compared to their urban counterparts (Barry, Doherty, Hope, Sixsmith & Kelleher, 2000; Bjorklund & Pippard, 1999; Blank, Fox, Hargrove, & Turner, 1995; Cacioppo & Hawkley, 2003; Kane & Ennis, 1996; Letvak, 2002; Levin & Hanson, 2001). Moreover, mental health service delivery to rural locales faces numerous barriers given the stigma among health providers, consumers, and employers; lack of or poor general health service integration; language and cultural issues in treatment; and, substantial reliance on public sector funding (Levin & Hanson, 2001). Therefore in these communities, the development and integration of innovative community support, incorporating informal social support, and improving openness regarding mental health issues need further emphasis (Barry et al., 2000; Bjorklund & Pippard, 1999; Blank et al., 1995; Kane & Ennis, 1996; Kemp, 2008; Letvak, 2002; Levin & Hanson, 2001).

Rates of mental health disorders (such as schizophrenia, bipolar disorder, anxiety and personality disorders) in rural communities are not higher than urban settings. This may be due to underreporting and differences in diagnosis and care (Dennis & Pallotta, 2001; Levin & Hanson, 2001). An estimated 20% - 24% of U.S. residents in rural communities struggle with mental disorders, substance abuse, and/or co-morbid conditions (Letvak, 2002; Roberts, Battaglia, & Epstein, 1999). However, these individuals face significant obstacles in obtaining sufficient psychiatric care and treatment due to lack of resources and access to services, the high

cost of services, the inability to obtain a referral for services, and lack of transportation (Arcury et al., 2005a; Bjorklund & Pippard, 1999; Blank et al., 1995; Huttlinger et al., 2004). Limited healthcare resources in rural locations pose a unique challenge of ensuring ethical conduct within mental health service provision. Consequently, providing mental health care for these patients involves numerous challenges such as the potential for self-harm and violence and protecting these patients from abuse or exploitation. Such challenges within rural settings can be adequately addressed through education and collaboration on the part of patients and care providers.

Therefore, patient input and feedback are necessary in developing effective solutions (Averill, 2003; Kane & Ennis, 1996; Kemp, 2008; Levin & Hanson, 2001; Roberts et al., 1999; Williams & Cutchin, 2002).

Substance abuse.

In rural communities, substance abuse, such as social drinking, is often an undesirable topic due to the traditional cultural belief system (Letvak, 2002; Wagenfeld, Murray, Mohatt, & DeBruyn, 1997). Additionally, a majority of individuals with alcohol or drug use disorders—such as young uninsured women, Hispanics, and African Americans—do not receive services mainly due to the stigma attached to receiving such treatment (Davis & Magilvy, 2000; Kemp, 2008; Wells, Klap, Koike & Sherbourne, 2001; Wu et al., 2003; Wu & Ringwalt, 2005).

Substance abuse rates among rural residents are typically comparable to or lower than those of urban residents. For example, alcohol abuse is as prevalent in rural communities as in urban areas; however, marijuana use is reportedly lower even though it is easily obtainable. Cocaine, opiate, and amphetamine use is uncommon among this pregnant patient population. Rural adolescents, particularly those in the south, have higher levels of smoking than those in urban areas. Several common barriers pertaining to substance abuse treatment in rural

communities include reduced availability of services, reduced access to treatment centers, lack of utilization of treatment, and inability to afford necessary services. Furthermore, residents with substance abuse tendencies in these communities generally face a greater number of challenges in seeking necessary treatment compared to urban residents (Dennis & Pallotta, 2001; Kemp, 2008; Rebhun & Hansen, 2001).

Health risk behaviors among adolescents.

The most common health concerns and risk behaviors appear to be universal among rural versus urban adolescents. Tobacco use, drug use, birth control pill use, and lack of involvement in physical activity have significantly increased among high school students. Other youth risk behaviors include suicide attempts, lifetime cigarette use, and promiscuous sexual activity. Common health concerns among adolescents residing in rural communities include fatigue, frequent headaches, weight problems, and depression; common health risk behaviors included alcohol and tobacco use and minimal concern for venereal diseases and HIV/AIDS (Dennis & Pallotta, 2001; Kemp, 2008; Rebhun & Hansen, 2001).

Oral health needs.

Increasing disparities exist in the oral health status of several population groups including those with low income; those residing in rural communities; racial and ethnic minorities; those who are non-English speaking; children and older adults; and those who are developmentally disabled or have major medical problems (Carter et al., 2003; Huttlinger et al., 2004; Kemp, 2008; Kent et al., 2000; Mertz & O'Neil, 2002; Vargas, Ronzio & Hayes, 2003). Underserved populations face many barriers to care and are at a greater disadvantage for poorer health outcomes. Overall, socioeconomic status, irrespective of race and gender, is a major indicator in determining the use of dental services and health outcomes with those insured having a higher

likelihood of regular dental care than the uninsured/underinsured (Huttlinger et al., 2004; Isman, 2001; Mertz & O'Neill, 2002). Access to oral health services is poor, particularly for low-income adults since many low-wage employers do not offer dental insurance or the premium is too high even if offered. In sparsely populated rural areas, such as southwest Virginia and Appalachia, the issues of access and coverage are compounded by a shortage and inconvenient geographic location of dentist and other oral health providers, as well as the absence of a dental school or professional training program (Beetstra et al., 2002; Huttlinger et al., 2004; Isman, 2001; Kemp, 2008). Mertz and O'Neil (2002) report that a large portion of the general U.S. population does not have access to dental care with a dentist. This is attributed to many factors included a poorly defined and underdeveloped dental safety net, inadequate or lack of dental insurance, and lack of dental providers accepting insurance such as Medicaid.

Oral health needs are significant in rural communities and require creative and collaborative solutions to alleviate these needs and reduce disparities. Beetstra and colleagues (2002) note that *health commons* are one means to address oral health (and other health needs) in rural communities. Health commons (for example, federally qualified health centers [FQHCs]) are enhanced, community-based, primary care safety net practices that offer medical, behavioral, social, public, and oral health services. Additionally, recruitment of new dental and other health practitioners to dental and health professional shortage areas can help in meeting oral health needs. Other options include population-targeted programs such as public dental clinic, dental vans and mobile dental services, and school-based services; teledentistry/telemedicine; better integration of oral and primary/chronic health services; expanded practice for dental hygienists and assistants; new dental school strategies; and a focus on the cost-effectiveness and patient dental program outcomes (Ayanian et al., 2000; Bashdur, Reardon & Shannon, 2000; Beetstra et

al., 2002; Berkowitz, 2004; Glasser et al., 2003; Huttlinger et al., 2004; Isman, 2001; Kemp, 2008; Jensen & Royeen, 2002; Leight, 2003; Mertz & O'Neil, 2002; Ricketts, 2000; Vargas et al., 2003a, 2003b).

Childhood, adolescent, and maternal health.

Cultural, health risk, and health care delivery systems differ among children and mothers residing in rural communities as compared to their urban counterparts. Additionally, there are disparities within rural communities as it related to access and distances to healthcare services (Abbott & Olness, 2001; Kemp, 2008).

Access to and availability of healthcare services.

Abbott and Olness (2001) discussed the fact that children residing in more rural areas typically experience limited access to care for certain medical conditions because of the lack of specialized medical staff, facilities, and medical equipment in rural hospitals and clinics. It has been reported that emergency care personnel in rural areas may lack experience in the management of acutely ill and injured children resulting in higher death rates from trauma among those children. Children in migrant farm-worker families are one of the most vulnerable in terms of access to health care services primarily because they lack continuity of care and adequate health insurance to cover preventive services such as immunization and oral health. Therefore, children of migrant workers may be more likely to experience nutritional and dental problems, as well as infectious diseases. McManus, Newacheck, and Weader (1990) reported that non-metropolitan adolescents made fewer physician visits and often postponed physician care compared to metropolitan adolescents.

Environmental hazards and injuries.

Children who live in smaller, non-urban and, particularly, rural areas have a number of different environmental hazards, physical injuries, fire hazards, drug use, and other disease risks

than their urban counterparts. Abbott and Olness (2001) reported that children living on farms are at greater risk of exposure than their urban counterparts to certain allergens and microbial agents (i.e., coccidiomycosis, blastomycosis, clostridium species [e.g., gas gangrene], and tetanus spores); zoonotic diseases (i.e., campylobacter diarrhea, rabies, brucellosis, cryptosporidiosis, *E. coli* 0157:H7 diarrhea, leptospirosis, and cat scratch fever); tick-borne illnesses (i.e., Lyme disease, borrelia, and Rocky Mountain Spotted Fever); toxic gases in silos or near manure sites; herbicides and insecticides; physical injuries such as machinery accidents and unintentional firearm accidents; and fire hazards. The leading causes of injury death to individuals residing in rural communities include motor vehicle accidents, drowning, unintentional firearm injuries, deaths from house fires, homicides, and suicides (Rausch, Saddal, Saddal & Esposito, 1998; Kemp, 2008).

Drugs and HIV.

Drug use among rural residents, especially adolescents, is problematic as emphasized by Abbott and Olness (2001). Consideration of the cultural identity and health literacy of community residents is critically important when planning health promotion and drug awareness programs. HIV is another important issue in rural communities since individuals living in these communities are less likely to receive regular primary and prenatal care and HIV testing. However, there is limited data on its incidence/prevalence. Individuals at greatest risk include migrant and seasonal farmworkers, alcohol abusers, prostitutes, black women, and intravenous and crack cocaine drug users (Abbott & Olness, 2001; Kemp, 2008).

In Virginia, there have been 1,828 drug deaths (excluding alcohol-only deaths) in the years 2004 through 2006 with 94.7% or 1,732 deaths being Virginia residents. These drug deaths have accounted for 16.6% of all unnatural death in the Commonwealth during this same time.

The majority of these deaths were accidents (78%), males (63%), and white (82%). Additionally, the number of drug deaths has been increasing each year with 576 deaths in 2004, 598 in 2005, and 654 in 2006. A range of drugs was responsible for these deaths including prescription, illegal, and over-the-counter. Of these drug deaths, prescription drugs (specifically fentanyl, hydrocodone, methodone, and oxycodone) and illegal drugs (specifically cocaine, heroin, and methylenedioxymethamphetamine [MDMA]) have increasingly become a concern. The age group with the highest burden of these drug deaths was the 35 – 44 age group with general trends showing that the younger age groups have a greater proportion of methadone-, heroin-, and MDMA-related deaths. There is a disparity in the geographic burden of these deaths with the western portion of the state, including the NRV, representing higher rates of illicit drug dependence and non-medical use of pain relievers, as well as problems with alcohol use and dependence than the national rate, and approximately 45% of all drug-related deaths (Virginia Department of Behavioral Health and Developmental Services, 2009; VDH, 2008).

Rural-based disasters.

Abbott and Olness (2001) reported that non-natural and natural disasters (such as floods and technological [e.g., chemical spills, radioactive], economic collapse or inability to adequately respond to disasters, conflict, and population displacement are issues that particularly affect rural communities. Infants and children in these communities lack access to treatment from the medical and psychological effects of disasters such as hurricanes, tornadoes, blizzards, forest fires, floods, earthquakes, avalanches, and chemical disasters related to train derailments or grain bin explosions. Infants, preschool children, pregnant and lactating women, older adults, and handicapped individuals are at significant risk for dehydration, malnutrition, fatigue, and infections from lack of sanitation during a disaster (Kemp, 2008).

Public health recommendations.

The proactive involvement of well-trained healthcare personnel is crucial in the health promotion recovery efforts of rural communities. Children (and their families) who lack transportation and access to medical and other services due to distance, socio-economic status, or cultural barriers should be identified and targeted to receive appropriate holistic care including health education, immunizations, well-child visits, primary care, and emergency services. Secondary and tertiary care should be readily available to these specific populations. Local health departments have an important role to assist communities in achieving appropriate care for children—i.e., providing of reliable, service-oriented infrastructure to community members; linking statewide organizations and local agencies; serving as sentinels and communicators of infectious disease information and prevention messages; and providing basic child healthcare in an economic and efficient manner. Many model programs focus on the special needs of this targeted population in the provision of preventive care, such as home visits to rural children. With increasing reliance of rural community residents on the public health system, healthcare delivery via public clinics and novel healthcare systems (such as FQHCs) is needed more than ever (Abbott & Olness, 2001; Kemp, 2008).

Chronic disease and sentinel events.

Many rural communities reported higher rates of chronic disease at the end of the 20th century than did their urban counterparts. Interestingly, this difference may be due to the fact that rural communities are typically slower than urban communities to adopt unhealthy lifestyles, yet also slower to adopt healthy behaviors. Additionally, these same communities have low utilization of preventive healthcare services even if such services are available and accessible. Individuals with chronic disease in rural communities also face numerous barriers including

healthcare provider shortages, long distances to healthcare services, lack of or limited health insurance, and few specialty clinics, all of which differ markedly from urban residents (Arcury et al., 2005a; Arcury, Preisser, Gesler & Powers, 2005b; Borders, Aday & Xu, 2004; Cacioppo & Hawkley, 2003; Davis & Magilvy, 2000; Dennis & Pallotta, 2001; Scariati & Williams, 2007). Healthcare providers in these communities also face barriers due to excessive patient loads and travel distances. Thus, the increasing rates of chronic disease among residents in rural communities highlights a significant lack of access to healthcare services and suggests an obstinate view of healthy behavior change (Borders et al., 2004; Davis & Magilvy, 2000; Dennis & Pallotta, 2001; Glasser et al., 2003; Kemp, 2008; Lee, Guise & Sathe, 2003).

Despite a lack of detailed, extensive, and conclusive research, holistic health in rural communities has been examined through studies of farmer, patients in non-metropolitan health centers, populations not adjacent to a metropolitan area, and in populations with fewer than 50,000 residents (Dennis & Pallotta, 2001). Health risks specific to these populations include agricultural exposure to organic and inorganic airborne dusts and gases, microbes, fertilizers, insecticides, herbicides, fungicides, and diesel exhaust fumes, as well as physical and mechanical hazards, stress, and behavioral factors. The major perceived health problems among individuals residing in rural communities are respiratory disorders, cancer, neurologic problems, injuries, skin diseases, hearing loss, and stress. Risk factors for chronic diseases include genetic, environmental, behavioral, social, and personal lifestyle (Dennis & Pallitta, 2001; Eberhardt & Pamuk, 2004; Sampson, 2003; Scariati & Williams, 2007).

Cardiovascular disease (CVD).

Cardiovascular disease (CVD) involves several modifiable risk factors--high blood pressure, high cholesterol, cigarette smoking, physical inactivity, diabetes, and obesity. A

disproportionately high level of coronary disease was reported in rural areas during the 1970s and 1980s, which may be due, in part, to lower socioeconomic levels as income in these communities decreased, or the high-fat and high-calorie dietary intake that comprises the traditional Southern or country diet. Therefore, interventions that address coronary heart disease among these residents should target individual lifestyle factors, such as smoking, diet, and obesity, in addition to adequate healthcare access (Averill, 2003; Dennis & Pallotta, 2001; Leight, 2003).

Cancer.

There have been no conclusive differences in cancer rates among rural versus urban communities in the research to date. The most common forms of cancer among residents in rural communities include non-Hodgkin's lymphoma, leukemia, and female-related, breast, cervical, colorectal, bladder, prostate, skin, lung, stomach, and brain cancers. These may be due to environmental factors such as pesticides, herbicides, fungicides, chemical solvents, and excessive sunlight. Additionally, cancer incidence, prevalence, and mortality rates among these residents may reflect differences in lifestyle factors (e.g., diet, smoking), lack of access to care, or differences in diagnosis and reporting compared to urban residents. Treatment, such as surgery for breast cancer, and preventive screening, such as prostate specific antigen (PSA), differ drastically in rural areas compared to urban settings. Therefore, further research on the marked differences in treatment and the development of cost-effective interventions are warranted in understanding how incidence, prevalence, and mortality rates may be affected in rural communities (Ayanian, Weissman, Schneider & Ginsburg, 2000; Dennis & Pallotta, 2001; Eberhardt & Pamuk, 2004; Kemp, 2008; Ricketts, 2000).

Lung and respiratory diseases.

Lung and respiratory conditions are thought to be caused by both toxic environmental factors (e.g., organic dusts, allergens, animal proteins) and one's lifestyle (e.g., smoking, obesity). Common chronic lung and respiratory conditions found in rural areas include chronic bronchitis, asthma, and chronic obstructive pulmonary disease, hypersensitivity pneumonitis, and organic-dust toxic syndrome. Moreover, barriers as noted earlier such as poverty, geographic location (i.e., distance to care), lack of health insurance, and poor access to healthcare services are factors in lung and respiratory diseases and the higher mortality rates from these diseases among residents in rural communities. Hence, research on the prevention of respiratory diseases among these residents is suggested (Arcury et al., 2005a, 2005b; Dennis & Pallotta, 2001; Kemp, 2008).

Musculoskeletal disease.

With more than 100 musculoskeletal diseases in existence, musculoskeletal disease is reported as the most common cause of physical disabilities in the U.S.--with arthritis, particularly rheumatoid, osteoarthritis, and osteoporosis prevalent in residents of rural communities. Lifestyle factors (such as diet, obesity, lack of mobility, smoking, physical inactivity, excessive alcohol use) and other risk factors (thin body build, long-term corticosteroid use, lack of estrogen replacement) account for the differences seen in rural versus urban populations. More research is needed to gain a better understanding of lifestyle factors related to such diseases and how these factors are manifested and modified in rural populations (Dennis & Pallotta, 2001; Kemp, 2008).

Neurologic disorders.

Chronic neurologic disorders common among rural populations include Alzheimer's disease, Parkinson's disease, multiple sclerosis, amyotrophic lateral sclerosis (ALS) (Lou Gehrig's disease), Guillain-Barre syndrome (GBS), epilepsy, and migraine headache. These conditions are often attributed to the toxicological effects of agricultural chemicals such as pesticides, organic solvents, and other chemicals commonly used by farmers and others. Due to extensive travel distances, there is a lack of healthcare specialists to provide care and treatment for those with neurologic disorders in rural communities. More research is needed to further define and identify associations of links between residence and occupations in rural communities and chronic neurologic diseases (Dennis & Pallota, 2001; Kemp, 2008).

Obesity and physical inactivity.

Higher rates of obesity among rural residents play a significant role in hypertension, diabetes, hypercholesterolemia, and other chronic diseases. For instance, coronary heart disease, diabetes, colorectal and breast cancer, and osteoarthritis have been found to be linked to obesity. Physical inactivity has also been attributed to several chronic conditions including stroke, breast and colorectal cancer, coronary heart disease, diabetes, and osteoporosis (Dennis & Pallotta, 2001; Kemp, 2008). Dennis and Pallotta (2001), Huttlinger, Schaller-Ayers, and Lawson (2004), and Leight (2003) suggest that additional research on dietary habits and physical activity among residents in rural communities is needed to determine the effects of these behaviors on overall health.

Other chronic diseases.

Rates of other common chronic diseases (such as hypertension, diabetes, and hypercholesterolemia) among rural residents may be on the rise due to increasing obesity rates (Committee on the Future of Rural Health Care [CFRHC], 2005). These residents have higher

age-adjusted rates for arthritis, cataracts, hearing and orthopedic impairments, ulcers, diabetes, kidney problems, bladder disorders, hypertension, and emphysema, as compared to urban residents. These differences in chronic disease rates in rural communities may be due to environmental exposures, lower socioeconomic status, reduced access to quality medical and rehabilitative care, higher rates of limitations in activity due to chronic conditions, as well as a lower percentage of residents who perceive their health as excellent compared to their urban counterparts. Additionally, there are differences in rural versus urban lifestyle factors such as obesity, diet, exercise, and smoking—that are related to these chronic diseases. The differences in chronic disease prevalence rates among rural communities--as compared to urban communities--can be attributed to life stressors and lower education levels that have the potential to lead to alcohol, drug, child, and spouse abuse, among other high-risk behaviors. Further research is warranted to better determine current trends in lifestyle factors (i.e., obesity and smoking behaviors) that can assist in planning for future healthcare needs of rural communities (CFRHC, 2005; Dennis & Pallotta, 2001; Eberhardt & Pamuk, 2004; Huttlinger et al., 2004; Kemp, 2008; May, Mendelson & Ferketich, 1995; Scariati & Williams, 2007).

Infectious diseases.

Residents in rural environments, especially those located in the southern regions of the U.S., have the potential for exposure to many zoonotic and other infectious diseases such as plague and anthrax, hantavirus, tick-borne diseases (such as Lyme disease, Rocky Mountain Spotted Fever, borreliosis), rabies, Hepatitis A, and HIV/AIDS. This is due, in part, to agricultural or migrant-related occupations and hobbies such as hunting and trapping that increase the likelihood of exposure to microbes transmitted by animals and insects. Also, many residents in rural communities are often exposed to untreated and contaminated water associated with lower

socio-economic status or underdeveloped water and sewer systems (Armitage & Sinclair, 2001; Cohn et al., 2001; Finnegan et al., 2002; Kemp, 2008; Krauss et al., 2003; Masters, Olson, Weiner & Paddock, 2003).

Gun safety.

Rural locales are typically notorious for environmental hazards such as accidental gun deaths. Within rural America alone, an estimated 40 million people use rifles, shotguns, and handguns for hunting and target shooting on a regular basis (National Shooting Sports Foundation [NSSF], 2007). Based on the previous NRV health needs assessment conducted in 2000, gun safety--particularly the locking and securing of firearms in family homes--was a major finding and remains a primary issue of concern especially for families with young children. Therefore, efforts to promote gun safety education and implement firearm safety protocols should be seriously considered by rural residents who keep firearms in the home for any reason (Kemp, 2008).

Environmental health needs.

Environmental health is a broad topic that involves the study of the effects on human health of the physical and social environment including issues related to urban, non-urban, and rural development, land usage, use of pesticides, public transportation systems, industrial development, and social capital (Srinivasan, O'Fallon & Dearth, 2003). More specifically, environmental health includes many facets such as clean air and water; adequate housing, education, and workplace facilities, highways, and roads; green space such as parks and walking/biking trails; adequate transportation; and protection from agricultural-specific hazards, pollutants, and chemicals; and rodent/pest control (Brownson et al., 2000). Rural community health needs tend to involve occupational risks and side effects of the local economy such as

contaminated water supplies due to the pesticides used during farming procedures. Additional occupational risks include farming machinery accidents, mining accidents, and manufacturing accidents. Teens employed on farms commonly report injuries such as insect stings, cuts, burns, and falls. Furthermore, industries such as farming, food manufacturing, and forestry are typically considered some of the most dangerous jobs in America producing the second highest rate of occupational injuries and illnesses. However, given the increasing migration of younger generations to rural communities, it is becoming progressively rarer that they maintain traditional rural occupations such as farming. Consequently, younger generations in rural communities are more often faced with non-farming and non-traditional health risk factors, such as those previously described (Elder et al., 2001).

A great deal of recent focus on the *built environment* relates to the challenges of providing adequate transportation; air pollution from increasing traffic and chemical farming techniques; unhealthy indoor environments; the lack of sidewalks; and the loss of natural environments. Daily exposure to and living in any of the above situations can either positively or negatively affect physical activity (e.g., lack of sidewalks inhibits walking) and chronic conditions such as asthma, respiratory disease, obesity, cardiovascular disease, lung cancer mortality, and mental health, most of which are attributed to a combination of genetics and the built environment. Healthy, sustainable communities are those where natural historic resources are preserved, jobs are available, development sprawl is contained, neighborhoods are safe, education is readily available, transportation and healthcare are accessible and affordable for all, and all community members have the opportunity to improve and enjoy their quality of life. An examination of environmental health in a community requires collaboration and a multidisciplinary research approach that includes public health and other health and human

service providers, healthcare professionals, architects, builders, planners, transportation officials, educators, local governments, elected officials, the faith community, businesses, and community members (Kemp, 2008; Srinivasan et al., 2003).

Spiritual health needs.

An issue that has been typically neglected in past literature is the spiritual health needs among rural residents--especially those in Appalachia--and the connection and relationship between spiritual health and general health needs. Health-related activities, such as community-based exercise programs, are often intertwined with religious activities (e.g., worship) in central Appalachia. Therefore, effective faith-health partnerships among clergy, health professionals, and community residents that support the health of central Appalachian and other rural populations are necessary in these communities to improve community health and reduce health disparities (Kemp, 2008; Simpson & King, 1999). Spirituality is multidimensional and typically viewed as one's search for meaning, purpose, and truth in life, and the beliefs and values by which an individual lives, as well as feelings of hope, love, connection, inner peace, comfort, and support. Compared to the concept of religion, there is more of a focus on an individual's inner resources (e.g., prayer, meditation) and connections with others in the community, the environment and nature, as well as a relationship with a higher power (Anandarajah & Hight, 2001; Kemp, 2008). There have been numerous studies on the recent focus on spirituality in medical care and physician practice, suggesting that many patients in rural communities believe spirituality plays an important role in their lives, that there is a positive correlation between a patient's spirituality or religious commitment and health outcomes (e.g., greater longevity, coping skills, health-related quality of life; reduced anxiety, depression, and suicide), and that these patients would like physicians to consider these factors in their medical care (Anandarajah &

Hight, 2001; Chatters, 2000; Chatters, Levin & Ellison, 1998; Kemp, 2008; Koenig, 2001; Mueller, Plevak & Rummans, 2001; Parker et al., 2002; Simpson & King, 1999).

Considering spirituality is important, given the positive relationship between religious commitment and mental and physical health and well-being, and the evidence of spirituality's role in the prevention of illness such as depression, substance abuse, coping with physical illnesses, recovery from illness, daily stressors and specific life events (e.g., bereavement, ethnic discrimination). Therefore, faith-based collaborations and coalitions among public health and other health and human services, clergy, and community members are vital to effectively incorporate non-denominational spirituality (Anadarajah & Hight, 2001; Chatters, 2000; Chatters et al., 1998; Kemp 2008; Miller & Thoresen, 2003; Mueller, Plevak & Rummans, 2001; Parker et al., 2002; Simpson & King, 1999; Sutherland, Hale & Harris, 1995).

The resurgence of interest in the connection of spirituality, public health, and well-being needs to encompass recent theoretical, conceptual, methodological, and analytic refinements in determining the nature of religious phenomena and the linkages between spirituality and health (Chatters, 2000; Koenig, 2001). Currently, the National Institutes of Health (NIH) has hosted several spirituality and health-focused conferences and is funding research efforts to better understand the connection between and effects of religion on health. Also, all major DHHS divisions have been given a Presidential mandate that encourages active research on faith-based community organizations that offer mental health and substance abuse services. Future unbiased research will better articulate and define the relationships between spirituality and health factors/outcomes and will advance public health practice for both individuals and groups (Chatters, 2000; Chatters et al., 1998; Kemp, 2008; Koenig, 2001; Miller & Thoreson, 2003; Sutherland et al., 1995)

Rural residents' quality of life and the local healthcare system.

Factors such as age, socioeconomic status, gender, and ethnicity largely affect one's perceptions of quality of life. Additionally, community residents hold very different individual priorities related to quality of life and, consequently, have the potential to negatively affect their perceptions of the quality of life. One's perception of convenience as related to shopping centers, for example, are drastically different from a resident with priorities more focused on the cost of living, particularly for a resident earning less than the federal poverty level. Likewise, many older adults, for instance, are required to purchase prescription drugs out-of-pocket on a regular basis. Consequently, both their finances and actual and/or perceived quality of life may be negatively impacted by this fact (Kemp, 2008).

One's overall satisfaction with and attachment to the neighborhood, support within the community play, feelings of safety, and health status play a role in his/her perceptions of quality of life and satisfaction within the community. Also, one's overall perception of quality of life can affect his/her relationships with family members and neighbors and vice versa. Rural residents who do not feel connected to their community and/or who feel a lack of safety will typically report a lesser quality of life and lower individual well-being than those who are actively involved in the community and have close relationships with neighbors and who feel safe in the community (Cummins, 2001; Kemp, 2008; Sirgy & Cornwell, 2002; Theodori, 2001; Whitener & McGranahan, 2003). However, overall, residents of rural communities typically report a higher quality of life and satisfaction with their community than do their counterparts in urban areas (Prezza & Constantini, 1998).

Overall health status also has the potential to negatively affect one's perceptions of quality of life (Donatelle, 2008). Interestingly, some individuals with chronic disabilities experience an overall good quality of life despite their disabilities or ailments (Albrecht & Devlieger, 1999). However, it is important to note that such a perception, in spite of disability or illness, may be due to the fact that some of these individuals possess good health insurance. With that said, illness as it relates to one's quality of life should be carefully considered as a subjective measure (Dennis, Williams, Giangreco, & Cloninger, 1993; Kemp, 2008).

A major factor that affects rural residents' perceptions of the local healthcare system is their and their family members' actual use of and experiences with the system. Residents who may not have had a need or adequate health insurance/finances to access the healthcare system on a regular basis will either report neutral (i.e., neither positive or negative) or negative perceptions based on their experience--or lack thereof--with the local healthcare system. Another factor that affects these residents' perceptions of the local healthcare system is the actual amount of healthcare services and programs that are offered in their community (Rahtz & Sirgy, 2000) and consumer satisfaction with specific community services (Sirgy, Rahtz, Cicic & Underwood, 2000).

Unfortunately, preventive health services and coordination of services is often lacking in rural communities. One major factor is privacy, or lack thereof, which serves as a barrier to effective and successful prevention programming and delivery. Therefore, more of a focus on the geographical distance between rural residents and prevention services is suggested, as well as more coordination and better collaboration efforts among primary and specialized health service providers (e.g., mental health, substance abuse, and primary healthcare services) (Averill, 2003; Ayanian et al., 2000; Ayanian, Zaslavsky, Weissman, Schneider & Ginsburg, 2003; CFRHC,

2005; Davis, 2004; Eberhardt & Pamuk, 2004; Glasser et al., 2003; Huttlinger et al., 2004; Kemp, 2008; Jensen & Royeen, 2002; Levin & Hanson, 2001; May et al., 1995; Ricketts, 2000; Roux, 2001; Wagenfeld et al., 1997). Further research is warranted as it relates to the development of efficient treatment and delivery models such as free clinics targeting mental health and primary healthcare services in rural communities (Averill, 2003; Ayanian et al., 2000, 2003; CFRHC, 2005; Davis, 2004; Eberhardt & Pamuk, 2004; Glasser et al., 2003; Kemp, 2008; Levin & Hanson, 2001; Roux, 2001; Scariati & Williams, 2007; Springett, 2001; Wagenfeld et al., 1997).

Druss and Rosenheck (1998) have reported that individuals with mental health disorders in rural communities often face substantial barriers to obtaining and maintaining health insurance, including substantial out-of-pocket expenses and lack of coverage. These individuals are also more likely to delay seeking care--and less likely to obtain necessary medical care, receive residential program treatment, maintain their treatment(s), and be satisfied with their care--as compared to those without mental disorders who have adequate health insurance (Ayanian et al., 2000, 2003; Kemp, 2008; Wu & Ringwalt, 2005). Regardless of insurance status, individuals who report mental disorders, substance abuse problems, or chronic illness often experience significant barriers to receiving necessary and adequate medical care—barriers such as low education levels, language, financial, and stigma or discrimination (Druss & Rosenheck, 1998; Kemp, 2008; Roberts et al., 1999; Wu et al., 2003). Restricted provider panels prevent many individuals from obtaining necessary specialty care even when they are insured and have a primary care provider (Ayanian et al., 2000, 2003; Casey, Klinger & Moscovice, 2002; Druss & Rosenheck, 1998; Hartley, Britain & Sulzbacher, 2002; Huttlinger et al., 2004; Ng, Bardwell & Camacho, 2002; Wu & Ringwalt, 2005). Additionally, public-sector managed care is often

characterized by insufficient access to necessary care, limited choices of plans and providers, and a lack of continuity of care for individuals with severe mental disorders (Wu et al., 2003).

Therefore, a sound solution to quality mental health care must incorporate more than the provision of insurance benefits or access to primary care providers (Kemp, 2008). Equity in access to publicly-funded programs is the fundamental infrastructure of a fair healthcare system, particularly for those with mental disorders, substance abuse problems, and the socially and economically disadvantaged. Expanding public insurance coverage to the young and uninsured and restructuring the support provided through various public services will certainly improve access to substance abuse and mental health services among individuals in need of such services (Ayanian et al., 2000, 2003; Davis, 2004; Druss & Rosenheck, 1998; Kemp, 2008; Wu & Ringwalt, 2005).

New policies are needed to improve access to and quality of substance abuse, mental health, and other medical care and treatment for ethnic minorities and diverse populations, whether insured or uninsured, as well as programs that aim to fully meet individual needs (Ricketts, 2000; Wells et al., 2001). Health care reform—with emphasis on universal insurance and prescription drug coverage, acute intervention, attention to holistic disease prevention and health promotion, integration of care, lower costs, reduced barriers to access of care, and accountability for health outcomes—remains at the top of political agendas and managed care systems. Greater efforts and collaboration among policymakers and healthcare professionals will be necessary to increase community support for such efforts (Ayanian et al., 2000, 2003; Berkowitz, 2004; Cacioppo & Hawkey, 2003; CFRHC, 2005; Davis, 2004; Davis & Magilvy, 2000; Glasser et al., 2003; Huttlinger et al., 2004; Jensen & Royeen, 2002; Kemp, 2008; Leight, 2003; Ricketts, 2000; Springett, 2001; Wu et al., 2003).

Theories and Models of Health Assessment

There are several ways of categorizing the theories and models associated with community health assessment. One way is to divide them into two groups. The first group—*planning models (or theories/models of implementation)*--includes those theories and models used for needs assessment and strategic planning, as well as implementing and evaluating health promotion programs (see section on “Planning Models”). The second group is referred to as *behavior change theories (or change process theories)* that will be discussed in this section (McKenzie et al., 2009). Behavior change theories help explain how change takes place--they “specify the relationships among causal processes operating both within and across levels of analysis” (McLeroy, Steckler, Goodman, & Burdine, 1992, p. 3).

Many health assessment and health promotion theories and models are applicable to this study. However, given the diverse needs of rural populations--and the fact that many theories are based on individual autonomy and purpose of urban populations--many theories and models fail to encompass the needs and characteristics of more traditional communities. Additionally, many theories entail detailed, thorough individual measurement, which makes them less efficient for use with populations not accustomed to sophisticated instrumentation, with low literacy levels, or programs with limited or no resources for measurement activities (Kemp, 2008). Nevertheless, individual-tailored theories form the foundation of comprehensive and successful health behavior programs and evaluation methods. Furthermore, theories provide a conceptual framework that encompasses psychosocial, social network, and community change theories and models (Elder, Ayala, Zabinski, Prochaska & Gehrman, 2001). The following, although not a comprehensive list, provides a discussion of the theories and frameworks most pertinent to the study of community health needs assessment and strategic planning in rural communities.

The ecological perspective--a multilevel, multi-sectoral collaborative approach.

Health promotion programs and practice today entail many functions including education of individuals regarding healthy lifestyles; efforts to change organizational behavior and the physical and social environment of communities; and advocacy for the development of policies to support healthy communities. Ultimately, health promotion utilizes an assortment of strategies and operates on many levels to address a community's diverse health problems across a wide range (McKenzie et al., 2009; Rimer & Glanz, 2005; Sallis & Owen, 2002).

As described and defined by Stockols (1992, 1996), the term *ecology* is a biological science term that refers to relationships and transactions between organisms and their environments. The *ecological perspective*, as it has evolved in behavioral sciences and public health, emphasizes the interaction between, and interdependence of, factors internal to and externally across all levels of a health issue. It is a "systems" approach, highlighting people's interactions and connections with their physical and socio-cultural surroundings (Rimer & Glanz, 2005). Stockols' *health-promotive environment* construct (1992, 1996) is consistent with the PRECEDE-PROCEED model of health promotion planning (Green, Richard & Potvin, 1996) (see section on "PRECEDE-PROCEED").

To better understand the ecological perspective, there are two key concepts that help determine points of involvement for health promotion activities:

- behavior affects and is affected by *multiple levels of influence*, and
- individual behavior shapes and is shaped by the social environment (*reciprocal causation*) (Hovell, Wahlgren & Gehrman, 2002; McKenzie et al., 2009; Rimer & Glanz, 2005; Sallis & Owen, 2002).

McLeroy and colleagues (1988) addressed the first key concept of the ecological perspective by identifying and defining five factors or levels of influence (see Table 1) for health-related behaviors and conditions that include:

- *intrapersonal or individual* factors;
- *interpersonal or primary group* factors;
- *institutional or organizational* factors;
- *community* factors; and
- *public policy* factors.

| <i>Concept</i> | <i>Definition</i> |
|---|---|
| Intrapersonal Level | Individual characteristics that influence behavior, such as knowledge, attitudes, beliefs, and personality traits |
| Interpersonal Level | Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support, and role definition |
| Community Level Institutional Factors | Rules, regulations, policies, and informal structures, which may constrain or promote recommended behaviors |
| Community Factors | Social networks and norms, or standards, which exist as formal or informal among individuals, groups, and organizations |
| Public Policy | Local, state, and federal policies and laws that regulate or support healthy actions and practices for disease prevention, early detection, control, and management |

Table 1. An Ecological Perspective: Levels of Influence (Rimer & Glanz, 2005, p. 11), used under fair use guidelines, 2011

In the real world, addressing problems at the community level requires consideration of numerous factors (such as institutional and public policy factors), social networks, standards, and norms. As illustrated in Figure 5, different levels of influence merge together to ultimately affect

a community's health--with each level of influence potentially affecting individual health behavior(s) (Rimer & Glanz, 2005).

Reciprocal causation, the second key concept, suggests that people both influence, and are influenced by, those around them.

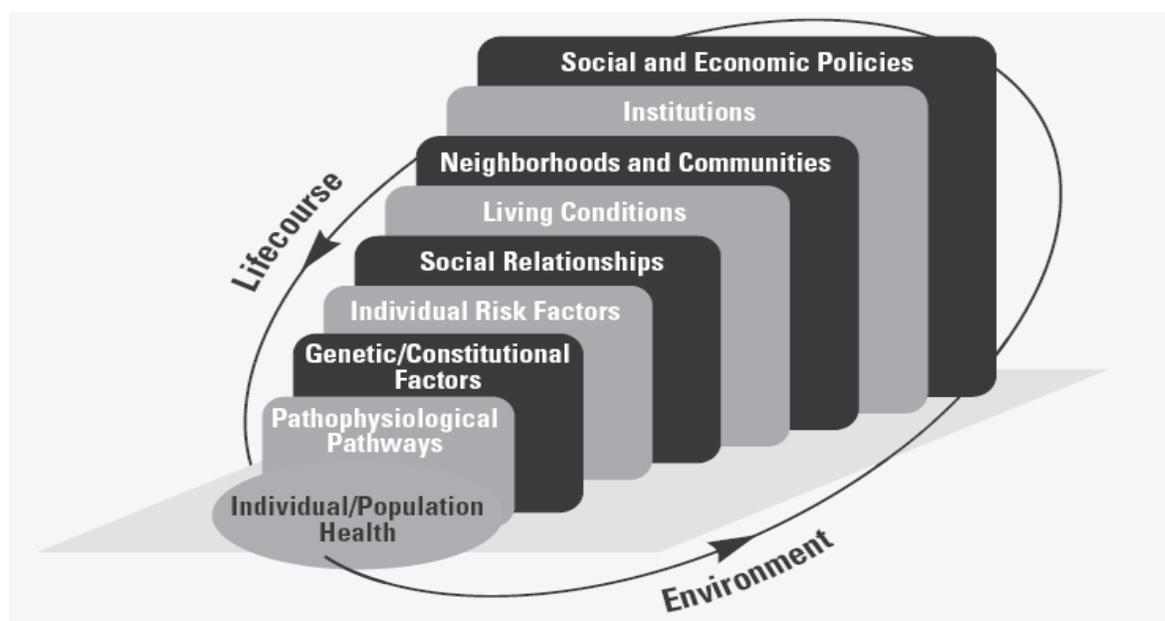


Figure 5. A Multilevel Approach to Epidemiology (Rimer & Glanz, 2005, p. 10), used under fair use guidelines, 2011

Continued research demonstrates that multilevel approaches developed from ecological models can be essential to improvement population health in areas such as smoking cessation, seatbelt and car seat use, recycling, and breastfeeding, as well as decreased substance abuse among adolescents and adults and prevention of cardiovascular disease (CDC, 1999; Economos, Brownson & Deangelis, 2001; Goodman, Wandersman, Chinman, Imm & Morrissey, 1996; Kumpfer & Turner, 1990; Rimer & Glanz, 2005; Sallis & Owen, 2002; Schmid, Pratt & Howze, 1995; Warner, 2000). Successful elements of these “ecological approaches” include government involvement, mass communication, environmental and policy change, and direction by a coalition (Sallis & Owen, 2002). Sallis and Owen (2002) and Smedley and Syme (2000) clarify

that because ecological models of health behavior usually lack specificity at each level, other models can be integrated to enhance the specificity of treatment of intrapersonal, interpersonal, and community levels of influence, as well as environmental influences. Multilevel interventions derived from the ecological perspective can also be seen in documents such as *Healthy People 2010* (DHHS, 2000) and the IOM report on promoting health behavior (Smedley & Syme, 2000).

Specific theories/models and their applications are relevant at three levels of influence—intrapersonal (individual), interpersonal, and community levels--of the ecological perspective. At the intrapersonal and interpersonal levels, more recent theories of health behavior can generally be labeled as “Cognitive-Behavioral.” According to Rimer and Glanz (2005), three key concepts are cross-cutting in all of these theories:

1. Behavior is mediated by thought processes; people’s knowledge base and their thoughts affect their decisions and how they act.
2. Knowledge is necessary for, but not sufficient to produce, most behavior changes.
3. Perceptions, motivations, skills, and the social environment strongly influence behavior.

Community-level models offer perspectives (or frameworks) for implementing multi-dimensional approaches to promote healthy behaviors; and these community models enhance educational approaches to support positive behavior change by attempting to change the social and physical environment (Glanz, Rimer & Lewis, 2002a; Glanz, Rimer & Lewis, 2002b; Kegler, Crosby & DiClemente, 2002; Rimer & Glanz, 2005).

Social ecology model (SEM).

Ecological models, such as the *Social Ecology Model (SEM)*, are important to consider within communal and rural areas, particularly because there is a focus on the interpersonal level, as opposed to solely focusing on health at the individual level. SEM purports that an individual's behavior stems from the overall social context of his/her life and argues that any effort toward health promotion must target behavior change at multiple levels and foster a health-promoting attitude among community members to make appropriate health-related decisions on a regular basis. An example of utilizing SEM in a community setting would be constructing weight management clinics within obese communities to improve individuals' and communities' overall health. However, an individual's desire to change his/her behavior may be hindered by such factors as economic, social, and cultural limitations. Therefore, SEM suggests the combination of individually-focused efforts for change with modifications to the physical and social environments (Elder et al., 2001; Kemp, 2008; Sallis & Owen, 2002).

Bronfenbrenner, a highly proclaimed social ecology theorist, identified three levels within SEM: (1) *microsystem*, which includes interpersonal social and family relationships in the home, at school, and in the workplace; (2) *mesosystem*, which describes interactions between the aforementioned settings; (3) *exosystem*, which refers to large social systems, such as the impact of economics, politics, cultural beliefs, and values. Likewise, four sets of environmental factors have been applied to the area of health promotion, including physical settings (i.e., natural environment), organizational (i.e., size and function of the organization), human aggregate (i.e., socio-demographic or socio-cultural characteristics of the population), and social climate (i.e., aspects of the environment that indicate current amount of social support). Given the above factors, it is increasingly important that public health practitioners and researchers include the

unhealthy aspects of rural environments. Health behavior change over time is most probable in an environment that fosters a shared sense of responsibility among its inhabitants (Elder et al., 2001; Kemp, 2008; Sallis & Owen, 2002).

Individual level (intrapersonal).

This is the most basic level in health promotion practice and focuses on explaining and influencing the behavior of individuals—such as one-on-one counseling, patient education, and health education. Since individual behavior is the basic infrastructure of group behavior, more expansive models of group, organizational, community, and national behavior include individual-level behavior change theories. In order to achieve policy and institutional change, individuals must be influenced to change their behavior(s) and ultimately spread that change to their groups, organizations, leaders, and policy. Theories at the individual level also focus on intrapersonal factors--those factors within the individual self or mind such as knowledge, skills, attitudes, beliefs, motivation, and self-concept (Kegler, Crosby & DiClemente, 2002; Rimer & Glanz, 2005). Three individual-level theories are particularly applicable to rural communities--the *Stages of Change (Transtheoretical) Model* (focuses on individuals' motivation and readiness for behavioral change), the *Theory of Planned Behavior (TPB)* and the *Theory of Reasoned Action (TRA)* (focus on the relationship between an individual's attitudes, beliefs, intentions, behavior, and that individual's perception of control over that behavior).

Stages of change (transtheoretical) model.

Initially published by Prochaska (1979) and further developed by Prochaska and DiClemente (1982, 1983, 1986, 2005), the *Stages of Change (Transtheoretical) Model* outlines the stages of an individual's readiness and/or attempt to change toward healthy behaviors. This model evolved from research that compared smokers who quit on their own with smokers who

received professional treatment, as well as from research on the treatment of drug addiction (Prochaska & DiClemente, 1983). The Stages of Change Model has been applied to many individual behavioral and organizational changes. The model's basic principle is that behavioral change occurs as a process along a continuum and is not a single event. Whether an individual participates in a professionally-coordinated program or uses self-management or some other method, that person progresses through five stages as he/she changes a behavior(s):

precontemplation, contemplation, preparation, action, and maintenance (see Table 2).

| Stage | Definition | Potential Change Strategies |
|-------------------------|--|--|
| Precontemplation | Has no intention of taking action within the next six months | Increase awareness of need for change; personalize information about risks and benefits |
| Contemplation | Intends to take action in the next six months | Motivate; encourage making specific plans |
| Preparation | Intends to take action within the next thirty days and has taken some behavioral steps in this direction | Assist with developing and implementing concrete action plans; help set gradual goals |
| Action | Has changed behavior for less than six months | Assist with feedback, problem solving, social support, and reinforcement |
| Maintenance | Has changed behavior for more than six months | Assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable) |

Table 2. Stages of Change Model (Rimer & Glanz, 2005, p. 15), used under fair use guidelines, 2011

Depending on the specific behavior that is being changed, definitions of the stages may vary; and the manner in which an individual progresses through these stages may also vary. However, it is important to realize that people at different points in the change process have different needs, and they benefit from different interventions specific for that stage. Rimer and Glanz (2005) provide an excellent example of these points by describing the fact that a person

who is trying to give up smoking experiences the stages of change differently than someone who is seeking to improve their dietary habits by eating more fruits and vegetables. Rimer and Glanz (2005) further emphasize that the Stages of Change Model is circular, not linear in that individuals do not “systematically progress from one stage to the next, ultimately ‘graduating’ from the behavior change process.” They may enter the change process at any stage, may relapse to a previous stage, start the entire process again, cycle repeatedly through the process, and end at any point (Prochaska, Redding & Evers, 2002; Rimer & Glanz, 2005).

Theory of planned behavior (TPB) and theory of reasoned action (TRA).

The Theory of Planned Behavior (TPB) and a related theory, Theory of Reasoned Action (TRA), focus on the relationship between behavior and beliefs, attitudes, and intentions in ultimately motivating an individual to perform a certain behavior. Both the TPB (an extension of TRA) and the TRA assume that a person’s intention to perform a specific behavior (*behavioral intention*) is the most important determinant of behavior. According to Rimer and Glanz (2005, p. 16), in these models, two factors influence behavioral intention--a person’s *attitude* (positive or negative) toward performing a behavior and the influence of the social environment (*subjective norms*) on the behavior. Both attitudes and subjective norms are a function of beliefs in this theory. The attitude toward the behavior is determined by the person’s beliefs that a given outcome will occur if s(he) performs the behavior and by an evaluation of the outcome. The subjective norm is determined by a person’s normative beliefs about whether individuals who are important to the person approve or disapprove of the behavior and by the individual’s motivation to comply with those people’s wishes or desires (Montano & Kasprzyk, 2002; Rimer & Glanz, 2005).

The TPB and TRA assume all other factors (e.g., culture, the environment) operate through the models' constructs, and do not independently explain the likelihood that a person will behave a certain way. The TPB differs from the TRA because it includes one additional construct, *perceived behavioral control*, focusing on people's beliefs that they can control a particular behavior (Montano & Kasprzyk, 2002; Rimer & Glanz, 2005). This construct was added by Azjen and Driver (1991) to account for situations in which people's behavior (or behavioral intention) is influenced by factors beyond their control. Azjen and Driver (1991) noted that people would probably work harder to perform a behavior if they felt they had a great degree of control over it—specifically, people's perceptions about controllability probably greatly influence their behavior (see Table 3). Over the years, TBP and TRA have been applied to many diverse health-related behaviors including weight loss, smoking, alcohol abuse, HIV risk behaviors, and mammography screening (Montano & Kasprzyk, 2002; Redding, Rossi, Rossi, Velicer & Prochaska, 2000; Rimer & Glanz, 2005).

| <i>Concept</i> | <i>Definition</i> | <i>Measurement Approach</i> |
|-------------------------------------|---|--|
| Behavioral intention | Perceived likelihood of performing behavior | Are you likely or unlikely to (perform the behavior)? |
| Attitude | Personal evaluation of the behavior | Do you see (the behavior) as good, neutral, or bad? |
| Subjective norm | Beliefs about whether key people approve or disapprove of the behavior; motivation to behave in a way that gains their approval | Do you agree or disagree that most people approve of/disapprove of (the behavior)? |
| Perceived behavioral control | Belief that one has, and can exercise, control over performing the behavior | Do you believe (performing the behavior) is up to you, or not up to you? |

Table 3. Theory of Planned Behavior (Rimer & Glanz, 2005, p. 17), used under fair use guidelines, 2011

Figure 6 shows TRA's and TPB's explanations, in graphic form, of how *behavioral intention* determines *behavior*, and how *attitude toward behavior*, *subjective norm*, and *perceived behavioral control* influence *behavioral intention*. Rimer and Glanz (2005) clearly summarize these model constructs and concepts as follows:

attitudes toward behavior are shaped by beliefs about what is entailed in performing the behavior and outcomes of the behavior. Beliefs about social standards and motivation to comply with those norms affect *subjective norms*. The presence or lack of things that will make it easier or harder to perform the behavior affect *perceived behavioral control*. Thus, a causal chain of beliefs, attitudes, and intentions drives *behavior*. (p. 18)

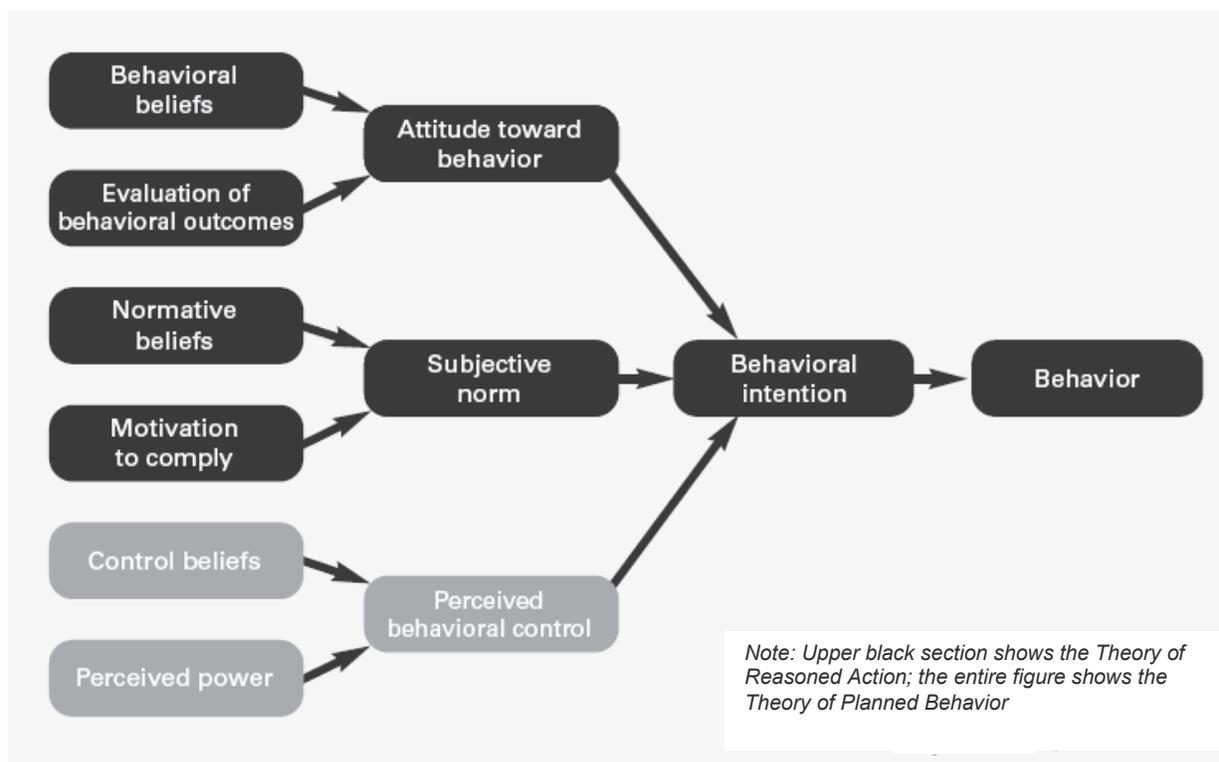


Figure 6. Theory of Reasoned Action and Theory of Planned Behavior (Rimer & Glanz, 2005, p. 18), used under fair use guidelines, 2011

Interpersonal level.

Theories of health behavior at the interpersonal level are based on the concept that the social environment influences individuals who also exist within that same social environment. The advice, beliefs, encouragement, and behaviors of the people in an individual's social environment (i.e. family members, coworkers, friends, health professionals, and others) influence his/her feelings and behavior, and vice versa. Also, the social environment influences health since it affects behavior. Many theories focus at the interpersonal level, but Social Cognitive Theory (SCT) has been applied to rural health research and practice, specifically population and public health. SCT, one of the most frequently used and robust health behavior theories, looks at the mutual interactions between people and their environments, as well as the psychosocial determinants of health behavior (McKenzie et al., 2009; Rimer & Glanz, 2005).

Social cognitive (also called social learning) theory (SCT/SLT).

Social Cognitive Theory (SCT) describes a dynamic, ongoing process where personal and environmental factors, and human behavior, influence each other. Reinforcement contributes to learning, but reinforcement along with an individual's expectations of the consequences of behavior determine the behavior. Behavior is seen as a function of the subjective value of an outcome and the subjective probability (or expectation) that a particular action will achieve that outcome. This type of approach has been referred to as "value-expectancy theory" (Baranowski, Perry & Parcel, 2002; <http://msucares.com/health/helath/appal.htm>).

According to SCT, the likelihood that a person will change a health behavior is affected by three main factors--self-efficacy, goals, and outcome expectancies. If individuals have confidence in their ability to take action (self-efficacy), they can overcome barriers to change behaviors. If they do not feel that they have control over their health behavior, they are not

motivated to take action or to be persistent and overcome challenges. According to Rimer and Glanz (2005), “As a person adopts new behaviors, this causes changes in both the environment and in the person. Behavior is not simply a product of the environment and the person, and environment is not simply a product of the person and behavior” (p. 20). SCT evolved from research on Social Learning Theory (SLT), which asserts that people learn from both their own experiences and also by observing the actions of others and the benefits of those actions. Subsequently, Bandura added the construct of self-efficacy to SLT and renamed it SCT to emphasize the cognitive aspect. Though SCT is the dominant version in current practice, it is still sometimes called SLT. SCT includes numerous constructs and concepts since it integrates concepts and processes from many models of behavior change--including cognitive, behaviorist, and emotional (see Table 4). It has been used successfully as the underlying theory for behavior change in situations and areas ranging from dietary change to pain control (Bandura, 1986; Baranowski, Domel & Gould, 1993; Baranowski et al., 2002; IOM, 2002a; Rimer & Glanz, 2005).

Reciprocal determinism describes the interactions between the person, behavior, and environment, where each influences the others. *Behavioral capability* implies that a person must know what to do and how to do it in order to perform a behavior. *Expectations* are the anticipated results an individual thinks will happen when taking s(he) takes a certain action. Bandura (1986) emphasized that *self-efficacy* is the most important personal factor in behavior change, and this concept or construct is almost universally cross-cutting in health behavior theories. Strategies for increasing self-efficacy include setting incremental goals (e.g., exercising for 10 minutes each day); behavioral contracting (a formal contract with specified goals and rewards); and monitoring and reinforcement (feedback from self-monitoring or record keeping).

| Concept | Definition | Potential Change Strategies |
|--|---|--|
| Reciprocal determinism | The dynamic interaction of the person, behavior, and the environment in which the behavior is performed | Consider multiple ways to promote behavior change, including making adjustments to the environment or influencing personal attitudes |
| Behavioral capability | Knowledge and skill to perform a given behavior | Promote mastery learning through skills training |
| Expectations | Anticipated outcomes of a behavior | Model positive outcomes of healthful behavior |
| Self-efficacy | Confidence in one's ability to take action and overcome barriers | Approach behavior change in small steps to ensure success; be specific about the desired change |
| Observational learning (modeling) | Behavioral acquisition that occurs by watching the actions and outcomes of others' behavior | Offer credible role models who perform the targeted behavior |
| Reinforcements | Responses to a person's behavior that increase or decrease the likelihood of reoccurrence | Promote self-initiated rewards and incentives |

Table 4. Social Cognitive (Social Learning) Theory (Rimer & Glanz, 2005, p. 20), used under fair use guidelines, 2011

Observational learning (or *modeling*) describes the process of how an individual learns from watching the actions and experiences of another credible person(s) and their reinforcements, rather than through that individual's own experience(s). *Reinforcements* or *rewards* are responses to behavior(s) that affect whether or not those behaviors will be repeated. They may be positive or negative and internal or external.

- Positive reinforcements increase a person's likelihood of repeating the behavior.
- Negative reinforcements may make repeated behavior more likely by motivating the person to eliminate a negative stimulus (e.g., when drivers put the key in the car's ignition, the beeping alarm reminds them to fasten their seatbelt).
- Internal rewards are things people do to reward themselves.

- External rewards (e.g., token incentives) encourage continued participation in multiple-session programs, but generally are not effective for sustaining long-term change because they do not increase a person's own desire or commitment to change (Bandura, 1986; Baranowski et al., 1993, 2002; IOM, 2002a; Rimer & Glanz, 2005).

Rimer and Glanz (2005, p. 22) provide an excellent example of using Social Cognitive Theory in a rural environment. A university in a rural area develops a church-based intervention to help congregation members change their habits to meet cancer risk reduction guidelines (behavior). Many members of the church have low incomes, are overweight, rarely exercise, eat foods that are high in sugar and fat, and are uninsured (personal factors). Because of their rural location, they often must drive long distances to attend church, visit health clinics, or buy groceries (environment). The program offers classes that teach healthy cooking and exercise skills (behavioral capability). Participants learn how eating a healthy diet and exercising will benefit them (expectations). Health advisors create contracts with participants, setting incremental goals (self-efficacy). Respected congregation members serve as role models (observational learning). Participants receive T-shirts, recipe books, and other incentives, and are taught to reward themselves by making time to relax (reinforcement). As church members learn about healthy lifestyles, they bring healthier foods to church, reinforcing their healthy habits (reciprocal determinism).

Figure 7 illustrates how self-efficacy, environmental, and individual factors impact behavior.

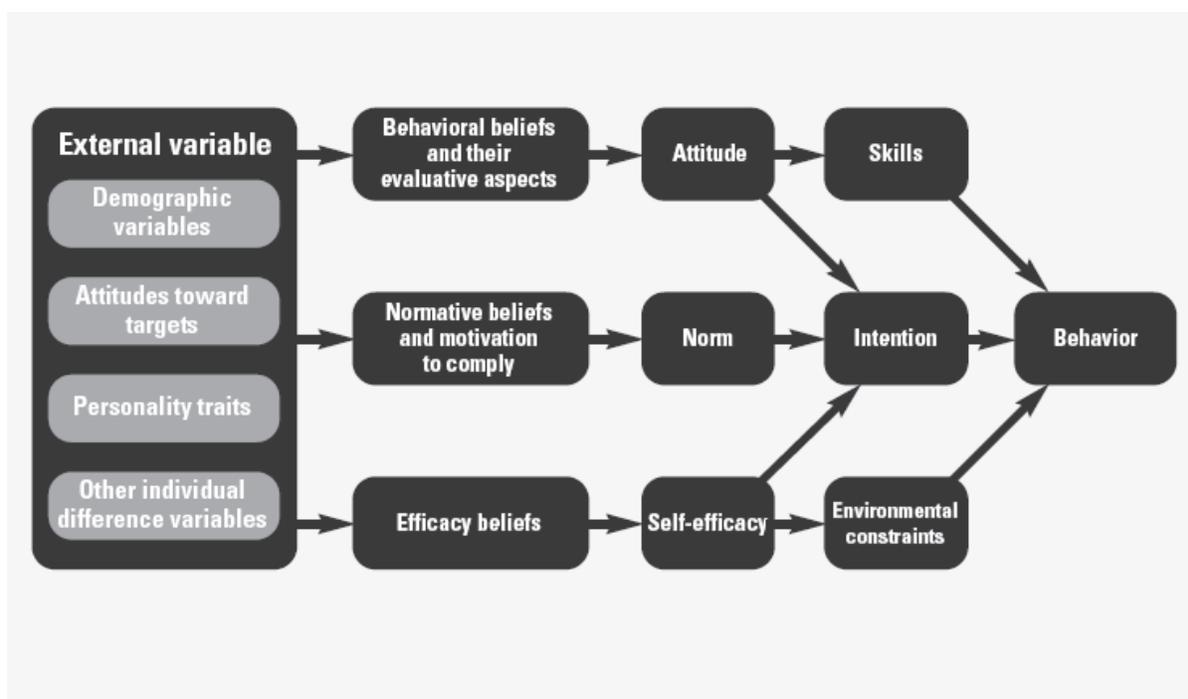


Figure 7. An Intergrative Model (Rimer & Glanz, 2005, p. 21), used under fair use guidelines, 2011

Community level (population-based).

Population-based initiatives that provide services to communities and populations are the infrastructure of public health approaches focusing on healthy communities and the prevention and control of diseases. The term “population health” alludes to the factors that influence the well-being of individuals and groups—such as the social and cultural environment, physical environment, an individual’s biological and genetic make-up, personal qualities, and behavioral and spiritual factors (Huttlinger, Schaller-Ayers & Lawson, 2004). Community level models are population-based approaches that delve into the functions of social systems and focus on mobilizing community members and organization to effect change in those social systems. Utilizing an ecological perspective, these community level models suggest a variety of different strategies that work with and address individual, group, organizational/institutional, and community issues in multiple settings—i.e. health care providers, schools, businesses,

community organizations/groups, and governmental agencies. Often, communities are defined in geographical terms; however, they can be defined by other criteria too—e.g., communities of shared interests (e.g., the artists' community) or collective identity (e.g., the African American community). Most health behavior and health education researchers strongly suggest that it is critical to learn about a community's unique characteristics when planning a community level intervention(s), especially when addressing health issues in ethnically or culturally diverse communities (Glanz, 2002; Minkler & Wallerstein, 2002; Steckler, Goodman & Kegler, 2002; Rimer & Glanz, 2005).

Comprehensive health promotion activities and programs frequently employ advocacy techniques to help support individual behavior, as well as organizational and regulatory change. Recently, research has documented the successes of community level health promotion efforts through the use of newly developed innovative tools and methods for evaluation and measurement. A great example is tobacco control and smoking cessation/prevention--an area where such programs have been extensively evaluated. Local tobacco cessation and control programs frequently focus on four simultaneous goals:

- raising the priority of smoking as a health concern,
- helping community members to change smoking behavior,
- strengthening legal and economic deterrents to smoking, and
- reinforcing social norms that discourage smoking.

This multi-level approach has been shown to be very successful and effective (Fawcett et al., 2000; Fetterman, Kaftarian, & Wandersman, 1996; Rimer & Glanz, 2005).

Community organization and other participatory models.

Community organization and other participatory models emphasize community-driven, population-based approaches to assessing and solving social and health problems. Community organizing is a process that facilitates community groups to identify common problems, mobilize resources, and develop and implement strategies to reach shared goals. Although narrow definitions of community organization suggest that the community itself identifies the problems to be addressed, public health professionals usually modify community organization methods to introduce programs that address problems reflecting the priorities of community members—problems and programs not necessarily initiated solely by the community itself, but with the help of an outside “change agent.” Research has demonstrated that community organization projects that begin with the community’s priorities, rather than an externally imposed agenda, are more likely to succeed (Minkler & Wallerstein, 2002; Resnicow, Braithwaite, Dilorio & Glanz, 2002; Rimer & Glanz, 2005). Community organization is consistent with an ecological perspective since it recognizes that any health problem has multiple levels, and it can be integrated with SCT-based strategies that acknowledge the interactions between human behavior, and personal and environmental factors (Butterfoss & Kegler, 2002; Kreuter & Lezin, 2002; Norton, McLeroy, Burdine, Felix & Dorsey, 2002). According to Rimer and Glanz (2005), “Theories of *social networks* and *social support* (exploring the influence of social relationships on health decision making and behavior) can be used to adapt community-organizing strategies to health education goals. *Social systems theory* (exploring how organizations in a community interact with each other and the outside world) is also useful for this purpose” (p. 23).

Community organization is not a single mode of practice; it can involve different approaches leading to change. Rothman and Tropman (1987) and Jack Rothman (2001) classify and describe three general types of community organization change models:

- *Locality development* (or community development) is a process-oriented approach focusing on cooperation, consensus-building, capacity, and a sense of community—that leads to community change through broad-based participation of a cross-section of community members who develop a sense of group identity and cohesion and attempt to identify and solve their own problems. Outside practitioners (coordinators and enablers) help to coordinate this effort and enable the community to successfully address its own concerns. In the literature, a segment of this field is referred to as “community development.” Examples of an application of this model include neighborhood work programs conducted by settlement houses, Volunteers in Service to America (VISTA), and the Peace Corps.
- *Social planning* is more task-oriented and stresses a technical aspect of problem solving with community participation varying from much to little depending on the problem and the organization variables present. It relies on expert planners using their technical abilities to guide complex change processes. The design and implementation of social plans and policies is the central focus of this model. Building community capacity for a community to solve its own problems or encouraging social change is not a major component of this model. The United Way, urban affairs, city planning and social planning divisions of housing authorities are good examples of this approach to community organization.

- *Social action*, a process- and task-oriented model, is used to increase the problem-solving ability of a community and also to achieve some tangible changes that correct social injustice that has been identified by a disadvantage or oppressed group. This process attempts to make basic changes in major institutions or community practices and to redistribute power, resources, or decision-making in the community and/or to change basic policies of formal organizations. Past examples of this approach include the civil rights movement, some of the early black-power groups, labor unions, women's liberation, and the welfare rights movement. It should be noted that these models sometimes overlap and can be combined (Rimer & Glanz, 2005).

These different approaches--broadly classified as community organization--share several common concepts that are important in achieving and measuring community change (see Table 5). *Empowerment* describes a social action process where individuals, organizations, or communities gain skills and confidence that help improve their quality of life (Wallerstein, 1992). *Community capacity* refers to characteristics of a community that help it identify and address social problems (e.g., trusting relationships between neighbors, civic engagement). *Participation* in the organization process helps community members gain leadership and problem-solving abilities. *Relevance* involves empowering community members to address issues that are important and significant to them. *Issue selection* entails identifying and separating interrelated issues and problems and choosing realizable targets. *Critical consciousness* focuses on awareness of community members that leads to identifying and addressing the root causes of social problems (Rimer and Glanz, 2005).

| <i>Term</i> | <i>Definition</i> | <i>Potential Change Strategies</i> |
|-------------------------------|--|---|
| Empowerment | A social action process through which people gain mastery over their lives and their communities | Community members assume greater power, or expand their power from within, to create desired changes |
| Community capacity | Characteristics of a community that affect its ability to identify, mobilize around, and address problems | Community members participate actively in community life, gaining leadership skills, social networks, and access to power |
| Participation | Engagement of community members as equal partners; reflects the principle, "Never do for others what they can do for themselves" | Community members develop leadership skills, knowledge, and resources through their involvement |
| Relevance | Community organizing that "starts where the people are" | Community members create their own agenda based on felt needs, shared power, and awareness of resources |
| Issue selection | Identifying immediate, specific, and realizable targets for change that unify and build community strength | Community members participate in identifying issues; targets are chosen as part of a larger strategy |
| Critical consciousness | Awareness of social, political, and economic forces that contribute to social problems | Community members discuss the root causes of problems and plan actions to address them |

Table 5. Community Organization (Rimer & Glanz, 2005, p. 24), used under fair use guidelines, 2011

Media Advocacy is a necessary approach in community organization that involves advancing public policies by using the mass media in a strategic manner (Dorfman, Wallack & Themba, 1993). Rimer and Glanz (2005) state that "because the media bring attention to specific issues, they set the agenda for the public and policy makers. The media often present health information in medical terms, focusing on technological breakthroughs and personal health habits" (p. 25). Media advocacy presumes that the root cause of most health problems is that people lack the power to change social and economic conditions; they do not necessarily lack information. It seeks to balance news coverage by framing issues to emphasize social, economic, and political—rather than personal and behavioral—influences on health (Wallack & Dorfman, 1997). In participatory action research, the people who are being studied take an active

role in some or all phases of the research. Participatory research builds an alliance between professional researchers and lay participants, and it enables a dialogue between them (Nichter, 1999). When planning and implementing health programs, the program's beneficiaries help to decide the type of investigation, collect and analyze data, envision potential solutions, and evaluate the costs and benefits of each choice (Rimer & Glanz, 2005). As Rimer and Glanz (2005) explain, "They engage in a learning process, both checking and complementing expert knowledge" (p. 26).

Social theory.

An important model, *Social Theory* has been applied to rural health research and practice, specifically population and public health. The theory considers the determinants of health and local citizens' mobilization for social change and develops public health programs based on the aforementioned factors--and examines how individuals live their lives in their social conditions. By incorporating social theory into current public health practice, issues that are commonly referred to as social problems are reinterpreted within a health framework. For example, illicit drug use programs now utilize a harm-reduction model that involves access to psychosocial rehabilitation services and low-threshold drug treatment in supervised injection sites (Kemp, 2008; Potvin, Gendron, & Bilodeau, 2005).

One's health is affected by not only the physical conditions in which s(he) lives, but also by the different social strata, such as socioeconomic factors, race/ethnicity, gender, and stages of life. Another influence on health and disease states is social organization, which is defined by the relationships created among and between various strata. An ideal social-change program in public health seeks to establish partnerships with all involved parties in a community, which are concerned with specific health issues within the community and whose goals and purposes depend on context, knowledge, and broad partnerships and interactions with other agents of

change and action. Hence, the characteristics of public health programs to adapt, innovate, and propose pertinent, effective, and transformative actions in response to local dilemmas are able to be utilized effectively in innovative programs and evaluation activities among public health practitioners, educators, policymakers, and researchers (Kemp, 2008; Potvin et al., 2005).

Community action model (CAM).

The *Community Action Model (CAM)* has been utilized in rural communities to create change by building community capacity. The CAM is asset-based and builds on the strengths or capacity of a community to create change from within. The CAM moves away from projects that focus solely on changing individual lifestyle and behavior to projects that mobilize community members and agencies to change environmental factors promoting economic and environmental inequalities. Fundamental to this model is a critical analysis that identifies the underlying social, economic, and environmental forces creating the health and social inequalities that the community wants to address. The intent of the CAM is to work in collaboration with communities and provide a framework for community members to acquire the skills and resources to investigate the health of the place where they live and then plan, implement, and evaluate actions that change the environment to promote and improve health (San Francisco Department of Public Health, 2010).

The CAM is based on the theory of Paulo Freire, a Brazilian educationalist who integrated educational practice with liberation from oppressive conditions. Freire's work emphasized dialogue, praxis, the grounding of education in lived experiences, and heightening people's consciousness to enhance the belief that they have the power to transform reality, specifically with respect to addressing oppression (Smith, 1997, 2002). The CAM involves participatory action research approaches and is asset based (i.e., it builds on the strengths of a

community to create change from within). Its intent is to create and promote environmental change by mobilizing and building community capacity, working in collaboration with communities, and providing a framework for residents to acquire the skills and resources necessary to assess the health conditions of their community--and then plan, implement, and evaluate actions designed to improve those conditions (Lavery et al., 2005).

CAM involves a five-step process: (1) skill- and knowledge-based training, in which community advocates are recruited and trained and use their knowledge and skills to select an issue or area of focus; (2) action research, in which advocates define, design, and conduct a community diagnosis (defined as the process of finding the root causes of a community concern or issue and then discovering the resources to overcome it); (3) analysis, in which advocates assess the results of the community diagnosis and prepare findings; (4) policy development, in which advocates select, plan, and implement an environmental change action and educational activities intended to support it; and (5) implementation, in which advocates seek to ensure that the policy outcome is enforced and maintained. CAM is designed to have a lasting impact by developing the capacity of both individuals and organizations to address disparities in health by creating environmental change through policy enactment. The model has been successful in increasing the capacity of communities in successfully completing a number of health-related actions such as policies to ban tobacco, purchase healthy food and drink products for school vending machines, and other-related health disparities, as well as moving communities toward environmental change in the form of a policy or change in organizational practices

(<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1449228/table/t1/>;

<http://www.sfdph.org/dph/comupg/oprograms/CHPP/CAM/default.asp>; Lavery et al., 2005).

Community-oriented primary care (COPC).

A model that has been increasingly cited in the literature is *Community-Oriented Primary Care* (COPC) and can be applied to children, adolescents, middle-aged and older adults. Glasser and colleagues (2003) discussed the use of COPC in community service-learning projects that link education to medical health and merge clinical practice with population-based medicine. Such projects include community engagement, needs assessment and problem definition, resource identification, program development and implementation, and program evaluation. With a focus on meeting the *Healthy People 2010* objectives and the target population's needs, COPC offers collaboration between an academic medical center and rural community agencies, such as local health departments, area primary care providers, public school system, and rural citizens themselves. Furthermore, COPC maintains an interdisciplinary framework for health professionals' education, research, evaluation, policy development, and community outreach. Examples of COPC projects that have proven successful in rural communities include farm safety meetings, anti-smoking programs, health education on high cholesterol geared toward county public health nurses, and banning efforts against the use of tobacco by minors in public places. Specific issues that have been addressed via the planning and conducting of COPC projects in rural communities include barriers to care, health screening, health promotion/prevention, behavioral risk reduction, understanding the nutritional practices of low-income populations, increasing immunization access and adherence, and developing teen pregnancy prevention programs. Further research on the value of continued partnerships between academia and rural communities is warranted (Glasser et al., 2003; Kemp, 2008).

Community as partner (CAP) model.

A model that has been utilized by community health nurses and is appropriate for rural communities is the *Community As Partner (CAP) model*. The model calls for community members to play an active role in identifying, prioritizing, and solving problems. According to CAP, findings from a survey are presented to community members and agencies in order to assist them in setting priorities for health care in their communities. Following the setting of priorities, ad hoc committees or agencies would establish realistic goals and objectives to address the identified problems. Moreover, CAP encourages the active involvement of community members in community health priorities, goals, and strategies (Anderson & McFarland, 2000; Huttlinger, Schaller-Ayers & Lawson, 2004).

Vulnerable populations conceptual model.

Another model that has been successfully applied to rural populations, albeit lacking extensive research, is the *Vulnerable Populations Conceptual Model*. This is particularly applicable to women and children, ethnic groups, gay men and lesbians, immigrants, the homeless, HIV-infected individuals, drug-dependent individuals, and older adults. This particular model focuses on social groups that are highly susceptible to adverse health outcomes, such as premature mortality, comparative morbidity, decreased functional status, and diminished quality of life. The vulnerable populations framework purports that there are interrelationships among resource availability (e.g., personal traits, ties between people, environmental factors, associated factors such as crime, social status, social capital, human capital), relative risk, and health status. More specifically, resource availability refers to socioeconomic and environmental resources, such as income, jobs, education, housing, availability of health care, quality of health care, and patterns of family and community life. Relative risk concerns the likelihood of exposure to risk

factors, such as through lifestyle behaviors, personal choices, and stressful events, as well as premature mortality, comparative morbidity (i.e., dependent upon one's risk of poor health at any given time in his/her life), decreased functional and mental status, decreased ability to work, limitations in activity, and diminished quality of life. Health status refers to morbidity and mortality, and encompasses physical, mental, and social well-being, including the quality and quantity of social contacts and relationships with others (Leight, 2003).

Leight (2003) proposed that the vulnerable populations conceptual model is particularly relevant for rural populations in that the presence or lack of both material and nonmaterial resources available to rural residents vary greatly due to existing social arrangements. For instance, illness in a susceptible community may deplete the amount of already limited resources, further increasing the relative risk of poor physical, psychological, or social health of community members. Future research is required to continue to inform research, practice, and policy on the opportunities and resources necessary to achieve and maintain health in rural communities. Specifically, future research is warranted on the effect of community interventions on rural health outcomes and to understand the experience of being a member of a vulnerable population, as well as the development of multi-organizational collaboration that aims for primary (e.g., deter high-risk behaviors such as seatbelt safety courses), secondary (e.g., screening and early detection such as mobile mammography), and tertiary (e.g., minimizing impact of chronic illness such as cardiac rehabilitation programs) levels of prevention (Leight, 2003).

Bridges to health model.

Lynn and colleagues (2007) proposed the *Bridges to Health Model*, which divides the population into eight specific groups--including people in good health; in maternal/infant situations; with an acute illness; with stable chronic conditions; with a serious, stable disability; with failing health near death; with advanced organ system failure; and, with long-term frailty. Examples of such groups include the nursing home population, hospitalized population, home health care population, and a public health office-based care population. However, it is important to note that individuals of any age, from young to old, can fit into any given category based on their health needs and priorities, and they can transition from one group to another at any given time. Each of those groups has its own definitions of optimal health, as well as individual priorities among services. Viewing health care in terms of individual group needs as a “bridge to health” can assist in the planning of patient-centered, timely, and equitable resources, care arrangements, and service delivery in order to adequately meet each individual’s health needs in the most efficient manner possible (Kemp, 2008).

Community as partner model (CAPM).

Another population-based approach to health care, specific to Appalachia, was proposed by Huttlinger and colleagues (2004) and known as the *Community As Partner Model (CAPM)*. CAPM can be used by communities to help structure interventions aimed at screening for depression, managing prescription medications, and identification of low-cost and free preventive, dental, vision care, and specialty services for individuals with chronic respiratory and cardiac disease, for example. CAPM is an important model to consider in rural settings such as southwest Virginia, since certain areas of southwest Virginia have a low primary care provider-to-population ratio and are designated health profession shortage areas. Many areas of southwest

Virginia also have a population that has a higher morbidity rate than the rest of the State and a poorer perception of health and worse health outcomes. Two additional pertinent needs among rural-dwellers are affordable health insurance and low-cost prescription drugs. These needs--compounded by the lack of medical or prescription coverage—result in rural dwellers sharing their prescription drugs with household members to eliminate excessive out-of-pocket costs, follow-up fees, and “uncooperative” physicians. Consideration of these needs, as well as Appalachian culture, are important in the development of policy for this unique area of the U.S. (Huttlinger et al., 2004; Kemp, 2008).

Community readiness.

A newer model, *Community Readiness*, has been proposed in the literature and focuses on a community’s readiness to address a specific issue. The model purports nine different stages, including no awareness, denial, vague awareness, preplanning, preparation, initiation, stabilization, confirmation-expansion, and professionalism. The intervention that is implemented is dependent on a community’s level of readiness, i.e., those communities in the earlier stages require more information than their later-stage counterparts regarding specifically how the behavior fits into the social environment. Furthermore, community readiness seeks to understand the community’s readiness to support changes in the environment to promote positive behavior change (Elder et al., 2001; Kemp, 2008).

Community health action model (CHA).

The goal of the *Community Health Action Model (CHA)* is to present community health promotion so that community members can collaboratively implement the process to achieve their collective actions and outcomes so that they maintain/improve the health of their community--the community as a whole for the benefit of all. The model is unique in its ability to

merge the community development process with a compatible community assessment, planning, implementation, and evaluation framework. The CHA model supports community participation leading to community-engaged assessment and change (Kemp, 2008; Racher & Annis, 2008).

Health action model for partnership in community (HAMPIC).

This collaborative community nursing practice model--originating in the Department of Nursing at Augustana College in Sioux Falls, South Dakota--addresses the connections and disconnections existing in human relationships. HAMPIC is an Advanced Practice Nursing model based on nurse theorist Rosemarie Rizzo Parse's "human becoming school of thought." The "human becoming school of thought" focuses on the primacy of the nurse's presence with others and conceptualizes health as "human becoming"--the way one chooses to live their life. The focus of the nurse-community process is quality of life from the community's perspective.

Quality of life is the main construct of the model and is embellished in the concepts of health as "human becoming," community interconnectedness, and voices of the community. Even though individuals and groups are unique with unique perspectives and have different health status and issues, the model's process attempts to attain a common understanding between these diverse groups and individuals. Objectives of the HAMPIC include creating a nursing model to guide provision of health services for individuals and families experiencing disconnection from economic, social and interpersonal resources; utilizing HAMPIC to address health issues of selected communities; providing educational experiences for nursing and other health professional students focusing on understanding diversity and health care disparity; and extending HAMPIC beyond the local area and sharing it as a prototype for healthcare regionally, nationally, and internationally (Augustana College, Department of Nursing, 2002).

Social action model (SAM).

The *Social Action Model (SAM)* differs from other forms of community intervention in that it is grassroots-based, conflict-oriented, and adapted to organizing disadvantaged people to act on their own behalf (Fisher, 1997). Although identified goals may be different, most include policy and other significant changes that are important to participants. Based primarily on the work of Saul Alinsky and the Industrial Areas Foundation, this approach uses direct-action strategies as the primary means of promoting change (Alinsky, 1989). It focuses on building power and encouraging community members to develop their capabilities as active and engaged citizens. In a social action approach to community organizing, *self-interest* is viewed as the motivating force for action--community members become involved when they realize that it will personally benefit them to take action, and targeted institutions are willing to make changes when they believe it is in their best self-interest. Successful community organization expands participants' sense of self-interest--from the individual or family level to their neighborhood, city, state, etc. Participants "grow" and are empowered through this process and ultimately learn to take an active role in determining their communities' future (Alinski, 1989; Rimer & Glanz, 2005).

CDC socio-cultural environment logic framework.

The CDC Task Force on the *Guide to Community and Preventive Services* created an organizing logic framework to illustrate how community-level factors influence health status (<http://www.thecommunityguide.org/social/Social-Environment.pdf>) (see Figure 8). The Task Force noted that numerous factors contribute to disparities in health status that include:

- experience of stress, societal support, and social cohesion;
- disparities in access to health care;
- exposure to environmental and occupational hazards;

- behaviors in response to illness; and
- health promotion and disease prevention behaviors.

Therefore, community-level interventions are critical to addressing health disparities—interventions addressing access to healthcare, health promotion and prevention; behavioral norms; neighborhood conditions; and opportunities for education, training, and employment (<http://www.thecommunityguide.org/social/Social-Environment.pdf>; IOM, 2002a). The model demonstrates those determinants and relationships that are part of the translation of theory into research and action (IOM, 2002a; Rimer & Glanz, 2005).

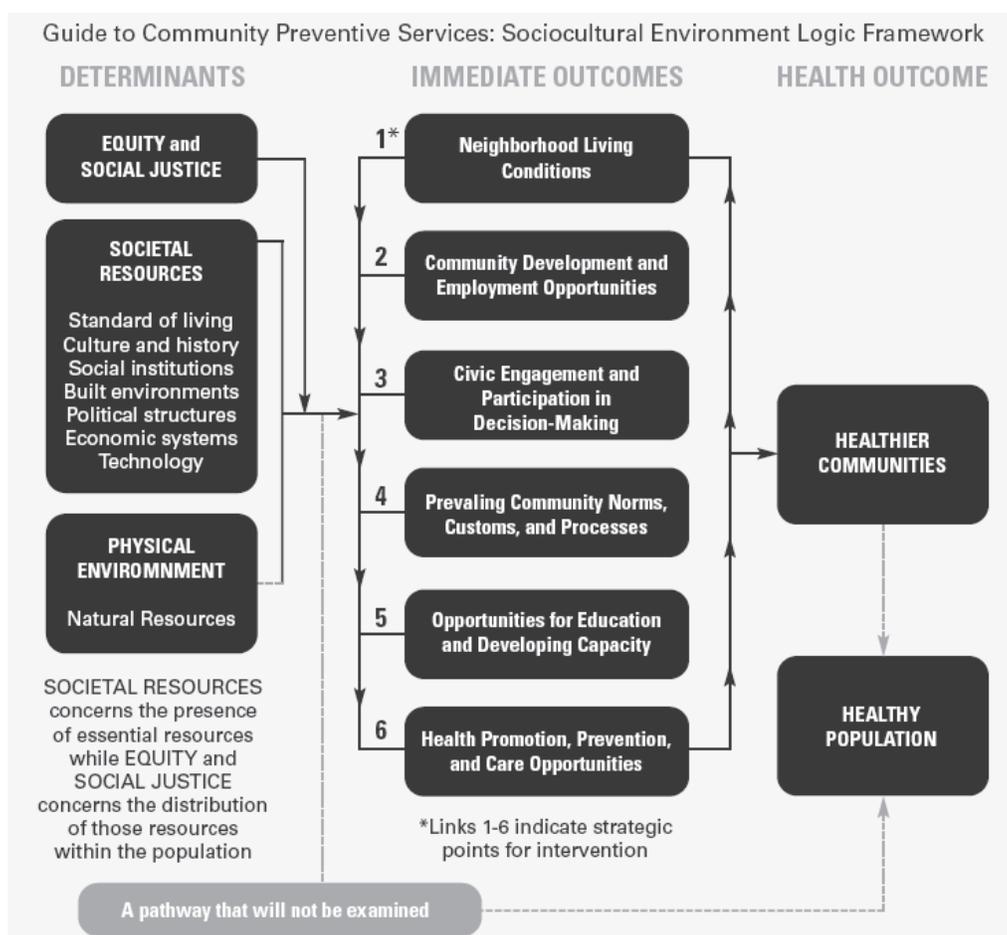


Figure 8. Sociocultural Environment Logic Framework (Rimer & Glanz, 2005, p. 26), used under fair use guidelines, 2011

Summary measures of population health.

Related to the concept of population health, summary measures of population health--including health-adjusted life expectancy--are being used more frequently for the purposes of monitoring the health status of regions and to evaluate public health interventions that indicate the health status of a population. McDowell, Spasoff, and Kristjansson (2004) proposed a more detailed approach to measuring population health that includes health indicators. These health indicators are classified based on their application (i.e., descriptive, prognostic, explanatory), according to the conception of population (i.e., as an aggregate), and according to the underlying model of health--all of which include indicators of a population's health. A more broad-based approach to population health should include outcome variables, such as morbidity and mortality indexes, as well as direct measures of health processes within the population in question (Kemp, 2008).

Population measures may include scales (such as disability indexes to describe current health status) and are used in surveys or as diagnostic tools for individuals and in determining needs for care or disease burden in groups. Prognostic measures determine future health status, such as screening tests or indicators of risk and prognosis on an individual basis, as well as general demographic projections of disease burden at the population level and sustainability potential. Population-based measures also can be used to retrospectively explain why some individuals are healthy and others are not, such as individual environmental exposures, genetic factors, personality, and social determinants of health status (e.g., income inequality). Evaluation is another method that can determine current health status that is sensitive to small changes in health utilizing continuous numerical scales, while recording intervention outcomes at the individual level and monitoring the program's or policies' impact at the societal level. These

measures are further categorized as aggregate (e.g., data combined from individuals and summarized regionally/nationally, such as rates of lung cancer), environmental (e.g., external factors, such as air or water quality), and global indexes (e.g., policies for equity in access to care), as well as according to contrasting models of health (including biomechanical, holistic, and dynamic) (Kemp, 2008; McDowell et al., 2004).

Communication theory.

Communication theory describes how different types of communication affect health behavior and delves into “who says what, in which channels, to whom, and with what effects”—exploring how messages are created, transmitted, received, and processed. From a public health perspective, the principal question that theories of communication answer is, “How do communication processes influence or discourage behavior change?” According to Rimer and Glanz (2005), *public health communications* is “the scientific development, strategic dissemination, and evaluation of relevant, accurate, accessible, and understandable health information, communicated to and from intended audiences to advance the public’s health” (p. 29) and focuses on community health improvement rather than examination of the fundamental communication processes (Bernhardt, 2004; Finnegan & Viswanath, 2002; Owen, Fotheringham & Marcus, 2002; Rimer & Glanz, 2005).

If done correctly, public health communications should embody an ecological perspective that eventually promote multilevel strategies—e.g., tailored messages at the individual level, targeted messages at the group level, social marketing at the community level, media advocacy at the policy level, and mass media campaigns at the population level. Ultimately, successful public health communications can:

- increase knowledge and awareness of a health issue;
- influence perceptions, beliefs, and attitudes that factor into social norms;
- prompt action;
- demonstrate or illustrate healthy skills;
- increase support for services;
- debunk misconceptions; and
- strengthen organizational relations (Finnegan & Viswanath, 2002; Office of Cancer Communications, 2001; Rimer & Glanz, 2005).

However, health communications, in and of itself, may not sustain behavioral changes at the individual-level, may not successfully convey complex health messages, and cannot compensate for lack of access to healthcare or healthy environments. Health communication depends on the additional influences from the physical and social environment (Freimuth & Quinn, 2004; Owen et al., 2002; Rimer & Glanz, 2005).

Media effects.

Mass media play an important role in public health interventions. The *media* are interconnected, large-scale organizations that gather, process, and disseminate news, information, entertainment, and advertising worldwide. Whether they are small operations (such as a neighborhood newspaper) or large corporations (employing tens of thousands of people), the media influence almost every aspect of human life--economic, political, social, and behavioral. The results of media propagation of ideas, themes, and stories are termed *media effects*; and research of media effects examines the influence of media on the knowledge, attitudes, and behaviors of their audience, as well as the affect that audience has on the media. Since the media's audience actively seeks and utilizes health information, information conveyed through

the media reflects their needs, interests, and priorities. There are two key questions that are helpful in understanding the effects of media on their audience: (1) What factors affect the probability that a person will be exposed to any given message?; (2) How do media effects differ with the amount of exposure to that message? (Finnegan & Viswanath, 2002; Hovell, Wahlgren & Gehrman, 2002; IOM, 2002a; Rimer & Glanz, 2005).

Several investigators, including Rimer and Glanz (2005) and Freimuth & Quinn (2004), have demonstrated and noted that, since money is required to purchase mass media time, funding is a principle element that determines whether or not audiences will be exposed to a message through the mass media. However, many public health programs have limited budgets and frequently depend on strategies for free media message dissemination—i.e., public service announcements (PSAs), embedding health messages in entertainment programs (e.g., soap operas), or promoting news coverage of public health topics in print and electronic media formats. Free media message distribution can also occur in community institutions that adopt and disseminate messages, as well as in social networks. The required frequency of hearing a message (exposure to a health message) before it influences an individual's beliefs or behaviors (outcome effect) depends on several factors--characteristics of target audiences (e.g., their readiness for change, the ways they process information), the complexity of the health issue, the presence of competing messages, and the nature of the health message. Repeated exposure to a message, especially when it is delivered through numerous channels, can deepen its influence on its audience.

There are several possible ways that a health communications message can influence someone's beliefs and/or behaviors and include:

- *immediate learning*—people or social groups learn directly from the message;
- *delayed learning*--the conveyed message is not sorted out immediately, but is processed at a later time;
- *generalized learning*--people are influenced by not only the message itself, but also by ideas and changes associated with the message;
- *social diffusion*—social groups receive messages that kindle dialogue and alter their beliefs; and
- *institutional diffusion*—messages initiate a response from public institutions that further strengthen the message's impact on the target audience (Finnegan & Viswanath, 2002; Freimuth & Quinn, 2004; Hovell et al., 2002; Rimer & Glanz, 2005).

Since the mass media can focus attention on issues that ultimately help to generate public awareness and create impetus for change, a major focus of communications research focuses on ways that the mass media influence public opinion—specifically politics and policymaking. *Agenda setting* involves establishing the media (what is covered), public (what people think about), and policy (regulatory or legislative actions on issues) agendas (see Table 6). Agenda setting research demonstrates that the amount of media coverage an issue receives correlates directly with the public's opinion of the importance of that specific issue (Dorfman et al., 1993; Finnegan & Viswanath, 2002; Rimer & Glanz, 2005).

Rimer and Glanz (2005) mention that a maxim in this area of research is that mass media may not tell the public *what* to think, but they are surprisingly effective in telling the public what to think *about*. However, an essential construct of agenda setting, reconstrues this concept.

Framing is a process in which the media or someone tells the audience what aspect of the story is important--not only *what* to think about, but *how* to think about it. The way information and facts are presented and “packaged” to tell a story generates the frame. By framing stories to highlight social and environmental issues that shape health, the media can be used to strongly influence decision makers to cultivate and champion policies that improve the health of the community (Finnegan & Viswanath, 2002; Rimer & Glanz, 2005).

| <i>Concept</i> | <i>Definition</i> | <i>Potential Change Strategies</i> |
|------------------------------|---|---|
| Media agenda setting | Institutional factors and processes influencing how the media define, select, and emphasize issues | Understand media professionals' needs and routines for gathering and reporting news |
| Public agenda setting | The link between issues covered in the media and the public's priorities | Use media advocacy or partnerships to raise public awareness of key health issues |
| Policy agenda setting | The link between issues covered in the media and the legislative priorities of policy makers | Advocate for media coverage to educate and pressure policy makers about changes to the physical and social environment needed to promote health |
| Problem definition | Factors and process leading to the identification of an issue as a “problem” by social institutions | Community leaders, advocacy groups, and organizations define an issue for the media and offer solutions |
| Framing | Selecting and emphasizing certain aspects of a story and excluding others | Advocacy groups “package” an important health issue for the media and the public |

Table 6. Agenda Setting, Concepts, Definitions, and Applications (Rimer & Glanz, 2005, p. 31), used under fair use guidelines, 2011

New communication technologies.

New communication technologies have created a surprising variety of ways to influence health behavior. For example, “E-health” utilizes emerging communication and information technology, such as the Internet, to improve health and health care. The term refers to an

emerging discipline at the intersection of business, public health, and medical informatics—linking clinical and non-clinical areas and comprising both individual and population health-oriented tools. Health information on the Internet, online support groups, online collaborative communities, information tailored by computer technologies, educational computer games, computer-controlled in-home telephone counseling, and patient-provider e-mail contact are a few examples of E-health communication strategies. Some major benefits of e-health strategies include:

- increased reach (the ability to communicate to broad, geographically dispersed audiences);
- asynchronous communication (interaction not bounded by having to communicate at the same time);
- the ability to integrate multiple communication modes and formats (e.g., audio, video, text, graphics);
- the ability to track, preserve, and analyze communication (computer records of interaction, analysis of interaction trends);
- user control of the communication system (the ability to customize programs to user specifications), and
- interactivity (e.g., increased capacity for feedback) (Eng, 2001; Eysenbach, 2001; Neuhauser & Kreps, 2003; Rimer & Glanz, 2002; Science Panel on Interactive Communication and Health, 1999).

E-health interventions may not necessarily be web-based. Today, with computer applications, there are new uses of traditional (e.g., print and telephone) media-related health communications. For example, tailored print communications (TPCs) and telephone-delivered

interventions (TDIs) are newer uses of traditional health communications media that may be able to reach linguistically and culturally diverse audiences. TPCs are printed materials created for and targeted to a specific individual; these are based on pertinent information about that individual. There have been greater than 40 research studies of TPCs conducted on a wide range of health topics--including diet, exercise, mammography, prostate cancer, and smoking cessation. The majority of these studies have shown positive outcomes evidence. TDIs entail a variety of "human-delivered" counseling and reminder interventions delivered using the telephone and computer-generated voice response systems. Although they do not have a broad-based scope, research demonstrates that TDIs are effective across several populations and health topics; however, they have not been extensively utilized with diverse populations (IOM, 2002; Owen et al., 2002; Rimer & Glanz, 2002).

Interactive games are yet another means for health intervention. Based on well-established theories of learning and behavior change (i.e., SCT), Lieberman and colleagues (1997, 2001) designed a series of Nintendo video games to improve children's and adolescents' self-care and prevention behaviors for asthma, diabetes, smoking prevention, and other health topics. Their research demonstrated that these games reduced players' urgent care and emergency medical visits up to 77%. Although research has demonstrated the success and usefulness of some of these new communications technologies, further investigation is needed into the fundamental reasons and mechanisms underlying their success (Kreps, 2002; Rimer & Glanz, 2005).

Although increased opportunities are available for the general public to obtain free Internet access via libraries and kiosks, disparate access remains problematic (U.S. Department of Commerce, 2002). There are still major gaps in Internet usage between Caucasians, African

Americans, and Hispanics, and people with lower levels of education are also less likely to have Internet access. Literacy issues also create barriers to accessing Web-based information making it difficult for people to read print and text-based information (Leslie Harris & Associates, 2002). Ironically, these new computer technologies could exacerbate already existing inequities in health status for many diverse populations. For that reason, it is critical that community members are involved in planning e-health interventions and offered ongoing training and support for using these emerging communications tools (IOM, 2002; Owen et al., 2002; Rimer & Glanz, 2005).

Educational and behavioral interventions utilizing these new communication technologies are breaking new ground and can benefit from the perspective(s) from theories of health behavior. Since e-health interventions can focus on issues and problems at the individual, group, or community/societal level, different theories may be appropriate, depending on the specific program's/project's goals. For example, theories of social support and social networks can be applied to online support groups, and community organization approaches have been used to coordinate Internet-based campaigns through www.Meetup.com (a technology platform that helps people self-organize local gatherings) (Finnegan & Viswanath, 2002; Rimer & Glanz, 2005).

There are two communication models/theories that are particularly applicable to rural communities—*Communication-Persuasion Model (CPM)* and *Media Advocacy*.

Communication-persuasion model (CPM).

Another stage-based model, McGuire's *Communication-Persuasion Model (CPM)*, focuses on how communication can effect change in individual attitudes and behaviors. CPM involves a type of input-output matrix to depict stages (outputs) leading to behavior change, and how progress via these stages is assisted by various forms of communication (inputs). On the one hand, the inputs involve qualities of the communicated message that can be manipulated and controlled by health promotion campaign designers, and describes the who, what, where, when, how, and why of the message. On the other hand, outputs refer to the information-processing steps that are required to be evoked in the individual receiver of the message (Elder et al., 2001; Kemp, 2008).

The components that are involved in the communication process include the source, message, channel, receiver, and the destination. The source refers to the communicator of the message. Persuasive impact may be influenced by factors such as age, gender, ethnicity, credibility, and socioeconomic status. Message involves the information that is communicated and factors such as delivery style, content organization, length, and repetition. Channel refers to the mode of communication, including face-to-face, print (e.g., newspaper, brochures), broadcast, and electronic media (e.g., computer, Internet). Characteristics of the receiver include age, education, intelligence, and demographic variables that are and should be considered when designing a public health campaign. The final component, destination, includes the target behaviors and issues, such as long-term versus short-term change and specific versus general behaviors. Alternatively, outputs involve the temporal process and stages of change, from the initial communication to long-term maintenance of change. There are a total of 12 output steps, including exposure, attention, liking, comprehension, skill acquisition, attitude, change, memory

storage, information search and retrieval from memory, decision based on retrieval, behaving in accordance with decision, reinforcement, and consolidation, all of which are necessary for successful communication and must occur in the specified order (Elder et al., 2001).

CPM has been used in the program design and evaluation of changes related to practical health communication and public health messages, such as via mass media, face-to-face exchanges, words, pictures, music, or other audiovisual or symbolic methods (Elder et al., 2001). The success – or lack thereof – of a communication program is based on the following factors: (1) how much access the target audience has to the information (e.g., does the majority of the target audience own a television?); (2) whether people were actually exposed to the media advertisement (e.g., were posters visible to all patrons in area community centers?); (3) whether the target audience acquired sufficient knowledge and skills to perform the target behavior (e.g., how much exposure is sufficient for the campaign to promote behavior change?); (4) whether the target audience actually has the opportunity to perform the behavior (e.g., new skills should be appropriately taught, or clinics from which to obtain free flu shots should be available to all residents); and, (5) whether short-term adoption can be reinforced through succeeding communication approaches. Likewise, social marketing is the application of communication and marketing concepts to the design, implementation, and management of health and safety promotion programs, for example. Social marketing has been applied to programs that create awareness of a health issue, problem, or solution; create demand for health services or support for individual or community action; teach skills; and, prompt and reinforce the maintenance and generalization of beneficial behavior change. Furthermore, social marketing can be applied to CPM's output variables, particularly obtaining people's attention and promoting knowledge regarding a specific health issue (Elder et al., 2001; Kemp, 2008).

Media advocacy.

Although not a theoretical model on its own, per se, media advocacy considers both health communication and applied behavior analysis theories and models of community change. Media advocacy integrates social marketing and health communication with policy changes and positive and negative reinforcement to reduce or remove knowledge gaps in the community-- specifically targeting tobacco, alcohol, weapons, and other manufacturers that only increase the nation's morbidity and mortality rates (Elder et al., 2001; Finnegan & Viswanath, 2002; Glanz, 2002). Today's media promotes health as an individual responsibility, rather than a shared responsibility among all levels of society, particularly celebrity diet commercials that heavily promote the concept of instant results and de-emphasize any risks with using the product in question. In order to have a more societal responsibility for health, the government should actively structure environments to reinforce healthy behaviors and downplay the glamorization of unhealthy behaviors (e.g., alcohol commercials). However, the general public must voice its concerns and opinions in order to effect the necessary change (Elder et al., 2001).

Adaptability of theoretical models to rural communities.

As noted in numerous previous examples, several theoretical models consider the unique needs and characteristics of rural communities and have been applied to a number of issues within these communities. Additionally, the Theory of Reasoned Action (TRA) has been applied to seatbelt safety among urban versus rural women, where differences have been reported in the attitudes and subjective norms of intenders and non-intenders to use seatbelts. TRA has also been utilized in the prediction of adolescents' behavioral intention in the safe operation of farm equipment, with the strongest predictor being one's subjective norm. Likewise, the Theory of Planned Behavior has been used to examine factors that determine influences on parents'

decisions to expose their children to various hazards on family farms, where behavioral beliefs have been reported as stronger predictors of behavioral intentions, as opposed to subjective norms or perceived control. The Stages of Change Model has been used in the areas of dietary change, smoking, mammography, and exercise; however, there is a dearth of research that evaluates the efficacy of stage-based interventions for promoting health in rural communities (Kemp, 2008; Elder et al., 2001).

As one might expect, Family Systems Theory has been very applicable to smaller, non-urban, rural populations, given their close family ties and reliance on extended kin members. While roles within the family can have an impact on health behaviors, community organizing holds promise in offering community-based alternatives to health care and collaboration among agencies that are typically lacking in necessary resources in rural communities (Biel, 2002; Elder et al., 2001; Leight, 2003). Likewise, the social ecology framework is applicable to rural communities in that rural-dwellers feel a unique connection to the land, to family, and to the community/surrounding environment itself, which is particularly prevalent in rural Appalachia. Unlike their urban counterparts, who are fairly concentrated within the community, rural-dwellers must rely more on the use of mass media to promote health among residents. However, it should be noted that residents who are of lower socioeconomic status may not own a television, radio, or other mass media outlet and, therefore, alternative means of contacting such individuals should be addressed. Additionally, McGuire's theory is appropriate for use with risky rural behaviors, such as safe operation of farm equipment (Elder et al., 2001; Kemp, 2008).

Planning models.

Systematic planning models are the means by which structure and organization are brought into the planning process--providing the direction and a framework for planning processes. Although many different planning models have been developed--each having some common, but differently labeled, elements--some are used more frequently than others (McKenzie et al., 2009). According to Simons-Morton, Greene, and Gottlieb, 1995, “the underlying principles that guide the development of the various models are similar; however, there are important differences in sequence, emphasis, and the conceptualization of the major components that make certain models more appealing than others to individual practitioners” (pp. 126-127). There are no perfect planning models, and these models are usually adapted to fit the needs of each planning situation and the cultural characteristics of the priority population, setting, and health problem (Kline & Huff, 1999; McKenzie et al., 2009). However, most planning models have five basic steps in common—assessing needs, setting goals and objectives, developing an intervention, implementing the intervention, and evaluating the results. The *Generalized Model for Program Planning* (see Figure 9) outlines these common steps.

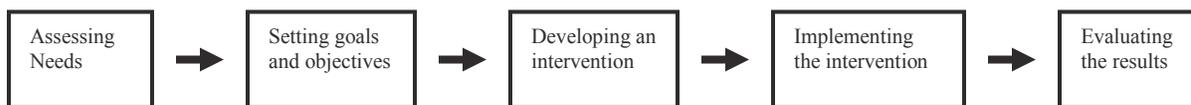


Figure 9. Generalized Model for Program Planning (McKenzie et al., 2009, p. 17), used under fair use guidelines, 2011

When beginning to plan a comprehensive needs assessment and strategic planning process that ultimately leads to goals, strategies, and interventions that promote health or change health behavior of a rural community, theory is helpful in interpreting the situation and guiding decisions about design, procedures, and measurement indicators. Depending on the component

of practice (e.g., individuals, groups, organizations, community) and the nature of the health problem, different theoretical approaches may be appropriate. Many times utilizing more than one theory to address a problem produces a stronger impact. This is particularly true when planning comprehensive needs assessment and strategic planning processes and health promotion programs that address multiple levels (e.g., individual, organizational, community) of a community's health problem. There are many models--representing a wide range of planning approaches--that are considered acceptable from theoretical and practical perspectives and useful in such processes. These models include *MATCH (Multilevel Approach to Community Health)* (Simons-Morton, Simons-Morton, Parcel & Bunker, 1988; Simons-Morton et al., 1995); *CDCynergy* (CDC, 2003); *SMART (Social Marketing Assessment and Response Tool)* (Neiger & Thackeray, 1998, 2002); *A Systematic Approach to Health Promotion (Healthy People 2010)* (United States Department of Health and Human Services [USDHHS], 2000); *APEX-PH (Assessment Protocol for Excellence in Public Health)* (NACCHO, 1991); *SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis* (Bartol & Martin, 1991; Johnson, Scholes, & Sexty, 1989); *Healthy Communities* (USDHHS, 2001); *The Health Communication Model* (National Cancer Institute, 2002); *Intervention Mapping* (Bartholomew, Parcel, Kok & Gottlieb, 2006; Green & Kreuter, 2005); *Healthy Plan-It* (CDC, 2000a); *Planning, Program Development, and Evaluation Model* (Timmreck, 2003); *Model for Health Education Planning* (Ross & Mico, 1980); *Comprehensive Health Education Model* (Sullivan, 1973); *Model for Health Education Planning and Resource Development* (Bates & Winder, 1984); and *Generic Health/Fitness Delivery System* (Patton, Corey, Gettman, & Graff, 1986).

However, two planning models--*PRECEDE-PROCEED* and *Social Marketing*--are most applicable in the development and implementation of comprehensive community health needs

assessment, strategic planning, and community health improvement plan processes since they integrate multiple theories to explain and address the holistic health problems of rural communities. The process starts by utilizing theory to develop a set of assumptions about the aspects and issues that contribute to a community's health problem(s). Research is then used to test, adjust, and add to these assumptions. Finally, using theoretical framework and situation-specific research findings, a targeted community improvement plan, including intervention strategies, is designed. This includes designing an evaluation method to determine if the intervention strategies are effective and choosing, in advance, realistic and obtainable goals defining how programmatic success looks (Glanz, Rimer & Lewis, 2002; McKenzie et al., 2009; Rimer and Glanz, 2005).

As emphasized by Rimer and Glanz (2005), “research (into the needs of the population, resources available, and the situation in which the health problem occurs) is a central feature of comprehensive planning models” (p. 36). Therefore, theory assists in developing questions to ask during the community needs assessment and strategic program planning, implementation, and evaluation phases. During the program planning phase, the needs and assets of the population are explored and effective resources and approaches are developed. During the implementation phase, the program is continually constructed and improved. Finally, the short- and long-term effects the program has had on the specific health problem(s) and its contributing causes are assessed. Both *social marketing* and the *PRECEDE-PROCEED* models are prominent models used to instruct the needs assessment and strategic planning process by assessing the target audience's/community's needs at multiple levels of a health problem(s). In social marketing, this preliminary investigation involves conducting consumer research and market analysis. In *PRECEDE-PROCEED*, it includes carrying out epidemiological assessment; behavioral,

educational, environmental, and organizational diagnosis; and administrative and policy assessment. Both planning models combine behavior change theories for greater impact and use them as a basis for evaluation (Crosby, Kegler & DiClemente, 2002; Gielen & McDonald, 2002; Maibach, Rothschild & Novelli, 2002; McKenzie, Neiger, & Thackeray, 2009; Rimer & Lewis, 2005).

Social marketing.

Social Marketing is not a theory, but an approach to promoting health behavior that uses marketing techniques to influence the voluntary behavior of target audience members for socially beneficial goals. It has been applied to health campaigns and used successfully in domestic settings for nearly 40 years and even longer internationally. It is different from health education because it not only educates and/or influences people, but also reinforces their behavior with incentives and other benefits. It also differs from commercial marketing because members of the target audience directly benefit from it, and success is defined as positive effects on society. A frequent misinterpretation of social marketing is that it is limited to narrow interventions, such as communication or advertising strategies. However, when used correctly, social marketing is a planning framework that positions consumers at the core of all activity. In fact, the hallmark of social marketing is a continual focus on the consumers who will eventually participate in the specific health promotion program. Therefore, in this planning model, consumers are placed at the center of all program planning and implementation by addressing their wants and needs, as well as their concerns. Early international social marketing interventions and techniques focused primarily persuading people to adopt effective family planning methods, develop good nutritional practices, become literate, immunize infants, and educate daughters. Social marketing activity in the U.S. has focused on diverse issues, including the prevention of AIDS and

cardiovascular disease, low-fat eating, the Five-a-Day Campaign, prevention and treatment of drug use, and breast cancer screening (Kennedy & Crosby, 2002; Maibach et al, 2002; McKenzie et al., 2009; Neiger et al., 2001; Rimer & Glanz, 2005; Walsh, Rudd, Moeykens & Moloney, 1993).

Alan Andreason (1995) defines social marketing as “the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal welfare and that of society” (p. 110). However, Glanz, Rimer, and Lewis (2002) more comprehensively define social marketing as:

a process that attempts to create *voluntary exchange* between a marketing organization and members of a target market audience based on mutual fulfillment of self-interest. The marketing organization uses its resources to understand the perceived interests of target market members; to enhance and deliver the package of benefits associated with a product, service, or idea; and to reduce barriers that interfere with the adoption or maintenance of that product, service, or idea. Target market members, in turn, expend their resources (such as money, time, or effort) in exchange for the offer when it provides clear advantages over alternative behaviors. Success of the social marketing program is defined primarily in terms of its contributions to the well-being of target market members, or to society as a whole. (p. 440)

In other words, the marketing organization’s main function is to accomplish its mission--which is defined by leadership of the organization--and the target audience members proceed with their own interests in mind.

According to Kennedy and Crosby (2002), detailed definitions of social marketing typically describe either the components of social marketing programs and/or the stages or strategic decision points in the social marketing process. Integrating these types of descriptions, social marketing serves as a multi-stage strategic planning and implementation process that typically has five steps:

1. Conducting formative audience research;
2. Using the research results to divide the target audience into segments with similar characteristics and tailoring messages to appeal to each segment;
3. Identifying the costs and benefits of the product or behavior from the consumer's point of view and then designing messages that minimize the costs and promote the benefits to create the perception of a beneficial exchange;
4. Employing a four P's analysis of campaign plans by considering the attractiveness of the offering or *product*, the affordability and perceived reasonableness of its *price* or non-monetary costs, the convenience with which it can be accessed or its *placement*, and the best channels and messages to use in its *promotion* to the target audience; and
5. Revising campaign contributions based on continual consumer feedback.

Social marketing programs are generally “consumer-driven,” not expert-driven, and targeted to serve a target population or specific group of people. To avoid demarcating the target market too broadly, social marketing experts *segment* a larger, heterogeneous target market into smaller, more homogenous subgroups with distinct, unifying characteristics and needs—known as *market segmentation*. For example, one could divide a larger audience of “smokers” into smaller subgroups using factors such as geography (regional location), ethnicity, gender, exercise habits, readiness for change, or media routines. In an attempt to successfully target marketing

strategies to specific subgroups, social marketing attempts to differentiate one target group from another by recognizing “patterns” (Kennedy & Crosby, 2002; Maibach et al., 2002; Rimer & Glanz, 2005).

As noted above, the social marketing process involves identifying an effective marketing combination—“the Four Ps” of *product*, *price*, *place*, and *promotion*. The optimal “marketing mix” generates a suitable and appropriate exchange that increases benefits, reduces barriers, and offers a superior option than competitors. By discovering benefits that are of greatest importance and appeal to target market members, the social marketer then develops strategies and methods for that specific target audience (Kennedy & Crosby, 2002; Maibach et al., 2002; Rimer & Glanz, 2005).

According to Glanz, Rimer, and Lewis (2002) and Rimer and Glanz (2005), the four Ps of the marketing mix are:

- *Product* (the right kind of behavioral change) includes not only the behavior that is being promoted, but also the benefits that go along with it;
- *Price* (an exchange of benefits and costs) refers to barriers or costs involved in adopting the behavior (e.g., money, time, effort);
- *Place* (making new behaviors easy to do) is about making the “product” accessible and convenient. It means delivering benefits in the right place at the right time;
- *Promotion* (delivering the message to the audience) is how the practitioner notifies the target market of the product, as well as its benefits, reasonable cost, and convenience.

Ideally, a social marketing intervention begins with *formative research* (also called audience or consumer research) to become familiar with the target market’s desires, needs, and perceptions related to health behavior. Formative research includes obtaining key information about

consumers' current activities and behavior—specifically how it is facilitated and reinforced. A second type of research, *competitive analysis* (also called environmental analysis) is also done to gather information and understand the environment in which health-related or other decisions leading to certain behavior(s) are made by target audience members. This analysis looks closely at competing behaviors encouraged by the target market. It also investigates economic, physical, and social environments influence consumers' decisions. A good example of social marketing is the 5-A-Day Program that uses messages about eating five fruits and vegetables a day to encourage people to eat convenient, inexpensive fast foods. (Kennedy & Crosby, 2002; Maibach et al., 2002; Rimer & Glanz, 2005).

Evaluation remains an essential and continuing part of social marketing programs. Formative research helps develop and refine concepts, messages, products, services, pricing, and distribution channels before their implementation. Qualitative methods—i.e., focus groups or key informant interviews—are also used to pre-test marketing ideas and models, messages, and materials. Certain materials may also be pilot-tested with specific individuals (who have similar characteristics of the target market) to verify the effectiveness of those materials, to identify various ways of distributing the message, and to measure outcomes. Additionally, process evaluation is used to track program progression while it's being implemented. Summative research, usually as outcome monitoring, may also be conducted by comparing a program's objectives with its short- and long-term outcomes to determine the successes and failures, as well as the cost-effectiveness of the specific program being evaluated (Kennedy & Crosby, 2002; Maibach et al., 2002; Rimer & Glanz, 2005).

According to Rimer and Glanz (2005), “social marketing programs are most successful when they are implemented using a research-driven process; then consumer research can help to adjust program messages and outputs” (p. 38). There are four stages of the social marketing process--planning and strategy development; development of pre-testing concepts, messages, and materials; implementation; assessment of in-market effectiveness; and feedback to the first stage (see Figure 10). Within each stage, there is a continual feedback loop between planning and research. Social marketing is a methodology that encourages behavior change through voluntary exchange and positive reinforcement, and it utilizes many concepts and practices from behavioral change theory that helps understand the present behavior of targeted members and how to positively change that behavior (Kennedy & Crosby, 2002; Maibach et al., 2002; Rimer & Glanz, 2005).



Figure 10. Social Marketing Wheel (Rimer & Glanz, 2005, p. 38), used under fair use guidelines, 2011

Precede-proceed.

The ability to apply theories of health behavior is one of the most critical skills needed in any needs assessment and strategic planning process--especially when designing and implementing community needs assessment and strategic planning programs to address community problems. A planning model or conceptual framework for practice, like *PRECEDE-PROCEED*, is helpful in such a process. As noted, PRECEDE-PROCEED--as an integrative planning model that includes constructs from many theories--does not elucidate or predict issues associated with selected outcomes, but provides a distinguishing framework for intervention strategies that address those issues. Currently, the most widely known model in program planning, it provides an approach to community health promotion program planning that is both structured and flexible. This model has been well-received professionally because it is theoretically grounded and comprehensive in nature. Developed by Green, Kreuter, and associates over the course of about 20 years, PRECEDE-PROCEED provides a “road map” that can be utilized to design health education and community health promotion and improvement programs and processes. It provides a comprehensive structure for assessing health and quality-of-life needs and for designing, implementing, and evaluating health promotion and other public health programs to meet those needs. The two components of this model provide assistance to plan programs and incorporate an ecological perspective (Green & Kreuter, 2005; <http://lgreen.net/index.html>; McKenzie et al., 2009; Rimer & Glanz, 2005).

In this model, health behavior is seen as being influenced by individual and environmental forces, and therefore, the model has two separate parts--an “educational diagnosis” (PRECEDE) and an “ecological diagnosis” (PROCEED). “PRECEDE” is an acronym for Predisposing, Reinforcing, Enabling Constructs in Educational/Environmental Diagnosis and

Evaluation. This component of the model--developed in the 1970s (Green, 1974, 1976, 1979; Green, Levine & Deeds, 1975; Green et al., 1978; Green, Kreuter, Deeds & Partridge, 1980)—“consists of a series of planned assessments that generate information that will be used to guide subsequent decisions” (Green & Kreuter, 2005, p. 8). It purports that, in order to design a health promotion intervention, an educational diagnosis is required--just as one needs a medical diagnosis for treatment plan. PRECEDE outlines a diagnostic planning process to assist in the development of targeted and focused public health programs. This approach evolved to address a concern among some professionals that health education focused too much on implementing interventions and too little on designing interventions that were strategically planned to meet confirmed needs.

“PROCEDE” stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development. An element developed in the 1980s and added to the framework in 1991 (Green, 1979, 1980, 1982, 1984, 1986; Green & Kreuter, 2005), it “is essentially an elaboration and extension of the administrative diagnosis step of PRECEDE, which was the final and least developed link in the PRECEDE framework” (Green & Kreuter, 2005, p. 825). Influenced by the participation of Green and Kreuter in national policy initiatives and the development of community health promotion programs such as PATCH, PROCEDE was added to take into account the impact of environmental factors on health. PROCEDE is “marked by the strategic implementation of multiple actions based on what was learned from the assessments in the initial phase” (Green & Kreuter, 2005, p. 9). Ultimately, it directs the implementation and evaluation of the programs designed using PRECEDE (Gielen & McDonald, 2002; Green & Kreuter, 1992, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005).

The PRECEDE-PROCEED process rests on a basic principle of practice, that of participation, which asserts that successful change is enhanced and achieved by the active participation of the targeted audience in defining their own high-priority problems and goals and in developing and implementing their own solutions. The designers of this model emphasized that individuals in the target population must be involved in the assessment of their own needs and aspirations. (Green & Kreuter, 2005; Freudenberg et al., 1995; McKenzie et al., 2009). This principle derives from the community development roots of health behavior and education (Steckler, Dawson, Israel & Eng, 1999), as well as the empowerment-education models illustrated by Freire's early work and by the more recent work of Minkler, Wallerstein, Israel, Fawcett, and others (Fawcett, 1995; Donovan, 1995; Israel, Checkoway, Shulz, & Zimmerman, 1994; Minkler & Wallerstein, 1992; Wallerstein, 1992; Wallerstein & Bernstein, 1994) (See also the previous section on Community Level [Population-Based] models).

The planning process begins with the proposition that health behaviors are complex, multidimensional, and influenced by various factors (Green & Kreuter, 2005). Because of its systematic approach, this planning model offers specific guidelines for establishing priorities and for utilizing intervention resources more efficiently and effectively. PRECEDE-PROCEED encompasses a eight-step planning process that begins at the end--by identifying the desired outcome, determining what causes it, and finally designing an intervention to reach the desired outcome. It begins with the final consequences (by initially focusing on selected health-related outcomes) and works backward to the causes (by identifying the best combination of intervention strategies to accomplish the selected objectives). The first four "diagnostic" steps (PRECEDE) address both educational and environmental topics: (1) social assessment; (2) epidemiological assessment that includes a genetics, behavioral, and environmental assessment;

(3) educational and ecological assessment, and (4) administrative/policy assessment and intervention alignment. The last four (PROCEED) steps involve implementation and evaluation of health promotion intervention: (5) implementation, (6) process evaluation, (7) impact evaluation, and (8) outcome evaluation (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005) (see Figure 11).

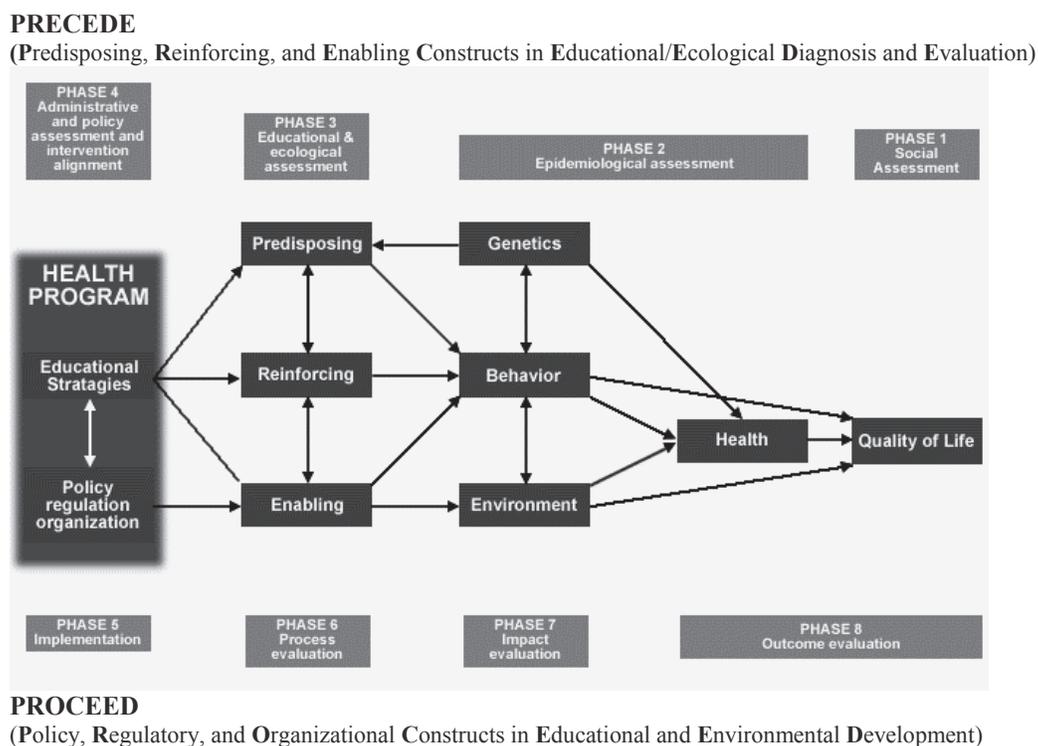


Figure 11. The PRECEDE-PROCEED Model (McKenzie et al., 2009, p. 21; Rimer & Glanz, 2005, p. 40), used under fair use guidelines, 2011

During the diagnostic (PRECEDE) steps of the model (see Table 7), various methods are used to learn about the community's perceived and actual needs, as well as the regulatory milieu in which the intervention will function. Phase 1, the *Social Assessment and situational analysis*, determines people's subjective perceptions of their own needs and quality of life—problems and priorities—as well as considers the community's problem-solving capacity (its strengths and resources and its readiness to change). It is conducted using multiple data collection activities

(e.g., key informant interviews, focus groups with members of the community, nominal groups, central location intercept, community forums, participant observation, and surveys). Some of the social indicators of quality of life include achievement, alienation, comfort, crime, discrimination, happiness, self-esteem, unemployment, and welfare (Gielen & McDonald, 2002; Green & Kreuter, 2005; Kretzman & McNight, 1993; McKenzie et al., 2009; Rimer & Glanz, 2005).

Phase 2, the *Epidemiological* Assessment, uses primary or secondary data collection and analysis to prioritize the community's health needs and establish program goals and objectives. Data in this assessment include traditional vital statistics and indicators (e.g., years of potential life lost, disability, prevalence, morbidity, incidences, and mortality), as well as genetic, behavioral and environmental factors. Genetics factors are a new addition to the model and represent the relationship between genes and various illnesses, risk factors, and biological conditions (Green & Kreuter, 2005). Assessment of behavioral and environmental factors identifies internal and external factors affecting the health problem. "Behavioral factors refer to the patterns of behavior of individuals and groups that protect or put them at risk for a given health or social problem" (Green & Kreuter, 2005, p. 14). Environmental factors exist outside the person and can be changed to support behavior, health, or quality of life. These factors may be related to the economy or the social circumstances of the priority population and may also involve services and resources (or lack thereof) available in the community. It is critical to rank the health problems in this phase because there are rarely, if ever, enough resources to deal with all or multiple problems, and this model is used to plan health programs (Green & Kreuter, 2005).

Once identified, the risk factors and/or determinants need to be prioritized. This can be done by first ranking the factors/conditions by importance and changeability, and then using the 2 x 2 matrix shown in Figure 12. Decisions are guided by the priorities of community members while also considering health problems that have the greatest community impact, population groups that are underserved, and goals and objectives that are realistic and achievable (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005). All of these factors—including those that influence individual behavior and the environment—are mapped out through various methods including reviewing pertinent literature, theory application, and utilizing the wisdom of the planning group. Each factor is also rated in terms of its changeability by relying on theories of organizational change, community organization, and diffusion of innovations (Erllich, Rothman & Teresa, 1999; Gielen & McDonald, 2002; Green & Kreuter, 2005; Rimer & Glanz, 2005; Rogers, 1995).

| | More important | Less important |
|-----------------|---|--|
| More changeable | High priority for program focus (Quadrant 1) | Low priority except to demonstrate change for political purposes (Quadrant 3) |
| Less changeable | Priority for innovative program; evaluation crucial (Quadrant 2) | No program (Quadrant 4) |

Figure 12. Prioritization Matrix (McKenzie et al., 2009, p. 22), used under fair use guidelines, 2011

In Phase 3, the *Educational and Ecological Assessment*, the many factors--that can potentially influence a given behavior and that are necessary to initiate and sustain behavioral change--are identified. These factors are further classified into three categories: predisposing, reinforcing, and enabling factors. All three levels of change theories (individual, interpersonal, or

community-level) can be helpful at this stage of the planning process to categorize determinants of behavior into one of these three categories and rank their importance. Because each type of factor requires different intervention strategies, classifying them helps determine how community needs are addressed (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005).

The three types of influencing factors include:

- *Predisposing factors*—knowledge and many affective traits (e.g., existing skills, values, attitudes, personal preferences, cultural beliefs, perceptions, and readiness to change)—facilitate or hinder a person’s motivation to change and can be altered through direct communication;
- *Enabling factors*—vehicles or barriers created mainly by societal forces or systems (e.g., available programs, access to healthcare facilities, skills, resources, supportive policies and laws [local, state, federal], assistance, and referrals to appropriate providers and services)—facilitate or create barriers for persons to act on their inclinations;
- *Reinforcing factors*—different types of continuing feedback, incentives, and rewards that those in target population receive after behavior change (e.g., social benefits such as reassurance, social support [family], praise, recognition, admiration, peer influence; self-actualization, imagined, or vicarious rewards such as improved appearance, self-respect; physical benefits such as convenience, comfort, symptom relief; and tangible benefits such as economic benefits or avoidance of cost)—either encourage or discourage repetition or persistence of a behavior(s) (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005).

In Phase 4, the final diagnostic step of PRECEDE-PROCEED, there are two parts: (1) *Intervention Alignment*, and (2) *Administrative and Policy Assessment*. The intent of intervention alignment is to match appropriate strategies and interventions with projected changes and outcomes identified in earlier phases, so that intervention strategies mirror previously gathered information, available resources to meet determined needs, and organizational rules and policies that could hinder or facilitate program implementation. In administration and policy assessment, it is determined if the capabilities and resources are available to develop and implement the program. Administrative and policy assessment can be informed by community-level theories (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005).

| <i>Planning Phase or Step</i> | <i>Function</i> | <i>Examples of Relevant Theory</i> |
|---|---|---|
| 1. Social Assessment | Assesses people's view of their own needs and quality of life | Community organization |
| 2. Epidemiological Assessment | Documents which health problems are most important for which groups in a community | Community building Community-level theories (if the community helps to choose the health problem that will be addressed) |
| includes Genetics/Behavioral/Environmental Assessment | Identifies factors that contribute the health problem of interest | Interpersonal theories -Social Cognitive Theory Theories of organizational change Community organization |
| 3. Educational/Ecological Assessment | Identifies preceding and reinforcing factors that must be in place to initiate and sustain change | Diffusion of innovations All three levels of change theories: -Individual -Interpersonal -Community |
| 4. Administrative/Policy Assessment and Intervention Alignment | Identifies policies, resources, and circumstances in the program's context that may help or hinder implementation Matches appropriate strategies and interventions with projected changes and outcomes | Community-level theories: -Community organization -Organizational change |

Table 7. Diagnostic Elements of PRECEDE-PROCEED (Green & Kreuter, 2005, pp. 140-147; McKenzie et al., 2009, p. 23; Rimer & Glanz, 2005, p. 42), used under fair use guidelines, 2011

The four remaining phases (PROCEED) consist of program implementation and evaluation. In Phase 5, *Implementation*, having adequate resources, the methods and strategies of the specific intervention are selected, and implementation begins. However, before the *Implementation* phase (Phase 5) is initiated, plans are established for process evaluation (Phase 6), impact (Phase 7), and outcome (Phase 8) of the intervention. *Process Evaluation* determines the extent to which a program is being implemented according to plan. *Impact Evaluation* measures the program effectiveness in terms of intermediate objectives and assesses changes in factors (i.e., predisposing, enabling, and reinforcing) that influence the probability of the occurrence of behavioral and environmental change. Finally, *Outcome Evaluation* determines if the intervention has ultimately affected health and quality-of-life indicators. Generally, the measurable objectives from earlier phases of the PRECEDE-PROCEED planning model serve as milestones or gold standards against which accomplishments are evaluated. Whether all three of these final phases are used depends on the evaluation requirements of the program. Usually, the resources required to conduct evaluations of impact (Phase 7) and outcome (Phase 8) are much greater than those needed to conduct process evaluation (Phase 6) (Gielen & McDonald, 2002; Green & Kreuter, 2005; McKenzie et al., 2009; Rimer & Glanz, 2005).

In actual practice, PRECEDE and PROCEED operate in a continuous sequence. Information gathered in PRECEDE steers the development of program goals and objectives in the implementation phase of PROCEED. This same information also presents the criteria to judge the success or failure of the program that is measured in the evaluation phase of PROCEED. In turn, the data gathered in the implementation and evaluations phases of PROCEED clarify the relationships examined in PRECEDE between the health or quality-of-life outcomes, their influencing behaviors and environments, and the factors leading to the preferred

behavioral and environmental changes. These data also suggest how programs may be modified to more closely reach their goals and targets. PRECEDE-PROCEED begins by engaging the targeted population to identify their most important health or quality-of-life issues. Then the model leads to the determination of the root causes those identified issues—i.e., what must precede them. By going through this process, interventions can be designed based not on hearsay and suppositions, but on a clear understanding of those factors that influence the health and quality-of-life issues in the specific population. The progression from phase to phase within PRECEDE allows priorities to be instituted in each phase in an effort to narrow the focus in each succeeding phase and arrive at a tightly defined subset of factors as intervention goals and objectives. This is an essential process because there is no single program that addresses all of the predisposing, enabling, and reinforcing factors for all the behaviors, lifestyles, and environments influencing all of the health and quality-of-life issues of interest (Gielen & McDonald, 2002; Green & Kreuter, 2005; <http://www.enotes.com/public-helaht-encyclopedia/preced-proceed-model>; McKenzie et al., 2009).

Individual, interpersonal, and community-level theories are most useful when applied to PRECEDE-PROCEED's diagnostic steps. Community organization relates to Step 1, which may involve working with communities to identify their own capacities, needs, resources, and strengths. In Step 2, descriptive epidemiology is most applicable; however, community-level theories may be pertinent if the community helps to choose or set priorities among the addressed health problem(s). When applied to Steps 3, 4, and 5, theory is most useful because strategic decisions are made in these steps. The use of theory, based on more than just intuition and personal judgment, helps formulate reliable and sensible decisions (Gielen & McDonald, 2002; Green & Kreuter, 1999; Rimer & Glanz, 2005).

PRECEDE-PROCEED is a widely used planning model that has guided the design of numerous and varied public health programs in rural communities. The model has been used to plan, design, implement, and/or evaluate programs for such diverse health and quality-of-life issues as breast, cervical, and prostate cancer screening; breast self-examination; cancer education; cardiovascular disease and hypertension control; maternal and child health; injury prevention including the correct use of care safety seats; worksite health promotion; weight control; increased physical activity; tobacco control; alcohol and drug abuse; school-based nutrition; health education policy; and curriculum development and training for health care professions. (Bertera, 1993; Gielen, Bernstein-Cohen & Radius, 1985; Gold, Green & Kreuter, 1997; Morisky et al., 1983; Rimer, 1995; Windsor et al., 1993; Worden et al, 1990). However, there are some challenges in applying this planning model. The model relies on and is extremely dependent on data, and using this model may require more resources (financial and human) than are available in some situations (Gielen & McDonald, 2002). Orenstein, Nelson, Speers, Brownstein, and Ramsey (1992) found that the process of planning was slow and that planners needed considerable training and/or technical assistance to implement this model especially with its strong emphasis on assessment. Additionally, the model does not emphasize intervention development. Because PRECEDE-PROCEED is an integrative planning model that includes constructs from many theories, it has not been systematically evaluated in comparison with other theoretical models of health behavior (Gielen & McDonald, 2002).

Mobilizing for Action through Planning and Partnerships (MAPP)

Overview.

Originally developed by NACCHO in 2001 as a community-wide strategic planning tool and framework for improving community health (see *History and Development of the MAPP Community Health Improvement Tool*), MAPP was implemented in the present study to help the NRV community prioritize public health system needs and issues and identify resources for addressing and improving them. MAPP focuses on the creation and strengthening of the local public health system which is defined as all entities that contribute to the delivery of public health services within a community--all public, private, non-profit, and voluntary organizations, as well as individuals and informal associations. It uses the EPHS, as well as other public health practice concepts such as the NPHPSP, to define public health activities and to reflect core processes used in public health to promote health and prevent disease (NACCHO, 2001, 2004).

MAPP is typically facilitated by public health and/or other community leaders, but community ownership is fundamental and key to the MAPP process, as community participation results in collective thinking and effective, sustainable solutions to the community's complex problems. Because the community's strengths, needs, and desires drive the MAPP process, the framework provides a community-focused initiative. Hence, broad community participation from and collaboration among an array of public, private, non-profit, and voluntary organizations and individuals--including community residents--is crucial in improving health and quality of life through this community-wide and community-driven process (NACCHO, 2001, 2004).

MAPP is comprised of six phases: (1) organize for success/partnership development; (2) visioning; (3) four assessments (local public health system, community themes and strengths, , community health status, and forces of change); (4) identify strategic issues; (5) formulate goals

and strategies; and (6) action cycle (includes planning, implementing, and evaluation). Activities in each phase influence the next in a cyclical manner ensuring continued success (NACCHO, 2001, 2004). Each of these phases is discussed in more detail below. It should be noted that there are two graphics (see Figure 2 and Figure 3) that illustrate the MAPP process. In the MAPP model (Figure 2), the phases of MAPP are shown in the center of the model and the four MAPP Assessments are shown in the four outer arrows. In the MAPP Community Roadmap (Figure 3), the process is shown moving along a road that leads to a healthier community (NACCHO, 2001, 2004).

Organize for success/partnership development.

In order to initiate the MAPP process, leadership organizations in the community organize themselves and prepare to implement MAPP in their community. Community-wide strategic planning requires strong and committed participation from and involvement among partners, stakeholders, and the community residents who are recruited to participate in the process. Careful preparation is key to this phase in order to produce a planning process that builds commitment, engages participants, uses participants' time well, and results in a plan that can be successfully and realistically implemented. These activities are important to launching a community on the path toward a successful community health improvement process utilizing the MAPP framework. The two critical and interrelated activities during this phase are to *organize for success* (a decision is made to undertake MAPP and the planning process is outlined) and *partnership development* (participants, including the MAPP Committee, are identified and recruited) (NACCHO, 2001, 2004).

NACCHO (2001, 2004) suggests six main steps in this first phase of MAPP. In Step 1, the lead organization(s) and/or the MAPP Committee that provides oversight throughout the process must determine the necessity of and reasons for undertaking the MAPP process. This understanding will help focus planning efforts and assists in the recruitment and sustained involvement of participants. Additionally, participants should consider the benefits they hope to achieve from the process and the obstacles that may present themselves during the process.

For Step 2, participants from local public health system partners, other community organizations, and community residents are identified and recruited. It is important that participants' expectations, time commitments, and logistics are clear since these determine the way in which to best organize the group. Likewise, there may be subcommittees that are formed to work on specific activities in conjunction with the MAPP Committee, such is the case with PATH (NACCHO, 2001, 2004).

Step 3 entails designing the planning process by considering four questions: "What will the process entail?," "How long will it take?," "What results are we seeking and how will we know when we are finished?," and "Who will do the work?" Consequently, all of the MAPP phases should be carefully reviewed and utilized to develop a timeline and workplan to most efficiently meet the community's needs and concerns (NACCHO, 2001, 2004).

Step 4 in the first MAPP phase involves identifying and assessing resource needs (e.g., staffing, meeting space, refreshments, report production and printing, and costs associated with information gathering and data collection) and securing participant commitment. Oftentimes, resource needs can be met via in-kind donations from organizations involved in the MAPP process (NACCHO, 2001, 2004).

In Step 5, a readiness assessment is conducted based on the information that is revealed in the previous four steps. The readiness assessment should serve as a final review and ensure that all of the necessary elements are in place for the MAPP process to begin (NACCHO, 2001, 2004).

Finally, Step 6 involves managing the process, including paying attention to the numerous details affecting the community planning process (i.e., meeting and conference logistics, coordinating schedules and activities, circulating materials for review, and clarifying assignments) by developing a project proposal, master calendars, and meeting agendas, as well as clarification of assignments and outlining the administration of the work. A common structure that balances participation and manageability is the establishment of a smaller support group (the core support team) and a larger planning committee (the MAPP Committee) (NACCHO, 2001, 2004).

Visioning.

The second phase of the MAPP process is the visioning process that results in a shared community Vision and common Values. The community Vision and Values Statement provides focus, purpose, and direction to the MAPP process to ensure that all participants share the same vision for their community for the future. Visioning is performed at the beginning of the MAPP process and provides a sense of enthusiasm for the process, sets the stage for planning, and provides a common framework for the proceeding phases and for pursuing long-term community goals to achieve the ideal healthy community.

During this particular phase, community leaders, organization members, stakeholders, and community members answer the following key questions: “What does a healthy community look like?”, “What are the characteristics of a healthy community?”, and “What would we like

our community to look like in the next five to ten years?” These questions can, of course, be tailored to meet a specific community’s needs and to enable community ownership or can be more broadly formulated (NACCHO, 2001, 2004).

There are five individual steps to the visioning phase of MAPP. In Step 1, the MAPP Committee reviews other community efforts that may have involved a visioning effort. If there was a previous visioning process, it is crucial to connect that vision with the MAPP process (NACCHO, 2001, 2004).

Step 2 involves designing the visioning process and selecting a facilitator. There are two possible ways to conduct the visioning process and determination of the best approach should be based on specific community needs and capacity: (1) A community visioning activity that involves 40-100 participants and is useful for engaging and mobilizing the overall community. However, community visioning is difficult to manage and may require more human and physical resources to implement. (2) An advisory committee/key leadership visioning activity that includes members of the MAPP Committee and other community leaders who develop a common vision. Although this approach is generally easier to manage and requires fewer resources than a community visioning activity, there is not a broad range of involvement among community members. Once either approach is chosen, a small group is responsible for preparing the visioning sessions, identifying and working with the facilitator, recording the results of the sessions, and drafting the Vision Statement (NACCHO, 2001, 2004).

Next, in Step 3, the visioning process is conducted through brainstorming and open discussions. During Step 4, a small, previously-selected group of individuals will formulate the vision and values statements based on the outcomes of the visioning session. The Vision

Statement should powerfully represent the ideal future that is determined during the visioning process, and the Values Statement should emphasize a positive climate as well as supportive behaviors that contribute to ultimately achieving the Vision. The final Vision Statement should be easy to read, understand, and remember, should be written in future tense, and should also be compelling, motivational, and inspirational (NACCHO, 2001, 2004).

Finally, for Step 5, throughout the remaining steps of the MAPP process, the Vision Statement should be the directing force and drive the MAPP effort. In order to keep the Vision and Values Statements at the forefront of the process, it is helpful to include reading the statements at meetings or including them on informational materials. Furthermore, it is important to note that the Vision and Values Statements can be revised at any time during the MAPP planning process (NACCHO, 2001, 2004).

Four assessments.

The four MAPP Assessments form the core of the MAPP process, and results from these assessments ultimately drive the identification of strategic issues and activities of the local public health system and the community for many years. Therefore, it is important to ensure their effective implementation with broad-based participation. It is important to note that only the collective analysis of all four MAPP Assessments will yield a complete picture of the community (NACCHO, 2001, 2004).

Local public health system assessment (LPHSA).

The LPHSA focuses on all organizations and entities within the community that contribute to the public's health by delivering public health services—including all public, private, non-profit, and voluntary organizations, as well as individuals and informal associations.

More specifically, the LPHSA answers the questions, “What are the components, activities, competencies, and capacities of our local public health system?” and “How are the Essential Services (EPHS) being provided to our community?” The dialogue that occurs in the answering of these questions helps identify strengths and weaknesses and determine opportunities for improvement (NACCHO, 2001, 2004).

Results from the NPHPSP assessments are used towards quality and performance improvement. By measuring the capacity and performance of the local public health system, the results from the NPHPSP local instrument provide MAPP communities with a comprehensive picture of EPHS provision in their localities. Within a MAPP process, the NPHPSP assessment fosters local public health system communication and cohesion, confirms or challenges the results of the other assessments, and provides a benchmark for public health practice improvements. Additionally, because MAPP is a flexible and iterative process, NPHPSP users can easily transition from the NPHPSP assessment into a MAPP process (NACCHO, 2001, 2004; Public Health Functions Steering Committee, 1994; www.cdc.gov/od/ocphp/nphpsp/index.htm).

The LPHSA uses the EPHS as the fundamental framework for assessing the local public health system. The ten EPHS include: (1) Monitor health status to identify community health problems; (2) Diagnose and investigate health problems and health hazards in the community; (3) Inform, educate, and empower people about health issues; (4) Mobilize community partnerships to identify and solve health problems; (5) Develop policies and plans that support individual and community health efforts; (6) Enforce laws and regulations that protect health and ensure safety; (7) Link people to needed personal health services and assure the provision of health care when otherwise unavailable; (8) Assure a competent public health and personal

health care workforce; (9) Evaluate effectiveness, accessibility, and quality of personal and population-based health services; and, (10) Research for new insights and innovative solutions to health problems. Using local public health performance model standards and measures for all of the ten EPHS to assess the local public health system's capacity and performance, the LPHSA provides a comprehensive picture of the work of a local public health system (NACCHO, 2001, 2004; Public Health Functions Steering Committee, 1994).

There are essentially three steps in conducting the LPHSA. In Step 1, a lead or coordinating group, organization, or subcommittee, as well as facilitators and recorders, are identified to oversee the process. These individuals review the LPHSA steps and tools to gain an understanding of the format and content and to determine how each step will be implemented. During this step, representatives can also be identified and selected from organizations that contribute to the delivery of public health services and to the health of the community (i.e., existing coalitions or community committees, healthcare providers, health and human service providers, environmental organizations, community-based organizations, the business community, the faith community, citizens, etc.) (NACCHO, 2001, 2004).

In Step 2, the participants are oriented to the process and the standardized LPHS Performance Assessment Instrument, and then they complete the standardized Instrument. The Instrument provides two to four indicators or activities (Model Standards or descriptions of the "gold standard" for public health activities) under each EPHS. Responding to the questions related to each indicator gives participants a good idea of the activities, capacities, and performance of the local public health system. Through discussions, participants will need to

identify one set of consensus responses to the Instrument. After discussions are completed, responses to the LPHSA Performance Assessment Instrument are submitted to CDC on-line for evaluation, and a summary report is generated (NACCHO, 2001, 2004).

Finally, in Step 3, participants discuss the results and categorize the indicators (from the performance measures instrument) into a list of 10 - 15 challenges and opportunities that the local public health system can then plan to address. Overall, this Assessment process will identify opportunities for collaboration, gaps in service provision, and overlapping activities based on the EPHS as applied to the respective local public health system (NACCHO, 2001, 2004).

There are several options (or a combination of options can be used) for structuring the LPHSA discussions to attain maximum participation without being burdensome to participants. One option is to hold a day-long “retreat” where the assessment is done in one sitting. This option requires a shorter time-frame, but may seem overwhelming and require more time commitment from the participants. Another option is to use small groups to address specific sections of the LPHS Performance Assessment Instrument (e.g., a group to address EPHS 1, 2, and 3). This option allows for the inclusion of expertise, as needed, and is less overwhelming. However, it can decrease cross-learning, a benefit of this Assessment, and can result in less consistency in developing responses. If this approach is used, it is important to have a kick-off process and orientation that helps ensure consistency in the manner that groups approach the process. A third option is to have a series of meetings where one or more EPHS are addressed at a time. With these meetings, a core group can be garnered to ensure a consistent process and

cross-learning, and individuals with specific expertise can be invited to specific meetings as needed. However, this process can be tedious to some participants and result in inconsistency in participation (NACCHO, 2004).

Additionally, there are several ways (or a combination of these) to structure discussions about the LPHS Performance Assessment Instrument and identify consensus responses in a timely and efficient manner, allowing for open discussions. One option—that is methodical--entails walking through the Instrument and questions one by one; however, this can seem tedious to participants. Another option allows participant discussion of the 32 Model Standards with the facilitator/recorder ensuring that the discussion is for a set period of time (e.g., 10 minutes) and hits all of the key points addressed in the model standard, and ultimately, making judgments on the responses to the questions based on the discussion. Because the discussion remains focused more on content than the process of identifying a response, this option may maintains participants' interest at a higher level. A third option involves providing participants with the full instruments, discussing each model standard for a set period of time, and voting using color-coded cards or raised hands on the response to each question. Further discussion can occur where there is disparity in responses (NACCHO, 2001, 2004).

Community themes and strengths assessment.

The first of four assessments to provide insight into any challenges and opportunities in the community, this assessment provides an understanding of the issues that residents feel are important by answering questions such as “What is important to our community?”, “How is quality of life defined and perceived in our community?”, and “What assets do we have that can be used to improve community health?” During this phase, community thoughts, concerns, and

opinions are utilized to determine the issues that are most important to the community. Feedback regarding quality of life in the community and community assets also is gathered, and that reveals crucial information from the residents' perspectives (NACCHO, 2001, 2004).

Benefits derived from this phase are that community members and participants develop a sense of ownership in (i.e., their concerns are an integral part of the process) and responsibility for the outcomes of the MAPP process. Impressions and thoughts of community residents provide the foundation for determining key issues and solutions to the community's current issues that can further offer insight into other assessment findings and lead to greater sustainability and enthusiasm throughout the process (NACCHO, 2001, 2004).

There are five main steps related to the community themes and strengths assessment. In Step 1, preparation is made for the Assessment by identifying necessary resources and individuals (especially those proficient in qualitative data collection) and by determining the most effective approaches for gathering community perspectives such as via community meetings, community dialogue sessions, focus groups, walking or windshield surveys, individual discussions/interviews, or surveys. A subcommittee can be established to oversee this particular phase of the MAPP process and to be responsible for selecting a variety of approaches in order to most effectively reach the broader community population, including low-income and uninsured/under-insured residents. For Step 2, the subcommittee implements information-gathering activities by identifying groups or individuals whose voices are not being heard in the community and determining how, when, and where the meetings are held with appropriate publicity to encourage the most diverse and broadest community participation possible (NACCHO, 2001, 2004).

During Step 3, the subcommittee compiles results of the Community Themes and Strengths Assessment. The subcommittee maintains a working list of ideas, comments, quotes, and themes as the activities are implemented and should also note possible solutions to identified problems or novel ideas for providing public health services--all of which are compiled into a master list. In Step 4, the key findings of the Assessment are summarized. This summary will be used for reporting back to the MAPP Committee and for guiding work during the Identify Strategic Issues phase (NACCHO, 2001, 2004).

Finally, in Step 5, the subcommittee members ensure that community involvement and empowerment is sustained. While an established timeline for focus groups and surveys continues to be followed, ongoing dialogue among community members is encouraged. These same community members will continue their involvement throughout the remaining phases of the MAPP process (NACCHO, 2001, 2004).

Community health status assessment (CHSA).

The CHSA answers the questions, “How healthy are our residents?” and (2) “What does the health status of our community look like?” This assessment provides the MAPP Committee with an understanding of the community’s health status, quality of life, and risk factors and ensures that the community’s priorities consider specific health status issues, such as low immunization rates. This assessment serves as the foundation for analyzing and identifying community health issues, as well as identifying changes over time among specific population groups, and determining where the community stands in relation to peer communities, as well as state and national data. There are 11 broad-based categories for which the CHSA provides a list of core indicators (data elements). These include demographic characteristics; socioeconomic

characteristics; health resource availability; quality of life; behavioral risk factors; environmental health indicators; social and mental health; maternal and child health; death, illness, and injury; infectious disease; and, sentinel events (NACCHO, 2001, 2004).

There are five steps in conducting the CHSA. In Step 1, a subcommittee is designated to oversee the CHSA. Key players on the CHSA subcommittee should include individuals with access to data and data collection, analysis, and interpretation skills. It is also important to note that members of this subcommittee will need to help provide epidemiological analyses of data and facilitate community ownership of the completed health profile. Since it is critically important that the data be monitored long-term, a number of subcommittee members should be selected for continued participation in future years (NACCHO, 2001, 2004).

Once the CHSA subcommittee is assembled, Step 2 entails collection of data for the MAPP core indicators on the CHSA indicator list—including trend, national comparison, and peer community data. Also, it is important to identify and collect data on locally-appropriate indicators (those of high priority and relevance) that help to better describe the community's health status and quality of life in ways that are of particular interest to the community. Much of this data may be found and collected from already existing local or state databases and from previously conducted health assessments or reports from the health department, community coalitions, hospitals, and other organizations (NACCHO, 2001, 2004).

In Step 3, the data is organized and analyzed, a compilation of the findings is developed, and the information is disseminated. Individuals with skills in analyzing and interpreting the data (at a minimum, demographic, socioeconomic, and mortality measures should be evaluated) then note disparities among age, gender, racial, and other population subgroups in order to develop a usable, meaningful, and understandable community health profile that includes visual

aids, such as charts and graphs. The compiled data is then proactively disseminated and shared with the community in a variety of ways such as through the media, presentations in the community, or grassroots efforts (NACCHO, 2001, 2004).

Step 4 entails the creation of an indicator monitoring system over time. In this step, the subcommittee establishes a system for monitoring selected indicators in order to ensure that baseline data is provided upon which future trends can be identified and compared, as well as identifying the results of the MAPP process and evaluating its success. Finally, in Step 5, challenges and opportunities related to health status are identified (NACCHO, 2001, 2004).

The CHSA should result in a list of challenges and opportunities related to the community's health status, and findings should be reviewed to identify challenges (e.g., low seatbelt use) and opportunities (e.g., increased yearly breast exams). A final list of 10-15 community health status issues will be further examined in the *Identify Strategic Issues* phase of MAPP (NACCHO, 2001, 2004).

Forces of change assessment.

Legislation, technology, and other issues affecting the manner in which the community and its public health system operate—and ultimately affecting the health and quality of life of the community—are the main foci of this assessment. More specifically, this assessment considers the trends in the community, such as migration into or out of the area; factors, such as a community's large ethnic population; and, one-time events, such as a hospital or factory closure—and their impact. Any and all types of forces should be included such as social, economic, political, technological, environmental, scientific, legal, and ethical. The following

questions are answered during the Forces of Change Assessment: “What is occurring or might occur that affects the health of our community or the local public health system?” and “What specific threats or opportunities are generated by these occurrences?” (NACCHO, 2001, 2004).

There are three steps in conducting the Forces of Change Assessment. In Step 1, a small group should be assigned to oversee and determine the process for the assessment. Step 2 involves convening a brainstorming session that is facilitated and structured for idea sharing, identification of forces of change, and development of a comprehensive list of new forces. In Step 3, participants identify threats and opportunities for the community and the local public health system associated with each force. The final list is then put on hold until the Identify Strategic Issues phase (described next) (NACCHO, 2004).

Identify strategic issues.

After challenges and opportunities are determined from each of the four assessments, it is important to identify *Strategic Issues*. Strategic Issues are defined as those fundamental policy choices or critical challenges that must be addressed in order for a community to achieve its vision. This phase entails four steps: (1) reviewing/discussing MAPP findings and brainstorming potential strategic issues, (2) developing an understanding about why an Issue is strategic and determining the consequences of not addressing an issue, and (3) consolidating overlapping or related Issues, and (4) arranging issues into an ordered list (NACCHO, 2001, 2004).

In Step 1, participants identify linkages between the most compelling findings of the MAPP assessments in order to determine the Strategic Issues. After reviewing the shared vision, common values, and results of the four MAPP Assessments, participants pose the question,

“What factors identified in the assessments must be addressed in order to achieve the Vision?”

Participants then attempt to identify where results overlap, and each potential Strategic Issue should be phrased as a question (NACCHO, 2001, 2004).

During Step 2, participants discuss each issue until they understand why it is strategic and separate from other problems that may be operational in nature or more easily remedied.

Participants must understand the Issues in order to make decisions about how to address them by asking, “What are the consequences of not addressing this?” Posing this question will determine whether or not action is required, as failure to address strategic issues could be detrimental to the community (NACCHO, 2001, 2004).

Step 3 entails participants examining all of the issues and narrowing them to no more than 12 Strategic Issues. Finally, in Step 4, a numerical list of the Strategic Issues to be addressed first should be composed, as well as a timeline for addressing the list of Issues (NACCHO, 2001, 2004).

Formulate goals and strategies.

Following the identification of the Strategic Issues, participants then formulate Goals (what is to be achieved?) and Strategies (what action is needed?) for addressing each Issue.

Goals provide a common understanding and direction of the expected end result(s), and *Strategies* communicate the direction that the community will move toward. These serve to connect the current community’s situation and the future Vision for the community. This phase encompasses three steps: (1) developing Goals and identifying Strategies, (2) considering barriers and implementation details, and (3) selecting Strategies and writing the Planning Report (NACCHO, 2001, 2004).

In Step 1, small groups of participants determine how the Strategic Issues are linked to the Vision, develop Goals for each of the Strategies, and identify specific Strategies for achieving the selected Goals and fulfilling the community Vision. It is important to note that several Strategies should be listed and build upon strengths and opportunities, with consideration of the threats associated with the Strategic Issues (NACCHO, 2001, 2004).

Next, in Step 2, obstacles to implementing the Goals and Strategies (e.g., insufficient resources, lack of community support, legal or policy issues, and technological difficulties) should be considered. Participants then discuss implementation issues and details related to each Strategy such as activities, timelines, participation, and resources (NACCHO, 2001, 2004).

In Step 3, participants select the best Strategy Alternatives to be adopted and present them in a draft Planning Report to be presented to the community. This Planning Report serves as an outline of the broad, strategic course of action where the community has reached consensus; it is not an implementation plan (NACCHO, 2001, 2004).

Action cycle.

During this final phase of MAPP, participants are involved in three key activities: planning for action (determining what will be done, who will do it, and how it will be done), implementing (completing the activities identified in the planning stage), and evaluating (determining what has been accomplished)--activities that build upon one another in a continuous and interactive manner to ensure continued success. Each of these key activities is composed of two to four steps (NACCHO, 2001, 2004).

Planning for action encompasses three steps. In the first step, organizing for action, a subcommittee of key players in the MAPP process is assigned to oversee the implementation and evaluation of activities. Participants then develop measurable Outcome Objectives for the identified Strategies and agree on accountability or responsibility for each Objective. Outcome Objectives are then discussed and “translated” into specific Action Plans to be carried out by participants (e.g., organization-specific or group of organizations) and may include specific activities, timeframes, and necessary resources (NACCHO, 2001, 2004).

Next, implementation entails two steps. Participants review the Action Plans and group activities to coordinate the use of limited community resources. Each MAPP participant is responsible for implementing at least one Strategy and decides if other organizations or individuals should be involved to more effectively implement the Strategies (NACCHO, 2001, 2004).

Evaluation has four steps. First, an evaluation of the entire MAPP process and each Strategy should be conducted, with consideration of which stakeholders need to be involved. Evaluation design is the next step and includes the questions that the evaluation will answer, the process for answering these questions, the methodology to be used in collecting answers, a Plan for carrying out the evaluation activities, and a strategy for reporting the results of the evaluation. Then, in the next step, MAPP participants collect credible data to answer the evaluation questions, and the evaluation team decides what the data indicate (e.g., whether the activity did what it set out to do, its effectiveness, etc.) and provides a justification for their conclusions. Finally, the evaluation results--that can be used to create new Strategies and activities and pinpoint successes and positive results--are used and shared with others (NACCHO, 2001, 2004).

Summary

MAPP--one of the most recent planning models/tools that brings strategic thinking and a systems orientation into public health planning and practice--was developed from 1997 to 2001 by NACCHO in collaboration with CDC. Its development relied heavily on a long history of LPHA planning that had evolved over 50 years from the earliest problem/program-focused planning to more comprehensive approaches like PATCH and APEX-PH, and finally to present day strategic planning. Additionally, the federally-sponsored health planning of the 1960s and 1970s strongly influenced public health planning as it evolved. Every phase of MAPP development was practice-driven with ongoing input from the field and careful attention to research/literature, and deliberately coordinated with associated efforts. The result is a model and tool that is well-grounded in research and practice, and it is also practical and useful for communities to use to improve their own health. The NPHPS, a component of MAPP, was also developed as a national consensus framework in a practice-driven manner with extensive field-testing and numerous revisions. This set of national performance standards helps measure how effectively public health systems deliver the EPHS.

The current study was designed to implement MAPP in the NRV of Virginia to demonstrate how the community, including the LPHS, can be mobilized to improve its holistic health. The MAPP model/tool has been implemented across the U.S. (e.g., Columbus, OH; Lee County, FL; Mendocino County, CA; Nashville, TN; Northern Kentucky; San Antonio, TX); however, the current process represented one of the initial implementations of MAPP in Virginia and in southwest Virginia. The principal investigator's hope is that other communities in Virginia and across the U.S. will also utilize MAPP to assist in determining and addressing their communities' most pressing health issues and needs.

Chapter 3

Methodology

Study Setting

The selected site of the present assessment is the New River Health District (New River Valley [NRV] or Planning District IV) that encompasses the counties of Floyd, Giles, Pulaski, and Montgomery, and the city of Radford.

Framework of the NRV Needs Assessment and Strategic Planning Process

The specific framework utilized for this community needs assessment and strategic planning process was MAPP--a comprehensive, multi-component, strategic planning model and tool--developed by NACCHO and CDC in 2001 (NACCHO, 2001, 2004). The MAPP tool was implemented in its entirety to mobilize the NRV community to prioritize public health issues, identify resources to address those issues, and effect actions for improving the public health (health status, health services provision, and quality of life) of NRV residents.

The MAPP process is comprised of six Phases (with one Phase that includes four Assessments):

- **Phase 1: Organize for Success/Partnership Development**—lead organization(s) organize themselves, recruit participants, and prepare to implement MAPP; answers the following questions: “*What will the process entail?*”, “*How long will it take?*”, “*What results are we seeking and how will we know when we are finished?*”, and “*Who will do the work?*”;

- **Phase 2: Visioning**—development of a shared community Vision and common Values that will be used to pursue long-range goals; answers the questions: “*What does a healthy NRV mean to you?*”, “*What are the characteristics of a healthy community?*”, and “*Where do you see the local public health system in the next five to ten years?*”;
- **Phase 3: Four MAPP Assessments:**
 - ***Local Public Health System Assessment (LPHSA)***—measures the capacity and performance of the local public health system (all organizations and entities that contribute to the public’s health); answers the questions, “*What are the components, activities, competencies, and capacities of the NRV local public health system?*” and “*How are the Ten Essential Services (ESPH) being provided to in the NRV community?*”;
 - ***Community Themes and Strengths Assessment***—identifies issues that interest the community, perceptions about quality of life, and community assets; answers the following questions: “*What is important to the NRV community?*”, “*How are quality of life and the local health care system perceived by NRV community residents?*” and “*What assets does the NRV community have that can be used to improve community health?*”;
 - ***Community Health Status Assessment (CHSA)***—assesses data about health status, quality of life, and risk factors in the community; answers the questions, “*How healthy are NRV residents?*” and “*What does the health status of the NRV community look like?*”; and

- ***Forces of Change Assessment***—identifies forces that are or will be affecting the community or the local public health system; answers the questions “*What is occurring or might occur that affects the health of the NRV community or the local public health system?*” and “*What specific threats or opportunities are generated by these occurrences?*”
- **Phase 4: Identify Strategic Issues**—determine the most critical issues for the community to address in order to achieve its vision from the results of the assessments; answers the questions: “*What factors identified in the assessments must be addressed in order to achieve the vision?*” and “*What are the consequences of not addressing this?*”;
- **Phase 5: Formulate Goals and Strategies**—for each of the strategic issues; answers the following questions: Goals—“*What do we want to achieve by addressing this strategic issue?*” and Strategies—“*How do we want to achieve it?*”, “*What action is needed?*”;
- **Phase 6: Action Cycle**—participants plan for action (determining what will be done, who will do it, and how it will be done), implement (carrying out the activities identified in the planning stage), and evaluate (determining what has been accomplished).

Each phase influences the next in a cyclical manner (NACCHO, 2001, 2004).

Research Design

The principal investigator partnered with PATH and a graduate student, Kemp, to conduct an approximate two-year long community-wide and community-driven needs assessment and strategic planning process in the NRV. This mixed-method study, a concurrent triangulation design strategy—utilizing the MAPP model/tool--entailed a variety of qualitative and quantitative research techniques (e.g., primary and secondary data collection, Key Informant Interviews/Discussions [with both opinion leaders and key informants in the NRV], Focus

Groups, Survey questionnaires, Expert Work Groups) (see Figure 13). The MAPP framework suggests incorporating a range of methods to gather information and data for assessing the community's needs and developing a strategic plan to address those needs that include community meetings and dialogues; face-to-face interviews; Focus Groups; Key Informant interviews/discussions; windshield/walking Surveys; and written/telephone/in-person Surveys.

Johnson and Onwuebuozie (2004) define mixed methods research as “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (p. 17). This research approach capitalizes on the strengths of each method to answer specific research questions and is very helpful in systematically studying issues and problems to improve a community's health or practice (McMillen, 2008, chap. 12). Researchers that gain an understanding of the strengths and weaknesses of qualitative and quantitative research can combine strategies using what Johnson and Turner (2003) called the “fundamental of mixed research.” According to this principle, researchers can collect multiple data using different strategies, approaches, and methods in such a way that the resulting combination is likely to result in complementary strengths and non-overlapping weaknesses (Brewer & Hunter, 1989; Johnson & Onwuebuozie, 2004).

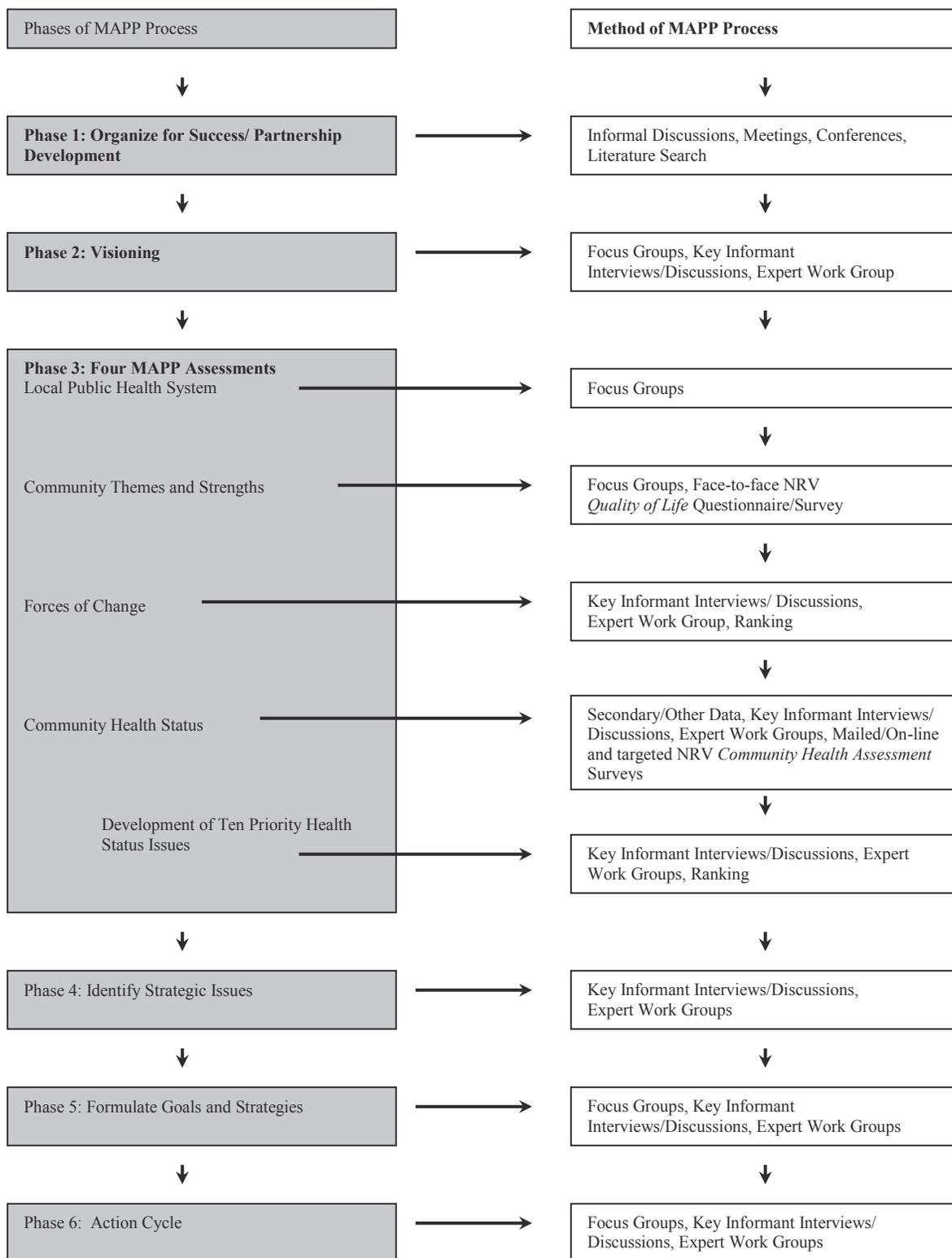


Figure 13. Flow Chart of Different Methods Used in the Six Phases of the MAPP Process

Initial efforts of the NRV MAPP process focused on collecting a variety of qualitative and quantitative data from a broad range of organizations and individuals to explore the issues from a wide range of perspectives, as well as focusing on populations with barriers to the health care system, particularly the under-/uninsured. A literature search/review was conducted by the principal investigator in Phase 1 to collect and analyze qualitative and quantitative information and data about the main health-related and other public health problems/issues in the NRV community and in other rural areas of the U.S. (e.g., health status, quality of life, and risk factors), and to obtain information/data from previous NRV needs assessments and other secondary sources of community health-related findings. During Phase 1, informal discussions, meetings, and conferences were held with over 80 colleagues and acquaintances--including Heidi Deutsch and Julia Joh, MAPP Program Managers at NACCHO--to gather additional background information and ideas for planning the approach for MAPP in the NRV.

Key Informant Interviews/Discussions of 163 representatives (including the PATH Steering Committee) from education, healthcare providers, health and human services agencies, faith communities, business, local governmental and elected officials, and the general public were conducted as part of Phase 2 to obtain additional input in developing a shared vision and common values; Phase 3: Forces of Change Assessment, to identify forces that affect the context in which the community and public health system operates; Phase 3, Community Health Status Assessment, to identify ten Community Health Status Issues (challenges and opportunities related to health status) in the NRV, and in Phase 4 and Phase 5, to identify Strategic Issues and formulate Goals and Strategies.

Focus Groups involving 192 representatives from education, healthcare providers, health and human services agencies, faith communities, business, local governmental and elected officials, and the general public were utilized in Phase 2 (Visioning); Phase 3 for the Community Themes and Strengths and Local Public Health System Assessments; and Phase 5 to formulate Goals and Strategies. Face-to-face interviews, as well as Mailed/On-line and targeted Surveys/Questionnaires, were also used in Phase 3 for the Community Themes and Strengths and Community Health Status Assessments.

The PATH Steering Committee also served as an Expert Work Group and reviewed the qualitative and quantitative data to formulate a proposed Vision for Phase 2, a proposed list of Forces of Change in Phase 3, a proposed list of ten Community Health Status Issues (challenges and opportunities related to health status) from the NRV *Community Health Assessment* data in Phase 3, and to identify and refine the Strategic Issues, Goals, and Strategies in Phase 4 and 5. An Expert Work Group from NACCHO—Heidi Deutsch, MAPP Program Manager, and her team member, Jonathan Schwartz—also reviewed qualitative and quantitative data from the Community Health Status Assessment in Phase 3 making suggestions about a proposed list of Community Health Status Issues and, ultimately, from all four Assessments in Phase 3 to identify and propose possible Strategic Issues for Phase 4. Another Expert Work Group (Georgetta Solomitchi-Lester, Graduate Student, Center for Public Administration and Policy; Karen Callahan, Retired Academic Statistician; and Mary Beth Dunkenberg, Senior Program Director, Virginia Tech Institute for Policy and Governance) provided a more detailed analysis of some of the data obtained in Phase 3 from the Mailed/On-line and targeted (African-American Churches and Senior Centers) NRV *Community Health Assessment* Surveys.

The principal investigator summarized all the data obtained in the Community Health Status Assessment in Phase 3, as well as the data and information attained in Phase 2 (Visioning) and all four Assessments in Phase 3. Ultimately, Focus Groups, Key Informant Interviews/Discussion, and Expert Work Groups will be utilized in Phase 6: The Action Cycle for planning, implementation, and evaluation.

Audrey J. Kemp, a Virginia Tech graduate student of Dr. Kerry Redican (School of Education, Department of Curriculum and Instruction), served as the lead for a more focused study involving one of the four MAPP assessments in Phase 3, the Community Themes and Strengths Assessment. After a pilot study, Kemp obtained qualitative data via 28 face-to-face interviews utilizing a series of open-ended questions from four interview groups in Blacksburg and Christiansburg (Montgomery County), Floyd County, and Giles County. Her dissertation and complete findings of this targeted investigation, *Quality of Life and the Health Care System in New River Valley, Virginia: Residents' Perceptions and Experiences* dated March 17, 2008 can be found at <http://scholar.lib.vt.edu/theses/available/etd-04032008-141550/>.

To complete the Phase 3, Community Themes and Strengths Assessment, for the entire NRV, this principal investigator collected additional qualitative data via 30 face-to-face interviews using the same series of open-ended questions from five additional interview groups representing Radford City and Pulaski County (five employees from Radford City Department of Social Services, four clients from Radford City Health Department, three NRHD employees living in Radford, ten Pulaski County Health Department clients, and eight NRHD employees living in Pulaski). The interview groups were categorized according to the locality in which the interviewees resided.

The research design for Phase 3, Community Themes and Strengths Assessment, utilized Kemp, the principal investigator, and three trained volunteer teams (retired senior volunteers, Radford University nursing students, and two interns from the Virginia Rural Health Resource Center) as the main instruments of data collection, and the interviewees were the primary sources of data. In previous studies (e.g., Arcury et al., 2005a, 2005b; Ayanian et al., 2000; Beem, Machala, Holman, Wraalstad, & Bybee, 2004; Berndt, Hevner, & Studnicki, 2003; Borders et al., 2004; CFRHC, 2005; Davis, 2004; Dennis & Pallotta, 2001; Eberhardt & Pamuk, 2004; Glasser et al., 2003; Huttlinger et al., 2004; Jensen & Royeen, 2002; Lee et al., 2003; Roux, 2001; Scariati & Williams, 2007), scholars found that the under-/un-insured population was most often served by government-subsidized public health agencies and non-profit organizations. Therefore, the most appropriate locations in which to conduct interviews in the NRV included local Free Clinics, Senior Centers, community agencies serving low-income individuals (e.g., New River Community Action [NRCA], Virginia Insurance Counseling and Assistance Program [VICAP], Retired and Senior Volunteer Program [RSVP], Health Departments, Social Services), and African-American Churches. The interviews were open to any volunteer interviewees; however, Kemp, this principal investigator, and PATH membership had a primary interest in hearing from populations with barriers to the healthcare system, particularly the under-/un-insured, as well as from African-Americans and senior citizens in the NRV.

Merriam (1998) stated that data collection in qualitative research involves three strategies: interviewing, observing, and analyzing documents. However, usually one of two methods of data collection predominates the others. For this particular Phase 3, Community Themes and Strength Assessment, the primary procedure for data collection was personal interviews. Merriam (1998) further emphasized that qualitative research primarily employs an

inductive research strategy, which builds concepts, hypotheses, or theories, rather than testing existing theories. Following Merriam's expertise, data in Phase 3, Community Themes and Strengths Assessment, was collected from community citizen's own words and by observing the participants to support findings of the study. Grounded theory, a qualitative research methodology, was also utilized in this phase to reveal the actual perceptions of participants interviewed regarding the quality of life, local health care system, and important issues in their respective communities. Glaser and Strauss (1967) introduced grounded theory as a systematic method to uncover significance from data. Grounded theory also provides the researcher with strategies to build theories within under-/unexplored areas (Byrne, 2001a, 2001b, 2001c, 2001d).

Sample

Primary data for this study was collected using several sampling methods/sources.

A non-probability sampling procedure—purposeful typical case sampling—was used to recruit a total of 63 participants at both MAPP retreats (June 14, 2007 and May 21, 2009) for Phase 2: Visioning, Phase 3: LPHSA, and Phase 5: Formulate Goals and Strategies.

In Phase 3, the Community Themes and Strengths Assessment, the qualitative sample ($N = 58$) was recruited via a non-probability sampling technique--convenience sampling--of staff and clients at local Free Clinics, Senior Centers, African-American Churches, and Community Agencies serving low-income individuals (e.g., RSVP, NRCA, VICAP, Radford City Department of Social Services [DSS], and local Health Departments in the New River Health District [health department staff living in Pulaski County and Radford City; clients of Pulaski County and Radford City health departments]). Participants were from various economic strata, education levels, employment status, physical and mental health, sex, age, and race within the NRV, Virginia. Interviewees were arbitrarily selected during their visit to each site location.

Scholars (e.g., Merriam, 1998; Patton, 1990) suggest that qualitative research is better served by non-probability sampling. The selected interviewees were those voluntarily willing to answer the interviewer's open-ended questions after being presented with a brief overview of the study's purpose and nature of the questions. The actual sites to conduct the face-to-face interviews were determined by input from the principal investigator, Kemp, the PATH Steering Committee, and PATH membership. Kemp and the principal investigator—as well as PATH members--desired to reach the under-/uninsured population, as well as insured individuals with healthcare service access issues.

Alternatively, in Phase 3, the Community Health Status Assessment, the quantitative sample consisted of 563 completed Surveys from a total of 2,500 Mailed single-step or cross-sectional Surveys sent to a random sample of residents throughout the NRV, as well as 34 completed Surveys targeted to and obtained from African-American Church members and 60 completed Surveys targeted to and obtained from members of Senior Centers in the NRV. The respondents had the ability to complete the Survey by hand or on-line. Nine of the 563 completed Surveys were completed and returned On-line. Processes in Phase 3 for both the Community Themes and Strength Assessment and the Community Health Status Assessment were anonymous and voluntary, and no identifying information was requested at any time during the interviews. However, all survey respondents could voluntarily provide their mailing address without their name at the end of the survey, which would be placed in a raffle for one of eight \$100 gift cards to Wal-Mart.

Triangulation in the MAPP Process

Triangulation was used to improve confidence in the NRV MAPP process (needs assessment and strategic planning) findings. Three types of triangulation including data source triangulation (multiple sources of data), researcher triangulation (multiple investigators), and methods triangulation (multiple methods) were used in this study (McMillan, 2008; Merriam, 1998; Moran-Ellis, 2006; O’Cathain, Murphy & Nicholl, 2007; Veronica, 2001; Ying, Jia, Hui, Daikun, Yang, & Jia, 2009).

First, in data source triangulation, a broad range of qualitative and quantitative data regarding the main health-related and other public health problems/issues in the NRV community and in other rural areas of the U.S. (e.g., health status, quality of life, and risk factors), as well as previous NRV needs assessments/findings, were collected, analyzed, and reviewed through a literature search (in Phase 1). Also, numerous qualitative and quantitative secondary community health data sources (e.g., demographic, socioeconomic, morbidity/mortality, and other vital statistics from VDH, CDC, local organizations, etc.) were accessed and analyzed (in Phase 3). The main health-related and other public health problems, issues, forces, and risk factors that interest and affect the NRV community and its local public health system, perceptions about quality of life and community assets, and the capacity and performance of the local public health system were investigated by Ranking, Focus Group discussions, Key Informant Interviews/Discussions, and face-to-face, mailed/on-line, and targeted questionnaire/Surveys (in Phase 3).

Secondly, triangulation of qualitative and quantitative methods (see Figure 13) can provide complementary data, which can assure research integrity and rigor (Steckler, McLeroy, Goodman, Bird, & McCormick, 1992; Weinreich, 2009;

http://en.wikipedia.org/wiki/Multimethodology#Mixed_methods_research;

http://www.articlealley.com/article_185975_22.html). Focus Group discussions were used to assess the capacity and performance of the local public health system, and Focus Group discussions using an open-ended questionnaire Survey were conducted to identify issues that interest the community, perceptions about quality of life, and community assets. Key Informant Interviews/Discussions were used to identify Strategic Issues (in Phase 4). Focus Group discussions and Key Informant Interviews/Discussions (qualitative research methods) were used to develop a shared community Vision and common Values (in Phase 2), formulate Goals and Strategies (in Phase 5), and in the Action Cycle (Phase 6). Ranking (a participatory research method) and Key Informant Interviews/Discussions (a qualitative research method) were used to identify Forces that are or will be affecting the community or the local public health system (in Phase 3) and the top Priority Community Health Status Issues (in Phase 3). A face-to-face Questionnaire/Survey, as well as mailed/on-line and targeted Surveys (quantitative research methods), were utilized to identify issues that interest the community, perceptions about quality of life, community assets, and to assess data about health status, quality of life, and risk factors in the NRV (in Phase 3).

Thirdly, triangulation of researchers refers to two or more researchers/investigators being employed to carry out the same tasks, such as data collection and analysis, which can reduce bias and increase reliability of results (Frey & Oishi, 1995; McMillan, 2008; Merriam, 1998; Seidman, 1998; Silverman, 1993; Soy, 2000; Veronica, 2001). The principal investigator and Kemp served as the lead investigators of the NRV MAPP study in partnership with the PATH

Steering Committee and PATH membership and utilized the help of trained facilitators, volunteer teams, and Expert Work Groups to gather and analyze the data from the MAPP process as follows:

- The Focus Groups and Key Informant Interviews/Discussions for Phase 2: Visioning and Phase 3: Local Public Health System Assessment were conducted at the 2007 Retreat by trained facilitators (executive health and human service agency staff from the NRV) and Heidi Deutsch, MAPP Program Manager from NACCHO. Additional Key Informant Interviews/Discussions with NRV legislators and governmental officials, representing all localities of the NRV, were conducted by the principal investigator for Phase 2: Visioning. The Phase 3: Local Public Health System Assessment was completed in Focus Group settings using the NPHPSP's Local Public Health System Performance Assessment Instrument. Each Focus Group's final ratings were given to the principal investigator and Kemp who ultimately submitted the data to CDC for analysis and scoring. The principle investigator and Kemp developed a list of overall themes from the 2007 Retreat sessions and, with the help of the PATH Steering Committee serving as an Expert Work Group, further refined those themes into a draft NRV Vision Statement. The draft Vision Statement was further refined and finalized through Key Informant Interviews/Discussions at PATH membership meetings facilitated by the principal investigator.

- The Focus Groups in Phase 3: Community Themes and Strengths Assessment were conducted with a field-tested/pilot-studied open-ended Questionnaire Survey by this principal investigator, Kemp, and three trained volunteer teams (eight retired seniors, Radford University [RU] undergraduate nursing students and their faculty Ph.D. instructor, and a volunteer graduate student intern from the Virginia Rural Health Resource Center). Analysis of the qualitative data obtained from the Focus Groups was done by the principal investigator and Kemp.

- Qualitative and quantitative secondary data for Phase 3: Community Health Status Assessment was collected and analyzed by the principal investigator with the help of Paige Bordwine, NRHD Epidemiologist. Quantitative primary data from the field- studied/pilot-tested NRV *Community Health Assessment* mailed/on-line and targeted Surveys were collected and double entered by the principal investigator, Kemp, and the retired volunteer team. Basic analysis and summary of the Survey data was done by the principal investigator using SPSS 18.1. An Expert Work Group (comprised of a Tech graduate student, Tech senior program director, retired academic statistician) performed selective analyses after some Survey data cleaning that was done by the Expert Work Group and a volunteer team (comprised of a program support technician from the Montgomery County Health Department, the editor of a local newspaper, and two retired senior volunteers).

- All of the qualitative and quantitative data from Phase 3: Community Health Status Assessment was organized and summarized by the principal investigator who facilitated Key Informant discussions/sessions with the PATH Steering Committee and PATH membership. Expert Work Groups—including Heidi Deutsch, MAPP Program Manager (and her MAPP team at NACCHO) and the PATH Steering Committee—examined and analyzed the CHSA data to identify a proposed list of ten Priority Community Health Status Issues for the NRV. Through these Key Informant discussions facilitated by the principal investigator, and with input from the Expert Work Groups, a draft list of ten Priority Health Status Issues was developed. During the 2009 Retreat, additional large group Key Informant discussions facilitated by a Virginia Tech faculty member, revised and ranked the Priority Community Health Status Issues.

- To complete Phase 3: Forces of Change Assessment, the principal investigator facilitated iterative small group Key Informant and an Expert Work Group “brainstorming” sessions/discussions with the PATH Steering to identify the major forces (factors, trends, and events) affecting public health and the NRV community and develop a draft Forces of Change list. This draft list was further refined and finalized during large group Key Informant “brainstorming” sessions/discussions with PATH membership that were also facilitated by the principal investigator.

- Phase 4: Identify Strategic Issues was accomplished by the principal investigator organizing, summarizing, and presenting all the data and major findings from Phase 2 and all four Assessments in Phase 3, and then facilitating iterative small group Key Informant and Expert Work Group “brainstorming” discussions/sessions with the PATH Steering Committee to identify potential Strategic Issues. Another Expert Work Group (Heidi Deutsch, MAPP Program Manager and her MAPP team at NACCHO) was also utilized for an unbiased and objective review and examination of the summary data and to make recommendations of potential Strategic Issues. Ultimately, the principal investigator facilitated large group Key Informant “brainstorming” sessions with the PATH membership to finalize the development of three Strategic Issues.

- Focus Groups, facilitated by a Virginia Tech faculty member and executive/leadership staff from NRV health and human service agencies, were utilized at a 2009 Retreat to formulate Goals and Strategies in Phase 5 of the MAPP process. The principal investigator then drafted a Planning Report (Strategic Issues, Priority Community Health Status Issues, Goals, and Strategies), presented it to the PATH Steering Committee, and facilitated an Expert Work Group discussion/session of the Committee to refine and adopt the Report.

- Phase 6: Action Cycle of the MAPP process entails planning, implementing, and evaluation and will be overseen by the principal investigator and the PATH Steering Committee. This Phase will utilize Focus Groups, Key Informant Interviews/Discussions, and Expert Work Groups.

Procedure

As noted above, MAPP is composed of six phases with phase 3 consisting of four individual assessments. The procedures for each phase will be discussed in detail. The local public health assessment will be discussed out of order and immediately following the visioning phase, as both were performed during a “Kick-Off” MAPP retreat meeting.

Organize for success/partnership development.

Prior to participation in the current MAPP initiative, all 35 local public health agencies (LPHAs) across Virginia, including this principal investigator and his senior staff from the New River Health District, met with Heidi Deutsch and Julia Joh, MAPP Program Managers from NACCHO, who presented an overview of several needs assessment/strategic planning processes/tools—including the MAPP tool—at a VDH statewide meeting in June 2006. Of the processes/tools available, MAPP was selected as the choice to be used because the tool focuses on the entire public health system and emphasizes leveraging the community’s assets through a strategic planning process in order to develop and implement a health improvement plan. MAPP represented a paradigm shift in thinking about public health planning from operational to strategic planning and quality improvement; from a focus on the agency to a focus on the community and the entire public health system; from needs assessment to an emphasis on assets and resources; from a medically or service-oriented model to a model that encompasses a broad definition of health; and from an “agency knows all” perspective to the belief that “everyone

knows something.” MAPP represented the best way of bringing everyone’s collective wisdom together in the NRV. By gathering all of the assets and resources within the NRV community, the community would be better able to determine how best to use all of its wisdom to create a healthier community (NACCHO, 2001, 2004).

Following that June 2006 meeting, this principal investigator partnered with the Nurse Manager Senior of the NRHD, Brenda Burrus, in December 2006, to submit a \$20,000 grant submission to VDH for start-up grant funding to support one of the first ten implementations of MAPP in Virginia in the NRV. This grant was awarded by VDH to the NRHD in January 2007. Subsequent discussions with Dr. Kerry Redican (School of Education, Department of Curriculum and Instruction) at Virginia Tech identified a graduate student, Kemp, who agreed to play a major role in the initial stages of the MAPP process including Phase 2 and part of Phase 3 (Community Themes and Strengths Assessment, Local Public Health System Assessment, and the surveys for the Community Health Status Assessment). The full PATH membership, which participated in the previous health needs assessment for the NRV in 2000, was the driving force behind providing, identifying, recruiting, and appointing professionals and volunteers to assist with the current MAPP initiative in the NRV.

After a presentation of MAPP to the PATH membership at their quarterly meeting in March 2007, PATH agreed to undertake MAPP and direct their efforts to this more detailed process. PATH had a vested interest to follow up with their previous assessment, and the MAPP initiative provided a synergistic framework. Members of PATH included a very broad and diverse representation from over 40 health and human service agencies, other community

organizations and businesses, education, faith communities, healthcare providers and corporations, media, insurance plans, local government, elected officials, and community representatives (see Appendix C).

Additionally, there was a PATH Steering Committee—co-chaired by the principle investigator--that met on a monthly basis and served as the MAPP Steering Committee to provide oversight, monitor, and receive updates throughout the MAPP process. The PATH Steering Committee, a governing and decision/recommendation-making subgroup of PATH, consisted of 15 individuals including this principle investigator as co-chair, as well as diverse representatives from Carilion New River Valley Medical Center, Free Clinic of the New River Valley, HCA Montgomery Regional Hospital, Mental Health Association of the New River Valley, New River Health District (NRHD), New River Valley Community Action, Radford Department of Social Services (DSS), Radford University (RU), Virginia College of Osteopathic Medicine (VCOM), Virginia Interfaith Council (VIC), Virginia Rural Health Resource Center, and Virginia Tech (VT) (see Appendix D). This Steering Committee worked together with the principle investigator and Kemp to design the planning process (answering questions such as “What will the process entail?”, “How long will it take?”, and “What results are we seeking and how will we know when we are finished?”), and assess resource needs and secure commitments (including in-kind donation from partner organizations). The MAPP process was ultimately managed by this principal investigator and Kemp in partnership with the PATH Steering Committee. Several volunteers contributed significantly to the overall process (see Appendix E).

One of the primary tenants of MAPP is its focus on the LPHS since a successful MAPP process includes active participation from many different sectors of the community. During Phase 1 (Organize for Success)--recognizing the unique value that each LPHS partner brings--

this principal investigator, Kemp, and several members of the PATH Steering Committee spent ample time discussing MAPP's agency-specific, LPHS-specific, and community-wide benefits with existing and prospective partners. These conversations presented opportunities to identify how MAPP could accomplish the priorities of all parties involved within the context of MAPP's emphasis on strategic thinking, community engagement, and LPHS strengthening. The principal investigator also conducted a literature search to collect, review, and analyze a broad range of qualitative and quantitative data about the main health-related and other public health problems/issues in the NRV community and in other rural areas of the U.S. (e.g., health status, quality of life, and risk factors), as well as previous NRV needs assessments/findings. It should be noted that during this and subsequent Phases, the principal investigator--in collaboration with the PATH Steering Committee--kept the broader NRV community aware of the MAPP initiative through community mechanisms such as the media (television, radio, and local newspapers), public postings, announcements and presentations at organizational meetings (e.g., Rotary clubs, etc.), letters to elected officials and local governments (e.g., Boards of Supervisors, Radford City Council), etc.

On June 13, 2007, Heidi Deutsch traveled from Washington, DC to the Selu Retreat Center in Radford, VA, to present a more in-depth, nine-hour "MAPP Kick-Off" retreat, workshop, and working session to 39 participants (see Appendix F) that focused on Phase 2: Visioning and the LPHSA in Phase 3 using the NPHPS local instrument. The retreat format entailed Key Informant Interviews/Discussions and Focus Groups (workgroups). The afternoon prior to the retreat, Heidi Deutsch met with the principle investigator, Kemp, and a group of ten volunteers, who facilitated and recorded discussions regarding the Vision and the capacity of the system to conduct the EPHS among their assigned Focus Groups (workgroups) during the

retreat. Two facilitators were selected and assigned to each of five Focus Groups (workgroups) according to their areas of expertise with the EPHS. Also during the pre-retreat meeting, the principle investigators and volunteer facilitators were coached on what was expected of them during the retreat, each assigned two of the ten EPHS to comprise their respective Focus Groups (workgroups) (see “Local Public Health System Assessment” below) and were provided with the color-coded voting cards and details of process to use with their Focus Groups (workgroups).

The retreat members were recruited through their own acceptance of invitations sent to all PATH members, as well as other public, private, governmental, and voluntary entities, as well as individuals and informal community partners and residents. Based on this principal investigator’s 15-year knowledge-base of the NRV population and “culture”, this *purposeful typical case sampling* (sometimes referred to as *purposive, judgment, or judgmental* sampling) targeted particular individuals because they would be representative of most others and would be particularly informative and “information-rich” about the NRV’s local public health system and needs (McMillan, 2008, pp. 117-123). According to McMillen (2008), purposeful sampling adds credibility to qualitative research and assures receipt of needed information (p. 123).

Visioning.

During the June 2007 retreat, each of the five Focus Groups (workgroup) brainstormed elements of a collective Vision and Values that described how they viewed a healthy community. The NRV Vision was developed by answering three main questions: “What does a healthy NRV mean to you?”, “What are the important characteristics of a healthy community for all who live, work, and play in the NRV?”, and “Where do you envision the NRV local health system in the next five to ten years?”. Each Focus Group’s (workgroup’s) facilitators presented the drafted vision themes to all the participants at the end of the retreat, and these were discussed in a Key

Informant group with further input. Additional Key Informant Interviews/Discussions utilizing the above questions were also done with a total of nine legislators/governmental officials representing all localities of the NRV to obtain their input during August 2007. Following the retreat and using the outcomes of the Focus Group and Key Informant Interview/Discussion sessions, Kemp and the principle investigator developed a list of overall themes (see Chapter 4) that provided the foundation for the final Vision and Values Statement. With the help of the PATH Steering Committee as an Expert Work Group, a draft Vision and Values Statement was gradually developed during their meetings in July, September, October, and November 2007. Additional Key Informant Interviews/Discussions and “brainstorming” were held at the PATH membership meetings in September and December 2007 where additional input and edits were obtained. The final NRV MAPP Vision and Values Statement was approved at the December 2007 PATH membership meeting (see Chapter 4). Throughout the MAPP process, the NRV MAPP Vision and Values Statement constantly steered the MAPP initiative efforts.

Local public health system assessment (LPHSA).

As noted, the June 2007 Retreat facilitators and attendees had been pre-assigned and were separated into five Focus Groups (workgroups) according to their areas of expertise to complete one of the four MAPP assessments, the LPHSA, using the NPHPSP’s Local Public Health System Performance Assessment Instrument (Local Instrument) (see “Instrument Format” below). The Local Instrument guides participants in evaluating their current performance against a set of optimal standards.

Assessments were completed using a consensus process. Each of five Focus Groups (workgroups) was allotted two hours to discuss and rate local public health system performance on two of the ten EPHS in the Local Instrument, with assistance from the pre-assigned

workgroup facilitators. Each Focus Group (workgroup) also had a recorder to document any key messages during the discussion such as strengths and weaknesses of the LPHS for the EPHS, as well as recommendations for immediate improvements and any priorities of the LPHS for the EPHS. The five Focus Groups (workgroups) and their EPHS were as follows: Focus Group I—EPHS 1 (monitor health status to identify community health problems) and 7 (link people to needed personal health services and assure the provision of healthcare when otherwise unavailable); Focus Group II—EPHS 2 (diagnose and investigate health problems and health hazards in the community) and 5 (develop policies and plans that support individual and community health efforts); Focus Group III—EPHS 3 (inform, educate, and empower people about health issues) and 10 (research for new insights and innovative solutions to health problems); Focus Group IV—EPHS 4 (mobilize community partnerships to identify and solve health problems) and 9 (evaluate effectiveness, accessibility, and quality of personal and population-based health services); and Focus Group V—EPHS 6 (enforce laws and regulations that protect health and ensure safety) and 8 (assure a competent public and personal healthcare workforce).

The goal of the this activity was to reach agreement via individual Focus Group (workgroup) discussion on which EPHS and Model Standards were currently being sufficiently addressed by the community and those that were most important for the community to address in the near future. Each Focus Group (workgroup) member received a set of the color-coded cards to facilitate individual Focus Group (workgroup) voting according to the following voting categories: (1) optimal activity (red); (2) significant activity (brown); (3) moderate activity (yellow); (4) minimal activity (blue); and, (5) no activity (green). A requirement was that the group obtained consensus as to the level of activity achieved by the entire LPHSA. For instance,

each Focus Group (workgroup) member was instructed to answer both of the following questions according to the two EPHS and associated Model Standards assigned to the Focus Group (workgroup), based on the aforementioned color-coded card categories: (1) What is the importance of this model standard to our public health system? (2) How important is it to improve our performance in this activity (e.g., through a quality improvement process, increased emphasis, or resources)? During this process, definitive strengths and areas of concern for each EPHS were also identified and recorded (DHHS, 2007a).

It is important to note that the entire local public health system was not represented at the June 2007 retreat, as several organizations' representatives were unable to attend. Despite the fact that the entire local public health system was not represented at the retreat, the attendees were able to creatively brainstorm with their designated Focus Group (workgroup) members and arrive at consensus in determining which EPHS were most pertinent to address, regardless of a possible lack of prior knowledge of, or experience with, the assigned essential services. In many instances, common sense and creativity outweighed prior knowledge and experience in proposing specific solutions and action plans.

Each Focus Group's (workgroup's) final ratings were tallied on one score sheet and given to this principle investigator and Kemp to ultimately submit to CDC for future analysis and scoring on a range of 0-100. Individual Focus Group (workgroup) results were not shared during the retreat. Using the responses to all of the assessment questions, a scoring process generates scores for each first-tier or "stem" question, Model Standard, Essential Service, and one overall score. The detailed scoring methodology can be accessed online at <http://www.cdc.gov/od/ocphp/nphpsp/Conducting.htm>.

The final analyzed results, received in a report from the CDC (Appendix Q), were then presented to the PATH Steering Committee in February 2008 and to PATH membership in March 2008 by the principal investigator. The results were discussed and challenges and opportunities identified. These results dictated which of the EPHS were most crucial and those that were less of a priority for the NRV to address (see Chapter 4), which further assisted in developing a strategic Action Plan for the community. The following questions helped stimulate the discussion:

1. Based on our scores in the EPHS and for all Model Standards, in which areas do we have the highest performance? In which areas do we have the lowest?
2. Overall, what is your response to the scores? How well do they match your perceptions and experiences of NRV's LPHS? Are any surprising? (DHHS, 2007a)

Because public health “system performance” is abstract, the NPHPSP results were discussed in the context of the following: comments and ideas captured during the assessment (see Chapter 4); pressing health needs and related issues affecting the NRV; and priorities, strategic opportunities, and initiatives. The following questions helped participants connect the EPHS scores to concrete public health concerns and prepared them for more detailed priority setting discussions:

1. Based on our scores, what public health issues does NRV's LPHS have the best ability to address?
2. What are the most important results that NRV's LPHS must deliver to our community?
3. To achieve these results, in what areas must we excel?

Additionally, the following questions—based on the four categories or “quadrants” in the final report--were considered in examining the relationship between the LPHS and the NRHD in achieving the EPHS and Model Standards:

➤ Quadrant I. Low Performance/High Department Contribution

1. Is the Department's level of effort truly high, or do they just do more than anyone else?
2. Is the Department effective at what it does, and does it focus on the right things?
3. Is the level of Department effort sufficient for the jurisdiction's needs?
4. Should partners be doing more, or doing different things?
5. What else within or outside of the Department might be causing low performance?

➤ Quadrant II. High Performance/High Department Contribution

1. What does the Department do that may contribute to high performance in this area?
2. Could any of these strategies be applied to other areas?
3. Is the high Department contribution appropriate, or is the Department taking on what should be partner responsibilities?
4. Could the Department do less and maintain satisfactory performance?

➤ Quadrant III. High Performance/Low Department Contribution

1. Who are the key partners that contribute to this area? What do they do that may contribute to high performance? Could any of these strategies be applied to other areas?
2. Does the low Department contribution seem right for this area, or are partners picking up slack for Department responsibilities?
3. Does the Department provide needed support for partner efforts?
4. Could the key partners do less and maintain satisfactory performance?

➤ Quadrant IV. Low Performance/Low Department Contribution

1. Who are the key partners that contribute to this area? Are their contributions truly high, or do they just do more than the Department?
2. Is the total level of effort sufficient for the jurisdiction's needs?
3. Are partners effective at what they do, and do they focus on the right things?
4. Does the low Department contribution seem right for this area, or is it likely to be contributing to low performance?
5. Does the Department provide needed support for partner efforts?
6. What else might be causing low performance?

In this MAPP process, the NPHPSP results were considered in the context of the three other assessments—community health status, community themes and strengths, and forces of change—before determining strategic issues, setting priorities, and developing action plans (DHHS, 2007a).

Instrument format.

The Local Instrument is constructed using the EPHS as a framework—one section or “chapter” for each EPHS. Each EPHS section is further divided into several *Model Standards* which represent major components, activities, or practice areas of that particular EPHS. For each EPHS in the Local Instrument, the Model Standards describe or correspond to the primary activities conducted at the local level. These Model Standards, written in paragraph and bullet format, describe the key aspects of an optimally performing public health system. Each Model Standard is followed by a series of *Assessment Questions* that serve as measures of performance, eliciting information on how well the Model Standards are being met. Assessment questions are organized in tiers, with first-tier, or stem questions, being typically more broad, overarching questions, and with second-tier, or sub-questions, having more specificity about the performance element being considered. Some stem questions, as well as some sub-questions, include a *Discussion Toolbox*, which contains even more specific elements or characteristics associated with optimal performance. Responses to these questions provide an indication of how well the Model Standard—which portrays the highest level of performance or “gold standard”—is being met. Through the assessment process, participants from throughout the LPHS have an opportunity to discuss and determine how they are performing in comparison to each of the 30 model standards (DHHS, 2007a).

There are five response options associated with each performance measure (assessment question). During the assessment, participants discuss each question and collectively determine the response that best describes the current level of activity within the system. The spectrum of activity associated with each response option is explained below:

| | |
|----------------------|---|
| NO ACTIVITY | 0% or absolutely no activity. |
| MINIMAL ACTIVITY | Greater than zero, but no more than 25% of the activity described within the question is met. |
| MODERATE ACTIVITY | Greater than 25%, but no more than 50% of the activity described within the question is met. |
| SIGNIFICANT ACTIVITY | Greater than 50%, but no more than 75% of the activity described within the question is met. |
| OPTIMAL ACTIVITY | Greater than 75% of the activity described within the question is met. |

(DHHS, 2007a, p. 12)

The NPHPSP assessment process includes two supplemental optional questionnaires in addition to the performance assessment instrument itself. The first of the optional questionnaires—Priority Questionnaire--asks participants to consider the priority of each Model Standard to their system using a scale of 1 to 10 (with 1 being low priority and 10 being high priority) (see Appendix G). The responses to this supplemental questionnaire are analyzed so that participants may consider their own prioritized Model Standards in relationship to their performance scores. The use of this questionnaire can guide sites in targeting their limited attention and resources to areas of high priority by low performance. A second optional questionnaire—Agency Contribution Questionnaire--assesses the LPHA's contribution to the achievement of each Model Standard (see Appendix H). It can assist sites in considering the role of the LPHA in performance improvement efforts. In this questionnaire, respondents are asked to think about the Model Standard as a whole and use a four-point scale to assess the percentage of the model standard that is achieved through the direct contribution of the public health agency. The four responses for the agency questionnaire are: 0-25%; 26-50%, 51-75%; and 76-100%. These results may assist the LHD in its own strategic planning and quality improvement activities. Additional details about the NPHPSP, as well as the Local Instrument and supplemental questionnaires, can be found at <http://www.cdc.gov/od/ocphp/nphpsp/>.

The incorporation of these two optional questionnaires into the NRV MAPP effort was intended to strengthen and better catalyze the performance improvement activities that should occur as a result of the assessment process (DHHS, 2007). Both of these questionnaires were completed shortly after the 2007 Retreat. The Priority Questionnaire was completed at the July 2007 quarterly PATH meeting by LPHS partners to assure a consistent approach across the Essential Services. The Agency Contribution Questionnaire was completed by the NRHD leadership team of the NRHD in June 2007 and reviewed at the July 2007 quarterly PATH meeting.

Data limitations.

- Because the participants in the retreat were selected by non-probability purposeful typical case sampling, it is difficult to generalize the findings to other subjects; however, generalization of the findings is possible to similar subjects. The retreat participants may be less representative of the entire NRV population, and the results obtained are dependent on the unique characteristics of the sample. The small sample sizes and non-probability selection of participants for the Focus Groups and Key Informant discussions/interviews during the retreat prevent using the findings to draw causal relationships or to generalize the results to the wider population from which the participants were taken. A consensus around a result is therefore the most “widely held or expressed” belief by the cohort participating in this particular MAPP process.
- The Local Instrument and supplemental questionnaire data represent the collective performance of all organizational participants in the assessment of the local public health system. Resulting scores should not be interpreted to reflect the capacity or performance of any single agency or organization.

- The responses to the questions within the assessments are based upon processes that utilize input from diverse system participants with different experiences and perspectives. The gathering of input and development of a response for each question incorporates an element of subjectivity.
- The assessment methods are not fully standardized and these differences in administration of the self-assessment may introduce an element of measurement error.
- There are differences in knowledge about the public health system among assessment participants. This may lead to some interpretation differences and issues for some questions, potentially introducing a degree of random non-sampling error.
- Because of the limitations noted, the results and recommendations associated with these reported data should be used for quality improvement purposes rather than external system comparisons. More specifically, results should be utilized for guiding an overall public health infrastructure and performance improvement process for the public health system.
- A high composite score may not reflect a low score of performance for individual assessment questions within that EPHS Model Standard.

Validity and reliability.

Validity.

Multiple approaches to validity testing have shown that the NPHPSP standards based on the EPHS have validity for measuring local public health system performance. Face and content validity were obtained in a survey of local public health department systems and community partners in Florida and New York that had used the local instrument. The face and content validity of each model standard in the local instrument was addressed along the following dimensions: the importance of the standard as a measure of the Essential Service; its

completeness as a measure; and its reasonableness for achievement. All standards for each Essential Service were then judged in terms of their completeness in measuring performance of that service. Respondents judged the standards to be highly valid measures of local public health system performance. However, some respondents had reservations about whether standards related to “enforcing laws and regulations” were achievable. Holding local public health systems accountable for the activities of other agencies was a factor mentioned in conjunction with those standards (Beaulieu & Scutchfield, 2002; Beaulieu, Scutchfield, & Kelly, 2003a).

Criterion validity of the local instrument was assessed for a sample of eight public health departments in Florida and six in New York by examining documentary evidence for selected responses. Criterion validity was also evaluated for a sample of Florida local public health departments and one Hawaii public health department by comparing state health department staff’s judgments (external judges) of performance against the instrument score. Criterion validity was upheld for a summary performance score on the local instrument, but was not upheld for performance judgments on individual Essential Services (Beaulieu, Scutchfield, & Kelly, 2003a; Beaulieu, Scutchfield, & Kelly, 2003b).

Reliability.

Studies to date have shown that reliability of the indicators and model standards in the local performance measurement instrument has been problematic to assess given the lack of a controlled test-retest environment for the instruments (Beaulieu, Scutchfield, & Kelly, 2003b). It should be noted that further testing for validity and reliability is continuing.

Community themes and strengths assessment.

To gather information and feedback about community thoughts, opinions, concerns, quality of life in the community, community assets, and other issues of importance to the NRV community, Kemp and the principal investigator collected qualitative data via face-to-face interviews using a series of open-ended questions (see Appendix I) during October, November, December 2007, and July, August, September 2008. Merriam (1998) suggested that the semi-structured format allows for the interview to be guided by a list of questions or issues to be explored, where questions may be asked or answered out of order. Therefore, to allow for the interviewees' feelings, emotions, and perceptions of the community's quality of life and local health care system to be revealed, the questions were designed in a semi-structured format with open-ended questions. The face-to-face Interview questions--developed with the help of Heidi Deutsch of NACCHO, Key Informant discussions with the PATH membership, and the PATH Steering Committee (as an Expert Work Group) during April, May, June, and July 2007--pertained to perceived quality of life in the community, safety in the community, green-space (e.g., availability of parks and walking trails), and perceived shared sense of community connectedness/capacity, and perceptions of the local healthcare system. This panel of experts, knowledgeable in the specific areas of the Interview questions, developed and reviewed the Interview Instrument in terms of content, format, and audience appropriateness.

Field testing/pilot study.

On July 19-21, 2007, Kemp, serving as the lead investigator for field testing/piloting the Interview Instrument for this assessment, and this principal investigator partnered with the Virginia Interfaith Council (VIC) and the Virginia Interfaith Center for Public Policy (VICPP), as well as with a team of six retired volunteers recruited via the VIC, to host a healthcare

listening tour across the NRV. Listening tour stops included Blacksburg and Christiansburg (Montgomery County), Pearisburg (Giles County), and Floyd. The stops were audio-recorded Focus Group-type sessions, where anonymous participants were asked two primary questions: (1) What should be included in a Healthcare Bill of Rights for Virginia?, and (2) What are some healthcare issues that you would like to see addressed? Kemp and this principle investigator and volunteer team joined the healthcare listening tour in order to field study/pilot test the Interview Instrument to establish the validity of the Survey Instrument in terms of suitability, utility, and clarity, as well as to gain experience in interviewing and transcribing cases. The field testing/pilot study was conducted under the same conditions and in a similar test environment as the subsequent qualitative interview sessions.

Interviews.

After finalizing the Interview Instrument based on the field testing/pilot study in July 2007 and with feedback from Key Informants in the PATH membership meeting in September 2007, two volunteer teams--one of eight retired seniors (aged 60-72) and another of Radford University undergraduate nursing students and their instructor, Dr. Maggie Basset, School of Nursing--assisted Kemp during September, October, November, and December 2007 in conducting 28 face-to-face interviews from four interview groups in Blacksburg and Christiansburg (Montgomery County), Floyd County, and Giles County at locations that included staff and clients of local Free Clinics, Senior Centers, and community agencies serving low-income individuals (e.g., New River Community Action [NRCA], Virginia Insurance Counseling and Assistance Program [VICAP], Retired and Senior Volunteer Program [RSVP]) and African-American Churches during October, November, December 2007.

To complete this assessment, a team of the principal investigator and a Radford University undergraduate student, who was doing a volunteer internship with the Virginia Rural Health Resource Center, collected additional qualitative data via 30 face-to-face interviews using the same series of open-ended questions from five additional interview groups representing Radford City and Pulaski County (five employees from Radford City Department of Social Services, four clients from Radford City Health Department, three NRHD employees living in Radford, ten Pulaski County Health Department clients, and eight NRHD employees living in Pulaski) during July, August, and September 2008.

Given the special needs (e.g., physical/mental disabilities, low-income, under-/uninsured) characteristics of the interviewees, the participation of the volunteer team was of great benefit, particularly when there were interviewees with low literacy or comprehension levels who could not have answered some of the questions without assistance. Again, the entire process was anonymous and voluntary, and no identifying information was requested at any time during the interviews. The interviews were open to any voluntary interviewees; however, Kemp and the principle investigator had a primary interest in hearing from populations with significant barriers to the healthcare system, particularly the under-/uninsured.

Each interview was manually recorded on paper or laptop by members of the volunteer teams. Interviews were held at each site location with random participants and averaged 20-30 minutes in duration. The length of the interview sessions was anticipated to be approximately 30-45 minutes, and was based on the average length of the pilot interviews. However, the interviewees in the current study were free to talk beyond the allotted 30-45 minutes if they

wished to do so. Seidman (1998) noted that there are no specific recommendations about the length of an interview. However, a decision should be made about the time prior to the interview process, and the interview should move at a pace that is consistent with the allotted time.

Interviews were conducted with each participant about their perceptions of the quality of life in the community and the local health care system, which represented the purpose and research questions for this particular assessment. Interviewees were encouraged to elaborate on their perceptions and experiences pertaining to the community in which they currently resided. Interviews began with a brief introduction of the interviewer, purpose of the study, and nature of the questions for the interview. Questions were then asked about perceptions of the quality of life in the community and local health care system. Again, the entire interview process was anonymous with no identifying information collected at any time from the interviewees.

Observations.

Kemp, members of the volunteer teams, and the principal investigator conducted observations of the NRV residents' to acquire a sense of the type of client served by each of the selected interview locations (i.e., Free Clinics, Senior Centers, NRCA, VICAP, RSVP, African-American Churches, Radford City Department of Social Services, and Pulaski County and Radford City Health Departments), how each agency provides services to the public, and to validate comments made by the interviewees. The observations revealed the reasons why clients may seek support and services from the Free Clinic, local health department, or VICAP, for example, the specific types of services sought, and any access issues individuals may experience due to insurance coverage or lack thereof. These observations helped to expand discussions with interviewees.

Analyzing documents.

While visiting and observing the interview sites and their respective staff, Kemp, the volunteer teams, and the principal investigator examined documents that provided insight on the history of each agency, the daily activities or types of services provided, the clients served, and the other organizations with which each agency coordinates activities/services. Kemp, the volunteer teams, and the principal investigator also reviewed local newspapers and magazines that covered stories about the activities and services provided by each agency. These documents helped expand conversation during interviews by providing the interviewers with knowledge about issues affecting residents seeking various health services (Kemp, 2008).

Data analysis.

The principal investigator and Kemp used a systematic coding approach. Merriam (1998) defined coding as assigning some sort of shorthand designation to various aspects of the researcher's data, so that he/she can easily retrieve specific pieces of the data. Borgatti (2006) described three different types of coding:

1. Open coding: concerned with identifying, naming, categorizing and describing phenomena found in the text (para. 8).
2. Axial coding: process of relating codes (categories and properties) to each other, via a combination of inductive and deductive thinking (para. 18).
3. Selective coding: process of choosing one category to be the core category, and relating all other categories to that category (para. 22).

The principal investigator and Kemp employed the *constant comparative method* and *axial coding* to analyze the interview transcripts. Byrne (2001) explained the coding process as the following,

Data typically are coded at three levels. At the first level, the researcher examines data line by line, and at the second level, he or she compares and contrasts the data to create categories or clusters. At the third or final level, the researcher moves from data analysis to concept and theory development. Theory emerges with data reduction (ie, filtering information relevant to the topic and discarding extraneous information) and selective sampling. Data usually are collected until no further new information is found. This process is termed saturation and signals the end of data collection (para. 8).

Following Byrne's (2001) explanation, the principal investigator and Kemp established seven categories that were related to the research questions and used for coding the information obtained during the interviews. The seven categories are community quality of life, community safety, community opportunities, community cohesion, community health care system, awareness of community health-related agencies and organizations, and community needs. The principal investigator and Kemp analyzed each manually-recorded interview and searched for key themes (i.e., positive versus negative) that characterized the categories by utilizing the constant comparative method, and the data were repeatedly re-examined in the light of new emerging themes. For example, a resident's comment in response to the community's quality of life may have been, "excellent community for children," which is a positive key theme. Therefore, positive key themes were coded with orange highlighter and separated from negative key themes, such as "drugs and peer pressure are a problem," which were coded with blue highlighter (Kemp, 2008).

Merriam (1998) stated that “deriving a theory from the data involves both the integration and the refinement of categories, properties, and hypotheses” (p. 191). Byrne (2001) stated that the core usually has some of the following characteristics:

- Recurs frequently,
- Links various data,
- Has an explanatory function,
- Has an implication for formal theory, and
- Becomes more detailed (para 6).

Finally, after the principal investigator and Kemp finished coding and interpreting the data, a comprehensive review of each case was written (see Chapter 4 in this dissertation for details of Pulaski County and Radford City AND Chapter 4 of Kemp’s dissertation for details of Montgomery, Floyd, and Giles counties). The core of emerging theory is presented in Chapter 5.

Validity and reliability.

Validity.

Scholars (e.g., Frey & Oishi, 1995; McMillan, 2008; Merriam, 1998; Seidman, 1998; Silverman, 1993; Soy, 2000) recommended that researchers must ensure the study is well constructed to guarantee validity and reliability. McMillan (2008) and Merriam (1998) suggest that there are several strategies to enhance internal validity:

1. Triangulation: researcher triangulation (using multiple investigators), data source triangulation (multiple sources of data), or methods triangulation (multiple methods) to confirm the emerging findings.

2. Long-term observation: gathering data at the research site or repeated observations of the same phenomenon over a period of time, in order to increase the validity of the findings.
3. Peer examination: asking colleagues to comment on the findings as they emerge.
4. Researcher's biases: clarifying the researcher's assumptions, worldview, and theoretical orientation at the outset of the study (pp. 34-35, 144-149; pp. 204-205).

The present study incorporated the above strategies to enhance internal validity.

Triangulation was implemented via multiple sources of data and methods to confirm findings. Kemp, the volunteer teams, and the principal investigator interviewed agency staff and clients and communicated with clients of the interview site locations (i.e., Free Clinics, Senior Centers, NRCA, VICAP, RSVP, African-American Churches, Radford City Department of Social Services, and Pulaski County and Radford City Health Departments). These agencies' daily activities, types of services provided, and how services are provided to the public were also observed. Documents, such as newspapers, magazines, and newsletter related directly to the local health care system and quality of life of NRV residents were also reviewed.

In addressing the long-term observation strategy, the principal investigator, Kemp, and the volunteer teams observed the operations of the interview site locations throughout the duration of the interview process. Furthermore, the principal investigator, Kemp, and the volunteer teams maintained contact with agency staff and church administrators regarding any special events that were hosted by the agencies or churches, or any novel issues proposed by new clients or parishioners regarding quality of life in the area, health needs, or problems with access to health services (Kemp, 2008).

As the principal investigator, Kemp, and volunteer teams observed the activities, services, and clients and parishioners of the agencies and churches, peer examination via communication with colleagues was utilized. More specifically, peer examination was implemented in conjunction with the PATH Steering Committee, the executive directors of numerous health and human service agencies in the NRV, and Kemp's and this principal investigator's doctoral committee members. The Interview Instrument was developed with expert input and review in terms of content, format, and audience appropriateness by this principal investigator, volunteer teams, Kemp's doctoral committee, the PATH Steering Committee, the PATH membership, and Heidi Deutsch of NACCHO--all of whom offered recommendations for improving the Interview Instrument. Additionally, the Interview Instrument was field-tested/pilot-studied to establish the validity of the instrument in terms of suitability, utility, and clarity. This feedback assisted Kemp and the principal investigator in developing the research questions and correct methodology (Kemp, 2008).

Researcher bias was acknowledged at the beginning of the study. In an attempt to minimize researcher bias, the principal investigator's literature review process helped in acquiring a full understanding of how the quality of life and local health care system affect a community and its residents. Moreover, the literature review helped the principal investigator focus on issues pertaining to needs assessment and strategic planning, as well as a rural community's actual quality of life and structure of the rural health care system. Additionally, the face-to-face interview guide was developed with the help of Heidi Deutsch of NACCHO, who had extensive MAPP expertise and experience, reducing bias on behalf of Kemp and the principal investigator (Kemp, 2008).

Reliability.

Merriam (1998) stated, “reliability in a research design is based on the assumption that there is a single reality and that studying it repeatedly will yield the same results” (p. 205). Thus, Kemp, the volunteer teams, and the principal investigator interviewed community residents until the data collected was redundant. As recommended by McMillan (2008), reliability was enhanced during this assessment by detailed field notes, teams of researchers to ensure better comprehensiveness and accuracy, the review of field notes for accuracy by participants, use of recorded data, use of participant quotations and literal descriptions, and an active search for discrepant data or cases.

Ethical considerations.

From the beginning of this current assessment, ethical considerations were of utmost importance to Kemp and the principal investigator. Promoting a trusting relationship with all interviewees on behalf of the principal investigators and volunteer teams was critical in order to produce rich information without any negative impacts on the interviewees. The protocol of ethics assured that interviewee participation was entirely voluntary and no identifying information would be collected or revealed at any time throughout the study. Interviewees also were informed that they could refuse to answer any question and withdraw from the interview at any time. All data collected became the property of Kemp, the principal investigator, and the NRHD Administrative office. No transcripts were produced that would connect the participants to their comments (i.e., no identifying information was recorded). Kemp, in her initial investigations for her dissertation, also received permission from the Virginia Polytechnic and State University Institutional Review Board for Research to conduct research on human subjects (Kemp, 2008).

Data limitations.

- Because the Focus Group participants were selected by non-probability convenience sampling, it is difficult to generalize the findings to other subjects; however, generalization of the findings is possible to similar subjects. The Focus Group participants may be less representative of the entire NRV population, and the results obtained are dependent on the unique characteristics of the sample. The small sample sizes and non-probability selection of participants for the Focus Groups prevent using the findings to draw causal relationships or to generalize the results to the wider population from which the participants were taken (McMillen, 2008, pp. 117-123). A consensus around a result is therefore the most “widely held or expressed” belief by the cohort participating in this particular MAPP process.

Community health status assessment (CHSA).

The CHSA gathers information regarding health status, population data, quality of life, disease trends, risk factors, and determinants of health that affect a community’s health. This assessment answers the questions, “How healthy are our residents?” and “What does the health status of our community look like?” The results of the CHSA provide a snapshot of the community's health status and ensure that the community's priorities include specific health status issues (e.g., low immunization rates). The CHSA is a crucial component of the MAPP process in that the data gathered serves as the foundation for analyzing and identifying community health issues and determining where the community stands in relation to peer communities, state data, and national data (NACCHO, 2001, 2004).

The CHSA provides a list of core indicators (data elements) and the MAPP framework suggests 11 broad-based categories from which data that should be collected. These CHSA categories include:

| Who are we and what do we bring to the table? | What are the strengths and risks in our community that contribute to health? | What is our health status? |
|---|--|---|
| <ol style="list-style-type: none"> 1. Demographic Characteristics 2. Socioeconomic Characteristics 3. Health Resource Availability | <ol style="list-style-type: none"> 4. Quality of Life 5. Behavioral Risk Factors 6. Environmental Health Indicators | <ol style="list-style-type: none"> 7. Social and Mental Health 8. Maternal and Child Health 9. Death, Illness, and Injury 10. Infectious Disease 11. Sentinel Events |

(NACCHO, 2004, p. 56)

A broad range of qualitative and quantitative secondary data was collected by the principal investigator with the help of Paige Bordwine, NRHD Epidemiologist, for the core indicators on the CHSA indicator list using national, state, and regional databases (such as U.S. Census Bureau, CDC's National Vital Statistics, VDH's Vital Statistics, National and State Behavioral Risk Factor Surveillance Systems [BRFSS], NRV Planning District Commission [NRVPDC], etc.), as well as accessing other data sources and previously conducted health assessments from NRV community coalitions, hospitals, and other organizations (i.e., 1994 *New River Valley Community Health Needs Assessment*, 1999/2000 *PATH New River Valley Community Health Needs Assessment*, and 2009 *Montgomery County HRSA FQHC Planning Project Needs Assessment*). Key Informant interviews with the PATH Steering Committee in July and October 2007 and with PATH membership in September and December 2007 provided input in identifying secondary sources of data and selecting locally-appropriate indicators.

In addition to the qualitative and quantitative data for the core indicators on the CHSA indicator list, 2,500 NRV *Community Health Assessment* Surveys were randomly mailed to residents throughout the NRV. The template for the NRV *Community Health Assessment* Survey Instrument was taken from the *Community Health Assessment—Citizen's Survey* utilized for the

1999- 2000 *PATH New River Valley Community Health Needs Assessment*. However, additional input regarding specific questions and format of the *NRV Community Health Assessment Survey Instrument* was obtained from Key Informant interviews and review of the Instrument with the PATH Steering Committee in July and October 2007 and with PATH membership in September and December 2007. This review of the Survey Instrument—in terms of content, format, and audience appropriateness--was done by these Key Informants who served as a panel of experts knowledgeable in the specific content areas of the Survey Instrument. Once the panel reviewed the Survey Instrument and provided comments and suggestions for revisions that included access issues/barriers facing the under-/uninsured residents of the NRV, the Survey Instrument was revised and a field test/pilot study was done.

Field test/pilot study.

On July 19-21, 2007, Kemp, serving as the lead investigator for field testing/piloting the 100 question *NRV Community Health Assessment Survey Instrument*, and this principal investigator partnered with the Virginia Interfaith Council (VIC) and the Virginia Interfaith Center for Public Policy (VICPP), as well as with a team of six retired volunteers recruited via the VIC, to host a healthcare listening tour across the NRV. Listening tour stops included Blacksburg and Christiansburg (Montgomery County), Pearisburg (Giles County), and Floyd. The stops were audio-recorded focus group-type sessions, where anonymous participants were asked two primary questions: (1) What should be included in a Healthcare Bill of Rights for Virginia? and (2) What are some healthcare issues that you would like to see addressed? Kemp, the principle investigator, and volunteer team joined the healthcare listening tour in order to distribute the *NRV Community Health Assessment Survey Instrument* as a field test/pilot study to establish the validity of the Survey Instrument in terms of suitability, utility, and clarity. The 28

listening tour participants each took home a Survey, and 26 of them returned it to Kemp's campus office address in a pre-addressed, pre-stamped envelope that was provided to them. After reviewing the respondents' suggestions about clarity, content, wording, and length, minor changes were made to the NRV *Community Health Assessment* Survey Instrument and questions were added about dental and mental health services.

Community health status assessment (CHSA) survey instrument: NRV community health assessment surveys.

With the help of Kemp, the retired volunteer team, and New River Community Action staff, the NRV *Community Health Assessment* Survey (see Appendix J) was randomly mailed to residents throughout the NRV on February 21, 2008 with a deadline for respondents to return the Survey no later than May 15, 2008. The random mailing utilized the *Direct Mail* database (<http://www.directmail.com/>) to obtain a "consumer" mailing list for a one-time use. The *Direct Mail* database is cleaned and updated on a monthly basis, and the list was a randomized listing of residential addresses only (no businesses), such as homes, apartments, condos, townhomes, etc. located throughout the NRV. Furthermore, the criteria for selecting residents were completely randomized, with age limits of 18-120 (per the database), and there were no limits set for gender, length of residence, or income level. The Survey was also available on-line during March and April 2008. In addition to the Mailed/On-line Survey, two sets of targeted surveys were distributed during March and April 2008 via the volunteer groups (retired group, RU nursing students) to local Senior Centers and by Ruth Wolford, Nurse Manager of the NRHD, to African-American Churches. The African-American Church Survey contained 100 forced-choice questions (see Appendix K), while the Senior Center Survey contained a total of 88 forced-choice questions (see Appendix L). It should be noted that the Senior Center Survey was an

earlier version of the *NRV Community Health Assessment Survey Instrument* that had not been revised, and therefore, the ordering of many questions were different. Although most of the questions were exactly the same, the Senior Center Survey did not contain questions such as those related to dental health.

Data analysis of NRV community health assessment surveys.

The *NRV Community Health Assessment Mailed/On-line Survey* consisted of 100 forced-choice questions, all of which included a blank for respondents to freely provide their personal response, particularly if their individual response was not already listed. Survey respondents were also provided the option to complete the survey online via a weblink if they so preferred. Regardless of how they chose to complete the survey, all respondents could voluntarily provide their mailing address without their name at the end of the Survey, which would be placed in a raffle for one of eight \$100 gift cards to Wal-Mart. It is important to note that respondents were eligible for the raffle whether they chose to complete the Survey either partially or in its entirety. The data from the completed *CHSA NRV Community Health Assessment Surveys* was double entered by the principle investigator, Kemp, and the retired volunteer team using SPSS 18.1. Initially, several methods were employed to assure the quality of the *NRV Community Health Assessment Surveys*. Each respondent who completed a Mailed/On-line Survey was given written instructions on how to complete the Survey; respondents from the local African-American Churches and Senior Centers were also given written instructions, but were able to obtain oral instructions—if needed—from the volunteers distributing the Surveys. The completed/returned Surveys were also carefully examined to correct any logical mistakes.

Basic analysis of all of the CHSA Survey data (response frequencies) was done by the SPSS 18.1 program and summarized by the principle investigator (see Chapter 4). The Survey demographic frequencies for all three Survey sets (Mailed/On-line, African American Churches, and Senior Centers) were also compared to six known NRV regional demographic statistics obtained from the U.S. Census Bureau to determine if data from the NRV *Community Health Assessment* Surveys was a representative sample. The demographic comparisons--including gender, race, age, income, education, and health care benefits (insured versus uninsured)--demonstrated that, depending on the Survey, there was an over-representation of women, and/or respondents who were insured, had higher income and educational levels, and were over the age of 65 who had returned the Surveys (see Chapter 4). This self-selection or response bias—as well as the sampling bias inherent in a “consumer” mail-out Survey database such as *Direct Mail*--could certainly affect the statistical significance of analytical findings. Therefore, sampling adjustment (weighting to more truly represent the actual population) would need to be done to mitigate the effects of these biases. However, a consensus decision was made by the principal investigator, PATH Steering Committee, and PATH members during meetings in May, June, and July 2008 to only focus selective analyses of the Mailed/On-line Survey on lower income respondents—those with annual incomes of less than \$25,000 (111 of 563 questionnaires). It was thought that this selective analysis would eliminate much of the sampling bias. As noted earlier, this principal investigator and Kemp had a primary interest in obtaining information from populations with barriers to the healthcare system, particularly the under-/un-insured. Furthermore, members of the PATH Steering Committee and PATH membership also desired to focus on and obtain selected analyses of the CHSA NRV *Community Health Assessment* Survey data on those with lower income, African-Americans, and Senior citizens.

During September and October 2008 and with the help of an Expert Work Group (Georgetta Solomitchi-Lester, graduate student, Center for Public Administration and Policy, Virginia Tech; Karen Callahan, retired academic Statistician; and Mary Beth Dunkenberger, Senior Program Director, Virginia Tech Institute for Policy and Governance), these selective and more detailed analyses were done using SPSS 18.1, frequency analyses, and crosstabs; however, no statistical tests (i.e., t-test, anova, regression) were used. In order to provide the best analytical results, some Survey data cleaning was done in October 2008 prior to the selective analyses to remove respondents with contradictory responses and to manually recode selected data sets to provide the best format customarily used for numerical analysis. For example, height was converted to inches in order calculate body mass index (BMI) to look at obesity. Also, some of the questions in the Surveys that allowed for open-ended responses and the multiple response questions were not formatted to allow for easy, straight-forward numerical analysis. The Survey data cleaning was performed by the Expert Work Group and a volunteer team (comprised of a program support technician from the NRHD Administrative Office, the editor of a local newspaper, and two retired senior volunteers).

The frequency tables and crosstabs tabulated responses to selected Survey questions by Survey group (Mailed/On-line Low-Income [referred to as Direct Mail Low-Income Survey] versus African-American Churches [referred to as Church Survey] versus Senior Centers [referred to as Senior Survey]) (that, of course, included race and may include by age group) and/or by response to another specific Survey question. Specific question topics/responses that were selectively analyzed included:

- Financial Assistance (Question 95);
- Medical Insurance Coverage (Question 19) and type (Question 20) (only from the Direct Mail and Church Surveys since senior citizens routinely have Medicare as their primary insurance);
- Selected Health Behaviors/Behavioral Risk Factors
 - Alcohol Consumption (use in the past month [Question 51], number of drinks [Question 52], driving after drinking [Question 65a]);
 - Tobacco Consumption (amount of smoking [Question 56], use of smokeless tobacco [Question 59], and passive smoking in the home [Question 60]);
 - Drug Use (driving after taking drugs [Question 65b], illegal drug use in past month [Question 65e]);
 - Time Since Last Mammogram (Question 23) (for female respondents only and by age group);
 - BMI Statistics for all Direct Mail/On-line respondents (by weight classification level and by actual BMI level crosstabulated with whether or not the respondent had been told by a doctor that s/he had “overweight” problems [Question 28q]);
 - BMI also analyzed by actual BMI level for Direct Mail Low-Income, Church, and Senior Survey respondents and crosstabulated with whether or not the respondent had been told by a doctor that they had “overweight” problems (Question 28q);

- Dental Health
 - Time Since Seeing a Dentist (Question 15) (by age group);
 - Dental Insurance Coverage (Question 18) (by age group; only for the Direct Mail Low-Income and Church Surveys; the Senior Survey did not include dental questions);
 - Reasons for Lack of Access to Dental Care (Question 16) (by age group; only for Direct Mail Low-Income and Church Surveys; the Senior Survey did not include dental questions);
- Mental Health
 - Feeling sad (Question 78a),
 - Feeling nervous (Question 78b),
 - Feeling restless and fidgety (Question 78c),
 - Feeling hopeless (Question 78d),
 - Feeling everything is an effort (Question 78e),
 - Feeling worthless (Question 78f);
- Well Child Care (for respondents with children)
 - Well-Baby Exam in Last year (Question 42),
 - Dental Exam in Last Year (Question 43),
 - Immunizations Up-To-Date (Question 44); and
- Barriers to Healthcare (Question 31).

The frequency and crosstab tables can be found in Appendix M.

Validity and Reliability.***Validity.***

The face and content validity of the Survey Instrument was established through the review of the Instrument by a panel of experts in terms of content, format, and audience appropriateness and through conducting a field test/pilot study for suitability, utility, and clarity.

Reliability.

Internal consistency, one of the most commonly used methods of estimating reliability (Windsor et al., 2004), refers to the inter-correlations among the individual items on the instrument, which is whether all items on the instrument are measuring part of the total area. This was done on the Survey Instrument by the panel of experts logically examining the Instrument to ensure that the items reflected what was to be measured and that the level of difficulty was the same. Statistical methods were not used to determine internal consistency of the Survey Instrument by correlating items on the Instrument with the total score. The Survey Instrument was not specifically pilot tested to determine the percentage of agreement on paired scores in an effort to establish reliability of the Instrument in terms of accuracy and consistency in the measurement process. However, it should be noted that no instrument will ever provide perfect accuracy in measurement (McKenzie et al., 2009, pp. 110-127).

Priority community health status issues.

Finally, during the later part of October and early November 2008, all of the qualitative and quantitative CHSA data was organized, analyzed, and compiled into a *Community Health Profile* summary (see Chapter 4) by the principal investigator—with input from the PATH Steering Committee and PATH membership--and presented to the PATH Steering Committee. During mid-to-late November 2008, the principal investigator utilized Expert Work Groups

including Heidi Deutsch, MAPP Program Manager (and her MAPP team, Jonathan Schwartz, at NACCHO) and the PATH Steering Committee to examine and analyze the CHSA data to identify a proposed list of ten compelling, Priority Community Health Status Issues for the NRV—i.e., challenges such as major health problems or high-risk behaviors and opportunities such as improving health trends—that will be more closely examined in Phase 4: Identify Strategic Issues of MAPP. Questions that were considered while examining the CHSA results and identifying ten Priority Community Health Status Issues (challenges and opportunities related to health status) in the NRV were:

1. Does this NRV health problem affect a large number of people, have serious consequences, show evidence of wide disparity between groups or increasing trends, and is it susceptible to proven interventions?
2. Does the Issue have broad implications for potential long-term health improvement in the NRV?
3. By addressing this Issue, is there potential for a major breakthrough in approaching community health improvement for the NRV?
4. Is this Issue one that has been persistent, nagging, and seemingly unsolvable?
5. Does this Issue identify a particular strength that can be replicated throughout the community?
6. Is ongoing monitoring of this Issue possible? (NACCHO, 2001, 2004).

The *Community Health Profile* summary of CHSA data, as well as the proposed list of ten Priority Community Health Status Issues, were presented at a December 2008 PATH membership meeting and again at the final MAPP retreat on May 21, 2009. Utilizing these Key Informant discussions, revisions were made to the list.

Data limitations.

- *Statistical instability* is always a data limitation in the NRV. There are many data issues (both in collection and analysis) in jurisdictions with small populations, such as the NRV, that may be an especially large barrier to community health assessment. In general, the higher the number of events, the more stable the data; therefore, it is recommended that all indicators be based on 20 or more events (e.g., infant deaths, low birth-weight infants, etc.). However, that is not always possible for small, sparsely- populated communities in the NRV making it challenging to translate low numbers or incidence into usable information. Low numbers or incidence can produce unstable rates and percentages that fluctuate greatly from year to year. In addition, a “snapshot” view of one year may not adequately represent the true status of the community’s health. The same indicator might appear substantially different from year to year, based on different or unique events and circumstances that occur yearly in each locality. Thus, indicators must be studied over an extended period of time to reliably reveal trends. In an effort to avoid *statistical instability* faced by many of the jurisdictions in the NRV, multi-year data (e.g., 5-year trend data) was utilized whenever possible (NACCHO, 2001, 2004). Unfortunately, trend data is not readily available and requires time, people, and resources, as well as individuals with statistical expertise who can analyze and convert data into an easily understood and usable format. Obtaining trend data from VDH was very costly and was only utilized for mortality data for the leading causes of death.

- Mortality and morbidity data should always be interpreted with caution since there are inconsistencies in reporting, as well as underreporting. For example, data on the leading causes of death are based on information from all resident death certificates. These death certificates have inconsistencies in reporting the cause of death and minority status, as well as

underreporting, especially for minorities. Changes in mortality may occur as a result of a number of factors affecting the outcome of a disease such as changes in socioeconomic conditions, disease prevention, or methods of treatment. Diagnostic criteria or accuracy of death certificates may also change over time. Thus a change in mortality may reflect a change incidence of the disease or case fatality rates related to treatment methods or access to care, or changes in definition or classification of diseases.

- Reportable disease data are also subject to underreporting, as well as have inconsistencies regarding minority status (Tulchinsky & Varavikova, 2009).
- All statistics are subject to sampling error, as well as non-sampling error such as survey design flaws, respondent classification and reporting errors, data processing mistakes, and under-coverage. The principle investigator took steps to minimize errors in the form of quality control and edit procedures to reduce errors made by respondents, coders, and interviewers.
- As compared to other health indicators, measuring the direct contribution of environmental indicators toward health outcomes is challenging. While other health status indicators can be associated with specific causative agents or certain risk factors, the measurement of environmental indicators involves agents that do not recognize specific geopolitical boundaries such as air quality, watersheds, underground aquifers, and recreational water quality.
- One of the most serious limitations of survey research is a low response rate. The smaller the response rate, the more likely the results will be biased. Response rates less than 70% are considered low (McMillen, 2008, p. 206). Response rates for the NRV *Community Health Assessment* Surveys were low, which increases the risk for nonresponse bias.

- For the NRV *Community Health Assessment* Surveys, self-reported behavioral risk factors such as smoking, as well as other self-reported data such as healthcare and preventive treatments (e.g., last mammogram), are not validated with medical records, are expressions of their personal beliefs, and are subject to the respondent's recall bias. To overcome some of these self-reporting limitations and to maximize use of the self-reported information in the Surveys, the principle investigator followed several of Baranowski's (1985) eight steps to increase the accuracy of this method of data collection including conducting a field test/pilot study of the Survey, anticipating and correcting as many major sources of unreliability as possible, employing quality-control procedures to detect other sources of error, and employing multiple methods of data collection.

- With the use of the NRV *Community Health Assessment* Survey and its limitations, it is important to distinguish the target population from the survey population or sampling frame, and understand that accurate, generalizable conclusions to a larger population are not possible (McMillan, 2008, p. 204).

Forces of change assessment.

The fourth MAPP assessment, the Forces of Change Assessment, is aimed at identifying the major forces, such as trends (e.g., migration in and out of a community), factors (e.g., a community's large ethnic population), or events (e.g., a hospital closing), which are or will be influencing the overall health and quality of life of the community, as well as the work of the local public health system in general. More specifically, the Forces of Change Assessment aims to answer questions such as "What has occurred, is occurring, or might occur in the future—locally, regionally, nationally, and globally--that affects the health of our community or local public health system and may pose a barrier to achieving the shared Vision?" and "What specific

threats or opportunities are generated by these occurrences?”. Also, it is important to consider whether or not forces identified were unearthed in previous discussions—“Did discussions during the Local Public Health System Assessment reveal changes in organizational activities that were the result of external trends?” and “Did brainstorming discussions during the Visioning or Community Themes and Strengths phases touch upon changes and trends occurring in the community?”. In addition, this particular assessment takes into account the broader environment that constantly affects communities and local public health systems, including such trends, factors, and events or forces of change as state and federal legislation, rapid technological advances, changes in the organization of health care services, shifts in economic and employment forces, and changing family structures and genders. (NACCHO, 2001, 2004).

The principal investigator met with the PATH Steering Committee over three months (March, April and May 2008) in iterative small group Key Informant and Expert Work Group “brainstorming” sessions/discussions to identify the major Forces—including factors, events, and trends—affecting public health and the NRV community. These sessions/discussions resulted in the development of a draft Forces of Change list. Then, this draft Forces of Change list was further refined during large group Key Informant “brainstorming” sessions/discussions in two quarterly meetings of the PATH membership (June and September 2008).

These large group, Key Informant “brainstorming” sessions/discussions, that lasted over two hours each, were facilitated by the principal investigator and resulted in numerous additions and edits to the draft, identification of new forces, and ultimately development of a comprehensive list. Through these facilitated and structured brainstorming sessions with diverse Key Informants and an Expert Work Group, the principal investigator was able to obtain a diversity of perspectives from participants and the final Forces of Change list sufficiently reflects

those diverse perspectives. The final list was reviewed and discussed again during the Identify Strategic Issues phase of the MAPP process by reviewing each of the issues identified in the other MAPP assessments in light of the Forces of Change, and the associated threats and opportunities were discussed. This activity ensured that Strategic Issues were relevant to the changing environment (NACCHO, 2001, 2004).

The small group (PATH Steering Committee) Key Informant “brainstorming” sessions/discussions utilized a customization of the *Affinity Diagram (Snow Card) Technique* (Bryson, 2004, pp. 140-142) where participants wrote down all of the Forces of Change that come to mind on small adhesive pieces of notepaper. The participants posted their ideas on the wall, and the small group then moved the ideas around, trying to categorize like ideas together. Through this process, multiple categories emerged. The principal investigator, as the facilitator, then presented the categories to the group, at which time participants had an opportunity to add new ideas to the list or make suggestions for reorganization.

The large group (PATH membership) Key Informant “brainstorming” sessions/discussions utilized the *Nominal Group Technique (Round-Robin Method)* where the participants--having previewed the draft Forces of Change and contemplated additions/edits prior to the session/discussion--wrote down all of their additions and edits to the draft Forces of Change that came to mind, and the principal investigator, as the facilitator, generated a master list of additions and edits to the draft Forces by calling on each participant in a round-robin fashion. Each participant was asked to briefly state one item on his/her list, until all ideas had been presented. The principal investigator, as facilitator, recorded these items on a flip chart, using the members’ own words. After all additional ideas and edits had been presented, the large Key Informant group discussed them. After discussion, the large Key Informant group

organized, clarified, combined, and logically grouped all the material. During the nominal group process, the facilitator encouraged the sharing and discussion of reasons for the choices made by each group member, thereby identifying common ground, and a diversity of ideas and approaches. This diversity allowed for the creation of hybrid ideas (combining parts of two or more ideas), often found to be even better than those ideas being initially considered (Bartunek & Murnighan, 1984; Delbecq & VandeVen, 1971; Delbec, VandeVen, & Gustafson, 1975; NACCHO, 2004).

Numerous researchers have shown that the nominal group technique enhances one or more dimensions of effectiveness of decision-making groups. According to Delbecq and VandeVen (1971) and Delbecq, VandeVen, and Gustafson (1975), requiring individuals to write down their ideas silently and independently prior to a group discussion increased the number of solutions generated by groups. Vedros (1979) also demonstrated that round-robin polling resulted in a larger number of inputs and fostered more equal participation. The increased number of heterogeneous inputs lead to higher quality inputs and decisions (Gustafson, Shukla, Delbecq, & Walster, 1973). As compared to interacting groups, the nominal group technique groups provide more unique ideas, more balanced participation between group members, increased feelings of accomplishment, and greater satisfaction with idea quality and group efficiency (VandeVen & Delbecq, 1974).

It should be noted that, collectively, the four Assessments provide insight on the gaps between current circumstances and the Vision, and serve as the source of information from which the Strategic Issues, Strategies, and Goals are built. In order for the four Assessments to be meaningful, it is important to use them in a collective manner. Disregarding any of the four Assessments will leave a community with an incomplete understanding of the factors that affect

the local public health system and, ultimately, the health of the overall community. Furthermore, all four of the Assessments must be completed to be true to the original tenets of the MAPP process.

Identifying strategic issues.

The next stage of MAPP is to identify Strategic Issues, which are those fundamental policy choices or critical challenges that must be addressed in order for a community to achieve its primary Vision. Strategic Issues are the foundation upon which Strategies are developed. They are built on the results of the previous MAPP phases and reveal what is truly important from the vast amount of information that has been gathered. Strategic Issues usually center around a conflict to be resolved and have no obvious solution. If there is an apparent solution, the question remains as to why the solution has not yet been implemented. Furthermore, Strategic Issues reflect policy-level as opposed to daily or operational problems. Strategic Issues must be an entity that the local public health system can address. For example, universal health coverage and eradicating poverty are admirable aspirations and would improve the public's health. However, such issues are not likely to be successfully addressed on the local level. Strategic Issues represent the most compelling, predominant, and interrelated findings/issues that emerge when all of the MAPP Assessments are examined collectively (NACCHO 2001, 2004).

The principal investigator organized, analyzed, and summarized the qualitative and quantitative data and the major findings from Phase 2 and all four Assessments in Phase 3 during November and December 2008 and presented the summary to the PATH Steering Committee in January 2009. The principal investigator then met with the PATH Steering Committee over two months (January and February 2009) and facilitated iterative small group Key Informant and Expert Work Group "brainstorming" sessions and discussions to identify potential Strategic

Issues by considering both the cross-cutting and most prominent findings from the assessments, as well as gaps between the current state of affairs in the NRV community (as reflected in the assessments) and the shared vision. These discussions entailed the question, “Which Issues suggested by the assessment findings must be addressed in order to achieve the NRV Vision?”, and identified where results and findings converge to affect the achievement of the Vision. Each potential Strategic Issue that was identified was phrased as a question, and the consequences of not addressing the Strategic Issue(s) were considered. Overlapping or related Strategic Issues were consolidated to provide a manageable focus for developing Strategies and by asking the questions “How are they related?”, “Do they share causes or influences that make them strategic?”, “What are the consequences of not addressing them?”, and “Can Strategic Issues be combined without losing a key perspective?” It should be noted that the principal investigator also utilized an Expert Work Group (Heidi Deutsch, MAPP Program Manager and her MAPP team member, Jonathan Schwartz, at NACCHO) for an unbiased and objective review of the summary data and to make recommendations regarding potential Strategic Issues that were incorporated into the PATH Steering Committee’s discussions. Ultimately, three overarching potential Strategic Issues (each with ancillary issues) were identified (see Chapter 4).

At a March 2009 meeting of the entire PATH membership, the principal investigator again presented a summary of the major findings. The proposed Strategic Issues were also further developed and refined during this three-hour large group Key Informant “brainstorming” session/discussion that was facilitated by the principal investigator. Through these facilitated and structured “brainstorming” sessions/discussions with diverse Key Informants and Expert Work Groups, the principal investigator was able to obtain a diversity of perspectives from participants and the final three Strategic Issues sufficiently reflect those diverse perspectives.

Formulate goals and strategies.

During this phase, goals and strategies are developed for each of the three Strategic Issues identified in the previous phase from the data and results of the four MAPP assessments and based on the NRV Vision. *Goals* set a common direction and understanding of the anticipated end result, and *Strategies* communicate how the community will move in that direction. Together, Goals and Strategies provide a connection between the current reality (what the public health system and the community's health looks like now) and the Vision (what the public health system and the community's health will look like in the future). In providing a focus for future action, Strategies lead to coordinated action by addressing the complexity of seemingly complicated problems. The emphasis on action also serves a critical role in linking planning to implementation (NACCHO, 2001, 2004).

On May 21, 2009, a final MAPP Retreat—workshop and working session--was held to formulate Goals and specific Strategies for each of the three Strategic Issues already identified. The Retreat format entailed a large group Key Informant discussion and Focus Groups (workgroups). Similar to the initial retreat of June 14, 2007, these 37 Retreat participants (see Appendix F) were recruited through their own acceptance of invitations sent to all PATH members, as well as other public, private, governmental, and voluntary entities, as well as individuals and informal community partners and residents. Based on this principal researcher's 15 year knowledge-base of the NRV population, this *purposeful typical case sampling* again targeted particular individuals because they would be representative of most others and would be particularly knowledgeable and informative about the NRV's local public health system and needs.

During the morning session of this eight-hour Retreat, the principal investigator--with the help of Paige Bordwine, NRHD's Epidemiologist, and Georgetta Solomitchi-Lester, Graduate Student, Center for Public Administration and Policy--initially presented a summary of the four MAPP assessments and reviewed the NRV MAPP Vision Statement to 37 participants. Following this overview, a large group Key Informant discussion--facilitated by Susan West Marmagas, Associate Professor of Public Health Practice, Department of Population Health Sciences VA-MD Regional College of Veterinary Medicine Virginia Tech--reviewed the ten Priority Community Health Status Issues. Utilizing this Key Informant discussion, revisions were made to the list with the addition of two additional Priority Community Health Status Issues, and then the ranking method was used to select the top three Priority Community Health Status Issues. Each Key Informant voted for his/her choice of the top three Priority Community Health Status Issues, and the three Issues that received the most total votes were selected as the top three Priority Community Health Status Issues. Key questions that participants considered and discussed during this selection and ranking process included:

1. Do we have good data to justify this as a priority in the NRV?
2. What are you or your agency able to contribute to the Priority?
3. Who is presently working on this issue in the NRV?
4. Are there possible new partners to expand?
5. Are there timely funding opportunities for the Priority?
6. Are there opportunities for data integration?

The rest of the afternoon session of the retreat focused solely on Phase 5--the formulation of Goals and Strategies for the three previously identified Strategic Issues. One facilitator and Retreat attendees had been pre-selected and assigned to each of three Focus Groups

(workgroups) according to their interest and areas of expertise with the specific Strategic Issue. Through “brainstorming” and discussions, each Focus Group then developed Goals and Strategies for each of the top three Priority Community Health Status Issues as related to the specific Strategic Issue, the NRV Vision--and that will be achieved when the specific Strategic Issue is resolved. Each Focus Group considered the following questions when considering Goals and Strategies:

1. Based on your review of the NRV Vision and Strategic Issue, what are the apparent Goals for each Priority Community Health Status Issue?
2. What broad Strategy Alternatives might members of the public health system pursue?
3. What are the barriers to realizing these Strategy Alternatives?
4. What implementation details accompany each Strategy Alternative?

The Goal statements reflected a relationship between the Priority Community Health Status Issues, the Strategic Issue, and NRV Vision. The NRV Vision presented, in the broadest sense, what the public health system wanted to achieve. The Strategic Issue must be resolved for this to be realized (NACCHO, 2001, 2004).

Each Focus Group generated Strategy Alternatives by considering and identifying potential Strategies for achieving each Goal developed for each Priority Community Health Status Issue as it related to the specific Strategic Issue and for achieving the NRV Vision. The task in this step was not to pick the best course of action, but to develop several Strategies for each Goal that the community could select from to reach the NRV Vision. During their discussion, each Focus Group considered how realistic each Strategy Alternative was by examining barriers (e.g., insufficient resources, lack of community support, legal or policy

impediments, technological difficulties) that may interfere with implementation. These barriers do not necessarily eliminate strategy alternatives; however, they serve to alert the community to obstacles that might be encountered if that alternative is pursued. Also, each Focus Group considered details related to implementing each Strategy alternative by exploring issues such as needed activities, timelines, participation, and resources, and by thinking broadly about how each Strategy alternative could be implemented (NACCHO, 2001, 2004).

Ultimately, by choosing among the Strategy Alternatives for each of the Goals, each Focus Group selected and adopted Strategies for each of the Goals of the top three Priority Community Health Status Issues as it related to their specific Strategic Issue. To make Strategy selection more systematic, less complex, and possibly less subject to debate, selection criteria had been agreed upon at the beginning of the Focus Groups. The set of criteria that was used—the *PEARL* test—is one that is commonly used in public health program planning and was designed specifically to test the reality and feasibility of a proposed strategy (Pickett & Hanlon, 1990, pp. 226-227). The *PEARL* acronym is defined as follows:

- *Propriety*—Is a Strategy consistent with the NRV Vision, data, findings, needs, Essential Services, and public health principles?
- *Economics*—Is the Strategy financially feasible? Does it make economic sense to apply this Strategy?
- *Acceptability*—Will the NRV stakeholders and the community accept the Strategy?
- *Resources*—Is funding likely to be available to apply this Strategy? Are NRV organizations able to offer personnel time and expertise or space needed to implement this strategy?
- *Legality*—Do current laws allow the Strategy to be implemented?

Finally, each Focus Group presented its results to the entire larger group for further Key Informant discussion to reach consensus on the Strategic Issues and Goals/Strategies for each of the three top Priority Community Health Status Issues, and to assure that all stakeholder interests were well represented.

Following the May 2009 Retreat, the principal investigator drafted the Planning Report during June, July, and August 2009 that outlined the broad strategic courses of action (Strategic Issues, Priority Community Health Status Issues, Goals, and Strategies). This document was presented to the PATH Steering Committee in September 2009 and PATH membership in October 2009 for discussion, refinement, and adoption.

Data limitations.

- Because the participants in the retreat were again selected by non-probability purposeful typical case sampling, it is difficult to generalize the findings to other subjects; however, generalization of the findings is possible to similar subjects. The 2009 Retreat participants may be less representative of the entire NRV population, and the results obtained are dependent on the unique characteristics of the sample. The small sample sizes and non-probability selection of participants for the Focus Groups and Key Informant discussions/interviews during the retreat prevent using the findings to draw causal relationships or to generalize the results to the wider population from which the participants were taken (McMillen, 2008, pp. 117-123). A consensus around a result is therefore the most “widely held or expressed” belief by the cohort participating in this particular MAPP process.

Action cycle.

The Strategies identified in the previous phase form the foundation for the Action Cycle where the efforts of the previous phases begin to produce results as the local public health system develops and implements an action plan for addressing the Strategic Issues. The MAPP process in the NRV is presently in this final phase and utilizing Focus Groups, Key Informant Interviews/Discussions, and Expert Work Groups and considering objectives in light of health care reform. Care is being taken to ensure that objectives of this phase are valid and reliable, clearly measurable, directly associated with the achievement of the strategy, responsive to changes in expect results, provide timely feedback at a reasonable cost, link performance to the expected improvement, and tighter rather than diffuse accountability (NACCHO, 2001, 2004). The PATH Steering Committee is providing oversight to this process. Since the PATH Steering Committee is overseeing implementation, it also has the function of assuring sustainable implementation.

In the Action Cycle, there are three activities that build upon one another in a continuous and interactive manner. These activities can be summarized as follows:

- *Planning*—Determining what will be done, who will do it, and how it will be done.
- *Implementation*—Carrying out the activities identified in the planning stage.
- *Evaluation*—Determining what has been accomplished (NACCHO, 2001, 2004).

Planning for action.

In planning for implementation, NRV participants are clearly determining what is being done, by whom, and with what measurable result(s). Decisions are presently being made to ensure that those specific organizations and groups--who will play a role in implementing and evaluating Strategies--are involved and accountable. How work will be completed and how

connections will be made throughout the planning and implementation process are being determined. In order to assure sustainable implementation, the following questions are being asked:

1. What do we expect from the leaders of this process in terms of commitment, presence, coordination, etc.?
2. What kinds of communication mechanisms need to be in place among participants (including quality, frequency, breadth, and depth)?
3. What products should result from evaluation and monitoring activities (e.g., evaluation model, reports, recognition, etc.)?

Measurable Outcome Objectives or a set of outcome objectives for each identified strategy is being developed. Consensus on accountability is being achieved through extensive dialogue. Once accountability for each objective is identified, the Strategies will be institutionalized by having each participating organization identify how the Goals, Strategies, and Outcome Objectives can be incorporated into their organizational mission statements and plans. After Outcome Objectives are established, they will be translated into specific Action Plans and activities to be carried out by the participants. These Action Plans will be organization-specific or require collective action from a number of organizations. Each Outcome Objective will probably generate a number of specific Impact and Process Objectives that will direct the development of activities in the Workplan. Then, specific tasks will be assigned for developing a Workplan and a budget for the activities to the agencies, organizations, or groups who have agreed to be responsible and accountable for specific outcome objectives (NACCHO, 2001, 2004).

Implementation.

Once NRV MAPP participants have agreed upon priority Goals, related Outcome Objectives, a system of accountability, and appropriate Action Plans, they will be ready to achieve results. Participants will review the Action Plans to identify common or duplicative activities and seek ways to combine or coordinate the use of limited community resources. And as activities are implemented, NRV groups and organizations assigned specific activities will continue to look for opportunities to connect to other action plans or build upon available resources. All MAPP participants will be involved in implementing a minimum of one Strategy. Furthermore, MAPP participants will regularly consider whether other organizations or individuals should be brought on board to more effectively implement the strategies. Each participating organization's staff is also being well informed about the process and the Action Plans that are being implemented. The use of media outlets is also being utilized as a way to educate the community about the Strategies and the progress that is being made on an ongoing basis (NACCHO, 2001, 2004).

Evaluation.

The evaluation process that will be used in the NRV is based on a framework developed by the CDC Evaluation Working Group (CDC, 1999a, 2005) (see Figure 14 and Table 9) and entails two types of evaluation:

- *Evaluation of the entire MAPP Process*—The implementation of MAPP will be evaluated to identify areas or activities that worked well and those that did not.
- *Evaluation of each Strategy*—The Strategies, Goals, and Action Plans will each be assessed and evaluated.

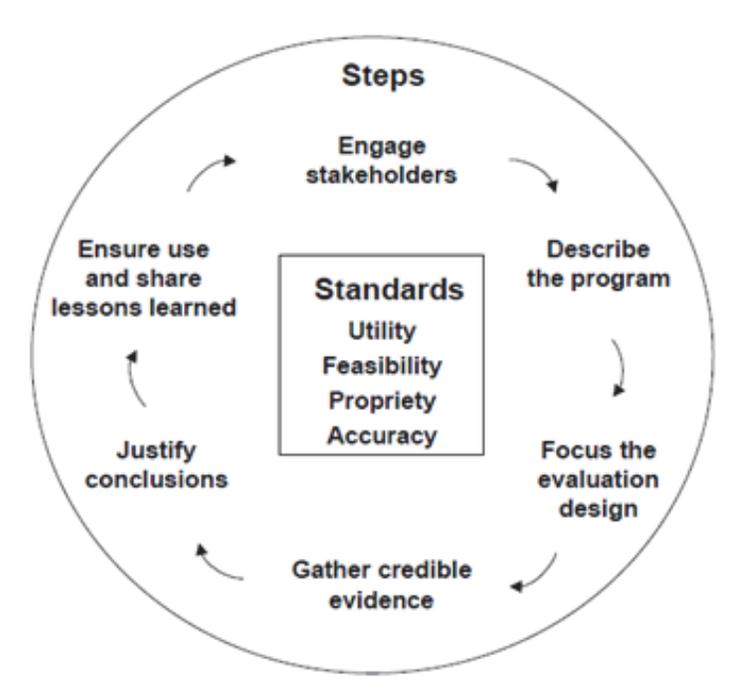


Figure 14. Elements of the CDC Evaluation Framework (CDC, 1999a, p. 4; 2005, p. 6), used under fair use guidelines, 2011

| Steps in Evaluation Practice | Standards for Effective Evaluation |
|---|--|
| <ul style="list-style-type: none"> • Engage stakeholders Those involved, those affected, primary intended users • Describe the program Need, expected effects, activities, resources, stage, context, logic model • Focus the evaluation design Purpose, users, uses, questions, methods, agreements • Gather credible evidence Indicators, sources, quality, quantity, logistics • Justify conclusions Standards, analysis/synthesis, interpretation, judgment, recommendations • Ensure use and share lessons learned Design, preparation, feedback, follow-up, dissemination | <ul style="list-style-type: none"> • Utility Serve the information needs of intended users • Feasibility Be realistic, prudent, diplomatic, and frugal • Propriety Behave legally, ethically, and with due regard for the welfare of those involved and those affected • Accuracy Reveal and convey technically accurate information |

Table 8. Overview of the CDC Framework for Program Evaluation (CDC, 1999a, p. 6), used under fair use guidelines, 2011

The following questions have been considered in preparing for evaluation activities:

1. Who needs to be involved? Other NRV stakeholders that should be involved will be considered including individuals who manage or work on the activity being implemented, or people who will be affected by its implementation.

2. What is being evaluated?

--*Strategies*. Participants will identify and describe the activity or strategy being evaluated.

--*Entire MAPP Process*. Participants will frame the evaluation of the entire MAPP process. Evaluation of MAPP will address issues such as level of community engagement, comprehensiveness of participation, and results and activities from each phase of MAPP (CDC, 1999a, 2005; NACCHO, 2001, 2004).

In developing the evaluation framework, the Evaluation Team (PATH Steering Committee and other Expert Work Groups) will select the questions that the evaluation will answer, the process for answering those questions, the methodology to be used in collecting answers, a plan for carrying out the evaluation activities, and a strategy for reporting the results of the evaluation. Common questions will include:

1. How well was the activity performed?
2. How effective was the activity?
3. How well did the activity meet the stated Goals?
4. What could be changed to improve the activity next time? (CDC, 1999a; NACCHO 2001, 2004).

Participants will then gather credible evidence and justify the conclusions by collecting data to answer the evaluation questions developed earlier. Once credible data are gathered, participants will then decide what the data indicate. Did the activity do what is set out to do? How effective was it? Ultimately, recommendations and implications of the evaluation will be based on an analysis of the data gathered, not just the Evaluation Team's opinions or feelings about how the activity was implemented (CDC, 1999a, 2005; NACCHO, 2001, 2004).

Finally, the results and lessons learned will be shared with others and successes will be celebrated! Evaluation results can improve existing processes and help create new Strategies and Activities. Frequent, ongoing, and creative approaches will be used to celebrate successes and recognize the efforts of the community. Continuous celebration and recognition of the hard work will certainly go a long way toward sustaining momentum and keeping the process alive (CDC 1999a, 2005; NACCHO, 2001, 2004).

During this phase, participants will keep in mind and uphold the elements of an effective evaluation:

- *Utility*—The evaluation should be useful to the individuals and communities involved in the activity being implemented.
- *Feasibility*—The evaluation should be realistic, prudent, diplomatic, and frugal.
- *Propriety*—Evaluation activities should be ethical and legal and conform to community standards, thereby adhering to community understanding of acceptability.
- *Accuracy*—Evaluations results should reveal and convey technically accurate information. If the results are questionable or the data gathered are inaccurate, the evaluation is of little value to the local public (CDC, 1999a, 2005; NACCHO, 2004, p. 92).

Communication and dissemination of information to NRV community.

To assure as diverse community participation as possible during the NRV MAPP process, announcements were made and information was disseminated broadly through community mechanisms (local media, television, radio; organizational bulletin boards and presentations at meetings, etc.). Data from the MAPP process were presented to the NRV community in as clear and concise a manner as possible attempting to emphasize the important findings and results in a variety of ways including:

- Written updates of the process (e.g., newsletters, reports, and summaries of findings);
- Oral presentations made to the community and media; and
- The maintenance of an open and public process.

Summary of organized participation and roles within each phase of NRV MAPP.

A matrix that describes and summarizes the type of partner participation and roles for each phase of the MAPP process in the NRV can be found in Appendix P. The following terms are used to describe the participants:

- *Principal Investigator*—The primary person(s) in charge of the MAPP research project.
- *PATH Steering Committee*—A governing and decision-/recommendation-making subgroup of PATH, that also served as the MAPP Steering Committee and provided guidance throughout the entire NRV MAPP process. This Committee was a broad group comprised of 15 representatives from many sectors including community representation. It also included this principal investigator who served as co-chair of the Committee.

- *Expert Work Groups*—In many phases of MAPP—Phase 2, 3, 4, and 6--subgroups of individuals with areas of expertise provided advice, input, and technical skills to develop and/or refine draft documents/Instruments and to analyze/compile data. In several instances, the PATH Steering Committee served in a dual role as an Expert Work Group.
- *Community*—Broad community participation is a vital concept throughout the MAPP process. While NRV residents were recruited to participate on the PATH Steering Committee and as PATH members, phase activities included ways of gaining broader community participation (e.g., retired senior volunteers). This ensured that the community's input was a driving factor throughout the MAPP process and that the NRV community ultimately felt ownership of the final MAPP results (NACCHO, 2004).

Overall Limitations

- It must be noted that the small sample sizes and nonprobability (non-random) selection (e.g., convenience and purposeful sampling) of participants for some aspects of this MAPP process—the Focus Groups and Key Informant interviews in particular—prevent using the findings to draw causal relationships or to generalize the results to the wider population from which the participants were taken. These participants may be less representative of an identified population and the results are dependent on the unique characteristics of the sample (McMillen, 2008, pp. 117- 123). Therefore, a consensus around a result is the most “widely held or expressed” belief by the cohort participating in that particular MAPP process.

- All Surveys, Focus Groups, Key Informant discussions, and Expert Work Groups were conducted in English, and therefore, those individuals who read and spoke English were eligible to participate. Although both qualitative and quantitative data were collected from ethnic populations, it would have been beneficial to also include additional groups such as the non-English speaking Asian community and other individuals where English is their secondary language, in the qualitative data collection process to further understand their perceptions of quality of life and healthcare services in the NRV. It would also have been advantageous to locate individuals within these groups to serve as a facilitator for a Focus Group(s).

- Additionally, there was difficulty reaching certain populations such as the homeless.
- There is uncertainty in quality of life and other health status needs assessment measures.

Unlike clinical measures of health function which may have well-known distributions and predictive accuracy (in terms of sensitivity and specificity), subjective ratings of a given health state may vary widely. Such variations may depend on age, sex, health (e.g. whether the respondent is healthy, disabled, or has a long-term illness), as well as a wide range of un-measurable individual factors and perceptions. This heterogeneity across population sub-groups is one source of uncertainty in health status needs assessment data. An additional source of uncertainty is random variability or statistical instability faced by jurisdictions that are sparsely populated, as is the case with some of the localities in the NRV. Low number or incidence can produce unstable rates that fluctuate greatly from year to year. In addition, a “snapshot” view of one year may not adequately represent the true status of the community’s health (Congdon, 2001; NACCHO, 2001, 2004).

- It is not always possible to design a needs assessment and strategic planning process to achieve the highest standards available or possible. By following principles of the *Shoestring Approach* (Bamberger, Rugh, Church & Fort, 2004), the principal investigator attempted to ensure that the maximum possible methodological rigor was achieved within the time, budget, resources, and data constraints of this study. The PATH Steering Committee and membership desired to have the extensive MAPP process completed in as short a time frame as possible—and no longer than 18 months. Therefore, careful planning was done to ensure as effective data collection and analysis as possible within the limited time constraints. The budget and other resources to conduct the MAPP process in the NRV were much smaller and more limited than desirable. These budget and resource constraints led to restricted choices in methodological instruments, depth of analyses, etc. and were addressed in such ways as simplifying the evaluation design, restricting sample sizes, exploring economical data collection methods (such as using volunteers to collect data and using focus groups and key informants) and looking for reliable secondary data. There were numerous data constraints that have already been outlined and discussed such as sampling and non-sampling biases and error, instrument validity/reliability, statistical instability, and Survey response rates. Other data constraints included systematic reporting biases and difficulty to reach certain populations within the NRV such as international populations and the homeless. These data constraints were addressed as much as possible by reconstructing baseline data from secondary data and through the use of multiple methods. Multiple methods, i.e., the mixed-method design of this study, combined qualitative and quantitative data to increase validity through triangulation and to save time and money. Overall, the constraints mentioned above were also dealt with through careful planning and consultation with the PATH Steering Committee and membership, as well as through

community stakeholders. By clearly identifying and understanding the expectations and needs of the community from this MAPP process, the costs and time of the process were streamlined and reduced as much as possible, while still maintaining credibility.

Summary

Means of improving the health status, quality of life, and local public health system in semi-rural and rural communities, such as the NRV, are longstanding issues. MAPP—a comprehensive, multi-component, strategic planning model and tool—was fully implemented in the NRV in an effort to mobilize the entire New River Valley community to prioritize public health issues, identify resources to address those issues, and take actions for improving the community’s health status and quality of life for NRV residents. The mixed-method study design utilized the MAPP tool and entailed a variety of qualitative and quantitative research techniques. This research approach capitalized on the strengths of each method to answer specific research questions and was very helpful in systematically bringing together community partners and studying issues and problems to improve the NRV community’s holistic health and practices.

Chapter 4

Data and Results

The purpose of the study was to mobilize the NRV community of southwest Virginia in an effort to improve the health status and the quality of life of its residents. This was accomplished by fully implementing MAPP—a comprehensive, multi-component, strategic planning model and tool that has six phases and four assessments (see Chapter 2 and 3)—to qualitatively and quantitatively prioritize public health issues, identify resources, and develop integrated plans and form effective partnerships to strategically address those issues. This chapter describes and discusses, in detail, the primary and secondary qualitative and quantitative community health data and information gathered during the four MAPP Assessments, as well as the MAPP Phases that entailed Visioning, Identifying Strategic Issues, and Formulating Goals and Strategies, and the Action Cycle. Each of these Phases clearly addressed the secondary research questions specific to that particular Phase.

The following summarizes the data and results of the NRV MAPP process.

Phase 2: Visioning

During the June 2007 retreat, information was collected, organized according to Themes (Appendix O), subsequently edited, and refined to develop shared Vision and Values statements that would provide focus, purpose, direction, and a framework to the entire MAPP process for the future. The community Vision provides an overarching goal for the community—a statement of what the ideal future looks like. Values are the fundamental principles and beliefs that guide a community-driven planning process (NACCHO, 2001, 2004). This phase answered the following questions:

- What does a healthy NRV mean to you?
- What are the characteristics of a healthy community?
- Where do you see the local public health system in the next five to ten years?

NRV MAPP vision statement.

The NRV MAPP Vision for the LPHS is to provide comprehensive and holistic health promotion, protection, and disease prevention services to all community residents and visitors, which encompasses the physical, mental, and spiritual components of well-being, including a healthy and safe environment and economic structure that supports the provision of adequate housing and transportation, as well as equal availability of, and accessibility to, cooperative healthcare and social services, including health education.

NRV MAPP values statement.

The NRV MAPP Vision embodies the following Values, regarded as elements of a healthy community:

- Quality, accessible, integrated, and affordable holistic healthcare and community services for everyone
- Effective and efficient use of community resources with an ability to adapt services and infrastructure in response to changing needs
- Integrated, diverse community partnerships that support a robust economy and a healthy, holistic, and sustainable way of life
- Emphasis on a healthy lifestyle with a focus on lifelong learning, informed decision-making, health education, prevention, and health promotion

- A community that welcomes and includes all members who have the opportunity to share their ideas, feel a sense of belonging, and have opportunities to share in the formation of evidence-based policy and practices
- Personal and community safety for everyone—as a right and a shared responsibility
- High quality and exceptional environmental indicators and resources

Phase 3 A: Local Public Health System Assessment (LPHSA)

The challenge of preventing and controlling illness and improving community health is ongoing and complex—ultimately resting on the capacity and performance of the local public health system of the NRV. The NRV LPHS is not just the local health department. It is the collective network of providers (public, private, not-for-profit, and citizens) that delivers services and works to promote a healthy community.

This Assessment used local-level model performance standards (Model Standards) found in the National Public Health Performance Standards Program (NPHPSP) instrument/tool (see Chapter 2 and 3) to help the NRV community's LPHS identify its strengths, weaknesses, and opportunities in an effort to improve its practice and performance. Through periodic assessment guided by the Model Standards, the NRV LPHS can improve collaboration and integration among its many components, ultimately guiding the direction of health policy and leading to more efficient and effective use of resources and improvement of services. The benefits of implementing public health performance Model Standards include improved accountability, better resource deployment, enhanced capacity building for the local community, widespread use of best practices, and greater focus on mission and goals (NACCHO, 2001, 2004).

The LPHSA addressed two questions:

- What are the components, activities, competencies, and capacities of the NRV local public health system?
- How are the EPHS being provided to the NRV community?

During the 2007 Retreat, participants used the NPHPSP's Local Public Health System Performance Assessment Instrument (<http://www.cdc.gov/od/ocphp/nphpsp/>) to evaluate the NRV's local public health system performance against a set of optimal standards using the following response options criteria:

| | |
|----------------------|---|
| NO ACTIVITY | 0% or absolutely no activity. |
| MINIMAL ACTIVITY | Greater than zero, but no more than 25% of the activity described within the question is met. |
| MODERATE ACTIVITY | Greater than 25%, but no more than 50% of the activity described within the question is met. |
| SIGNIFICANT ACTIVITY | Greater than 50%, but no more than 75% of the activity described within the question is met. |
| OPTIMAL ACTIVITY | Greater than 75% of the activity described within the question is met. |

(DHHS, 2007a, 2007b).

The completed Assessment (including the two optional questionnaires) was submitted to the CDC for final analysis and scoring that used the same categories as noted above to characterize levels of activity and performance for the EPHS and Model Standards. The final report can be found in Appendix Q. It should be noted that the NRV's LPHSA results represent the participants' collaborative effort to monitor local performance standards and the collective assessment of performance of all entities in the NRV LPHS, not any one organization (DHHS, 2007a).

NRV performance assessment instrument results.

Table 9 provides a quick overview of the level of the NRV local public health system's performance activity in each of the EPHS. The EPHS are color coded by core public health function—gold (assessment), green (policy development), and blue (assurance). Each EPHS score is a composite value determined by the scores given to those activities that contribute to each EPHS (DHHS, 2007b). Details of the individual activity scores of the Model Standard(s) for each EPHS and the stem question scores for that standard(s) can be found in the final report in Appendix Q.

Figure 15 displays each composite score from low to high, allowing easy identification of service domains where performance was relatively strong or weak. The range lines show the range of responses within an EPHS, and the color coded bars identify which of the EPHS fall in the five categories of performance activity. These scores show that the NRV LPHS is consistently demonstrating strong performance (significant to optimal activity) in nine of the 10 EPHS--the only exception being EPHS #9, Evaluating Services, where there is only moderate activity.

| Essential Service | | Score |
|---------------------------|---|-------|
| 1 | Monitor Health Status To Identify Community Health Problems | 52 |
| 2 | Diagnose And Investigate Health Problems and Health Hazards | 95 |
| 3 | Inform, Educate, And Empower People about Health Issues | 66 |
| 4 | Mobilize Community Partnerships to Identify and Solve Health Problems | 59 |
| 5 | Develop Policies and Plans that Support Individual and Community Health Efforts | 67 |
| 6 | Enforce Laws and Regulations that Protect Health and Ensure Safety | 92 |
| 7 | Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 59 |
| 8 | Assure a Competent Public and Personal Health Care Workforce | 72 |
| 9 | Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 47 |
| 10 | Research for New Insights and Innovative Solutions to Health Problems | 86 |
| Overall Performance Score | | 70 |

Table 9. Summary of Performance Scores by Essential Service (DHHS, 2007b)

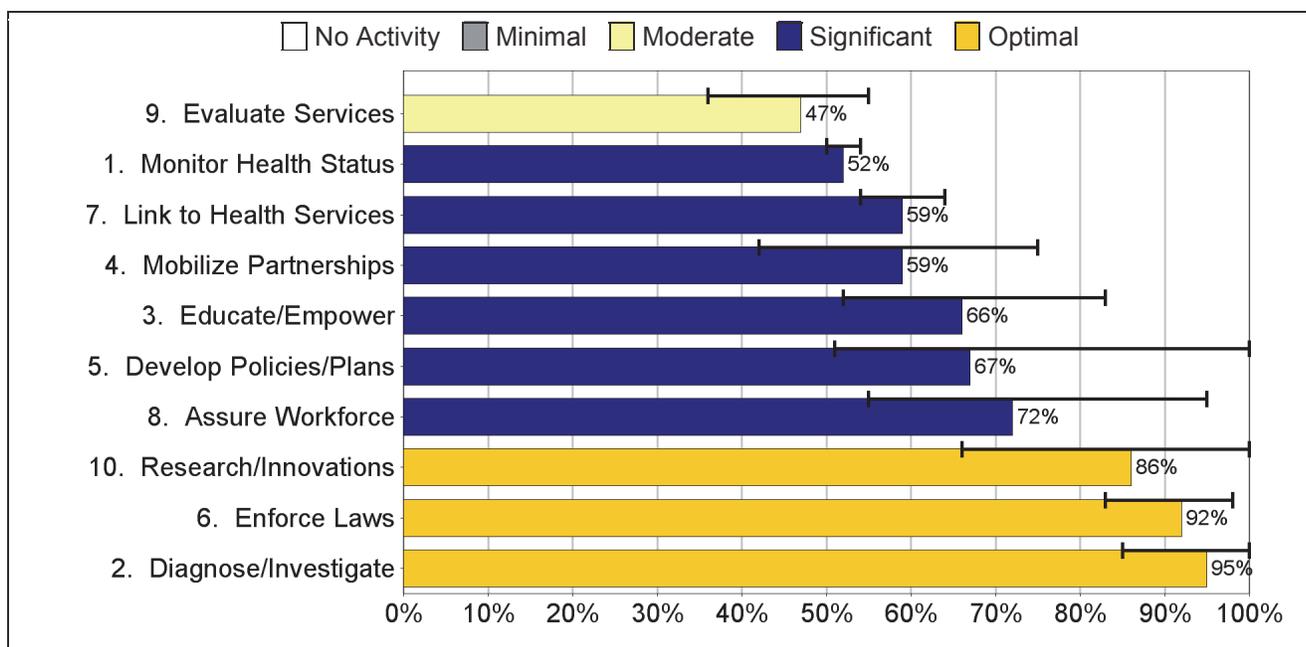


Figure 15. Rank Ordered Performance Scores for Each Essential Service, by Level of Activity (DHHS, 2007b)

Overall, 60% of the NRV LPHS's EPHS scored in the significant activity level, 30% in the optimal level, and only 10% in the moderate level (DHHS, 2007b). However, there were definitive strengths and areas of concern in the NRV LPHS for each EPHS that were identified and discussed during the 2007 Retreat scoring process. These are noted in Appendix R.

Additionally, the following themes emerged during the NPHPSP/LPHSA process:

- Funding, resources, and regulations drive activity. For example, Model Standards related to emergency preparedness and response activities (including epidemiologic response) scored high because a significant amount of funding is currently available for this activity. Larger organizations had higher levels of performance activity than smaller organization, probably due to available resources. Model Standards related to enforcement of laws, regulations, and ordinances consistently scored high.
- Discussions resulting from the consensus process resulted in votes changing as more information was presented.
- The scores were less important than the increased awareness, strengthened relationships, and commitment to improvement generated by the process.

Optional priority rating and agency contribution questionnaires.

Two optional questionnaires were also completed—one which asks about priority of each model standard and the second which assesses NRHD’s contribution to achieving the model standard. The supplemental *Priority Questionnaire* (see Appendix G)—which asks about the priority of each Model Standard to the LPHS--was useful in guiding sites to target their limited attention and resources to areas of high priority, but low performance. The second supplemental questionnaire—*Agency Contribution Questionnaire* (see Appendix H)--that asks about the contribution of NRHD to each model standard--assisted in considering the role of NRHD in performance improvement efforts. These results helped NRHD in its own strategic planning and quality improvement activities (DHHS, 2007a, 2007b).

Optional priority rating questionnaire results.

Table 10 shows the priority ratings (as rated by participants in the July 2007 PATH meeting on a 1 - 10 scale, with 10 being the highest) and performance scores for EPHS arranged under four quadrants. The quadrants are based on how the performance of each EPHS compares with the priority rating and provide guidance in considering areas for attention and next steps for performance improvement (DHHS, 2007b).

| Essential Service | Priority Rating | Performance Score (level of activity) |
|--|-----------------|---------------------------------------|
| Quadrant I (High Priority/Low Performance) - These important activities may need increased attention. | | |
| 1. Monitor Health Status To Identify Community Health Problems | 8 | 52 (Significant) |
| 3. Inform, Educate, And Empower People about Health Issues | 9 | 66 (Significant) |
| 4. Mobilize Community Partnerships to Identify and Solve Health Problems | 8 | 59 (Significant) |
| 5. Develop Policies and Plans that Support Individual and Community Health Efforts | 9 | 67 (Significant) |
| 7. Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 9 | 59 (Significant) |
| Quadrant II (High Priority/High Performance) - These activities are being done well, and it is important to maintain efforts. | | |
| 2. Diagnose And Investigate Health Problems and Health Hazards | 9 | 95 (Optimal) |
| 6. Enforce Laws and Regulations that Protect Health and Ensure Safety | 8 | 92 (Optimal) |
| 8. Assure a Competent Public and Personal Health Care Workforce | 8 | 72 (Significant) |
| Quadrant III (Low Priority/High Performance) - These activities are being done well, but the system can shift or reduce some resources or attention to focus on higher priority activities. | | |
| 10. Research for New Insights and Innovative Solutions to Health Problems | 6 | 86 (Optimal) |
| Quadrant IV (Low Priority/Low Performance) - These activities could be improved, but are of low priority. They may need little or no attention at this time. | | |
| 9. Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 7 | 47 (Moderate) |

Table 10. Essential Services by Priority Rating and Performance Score, with Areas for Attention, NRHD (DHHS, 2007a)

Model Standards by priority and performance score, with areas for attention can be found in the final report (Appendix Q).

Those EPHS and/or Model Standards that are potential areas/activities needing increased attention in the NRV--based on the priority ratings and performance scores—are found in Quadrant I and include:

- EPHS 1: Monitor Health Status to Identify Community Health Problems
 - Model Standard 1.1: Population-Based Community Health Profile (CHP)
 - Model Standard 1.2: Access to and Utilization of Current Technology to Manage, Display, Analyze, and Communicate Population Health Data
- EPHS 3: Inform, Educate, And Empower People about Health Issues
 - Model Standard 3.1: Health Education and Promotion
 - Model Standard 3.2: Health Communication
- EPHS 4: Mobilize Community Partnerships to Identify and Solve Health Problems
- EPHS 5: Develop Policies and Plans that Support Individual and Community Health Efforts
 - Model Standard 5.1: Government Presence at the Local Level
 - Model Standard 5.1: Public Health Policy Development
 - Model Standard 5.3: Community Health Improvement Process
- EPHS 7: Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable
 - Model Standard 7.1: Identification of Personal Health Service Needs of Populations
 - Model Standard 7.2: Assuring the Linkage of People to Personal Health Services
- Model Standard 8.1: Workforce Assessment, Planning, and Development

(DHHS, 2007b).

Optional agency contribution results.

Table 11 shows the EPHS arranged by LPHA contribution (Highest to Lowest) and performance score, as well as quadrant designation. The quadrants are based on how the performance of each EPHS compares with the LPHA contribution and provide guidance in considering the role of the LPHA as it relates to the results for each EPHS. These results can assist the LPHA in strategic planning and quality improvement activities (DHHS, 2007b).

| Essential Service | LHD Contribution | Performance Score | Consider Questions for: |
|--|------------------|-------------------|-------------------------|
| 1. Monitor Health Status To Identify Community Health Problems | 83% | Significant (52) | Quadrant I |
| 2. Diagnose And Investigate Health Problems and Health Hazards | 100% | Optimal (95) | Quadrant II |
| 3. Inform, Educate, And Empower People about Health Issues | 58% | Significant (66) | Quadrant I |
| 4. Mobilize Community Partnerships to Identify and Solve Health Problems | 50% | Significant (59) | Quadrant I |
| 5. Develop Policies and Plans that Support Individual and Community Health Efforts | 50% | Significant (67) | Quadrant I |
| 6. Enforce Laws and Regulations that Protect Health and Ensure Safety | 75% | Optimal (92) | Quadrant II |
| 7. Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 75% | Significant (59) | Quadrant I |
| 8. Assure a Competent Public and Personal Health Care Workforce | 31% | Significant (72) | Quadrant III |
| 9. Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 33% | Moderate (47) | Quadrant IV |
| 10. Research for New Insights and Innovative Solutions to Health Problems | 33% | Optimal (86) | Quadrant III |

Table 11. Essential Services by Perceived LPHA Contribution, Performance Score, and Quadrant, NRHD (DHHS, 2007b)

Model Standards by perceived LPHA contribution and performance score, and quadrant, can be found in the final report (Appendix Q).

Phase 3 B: Community Themes and Strengths Assessment

The Community Themes and Strengths Assessment, a vital part of a community improvement process, gathered information and feedback about community thoughts, opinions, concerns, quality of life in the community, community assets, and other issues of importance to the NRV community. This Assessment answered the following questions:

- What is important to the NRV community?
- How are quality of life and the local health care system perceived by NRV community residents?
- What assets does the NRV community have that can be used to improve community health?

The principal investigator and Kemp, with assistance of volunteers, interviewed a total of 58 NRV residents representing nine locales/groups. Kemp interviewed 28 individuals from four groups representing three locales—one group each representing Floyd and Giles counties, and two groups representing Montgomery County (Blacksburg and Christiansburg). This principal investigator interviewed 30 individuals from five groups representing two NRV locales--two groups from Pulaski County (Pulaski County Health Department clients, NRHD employees living in Pulaski County), and three groups representing Radford City (Radford City Department of Social Services, Radford City Health Department clients, and NRHD employees living in Radford City). An analysis of seven to 18 interviews from each of the six groups was conducted. These interviews were sufficient to allow the primary investigator and Kemp to discover a redundancy of findings and uniformity in the number of individuals interviewed from each group. The data and observations collected during the interviews were analyzed using the constant comparative method by comparing occurrences found within transcripts of interviews

that describe the Assessment questions. Occurrences are characterized by direct words or phrases spoken by the interviewee. Comparisons of occurrences lead to a property that describes the occurrences. The principal investigator and Kemp transcribed the hand-recorded interviews, uncovering informative responses from the interviewed participants, and then coded the data by reading the transcripts line-by-line and entering the transcripts into seven categories based on the Interview Guide (Appendix I). The results of the data analysis provided a rationale and description for each of the Assessment questions (Kemp, 2008).

Kemp's complete findings of her targeted investigation of Floyd, Giles, and Montgomery counties can be found in her dissertation, *Quality of Life and the Health Care System in New River Valley, Virginia: Residents' Perceptions and Experiences*, dated March 17, 2008 (<http://scholar.lib.vt.edu/theses/available/etd-04032008-141550/>). The following analysis presents a synthesis of how the groups representing Pulaski County and Radford City responded to the questions from the Interview Guide. In addition, the analysis defines the seven categories from within the coding process and interprets the data collected from the interviews. Kemp's findings are also summarized and compared to this principal investigator's findings. It should be noted that common themes were found within each group that distinctly set them apart from other groups. Similar themes were also found that threaded a bond between the groups. The themes and bonds characterize the perceptions and concerns of NRV citizens concerning their local community in relation to current healthcare systems and accessibility. Tables in Appendix S summarize the seven categories—thematic codes and examples—for each of the six groups' responses (Table S1—Blacksburg, Table S2—Christiansburg, Table S3—Floyd, Table S4—Giles, Table S5—Pulaski, Table S6—Radford).

Pulaski group.

Interviewees for the Pulaski group consisted of 17 women and one man and ranged in age from 16 to 75 years. Four interviewees were unmarried, eleven were married, and three were widowed. All but three interviewees were currently employed, and all but one had health insurance. The interviews took place at the Pulaski County Health Department office and the NRHD Administrative office in the Montgomery County Health Department.

Community quality of life.

Overall, the perceptions of the quality of life in the community among the Pulaski Group were very positive, with one female interviewee claiming that she is, “very satisfied living next door to a preacher, near the fire station, and neighbors greatly enhance the quality of life here.” Other comments included the fact that several interviewees feel “very satisfied,” “well cared for,” and “way safe here” in the community and “have opportunities to participate in a variety of activities and associations.” One interviewee commented that there is “always a police car seen multiple times daily and our town has cleaned up all areas by removing old buildings, so it presents a great visual impression.” Another interviewee commented that “the area offers reasonably priced homes, quiet neighborhoods, safety, and security...my family has only grown fond of the area and the overwhelming sense of community it offers.” Nevertheless, there are negative perceptions of quality of life in the community, as one interviewee reported that, “it appears to be a town in decay and the rich history disappears with the demolition of each building, with nothing filling the empty void.” Another interviewee states that “the quality of life for many Pulaski County residents is poor due to lack of education, job opportunities, health care, and substance abuse...neighbors waving and having a nice word, hardly exist anymore...doors and windows are locked now, because there is no trust.”

Community safety.

Pulaski seems to be a very safe community, with a “very low crime rate,” based on several interviewees’ perceptions. More specifically, it was reported that they “feel very safe due to the low crime rate and feel comfortable alone at night.” As one interviewee states, “Workplaces, schools, and playgrounds are safe. Many people know and trust one another. Neighbors do look out for one another.” One female interviewee explained that she lives alone and feels safe “knowing my neighbors helps out, as I have a system worked out with them to let them know if I need help.” Another female interviewee commented that “I absolutely feel that Pulaski County is a safe place to live. I feel comfortable and safe in my home and neighborhood; I count on my neighbors’ sense of community and expect them to ‘keep an eye out’ for my home as I would for them. I often shop alone, even at night, and have always felt at ease in our community parks and playgrounds.” Furthermore, one interviewee expressed concern that “Pulaski has an unfair reputation for being ‘unsafe’.” However, there is a presence of “druggies, but those problems are everywhere and at least here you know who to avoid because you know who is ‘trouble’.” In addition, one female interviewee expressed that she feels “unsafe in this community” due to a recent personal experience with violence, as she was raped in April and “this incident caused me to feel unsafe in my own community.” Another interviewee explained that he “often hears of concerns regarding safety and, as a result, there is a noticeable decrease in neighbor interactions.” Several interviewees expressed safety concerns related to increasing drug usage and crime. As one interviewee explained, this community is “saturated with illegal drugs and crime. We look out for those who we have come to know and trust, but it is not the closeness of a neighborhood that was present in this town 30-40 years ago.” Likewise, several

interviewees stated that they are not confident about the “citizens’ safety when the only time law enforcement is present is “when they are trying to apprehend the drug dealers living on the block.”

Community opportunities.

The consensus concerning opportunities for career growth, business ownership, job training/education, or reasonable daily commutes in Pulaski was negative, with the universal sentiment among the group being that “Pulaski is in desperate need of more job opportunities for its residents.” Interviewees stated that they can “understand why most younger people choose to move elsewhere” because “finding a job with career growth in Pulaski is challenging and economically, the area is experiencing somewhat of a free-fall so, there is concern for anyone trying to find employment or business opportunities in the area.” One interviewee explained that, “it is difficult to get a business going,” as “locally owned businesses seem to struggle,” and that “there are many unemployed in this area.” Furthermore, in terms of the daily commute, “Pulaski has very few jobs,” so several interviewees noted that they “must travel to Christiansburg, Radford, Blacksburg, or Roanoke for a good job.” Additionally, many businesses/manufacturers have closed in recent years in Pulaski—e.g., “Pulaski has already seen a dramatic increase in its unemployment with the recent closing of Pulaski furniture”--so “workers who thought that they would retire from their jobs have been hit with how to find another job at the age of 60!” The opportunities that are nearby include job training via local universities and community colleges, affordable housing, Volvo, and Walmart, which if it were not for the latter businesses, “people would be in trouble.” Still, despite limited opportunities, a female interviewee’s observations

sum up the overall group think: “Our town needs employers to invest in the town and make it a place where we can be proud (as we once were) that we have the employment opportunities for its town residents.”

Community cohesion.

There was an overwhelming sense of cohesion among the interviewees, as “most people in Pulaski County care about their home and are willing to do their part in protecting its reputation as a great place to live. Pulaski County residents, as many others in the New River Valley, have a strong sense of community; there are many second, third, fourth, etc. generation residents to whom the area not only represents community, but family history as well.” As one interviewee shared “people who live here were raised to believe they should help out their neighbors,” act as a “resource for others,” and raise their children to be “interested and involved in the community.” In fact, one woman explained that, “when people here can’t pay their bills, the community will collect cans to help people out.” Likewise, another interviewee claimed that if she “won the lottery,” she would “build a homeless shelter here.” However, negative sentiments, although infrequent, were expressed in that “neighbors here know they can help make Pulaski a better place to live, but that doesn’t mean they are willing to give the effort,” because “one person can’t do it all” and the “voice of the elite is heard the loudest here.”

Community healthcare system.

For those residents with health insurance, accessibility and availability of health care services and area hospitals are satisfactory in the area. As one interviewee explained, “I am satisfied with the healthcare I receive, but I have good health insurance. I know some people have difficulty finding a new or different doctor. I think the cost of health care in this area is high. The quality of health care is good, but at times, could be much better. Many times, options

are limited. A person may have to drive 30 or 40 minutes or even an hour to receive a certain test or procedure. If the person is seriously ill, medical care is provided out of the area.” Another interviewee noted that “we have a wonderful hospital in the area, but this hospital does not do maternity services anymore...what a shame!” However, one woman explained that she had chemotherapy at Cleveland Clinic, and the health care was “definitely better in Cleveland than here.” Additionally, there are no geriatric and very few female health specialists in the area, as the “closest appears to be in Roanoke,” and the “health care system appears to be very much male dominated...Pulaski County is in need of more healthcare providers, especially more female healthcare providers.” Another interviewee complained that “the hospital was moved to an area that is not easily accessible to its constituents. It is difficult to get an appointment with physicians...and many physicians in corporate practices limit their time with patients...when more time should be taken.” Another interviewee noted that “the physicians are good, but their business offices are horrible.” Concern was consistently expressed about those residents who were under-/uninsured who “lack the knowledge, skills, and ability to find alternatives and navigate through the healthcare arena!” However, there are healthcare provider options for the under-/uninsured in Pulaski County such as the Free Clinic and the Pulaski County Health Department, but these are not without problems. As one interviewee noted, “There has been great improvement at our local Free Clinic as far as services, but there are some folks that don’t qualify for Free Clinic services because they work and make too much money. However, these folks still don’t have the luxury of being able to afford the benefits of having health insurance.” It was also mentioned that the Pulaski County Health Department itself is not without flaw, as “it is not accessible for persons who are physically challenged, such as those confined to a

wheelchair or walker.” However, it is important to note that despite the local health care system’s opportunities for improvement, one widow explained that although her “health insurance costs keep rising, it still pays for 100% of services,” therefore, she is satisfied.

Awareness of community health-related agencies and organizations.

All of the interviewees noted that there are numerous governmental, private, and non-profit organizations—and a “formal and informal network of agencies and well-meaning people”—available to provide services to those in need such as “transportation services, income-based medical clinics, faith-based groups, food banks, counseling services, shelters, etc.,” and many gave specific examples. For instance, one interviewee shared that several such agencies include the “Health Department, Free Clinic, Community Action, New River Valley CSB, Agency on Aging, RSVP, SHARE Program, Meals on Wheels, as well as churches that offer food and other necessities.” Interviewees also mentioned additional examples including other local and state health and human service agencies (Social Services, Community Action, NRV Community Services, NRV Senior Services), Share Program, Salvation Army, Daily Bread, and Beans and Rice. It was also noted by many interviewees that “these agencies work well together in providing services,” and “it is easy to get help from these groups provided you meet certain criteria.” However, at times, limited funding and resources were noted as a barrier, “individuals may encounter a waiting period before receiving assistance,” and often, “there is lots of red tape to access services.” Similarly, another interviewee explained that “churches and community provide the main sources of support; for state organizations, you have to drive for their services.”

Community needs.

There are numerous community needs proposed by the interviewees, including “a recreation/community center,” “a homeless shelter,” “after-school programs for children that help build self-esteem in an effort to address issues such as bullying, drug activity, pregnancy, gang activity,” “economic and workforce development,” “increased industry and jobs,” “improved services for the elderly...including affordable retirement communities, government-assisted housing, and an adult day care center,” “affordable and accessible public transportation or volunteer transport for medical appointments and shopping.” Other suggestions included “town council members who will welcome more organizations and opportunities into the area,” and “revitalization of the town center.” More specifically, one interviewee explained that the “Walmart had to relocate to Dublin, VA.” Similarly, another interviewee explained that there needs to be “more local and government funding for service programs, more health care for senior and women’s health issues, and additional government -assisted housing for the elderly.” Additionally, there is a perceived need for “improved community communication and increased involvement of individuals in the community.” As one interviewee eloquently stated, “There are several things that would make the community a better place to live. First, people need to take a more active role in local government in order to ensure policies are put into place with the best interest of the community in mind. Second, people need to become better advocates for community-based programs; they must understand that things that benefit our citizens benefit the community as a whole. It is important that people be willing to give time, money, or whatever they can in support of these services. Third, people need to educate themselves...because information really is power. Taking responsibility for oneself is an important step in protecting

the overall health and well-being of everyone in the community.” Nevertheless, one interviewee felt that she “wouldn’t change a thing, especially the beautiful views, as the natural beauty greatly adds to the quality of life in the community.”

Summary.

Overall, the Pulaski group perceived a good quality of life and strong sense of community cohesion, with several apparent community needs, such as economic and workforce development, an improved public transit system, more programs/services for children and the elderly, and a more accessible local healthcare system. Although there was a fair distribution of both positive and negative attributes perceived by the interviewees, it was unclear as to how long some of the residents resided in the area, or if they had relocated from another state or area that may have offered more accessible health care services or job opportunities. While Pulaski has many community needs, the residents seem to appreciate their quality of life and the aesthetic beauty of the surrounding area in southwest Virginia.

Radford City group.

There were a total of 12 interviewees that constitute the Radford City Group, ranging in age from 19 to 68 years of age. Three interviewees were male, while nine were female, eight married, one widowed, and three who were unmarried. In addition, all but three interviewees were currently employed, and all but one had health insurance. The interviews took place at the Radford City Health Department office and the New River Health District Administrative office in the Montgomery County Health Department.

Community quality of life.

There was a strong sense of satisfaction with the quality of life in the area, as it is a “good place to live,” “an excellent place to raise a family,” “a good place to grow old,” “safe community compared to others,” with “many resources,” and “knowing neighbors helps increase the quality of life.” Other positive comments included “I feel as if the City of Radford has a lot of activities that promote community life;” and “We have recreation, excellent schools, activities for kids, and an attitude of community.” One interviewee stated that “my children love the area!” Interestingly, it was noted by one interviewee that, “most people have lived around here for years, so knowing each other and that policeman live nearby makes one feel safe.” However, one interviewee noted that “if not for VA Tech and Radford University, there would be no opportunities for cultural enrichment, i.e., plays, musical events, speakers.” Nevertheless, three interviewees perceived a lack of quality of life, citing “there are no jobs available, with too many people and too few jobs;” “you must leave these communities for entertainment other than high school athletic events and dining out;” “little cultural stimulation;” and “limited opportunities for community life participation other than opportunities presented through work.”

Community safety.

The interviewees reported mixed observations regarding crime and community safety. Eight interviewees felt that Radford City was a safe place to live “with individual neighborhoods that are safe” citing that there is “very little crime present” and that the “police do an excellent job.” In addition, one female interviewee explained that she “feels very safe here and do not feel afraid to go out alone at night” and that “usually problems are caused by newcomers.” Another female interviewee explained that “we have very good neighbors and we watch out for each other.” However, one interviewee shared that she is “scared to walk down the street alone at

night due to the threats associated with living in a college town.” However, this same interviewee also explained that she has “two neighbors that look out” for her since she lives alone. Two interviewees did note that “in recent years we have seen more crime related to drugs and more violent crimes in the area.”

Community opportunities.

There was differing opinions regarding opportunities in the community such as economic development and business growth, employment, education, and cultural enrichment. However, overall, job opportunities are lacking in the area. As one interviewee explained, “there is a big shortage of jobs, especially blue collar jobs.” However, a younger interviewee shared that while it is a fairly “difficult place to find a job,” he felt that “it would be relatively easy to start a business here,” given the fact that there is “good higher education at Radford University and affordable housing.” Another interviewee noted that “downtown has a problem attracting business appropriate for a college community and then keeping the ones we do have...,” while another interviewee noted that “local businesses are rarely successful...Radford City does not work well with Radford University to promote business growth.”

Community cohesion.

Most (eight) of the interviewees expressed a strong sense of community cohesion and “community bonding.” As one interviewee stated, “The people in this community are generous and very giving folks.” More specifically, one interviewee reported that “people work individually and in groups to make the community better,” and she is currently involved in “mentorship programs and talks to high schoolers about the benefits of college.” Other interviewees noted that “most people living here care about Radford and their neighbors” and “neighbors do look out for one another.” However, one of the older female interviewees noted

that “there is a sense of community for some, but others are transient and could care less.” Three interviewees perceived more negative aspects of community cohesion, such as being “willing to help out,” but not knowing anything or what to do. One female interviewee expressed that she felt like “the majority of people don’t know what needs the citizens in Radford have.” Another interviewee explained that she “actually feels helpless in problems facing the community,” while another interviewee shared that “without better leadership, working with the American Cancer Society and church do not make major improvements.” Another interviewee noted that “Too many faculty at the university live outside Radford. That is not helpful for growth and enrichment of our schools and for community cohesion.”

Community healthcare system.

Eight of the 12 interviewees expressed a positive experience with the local health care system, highlighting the accessibility of hospitals, “an outstanding Health Department” and the Carilion Clinic and the “excellent care” received there, as well as “easy access to healthcare with Medicaid benefits.” One interviewee claimed that he “doesn’t know much about it,” and another stated that she was “uninformed as to the challenges for those less fortunate;” therefore, they did not elaborate on their responses. However, one interviewee explained that she was “not satisfied with access,” as she takes care of her “elderly mother and other than home health, there is no help, and she has a catheter, so assisted living won’t help.” Regarding mental health services, “mental health is almost non-existent, and without insurance, you can forget mental health access.” Eight of the interviewees cited existing gaps in the healthcare system “to cover the uninsured and poor” including that fact that “dental care is an ongoing need for the uninsured

and poor.” However, many of these noted the Free Clinic as an alternative option for the under/ uninsured. One female interviewee stated that she was satisfied with the healthcare system, but “clients complain about the availability of Medicaid doctors and especially Medicaid dentists.”

Awareness of community health-related agencies and organizations.

With the exception of one interviewee, there was a good sense of awareness of community health related agencies and organizations, including “an outstanding Health Department,” “social services and NRV Community Services, who help with medicine if you’re all out,” and “local churches: Radford Worship Center, Main Street Methodist, Central Methodist.” Interestingly, even though “organizations cooperate and work together well, it can be difficult to obtain services.” Other agencies and organizations that were mentioned included “church support, Beans and Rice Program, and the Pulaski Recreation Center for Youth,” “Red Cross and food banks,” “... Women’s Resource Center, Community Action, Radford Clothing Bank”—and their services were noted to be “easy to obtain” and “easy to get assistance if you meet the criteria for the programs and the services.” One interviewee noted that “all of these organizations have a good mission statement and attitude for helping those who need it.” Other organizations with a positive connotation included the “EMS is good, good Fire Department, and the police are very helpful.” However, it was noted by one interviewee that “many churches are not doing public outreach, although one has an afterschool program for children and food bank.” More specific to health care organizations, “Carilion Home Health is very difficult to obtain help, and for an elderly person without help to fill out forms, he/she couldn’t get help.” Due to the aforementioned discrepancy in services, one interviewee exclaimed that she “doesn’t feel the

organizations work well together at all!” Two interviewees clearly articulated that “people need to be informed more about the agencies and organizations that may help them” and “there could be more advertising about the programs to help people.”

Community needs.

Several community needs were reported by this group, which reiterates the needs reported above, such as “more jobs,” “more doctors and better care for elderly adults and the poor;” expanded transportation system, such as the “university shuttle should expand their services and be modeled more like Blacksburg Transit;” and “make the community look cleaner and lower prices in local stores.” One younger interviewee explained that there is a need for “more places for youth to hang out at night, as those that are available don’t seem to be open during the times with the most need.” Other expressed community needs included “encouraging recycling,” “shopping areas that reflect the community,” “some choices of restaurants,” “more cultural events,” and “well-marketed community events that would offer stimulation to all age groups.” Another middle-aged male interviewee noted that “local governments/organizations need to communicate/collaborate on regional projects when applicable” and “resources need to be shared as much as possible to take advantage of what our local college/universities have to offer.”

Summary.

While there were several positive aspects to the City of Radford, such as the availability of many community agencies and organizations and Radford University, the community lacks the availability of and access to elder care services and healthcare for the under-/uninsured (particularly dental and mental health), a more expanded public transit system, and more job opportunities, particularly for blue-collar employees. Furthermore, it should be noted that two

interviewees were not aware of any available community agencies and organizations, which speaks to a need for improved public communication/media on behalf of community health and human service agencies and organizations to promote awareness of service availability.

Blacksburg group.

The interview group from Blacksburg consisted largely of mid-30s to middle-aged adults, and one middle school student, with five women and two men present, and four unmarried, one married, and two widowed interviewees. All of the interviewees were very active in the community as volunteers with the Retired Senior Volunteers Program (RSVP), Humane Society, and church. Additionally, two of the women were currently employed; one who worked from home as a contract worker for a major corporation and the other a teacher in the local public school system. Of the seven interviews conducted with this particular group, two were conducted at the Blacksburg Humane Society, three at RSVP, and two were conducted at the Blacksburg Community Center (Kemp, 2008).

Summary.

According to Kemp (2008), the Blacksburg group, overall, perceived the quality of life, safety, opportunities, cohesion, and the healthcare system in the community very positively, with a strong sense of awareness of health-related agencies and organizations in the area. Several needs within the community were also expressed by the interviewees (such as housing/assisted living opportunities, after-school opportunities especially for high-school students, and economic development opportunities for small businesses), but these needs were not viewed as completely detrimental to the positive aspects of the community at-large.

Christiansburg group.

The Christiansburg interview group was comprised of one 29-year-old, two middle-aged adults, and four adults between the ages of 69 and 85 years. Four interviewees were unmarried, two widowed, and one was married, with four males and three females. Several interviewees in this group were active volunteers in the community, with two serving as working parents. Additionally, one interviewee was a young, single mother of two, four interviewees had adult children residing in the NRV, and two interviewees never had children. The interviews took place at the Christiansburg Free Clinic, Christiansburg RSPV office, and following a Central Labor Council meeting.

Summary.

As noted by Kemp (2008), the Christiansburg group, overall, perceived a good quality of life in the area and shared a sense of safety within the community. While the majority of interviewees perceived a number of opportunities in the community—including volunteer opportunities, retirement centers, learning opportunities for seniors, and recreation centers—a strong sense of community cohesion was lacking among the majority of interviewees, as well as major deficits within the community healthcare system particularly in terms of insurance and access for the under-/uninsured. The Christiansburg group was also aware of the various health-related agencies and organizations in the community; however, one interviewee was not familiar with Meals on Wheels, which highlights the need for improved advertising and education regarding available community service agencies and organizations. Finally, a number of important needs for the community to address were expressed (such as transportation, improved schools, entertainment for seniors and children, community leadership, and nursing homes for

the elderly); however, job opportunities (better paying jobs with more career growth potential; higher paying jobs for high school graduates and disabled individuals) and affordable health insurance rated among the group's top priorities.

Floyd group.

The Floyd interview group was composed of six female and one male interviewee, ranging in age from 30 to 65 years. Of the seven interviews conducted in the present community, three were unmarried, two married, and two interviewees were widowed. More specifically, one single woman, in her 30's, owned her own business in Floyd and worked part-time elsewhere to supplement her income, while a single father of three teenage boys worked for the Montgomery County Public Service Authority. A total of five interviewees were not working, either due to disability (e.g., cancer treatment) or retirement, and two of these interviewees currently had no insurance. Additionally, two interviewees were mothers of young children in the Head Start program. The interviews were conducted at the New River Community Action (NRCA) office and Giles Free Clinic. It should be noted that there are four Free Clinic locations in the NRV-- including the Christiansburg (Montgomery County), Town of Floyd (Floyd County), Town of Pearisburg (Giles County), and Town of Pulaski (Pulaski County) facilities.

Summary.

Overall, the Floyd group experienced a good quality of life, with the exception of single parents and baby boomers, and the problems associated with drugs and peer pressure. In addition, the Floyd group reported an overall strong sense of cohesion among the community. Community safety did not seem to be an issue, although car accidents were frequent among teens. There were reportedly numerous opportunities for homeschooling, recreation, and small business development, as well as alternative medicine services. Finally, as is the case in many

other communities throughout Virginia and the United States, interviewees within the Floyd group reported numerous perceived community needs, including but not limited to, public transportation, recreation opportunities, more jobs, economic development and commercialization, daycare, better schools, and stricter drug laws. Again, it was noted that there was a general lack of awareness of existing community services and better advertising of these services was needed (Kemp, 2008).

Giles group.

Interviewees in the Giles group consisted of six females and one male, ranging in age from 50 to 80, with all but two interviewees retired. One interviewee was unmarried, three were married, and three were widowed. In addition, one woman in her 60's worked in a local social service agency prior to taking early retirement to take care of her disabled husband, which caused her to lose her employer insurance plan. The interviews took place at the Giles Free Clinic, Christiansburg RSVP office, and NRCA office (Kemp, 2008).

Summary.

According to Kemp (2008), the perceptions of the Giles group were that they experienced a very positive quality of life in the area; generally felt safe; enjoyed and utilized a number of community opportunities (social and community-based activities, shopping, community services volunteer activities), despite a lack of jobs within the immediate area; felt a sense of cohesion within the community; and were very much aware of the variety of community services offered by various organizations and agencies. Similar to many other communities, specifically rural in nature, the community healthcare system in Giles needs improvement in the areas of access and insurance coverage, in addition to jobs, more business/industry, school activities that fit families' financial situations, and an improved justice system.

Conclusion.

The Pulaski group reported a positive quality of life and strong sense of community cohesion in an area with fairly low crime. However, recreational opportunities and public transportation, as well as affordable and available housing (especially for the elderly), were listed as community needs. Access to holistic healthcare seemed to pose a problem for those lacking insurance coverage, or for those in need of specialized care (e.g., chemotherapy). In addition, job opportunities are lacking in Pulaski, as many businesses have relocated elsewhere for economic reasons. Still, the interviewees were well aware of many community agencies and organizations that are available to help residents in need at all levels.

The Radford City group reported a fairly good quality of life, with room for improvement in terms of economic development, job availability, and public transportation. There was some need cited for improved community safety. While there were a number of available agencies and organizations reported by the interviewees, not all interviewees were aware of such services, which again emphasized that the public communication/media component is crucial to increase awareness of such agencies and organizations and the services they offer. Holistic healthcare services in Radford City need improvement in terms of accessibility—particularly for elder residents, caregivers of older adults, and the under-/uninsured. Mental health and dental health were specifically cited as major gaps. Overall, it should be noted that there was a wide age range in this interview group. Therefore, the perceived needs and flaws in the community may be very different for a 19-year-old compared to a 68-year-old, as the different age groups naturally have a different set of priorities regarding perceived community needs and areas of improvement.

As Kemp (2008) found in her research, the Blacksburg group, overall, perceived the quality of life, safety, opportunities, cohesion, and health care system in the community very

positively, with a strong sense of awareness of health-related agencies and organizations in the area. Several needs within the community were expressed by the interviewees, such as housing opportunities and control of business growth. However, these needs were not perceived as completely detrimental to the positive aspects of the community at-large.

The Christiansburg group perceived a good quality of life in the area and shared a sense of safety within the community, for the most part. While the majority of interviewees perceived a number of opportunities in the community, a strong sense of community cohesion was lacking among the majority of interviewees, as well as major deficits within the community health care system. The Christiansburg group was also aware of the various health-related agencies and organizations in the community, although not all interviewees, again highlighting the need for improved advertising of service agencies and organizations available in the community. Finally, a number of important needs for the community to address were expressed, with job opportunities and affordable health insurance among the group's top priorities.

The Floyd group experienced a good quality of life, with the exception of single parents and baby boomers, and the problems associated with drugs and peer pressure. In addition, the Floyd group reported an overall strong sense of cohesion among the community, which may be tied to the reportedly good quality of life in the area. Community safety did not seem to be an issue, although car accidents were frequent among teens. There were numerous opportunities for homeschooling, recreation, and small business development, as well as alternative medicine services. Finally, as is the case in many other communities throughout Virginia and the United States, interviewees within the Floyd group reported numerous services and opportunities as perceived community needs, including but not limited to, transportation, recreation opportunities, more jobs, commercialization, daycare, and stricter drug laws (Kemp, 2008).

The perceptions of the Giles group were that they experienced a very positive quality of life in the area; generally felt safe; enjoyed and utilized a number of community opportunities, despite a lack of jobs within the immediate area; felt a sense of cohesion within the community; and, were very much aware of community services offered via various organizations and agencies. However, the community healthcare system in Giles needs improvement in the areas of access and insurance coverage, in addition to jobs, more business/industry, school activities that fit families' financial situation, and an improved law system. Despite these needs, however, the Giles group still remained actively involved in their community in many ways (Kemp, 2008).

Overall, the perceptions of quality of life in the NRV by community residents were consistently positive among the six groups. It should be noted that these perceptions can be partially affected by factors such as age, socioeconomic status, gender, race/ethnicity, health status, and individual priorities such as one's prioritization of community resources. However, there were some concerns expressed regarding community safety (e.g., increasing drug use and crime), quality of public school systems, community cohesion, and the need for more culturally-stimulating community events. On the other hand, perceptions of the NRV community healthcare system were both positive and negative with the majority of complaints pertaining to the difficulty in accessing care for those under-/un-insured residents, lack of transportation, lack of healthcare providers, and limited healthcare services and options. Some community residents reported easy access to medical care because they had a full insurance plan, while others reported negative experiences accessing the healthcare system if they lacked healthcare insurance. There were several recurrent and consistent needs expressed by interviewees in the six groups that included recreational opportunities, public transportation, affordable and available housing (especially for the elderly), and economic development and job opportunities.

Several themes were found throughout these interviews. One theme entailed communication and awareness. Although many interviewees reported numerous agencies and organizations providing services to NRV residents, not all interviewees were aware of such services. This emphasizes the importance of coordinated public communication/media efforts to increase awareness about community agencies and organizations and the services they offer. Another theme involved improved/needed services for children/adolescents and the elderly. For example, many interviewees mentioned the need for affordable housing and retirement communities for the elderly, as well as geriatric services, and after-school, daycare, mentoring, and other community-sponsored events/activities for children/adolescents.

Phase 3 C: Community Health Status Assessment (CHSA)

The *Community Health Status Assessment (CHSA)* is one of four assessments in the MAPP process addressing the following questions:

- How healthy are our residents?
- What does the health status of the NRV community look like?

These require demographic (e.g., education), socioeconomic (e.g., income), health resource availability (e.g., child health services), quality of life (e.g., perception of holistic health status), behavioral risk factors (e.g., tobacco use), environmental health (e.g., air and water quality), social and mental health (e.g., suicide rates), death, illness, and injury (e.g., leading causes of death), and communicable disease (e.g., sexually-transmitted diseases rates) data to understand how these factors may contribute to a healthy NRV (NACCHO, 2001, 2004).

Qualitative and quantitative data for this assessment—both primary and secondary--were collected and organized from numerous sources. Secondary data consisted of statistical and survey data. Statistical data was initially collected and organized from national, state, regional

databases and reports from organizations/foundations (e.g., University of Wisconsin and Robert Wood Johnson Foundation), U.S. Census Bureau, CDC's National Vital Statistics, VDH's Vital Statistics, National and State Behavioral Risk Factor Surveillance (BRFSS), NRV Planning District Commission, and other local NRV community organizations. Secondary survey data included previously conducted health assessments in the NRV such as the *1994 New River Valley Community Health Needs Assessment*, *1999/2000 PATH New River Valley Community Health Needs Assessment*, and *2009 Montgomery County HRSA FQHC Planning Project Needs Assessment*. Primary data entailed the collection and general analysis of a mailed/on-line Survey and two sets of targeted Surveys to local Senior Centers and African-American Churches. Selective analyses of specific questions from the NRV Mailed/On-line Survey focused on lower income respondents—those with annual incomes of less than \$25,000—and compared the responses to the African-American and senior citizen Surveys.

Secondary statistical data and information.

Because there is such a large amount of relevant secondary qualitative and quantitative data available for the NRV, only selected information will be presented in this section. Additional background, supporting, and more detailed secondary data and information can be found in Appendix N.

Demographic characteristics.

Population characteristics.

As noted in Figure 16, over 50% of the NRV population resides in Montgomery County, 20% in Pulaski County, 10% in Giles County, and 9% in Floyd County and Radford City, respectively.

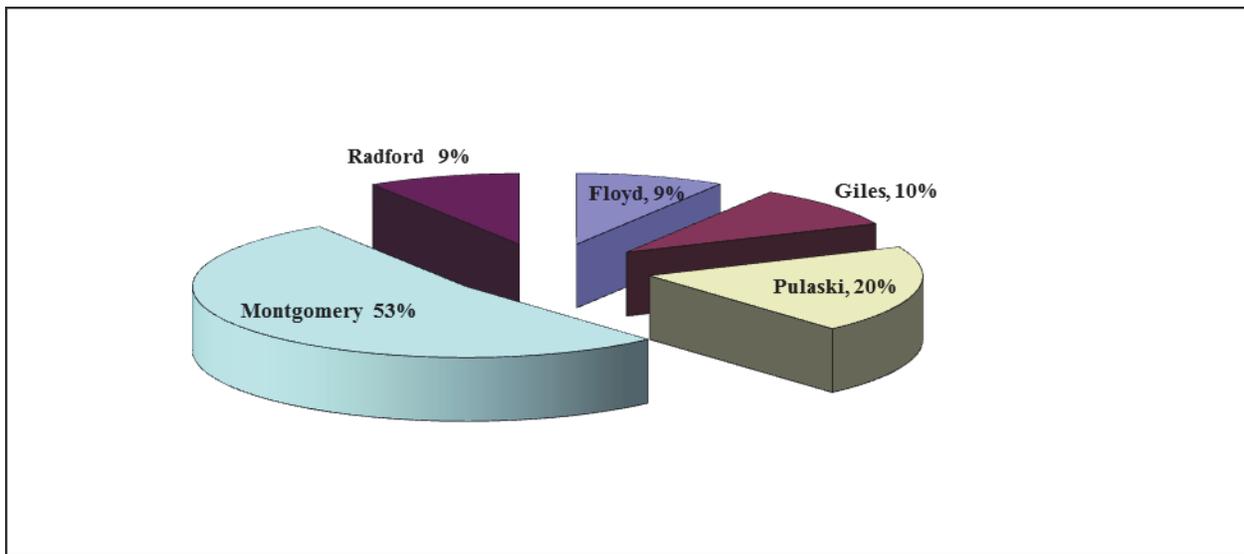


Figure 16. Population Distribution, NRHD by Locality, NRHD, 2008 (NRVPDC, 2009, 2010; U.S. Census Bureau, 2008; Virginia Employment Commission [VEC], 2010; Weldon Cooper Center for Public Service, 2010a; VEC, 2009, 2010)

The following table and figures (Table 12 and Figures 17, 18) reveal New River's population composition according to age, sex, and race/ethnicity. This data is based on the July 1, 2008 population projections by the U.S. Census Bureau. New River's total population is approximately 173,149—composed of 84,652 females and 87,497 males.

Unlike the State, males outnumber females in the NRV. Males also outnumber females in all age ranges except for the 18-49 age group in the NRV as noted in Table 12 and Figure 17.

| JURISDICTION | 2008 POPULATION | MALE | % | FEMALE | % |
|-----------------|------------------|------------------|--------------|------------------|--------------|
| Floyd | 14,821 | 7,432 | 50.1% | 7,389 | 49.9% |
| Giles | 17,249 | 8,483 | 49.2% | 8,766 | 50.8% |
| Montgomery | 89,967 | 47,748 | 53.1% | 42,219 | 46.9% |
| Pulaski | 34,987 | 17,390 | 49.7% | 17,597 | 50.3% |
| Radford | 16,125 | 7,444 | 46.2% | 8,681 | 53.8% |
| New River | 173,149 | 88,497 | 51.1% | 84,652 | 48.9% |
| Virginia | 7,769,089 | 3,814,622 | 49.1% | 4,583,762 | 50.9% |

Table 12. Population by Sex, NRHD and Localities, 2008 (U.S. Census Bureau, 2008; Virginia Economic Development Partnership, 2009)

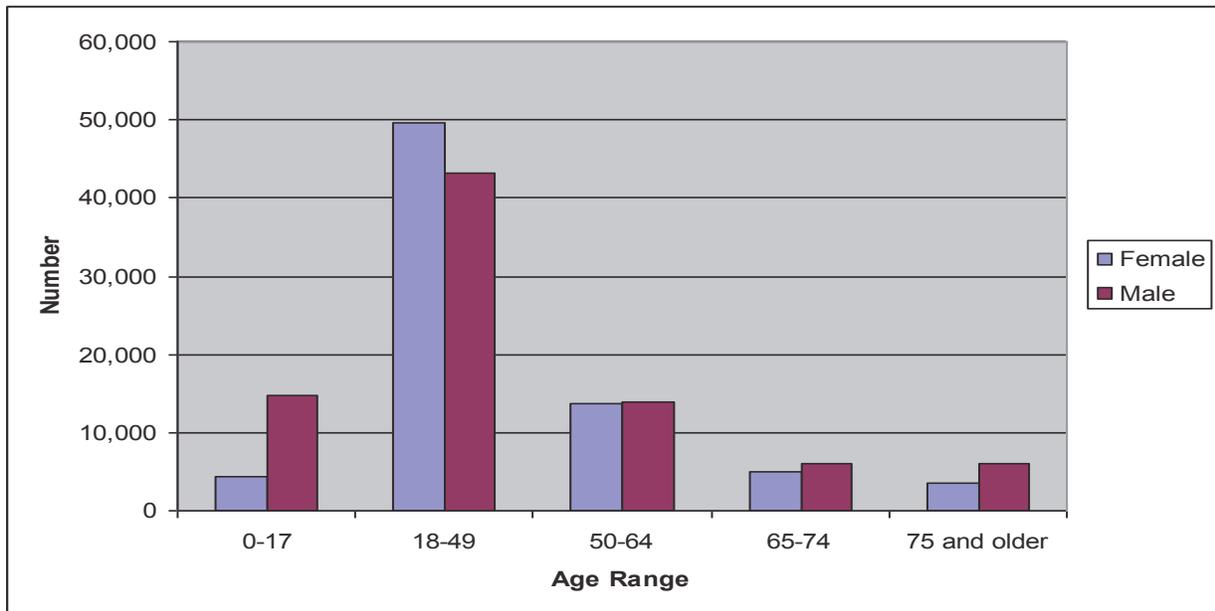


Figure 17. Population Distribution by Age Groups and Sex, NRHD, 2008 (NRVPDC, 2010; Weldon Cooper Center for Public Service, 2010a; Virginia Economic Development Partnership, 2009)

As can be seen in Figures 17 above and Figure 18 below, 18-49 year olds comprise the largest population group—primarily due to the impact of the college populations at Radford University and Virginia Tech on Radford City and Montgomery County, respectively. For this same reason, the percent of population aged 18-64 years in the NRV (70.4%) is greater than that of Virginia (63.2%). However, the number of adults aged 65 years and older is very similar for the NRV (12.2%) and Virginia (12.1%) (NRVPDC, 2010; Weldon Cooper Center for Public Service, 2010a; VDH, 2010a).

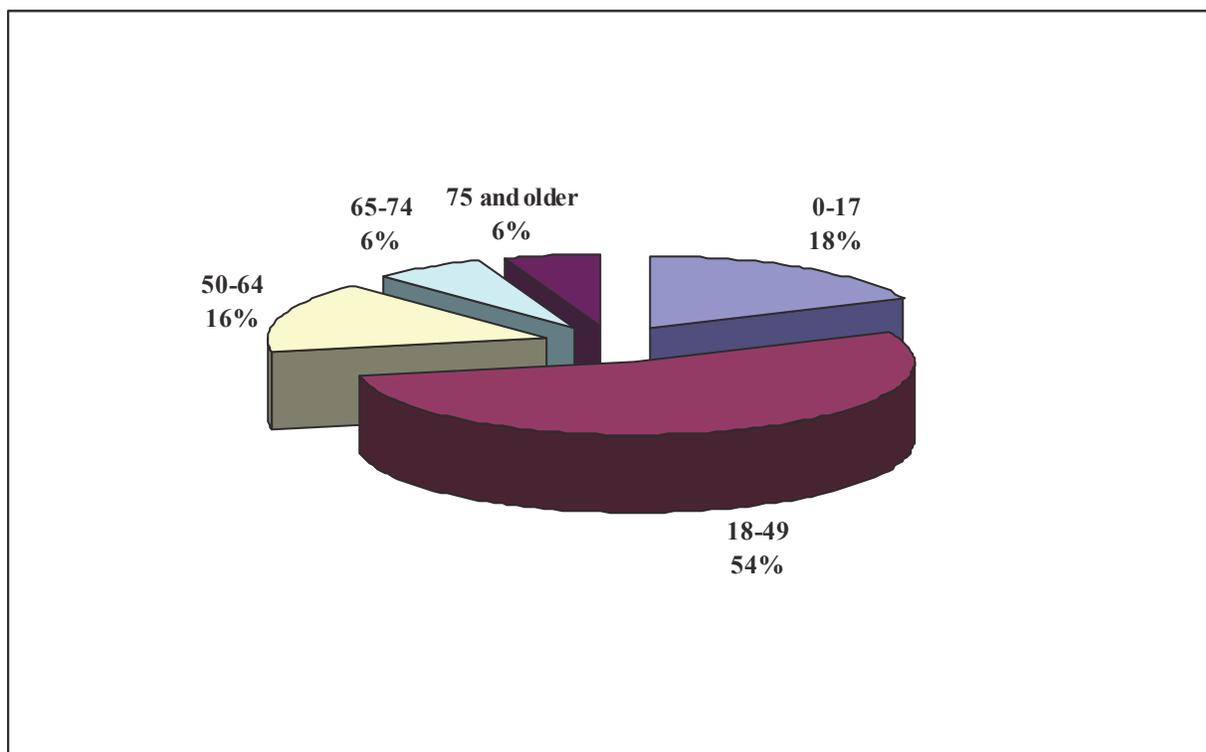


Figure 18. Population Distribution by Age, NRHD, 2008
(NRVPDC, 2010; Weldon Cooper Center for Public Service, 2010a; Virginia Department of Health, 2010a)

A comparison of the median age for individual jurisdictions, as well as Virginia, is provided in Table 13. The median age for both Montgomery County and Radford City is lowered by the concentration of college students residing in these jurisdictions. Increased enrollment at the two universities also dampened or reversed the trend toward increased median age in these two localities, in contrast to the other NRV jurisdictions and the State (NRVPDC, 2010).

| JURISDICTION | 1970 | 1980 | 1990 | 2000 | 2008 |
|-----------------|-------------|-------------|-------------|-------------|-------------|
| Floyd | 33.7 | 33.9 | 37.6 | 40.5 | 40.7 |
| Giles | 30.3 | 32.8 | 37.9 | 40.2 | 41.1 |
| Montgomery | 22.9 | 23.3 | 25.5 | 25.9 | 26.7 |
| Pulaski | 28.6 | 31.3 | 36.6 | 40.3 | 42.0 |
| Radford | 22.4 | 23.0 | 22.0 | 22.8 | 23.1 |
| Virginia | 27.5 | 29.8 | 32.6 | 35.7 | 37.1 |

Table 13. Median Age, Virginia, NRHD and Localities, 1970-2008
(U.S. Census Bureau, 2008; Virginia Economic Development Partnership, 2009)

From a racial/ethnic standpoint, the population composition of the NRV and its localities is predominantly non-Hispanic White (89.4%) with very few minorities as compared to the State. Black or African-American and Hispanic residents comprise 4.6% and 1.8% of the total NRV population, respectively, and other races comprise 4.2% as can be seen in Table 14.

| JURISDICTION | WHITE NON-HISPANIC (WHITE HISPANIC) | | BLACK | | AMERICAN INDIAN AND ALASKA NATIVE | |
|-----------------|--|-------------------------------|--|--------------|-----------------------------------|-------------|
| | Number | Percent (%) | Number | Percent (%) | # | % |
| Floyd | 13,961 (362) | 94.2% (2.5%) | 347 | 2.3% | 13 | 0.1% |
| Giles | 16,645 (140) | 96.5% (0.8%) | 301 | 1.7% | 23 | 0.1% |
| Montgomery | 78,451 (1,913) | 87.2% (2.1%) | 3,858 | 4.3% | 170 | 0.2% |
| Pulaski | 31,808 (468) | 90.9% (1.2%) | 2,142 | 6.1% | 59 | 0.2% |
| Radford | 13,835 (305) | 85.8% (1.9%) | 1,358 | 8.4% | 39 | 0.2% |
| New River | 154,795 (3,117) | 89.4% (1.8%) | 8,006 | 4.6% | 304 | 0.2% |
| Virginia | 5,127,598 (543,836) | 66.0% (7.0%) | 1,546,444 | 19.9% | 28,595 | 0.4% |
| JURISDICTION | ASIAN | | NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER | | TWO OR MORE RACES | |
| | # | % | # | % | # | % |
| Floyd | 26 | 0.2% | 3 | 0.02% | 109 | 0.7% |
| Giles | 40 | 0.2% | 0 | 0.00% | 100 | 0.6% |
| Montgomery | 4,256 | 4.7% | 35 | 0.04% | 1,284 | 1.4% |
| Pulaski | 131 | 0.4% | 13 | 0.04% | 366 | 1.0% |
| Radford | 347 | 2.2% | 6 | 0.04% | 235 | 1.5% |
| New River | 4,800 | 2.8% | 57 | 0.03% | 2,094 | 1.2% |
| Virginia | 378,226 | 4.9% | 6,823 | 0.1% | 135,088 | 1.7% |

Table 14. Population Distribution by Race/Ethnicity, NRHD, 2008 (NRVPDC, 2010; Weldon Cooper Center for Public Service, 2010a)

Population density within the NRV is smaller than the average density within the State, except for Radford City and Montgomery County. Urbanization greatly influences the density, with Radford City having an average of 1,612.5 persons per square mile, while Floyd County has an average of 38.9 persons per square mile. Table 15 provides information on population density and land area for each jurisdiction, the NRV, and Virginia.

| JURISDICTION | 2008 POPULATION | 2008 LAND AREA SQUARE MILES | 2008 PERSONS PER SQUARE MILE |
|-----------------|------------------|-----------------------------|------------------------------|
| Floyd | 14,821 | 381 | 38.9 |
| Giles | 17,249 | 357 | 48.3 |
| Montgomery | 89,967 | 388 | 231.9 |
| Pulaski | 34,987 | 321 | 109.0 |
| Radford | 16,125 | 10 | 1,612.5 |
| New River | 173,149 | 1,457 | 118.8 |
| Virginia | 7,769,089 | 39,594 | 178.8 |

Table 15. Population Density and Land Area, Virginia, NRHD and Localities, 2000 (NRVPDC, 2010; U.S. Census Bureau, 2008)

Population growth.

Since 1990, the NRV has experienced steady population growth. Total population increased from 152,720 in 1990 to 165,146 in 2000 to 173,149 in 2008, a rate of 8.1% from 1990 to 2000, and 4.8% from 2000 to 2008. It is interesting to note that from 2000 to 2008, Pulaski County decreased slightly in population, while Floyd, Giles, and Montgomery Counties, and Radford City experienced an increase in population. The following table (Table 16) reflects the changes in the population from 1990 to 2008 for the NRV and its jurisdictions, as well as Virginia.

| Jurisdiction | 1990 Population | 2000 Population | Percent Change 1990-2000 | 2008 Population (estimate) | Percent Change 2000-2008 |
|-----------------|------------------|------------------|--------------------------|----------------------------|--------------------------|
| Floyd | 12,005 | 13,874 | 15.6% | 14,821 | 6.8% |
| Giles | 16,366 | 16,657 | 1.8% | 17,249 | 3.6% |
| Montgomery | 73,913 | 83,629 | 13.1% | 89,967 | 7.8% |
| Pulaski | 34,496 | 35,127 | 1.8% | 34,987 | -0.01% |
| Radford | 15,940 | 15,849 | -0.5% | 16,125 | 0.02% |
| New River | 152,720 | 165,146 | 8.1% | 173,149 | 4.8% |
| Virginia | 6,187,358 | 7,078,515 | 14.4% | 7,769,089 | 9.8% |

Table 16. Population Growth, Virginia and NRHD by Locality, 1990 – 2008
(NRVPDC, 2009, 2010; U.S. Census Bureau, 2008; Weldon Cooper Center for Public Service, 2010a)

Population projections.

Population projections for the NRV and for each jurisdiction through the year 2030 parallel the steady growth of the State and Nation. The population of the NRV is projected to experience continued growth, although individual jurisdictions may experience declines before increasing by the year 2030. By the year 2020, it is projected that 183,208 people will reside in the NRV, an increase of approximately 26% or 41,000 people (Council on Virginia's Future, 2009; NRVPDC, 2009; Weldon Cooper Center for Public Service, 2010). It is important to look at population composition because data for certain social problems and diseases are difficult to compare unless the rates are age-adjusted or the numbers are reported by certain age ranges in the population (Hershey et al., 1998, 2007).

Socioeconomic characteristics.

Educational attainment.

The latest educational attainment data for the New River Valley is based on the 2000 census. The following table (Table 17) reflects the level of educational attainment for the

individual localities of the New River Valley as compared to Virginia. From this data, it can be noted that the 2008-2009 high school graduation rate in the NRV (80.2%) was slightly higher than that of the State (79.7%). However, it is disturbing to note that, with the exception of Radford City (83.4%) and Montgomery County (82.8%), the other jurisdictions of the New River Valley fall below the State's percent (81.5%) of persons 25 years and older who are high school graduates. Also, the percent of persons 25 years and over who have earned a bachelor's degree or higher falls below the State's (19.7%)—Floyd County (12.5%), Giles County (12.4%), and Pulaski County (12.5%). It is interesting to note that Virginia is one of 24 states in which the younger adult cohort is less educated than the older cohort (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

| Jurisdiction | % 2005-06 Ninth Graders graduating from High School in 2008-09 | % 2008-09 High School Graduates in Continuing Education (two- or four year colleges or other) | % age 25+ who are High School Graduates | % age 25+ with Bachelor's Degree or higher |
|-----------------|--|---|---|--|
| Floyd | 74.3% | 75.5% | 70.1% | 12.5% |
| Giles | 85.6% | 69.7% | 75.9% | 12.4% |
| Montgomery | 79.5% | 75.5% | 82.8% | 35.9% |
| Pulaski | 82.3% | 72.3% | 74.2% | 12.5% |
| Radford | 77.7% | 89.8% | 83.4% | 34.1% |
| New River | 80.2% | 74.7% | 79.4% | 24.4% |
| Virginia | 79.7% | 80.5% | 81.5% | 19.7% |

Table 17. Educational Attainment, Virginia, NRHD and Localities, 2009 (U.S. Census Bureau, 2008, 2010; Virginia Department of Education, 2009; Virginia Economic Development Partnership, 2009)

Income.

A review of the adjusted gross income data for the NRV and its localities as compared to other Virginia counties and cities for 2005 and 2007 shows that the average per tax return income levels in the NRV are lower than reported earnings at the State level, and lower than the average of all Virginia counties and cities (Weldon Cooper Center for Public Service, 2010b). Based on the 2000 census, per capita income for the NRV (\$17,284) is below the State (\$23,975)—ranging from the highest, \$18,975, in Pulaski County; to \$18,396 in Giles County; to \$17,077 in Montgomery County; to \$16,345 in Floyd County; and to the lowest, \$14,289, in Radford City. Per capita income is total personal income divided by population and gives a distributive spread of income across entire jurisdictions (NRVPDC, 2010; Weldon Cooper Center for Public Service, 2010b; Virginia Economic Development Partnership, 2009).

Median family (household) income is the measure typically used to assess community wealth and service needs. Table 18 reports the 1980, 1990, 2000, and 2010 median family income by locality in the NRV and for Virginia. The NRV's percent of change between 1990 and 2000, 83.4%, was well below the change in the State average of 90.9%; however, the NRV's percent of change (38.4%) between 2000 and 2010 was slightly higher than the State's (36.8%). Montgomery County (38.9%) and Radford City (41.6%) showed the most substantial increase in median (household) family income between 2000 and 2010, while Floyd County (36.6%) showed the smallest increase.

| JURISDICTION | 1980 | 1990 | 2000 | **2010 | % CHANGE 2000-2010 |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------------|
| Floyd | \$14,585 | \$27,439 | \$38,128 | \$52,100 | 36.6% |
| Giles | \$15,274 | \$29,416 | \$42,089 | \$57,600 | 36.9% |
| Montgomery | \$17,084 | \$32,128 | \$47,239 | \$65,600 | 38.9% |
| Pulaski | \$16,247 | \$28,057 | \$42,251 | \$57,800 | 36.8% |
| Radford | \$18,680 | \$31,318 | \$46,332 | \$65,600 | 41.6% |
| New River | \$16,444 | \$30,163 | \$44,719 | \$61,938 | 38.4% |
| Virginia | \$20,018 | \$38,213 | \$54,169 | \$74,100 | 36.8% |

Table 18. Median Family (Household) Income, Virginia, NRHD and localities, 1980, 1990, 2000, 2010 (NRVPDC, 2010; U.S. Census Bureau, 2008, 2010; **Virginia Department of Housing and Urban Development, 2010; Virginia Economic Development Partnership, 2009)

Poverty increases the likelihood of child abuse and neglect, domestic violence, alcohol and drug abuse, poor health care, poor educational attainment, inadequate housing, and homelessness. A measure of poverty in the NRV is the number of residents living below the federally defined poverty level (Hershey et al., 1998, 2007). Table 19 shows the number and percentage of families below 100% poverty level at the local, regional, and State levels for 1980, 1990, and 2000. Poverty status is determined for all persons except institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old. Radford City showed the largest percentage increase in poverty from 1980 to 1990 (2.8%) with Giles County showing the only decrease (0.6%). From 1990 to 2000, Pulaski County was the only jurisdiction that showed an increase in poverty (0.3%); the rest of the NRV experienced declines. The NRV showed a decrease of 323 families below the poverty level from 1990 to 2000.

| JURISDICTION | 1980 | | 1990 | | 2000 | |
|-----------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|
| | NO. BELOW POVERTY | % OF FAMILIES | NO. BELOW POVERTY | % OF FAMILIES | NO. BELOW POVERTY | % OF FAMILIES |
| Floyd | 419 | 12.5 | 463 | 13.2 | 357 | 8.5 |
| Giles | 512 | 10.1 | 466 | 9.5 | 323 | 6.6 |
| Montgomery | 1,157 | 8.7 | 1,589 | 10.0 | 1,535 | 8.8 |
| Pulaski | 850 | 8.5 | 1,016 | 10.3 | 1,070 | 10.6 |
| Radford | 177 | 7.1 | 255 | 9.9 | 181 | 6.9 |
| New River | 3,115 | NA | 3,789 | 10.3 | 3,466 | NA |
| Virginia | 128,974 | 9.2 | 126,897 | 7.7 | 129,890 | 7.0 |

Table 19. Number and Percent of Families Below 100% Poverty Level, Virginia, NRHD and Localities, 1980, 1990, and 2000 (NRVPDC, 2010; U.S. Census Bureau, 2008, 2010; Virginia Economic Development Partnership, 2009; Weldon Cooper Center for Public Service, 2010d) NA=not available

As noted in Figure 19, in 2008, the percent of NRV's population living below 100% poverty in every jurisdiction—11.9% in Floyd County, 12.5% in Giles County, 15.4% in Pulaski County, 20.6% in Montgomery County, 26.7% in Radford City--exceeds the State's (10.2%).

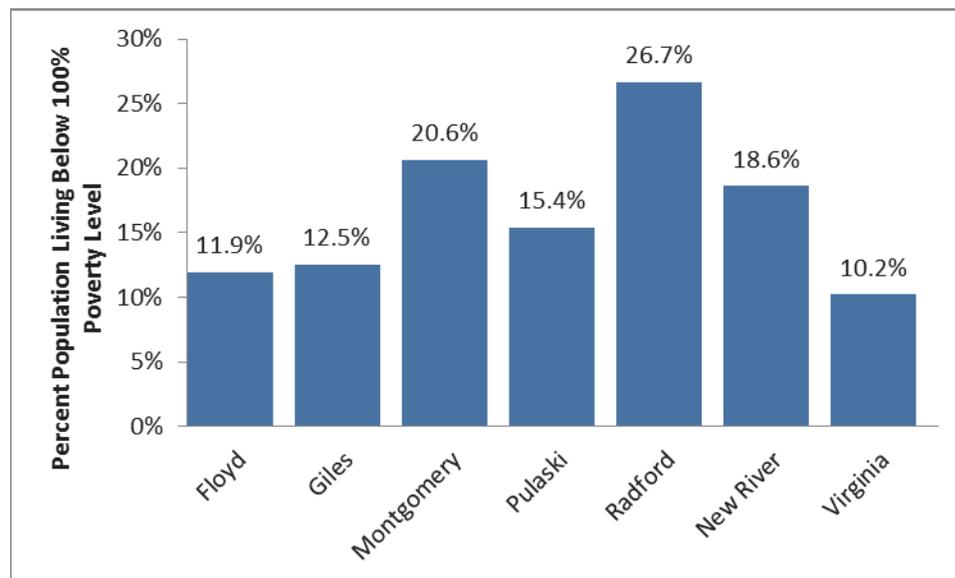


Figure 19. Percent of Population Living Below 100% Poverty Level, Virginia, NRHD Localities, 2008 (DHHS, 2010).

A person has low-to-moderate income status if his/her annual income does not exceed 80% of the median income for his/her family size. These figures are calculated in Table 20. Income is the total income of all family members over age 17 with whom he/she resides. Family is defined as all persons living in the same household related by marriage, birth, or adoption (NRVPDC, 2010; Virginia Department of Housing and Urban Development, 2010).

| JURISDICTION | PERSONS PER HOUSEHOLD | | | | | | | |
|-----------------------------|-----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| B-burg, C-burg, and Radford | \$36,750 | \$42,000 | \$47,250 | \$52,500 | \$56,700 | \$60,900 | \$65,100 | \$69,300 |
| Floyd | 29,900 | 34,150 | 38,400 | 42,650 | 46,100 | 49,500 | 52,900 | 56,300 |
| Giles | 32,300 | 36,900 | 41,500 | 46,100 | 49,800 | 53,500 | 57,200 | 60,900 |
| Pulaski | 32,400 | 37,000 | 41,650 | 46,250 | 49,950 | 53,650 | 57,350 | 61,050 |
| Virginia | 41,500 | 47,400 | 53,350 | 59,300 | 64,000 | 68,750 | 73,500 | 78,250 |

Table 20. Low/Moderate Income Limits Based on Persons per Household, Virginia, NRHD Localities, 2010 (NRVPDC, 2010; Virginia Department of Housing and Urban Development, 2010)

Workforce and employment characteristics.

Analysis of work force data from the VEC and Bureau of Labor Statistics shows that the NRV's work force has been relatively stable over the last four years. When looking at employment by industry, manufacturing is the largest individual employment sector in the NRV, followed by education, healthcare, and social services (VEC, 2010). Employment statistics by occupation rather than industry demonstrate that the management, professional, and related occupations comprise the largest occupation in the NRV at 32%, followed by sales and office occupations at 23%. These statistics also reveal that within the NRV, there are several occupational differences among its localities' residents. Production, transportation, and material moving occupations comprise more of the work force than any other classification in Pulaski County. In Floyd County, the production category and the management and professionals categories are strong. In Giles and Montgomery counties, as well as Radford City, management

and professional specialty, as well as sales and office occupations employment are strong (NRVPDC, 2010; U.S. Census Bureau, 2008, 2010; Virginia Economic Development Partnership, 2009).

Unemployment.

The unemployment rate in the NRV is consistently higher than the State unemployment rate. In the figure below (Figure 20), a comparison of the unemployment rates for New River localities and Virginia are listed for 2008 and 2010. In 2010, New River's percentage of persons unemployed was above the State's (6.5%) in all five localities--Floyd County (7.1%), Giles County (8.2%), Montgomery County (6.7%), Pulaski County (7.8%), and Radford City (7.8%). All jurisdictions in the NRV saw unemployment rates increase from 2008 to 2010; however, Virginia's unemployment rate decreased.

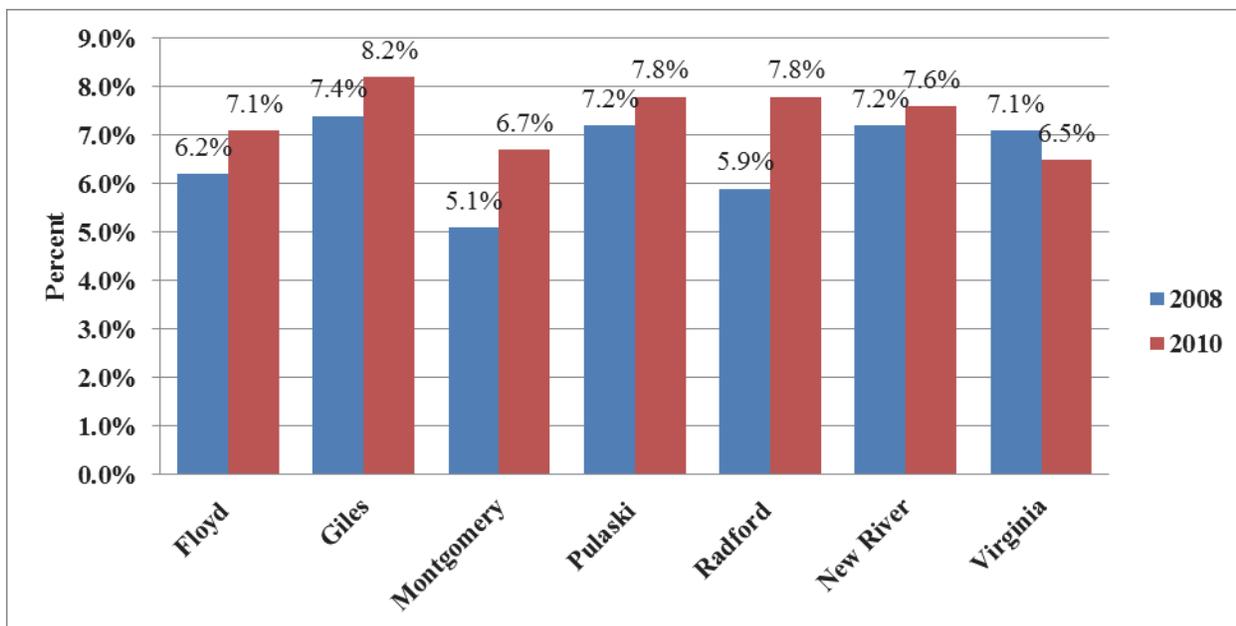


Figure 20. Unemployment Rates, Virginia, NRHD and Localities, 2008 and 2010 (VEC, 2010)

Table 21 summarizes the most recent data regarding key economic indicators in the NRV.

| Jurisdiction | 2010 Median Family Income | 2008 Median Household Income | 2008 Per Capita Personal Income | 2008 Poverty Rate | Dec. 2009 Unemployment Rate |
|-----------------|---------------------------|------------------------------|---------------------------------|-------------------|-----------------------------|
| Floyd | \$52,100 | \$41,514 | \$26,509 | 11.9 | 7.7% |
| Giles | 57,600 | 43,322 | 27,594 | 12.5 | 9.3% |
| Montgomery | 65,600 | 43,176 | 27,102 | 20.6 | 6.4% |
| Pulaski | 57,800 | 40,426 | 31,813 | 15.4 | 9.6% |
| Radford | 65,600 | 35,516 | 27,102 | 26.7 | 7.6% |
| New River | N/A | 41,685 | 27,678 | 18.6 | 7.6% |
| Virginia | \$74,100 | \$61,210 | \$44,075 | 10.2 | 6.7% |

Table 21. Summary of Most Recent Key Economic Indicators, Virginia, NRHD and Localities (NRVPDC, 2010; U.S. Census Bureau, 2008, 2010; VEC, 2010; Virginia Economic Development Partnership, 2009)

Health resource availability.

Health care providers and services.

Access to medical services is critically important, and the NRV has excellent healthcare facilities. There is a health department in each of the five jurisdictions; a community hospital in four jurisdictions: Giles, Montgomery, Pulaski, and Radford; four Free Clinic facilities located in Floyd, Giles, Montgomery, and Pulaski counties; and over 170 physicians representing most specialties, 75 dentists, and other healthcare professionals practicing in the area. In addition, Carilion Saint Albans Behavioral Health provides 36 special care beds.

Also, there are State-supported mental health and non-profit mental health community services provided by NRV Community Services and the Mental Health Association of the NRV, respectively. There are also hospice services that provide medical, psycho-social and spiritual care and other support services to people with a life limiting, progressive illness and to the

family members in all localities of the NRV. Additionally, there are seven nursing homes/long-term care facilities operating in the NRV (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Tables 22 and 23 list the hospitals and nursing homes/long-term care facilities, their location, and the number of beds in service for each facility.

| Hospitals | Location | # Licensed Beds |
|--|------------|-----------------|
| Carilion Giles Community | Giles | 25 |
| Carilion New River Valley Medical Center | Montgomery | 146 |
| Lewis Gale Medical Center-Montgomery | Montgomery | 146 |
| Lewis Gale Medical Center-Pulaski | Pulaski | 147 |
| Total | | 464 |

Table 22. Hospitals in the NRV, 2010
(Carilion Clinic Report, 2010; Lewis-Gale Clinic Report, 2010; NRVPDC, 2010)

| Nursing Homes/Long-Term Care Facilities | Location | # Licensed Beds |
|---|------------|-----------------|
| Kroontje Health Care Center | Montgomery | 120 |
| Heritage Hall-Blacksburg | Montgomery | 194 |
| Highland Ridge Rehab Center, LLC | Pulaski | 132 |
| Pulaski Health & Rehabilitation Center | Pulaski | 90 |
| Radford Nursing & Rehabilitation Center | Radford | 90 |
| Riverview Nursing Home | Giles | 60 |
| Skyline Nursing and Rehabilitation Center | Floyd | 90 |
| Total | | 776 |

Table 23. Nursing Homes/Long-Term Care Facilities in the NRV, 2010
(NRVPDC, 2010; Virginia Health Care Association, 2010)

Healthcare coverage and workforce.

Table 24 summarizes data on healthcare coverage and workforce for the NRV health system—including uninsured and Medicare beneficiary percentages, as well as primary care and dental health professional ratios--that may affect access to healthcare services. As can be seen, in 2008, there were approximately 39,000 or 22.5% of residents in the NRV who are uninsured—ranging from a low of 12.2% in Pulaski County to 26.2% in Montgomery County. Overall, the percent of uninsured NRV residents, as well as the percent of uninsured residents in

Floyd and Montgomery counties and Radford City, are higher than the State uninsured rate of 12.4%. This is not surprising since southwest and western Virginia has consistently had higher percentages of uninsured residents than the rest of the State. Also, the U.S. Census Bureau has found that the highest percentages of uninsured residents are in Virginia's college towns (U.S. Census Bureau, 2008). Additionally, it is interesting to note that the percent of Medicare beneficiaries in Floyd (16.2%), Giles (21.2%), and Pulaski (18.6%) are also higher than the State average of 14.1%.

| Jurisdiction | # Uninsured (%) | Medicare beneficiaries (%) | Primary care physicians/100,000 population | Dentists/100,000 population |
|-----------------|------------------------------|------------------------------|--|-----------------------------|
| Floyd | 2,630 (21.0%) | 2,396 (16.2%) | 27.3 | 20.5 |
| Giles | 2,038 (13.8%) | 3,667 (21.2%) | 46.8 | 40.9 |
| Montgomery | 18,814 (26.2%) | 8,864 (9.8%) | 73.5 | 28.5 |
| Pulaski | 3,519 (12.2%) | 6,525 (18.6%) | 59.9 | 22.8 |
| Radford | 2,574 (21.6%) | 2,218 (13.8%) | 171.5 | 54.9 |
| New River | 38,958 (22.5%) | 23,670 (13.7%) | 98.2 | 43.3 |
| Virginia | 1,014,834 (15.5%) | 1,100,000 (14.1%) | 78.27 | 80.0 |

Table 24. Access to Healthcare Services in the NRV, 2008 (U.S. Census Bureau, 2008; U. S. Department of Health and Human Services, 2010; Virginia Economic Development Partnership, 2009)

It can also be seen from Table 24 that Floyd, Giles, Montgomery, and Pulaski counties have primary care physician/population ratios that are lower than the State. However, none of the localities in the NRV are designated as a Medically Underserved Area (MUA) or as a Primary Care Health Professional Shortage Area by HRSA. All of the localities in the NRV have dentist/population ratios that are lower than the State, but only Floyd County is designated as a Dental Health Professional Shortage Area by HRSA. On the other hand, all of the localities in the NRV are designated as Mental Health Professional Shortage Areas.

Although there were increases in health professionals in Virginia during the first decade of the 21st century, these increases have not closed the practitioner/population ratio gaps between rural areas (such as the NRV) and urban areas. One of the healthcare challenges of the NRV (and other rural areas in Virginia) is the recruitment and retention of health professionals, such as obstetricians and psychiatrists, to meet the health services needs of its rural residents. For those rural areas with low population density (such as Floyd, Giles, and Pulaski Counties), one significant barrier to establishing medical practices and/or healthcare facilities is a lack of an economic base to support health practitioners and facilities (Virginia State Office of Rural Health, 2008).

Quality of life.

Citizens of the NRV are proud of their quality of life, and the NRV has a strong heritage and pride embedded in its roots. A wide variety of religious denominations are represented in the NRV, and there are also many agencies and organizations dedicated to public service. It is a dynamic area of industry and trade, in part due to its location within a day's drive to approximately three-quarters of the nation's major markets. The NRV has excellent and well-developed rail and interstate highway systems, as well as an established and developing public transportation and utility system. Thirty-four banks and savings and loan institutions serve the NRV.

All localities of the NRV provide educational, health, welfare, and recreational services, as well as law enforcement, fire, and rescue protection for their residents. Local governments or public service authorities also supply water, sewer, and sanitation services. Public water in the NRV is plentiful, of good quality, and available for residential, commercial, and industrial use. There are four jurisdictions and three regional authorities within the NRV providing solid waste

disposal services (NRVPDC, 2010; Virginia Economic Development Partnership, 2009). All NRV jurisdictions maintain active planning commissions and have adopted comprehensive plans. Zoning (subdivision) regulations are established in Giles, Montgomery, and Pulaski Counties, and Radford City, as well as in the incorporated towns in those areas. Montgomery County has a strategic plan for economic development (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

There is an abundance of cultural and recreational opportunities available to residents of the NRV such as sporting events and concerts at the universities, hiking on the Appalachian Trail, camping in the Jefferson National Forest, fishing in Claytor Lake, and kayaking on the New River. The scenic vistas, historical and cultural attractions, and qualities inherent to the area are drawing tourists and businesses to this rapidly growing Valley. Business and industry searching for new locations appreciate the excellent natural resources found here.

A critical component of success in this region is the pride and work ethic exhibited by the residents. Here, surrounded by natural beauty, is a spirit of cooperation to get things done. The priorities are clear—develop and maintain a growing economy and provide jobs and personal enrichment opportunities for everyone (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Data and information on education, housing, birth and death rates, and behavioral risk factors relating to perception of quality of life are included in this section. Additional data and information on education, local government, law enforcement/fire and rescue, transportation and accessibility, utilities, financial institutions, cultural and recreational opportunities, and religious and civic organizations—as well as climate, forestry, taxes, libraries, media, internet service, shopping facilities, and hotels/motels can be found in Appendix N.

Education.

The NRV--with over 45 primary and secondary schools (in five separate public school systems), several private primary and secondary schools, two universities (Virginia Tech in Montgomery County and Radford University in Radford City), a community college (NRV Community College in Pulaski County), a veterinary college (The Virginia-Maryland Regional College of Veterinary Medicine), and a medical school (Virginia College of Osteopathic Medicine [VCOM])--is rich in educational opportunities. The NRV's current education and training system is undergoing a transition to make its twenty-first century workforce more productive. Primary schools are connecting students to the Internet and beginning to integrate industry input into their curriculum. Secondary institutions provide education in both liberal arts and technical fields. The Southwest Virginia Governor's School for Science, Math, and Technology is located on the campus of Pulaski County High School and serves students from the county public school systems of Pulaski, Giles, Bland, Floyd, Carroll, Grayson, Bland, Wythe, and Smyth, and the city of Galax (Hershey et al., 1998, 2007; NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Housing.

A wide variety of housing is available for NRV residents. According to the 2000 Census, 58.6% of all housing units in the area were owner occupied. The remaining 23,512 units were composed of apartments, houses, rooms, single units, and trailers which were rental units. General housing characteristics are shown in Table 25.

| CHARACTERISTIC/ DESCRIPTION | FLOYD | GILES | MONT- GOMERY | PULASKI | RADFORD | NEW RIVER | VIRGINIA |
|--------------------------------|----------|----------|-----------------|----------|----------|--------------|-----------|
| Total Housing Units* | 6,763 | 7,732 | 32,527 | 16,325 | 6,137 | 69,484 | 2,904,192 |
| Occupied Housing Units | 5,791 | 6,994 | 30,997 | 14,643 | 5,809 | 64,234 | 1,837,958 |
| Owner | 4,738 | 5,526 | 17,093 | 10,780 | 2,585 | 40,722 | 1,837,958 |
| 1-2 attached/detached | 3,876 | 4,730 | 14,200 | 9,511 | 2,453 | 34,770 | 1,715,470 |
| Mobile home | 862 | 791 | 2,893 | 1,253 | 132 | 5,931 | 121,751 |
| Boat, RV, van, etc. | 0 | 5 | 0 | 16 | 0 | 21 | 737 |
| Median value | \$79,700 | \$69,200 | \$114,600 | \$80,000 | \$95,100 | \$93,981 | \$125,400 |
| Median persons/unit | 2.39 | 2.42 | 2.51 | 2.41 | 2.46 | 2.45 | 2.63 |
| Median rooms/unit | 5.7 | 5.9 | 6.2 | 5.9 | 6.2 | 6.0 | 6.6 |
| Renter | 1,053 | 1,468 | 13,904 | 3,863 | 3,224 | 23,512 | 861,215 |
| 1-2 attached/detached | 796 | 1,239 | 12,882 | 3,471 | 3,196 | 21,584 | 822,602 |
| Mobile home | 257 | 229 | 1,022 | 392 | 28 | 1,928 | 38,386 |
| Boat, RV, van, etc. | 0 | 0 | 0 | 0 | 0 | 0 | 277 |
| Median monthly rent | \$407 | \$375 | \$535 | \$382 | \$437 | \$478 | \$650 |
| Median persons/unit | 2.37 | 2.16 | 2.27 | 2.08 | 2.07 | 2.21 | 2.33 |
| Median rooms/unit | 4.9 | 4.6 | 4.3 | 4.4 | 4.3 | 4.4 | 4.3 |
| Vacancy Rate | | | | | | | |
| Owner | 13.5% | 8.8% | 5.0% | 10.3% | 3.8% | 7.9% | 6.9% |
| Renter | 17.9% | 12.2% | 4.4% | 10.4% | 6.6% | 6.9% | 7.3% |

Table 25. General Housing, Occupancy, Structural, and Utilization Characteristics Virginia, NRHD and Localities, 2000 (U.S. Census Bureau, 2008, 2010; Virginia Economic Development Partnership, 2009)

Birth and death rates.

Table 26 presents the birth and death rates for the NRV and for Virginia for even numbered years from 1980-2008. Birth rates for the NRV have been consistently lower than those in Virginia, whereas death rates in the NRV have been higher than the State since 1994.

| YEAR | NEW RIVER VALLEY | | VIRGINIA | |
|------|------------------|------------|------------|------------|
| | BIRTH RATE | DEATH RATE | BIRTH RATE | DEATH RATE |
| 1980 | 10.9 | 7.2 | 14.7 | 7.9 |
| 1982 | 10.6 | 6.8 | 14.8 | 7.9 |
| 1984 | 10.4 | 6.9 | 14.8 | 7.9 |
| 1986 | 11.0 | 7.4 | 15.0 | 8.0 |
| 1988 | 11.2 | 7.7 | 15.6 | 8.0 |
| 1990 | 11.7 | 7.8 | 16.0 | 7.7 |
| 1992 | 10.6 | 7.4 | 15.1 | 7.7 |
| 1994 | 10.8 | 8.2 | 14.6 | 7.9 |
| 1996 | 10.3 | 8.3 | 13.9 | 8.0 |
| 1998 | 10.7 | 7.9 | 13.9 | 7.9 |
| 2000 | 10.9 | 8.3 | 14.0 | 7.9 |
| 2002 | 9.6 | 8.2 | 13.6 | 7.8 |
| 2004 | 10.0 | 8.4 | 13.9 | 7.5 |
| 2006 | 10.3 | 8.6 | 13.9 | 7.5 |
| 2008 | 9.9 | 8.3 | 13.7 | 7.6 |

Table 26. Birth Rates and Death Rates per 1,000 Population, Virginia and NRHD, Even-Numbered Years, 1980-2008 (NRVPCD, 2010; VDH, Division of Health Statistics, 2010)

Table 27 shows that the 2008 birth rate for Virginia (13.7) is higher than any locality of the NRV. In the NRV, the highest birth rate is in Floyd County (11.1) and the lowest in Radford City (7.9) (VDH, Division of Health Statistics, 2010; VDH, Infant Mortality Workgroup, 2010).

| Jurisdiction | Birth Rate/ 1,000 Population |
|-----------------|---------------------------------|
| Floyd | 11.1 |
| Giles | 9.5 |
| Montgomery | 9.9 |
| Pulaski | 10.3 |
| Radford | 7.9 |
| New River | 9.9 |
| Virginia | 13.7 |

Table 27. Birth Rates, Virginia, NRHD and Localities, 2008 (VDH, Division of Health Statistics, 2010)

Virginia behavioral risk factor surveillance system (BRFSS) information.

The Virginia Behavioral Risk Factor Surveillance System (BRFSS) is an annual telephone survey—conducted with the help of CDC--of Virginia’s adult population about individual behaviors that relate to chronic disease and injury. The BRFSS is the primary source of state-based information on health risk behaviors among adult populations. BRFSS interviewers ask questions related to behaviors that are associated with preventable chronic diseases, injuries and infectious diseases (VDH, 2010c). Three of the BRFSS questions—about whether the responder reports fair or poor health, limitations in activities, and frequent poor mental health days—relate specifically to perceived quality of life. As noted in Table 28, the percent of adults in the NRV who reported two of these specific health indicators—fair or poor health status and frequent poor mental health days—was higher, but not significantly higher, than the State. However, those reporting limitations in activity in the NRV were significantly higher than the State (http://www.vahealth.org/cdpc/documents/2010/pdf/Chronic%20Disease%202010_New%20River.pdf Virginia).

| VA BRFSS--QUALITY OF LIFE | NEW RIVER | VIRGINIA |
|---|--------------|-------------|
| Percent adults who report fair or poor health status | 14.7 | 13.3 |
| Percent adults with limitations in activities | 23.4* | 18.4 |
| Percent of adults who report frequent poor mental health days | 12.5 | 9.3 |

Table 28. Virginia BRFSS, Quality of Life, Virginia and NRHD, 2008
(http://www.vahealth.org/cdpc/documents/2010/pdf/Chronic%20Disease%202010_New%20River.pdf Virginia; VDH, 2010c) *Significantly higher than the State rate

Additional quality of life data.

Additional qualitative data regarding NRV residents' perception of their quality of life in their communities can be found in section, *Phase 3: Community Themes and Strengths*, in this chapter, as well as in Kemp's dissertation, *Quality of Life and the Health Care System in New River Valley, Virginia: Residents' Perceptions and Experiences* (<http://scholar.lib.vt.edu/theses/available/etd-04032008-141550/>).

Behavioral risk factors.

Risk factors in this category include behaviors which are believed to cause--or be contributing factors to--injuries, disease, and death during youth and adolescence and significant morbidity and mortality later in life. Most of this data is collected through CDC's (and Virginia's) Behavioral Risk Factor Surveillance System (BRFSS).

Table 29 includes data on health risk factors (e.g., smoking, obesity, physical inactivity), the prevalence of chronic diseases (e.g., heart disease, diabetes, hypertension), and preventive health behaviors (e.g., pap smears) based on the most currently available health behavior and health outcome data from the 2008 Virginia BRFSS (VA BRFSS) and vital records.

| HEALTH RISK BEHAVIORS | NEW RIVER | VIRGINIA |
|--|---------------|-------------|
| Percent (%) adults who ever smoked | 45.4 | 42.3 |
| Percent (%) adults who currently smoke | 20.5 | 18.1 |
| Percent (%) adults who are overweight or obese | 58.4 | 61.7 |
| Percent (%) adults who are physically inactive | 40.6** | 49.8 |
| Percent (%) adults who eat < 5 servings of fruits/vegetables daily | 74.6 | 73.7 |
| Percent (%) adults who binge drink alcohol | 9 | 13.5 |
| CHRONIC CONDITIONS | | |
| Percent (%) adults with diabetes | 9.7 | 7.8 |
| Percent (%) adults with current asthma | 9.5 | 8.6 |
| Percent (%) adults with high blood pressure | 28.7 | 28 |
| Percent (%) adults with high cholesterol | 39.4 | 38.1 |
| Percent (%) adults with arthritis | 34.3* | 27.2 |
| PREVENTIVE HEALTH BEHAVIORS | | |
| Percent (%) adults (age 50+)--no sigmoidoscopy/colonoscopy | 42.3* | 35.2 |
| Percent (%) women (age 40+)--no mammogram in past 2 years | 23.1 | 23.8 |
| Percent (%) women (age 18+)—no Pap smear in past 3 years | 13.5 | 14.3 |

Table 29. Health Risk Behaviors, Chronic Conditions, and Preventive Health Behaviors, Virginia and NRHD, 2008 (http://www.vahealth.org/cdpc/documents/2010/pdf/Chronic%20Disease%202010_New%20River.pdf Virginia; VDH, 2010c) *Significantly higher than the State rate; **Significantly lower than the State rate

From an analysis of this data, the percent of adults who are physically inactive in the NRV was the only health risk behavior that was significantly lower than the State. On the other hand, the percent of adults with arthritis and adults over age 50 who have not had a sigmoidoscopy/colonoscopy was significantly higher in the NRV than the State.

Environmental health indicators.

Air quality.

Table 30 shows that the national air quality standards in all localities of the NRV, as monitored by the Department of Environmental Quality (DEQ), were met in 2008. Overall, the NRV has good air quality.

| JURISDICTION | CARBON MONOXIDE | NITROGEN DIOXIDE | SULFUR DIOXIDE | PARTICULATE MATTER | LEAD |
|--------------|-----------------|------------------|----------------|--------------------|------|
| Floyd | Yes | Yes | Yes | Yes | Yes |
| Giles | Yes | Yes | Yes | Yes | Yes |
| Montgomery | Yes | Yes | Yes | Yes | Yes |
| Pulaski | Yes | Yes | Yes | Yes | Yes |
| Radford | Yes | Yes | Yes | Yes | Yes |

Table 30. National Air Quality Standards Met? Localities of the NRHD, 2008 (DHHS, 2008; EPA, 2010)

Water quality.

The abundance of ground and surface water is one of the NRV's significant resources. The NRV has as Water Supply Plan to address the requirements of local and regional water supply planning regulations (9 VAC 25-780). Since 2006, this plan covers the New River Valley Planning District, except for the Towns of Blacksburg and Christiansburg in Montgomery County. The plan includes water source and use information, existing resources information, projected water demand into the future, water demand management, drought response and system needs and alternatives.

In Virginia, the DEQ monitors surface and groundwater water quality (according to national standards and designated usage) and regularly publishes a report of impaired surface waters. The Virginia Department of Environmental Quality (VA DEQ) utilizes water quality testing data from the U.S. Geological Survey (USGS) that maintains stream and groundwater monitoring stations throughout the NRV. There are no stream gauges in Floyd County, three in Giles County, two in Montgomery County, and four in Pulaski County. USGS also maintains a groundwater monitoring well in Christiansburg and in Montgomery County, and two monitoring wells in Pulaski County (one near Claytor Lake and one outside Dublin) (VA DEQ, 2008).

Table 31 is a summary of the designated uses of bodies of water in the New River Basin and the number of miles of impairment. The VA DEQ regularly publishes a listing of impaired streams categorized by county, basin, and type of impairment. The 2008 impaired waters report from DEQ cites 29 stretches of impaired waters in the New River Basin area of Floyd, Giles, Montgomery, and Pulaski counties, and the City of Radford. Seven water segments in Floyd County are impaired because they do not meet the state standards for acceptable water temperature or bacteria. In Giles County, there are seven water segments with impairments, mostly from bacteria. Montgomery County has six impaired streams mainly from bacteria. There are seven impaired waterways in Pulaski County with conditions ranging from contaminations in fish tissue from polychlorinated biphenyls (PCBs) to bacteria. Radford City is home to two stretches of impaired streams, one with PCBs in fish tissue and the other with bacteria. In some cases, different segments of the same waterway have different impairments in different counties, such as the New River in Giles, Montgomery, Pulaski, and Radford (VA DEQ, 2008).

| Designated Use | Water Body Type | Fully Supporting | Total Impaired | Naturally Impaired |
|---------------------|-------------------|--------------------------|----------------|--------------------|
| Aquatic Life | River (mi) | 787 | 255 | 0 |
| | Lakes (acres) | 2,261 | 2,348 | 2,348 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Fish Consumption | River (mi) | 101 | 164 | 0 |
| | Lakes (acres) | 0 | 4,286 | 0 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Public Water Supply | River (mi) | 16 | 0 | 0 |
| | Lakes (acres) | 1,999 | 0 | 0 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Recreation | River (mi) | 193 | 737 | 0 |
| | Lakes (acres) | 4,548 | 60 | 0 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Shellfishing | River (mi) | NA | NA | NA |
| | Lakes (acres) | NA | NA | NA |
| | Estuary (sq. mi.) | NA | NA | NA |
| Wildlife | River (mi) | 954 | 0 | 0 |
| | Lakes (acres) | 4,548 | 0 | 0 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Designated Use | Water Body Type | Insufficient Information | Not Assessed | Total Assessed |
| Aquatic Life | River (mi) | 138 | 2,939 | 1,042 |
| | Lakes (acres) | 0 | 36 | 4,608 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Fish Consumption | River (mi) | 42 | 3,812 | 265 |
| | Lakes (acres) | 0 | 358 | 4,268 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Public Water Supply | River (mi) | 11 | 364 | 16 |
| | Lakes (acres) | 0 | 36 | 1,999 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Recreation | River (mi) | 76 | 3,113 | 930 |
| | Lakes (acres) | 0 | 36 | 4,608 |
| | Estuary (sq. mi.) | NA | NA | NA |
| Shellfishing | River (mi) | NA | NA | NA |
| | Lakes (acres) | NA | NA | NA |
| | Estuary (sq. mi.) | NA | NA | NA |
| Wildlife | River (mi) | 62 | 3,102 | 954 |
| | Lakes (acres) | 0 | 96 | 4,548 |
| | Estuary (sq. mi.) | NA | NA | NA |

Table 31. New River Basin Individual Use Support Summary Table and Impairments, 2008
Rivers - 4,119 miles, Lakes - 4,644 acres, Estuaries - 0 square miles (VA DEQ, 2010)

Water supply and wastewater (sewage) disposal systems.

Public water in the NRV is plentiful, of good quality, and available for residential, commercial, and industrial use. Several public service authorities serve the area. Sewer service is provided by the localities, except where public service authorities are established. However, localities do not always provide community water and sewer systems to their customers. Two environmental health indicators are the numbers of individual water supply systems and wastewater (sewage) disposal systems. Where there is no public water or sewer to serve residents, individuals must construct wells, cisterns, or develop springs, and install septic tanks/drainfields (Hershey et al., 1998, 2007; NRVPCD, 2010a).

There are 55 Community Water Systems (CWS), also known as public water systems, in the NRV. A CWS is defined as a system that regularly serves 25 or more people or has at least 15 year-round service connections. Of these 55 systems, 39 withdraw water from groundwater sources, including Floyd-Floyd County PSA, Giles County PSA, and Montgomery County PSA. In the region, there are 16 surface water systems, including spring-fed systems. The Town of Pulaski, Radford City, and Pulaski County PSA utilize surface water sources. Montgomery County PSA purchases surface water to sell to a portion of their users. Those users not served by the county PSAs or town public works departments are self-supplied users. These self-supplied users include large, non-agricultural users; small agricultural users; and small non-agricultural users. Large, non-agricultural users include large industries such as power generation, as well as golf courses and country clubs. Small, agricultural users are primarily farms that use water for livestock. Small, non-agricultural users are either residences or businesses that have private wells. Approximately 21% of homes in the region utilize wells, as well as approximately 66 businesses (Hershey et al., 1998, 2007; NRVPCD, 2010b).

This information is important because the Safe Drinking Water Act (SDA) and its amendments require the EPA to set standards or Maximum Contaminant levels (MCL) for designated drinking water contaminants for all community (public) water systems. These contaminants are identified through routine water sampling and testing mandated by the SDA. However, residents who have private wells, springs, or cisterns do not have routine periodic water sampling and testing; in this instance, testing is optional upon individual request (Hershey et al., 1998, 2007; NRVPCD, 2010b).

Table 32 illustrates the diversity of water sources that supply housing units by locality in the NRV—those utilizing either community (public) water, individual drilled wells, dug wells, or other sources of drinking water such as cisterns or springs. The NRV has approximately 70% of its housing units connected to a public community water system. Drilled and hand dug wells account for 21% and 1%, respectively. There are still 8% of housing units in the NRV that use some other source of water for drinking such as a spring or cistern. Approximately 30% of housing units in the NRV are in private water supplies and, consequently, are not samples under the SDA. These housing units may be at higher risk for waterborne illness (Hershey et al., 1998, 2007; NRVPCD, 2010b).

| Water Supply Systems | New River | Floyd | Giles | Montgomery | Pulaski | Radford |
|---|-----------|-------|-------|------------|---------|---------|
| Percent (%) of Housing Units on Public Water | 70 | 8 | 56 | 75 | 70 | 99.7 |
| Percent (%) of Housing Units on Drilled Wells | 21 | 55 | 23 | 21 | 24 | 0.2 |
| Percent (%) of Housing Units on Dug Wells | 1 | 4 | 1 | 1 | 2 | 0 |
| Percent (%) of Housing Units with Other Water Sources | 8 | 33 | 20 | 3 | 4 | 0.1 |

Table 32. Water Supply Systems, NRHD and Localities, 2008 (Hershey et al., 1998, 2007; NRVPCD, 2010b)

Localities in the NRV do not always provide community water and sewage systems simultaneously to their customers. The size of a water or sewer treatment plant determines how many customers each treatment plant can adequately serve. Housing units may be connected to a community water system, but if a centralized sewer system is not available or not sized sufficiently, a homeowner must install a septic tank and drainfield or sewage disposal system. As noted in Table 33, 54% of total housing units in the NRV are on public sewer. The percent distribution of wastewater and sewage system sources/methods--either public sewer, septic tank or cesspool, or other means of sewage disposal such as pit privies and sand mounds--vary by locality. Radford City has the largest percent (98%) of housing units on public sewer, and Floyd County has the least (7%). Montgomery County has 65% of housing units on connected to public sewer, Pulaski County has 43%, and Giles County has 36%.

| Wastewater (Sewage) Disposal Systems | New River | Floyd | Giles | Montgomery | Pulaski | Radford |
|---|------------------|--------------|--------------|-------------------|----------------|----------------|
| Percent (%) of Housing Units on Public Sewer | 54 | 7 | 36 | 65 | 43 | 98 |
| Percent (%) of Housing Units with Septic Tanks or Cesspools | 43 | 84 | 60 | 33 | 54 | 1 |
| Percent (%) of Housing Units with Other Means of Sewage Disposal | 3 | 9 | 4 | 2 | 3 | 1 |

Table 33. Wastewater (Sewage) Disposal Systems, NRHD and Localities, 2008 (Hershey et al., 1998, 2007; NRVPCD, 2010b)

Safe drinking water can only be achieved by routine testing and sampling of treated water provided by public drinking water supplies. As septic systems continue to be installed in areas where public sewer does not exist, a greater potential for contamination of the groundwater will occur. Septic systems, alternative, and other on-site means of sewage disposal are only a temporary means of wastewater disposal. A balance of both public water and public sewer must be met to protect the groundwater and, ultimately, to assure safe drinking water. Assurance of

safe drinking water can only be accomplished if both public water and public sewage systems exist. This allows for proper sewage treatment, thereby preventing contamination of the groundwater (Hershey et al., 1998, 2007).

Foodborne illness.

The numbers and rates of foodborne illness in any area are an indicator of food safety, an environmental concern. Food is obtained and prepared from a variety of sources ranging from grocery stores to restaurants and hot dog stands to company picnics. Tables 34, 35 and Figure 21 show the number and rates of reported cases of foodborne illness in 2008 for the NRH.

| Jurisdiction | Campylobacter | E. coli (Shiga toxin producing) | Salmonella | Shigella |
|--------------|---------------|---------------------------------|------------|----------|
| Floyd | 1 | 0 | 2 | 0 |
| Giles | 1 | 0 | 2 | 0 |
| Montgomery | 5 | 3 | 15 | 0 |
| Pulaski | 2 | 0 | 4 | 0 |
| Radford | 0 | 0 | 1 | 0 |

Table 34. Number of Reported Cases of Foodborne Illness, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2008)

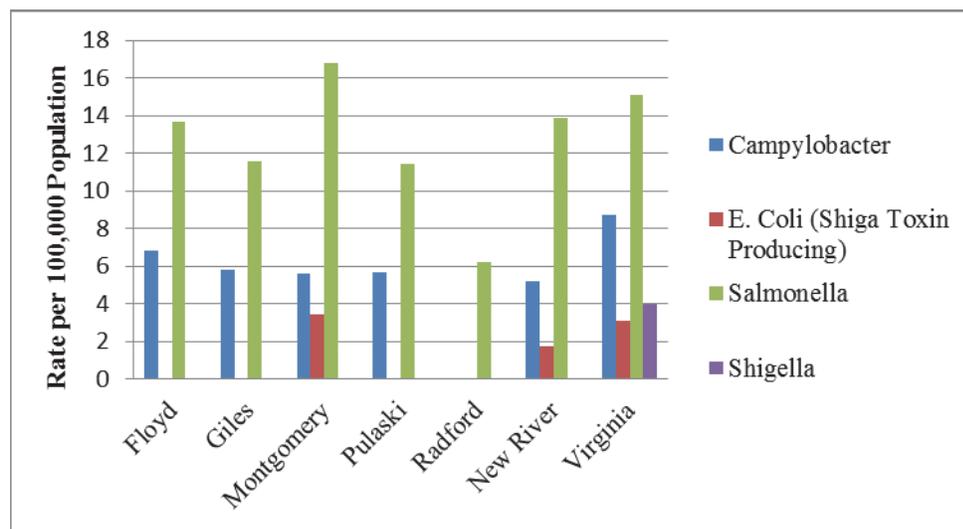


Figure 21. Foodborne Illness Incidence per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

| Jurisdiction | Campylobacter | E. Coli (Shiga Toxin Producing) | Salmonella | Shigella |
|--------------|---------------|---------------------------------|------------|----------|
| Floyd | 6.8 | 0 | 13.7 | 0 |
| Giles | 5.8 | 0 | 11.6 | 0 |
| Montgomery | 5.6 | 3.4 | 16.8 | 0 |
| Pulaski | 5.7 | 0 | 11.4 | 0 |
| Radford | 0 | 0 | 6.2 | 0 |
| New River | 5.2 | 1.7 | 13.9 | 0 |
| Virginia | 8.7 | 3.1 | 15.1 | 4 |

Table 35. Foodborne Illness Incidence per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

In 2008, the rate of salmonella foodborne illness in Montgomery County (16.8) was higher than any other NRV locality and higher than the State (15.1).

In addition to salmonellosis, other major foodborne diseases include campylobacteriosis, shigellosis, and *Escherichia coli* (*E. coli*) shiga toxin producing. Floyd County had the highest rate (6.8%) of campylobacteriosis, and Radford City had the lowest (0). Fortunately, only Montgomery County had three reported cases of *E. coli* (shiga toxin producing) in 2008. No localities in the NRV had reported cases of shigellosis in 2008.

Lead poisoning.

Elevated blood levels in children (exceeding 10 mcg/dL) have been reportable in Virginia since July 1, 1994. Elevated blood lead levels are reported to VDH by local healthcare providers and laboratories. Although blood lead levels (BLLs) in children have been declining, lead exposure remains a significant public health problem. CDC recommends that all children ages one and two who live in housing built before 1950 and all children who receive services from public assistance programs for the poor (such as Medicaid) be screened, as well as other children who are at risk.

Two to three children 72 months of age or younger residing in the NRV experience a confirmed elevated blood lead level each year. Between 2005 and 2008, a total of 11 children had confirmed blood lead levels in the NRV. In 2008, there were two children, ages 0-15 in the NRV—one in Montgomery County and one in Radford City—who had elevated blood lead levels. As can be noted in Figure 22, the single elevated blood lead level in Radford City resulted in an incidence (45.9) higher than that of Virginia (19.0). However, the NRV and its localities consistently have very few elevated blood lead levels detected and reported in children as compared to Virginia.

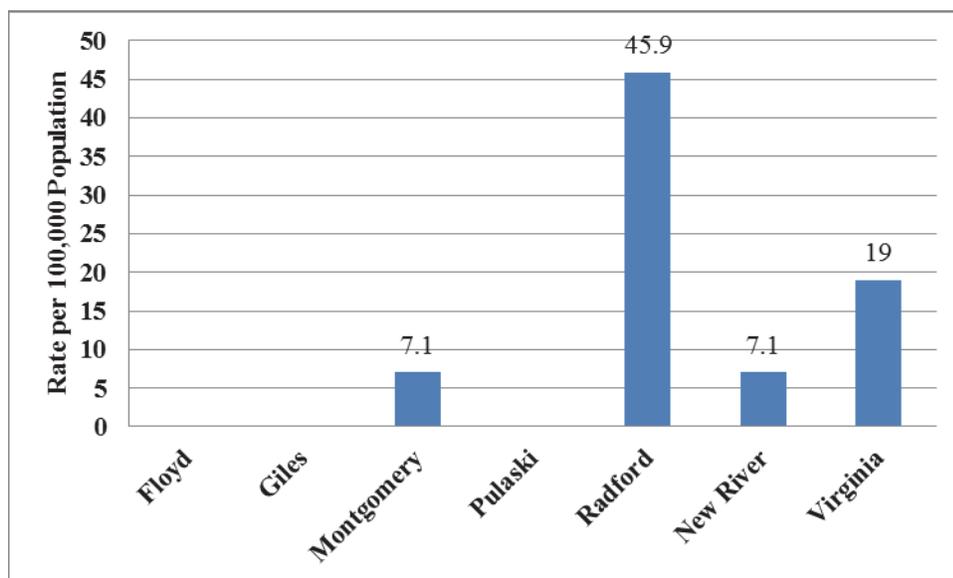


Figure 22. Elevated Childhood (age 0-15) Blood Lead Level Incidence per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

Significant progress has been made in the U.S. in reducing rates of childhood lead poisoning by implementing environmental standards that remove lead from gasoline, paint, and plumbing; water treatment; removing lead solder from food cans; and reducing lead-based paint hazards in children's homes. Despite this progress, lead-based paint in older homes—that is deteriorating, creating dust and paint chips, or is disturbed during renovation or remodeling—and

lead-contaminated soil are the remaining major sources of lead exposure. Other sources include abandoned industrial sites and smelters; utilizing leaded ceramics for cooking, eating, or drinking; and exposure to clothing with lead dust (Hershey et al., 1998, 2007).

Unlike many environmental health problems, lead contamination is often found in the home. About 74% of privately owned and occupied housing units in the U.S. built before 1980 contain lead-based paint. In the NRV, each locality has a historical district of older “period homes” which are being restored. *Lead Safe Virginia*, VDH’s Childhood Lead Prevention Program, notes that ingestion of paint in homes built before 1978 as the biggest source of childhood lead poisoning in Virginia (<http://www.vahealth.org/leadsafe/>). Approximately 50.6% of the total housing units in the NRV were built before 1980. The older the house, the more likely it is to contain lead-based paint and to have a higher concentration of lead in the paint. Housing built before 1950 poses the greatest hazard to children because it is much more likely to contain lead-based paint than newer housing. Interestingly, 20.8% of housing units in the NRV were built before 1950. Giles County has the highest percent (31.8%) of housing units built before 1950, followed by Radford City (29.1%), Pulaski County (27.2%), Floyd County (26.6%), and Montgomery County (12.2%). It should be noted that all of the NRV’s localities—except Montgomery County (12.2%)—exceed both Virginia’s (15.6%) and the Nation’s (22.1%) percentages of housing units built before 1950. The number and percent of housing units in each locality of the NRV built before 1950 can be seen in Table 36.

| | Floyd | Giles | Montgomery | Pulaski | Radford | New River | Virginia | U.S. |
|---|-------|-------|------------|---------|---------|-----------|----------|-----------|
| Number of housing units built before 1950 | 1,797 | 2,461 | 3,977 | 4,449 | 1,748 | 14,468 | 453,053 | 2,872,329 |
| Percent (%) of housing units built before 1950 | 26.6% | 31.8% | 12.2% | 27.2% | 29.1% | 20.8% | 15.6% | 22.1% |

Table 36. Number and Percent of Housing Units Built Before 1950, Virginia, NRHD and Localities, 2008 (Hershey et al., 1998, 2007; NRVPCD, 2010; U.S. Census Bureau, 2000b; U.S. Census Bureau, 2009)

Rabies.

Rabies is a fatal viral disease only found in mammals and is caused by a virus that attacks the nervous system. The rabies virus is found in the brain and saliva of rabid animals and is most often spread through an animal bite. It can also be contracted by getting saliva or brain tissue of a rabid animal in one's eyes or mouth or into a wound. Rabies is enzootic throughout Virginia and wildlife species—especially bats, foxes, raccoons, skunks—are the most commonly reported animals with rabies, along with cats, dogs, and some farm animals (cows, sheep, goats, horses). Rabbits, squirrels, rats, mice, and pets, such as gerbils and hamsters, rarely get rabies. Birds, fish, reptiles, and amphibians do not get the disease. The control of domestic animal rabies is considered an essential public health measure for protecting humans from rabies exposure. Despite the preponderance of rabid wild animals, domestic animals with rabies are more likely to expose humans than are wild animals (Hershey et al., 1998, 2007).

As noted in Table 37, there were 17 cases of rabies confirmed in animals in the NRV during 2008—with Montgomery County having the highest (10), followed by Floyd and Pulaski Counties with three each, Giles County with one, and Radford City with none.

| Jurisdiction | Number of Animal Rabies Cases |
|--------------|-------------------------------|
| Floyd | 3 |
| Giles | 1 |
| Montgomery | 10 |
| Pulaski | 3 |
| Radford | 0 |
| New River | 17 |

Table 37. Number of Confirmed Animal Rabies Cases, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

Social and mental health.

Virginia behavioral risk factor surveillance system (BRFSS) information.

As noted in Table 38 in the *Quality of life* category under the *Virginia behavioral risk factor surveillance system (BRFSS) information* section, the percent of adults in the NRV who reported frequent poor mental health days was higher, but not significantly higher, than the State. (http://www.vahealth.org/cdpc/documents/2010/pdf/Chronic%20Disease%202010_New%20River.pdf Virginia).

| VA BRFSS--QUALITY OF LIFE | NEW RIVER | VIRGINIA |
|---|-----------|----------|
| Percent of adults who report frequent poor mental health days | 12.5 | 9.3 |

Table 38. Virginia BRFSS, Quality of Life, Virginia and NRDH, 2008 (http://www.vahealth.org/cdpc/documents/2010/pdf/Chronic%20Disease%202010_New%20River.pdf Virginia; VDH, 2010a)

Drug/poisoning cases.

Drug/poisoning cases are reflective of the social/mental factors and conditions the directly/indirectly influence the overall health status and individual/community quality of life in the NRV. According to *The Office of the Chief Medical Examiner's Annual Report 2008*, the number of drug/poisoning cases in Virginia increased again in 2008 with an overall increase of 91.4% since 1999. Over one-third (33.4%)--of all of these deaths were in the western part of the State that includes the NRV. The majority of cases were accidents (78.1%), males (61.4%),

whites (86.1%), and 35-44 year olds (27.2%). Narcotics were the most frequently identified class of compounds (36.2%) followed by anti-anxiety medications (15.6%). Twenty-three of the 735 or 3.1% of drug/poison deaths were ethanol-only deaths. Whites died from prescription drugs 4.5 times that of blacks, while blacks died from illegal drugs 1.6 times that of whites (VDH, 2009, pp. 121-136).

Figure 23 summarizes the incidence of all drug/poison-caused deaths for 2008 in the localities of the NRV and in Virginia. All localities in the NRV had higher drug/poison death rates than Virginia (9.5) with the highest incidence in Pulaski County (31.4%), followed by Radford City (24.8%), and Giles County (23.2%). The lowest incidences in the NRV in 2008 were in Floyd (13.5%) and Montgomery (14.4%) counties. Prescription drug deaths have become an increasing cause of injury and death in Virginia accounting for at least 61.2% of all drug/poison deaths in 2008. Fentanyl, hydrocodone, methadone, and oxycodone (FHMO) were found to be partly or wholly responsible for 65.1% of these prescription drug-only deaths. Of interest, 95% of FHMO deaths were white and 61.2% were male. Methadone was found in 40.4% of all FHMO deaths. The western portion of Virginia had the majority (44.7%) of all the FHMO cases. Cocaine and heroin are not the only illegal drugs used in Virginia; however, they are the main compounds found in deaths by illegal drugs. Additionally, heroin deaths are typically underestimated because heroin is very rapidly metabolized into morphine. Therefore, without known heroin history, circumstances, and/or the presence of a specific heroin metabolite; heroin cases may be missed. 2008 data show that cocaine and/or heroin were involved in 23.3% of all drug/poison cases, and the majority of these cases occurred in the more eastern portions of the state (VDH, 2009, pp. 121-136).

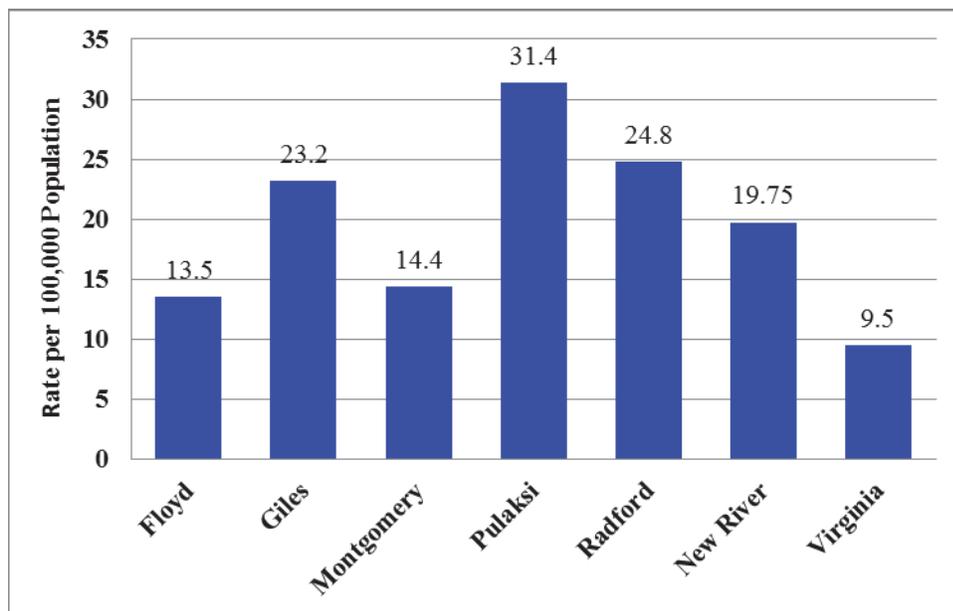


Figure 23. Incidence of Drug/Poison-Related Deaths per 100,000 Population, Virginia and NRHD Localities, 2008 (VDH, 2009, pp. 134-136)

Table 39 shows that the majority of these drug/poison-related deaths were from illegal (street) drugs. The majority of these deaths were accidental (78%), followed by suicide (20%), undetermined (2%), and homicide (0.3%) (VDH, 2009, pp. 121-124).

| Cause of Death | OCME District | | | | Total |
|------------------------------------|---------------|------------|------------|------------|------------|
| | Central | Northern | Tidewater | Western | |
| Ethanol Poisoning Prescription | 8 | 8 | 2 | 5 | 23 |
| Drug Poisoning Illegal (Street) | 118 | 73 | 73 | 186 | 450 |
| Drug Poisoning Mixed Category | 59 | 38 | 27 | 16 | 140 |
| Drug Poisoning Inhalant | 6 | 33 | 15 | 31 | 85 |
| Poisoning | 2 | 1 | 0 | 4 | 7 |
| OTC Poisoning | 2 | 6 | 4 | 0 | 12 |
| Ethylene Glycol Poisoning | 0 | 4 | 0 | 1 | 5 |
| Not Otherwise Specified Poisoning | 2 | 1 | 2 | 2 | 7 |
| Other Poisons (Heavy Metals, etc.) | 3 | 1 | 1 | 1 | 6 |
| Total | 200 | 165 | 124 | 246 | 735 |

Table 39. Drug/Poison-Caused Deaths by OCME District, 2008 (VDH, 2009, p. 122).

Homicide.

Homicide death rates are also reflective of the social/mental conditions and quality of life in the NRV. As can be seen in Figure 24, homicide death rates for the NRV in 2008 ranged from 13.5 in Floyd County to none in Giles County. Floyd County (13.5) and Radford City (12.4) were significantly higher than Virginia (4.9) in 2008. There were a total of eight homicide deaths in the NRV in 2008—two in Floyd County, three in Montgomery County, one in Pulaski County, and two in Radford City. Additional data and information on homicide death rates can be found in the *Death, Illness, and Injury* subsection.

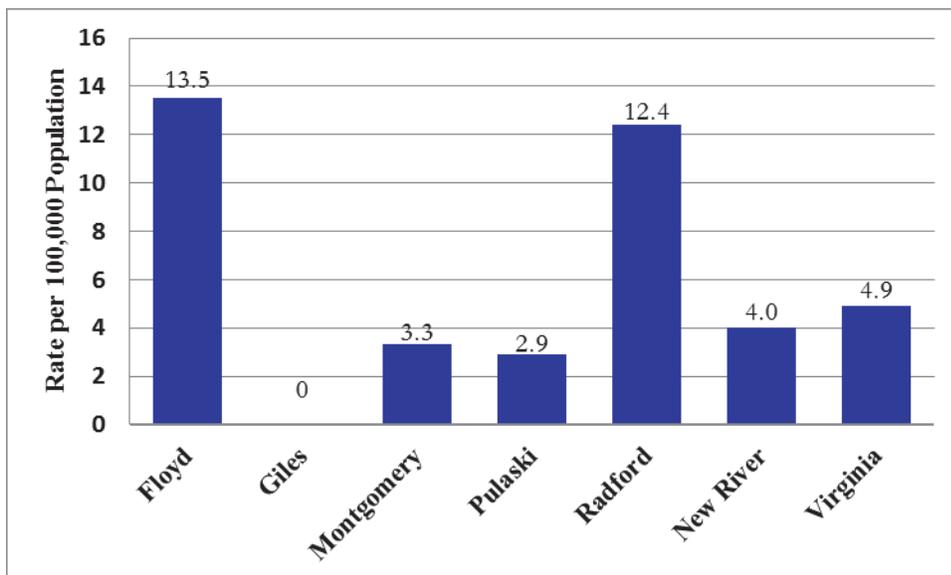


Figure 24. Homicide Death Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, 2009; VDH, Division of Health Statistics, 2010)

Maternal and child health.

One of the key measuring tools for determining the well-being of any community is the assessment of maternal-child health. Indicators used both locally in the NRV and throughout the Nation to assess maternal-child health include birth rate and infant mortality (IMR), low birth

weight (LBW), non-marital births, early entry into prenatal care, and teenage pregnancy. These indicators are interrelated and often influenced by numerous variables (Hershey et al., 1998, 2007).

Infant mortality (IMR).

Table 40 shows infant mortality rates in the Virginia, the NRV and its localities, and in surrounding localities from 1998-2008. Giles County had infant mortality rates consistently higher than the State for eight of 11 years, while Pulaski County and Radford City had infant mortality rates higher than Virginia for four and five of 11 years, respectively. However, neighboring jurisdictions, such as Roanoke City and Wythe County, have also had infant mortality rates higher than Virginia for seven and 10 of 11 years, respectively. As noted, three of the five localities in the NRV had infant mortality rates higher than the State in 2008—Floyd County (18.3) with the highest, Giles County (12.2), and Pulaski County (8.3). Montgomery County and Radford City had the lowest rates at 1.1 and 0, respectively.

Low birth weight (LBW).

Table 41 shows the number and percent of LBW (of resident total live births) in the Virginia, the NRV and its localities, and in surrounding localities from 1998-2008. Pulaski County consistently had higher percentages of LBW infants than the State for eight of the 11 years, while Giles and Floyd counties had higher percentages of LBW infants than Virginia for four and three of 11 years, respectively. However, neighboring jurisdictions--such as Roanoke City, Wythe County, and Bland County—have also had infant mortality rates higher than Virginia for 11, eight, and four of 11 years, respectively. As can be seen, the percent of LBW infants for the NRV was lower than Virginia in 2008. Within the NRV in 2008, the percentage of LBW infants ranged from a low of 6.7% in Montgomery to a high of 11% in Giles County.

| Jurisdiction | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|
| | No. | Rate |
| Floyd | 1 | 6.8 | 1 | 6.6 | 1 | 6.3 | 1 | 7.2 | 0 | | 1 | 6.8 |
| Giles | 2 | 9.6 | 4 | 19.7 | 0 | | 2 | 9.8 | 2 | 9.4 | 0 | |
| Mont. | 4 | 5.1 | 5 | 6.1 | 4 | 4.9 | 5 | 6.4 | 1 | 1.3 | 5 | 6.0 |
| Pulaski | 4 | 9.5 | 2 | 5.2 | 0 | | 2 | 5.4 | 1 | 3.1 | 6 | 17.8 |
| Radford | 1 | 8.1 | 1 | 6.8 | 2 | 12.6 | 1 | 7.4 | 0 | | 0 | |
| New River | 12 | 7.1 | 13 | 7.1 | 7 | 3.9 | 11 | 6.8 | 4 | 2.5 | 12 | 7.4 |
| Bland | 0 | | 0 | | 1 | 15.9 | 0 | | 0 | | 0 | |
| Wythe | 2 | 7.2 | 3 | 8.8 | 4 | 11.9 | 1 | 3.2 | 3 | 9.2 | 0 | |
| Roanoke Co. | 3 | 3.6 | 5 | 5.8 | 6 | 6.7 | 3 | 3.0 | 2 | 2.0 | 4 | 4.6 |
| Roanoke City | 11 | 8.1 | 12 | 8.7 | 13 | 9.6 | 16 | 12.5 | 15 | 13.5 | 24 | 18.0 |
| Virginia | 695 | 7.4 | 685 | 7.2 | 676 | 6.8 | 730 | 7.4 | 725 | 7.3 | 766 | 7.6 |

| Jurisdiction | 2004 | | 2005 | | 2006 | | 2007 | | 2008 | |
|--------------|------|------|------|------|------|------|------|------|------|------|
| | No. | Rate |
| Floyd | 0 | | 0 | | 2 | 12.3 | 1 | 6.3 | 3 | 18.3 |
| Giles | 2 | 10.6 | 2 | 12.4 | 1 | 5.5 | 2 | 10.5 | 2 | 12.2 |
| Mont. | 3 | 3.6 | 8 | 9.7 | 8 | 9.0 | 6 | 6.2 | 1 | 1.1 |
| Pulaski | 3 | 8.7 | 6 | 17.4 | 4 | 11.9 | 2 | 5.6 | 3 | 8.3 |
| Radford | 3 | 27.0 | 0 | | 2 | 14.4 | 1 | 6.7 | 0 | |
| New River | 11 | 6.7 | 16 | 9.9 | 17 | 10.0 | 12 | 6.6 | 9 | 5.3 |
| Bland | 0 | | 0 | | 0 | | 2 | 39.2 | 0 | |
| Wythe | 3 | 9.0 | 3 | 9.1 | 2 | 6.0 | 3 | 9.3 | 2 | 6.9 |
| Roanoke Co. | 4 | 2.9 | 3 | 2.8 | 7 | 6.7 | 3 | 3.3 | 4 | 4.5 |
| Roanoke City | 8 | 8.4 | 17 | 14.1 | 17 | 12.0 | 19 | 12.0 | 16 | 10.1 |
| Virginia | 768 | 7.4 | 777 | 7.4 | 760 | 7.1 | 839 | 7.7 | 716 | 6.7 |

Table 40. Infant Mortality--Number and Rate (per 1,000 Resident Live Births), Virginia, NRHD and Localities, and Neighboring Localities, 1998-2008 (VDH, Division of Health Statistics, 2010)
Higher than the rate for Virginia

| Jurisdiction | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|
| | No. | Rate |
| Floyd | 6 | 4.1 | 10 | 6.6 | 9 | 5.7 | 12 | 8.7 | 14 | 8.9 | 9 | 6.2 |
| Giles | 17 | 8.2 | 19 | 9.4 | 15 | 5.9 | 16 | 7.8 | 15 | 7.1 | 11 | 6.2 |
| Mont. | 52 | 6.6 | 57 | 7.0 | 53 | 6.4 | 53 | 6.8 | 46 | 5.9 | 50 | 6.0 |
| Pulaski | 32 | 7.6 | 31 | 8.1 | 33 | 8.0 | 39 | 10.6 | 28 | 8.6 | 29 | 8.6 |
| Radford | 7 | 5.7 | 9 | 6.2 | 15 | 9.4 | 6 | 4.4 | 1 | 0.8 | 9 | 7.1 |
| New River | 114 | 6.8 | 126 | 7.4 | 125 | 6.9 | 126 | 7.7 | 104 | 6.5 | 108 | 6.7 |
| Bland | 3 | 6.0 | 3 | 4.7 | 5 | 7.9 | 4 | 6.8 | 4 | 7.3 | 7 | 11.7 |
| Wythe | 20 | 7.2 | 31 | 9.1 | 23 | 6.8 | 36 | 11.4 | 22 | 6.8 | 29 | 8.7 |
| Roanoke Co. | 57 | 6.8 | 63 | 7.3 | 56 | 6.3 | 80 | 8.0 | 74 | 7.3 | 62 | 7.1 |
| Roanoke City | 129 | 9.6 | 126 | 9.1 | 120 | 8.8 | 102 | 8.0 | 93 | 8.3 | 121 | 9.1 |
| Virginia | 7479 | 7.9 | 7416 | 7.8 | 7886 | 8.0 | 7816 | 7.9 | 7904 | 8.0 | 8278 | 8.2 |

| Jurisdiction | 2004 | | 2005 | | 2006 | | 2007 | | 2008 | |
|--------------|------|------|------|------|------|------|------|------|------|------|
| | No. | Rate |
| Floyd | 10 | 5.9 | 9 | 5.7 | 11 | 6.7 | 9 | 5.7 | 14 | 8.5 |
| Giles | 10 | 5.3 | 12 | 7.5 | 15 | 8.3 | 12 | 6.3 | 18 | 11.0 |
| Mont. | 67 | 8.0 | 59 | 7.2 | 67 | 7.6 | 73 | 7.5 | 60 | 6.7 |
| Pulaski | 36 | 10.4 | 32 | 9.3 | 37 | 11.0 | 34 | 9.5 | 28 | 7.7 |
| Radford | 9 | 8.1 | 5 | 3.9 | 18 | 12.9 | 20 | 13.4 | 10 | 7.9 |
| New River | 132 | 8.0 | 117 | 7.2 | 148 | 8.7 | 148 | 8.1 | 130 | 7.6 |
| Bland | 4 | 7.4 | 4 | 6.3 | 5 | 10.4 | 5 | 9.8 | 7 | 13.2 |
| Wythe | 40 | 12.0 | 34 | 10.4 | 29 | 8.7 | 30 | 9.3 | 25 | 8.6 |
| Roanoke Co. | 114 | 8.1 | 96 | 9.0 | 77 | 7.4 | 74 | 8.2 | 66 | 7.4 |
| Roanoke City | 90 | 9.5 | 112 | 9.3 | 153 | 10.8 | 177 | 11.2 | 160 | 10.1 |
| Virginia | 8674 | 8.4 | 8594 | 8.2 | 8893 | 8.3 | 9344 | 8.6 | 8996 | 8.4 |

Table 41. Low Birth Weight--Number and Percent (of Resident Total Live Births), Virginia, NRHD and Localities, and Neighboring Localities, 1998-2008 (VDH, Division of Health Statistics, 2010)
Higher than the percent LBW for Virginia

Non-marital births.

The percent non-marital births of total births in Virginia and the NRV during 2008 can be seen in Table 42. Although the NRV (34.2) had a lower percent of non-marital live births than the State, three NRV localities had higher percentages than Virginia (35.8)—Giles County (42.7) had the greatest percent, followed by Pulaski County (41.2) and Radford City (39.4). Floyd County (32.9) was lower than the State, and Montgomery County (29.6) had the lowest percent non-marital live births in the NRV.

| Jurisdiction | Non-Marital Births (% of Total Births) |
|-----------------|---|
| Floyd | 32.9 |
| Giles | 42.7 |
| Montgomery | 29.6 |
| Pulaski | 41.2 |
| Radford | 39.4 |
| New River | 34.3 |
| Virginia | 35.8 |

Table 42. Percent of Non-Marital Births, Virginia, NRHD and Localities, 2008 (VDH, Division of Health Statistics, 2010)

Prenatal care.

As noted in Table 43, in 2008, a greater percent of pregnant women in the NRV (89%) received prenatal care in the first trimester than in Virginia (84.6%). In fact, four NRV localities had a greater percent of women receiving prenatal care than the State—Montgomery (91.1%), Floyd (89.6%), Pulaski (89.0%), and Radford (85.8%). Only Giles County (81.7%) had a lower proportion of all pregnant women receiving prenatal care in the first trimester of pregnancy than Virginia.

| Jurisdiction | Percent (%) Prenatal Care Began in First Trimester |
|-----------------|--|
| Floyd | 89.6 |
| Giles | 81.7 |
| Montgomery | 91.1 |
| Pulaski | 89.0 |
| Radford | 85.8 |
| New River | 89.2 |
| Virginia | 84.6 |

Table 43. Percent Beginning Prenatal Care in First Trimester, Virginia, NRHD and Localities, 2008 (VDH, Division of Health Statistics, 2010)

Teenage pregnancy.

During 2008, 282 females ages 10-19 became pregnant in the NRV. This represents a teenage pregnancy rate of 22.8 per 1,000 adolescents which was less than Virginia's 2008 rate (26.3). As can be seen in Table 44, Giles County had the highest (47.3) teenage pregnancy rate among females ages 10-19, followed by Pulaski Count (34.7), Radford City (19.9), Floyd County (19.6), and Montgomery County (17.6), respectively. Additional teenage pregnancy rates are shown in this table for ages < 15, ages 15-17, and ages 18-19.

| Jurisdiction | Pregnancy Rate/ 1,000 Females Ages 10-19 | Pregnancy Rate/ 1,000 Females Ages <15 | Pregnancy Rate/ 1,000 Females Ages 15-17 | Pregnancy Rate/ 1,000 Females Ages 18-19 |
|-----------------|--|--|--|--|
| Floyd | 19.6 | 0 | 20.8 | 74.3 |
| Giles | 47.3 | 2.1 | 45.5 | 197.3 |
| Montgomery | 17.6 | 0.5 | 34.1 | 21 |
| Pulaski | 34.7 | 0 | 28.9 | 156.5 |
| Radford | 19.9 | 0 | 40.8 | 20.9 |
| New River | 22.8 | 0.5 | 33.2 | 33.6 |
| Virginia | 26.3 | 1 | 24.1 | 84.7 |

Table 44. Teenage Pregnancy Rates per 1,000 Females Ages 10-19, Age < 15, Ages 15-17, and Ages 18-19, Virginia, NRHD and Localities, 2008 (VDH, Division of Health Statistics, 2010)

Death, illness, and injury.*Leading causes of death.*

The overall ranking and percent of total deaths for the leading causes of death vary between the U.S., Virginia, and the NRV as noted in Table 45. The only U.S. data available is for 2007; however, the Virginia and NRV data is for 2008.

| CAUSE OF DEATH | U.S.* | | VIRGINIA | | NEW RIVER | |
|---|-----------------------------|------------|-----------------------------|------------|-----------------------------|------------|
| | Percent (%) of Total Deaths | Rank Order | Percent (%) of Total Deaths | Rank Order | Percent (%) of Total Deaths | Rank Order |
| Heart Disease | 25.4 | 1 | 23.6 | 1 | 26.2 | 1 |
| Malignant Neoplasms (Cancer) | 23.2 | 2 | 23.3 | 2 | 21.0 | 2 |
| Cerebrovascular Diseases (Stroke) | 5.6 | 3 | 5.4 | 3 | 4.9 | 5 |
| Chronic Lower Respiratory (Lung) Diseases | 5.3 | 4 | 5.1 | 4 | 5.3 | 4 |
| Unintentional Injuries (Accidents) | 5.1 | 5 | 4.7 | 5 | 6.5 | 3 |
| Alzheimer's Disease | 3.1 | 6 | 3.0 | 6 | 3.2 | 6 |
| Diabetes Mellitus (Diabetes) | 2.9 | 7 | 2.6 | 8 | 2.8 | 8 |
| Influenza and Pneumonia | 2.2 | 8 | 2.2 | 10 | 2.4 | 9 |
| Nephritis and Nephrosis (Kidney Disease) | 1.9 | 9 | 2.6 | 7 | 3.1 | 7 |
| Septicemia | 1.4 | 10 | 2.4 | 9 | 1.7 | 10 |
| Suicide | 1.4 | 11 | 1.6 | 11 | 1.1 | 11 |
| Chronic Liver Disease | 1.2 | 12 | 1.1 | 12 | 1.0 | 12 |
| Primary Hypertension And Renal Disease | 1.0 | 13 | 1.0 | 13 | 0.3 | 14 |
| Parkinson's Disease | 0.8 | 14 | 0.7 | 15 | NA | NA |
| Homicide | 0.8 | 15 | 0.8 | 14 | 0.6 | 13 |
| All Other Causes | 18.6 | NA | 19.8 | NA | NA | NA |

Table 45. Leading Causes of Death, Ranking and Percent of Total Death, U.S., Virginia, and NRV, 2008 (CDC, National Center for Health Statistics, 2010; VDH, Division of Health Statistics, 2010)

*2007 data is most recent data available for U.S. NA=not available.

As can be seen in Table 45, heart disease and cancer accounted for almost one-half of all deaths in the U.S. (48.6%) in 2007, and in Virginia (46.9) and the NRV (47.2%) in 2008. While heart disease and cancer were consistently ranked first and second for the U.S., Virginia, and the NRV, unintentional injury was ranked as the third leading cause of death for the NRV and the fifth leading cause of death for Virginia and the Nation. Cerebrovascular disease was ranked as the third leading cause of death for the U.S. and Virginia and the fifth leading cause for the NRV. Chronic lower respiratory (lung) disease, Alzheimer's disease, suicide, chronic liver disease were consistently ranked as the fourth, sixth, eleventh, and twelve leading causes of death, respectively, for the U.S., Virginia, and the NRV. Nephritis and nephrosis was ranked as ninth in the U.S., but as the seventh leading cause of death in Virginia and the NRV. Diabetes was ranked as the seventh leading cause of death in the U.S., but eighth in Virginia and the NRV. Septicemia was ranked as the ninth leading cause of death in Virginia, but the tenth leading cause of death in the NRV and the U.S. Influenza and pneumonia were ranked as the eighth, ninth, and tenth leading causes of death in the U.S., NRV, and Virginia, respectively. Primary hypertension and renal disease was ranked as the thirteenth leading cause of death in the U.S. and Virginia, but fourteenth in the NRV. Homicide was ranked as the thirteenth, fourteenth, and fifteenth leading causes of death in the NRV, Virginia, and the U.S., respectively. Parkinson's disease was ranked as the fourteenth leading cause of death in the U.S. and the fifteenth leading cause of death in Virginia. No data is available for Parkinson's disease in the NRV. Although mortality from HIV disease has not been on the list of the 15 leading causes of death since 1997, it is still of concern. HIV disease continues to be one of the five leading causes of death for specific age groups of females and in the black population (DHHS, National Center for Vital Statistics, 2010)

There were noted age, sex, and race/ethnicity differences in the leading causes of death in the U.S., as well as in Virginia and the NRV. The leading cause of death in youth from birth to age 24 was unintentional injury, but homicide and suicide were also important causes of death in these age categories. In the older age groups, mortality due to chronic diseases—specifically cancer and heart disease--was most prevalent (Xu, Kochanek, Murphy & Tejada-Vera, 2010). Generally, women tend to have a lower mortality rate at every age, and men are more likely to die from most of the leading causes of death than women. There are also racial/ethnic disparities with minorities generally having a higher mortality rate for the leading causes of death.

There are also variations in the rankings, and specifically the 2008 age-adjusted death rates, of the leading causes of death between localities in the NRV as can be seen in Table 46. These variations are associated with differences in sex, age, socioeconomic status, race/ethnic composition, and differences in risk for specific causes of death.

Radford City (272.0) and Giles (264.2) and Pulaski (231.6) counties had the highest heart disease age-adjusted death rates in the NRV (222.5)--where all heart disease age-adjusted death rates, except Montgomery County (198.5), were significantly higher than the State (176.5).

Pulaski (205.1) and Giles (204.2) counties and Radford City (203.3) had the highest cancer age-adjusted death rates in the NRV.

Floyd County had significantly higher cerebrovascular disease (stroke) age-adjusted death rates than the NRV (42.2) and Virginia (42.0); however, Radford City (14.5) had a significantly lower rate.

| CAUSE OF DEATH | AGE-ADJUSTED RATE PER 100,000 POPULATION | | | | | | |
|---|--|--------|------------|---------|---------|-----------|----------|
| | Floyd | Giles | Montgomery | Pulaski | Radford | New River | Virginia |
| Heart Disease | 204.3* | 264.2* | 198.5 | 231.6* | 272.0* | 222.5* | 176.5 |
| Malignant Neoplasms (Cancer) | 156.8 | 204.2 | 157.0 | 205.1 | 203.3 | 179.4 | 176.2 |
| Cerebrovascular Diseases (Stroke) | 63.2* | 45.0 | 47.6 | 32.4 | 14.5** | 42.2 | 42.0 |
| Chronic Lower Respiratory (Lung) Diseases | 43.2 | 51.9* | 36.4 | 52.3* | 51.0* | 45.1 | 39.7 |
| Unintentional Injuries (Accidents) | 45.1 | 82.0* | 45.0 | 65.9* | 98.5* | 56.2* | 35.4 |
| Alzheimer's Disease | 23.8 | 52.8* | 19.9 | 27.3 | 21.7 | 26.9 | 23.5 |
| Diabetes Mellitus (Diabetes) | 21.3 | 27.3* | 17.5 | 40.5* | 8.2** | 24.6* | 19.5 |
| Influenza and Pneumonia | 27.5* | 31.2* | 14.9 | 23.1* | 14.1 | 20.8* | 17.2 |
| Nephritis and Nephrosis (Kidney Disease) | 10.6** | 21.1 | 29.7* | 29.9* | 38.6* | 26.7* | 20.0 |
| Septicemia | 13.1 | 4.6** | 20.4 | 15.7 | 6.9** | 15.2 | 18.3 |
| Suicide | 6.3 | 20.9* | 10.2 | 3.7 | 6.5 | 9.7 | 11.8 |
| Chronic Liver Disease | 6.3 | 3.8** | 10.7 | 11.5 | 11.1 | 9.3 | 7.6 |
| Primary Hypertension And Renal Disease | 4.4 | 0.0 | 1.5 | 6.2 | 0.0 | 3.0 | 7.3 |
| Parkinson's Disease | NA | NA | NA | NA | NA | NA | NA |
| Homicide*** | 13.5* | 0.0 | 3.3 | 2.9 | 12.4* | NA | 4.9 |

Table 46. Age-Adjusted Death Rates for the Leading Causes of Death, Virginia, NRHD and Localities, 2008 (VHD, Division of Vital Statistics, 2010) *Significantly higher than the State rate; **Significantly lower than the State rate; ***OCME rates that are not age-adjusted; NA=not available

Pulaski (52.3) and Giles (51.9) counties and Radford City (51.0) had the highest chronic lower respiratory disease age-adjusted death rates in the NRV (45.1) and significantly higher than Virginia (39.7)—where all lung disease age-adjusted death rates, except Montgomery County (36.4), were higher than Virginia.

In regards to unintentional injury deaths, the NRV (56.2) and all of its localities had higher age-adjusted death rates than the State (35.4), with Radford City (98.5), Giles (82.0) and Pulaski (65.9) counties having significantly higher rates.

Giles County (52.8) had significantly higher age-adjusted death rates from Alzheimer's disease than the NRV (26.9) and Virginia (23.5); Montgomery County (19.9) and Radford City (21.7) had lower rates than Virginia and the lowest rates in the NRV.

Age-adjusted death rates from diabetes were significantly higher in the NRV (24.6)—particularly in Pulaski (40.5) and Giles (27.3) counties--than in Virginia (19.5); Radford City (8.2) had a significantly lower rate.

The NRV (20.8) and three of its localities--Giles (31.2), Floyd (27.5), and Pulaski (23.1) counties--had significantly higher influenza and pneumonia age-adjusted death rates than Virginia (17.2).

The NRV (26.7) and three of its localities--Radford City (38.6), and Pulaski (29.9) and Montgomery (29.7) counties—had significantly higher kidney disease age-adjusted death rates than the State (20.0). Floyd County (10.6) had significantly lower rates.

Montgomery County (20.4) had higher age-adjusted death rates from septicemia than the NRV (15.2) and Virginia (18.3); whereas Radford City (6.9) and Giles (4.6) County had significantly lower rates.

Suicide age-adjusted death rates for the NRV (9.7) and its localities were consistently lower than Virginia (11.8) except for Giles County (20.9) that had and has had a consistent significantly higher suicide death rate.

Pulaski County (11.5), Radford City (11.1), and Montgomery County (10.7) had the highest chronic liver disease age-adjusted death rates in the NRV (9.3), but Giles County had a significantly lower rate.

The age-adjusted death rate for primary hypertension and renal disease was the highest for Pulaski County (6.2); however, death rates for the NRV (3.0) and all of its localities were lower than the State (7.3).

In 2008, Floyd County (13.5) and Radford City (12.4) had significantly higher homicide age-adjusted death rates than Virginia (4.9) and the highest rates in the NRV.

Morbidity discharge data (hospitalization) for selective primary care diagnoses and ambulatory care sensitive conditions.

Patient-level hospital discharge data of selective primary diagnoses and ambulatory care sensitive conditions (heart, cerebrovascular, and chronic obstructive pulmonary disease; and diabetes, asthma) show that the NRV had significantly higher hospitalization age-adjusted rates (per 10,000) than Virginia in 2008 for heart disease (138.2 versus 98.1), chronic obstructive pulmonary disease (30.0 versus 17.8), and diabetes (17.1 versus 15.1). Age-adjusted hospitalization rates for cerebrovascular disease in 2008 for the NRV were higher, but not significantly higher, than the State (29.2 versus 26.9). Asthma age-adjusted hospitalization rates were lower, but not significantly lower, than Virginia in 2008 (10.3 versus 11.8) (Virginia Health Information, 2008).

Manner of death—OCME cases.

In 2008, the OCME investigated 5,811 deaths, representing 9.9% of the estimated deaths in Virginia. Accidents accounted for the greatest proportion of deaths by any manner. Motor vehicle deaths were the most common cause of accidental deaths with 39.9% of all accidents, followed by drug use with 23.8%. Seniors, 85 and older, had the highest rate of accidental falls (VDH, 2009).

Death rates for OCME-defined cases in Virginia and localities of the NRV in 2008 are shown in Figure 25 and Table 47. Although all NRV localities had higher accidental death rates than the State (26.8), Radford City (68.2), Giles (52.2) and Pulaski (45.7) counties had significantly higher rates. Floyd County (13.5) and Radford City (12.4) had the highest homicide rates in the NRV, and these rates were also significantly higher than Virginia (4.9). Both Floyd (47.2) and Pulaski (25.7) counties had the highest natural death rates in the NRV, and these rates were also higher than the State's (24). Giles County (17.4) had the highest suicide rate in the NRV, and Giles County was the only locality in the NRV to have a suicide rate higher than Virginia's (11.8). Of interest, Giles County has consistently had higher suicide rates than other localities of the NRV.

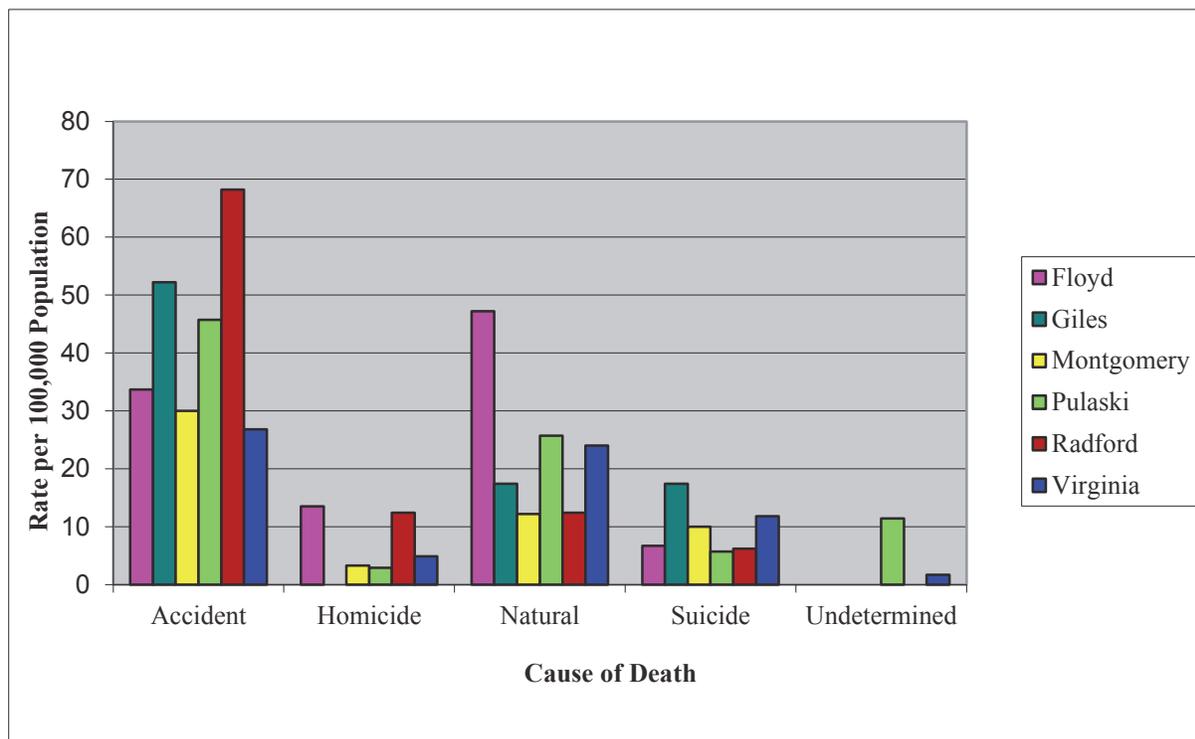


Figure 25. Death Rates for OCME-defined Cases, Virginia and NRHD Localities, 2008 (VDH, 2009)

| Death Rates per 100,000 for OCME Cases | | | | | |
|--|----------|----------|---------|---------|--------------|
| Jurisdiction | Accident | Homicide | Natural | Suicide | Undetermined |
| Floyd | 33.7 | 13.5* | 47.2 | 6.7 | 0 |
| Giles | 52.2* | 0 | 17.4 | 17.4* | 0 |
| Montgomery | 30 | 3.3 | 12.2 | 10 | 0 |
| Pulaski | 45.7* | 2.9 | 25.7 | 5.7 | 11.4 |
| Radford | 68.2* | 12.4* | 12.4 | 6.2 | 0 |
| Virginia | 26.8 | 4.9 | 24 | 11.8 | 1.7 |

Table 47. Death Rates for OCME Cases, Virginia and NRHD Localities, 2008 (VDH, 2009)

To obtain a more accurate perspective on mortality in the NRV, five-year trend data for the 14 leading causes of death and cancer morbidity, in the NRV and Virginia, were analyzed and are shown in Figure 26. The sources for this information included comparisons of the five-year (2001-2005) age-adjusted resident death data (from the 14 leading causes of death) and of the five-year (2000-2004) age-adjusted cancer data. Although this data shows that some of the NRV's age-adjusted rates of death—from heart, cerebrovascular, chronic lower respiratory, and chronic liver diseases, as well as unintentional injury, diabetes, influenza/pneumonia, nephritis and nephrosis, suicide, and pneumonia due to solids and liquids—are higher than those for Virginia, analysis of the data shows that NRV's rates **are not** significantly higher than health districts and localities in southwest and western Virginia. Overall, they are consistent with other localities in southwest and western Virginia and the State as a whole. In fact, some of the other health districts and localities in southwest and western Virginia have significantly elevated death rates for these 14 leading causes of death as compared to those of localities in the NRV and Virginia. The same age-adjusted data also show that the NRV's rates of cancer diagnosis **are not** significantly higher than other health districts and localities in southwest and western Virginia and for Virginia overall.

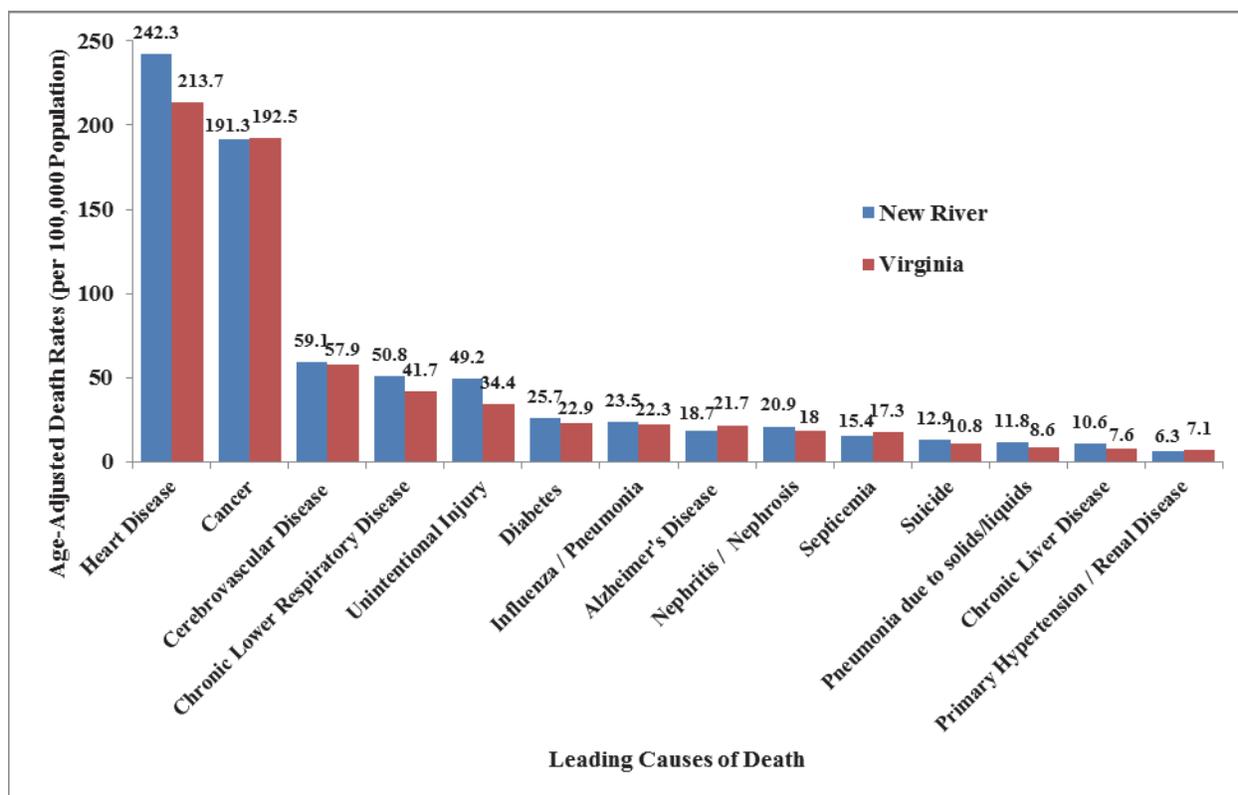


Figure 26. Age-Adjusted Death Rates for the 14 Leading Causes of Death, Virginia and NRHD, 2001-2005 (VDH, 2008) Data compiled by the VDH, Office of Epidemiology

Communicable disease.

Figures 27, 28 and Tables 48, 49, and 50 show the 2008 incidence rates per 100,000 population for some of the reportable diseases in Virginia, and the NRV and its localities. Figure 27 and Table 48 focus on three sexually-transmitted infections (STIs)—chlamydia, gonorrhea, and syphilis. As can be seen, all localities of the NRV had chlamydia, gonorrhea, and syphilis rates lower than Virginia. However, Radford City (378) and Montgomery County (243.3) had the highest rates of chlamydia in the NRV—which would correlate with their college populations. Pulaski County's (171) chlamydia rate is also elevated, but Giles (11.6) and Floyd (6.8) counties had the lowest rates. Radford City (56) had the highest gonorrhea rate in the NRV, followed by Pulaski (23), Montgomery (18), and Giles (17) counties. Floyd County (6.8) also had the lowest gonorrhea rate. The only case of syphilis reported in the NRV in 2008 was from Floyd County.

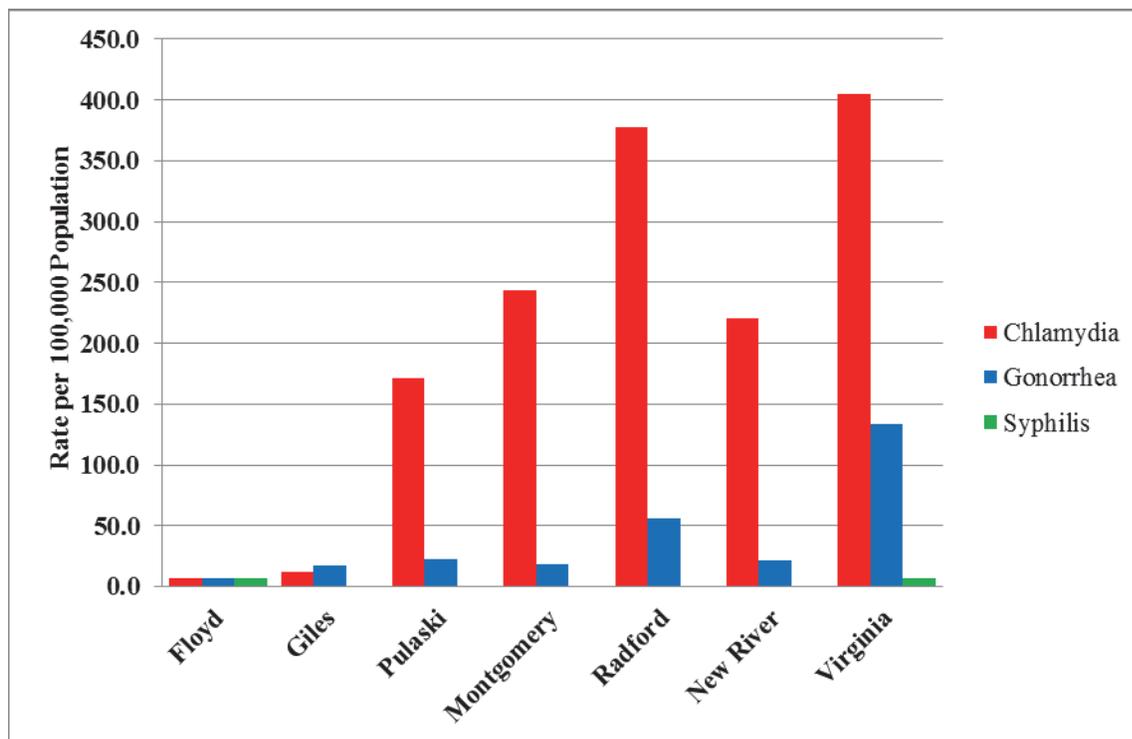


Figure 27. Sexually Transmitted Infection Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

| Jurisdiction | Chlamydia | | Gonorrhea | | Syphilis | |
|--------------|-----------------|-------------------------------|-----------------|-------------------------------|-----------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 16 | 6.8 | 1 | 6.8 | 1 | 7.0 |
| Giles | 26 | 11.6 | 3 | 17.0 | 0 | 0 |
| Montgomery | 217 | 243.3 | 16 | 18.0 | 0 | 0 |
| Pulaski | 59 | 171 | 8 | 23 | 0 | 0 |
| Radford | 61 | 378 | 9 | 56 | 0 | 0 |
| New River | 379 | 220.6 | 37 | 22 | 1 | 1.0 |
| Virginia | 31,218 | 404.8 | 10,337 | 134.0 | 789 | 10.2 |

Table 48. Number of Sexually Transmitted Infections and Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

Table 49 focuses on selected “re-emerging infectious diseases” in the NRV—tuberculosis (TB) and meningococcal disease. Radford City and Montgomery County had the only reported cases of tuberculosis in 2008--two and three, respectively. The incidence of tuberculosis in Radford City (12.4) was significantly higher than the State (3.8). Because of the international college populations at Virginia Tech and Radford University, it is expected that these localities may have a higher incidence of reported tuberculosis than other NRV localities. There were no reported cases of meningococcal disease in the NRV in 2008; however, the NRV does have cases of meningococcal infection reported frequently, in part, due to the college population in the area.

| Jurisdiction | Tuberculosis Disease | | Meningococcal Disease | |
|--------------|----------------------|-------------------------------|-----------------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 0 | 0.0 | 0 | 0.0 |
| Giles | 0 | 0.0 | 0 | 0.0 |
| Montgomery | 3 | 3.4 | 0 | 0.0 |
| Pulaski | 0 | 0.0 | 0 | 0.0 |
| Radford | 2 | 12.4 | 0 | 0.0 |
| New River | 5 | 2.9 | 0 | 0.0 |
| Virginia | 292 | 3.8 | 24 | 0.3 |

Table 49. Number of Tuberculosis and Meningococcal Disease Infection Cases and Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

Figure 28 and Table 50 focus on HIV infections and AIDS. As can be noted, in 2008, there were two cases each of HIV infection reported in Pulaski and Montgomery counties, two cases of AIDS in Pulaski County, and one case of AIDS in Giles County. Rates for both HIV infections--in Montgomery (2.2) and Pulaski (2.0) counties--and AIDS—in Giles (5.8) and Pulaski (5.7) counties--are significantly lower than the State rates of 10.9 and 8.3, respectively.

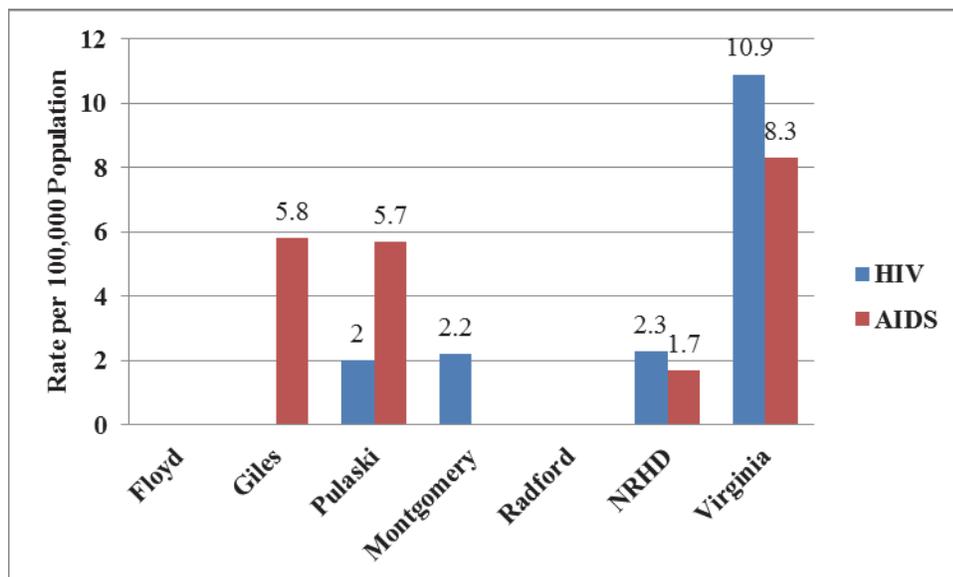


Figure 28. HIV Infection and AIDS Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

| Jurisdiction | HIV Infection | | AIDS | |
|--------------|-----------------|-------------------------------|-----------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 0 | 0.0 | 0 | 0.0 |
| Giles | 0 | 0.0 | 1 | 5.8 |
| Montgomery | 2 | 2.2 | 0 | 0.0 |
| Pulaski | 2 | 2.0 | 2 | 5.7 |
| Radford | 0 | 0.0 | 0 | 0.0 |
| New River | 4 | 2.3 | 3 | 1.7 |
| Virginia | 823 | 10.9 | 634 | 8.3 |

Table 50. Number of HIV Infection and AIDS Cases and Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

Figure 29 and Table 51 show the number of acute Hepatitis A, B, and C cases and the incidence of acute Hepatitis A, B, and C in the NRV during 2008. Only Montgomery County had reported cases of Hepatitis A in 2008 with an incidence of 2.2, as compared to Virginia's rate of 0.7. Montgomery County's rate was higher than the State's. The incidence of Hepatitis B was highest in Pulaski County (45.6), followed by Radford City (24.8), Floyd County (6.8), and

Montgomery County (3.4). Pulaski County's and Radford City's Hepatitis B rates were significantly higher than that of Virginia (1.7). This probably correlates with known increasing illegal/injectable drug use among residents of these localities. Giles County had no reported cases of Hepatitis B for 2008. There were no reported cases of acute Hepatitis C in any localities of the NRV in 2008.

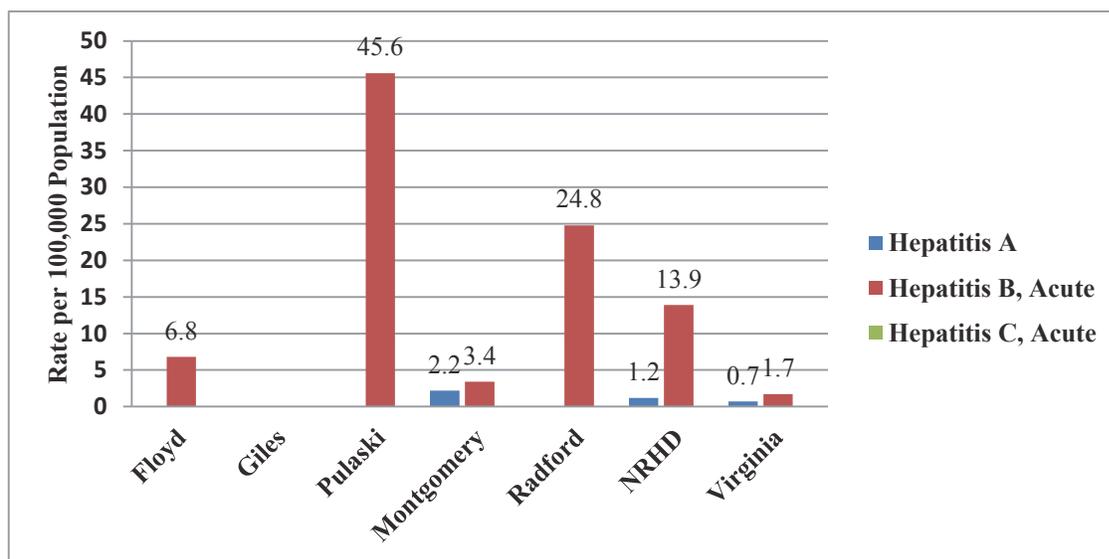


Figure 29. Acute Hepatitis A, B, and C Rates (per 100,000 Population), Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

| Jurisdiction | Hepatitis A | | Hepatitis B, Acute | | Hepatitis C, Acute | |
|--------------|-----------------|-------------------------------|--------------------|-------------------------------|--------------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 0 | 0.0 | 1 | 6.8 | 0 | 0.0 |
| Giles | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Montgomery | 2 | 2.2 | 3 | 3.4 | 0 | 0.0 |
| Pulaski | 0 | 0.0 | 16 | 45.6 | 0 | 0.0 |
| Radford | 0 | 0.0 | 4 | 24.8 | 0 | 0.0 |
| New River | 0 | 1.2 | 24 | 13.9 | 0 | 0.0 |
| Virginia | 51 | 0.7 | 130 | 1.7 | 8 | 0.1 |

Table 51. Number of Acute Hepatitis A, B, and C Cases and Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

The goal of childhood disease prevention is to reduce the incidence of fifteen diseases through age-appropriate vaccinations, and immunizations remain the most cost-effective way to prevent illness and disease in large populations. CDC's Advisory Committee on Immunization Practices (ACIP) develops and annually updates written recommendations for the routine administration of childhood and adult vaccines, along with schedules regarding the appropriate timing, dosage, and contraindications. Childhood immunization rates in the U.S. for children aged 19-35 months in 2008 remained at or over 90% for most of the routine vaccines. Although immunization laws in Virginia mandate that children are adequately immunized by preschool and/or kindergarten level, only 70.3% of children completed the recommended childhood vaccination series by age two, a critical period for childhood disease prevention.

Figure 30 shows the proportion of two-year old health department clients in Virginia and the NRV localities in 2008 who received all age-appropriate vaccines. All localities in the NRV—except Montgomery County--had higher vaccination rates than Virginia (56%). Floyd County (81%) had the highest childhood immunization rates followed by Pulaski (73%) and Giles (71%) counties, and then Radford City. Montgomery County had the lowest childhood vaccination rates in the NRV.

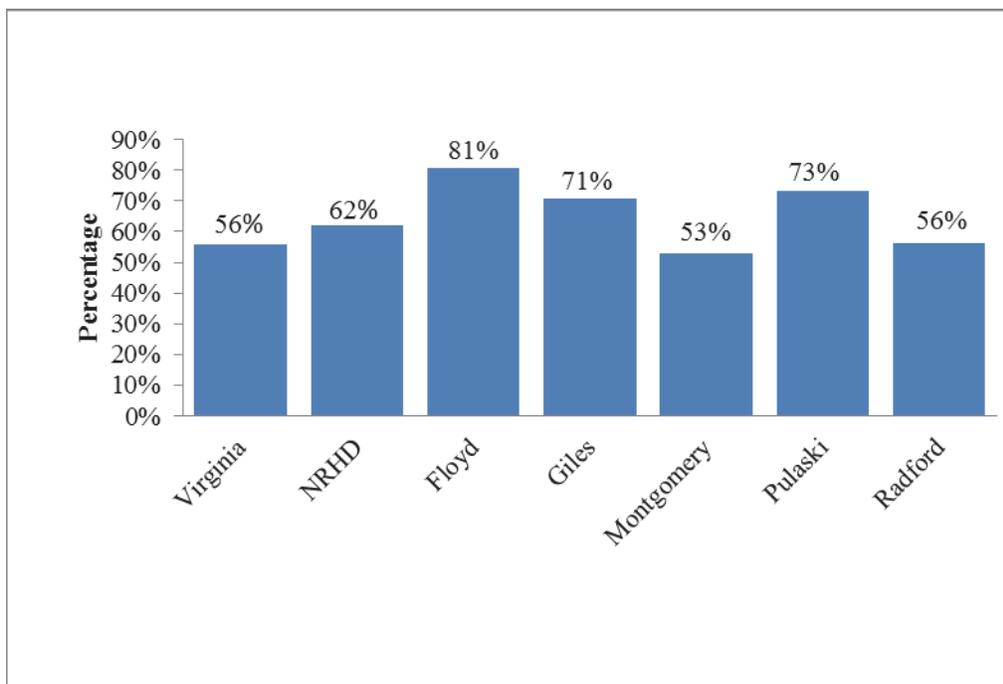


Figure 30. Percent of Two-Year Old Health Department Clients Receiving All Age-Appropriate Immunizations, Virginia, NRV and Localities, 2008 (VDH, Office of Epidemiology, 2010).

Sentinel events.

Vaccines represent one of the top public health success stories of the 20th century.

Immunization as a disease-prevention strategy is challenged, however, when vaccine-preventable diseases occur in persons who are appropriately vaccinated for their age and when outbreaks occur among highly vaccinated groups or populations. Vaccine-preventable diseases are sentinel events for the NRV. Figure 31 and Table 52 provide the number and incidence of selected confirmed vaccine-preventable illnesses in 2008 in the NRV for measles, mumps, rubella, and pertussis. Montgomery County had two cases of mumps and one case of pertussis, while there was one case of pertussis in Floyd County. The incidence of mumps in Montgomery County (2.2) was significantly higher than Virginia (0.1), and the incidence of pertussis in Floyd County (6.8) was significantly higher than Virginia (2.6).

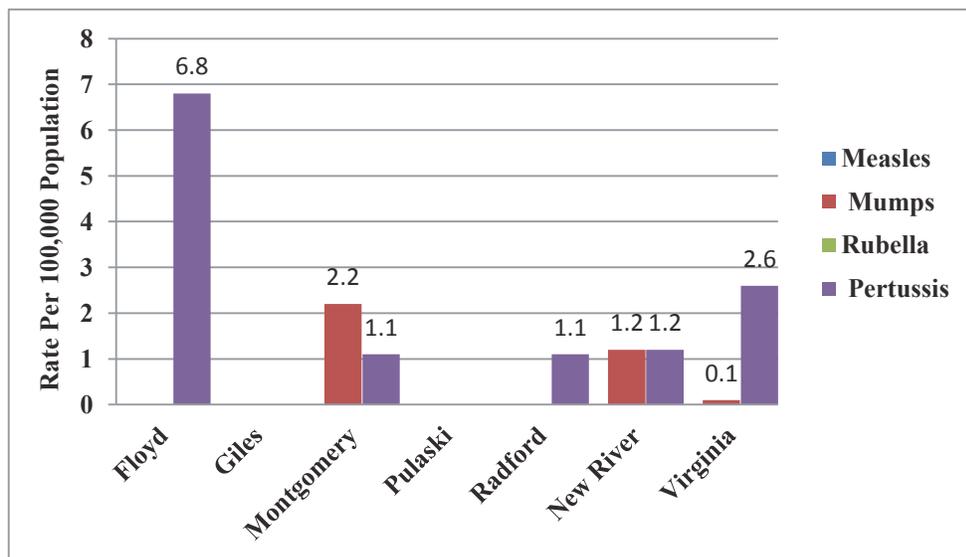


Figure 31. Measles, Mumps, Rubella, and Pertussis Case Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

| Jurisdiction | Measles | | Mumps | |
|--------------|-----------------|-------------------------------|-----------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 0 | 0.0 | 0 | 0.0 |
| Giles | 0 | 0.0 | 0 | 0.0 |
| Montgomery | 0 | 0.0 | 2 | 2.2 |
| Pulaski | 0 | 0.0 | 0 | 0.0 |
| Radford | 0 | 0.0 | 0 | 0.0 |
| New River | 0 | 0.0 | 2 | 1.2 |
| Virginia | 0 | 0.0 | 9 | 0.1 |

| Jurisdiction | Rubella | | Pertussis | |
|--------------|-----------------|-------------------------------|-----------------|-------------------------------|
| | Number of Cases | Rate (per 100,000 Population) | Number of Cases | Rate (per 100,000 Population) |
| Floyd | 0 | 0.0 | 1 | 6.8 |
| Giles | 0 | 0.0 | 0 | 0.0 |
| Montgomery | 0 | 0.0 | 1 | 1.1 |
| Pulaski | 0 | 0.0 | 0 | 0.0 |
| Radford | 0 | 0.0 | 0 | 0.0 |
| New River | 0 | 0.0 | 2 | 1.2 |
| Virginia | 0 | 0.0 | 198 | 2.6 |

Table 52. Number of Measles, Mumps, Rubella, and Pertussis Cases and Rates per 100,000 Population, Virginia, NRHD and Localities, 2008 (VDH, Office of Epidemiology, 2010)

2010 county health rankings.

The *County Health Rankings: Mobilizing Action Toward Community Health (MATCH)*, funded by the Robert Wood Johnson Foundation in conjunction with the University of Wisconsin, was released in February 2010 providing the first state-based city and county health rankings report ever done at the national level. The report examined and compared health outcomes and determinants in all counties (and independent cities) on a state-by-state basis only, not across state boundaries (Robert Wood Johnson Foundation & University of Wisconsin, 2010a).

The *County Health Rankings* is based upon the model of population health improvement in which health outcomes are the result of a set of many other factors that determine health, such as individual behaviors, the quality of healthcare, education, jobs, and the environment. Counties' and cities' health were ranked on two sets of measures: *health outcomes* [length (mortality) and quality of life (morbidity)]; and weighted *health factors* [health behaviors (30%), access to and quality of clinical care (20%), social and economic factors (40%), and the physical environment (10%)]. There are no composite rankings (i.e. combining the health outcomes and health factors rankings). The mortality rank, representing length of life, was based on a measure of premature death—the years of potential life lost prior to age 75. The morbidity rank was based on measures that represent health-related quality of life and birth outcomes by combining four measures—self-reported fair or poor health, poor physical health days, poor mental health days, and the percent of births with LBW. Health behaviors included measures of smoking, diet, and exercise, alcohol use, and risky sex behavior. Clinical care included measures of access to care and quality of care. Social and economic factors included measures of education, employment,

income, family and social support, and community safety. The physical environment included measures of environmental quality and the built environment (Robert Wood Johnson Foundation & University of Wisconsin, 2010a).

Virginia's 2010 *County Health Rankings* report can be found—along with more detailed information—at <http://www.countyhealthrankings.org/Virginia>. Appendix T is a spreadsheet that summarizes the overall rankings for localities in the NRV that ranged in ranking from the top 25% in Virginia to the lower 25%—depending on the specific factor and measure. With regard to overall health outcomes (measures that describe the current health status), Floyd County was in the first (highest) quartile; Montgomery County was in the second quartile; Radford City and Giles County were in the third quartile; and Pulaski was in the fourth (lowest) quartile. With regard to health factors (what influences health of a locality), Montgomery County was in the first quartile; Giles County, Radford City, and Floyd County were in the second quartile; and Pulaski County was in the third quartile (Robert Wood Johnson Foundation & University of Wisconsin, 2010b).

The *County Health Rankings* provided another “snapshot” measure of the overall health and the factors that influence the health of each county/city in Virginia. The Report provided an ability to see how the NRV's “health” compared to that of other counties/cities in Virginia—where the NRV is doing well and where there can be improvements. However, it is important to remember that the *County Health Rankings* are another methodology and tool for looking closely at community health status and has limitations (Robert Wood Johnson Foundation & University of Wisconsin, 2010a).

Summary of secondary statistical data and information.

The NRV is located in southwest Virginia and surrounds the New River. With a predominantly non-hispanic White population of approximately 173,000, over half reside in Montgomery County, males outnumber females, and 18-49 year olds comprise the largest population group. Population density with the NRV is smaller than the average density within Virginia. The area has a lower percent of high school and a higher percent of college graduates than the State. The larger percent of population age 18-49 and the higher number of college graduates than the State are primarily due to the impact of the college populations in Montgomery County and Radford City. Median household income is consistently below the State, and the percent of the population living below 100% poverty exceeds the State in every jurisdiction. The three largest employment sectors within the NRV are manufacturing, educational services, and retail trade. The unemployment rate in the area has remained higher than the Virginia rate since 2000 with higher rates in Giles and Pulaski Counties. The NRV has excellent healthcare facilities and a few nursing home/long-term care facilities. There is a greater percent of uninsured residents and Medicare beneficiaries in the NRV than in Virginia. Although every NRV locality except Radford City has a primary care physician/population ratio lower than the State, none of the localities in the NRV are designated as a MUA or as a Primary Care Health Professional Shortage Area. However, Floyd County is designated as a Dental Professional Shortage Area, and all of the localities in the NRV are designated as Mental Health Professional Shortage Areas. One of the challenges of the NRV is the recruitment and retention of health professionals to meet the health service needs of its rural residents.

Residents of the NRV are proud of their quality of life from scenic vistas to a variety of religious denominations to numerous dedicated public service agencies and civic organizations to local governments that provide educational, health, welfare, and recreational services, law enforcement, and fire and rescue protection for their residents. It is a dynamic area of industry and trade with good transportation and accessibility. Tourism is an expanding economic force in the NRV with an abundance of cultural and recreational opportunities, as well as numerous historical societies. Committed to educational excellence, the NRV has developed an excellent educational system and is rich in educational opportunities with over 45 public and private primary and secondary schools, two universities, a community college, a veterinary college, and a medical school. A wide variety of housing is available for NRV residents where birth rates have been consistently lower, and death rates have been consistently higher, than the State.

Virginia BRFSS data shows that the percent of adults in the NRV who report fair or poor health and frequent poor mental health days is higher than the State, and those that report limitation in activity is significantly higher than the State. Additionally, the percent of adults with arthritis and adults over age 50 who have not had a sigmoidoscopy/colonoscopy is significantly higher in the NRV than the State, whereas the percent of adults who are physically inactive in the NRV is the only health risk behavior that is significantly lower than the State.

From an environmental perspective, overall air and water quality in the NRV are good to excellent. The abundance of ground and surface water is one of the NRV's significant resources; however, there are 29 segments of impaired waters in the NRV. Public water in the NRV is plentiful, of good quality, and available for residential, commercial, and industrial use. Several public service authorities serve the area with community water systems; however, approximately 30% of homes in the region utilize private water supplies. About 54% of houses in the NRV are

on public sewer. Although the percentage of houses in all localities of the NRV, except Montgomery County, built before 1950 are higher than in the State and Nation, the NRV and its localities have very few elevated blood lead levels detected and reported in children as compared to Virginia. Foodborne illness is an environmental health indicator, and interestingly, the rate of salmonella foodborne illness in Montgomery County was higher than the State and any other NRV locality in 2008.

From a social and mental health perspective, the percent of adults in the NRV who reported frequent poor mental health days was higher than the State. Over one-third of all drug/poison deaths were in the western part of Virginia, and the majority of these were from illegal (street) drugs. All localities in the NRV had higher drug/poison death rates than Virginia--with the highest in Pulaski County, Radford City, and Giles County. Homicide rates in 2008 in the NRV, overall, were lower than Virginia; however, Floyd County and Radford City had rates that were significantly higher than Virginia.

Since 1998, infant mortality has been a consistent maternal-child health problem for Giles County and an intermittent problem for Pulaski County and Radford City. Pulaski County has also consistently had higher percentages of LBW infants than the State. In 2008, Giles County, Radford City, and Pulaski County had higher percentages of non-marital live births than Virginia. Giles County also had a lower proportion of all pregnant women receiving prenatal care in the first trimester of pregnancy than the State. Giles and Pulaski counties also had significantly higher teenage pregnancy rates among females ages 10-19 than Virginia.

In rank order, heart disease, cancer, unintentional injury, chronic lower respiratory (lung) disease, and cerebrovascular disease (stroke) are the top five leading causes of death in the NRV for 2008, followed by Alzheimer's disease, kidney disease, diabetes, influenza and pneumonia,

septicemia, suicide, chronic liver disease, homicide, and primary hypertension/renal disease. Overall, residents of the NRV had significantly higher cardiovascular disease, chronic lower respiratory disease, and unintentional injury age-adjusted death rates than Virginia, as well as higher, but not significantly higher, cancer, cerebrovascular, Alzheimer's, kidney, and chronic liver disease, and diabetes, influenza and pneumonia mortality rates. The NRV had lower septicemia, suicide, and primary hypertension/renal disease death rates in 2008 than the State.

There were variations in the 2008 age-adjusted death rates between localities in the NRV that were associated with age, sex, socioeconomic status, and race/ethnicity differences, as well as differences in risk for specific causes of death. Unintentional injury, homicide, and suicide were more common from birth to age 24, and mortality due to chronic diseases (e.g., heart disease and cancer) was more common in the older age groups. Generally, woman had a lower mortality rate at every age, and minorities had a higher mortality rate for the leading causes of death. Radford City, and Giles and Pulaski counties had the highest cardiovascular, cancer, and chronic lower respiratory disease, as well as unintentional injury death rates—with some of these rates being significantly higher than Virginia. Pulaski and Giles counties also had significantly higher diabetes death rates. Giles County had a significantly higher age-adjusted death rate from Alzheimer's disease in 2008 and has consistently had a significantly higher death rate from suicide. However, all the other localities of the NRV have lower suicide age-adjusted death rates. Floyd, Giles, and Pulaski counties had significantly higher influenza and pneumonia death rates. Floyd County and Radford City had significantly higher homicide age-adjusted death rates. Floyd County also had a significantly higher cerebrovascular disease death rate. Montgomery and Pulaski counties, and Radford City had higher kidney disease and chronic liver disease age-adjusted death rates. Montgomery County also had higher age-adjusted death rates from

septicemia. Pulaski County also had the highest death rate for primary hypertension and renal disease in the NRV. Radford City had a significantly lower age-adjusted death rate from cerebrovascular disease, diabetes, and septicemia. Giles County had the lowest death rates from septicemia and chronic liver disease in the NRV, rates that were significantly lower than the State.

Five-year age-adjusted trend data for the 14 leading causes of death in the NRV show that, although some of the NRV's age-adjusted rates of death are higher than those for Virginia, these rates are not significantly higher than and are consistent with other health districts and localities in southwest and western Virginia. In fact, some of the other health districts and localities in southwest and western Virginia have significantly elevated death rates for these 14 leading causes of death as compared to those of localities in the NRV and Virginia.

Patient-level hospital discharge (morbidity) data of selective primary diagnoses and ambulatory care sensitive conditions (heart, cerebrovascular, and chronic obstructive pulmonary disease; and diabetes, asthma) show that the NRV had significantly higher hospitalization age-adjusted rates (per 10,000) than Virginia in 2008 for heart disease, chronic obstructive pulmonary disease, and diabetes. Age-adjusted hospitalization rates for cerebrovascular disease were higher, but not significantly higher, than Virginia; however, asthma hospitalization rates were lower, but not significantly lower, than the State.

When examining communicable disease rates, the NRV had lower rates of STIs, TB and meningococcal disease, HIV infections, AIDS, and hepatitis C than Virginia in 2008. However, hepatitis B rates in the NRV were significantly higher than the State—particularly in Pulaski County and Radford City—and correlate with known illegal/injectable drug use. Radford City also had a significantly higher rate of TB infection in 2008 than the State, which is not surprising because of the international college population. Additionally, among NRV localities, Radford

City and Montgomery County had the highest rates of chlamydia in the NRV—which correlate with their college populations. It should also be noted that all localities in the NRV, except Montgomery County, had a greater proportion of two-year old health department clients who had received all age-appropriate vaccines. Vaccine-preventable diseases as sentinel events do occur in the NRV, and in 2008, Montgomery County had two cases of mumps and one case of pertussis, while there was one case of pertussis reported in Floyd County.

Another “snapshot” measure of overall health and the factors that influence the health of each locality of the NRV was reflected in the *County Health Rankings*, a national report that compared NRV’s “health” to that of other counties/cities in Virginia. With regard to overall health outcomes (measures that describe the current health status), Floyd County was ranked in the first (top) quartile, Montgomery County in the second quartile, Radford City and Giles County in the third quartile, and Pulaski County in the fourth (lowest) quartile. With regard to health factors (what influences health of a locality), Montgomery County was ranked in the first quartile; Giles County, Radford City, and Floyd County were in the second quartile; and Pulaski County was in the third quartile.

Secondary focus group, survey, and needs assessment data.

1994 New River Valley health and human services needs assessment (NRVHHSNA).

This needs assessment is discussed in Chapter One in the *Background Information* section under *History of Community Health Improvement Efforts, Needs Assessment, and Strategic Planning in the NRV*.

1999-2000 PATH New River Valley community health needs assessment.

This needs assessment is also discussed in Chapter One in the *Background Information* section under *History of Community Health Improvement Efforts, Needs Assessment, and Strategic Planning in the NRV*.

2009 Montgomery County HRSA FQHC planning project needs assessment.

A recent community needs assessment was conducted in Montgomery County in the spring of 2009 by VCOM to determine the healthcare needs of the uninsured and underserved and the feasibility of an FQHC. This was done as part of the development of a grant application to the Bureau of Primary Health Care (BPHC) for funding to open an FQHC in a medically underserved area of northeastern Montgomery County.

The needs assessment consisted of a survey and community focus groups targeted to low-income and under-/uninsured residents and their families. The survey questions focused on demographics; socioeconomic, employment, and insurance status; use of current healthcare services; and possible use and desired services of a proposed FQHC. Survey findings included:

➤ Demographics

- 306 households surveyed representing 860 individuals
- average age was 30 years, with a maximum age of 94
- over-representation of African-American and Hispanic respondents

➤ Income

- 60% of households earned less than \$20,000 per year
- 81% of households earned less than 200% of Federal Poverty Level
- employment status of adults: 47.1% worked full- or part-time, 21.4% were unemployed, 9.3% retired, 9.7% disabled, 7.8% students.

➤ Insurance Status

- almost one-third of households had at least one uninsured child
- almost one-half of households had at least one uninsured adult
- 78% of respondents without health insurance, reported they could not afford it
- more than one-third of all households had been without dental insurance for more than six years
- main reasons for lack of insurance: cost, do not qualify for public assistance, unemployed, not offered by employer

➤ Current Healthcare Services

- Medical
 - more than 25% received care through the emergency department
- Dental
 - 41% of respondents reported no regular dental care
 - some used the emergency department for dental care
- Mental Health
 - when needed, 73% do not go to a counselor for regular care
- Emergency Department
 - 50% reported that someone in their household had used the emergency department in the past 24 months

- FQHC in Montgomery County
 - 99.6% reported that they “would” or “might” use services at a FQHC
 - 63% requested ancillary services such as transportation to and scheduling of appointment, translation and explanation of health-related information
 - top four requested services desired by more than 61% of respondents--regular medical care, dental, vision care, and affordable prescriptions

Focus groups meetings further defined the healthcare needs of low-income, under-/uninsured target populations living in medically underserved areas of Montgomery County. Based on participants’ feedback three overarching issues were identified: cultural health perceptions, perceived barriers, and coping strategies. It was noted that cultural health perceptions and perceived barriers shaped participants coping strategies. Several themes were identified for each overarching issue and included:

➤ Cultural Health Perceptions

- a right to access quality care, e.g. entitlement versus responsibility to pay healthcare bills
- healthcare priorities, e.g. preference for necessities such as food, value preventive care but lack access to affordable care
- care for children is priority, e.g. ensure children receive preventive and acute care even if cannot afford
- lack of provider confidence, e.g. demand for specific care and have healthcare provider cooperate with request, time with provider limited and inadequate, lack of provider understanding patient needs, lack of provider interest in the welfare of the patient, and ineffective provider communication

➤ Perceived Barriers

- access to affordable care, e.g. access to primary care and dental services, as well as mental health and substance abuse services, especially for under-/uninsured; limited Medicaid providers; access to affordable medications; access to prenatal services; access to vision services; access to specialty care/diagnostic services
- payor status, e.g. Medicare co-pays and deductibles can be expensive, Medicaid provides medical and dental coverage to children up to age 21, private insurance through employer or military is helpful but can be expensive, under-/uninsured patients face large out-of-pocket deductibles and expenses for healthcare and cannot afford
- hours of operations, e.g. complaints of difficulty obtaining timely appointment(s) when needed, long office wait times, and limited service hours; desire for extended (evening and weekend) hours

➤ Coping Strategies

- delay treatment, e.g. overutilization of emergency department for primary and dental care, self-care
- seek financial assistance, e.g. discounted fees, charity care, and sliding fees
- transportation, e.g. utilize ride services, reimbursement for transportation, and delivery services
- navigate the system, e.g. use of available low-cost resources like the Free Clinic of the NRV and local health departments (VCOM, 2009).

Summary of secondary focus group, survey, and needs assessment data.

Secondary focus group, survey, and needs assessment data consistently confirmed that those individuals in the NRV with the more dire need for community health services were also those residents least able to access and/or pay for necessary services. The data also consistently demonstrated the adverse impact of being under-/uninsured and revealed that the major concerns and most pressing problems of residents in the NRV were access to affordable holistic healthcare (i.e., medical, dental, mental health, medications, vision, etc.) secondary to lack of health insurance; mental health issues such as stress, anxiety, depression, and suicide; transportation; and unhealthy lifestyle choices and behaviors. Basic needs (housing and food) were also a problem for NRV residents with a lower income and were prioritized over adult acute and preventive healthcare; however, children's acute healthcare was a priority for families.

Past focus groups and surveys of a variety of representatives (including healthcare providers, health and human service agencies, faith communities, academia, business, etc., and the general population) from all NRV localities revealed that residents' greatest needs and concerns were access to holistic healthcare (including primary care, prenatal, and specialty care/diagnostic services such as those for HIV positive individuals and/or disabled individuals), dental health, mental health (depression and anxiety), affordable prescriptions, healthcare provider hours not convenient, healthcare and other services for older adults, chronic health conditions (e.g., heart disease, cancer, obesity), unhealthy lifestyle choices and behaviors such as inactivity and drug/alcohol abuse, teen pregnancy, transportation, lack of work skills, substandard and affordable housing, and poverty.

From the surveys, it was noted that residents with a high school education or less and/or lower annual household incomes (less than \$25,000)—and their family members--were more likely to be unemployed; under-/uninsured; unable to work due to a disability; have mental/emotional problems themselves or in their homes; attempt suicide; over-utilize the emergency room for primary and dental care; utilize late or weekend healthcare provider hours; have unhealthy lifestyle behaviors and choices such as inactivity (lack of regular exercise), smoking, and drug/alcohol abuse; not have a primary care provider and not see a dentist or eye doctor regularly; not get healthcare services because of inability to pay, and not be able to afford prescription medication or eyewear. The major reasons for lack of health insurance included cost, not qualifying for public assistance, unemployed, and not offered by employer.

Barriers to healthcare and other community services included lack of knowledge of community services; lack of affordable insurance; if insured, large out-of-pocket deductibles and co-pays; lack of reliable transportation; affordability of services; limited Medicaid and Medicare providers; geography (long traveling distances to a provider); illiteracy and limited health literacy; lack of work skills; economics (poor paying jobs) and therefore, not having enough money to pay for medications, eyewear, or appointments; cultural; compliance issues; inconvenient and inadequate healthcare provider office hours (none during evenings/weekends); not being able to get a timely appointment with a healthcare provider; and lack of confidence in healthcare providers and ineffective provider communication.

Recommendations have included increased and improved culturally-appropriate and understandable community health promotion/education, efforts to increase awareness of existing services among community residents, provision of adequate personal care services targeted to those most in need such as the elderly, employment/training, federally qualified health centers to provide holistic care to under-/uninsured, and attention to housing and water quality.

Primary survey data—general analysis.

Primary data collection and analysis entailed three *NRV Community Health Assessment Surveys*—a randomly Mailed/On-line Survey to the general population (Appendix J), as well as two sets of targeted Surveys to local African-American Churches (Appendix K) and Senior Centers (Senior Survey) (Appendix L). The response frequencies for each Survey can be found in Appendices J, K, L, and summarized in Appendices U, V, and W. For simplicity purposes, the Mailed/On-line, African-American Church, and Senior Center Surveys are also referred to as the Direct Mail Survey, Church Survey, and Senior Survey, respectively.

Of the 2,500 Surveys mailed using the *Direct Mail* consumer database, 552 Surveys were completed and returned. An additional 11 of these same Surveys were available and completed on-line. This totaled 563 returned Direct Mail Surveys—and a response rate of 22.5%. There were also 34 Church Surveys and 60 Senior Surveys completed.

The demographic frequencies for all three Survey groups were initially compared to six known 2008 NRV regional demographic statistics obtained from the U.S. Census Bureau—gender, race, age, income, education, and healthcare benefits (insured versus uninsured). All three Surveys had an over-representation of women as demonstrated in Figure 32.

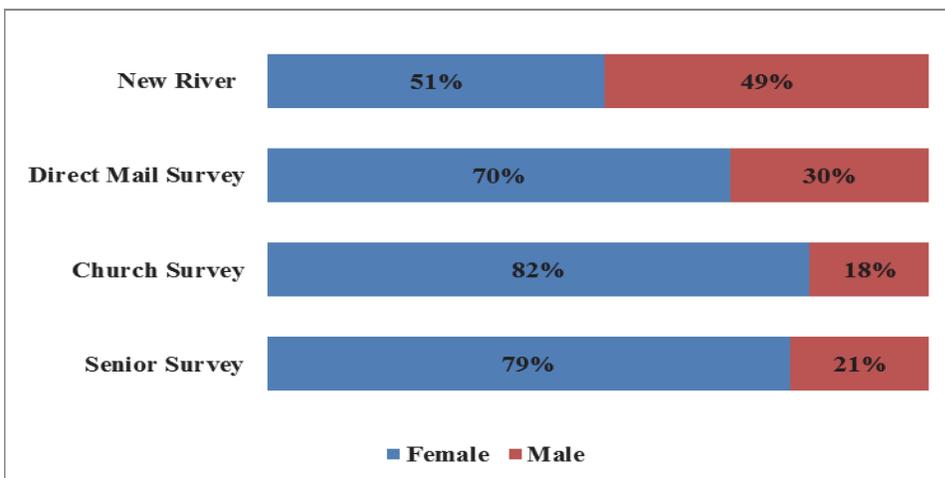


Figure 32. Gender Distribution NRV and *NRV Community Health Assessment Surveys* (U.S. Census Bureau, 2008, 2010)

The Direct Mail Survey also had an over-representation of insured respondents with higher incomes and educational attainment, as well respondents over 65 years of age. There was also an over-representation of ages 18-64.9 and 65+ years in the Church Survey. Demographic data for age distribution, family (household) income, education, and health insurance for the NRV and Survey respondents can be seen in Figures 33, 34, 35, and 36.

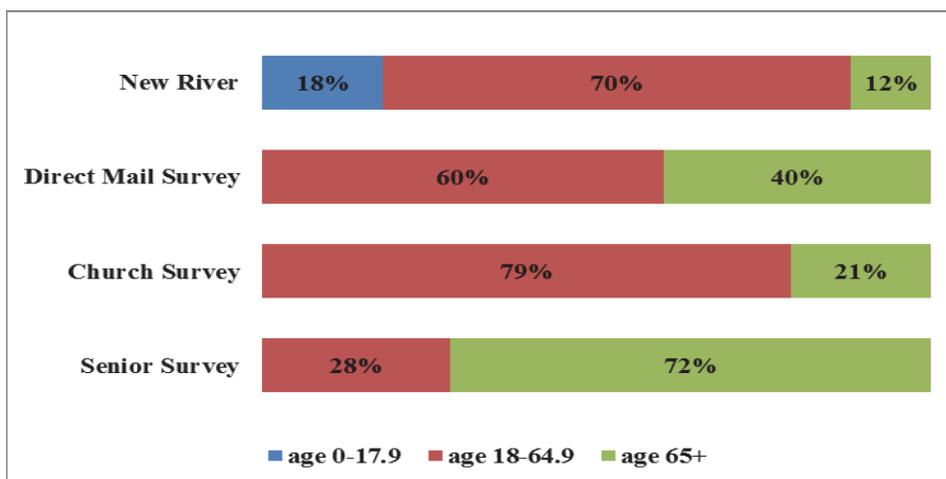


Figure 33. Age Distribution NRV and *NRV Community Health Assessment Surveys* (U.S. Census Bureau, 2008, 2010)



Figure 34. Median Family (Household) Income Distribution *NRV Community Health Assessment Surveys* (NRVPDC, 2010; U.S. Census Bureau, 2008, 2010; VEC, 2010; Virginia Economic Development Partnership, 2009) *The NRV 2008 median household income is \$41,685.

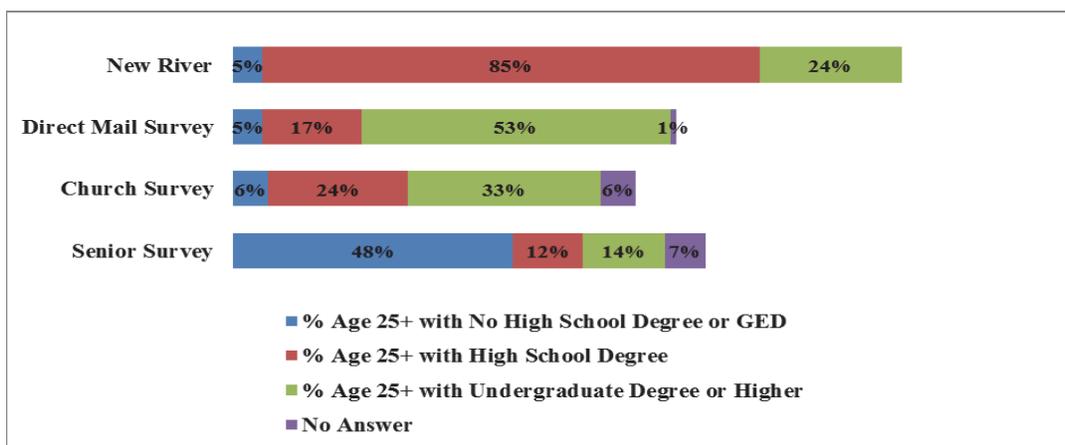


Figure 35. Educational Distribution *NRV and NRV Community Health Assessment Surveys* (U.S. Census Bureau, 2008, 2010; Virginia Department of Education, 2009; Virginia Economic Development Partnership, 2009)

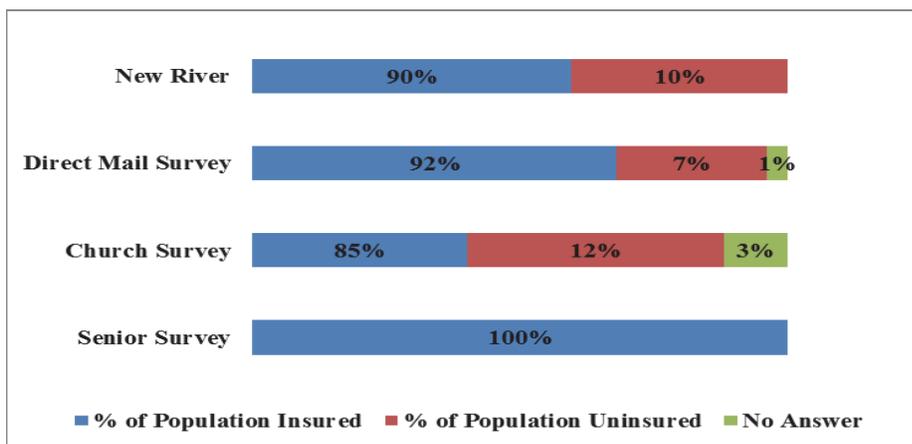


Figure 36. Healthcare Coverage Distribution *NRV and NRV Community Health Assessment Surveys*—Insured versus Uninsured (U.S. Census Bureau, 2008; U. S. Department of Health and Human Services, 2010; Virginia Economic Development Partnership, 2009)

The racial/ethnic distribution of respondents to the Surveys and of residents in the NRV is noted in Figure 37.

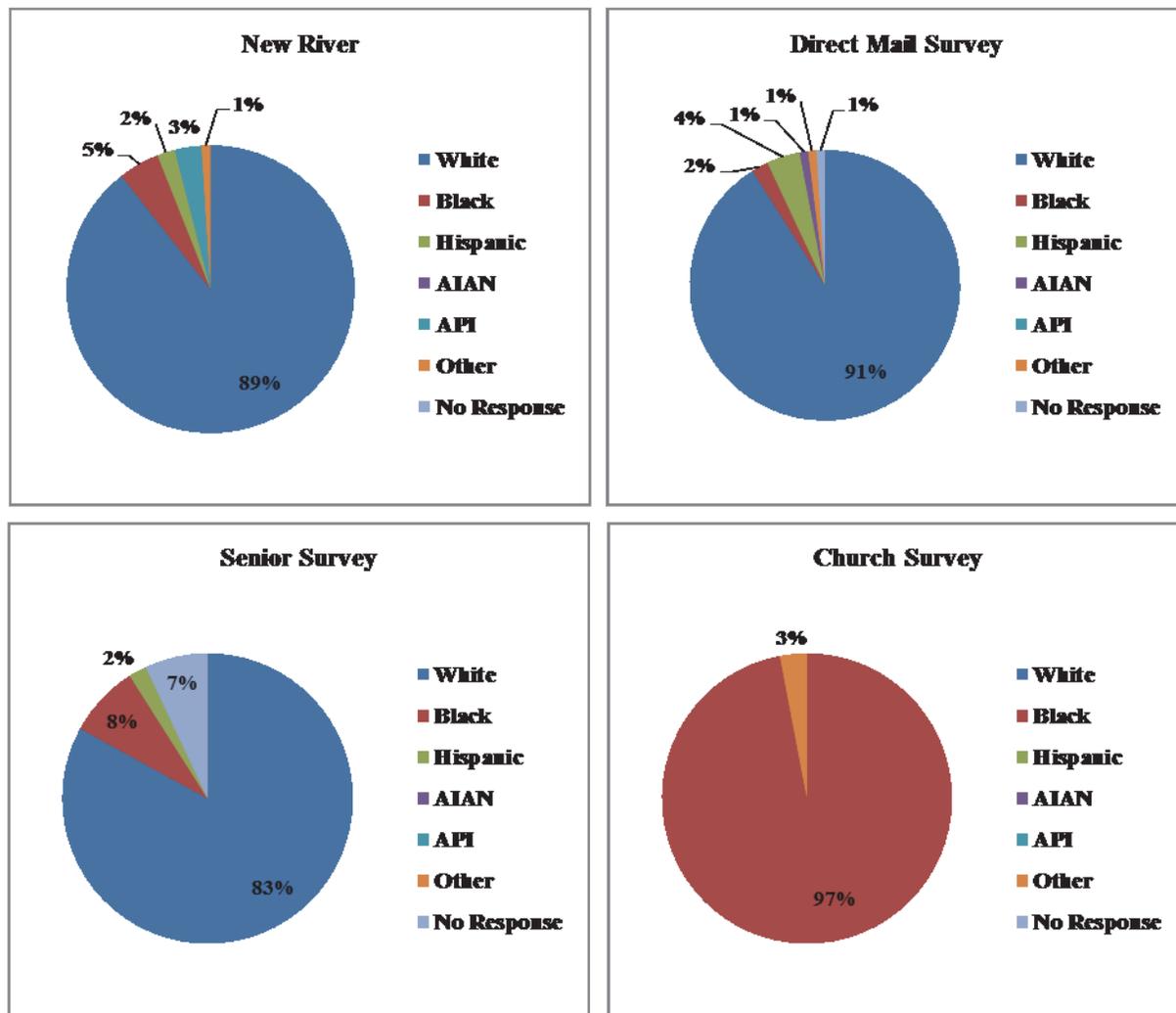


Figure 37. Racial/Ethnic Distribution of the NRV and *NRV Community Health Assessment Surveys* (U.S. Census Bureau, 2008, 2010)

Location of residence varied greatly between the three Surveys as noted in Figure 38. More than half (53%) of the Direct Mail Survey respondents were from Montgomery County; 44% and 41% of the Church Survey respondents were from Pulaski County and Radford City, respectively, and none were from Floyd; and 72% of the Senior Survey respondents did not designate a location of residence (20% were from Montgomery County).

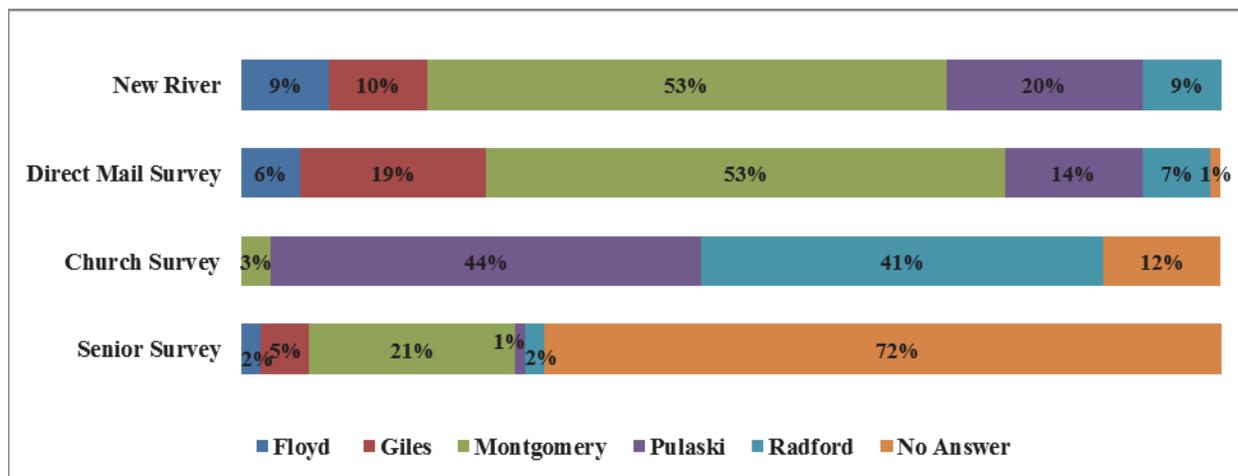


Figure 38. Geographic Distribution NRV and *NRV Community Health Assessment Surveys* (U.S. Census Bureau, 2008, 2010)

The following compares and summarizes the major findings of the *NRV Community Health Assessment Surveys* (see Appendices J, K, L, U, V, and W for more detail):

➤ Demographics

- *Low Income*

- 29 - 55% live in households making less than 35,000 annually
(29% Direct Mail, 48% Church, 55% Senior)

➤ Healthcare

- *Healthcare Coverage/Health Insurance*

- 15 - 22% report not getting medical treatment either because they cannot pay the deductible or it is not covered by their plan
(15% Direct Mail, 15% Church, 22% Senior)

- *Eye Care*

- 12 - 28% have never seen or not seen an eye doctor in more than 3 years
(28% Direct Mail, 12% Church, 7% Senior)

- *Dental Care*
 - 21 - 33% have not seen a dentist in 3 or more years
(21% mailed, 26% Church, 33% Senior)
- *Flu Shots*
 - 38 - 51% are not getting flu shots
(51% Direct Mail, 38% Church, 43% Senior)
- *Prescription Medicine*
 - 13 – 15% were unable to afford prescription medicine for themselves or a family member
(13% Direct Mail, 15% Church, 13% Senior)
- *Eyewear*
 - 12 – 18% were unable to afford eyewear for themselves or a family member
(14% Direct Mail, 12% Church, 18% Senior)
- *Mental Health*
 - 10 – 17% have someone in the home with a mental health or emotional problem that affected their ability to do daily activities in the past year
(17% Direct Mail, 12% Church, 10% Senior)
- Risk Behaviors
 - *Alcohol*
 - 3 – 6% consume alcohol every day
(6% Direct Mail, 3% Church, 0% Senior)
(49% Direct Mail, 21% Church consume 1 – 2 drinks/day)

- *Tobacco*
 - 2 – 14% currently smoke
(14% Direct Mail, 6% Church, 2% Senior)
- *Seat Belt Use*
 - 3 – 18% sometimes to never use a seatbelt
(7% Direct Mail, 18% Church, 3% Senior)
- *Physical Activity/Exercise*
 - 18 – 21% have not participated in physical activity/exercise in past month
(18% Direct Mail, 21% Church, 20% Senior)
- *Obesity*
 - 28 - 56% have been told by doctors they have weight issues
(28% Direct Mail, 56% Church, 33% Senior)
- *Guns*
 - 21 – 57% have guns/firearms in/around the home
(57% Direct Mail, 21% Church, 30% Senior)
 - 9 – 15% have a loaded and unlocked firearm in the home
(15% Direct Mail, 9% Church, 10% Senior)
- Environmental Health
 - *Environmental Health*
 - Air quality (outdoor, indoor), water quality (drinking and recreational), food safety, solid waste disposal of most concern to survey respondents

➤ Community Awareness

- *Awareness of Specific Available Community Services*

- Senior were the least aware

(46-75%% Direct Mail, 56-74% Church, 27-47% Senior)

- *Community Information Sources*

- Television, word of mouth, and newspapers are best route of communication

➤ Care-Giving

- *Care-Giving*

- 6 – 8% provide care for one or more 65+ and/or developmentally disabled person(s)

(8% Direct Mail, 6% Church, 7% Senior)

- ~50% of those providing care were aware of community services available.

Primary survey data—focused selective analyses.

Selective analyses of the Direct Mail Surveys focused on lower income respondents-- those with annual incomes of less than \$25,000 (111 of 563 questionnaires)—and compared specific question response frequencies with response frequencies of similar questions in the Church and Senior Surveys (see Chapter 3). It should be noted that none of the 11 Surveys submitted on-line were from lower income respondents. For simplicity, the selected low-income Direct Mail Survey respondents will be referred to as the Direct Mail Low-Income Survey group or respondents. The frequency tables and crosstab tabulated responses to selected Survey questions by Survey group can be found in Appendix M.

Analyses of specific question topics/responses included financial assistance; medical insurance coverage and type; selected health behaviors/behavioral risk factors such as alcohol consumption (use in the past month, number of drinks, driving after drinking), tobacco consumption (amount of smoking, use of smokeless tobacco, and passive smoking in the home), drug use (driving after taking drugs, illegal drug use in past month), time since last mammogram (for female respondents only and by age group), BMI statistics for all Direct Mail/On-line Surveys (by weight classification level and by actual BMI level cross-tabulated with whether or not the respondent had been told by a doctor that s/he had “overweight” problems), and BMI also analyzed by actual BMI level for Direct Mail Low-Income, Church, and Senior Survey respondents and cross-tabulated with whether or not the respondent had been told by a doctor that they had “overweight” problems; dental health (time since seeing a dentist [by age group], dental insurance coverage [by age group only for the Direct Mail and Church Surveys since the Senior Survey did not include dental questions]), reasons for lack of access to dental care [by age group only for Direct Mail and Church Surveys since the Senior Survey did not include dental questions]); mental health (feeling sad, nervous, restless and fidgety, hopeless, everything is an effort, and worthless; well child care (for respondents with children) such as well-baby and dental exam in last year, and immunizations up-to-date; and barriers to healthcare. The major findings of the analyses by specific question topics/responses are summarized in the following paragraphs, tables, and figures (see Appendix M for more detail).

Analysis of financial assistance (Table M35) showed that a greater percentage of the Senior Survey respondents (63%) received some type of financial assistance (food stamps, welfare, disability, help with rent, WIC [Women, Infants and Children, a federally subsidized

food supplementation program], etc.) than the Direct Mail Low-Income (51%) and the Church (37%) Survey respondents. It should be noted that 18-37% of the Survey respondents were on disability.

In regards to medical insurance coverage and type, fewer Direct Mail Low-Income Survey group respondents had medical insurance and more were on Medicaid than the Church group (Figure 39 and 40).

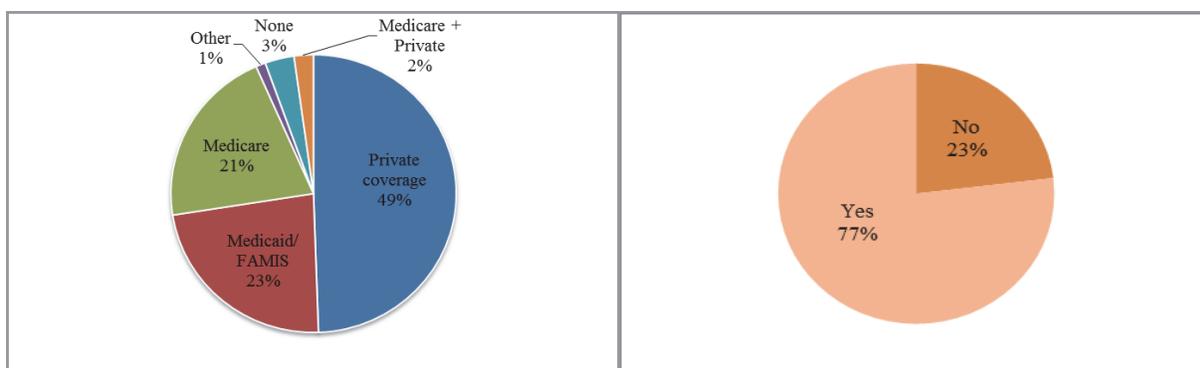


Figure 39. Medical Insurance Coverage and Type—Direct Mail Low-Income Survey

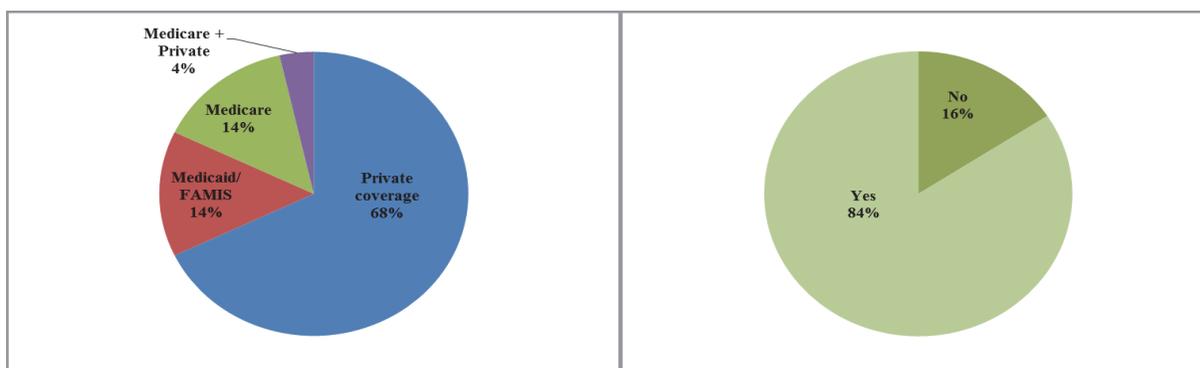


Figure 40. Medical Insurance Coverage and Type—Church Survey

Alcohol consumption varied according to the Survey group as seen in Figure 41. Consumption of alcohol—a few days a week to every day—ranged from 6% in the Senior Survey to 6.5% in the Direct Mail Low-Income Survey to 10.3% in the Church Survey. However, the Senior group was the least likely to consume alcohol (80% never drink), followed by the Church group (66%), and then the Direct Mail Low-Income group (58%).

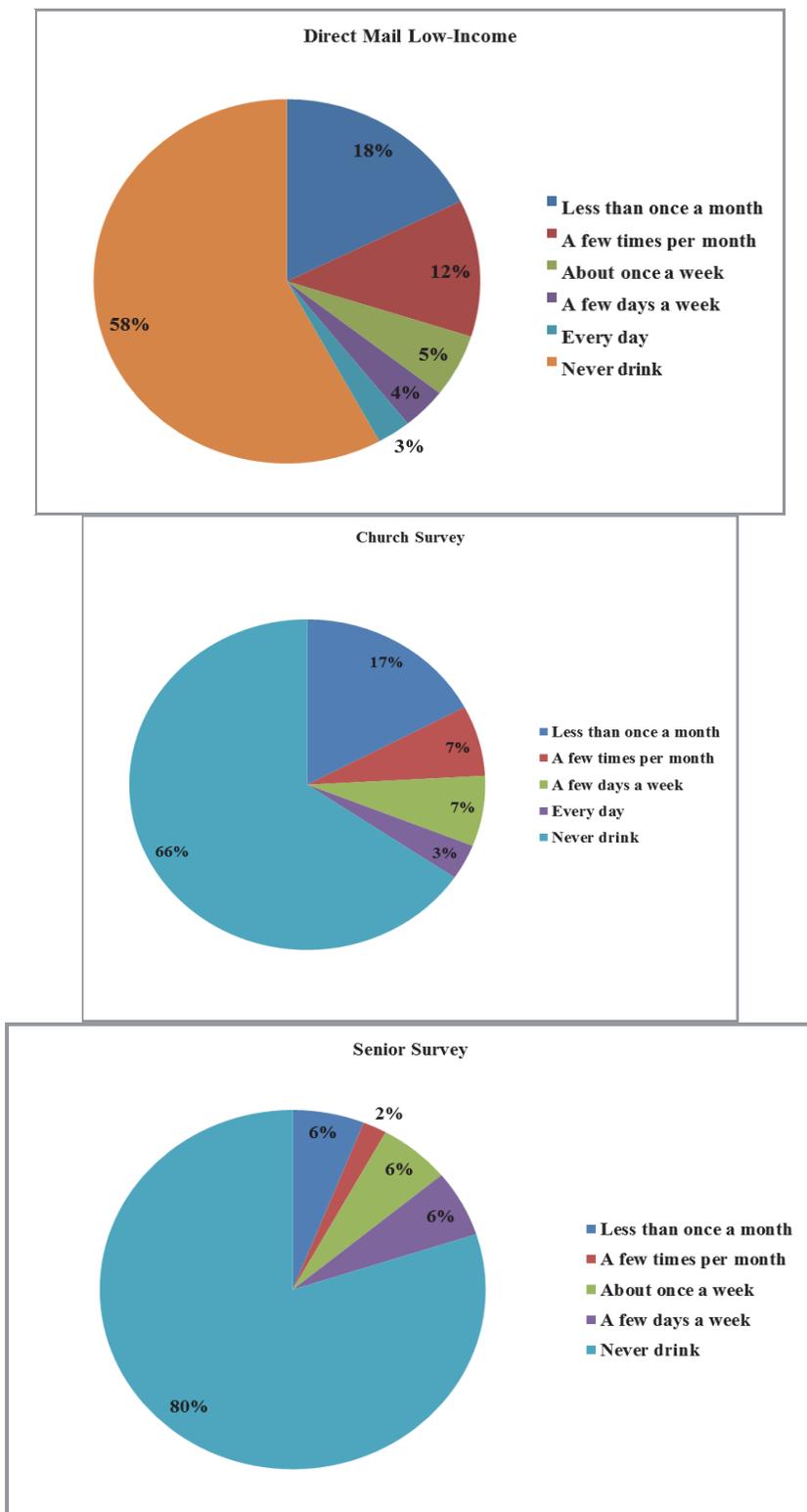


Figure 41. Alcohol Consumption by Survey Group

Interestingly, a larger percentage of the Church group (10%) consumed more than 10 drinks of alcohol at a time when drinking as compared to the Direct Mail Low-Income group (2%) and the Senior group (0%). Also, more of the Church group (3%) had driven a car/truck after having too much to drink than the Direct Mail Low-Income (2%) and Senior (0%) groups (Table M7, M8). Perhaps the Church group respondents were more honest about their alcohol consumption!

There were also differences in tobacco consumption between the Survey groups (Table M11). Of those Direct Mail Low-Income respondents who smoke, 88.5% smoke between one and two packs per day (up to 40 cigarettes) versus 50% of the Senior respondents who smoke less than 10 cigarettes per day (see Table M9). Only 10%, 7%, and 5% of the Direct Mail Low-Income, Senior, and Church groups, respectively, used smokeless tobacco (Table M10). On the other hand, 27%, 15%, and 6% of the Direct Mail Low-Income, Church, and Senior groups, respectively, indicated that someone else in their homes smoked cigarettes, cigars, or a pipe.

When comparing drug use, 5% of the Direct Mail Low-Income group versus 0% of the Church and Senior groups admitted to driving a car/truck after taking drugs that could affect their ability to drive (Table M12). None of the Senior respondents admitted to using illegal drugs in the past month; however, 5% and 3% of the Direct Mail Low-Income and Church groups, respectively, did answer that they used illegal drugs.

Figure 42 shows that the Direct Mail Low-Income female respondents also had the largest percentage (37%) that never had a mammogram--as compared to the Church (16%) and Senior (13%) groups. It is interesting to note that the Church group had the greatest percentage of women (64%) who had a mammogram within the past year (see also Tables M14 and M15).

From Table M15, it can be seen that the largest majority of women who had not had mammograms were under age 40 (100% Church, 89% Direct Mail Low-Income, 80% Senior) followed by women ages 40-64 (14.3% Senior, 12% Church, and 9% Direct Mail Low-Income).

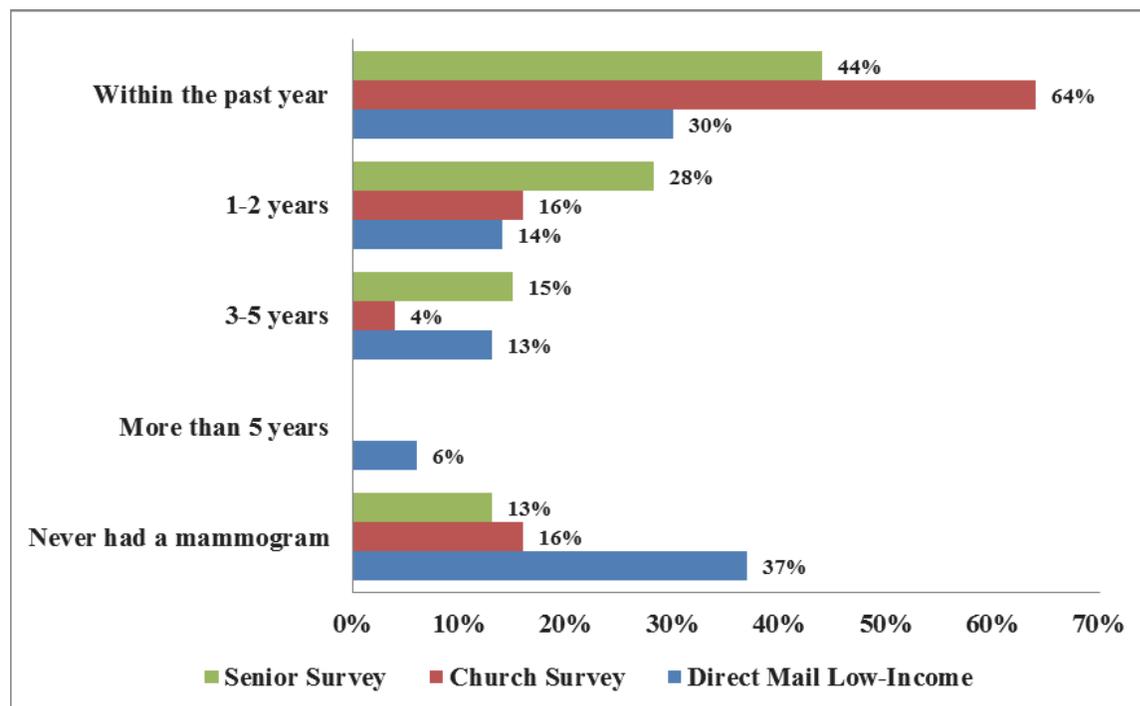


Figure 42. Time Since Last Mammogram by Survey Group (female respondents only)

Body mass index (BMI)—a number calculated from a person’s weight and height—is a fairly reliable indicator of body fatness for most people and is one of the best methods for population assessment of overweight and obesity. The standard weight status categories associated with BMI ranges for adults are underweight (BMI below 18.5), normal (BMI 18.5-24.9), overweight (BMI 25.0-29.9), and obese (BMI 30.0 and above). Analysis of all of the Direct Mail/On-Line Surveys showed a mean BMI of 28 with a range of 16 to 69 (Table M16).

Overall, 26% of respondents were obese, 35% were overweight, 39% were normal, and 1% was underweight (Table M17). Of those Direct Mail respondents who were overweight and obese by actual BMI, 71% and 21%, respectively, had been told by a doctor that they were overweight (Table M18).

Analysis of the Direct Mail Low-Income Surveys showed a fairly similar range of BMIs from 17 to 53 with a mean of 29. However, the Church group demonstrated the highest mean BMI of 31 with a range of 18 to 51. The Senior group had the lowest mean BMI of 27 with a range of 15 to 44 (Table M19). As can be seen in Figure 43, the Church group had the highest percentage of respondents classified as obese by BMI (48%), and the Senior group had the highest percentage of respondents classified as normal weight (39%). Interestingly, the Church group had the largest percentage of respondents who were overweight and obese by actual BMI, 73% and 50%, respectively, that had been told by their doctor that they had an overweight problem. This compared to 77% and 20%, respectively, of the Senior Center, and 66% and 29%, respectively, of the Direct Mail Low-Income respondents (Table M21).

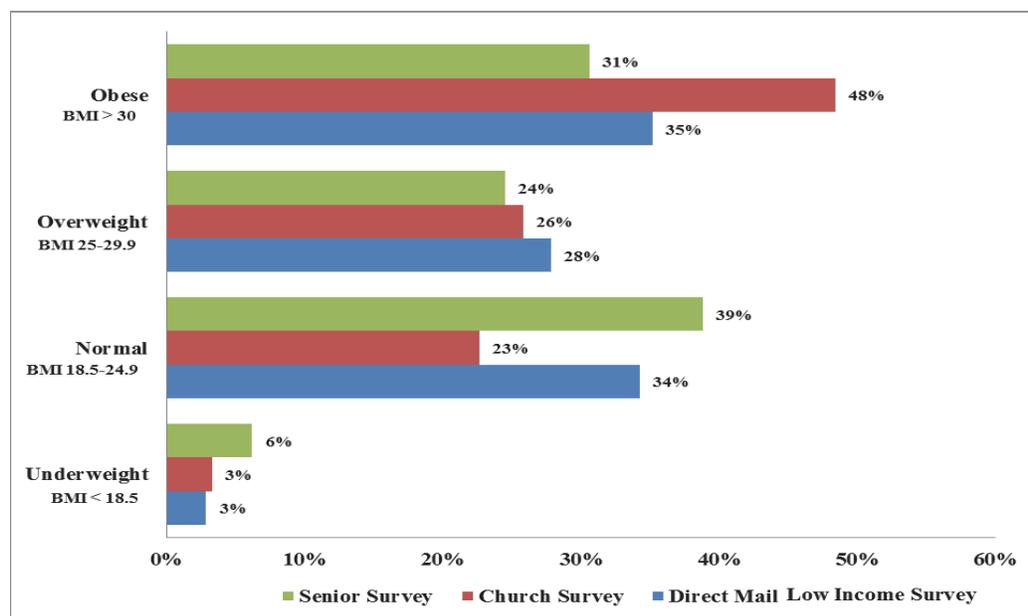


Figure 43. Percentage of Respondents in Each BMI Weight Classification Level by Survey Group

From a dental health perspective, a greater percentage of the Senior group (7.5%) had never seen a dentist, as compared to the Direct Mail Low-Income group (3%) and Church group (0%). The percentages of respondents who had not seen a dentist in five or more years ranged from 25% in the Direct Mail Low-Income Survey to 20% for each of the Church and Senior Surveys, respectively. This was more likely to be seen in age 50 and older age groups. The Direct Mail Low-Income group had the smallest percentage of respondents receiving dental care within the past year (44%) as compared to the Senior (47.5%) and Church (63%) groups. The younger age groups, particularly those ages 19-35, were more likely to see a dentist within the past year (see Table M22).

When looking at dental insurance by age group (Table M24), a larger percentage of Direct Mail Low-Income respondents (76%) lacked dental insurance as compared to the Church (46%) respondents (Table M23). Lack of dental insurance tended to increase with increasing age in both Survey groups as seen in Figures 44. The Senior Survey did not include dental questions.

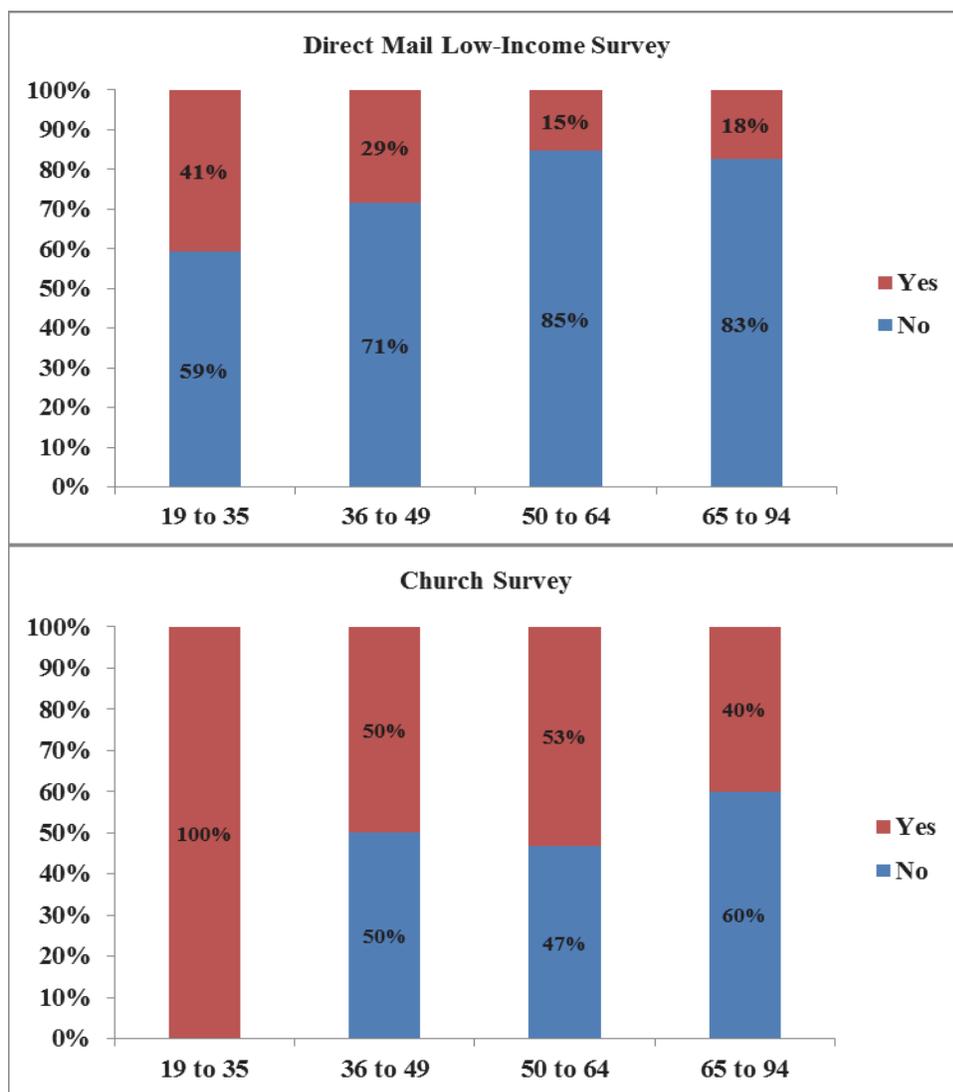


Figure 44. Percentage of Respondents with Dental Insurance by Age Group for Direct Mail Low-Income and Church Surveys

Lack of dental insurance was the most common reason for not accessing dental care for both the Direct Mail Low-Income and Church respondents--56% and 54%, respectively, of each group did not have dental coverage under their health insurance plans. This was consistent across all age groups. Having dentures was the second most common reason for lack of dental care, followed by not having a dentist.

From a mental health perspective, a greater percentage of the Direct Mail Low-Income respondents (74%) than the Church (18%) or Senior (30%) groups consistently reported that, most of the time to all of the time, they experienced feelings of sadness, nervousness, restlessness, hopelessness, worthlessness, and feeling that everything was an effort. This can be clearly seen in Figure 45 and Tables M25, M26, M27, M28, M29, and M30.

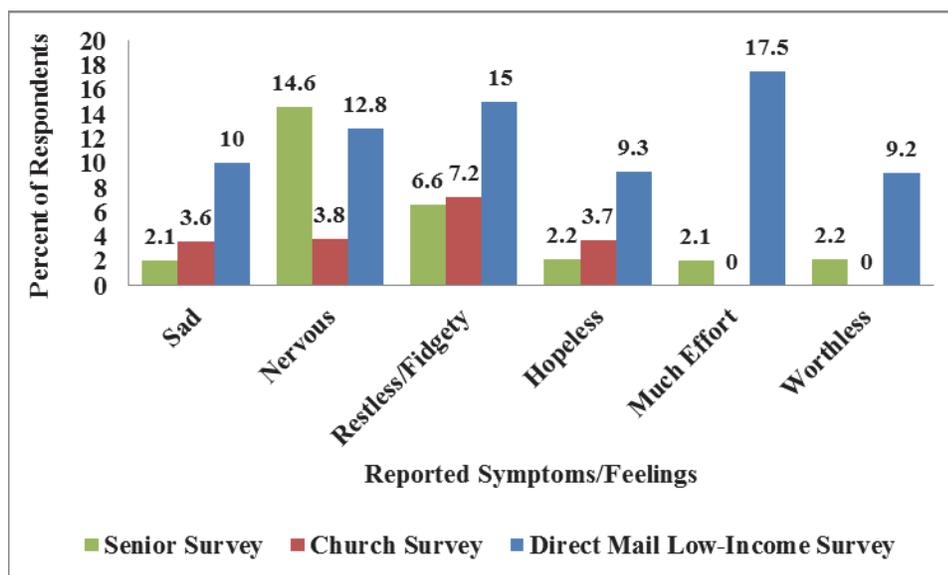


Figure 45. Percent of Survey Respondents Reporting Specific Mental Health Symptoms/Feelings

Well-child care was also examined for Survey respondents with children (Tables M42, M43, and M44). All three Survey groups had a high percentage of their children that had received a physical/well-baby exam in the past year—82%, 83%, and 100% for the Direct Mail Low-Income, Church, and Senior groups, respectively. Also, the majority of Survey respondents' children (age three and older) had a dental examination in the past year—70%, 67%, and 100% for Direct Mail Low-Income, Church, and Senior groups, respectively. Interestingly, the Church respondents had a greater percentage (17%) of their children that were not “up-to-date” on required immunizations as compared to the Direct Mail Low-Income (5%) and Senior (100%) respondents.

Finally, analysis of the major barriers to access to healthcare demonstrated similarities for the Survey groups (Table M34). These included inability to pay for healthcare services (9-19%), lack of insurance/coverage (11-13%), and high insurance deductibles (6-10%). Transportation was also a barrier for the Direct Mail Low-Income (6%) and Senior (10%) groups. Other barriers that were noted by respondents included insurance not accepted by healthcare provider, finding a healthcare provider that was liked/trusted, healthcare provider hours not convenient, distance to provider, inability to get an appointment, and not knowing where to go for healthcare services (Figure 46).

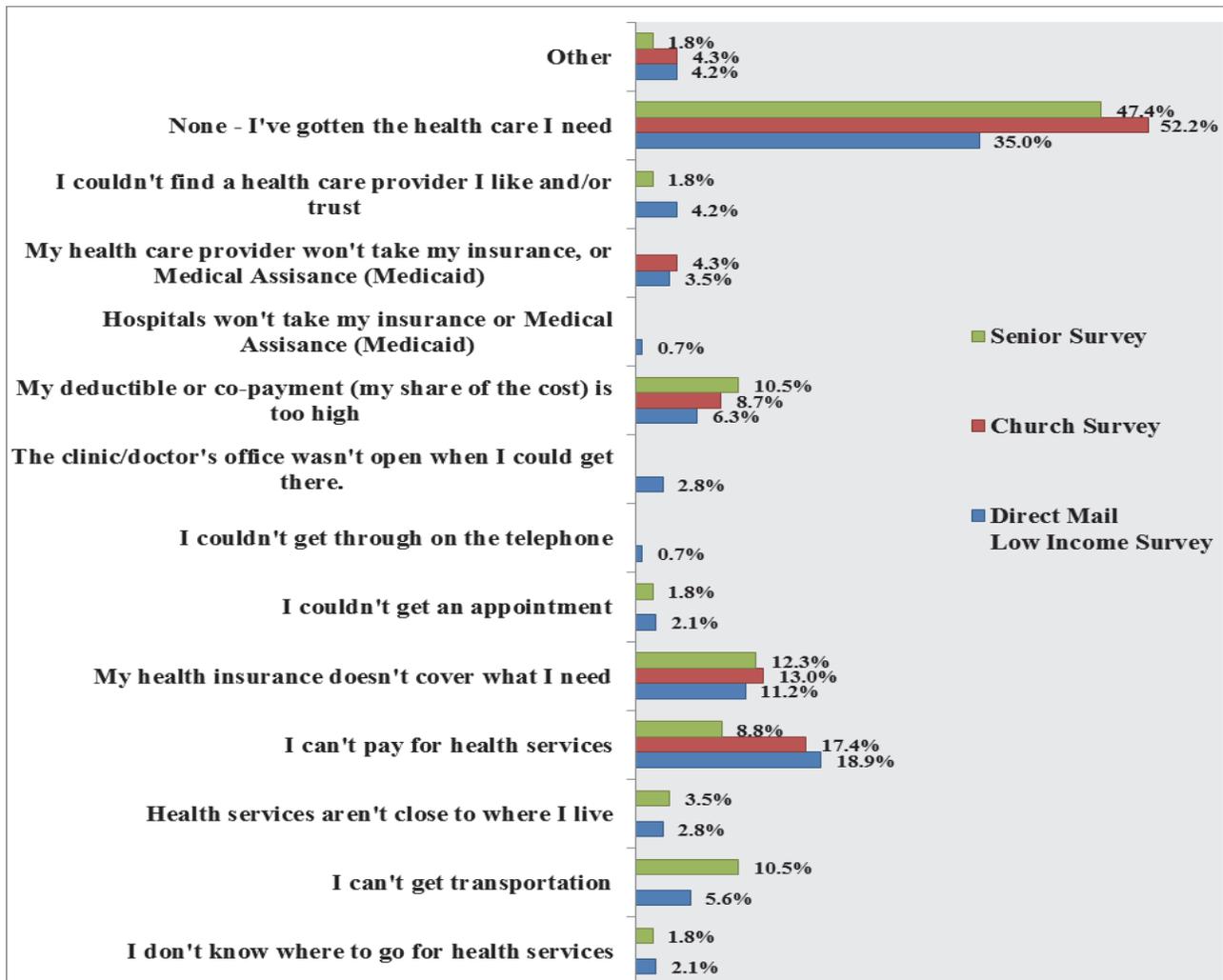


Figure 46. Barriers to Access to Healthcare Reported by Survey Respondents

Summary of general and focused selective analyses of primary survey data.

Primary data collection entailed three *NRV Community Health Assessment Surveys*—one that was randomly Mailed/On-line and two that were targeted to African-Americans and Seniors. Analyses of the three Surveys demonstrated an over-representation of women and, depending on the Survey, over-representation of certain age groups, as well as respondents who were insured and who had higher income and educational levels. Major findings showed that:

- 29-55% lived in households making less than \$35,000 annually;
- 15-22% reported not getting medical treatment either because they cannot pay the deductible or it is not covered by their plan;
- 12-28% had never seen or not seen an eye doctor in more than three years;
- 21-33% had not seen a dentist in three or more years;
- 38-51% are not getting flu shots;
- 13-15% were unable to afford prescription medicine for themselves or a family member;
- 12-18% were unable to afford eyewear for themselves or a family member;
- 10-17% had someone in the home with a mental health or emotional problem that affected their ability to do daily activities in the past year;
- 3-6% consumed alcohol every day;
- 2-14% reported that they currently smoke;
- 3-18% sometimes to never use a seatbelt;
- 18-21% had not participated in physical activity/exercise in the past month;
- 28-56% had been told by doctors that they have weight issues;

- 21-57% have guns/firearms in/around the home;
- 9-15% have a loaded and unlocked firearm in the home;
- 6-8% provide care for one or more individuals 65 years of age and older and/or developmentally disabled person(s); and
- 50% of those providing care were aware of available community services.

Other findings demonstrated that from an environmental perspective, respondents were most concerned about air and water quality, food safety, and solid waste disposal. Additionally, when looking at community awareness, Seniors were the least aware of available services, and the best community information/communication sources were television, word of mouth, and newspapers.

Selective analyses of specific question response frequencies of lower income Direct Mail Survey respondents (annual incomes less than \$25,000) were compared to Church and Senior Survey respondents. Major findings included:

- 18-37% of Survey respondents were on disability;
- More Senior Survey respondents received some type of financial assistance;
- Direct Mail Low-Income Survey respondents reported that, overall, they were more likely to consume alcohol; however, more Church Survey respondents reported that they consumed alcohol a few days a week to every day, consumed more than 10 drinks of alcohol at a time when drinking, and had driven a car/truck after having too much to drink;
- Direct Mail Low-Income respondents who smoke were more likely to smoke more cigarettes per day;
- Direct Mail Low-Income respondents were more likely to use smokeless tobacco;

- Direct Mail Low-Income respondents were more likely to use illegal drugs and more likely to drive a car/truck after taking drugs that could affect their ability to drive;
- Direct Mail Low-Income female respondents were more likely to never have a mammogram, whereas women in the Church group were more likely to have a mammogram in the past year;
- Women under the age of 40 in all Survey groups were the most likely to never have a mammogram, followed by women ages 40-64;
- Church Survey respondents were more likely to have a higher BMI and to be classified as overweight and obese;
- Senior Survey respondents were more likely to never see a dentist;
- Direct Mail Low-Income Survey respondents were more likely to lack dental insurance and to have not seen a dentist in the past year and for the last five or more years;
- Younger age groups (under age 35) were more likely to see a dentist within the past year; older age groups (over age 50) were more likely to not see a dentist in the past five or more years;
- Lack of dental insurance increased with increasing age and was the most common reason for not accessing dental care;
- Direct Mail Low-Income respondents were more likely to report mental health symptoms;
- The majority of children from all Survey groups had received a physical/well-baby and a dental exam in the past year;

- Church Survey respondents' children were more likely to not be “up-to-date” on required immunizations;
- The top four barriers to access to healthcare were inability to pay for healthcare services, lack of insurance/coverage, high insurance deductibles, and transportation.
- Other barriers included insurance not accepted by healthcare provider, finding a healthcare provider that was liked/trusted, healthcare provider hours not convenient, distance to provider, inability to get an appointment, and not knowing where to go for healthcare services.

The analyses of these three NRV MAPP Surveys demonstrated overall findings that were generally consistent with the secondary focus group, survey, and needs assessment data. The Survey data demonstrated that the lower income and under-/uninsured residents were more likely to lack access to holistic healthcare including dental, mental health, vision, and substance abuse services, as well as primary care, prenatal/delivery and geriatric services, prevention and health education, specialty services, and medication. It also emphasized that underserved and lower income NRV populations faced multiple barriers to healthcare such as lack of transportation, functional illiteracy, limited health literacy, cost of services (medications, insurance co-pays and deductibles, and specialty care), lack of affordable mental health and dental providers. Additionally, the Surveys provided further insight into African-American and Senior health behaviors and needs—such as medical insurance coverage, alcohol and tobacco consumption, drug use, frequency of mammograms, obesity, dental health, childhood immunizations, and barriers to healthcare--not obtained in earlier NRV needs assessment efforts.

Priority community health status issues.

After examination and discussion of all of the CHSA data and results, ten Priority Community Health Status Issues—challenges and opportunities related to health status—in the NRV were identified. These included:

- Access to Affordable, Holistic Healthcare (both prevention and treatment)
(includes medical, dental, vision, hearing, mental health, substance abuse, medication, transportation, care coordination, case management, etc.)
- Affordable and Healthy Housing (includes universal design)
- Aging/Disabled/Mentally-Ill Population (includes care-giving)
- Chronic Disease (cardiovascular, diabetes, respiratory, stroke, etc.)
- Data gathering, analysis, use, and integration for program planning, evaluation, and resource allocation
- Environmental Health (includes air quality [outdoor and indoor], water quality [drinking and recreational], food safety, solid waste disposal, walkable/green community)
- Infectious Diseases
- Obesity
- Health Disparities (includes socio-economic status, cultural competency, race/ethnicity, unemployment)
- “Seamless Web” of community-based public health and social services (including linkages between stakeholders involved in community development)

Phase 3 D: Forces of Change Assessment

The Forces of Change Assessment resulted in a comprehensive, but focused, list that identified key forces—trends, factors, and events--and described their impact on the overall health and quality of life of the NRV community. This Assessment answered the following questions:

- What is occurring or might occur that affects the health of the NRV community or local public health system?
- What specific threats or opportunities are generated by these occurrences?

This Assessment for the NRV identifies six major categories--economic, environmental, healthcare delivery, legal/political, social, and technological/scientific. Each category then has between six to 12 forces, and each force has numerous threats and opportunities. Appendix X summarizes the details for the NRV Forces of Change Assessment. It should be noted that many of the forces identified under the NRV MAPP process dovetail with data from the other three NRV MAPP Assessments and from other collected NRV community data and information. Those forces include increasing health disparities; decreasing budgets for local government and health and human service agencies/organizations; disconnects between community and environmental health (global warming, poor housing, public water/sewer); growing elderly population; rising healthcare costs; increasing under-/uninsured populations; provider shortages (primary care, dental, mental health, obstetricians); vaccine shortages; “urban” sprawl; substance abuse; complexity of healthcare system; and reliance on the faith community and other health and human service organizations for social services.

Phase 4: Identify Strategic Issues

During this phase of the NRV MAPP process, Strategic Issues—or the most important Issues facing the community (either challenges or policy choices) that must be addressed in order to achieve the Vision—were identified. The Strategic Issues, written in question format, reflected the most important results of all of the NRV MAPP phases.

During discussions and “brainstorming” sessions, it was noted that there was agreement across all data and information collected in the four Assessments regarding the ten Priority Community Health Status Issues and trends in the NRV. Initially, a draft of three major Strategic Issues were identified—in no specific order as to when they should be addressed—with some additional “sub-Issues” listed under each major Strategic Issue (see Appendix Y). These were further developed and refined to include three final NRV Strategic Issues that needed to be addressed simultaneously:

- Strategic Issue #1. How do we establish a collaborative *holistic health-centric* planning process (includes everything from healthy community development with walking paths, good schools/jobs/etc. to clean air and water to affordable, quality healthcare) with PATH members and other relevant stakeholders to improve the overall health status in the NRV?
- Strategic Issue #2. How do we design, implement, and evaluate community-based outreach and education interventions to improve prevention and care services for our NRV priority issues?
- Strategic Issue #3. How do we develop policy strategies at the local and state level to improve health outcomes in the NRV specifically related to our priority issues?

Phase 5: Formulate Goals and Strategies

During the May 2009 Retreat, the NRV MAPP Vision statement, findings of the four MAPP assessments, and the list of the ten Priority Community Health Status Issues were reviewed. Two additional Priority Community Health Status Issues—Built Environment (includes schools/educational institutions, home, workplaces) and Transit/Planning/Community Design (includes access to healthcare, jobs, air quality)--were added to the list (see Appendix Z).

Using the ranking method, the following top three Priority Community Health Status Issues were selected:

- Access to Affordable, Holistic Health Care (both prevention and treatment) (includes medical, dental, vision, hearing, mental health, substance abuse, medication, transportation, care coordination, case management, etc.)
- Health Disparities (include socio-economic status, cultural competency, race/ethnicity, unemployment)
- “Seamless Web” of community-based public health and social services (including linkages between stakeholders involved in community development, public health, and social services)

Subsequently, the following Goals and Strategies for each of the top three Priority Community Health Status Issues as related to the specific Strategic Issue were identified:

STRATEGIC ISSUE #1

How do we establish a collaborative *holistic health-centric* planning process (includes everything from healthy community development with walking paths, good schools/jobs/etc. to clean air and water to affordable, quality healthcare) with PATH members and other relevant stakeholders to improve the overall health status in the NRV?

Priority Issue #1

Access to Affordable, Holistic Health Care (both prevention and treatment) (includes medical, dental, vision, hearing, mental health, substance abuse, medication, transportation, care coordination, case management, etc.)

Goal

95% of residents in the NRV can get an appointment, are able to get there, and the cost of all the services are covered.

Strategies

- In order to be able to measure the goal, set up a tracking systems for “ambulatory sensitive health indicators” in the NRV with a specific focus on the area hospitals
- Clean up the existing systems of care in ways that integrate services that are currently provided across the NRV
- Engage health care professionals in implementing a cleaned-up and integrated system
- Identify ways to pay for services for residents who do not currently have coverage

- Address the transportation needs of residents who do not have physical access to services
- Develop a comprehensive care coordination and case management system for the NRV

STRATEGIC ISSUE #2

How do we design, implement, and evaluate community-based outreach and education interventions to improve prevention and care services for our Priority Issues?

Priority Issue #1

Access to Affordable, Holistic Health Care (both prevention and treatment) (includes medical, dental, vision, hearing, mental health, substance abuse, medications, transportation, care coordination, case management, etc.)

Goal

Establish common uniform processes for accessing services for ease of navigation for clients and providers

Strategies

- Develop an intake and assessment process that is shared by multiple agencies or entities
- Establish an effective referral process
- Develop a marketing plan to motivate providers and clients to utilize new process

Priority Issue #2

Health Disparities (include socio-economic status, cultural competency, race/ethnicity, unemployment)

Goal

Establish an effective process for assessing health disparities

Strategies

- Identify an ongoing process of data collection focusing on health disparities
- Identify an interagency group to analyze data and make recommendation

Priority Issue #3

“Seamless Web” of community-based public health and social services (including linkages between stakeholders involved in community development, public health, and social services)

Goal

Utilize existing systems and processes (i.e., PATH) in order to become more seamless

Strategies:

- Enhance membership of PATH by including business and faith communities (possibly committee work)
- Utilize a list-serve to communicate about activities of PATH to a larger audience
- Determine PATH’s potential

STRATEGIC ISSUE #3

How do we develop policies at the local and state level to improve health outcomes in the NRV specifically related to our priority issues?

Priority Issue #1

Access to Affordable, Holistic Healthcare (both prevention and treatment) (includes medical, dental, vision, hearing, mental health, substance abuse, medication, transportation, care coordination, case management, etc.)

Goal

Simplify the application process/ongoing eligibility of Medicaid (local and State)

Strategies

- Advocate to Department of Medical Assistance Services (DMAS) to make application more user-friendly
- Develop a work group to establish common understanding of the uniform release of information
 - Understanding = consistency (Standard Operating Procedures)
- Advocate to DMAS to improve the process of provider assignment to allow access and continuity of care

Goal

Increase service provisions in the Medicaid State Plan—vision, hearing, dental for adults

Strategies

- Engage local legislators in PATH
- Identify state-level advocacy groups to represent PATH

Goal

Invite the faith community to shape and advocate healthcare access policy

Strategies

- Identify key leaders in local community churches/faith community
- Provide information and educate

Priority Issue #2

Health Disparities (includes socio-economic status, cultural competency, race/ethnicity, unemployment)

Goal

Provide insurance for un-/under-insured

Strategies

- Coordinate with safety net providers to collect and synthesize data--
who are they?
- Seek funding to study data results
- Use analysis to inform policy change
- Utilize volunteer base

Priority Issue #3

“Seamless Web” of community-based public health and social services (including linkages between stakeholders involved in community development, public health, and social services)

Goal

Create common Standard Operating Procedures (SOPs) and Memoranda of Agreement (MOAs) between regional health and human service providers on eligibility criteria and health status information in accordance with the Health Insurance Portability and Accountability Act (HIPAA)

Strategies

- Convene an inter-agency working group to develop policies and procedures
- Train frontline workers
- Create a feedback loop with frontline workers on needed ongoing process improvements

Goal

Create a single point of entry for all health and human health services providers

Phase 6: Action Cycle

The Strategies identified above in Phase 5 form the foundation for this Phase, the Action Cycle, where the NRV LPHS will develop and implement an Action Plan for addressing the Strategic Issues. The *NRV Community Health Improvement Plan*, as it will be called, will be a “living” and “working” document that will institutionalize the concepts of a healthy community and holistic health throughout the NRV.

The NRV MAPP process is presently in this final Phase and considering objectives in light of health care reform. A multidisciplinary team approach will be utilized. This MAPP Phase is continuous and interactive and entails planning, implementation, and evaluation activities (NACCHO, 2001, 2004).

Summary

Rural areas, such as the NRV, frequently pose different and, in some instances, greater challenges than urban areas in addressing a number of holistic healthcare and other public health system issues. As noted from the data and information collected in the literature search and four MAPP Assessments, there are rural-urban disparities in health and social conditions in the NRV associated with particular preventable or chronic diseases and social problems such as housing and employment, as well as inequities in infrastructure or professional/community capacity to address needs. There is ample evidence from the Assessment data that some important rural health inequities exist in the NRV with respect to, for example, shortages of qualified primary care physicians (including obstetricians) and other health professionals such as mental health and dental health providers, prevalence of rural occupational and chronic health problems, and delays in health screening.

NRV residents, living in a primarily rural area, face a unique combination of factors that create disparities in their health status and well-being as compared to more urban and other areas/communities. Particular conditions such as economic factors, cultural and social differences, education limitations, geographic isolation, a growing aging population, lack of transportation systems, lack of access to specialty services, lack of health insurance, lack of adequate support to maintain quality of medical care, and limited rural infrastructure present obstacles to NRV residents seeking services and providers delivering those services. Access to insurance to support healthcare continues to be a growing problem in many rural areas, including the NRV—a problem associated with, in many instances, a lower paid workforce reliant upon limited job opportunities and small employers that are less likely than larger employers to offer health insurance. Although access to timely and effective primary care is deemed critical to

avoiding hospitalizations for ambulatory care sensitive conditions, healthcare workforce shortages and the recruitment/retention of primary care and specialty healthcare providers continue to be identified as major rural health concerns for the NRV. Many of the holistic healthcare and other public health system challenges facing the NRV are similar to those facing rural residents in other areas of Virginia and across the nation (Virginia State Office of Rural Health, 2008).

The NRV MAPP process served as a community-wide strategic planning approach for improving the NRV's community health. The process combined a series of six distinct phases designed to facilitate the development of a community-derived and community-owned strategic plan. The NRV community began by organizing, planning, and developing partnerships. Following this initial planning phase, NRV MAPP partners developed a collective Vision of their ideal community and, with their Vision as a guide, completed four Assessments. These four complementary Assessments were the "core" of the NRV MAPP process, revealing data and information about community strengths and challenges, local public health system (LPHS) capacity, local trends and forces, and community health status. The Assessment Phase of the NRV MAPP process provided a comprehensive picture of public health in the NRV. In subsequent phases, the Assessment data and information were used to identify Strategic Issues, formulate Goals and Strategies, and finally, develop Action steps that would help the NRV community reach its Vision. Each of the NRV MAPP Phases clearly addressed the secondary research questions specific to that particular Phase.

Chapter 5

Conclusions: Summary, Discussion, and Recommendations

Summary

The purpose of this study was to mobilize the NRV community to improve its own holistic health status and the quality of life of its residents. In addition, this study was designed to fully implement MAPP—a comprehensive, multi-component, strategic planning model and tool—in the NRV, Virginia to help the NRV community consider its unique circumstances and needs, prioritize public health issues, identify resources to address those issues, develop integrated plans, and take coordinated, collaborative actions that ultimately lead to achieving optimal community health.

Chapter Four described and discussed in detail the primary and secondary qualitative and quantitative community needs assessment data and information gathered during the four MAPP Assessments, as well as the MAPP Phases that entailed Visioning, Identifying Strategic Issues, and Formulating Goals and Strategies, and the Action Cycle. Each of these Phases clearly addressed the secondary research questions specific to that particular Phase. This Chapter addresses the primary research question by presenting an overall summary of the benefits and success of MAPP in mobilizing the NRV community in its most comprehensive community health needs assessment and strategic planning effort to date, highlights lessons learned (including challenges and limitations), and makes recommendations for current practice and future research.

Primary Research Question--How Can The New River Valley Community Be Mobilized To Improve Its Own Health Status And The Quality Of Life Of Its Residents?

The vision for implementing the MAPP in the NRV involved improving the health and quality of life through a community needs assessment and strategic planning approach that mobilized partnerships and led to the community taking strategic action. Through the NRV MAPP process, the primary research question was addressed.

MAPP served as a community-wide strategic planning tool for community health improvement and strengthening of the LPHS by helping the NRV community prioritize public health system issues, identify resources, and then develop integrated plans for addressing those issues. The NRV MAPP process provided a solid framework for creating a community-driven needs assessment, LPHS performance improvement, and strategic planning approach and initiative that brought together diverse public, private, non-profit, and voluntary organizations, businesses, faith communities, academia, community members, and others who shared the commitment to and had a role in the community's health and overall well-being.

Because the NRV MAPP endeavor was a community-based process that involved the entire public health system, all aspects of the process were informed by collective wisdom and used resources compiled by the numerous public, private, and voluntary entities responsible for improving public health in the NRV. Through MAPP, the NRV community strived to determine the most effective ways to achieve optimal community health by considering its unique circumstances and needs, identifying Strategic Issues, formulating Goals and Strategies, and forming effective partnerships for strategic action (NACCHO, 2001, 2004).

Two data sets that had been lacking in previous local and regional assessment efforts in the NRV were incorporated in the NRV MAPP process—a focus on asset building with a strong emphasis on quality of life and identifying Forces of Change (trends, factors, and events) that are occurring or might occur (and threats and opportunities generated by these occurrences) to affect the community’s health and/or the local public health system. Also, the incorporation of the NPHPSP into the NRV MAPP process encouraged the use of local performance standards and public health system performance improvement within the context of a broader health improvement effort. Since the NRV MAPP process resulted in a strategic community health improvement plan for the entire public health system and community, as opposed to one public health agency, implementation of performance improvement plans will also necessitate collective action and involvement of the entire public health system and community.

The NRV MAPP process led the NRV community to an unprecedented union among its community organizations, agencies, groups, and individuals that comprise the NRV local public health system. Through broad ownership, the NRV community created and is still creating an initiative that is sustainable, builds on collective wisdom, uses resources from throughout the community, and, ultimately, leads to community health improvement.

MAPP principles and elements integral to success in the NRV.

Since MAPP was developed by NACCHO in conjunction with CDC, it represents a planning approach common to local health departments and communities. The following principles and elements, noted by NACCHO (2001, 2004), were integral to the success of MAPP in the NRV:

- *Systems thinking*--MAPP is focused on systems thinking to promote an appreciation for the dynamic interrelationship of all components of the local public health system required to develop a Vision of a healthy community.
- *Strategic thinking*--MAPP uses traditional strategic planning concepts within its model. While the NRV community had participated in previous strategic planning processes, applying the MAPP concepts to public health practice in the NRV helped identify and secure resources, align needs with assets, respond to external circumstances, anticipate and manage change, and establish a long-range direction for the community. The MAPP model included basic strategic planning concepts, such as visioning, an environmental scan, the identification of strategic issues, and the formulation of strategies. MAPP fostered a proactive response to the issues and opportunities facing the NRV public health system.
 - *Dialogue*--MAPP uses dialogue to ensure respect for diverse voices and perspectives during the collaborative process.
 - *Shared vision*--MAPP helps to develop a shared vision to form the foundation for building a healthy community future.
 - *Data*--MAPP uses data to inform each step of the process. MAPP provides a framework for applying data towards action.
 - *Partnerships and collaboration*--MAPP helps to develop partnerships and collaboration to optimize performance through shared resources and responsibility.
 - *Opportunities for public health leadership*--MAPP creates opportunities for public health leadership by encouraging community ownership and leadership of public health activities, allowing space for creative and collective thinking that may ultimately produce more innovative, effective, and sustainable solutions to complex problems and issues.

- *Previous experiences and lessons learned*--MAPP builds on previous experiences and lessons learned by anticipating and managing change, seeking opportunities, and utilizing existing resources.
- *Celebration of successes*--MAPP encourages the celebration of successes to ensure that contributions are recognized and to sustain excitement for the process.

Benefits of undertaking MAPP in the NRV.

Many of the benefits, as outlined by NACCHO (2001, 2004), were derived from the NRV MAPP process and include:

- *Creation of a healthy community and a better quality of life.* The ultimate goal of MAPP is optimal community health—a community where residents are healthy, safe, and have a high quality of life. The concept of “healthy community” goes beyond physical health alone, as there are many definitions of a healthy community. *Healthy People 2010, Healthy People in Healthy Communities: A Community Planning Guide Using Healthy People 2010, and Healthy People 2020* (http://www.cdc.gov/nchs/healthy_people.htm) describe healthy communities according to quality of life; jobs; productivity; access to healthcare services for treatment and prevention; safety; the presence of roads, schools, playgrounds, and services to meet the needs of the people in the community. The Centers for Disease Control and Prevention (CDC) defines healthy communities as “creating and improving those physical and social environments and expanding those community resources that enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential” (<http://www.cdc.gov/healthyplaces/default.htm>). According to the World Health Organization (WHO), “Health is a dynamic state of complete physical, mental, spiritual, and social well-being and not merely the absence of disease or infirmity”

(<http://www.who.int/about/definition/en/print.html>). Anything that influences any of these aspects of well-being of a person can influence health. The Institute of Medicine (IOM) echoes this definition and notes that “health is...a positive concept emphasizing social and personal resources as well as physical capabilities” (IOM, 1997, p. 41).

- *Increased visibility of public health within the community and new advocates for local public health.* By implementing a participatory and highly-publicized effort, increased awareness and knowledge of public health issues and greater appreciation and advocacy for local public health and the local public health system, as a whole, was achieved.

- *Increased ability to anticipate and manage change.* Because there are so many new emergent threats, the NRV local public health system, at times, finds it difficult to be proactive. The NRV MAPP process and its community-based strategic planning prepared the NRV local public health system to anticipate, manage, and respond to changes in the environment better than before.

- *Creation of a stronger public health infrastructure and strengthened partnerships.* Because MAPP was not a tool just for the LHD, but for all partners within the public health system to work on collaboratively, the NRV MAPP process helped build stronger partnerships. The diverse network of partners within the NRV local public health system was strengthened through the implementation of MAPP and the use of the Performance Standards. This will ultimately lead to better coordination and integration of services and resources, a greater appreciation and awareness among partners, and less duplication of services.

- *Engaged the community and created community ownership for public health issues.* Through participation in the MAPP process, NRV community residents and partner organizations gained a better awareness of the holistic health issues in the NRV and their own

potential for improving their quality of life. Since this was a community-driven process, it led to collective thinking and a sense of community ownership of initiatives, and, ultimately, will produce more innovative, effective, and sustainable solutions to complex problems in the NRV. Also, community participation in the NRV MAPP process will augment community involvement in other initiatives and/or have long-lasting effects on creating a stronger NRV community spirit.

- *Increased public health leadership.* As NRV MAPP partners began to have a better understanding of their role within the LPHS (as not all of them initially understood that what they do necessarily impacts public health), the NRHD's leadership strengthened among its peers.

Additionally, benefits that NRV MAPP partners and participants have stated that they received from the process have been:

- *Access to more appropriate and current data* for organizational/agency needs. The data that came out of the NRV MAPP process has been the number one benefit expressed by partners. In fact, one participant told this principal investigator that, "if nothing else, the data was worth the effort!";

- *Increased recognition* within the community and among peers.
- *Improved focus on organizational- and agency-specific priorities*, knowing that other areas would be addressed by their partners. As one agency director expressed, "You can get stretched too thin if you try to do everything. Having a better sense of who else is doing different things will help us be more efficient and effective in our work. We don't have to spin our wheels."; and

- *Increase in financial resources.* As another organizational participant stated, "The data can help get you grants and funding. It can help you with advocating for more dollars for your efforts."

Other positive comments about the NRV MAPP experience came from participating community and organizational partners and emphasized the successes and benefits of the NRV MAPP endeavor:

- “MAPP has increased the visibility of public health within the NRV by implementing a participatory and highly publicized process.”
- “There was involvement of a diverse group of community agencies, partners, and stakeholders that were truly committed and interested and had a genuine desire to make a difference in the health of the New River Valley!”
- “So many different groups and individuals were brought together in the New River Valley MAPP effort...the planning and implementation of this project was very inclusive of the entire community and demonstrated a sincere desire to care for the underserved citizens of the New River Valley.”
- “The quality and quantity of information gathered, as well as the volume of knowledge from many different areas in the New River Valley community made this effort a success.”
- “It served to eliminate competition, definitely made for more collaboration—much of this due to MAPP.”
- “One of the major results was community recognition and credibility. This resulted in much more political clout—more involved in county and state affairs.”
- “A continued reputation for capability was reinforced and heightened, and reputation is priceless.”
- “NRV MAPP set new standards on how rural health should be done.”

- “MAPP revealed the need for a long-term, strategic approach for improving community health in the NRV...”
- “The MAPP effort prompted a reassessment of holistic health priorities and initiated a more proactive approach to community health improvement in the NRV.”
- “The benefits of implementing NPHPS/LPHSA in the NRV included improved accountability, better resource deployment, enhanced capacity building for the NRV community, widespread use of best practices, and greater focus on holistic health mission and goals.”
- “Partners will definitely use the MAPP data for grant applications.”
- “Many agencies now feel that the community ‘owns’ these issues, not just their agency.”
- “I would recommend it to any community; it helps to define critical issues and strategies.”

Additional benefits—performance improvement, community benefit, and academic-public health practice linkages.

Performance improvement.

NPHPS/LPHSA.

The NPHPS/LPHSA, a component and assessment phase of the NRV MAPP process, was intended to promote and stimulate quality improvement—by looking at how the local public health “system” is functioning. The dialogue that occurred between NRV MAPP partners in completing the NPHPS/LPHSA Instrument (Local Instrument) during this MAPP Assessment led to increased awareness of programs, the willingness to share information, and, ultimately, even broader discussions. The major outcome of responding to the LPHSA Instrument in the NRV was the identification of strengths and weaknesses in the local public health system--

identifying how NRV organizations and agencies contributed to the delivery of public health services, understanding the existing infrastructure, and identifying potential gaps or challenges. This information was used to determine areas, opportunities, and methods for improvement. Ultimately, this information fed into the NRV MAPP health improvement process and is resulting in better planning and action around identified priority areas.

By measuring the capacity and performance of the NRV LPHS, the results from the NPHPS/LPHSA provided the NRV community with a comprehensive picture of the EPHS provision in their localities. The NPHPS was a valuable tool in identifying areas for system improvement, strengthening local partnerships, improved accountability, and assuring that a strong NRV LPHS is in place for effective response to day-to-day public health issues, as well as public health emergencies. Going through the assessment process and evaluation provided some terrific benefits for the NRV LPHS partners and, by extension, the NRV community that they serve.

Obviously, it improved and fostered organizational and community communication, collaboration, and cohesion among NRV LPHS partners by bringing diverse and, in many instances, non-traditional partners to the same table to discuss issues, needs, and activities. Strengthening the diverse network of partners within the NRV LPHS ultimately led to more cohesion among partners, sharing of best practices, better coordination of activities and resources, and less duplication of services. Importantly, the NPHPS/LPHSA provided a “systems” view of public health service delivery in the NRV. It educated NRV MAPP participants about public health and the interconnectedness of activities that led to a higher appreciation and greater awareness of the many activities related to improving the public’s health—and, ultimately, improved understanding among NRV LPHS partners (including the

NRHD) of the role of the LHD as a member of the LPHS (NACCHO, 2009). Also, the NRV NPHPS/LPHSA confirmed and challenged the results of other Assessments. Finally, it provided a benchmark for public health practice improvements by setting a “gold standard” to which the NRV LPHS aspires. Through the identification of strengths and weaknesses within the NRV LPHS to be addressed in quality improvement efforts, responses to the NRV NPHPS/LPHSA can be tracked over time to identify system improvements or changes (DHHS, 2007a).

MAPP and the CHSA.

In the NRV, MAPP also served as a performance improvement process that incorporated collected and analyzed health status data in the Community Health Status Assessment (CHSA) along with data from three other types of Assessments. This Assessment data was then utilized to develop and implement community-based strategic plans that will ultimately result in improved public health system performance and better health outcomes.

The CHSA in the NRV MAPP process was similar to previous “traditional” community health assessments; however, the NRV MAPP process deliberately emphasized community and public health system participation in all aspects of assessment completion (NACCHO, 2008). By engaging system partners and community members at every stage of the process, from indicator selection to data collection and dissemination of findings, the NRV MAPP CHSA built trust between the community and local public health entities. Additionally, by mobilizing community partnerships to complete this Assessment, the NRV MAPP CHSA strengthened the local public health system partnerships that are so critical to ensuring delivery of the ten ESPH.

Establishing a system to monitor indicators over time is also a defining characteristic of the MAPP CHSA. Traditional community health assessment is sometimes perceived as a static activity. In contrast, the MAPP process encourages communities to create dynamic and

updatable health status data systems. Establishing a monitoring system helps ensure that future CHSA efforts are efficient and effective, and use CHSA benchmark data to document public health improvements. Finally, as in all aspects of the MAPP process, collaboration among community partners is essential to the creation and maintenance of a CHSA monitoring system (Jacobs & Elligers, 2009).

Completing a CHSA through the NRV MAPP process had several benefits. First, CHSA data were validated by data collected in the other MAPP Assessments. While the CHSA provided important information about health status, the other Assessments provided information about why certain health issues existed in the NRV. Second, the data collected through a MAPP process are used to create, implement, and evaluate a community health improvement plan (Jacobs & Elligers, 2009). MAPP is not an assessment process; rather, the process collects and analyzes data to identify and implement appropriate performance improvement strategies. Third, and as noted earlier, because NRV MAPP was a community-based process involving the entire public health system, implementation of performance improvement plans will entail collective action and diverse community partner participation. Finally, MAPP communities are better positioned to meet agency performance standards, and they have data and experience that can inform agencies' quality improvement processes (Jacobs & Elligers, 2009). Although MAPP focuses on the public health system, agencies derive important benefits from engaging in the process.

Operational definition.

Developed in the mid-1990s during this principal investigator's tenure on the NACCHO leadership team, the *Operational Definition of a Functional Local Health Department (Operational Definition)* defines what everyone can reasonably expect from governmental local

health departments. It combines standards that describe LHD functions—as framed around the ten EPHS—and it has been recommended as the framework for LHD accreditation standards. LHDs will improve performance and build capacity as they demonstrate achievement of the standards. To support application of the Operational Definition, a prototype set of measurements have been created that demonstrate how LHDs might meet the standards and hold themselves uniformly accountable to their constituencies. The measurements drew heavily from the NPHSPSP local instrument and existing state-based accreditation and related programs, suggesting that any LHD currently using either may be well-positioned to gauge the extent to which the LHD is aligned with future accreditation standards and indicators (NACCHO, 2006).

As noted in NACCHO's *Operational Definition of a Functional Local Health Department* (NACCHO, 2005), LHDs should understand community health issues, investigate health problems and threats, engage community and public health system partners, coordinate public health system efforts to reduce inefficiencies, and create strategic plans that result in health improvements that meet community expectations. While the details of voluntary accreditation of LHDs are still being developed and refined (see discussion in the next section), the responsibilities as noted in the Operational Definition will be reflected in accreditation standards. In addressing these agency responsibilities, the MAPP process helps LHDs collaborate with system and community partners to collect information; identify health problems, issues, and threats; and reduce duplication and gaps in both agency and system efforts to improve public health. Because LHDs are the “backbone” of public health systems, the MAPP process benefits both the LHD and the entire LPHS (IOM, 2002b). Moreover, to meet the public health needs of communities, agencies and systems must work together to deliver the EPHS. Overall,

MAPP complements the application of the Operational Definition and improves agency and LPHS interaction and coordination, which are necessary for improving the quality of public health in local communities.

Accreditation.

The benefit of MAPP process, which includes completion of the NPHPS/LPHSA, will be especially helpful to LHDs, such as the NRHD, in preparing for the recently rolled-out Voluntary National Accreditation of LHDs. Led by the Public Health Accreditation Board (PHAB) (2009), Voluntary National Accreditation is designed to improve and protect the health of the public in every community by advancing the quality and performance of public health departments.

Accreditation has been defined as the following:

(1) The development of a set of standards, a process to measure health department performance against those standards, and some form of reward or recognition for those agencies meeting the standards;

(2) The periodic issuance of endorsements to organizations that meet a specified set of performance standards; and

(3) A voluntary assessment process where an organization or agency uses experts in a particular field of interest or discipline to define standards of acceptable operation/performance for organizations and measure compliance with them. This recognition is time-limited and usually granted by non-governmental organizations (www.phaboard.org).

In the context of preparing for accreditation, LHDs that implement a robust MAPP process--including completion of the NPHPS/LPHSA—will fulfill the accreditation measure. Also, by implementing just the NPHPS/LPHSA, LHDs will fulfill the accreditation measure (NACCHO, 2009).

Integrating performance improvement processes—MAPP, NPHPS/LPHSA, the operational definition, and accreditation.

MAPP, the NPHPS/LPHSA, and the Operational Definition are complementary tools designed to improve the performance and quality of public health systems—NPHPS/LPHSA looks at how the system is functioning; MAPP demonstrates how it can improve to better address the communities' public health priorities; and the Operational Definition defines standards that describe LHD functions. After completing the NPHPS/LPHA, MAPP is a means to address system performance improvement against a backdrop of the LPHS's priorities. MAPP is one approach to interpreting performance standards data within the broader context of a community's public health needs and strengths. Using NPHPS/LPHSA within MAPP ensures broad-based involvement in the performance assessment process. Accreditation, on the other hand, is designed to improve the performance and quality of public health departments. As NACCHO (2009) has eloquently stated:

Both types of improvement efforts are critical to ensuring the public's health. Accreditation on its own may help improve the performance and quality of LHDs, but, even though it includes the need for LHDs to work in concert with the public health system, it will not ensure that LHDs are operating within a healthy, well-functioning system. On the other hand, accreditation will rigorously assess the health department capacity and accountability, which are aspects that are not directly addressed by NPHPS or MAPP. LHDs and their system partners share responsibility for protecting and promoting the public's health; however, as the "backbone" of the LPHS, LHDs have the legal authority to protect the public's health. A system without a strong backbone will have limited success, just as an

agency without system partners will not thrive. Accordingly, when used together, MAPP, NPHPSP, and accreditation reinforce one another and move communities closer to the ultimate goal of improving the public's health. (p. 3)

The NPHPS/LPHSA assesses the capacity of the local public health system to conduct the ten EPHS. As complementary tools, the Operational Definition articulates the LHD's role, and the NPHPS/LPHSA assists the LHD in its role as the backbone of the LPHS. In addition, the NPHPS/LPHSA assists the LHDs in the "assurance" functions described in the Operational Definition, such that the NPHPS/LPHSA helps the LHD and system partners identify who is doing what, where there are gaps, and where there are overlaps and inefficiencies in services. MAPP then augments these efforts as a quality improvement tool to engage the community in determining how best to strengthen areas of weaknesses that are identified (NACCHO, 2006).

Community benefit.

Community benefit is central to the mission of non-profit hospitals and is the basis for their tax exemption. Non-profit hospitals receive a variety of tax exemptions from federal, state, and local governments with the expectation that, in return, they will provide benefits to the community; these laws are referred to as "community benefit" (Congress of the United States, Congressional Budget Office, 2006; NACCHO, 2010; www.communityhlth.org/communityhlth/resources/cbmap.html). Community benefit has been defined by the Internal Revenue Service (IRS) as "the promotion of health for a class of persons sufficiently large so the community as a whole benefits" (Barnett, 2009). Simply put, community benefit is composed of programs and services designed to address identified needs and improve community health. To qualify as community benefit, initiatives must respond to an identified community need and meet at least one of the following criteria--improve access to healthcare

services, enhance health of the community, advance medical or health knowledge, and relieve or reduce the burden of government or other community efforts (NACCHO, 2010; www.chaus.org/pages/our_work/community_benefit/overview/).

Despite scarce reporting requirements, many hospitals have provided substantial community benefits to their communities for decades. Historically, the majority of community benefit funds have been spent on “charity care,” while a smaller portion has been invested in community-based efforts such as community health improvement planning. However, beginning in 2009, as part of new community benefit reporting requirements, non-profit hospitals were required to complete the IRS form 990 Schedule H (American Hospital Association, 2009). The IRS form includes questions about how the organization assesses community needs and how community benefit programs are structured to address identified needs (Catholic Health Association, 2009).

With the historic passage of the Patient Protection and Affordable Care Act, non-profit hospitals, such as the Carilion system in southwest Virginia, are being called to increase their accountability to the communities they serve. The Patient Protection and Affordable Care Act revises the tax exemption standards applicable to non-profit hospitals by adding several new components to the Internal Revenue Code. This Act requires non-profit hospitals to (1) conduct a community health needs assessment at least every three years; (2) widely publicize assessment results, and (3) adopt an implementation strategy to address the community health needs identified by the assessment. The Act also requires that the community health needs assessment “take into account input from persons who represent the broad interests of the community served by the hospital facility, including those with special knowledge of or expertise in public health” (NACCHO, 2010; One Hundred Eleventh Congress of the United States of America, 2010).

According to the Catholic Health Association, the new provision “gives great importance to taking a more strategic approach to community benefit planning” (Catholic Health Association, 2010). The MAPP process will help to fulfill these “community benefit” requirements. As a partner in the MAPP process, hospitals can demonstrate collaborating with the community, including public health experts, to assess community needs, identify solutions, and implement health improvement strategies (NACCHO, 2010).

In a recent community benefit demonstration project report, *Advancing the State of the Art in Community Benefit (ASACB)*, the Public Health Institute and the Association for Community Health Improvement (2010) delineated five core principles for effective community benefit programs: emphasis on communities with disproportionate unmet health-related needs, emphasis on primary prevention, building a seamless continuum of care, building community capacity, and collaborative governance. The core principles reflected in this Report align with the MAPP approach. As a community-wide health improvement process, MAPP does the following:

- Includes a comprehensive Assessment Phase that identifies local public health strengths, challenges, and unmet health-related needs;
- Emphasizes primary prevention;
- Strengthens partnerships among healthcare providers, public health professionals, and other stakeholders;
- Mobilizes community members to identify and act on strategic health issues; and
- Institutionalizes a collaborative approach to planning, implementing, and evaluating community health improvement strategies (NACCHO, 2010).

Community benefit presents a unique opportunity to engage non-profit hospitals, such as Carilion New River Valley and Carilion Giles Memorial, in MAPP. For non-profit hospitals to fulfill their mission and retain tax exempt status, they must provide programs and services that assess and respond to local community health needs. By engaging in MAPP, hospitals not only work toward fulfilling their community benefit requirements, but also gain access to a comprehensive dataset that includes information about community health status, LPHS functionality, community needs and assets, and local, state, and national forces of change. Additionally, as with all LPHS partners that participate in MAPP, hospitals build new partnerships and benefit from the community's strengthened public health infrastructure and improved ability to anticipate and manage change. United with a common framework and shared values, non-profit hospitals, LHDs, and LPHS partners can collectively move communities closer to the ultimate goal of improving the public's health (NACCHO, 2010).

Academic-public health practice linkages.

The importance of establishing and sustaining academic-public health practice linkages has been emphasized and identified as a critical element in the IOM reports on public health in 1988 and 2003 (IOM, 1988, 2003). The MAPP process--as a comprehensive strategic planning effort with multiple distinct assessment activities--can pose a challenge for implementation in many communities because it requires extensive human resources. However because of its complexity and extensive human resource requirements, the MAPP process lends itself well as a framework for establishing and/or strengthening academic-public health linkages by involving students and faculty in "real-world" public health practice settings and field placements that positively impact public health practice, academia, and the community (Erwin, Hamilton & Welch, 2005).

During implementation of MAPP in the NRV, this principal investigator and the PATH Steering Committee partnered with students and faculty from both Virginia Tech and Radford University. As previously noted, Audrey Kemp, a graduate student of Dr. Kerry Redican--in the School of Education, Department of Curriculum and Instruction at Virginia Tech—provided a leadership role in the initial stages of the MAPP process including Phase 2 and part of Phase 3 (Community Themes and Strengths Assessment, Local Public Health System Assessment, and the Surveys for the Community Health Status Assessment). Nursing students and their instructor, Dr. Maggie Basset, Radford University School of Nursing, as well as a Radford University undergraduate student who was doing a volunteer internship with the Virginia Rural Health Resource Center, helped collect qualitative data via face-to-face interviews for Phase 3: Community Themes and Strengths Assessment. Also, selective analyses of the NRV Community Health Assessment Surveys in Phase 3: Community Health Status Assessment were done by another graduate student in the Center for Public Administration and Policy at Virginia Tech; Mary Beth Dunkenberger, Senior Program Director, Virginia Tech Institute for Policy and Governance; and Karen Callahan, a retired academic statistician.

Involving undergraduate and graduate students and faculty in the field during various phases of the NRV MAPP process has impacted public health practice in the NRV in many ways. First, it provided much-needed human resources to fully implement MAPP in the NRV. It has also served as a workforce recruiting opportunity for future public health professionals and has encouraged some undergraduate students to seek more formal public health training in an MPH program (Erwin et al., 2005).

Additionally, student and faculty involvement in the NRV MAPP process has had significant impact on academia including teaching, research, and service. Since students had the

opportunity to see and participate in a public health field-based process in the NRV, they gained insight into and recognition of the complexity of managing such community-based projects and the need for flexibility and adaptability to the diverse values, perspectives, and power bases of participants and organizations. Students also garnered knowledge regarding public health infrastructure, as well as the competencies and leadership skills needed to successfully function and perform within the various levels of that infrastructure and those needed by the public health practitioner to positively impact the health of the community. Participating in the NRV MAPP process provided students with hands-on experience in activities related to community health improvement and MAPP implementation competencies (e.g., strategic planning, community engagement, data analysis). The NRV MAPP process clearly demonstrated to students that public health practice was strengthened through developing partnerships within the NRV LPHS and with individuals in the NRV community. The concept of planning with people, not for them, and the need for diverse community involvement--that ultimately results in community ownership--was demonstrated throughout the NRV MAPP process. Students became aware that public health interventions were more likely to be sustained long-term by the local community if community leaders and stakeholders have the opportunity, from the beginning, to participate and influence a community health improvement process (Erwin et al., 2005). The learning exposure created greater awareness of, and hopefully, sensitivity to, the community impacts that result from the work of public health professionals. It further provided faculty and students with a means to contribute community-focused service that had direct relevance to their classroom curricula. Also, the NRV MAPP process provided faculty with an opportunity to participate in teaching and learning activities, as well as community-based research, outside of the classroom.

Finally, the NRV MAPP academia-public health practice linkages had positive impacts on the NRV community itself. Student and faculty involvement helped keep the process moving forward by helping to complete necessary human-resource-intensive tasks such as data gathering, compiling, and analyzing. Having students and faculty actively participate provided enthusiasm, energy, and stimulation and brought differing perspectives to the NRV MAPP process. Certainly this principal investigator, the NRHD leadership team, and many members of PATH, the PATH Steering Committee, and the NRV community felt a sense of pride in offering undergraduate and graduate students a practical learning experience. Student and faculty involvement in the NRV MAPP process also empowered community members to feel more ownership and leadership in addressing their health issues by the experience gained through guiding and teaching students (Erwin et al., 2005).

Lessons Learned from NRV MAPP (including challenges and limitations)

➤ Relationships are crucial...it's all about relationships! It is important to know who the key community players are and to build new relationships or strengthen existing relationships. Aggressive recruitment and partnership development is particularly important for successful implementation of MAPP because the model emphasizes the need for traditional and non-traditional partners.

➤ Do your homework...prepare, prepare, prepare...and become a MAPP expert! Thoroughly research and understand MAPP and identify how MAPP can complement and build on existing community health improvement efforts. Always be ready to describe the MAPP philosophy and components to a new audience keeping in mind that many potential community partners may be unfamiliar with public health terminology and will appreciate explanation of the elements and value of a broad definition of health.

➤ Three main factors prepared the NRV for beginning the MAPP process. These factors were (1) PATH, an already established, successful community partnership; (2) drawing from previous assessment experience; and (3) NRHD (local health department) leadership and support. Leveraging these factors significantly contributed to the success of the NRV MAPP. These factors are certainly unique to the NRV, but not necessarily found in other rural areas.

➤ Strong and committed leadership; an established and long-standing community partnership (PATH); a history of interagency cooperation and commitment to improving the health status of the NRV; community readiness and a commitment to a new way of doing business; a history of success at problem solving; shared decision-making power; and prepared health and human service workforces; and a cross-disciplinary and team approach were characteristics and strengths of the NRV community that provided a definite advantage for and were strongly associated with completion and success of the NRV MAPP process.

➤ There is tremendous support for communities wishing to implement MAPP including Dedicated NACCHO staff, NACCHO's MAPP Web site, other MAPP demonstration sites and/or users, and numerous training programs and conferences.

➤ PATH approached the NRV MAPP process as a community initiative, rather than exclusively a health department project. There was a Steering Committee and a graduate student committed to providing leadership and guidance for MAPP activities. Success of the NRV MAPP process, in large part, was defined by strong leadership, community ownership, and collective thinking.

➤ From the beginning, it was reinforced that this was a community-wide plan, and that no single agency was solely responsible for its success, but instead, everyone was collectively responsible. This tone needs to be set early and this message needs to be continually sent to the

community throughout the process. It is critical that a coordinated, community-wide public health system is created and supported and that all community partners (and hopefully their employees!) embrace the MAPP process and recognize their shared responsibility for community health improvement.

➤ One of the greatest benefits of MAPP is that, as opposed to grant-driven initiative, it is grassroots effort. A sense of ownership was key to building a solid, community-wide commitment to the NRV MAPP process. Creating this sense of community ownership was, in part, accomplished by ensuring that participants decided when and how often to meet, set the agendas, and determined how to approach each phase of the process. Decisions made by consensus are more likely to be supported by the community. When a community feels heard and valued, it is often more supportive of the process.

➤ There were numerous overall challenges to implementing MAPP in the NRV including limited resources (time and money); obstacles to participation (suspicion of government and organizational initiative, “meeting burnout,” engaging diverse coalition memberships, time-frame of MAPP); the systems approach; and length of the MAPP process.

- Despite the increasing involvement of partnerships focused on community-based improvement activity, it remains difficult to identify funding to support planning and partnerships that are not specifically geared toward a specific health status issue such as obesity or substance abuse. The MAPP effort takes resources including staff time, meeting space for partners, refreshments, etc. As for the dollar side of resources, funding this effort could have been difficult if it had not been for the \$20,000 start-up grant funding received by the NRHD from VDH to support one of the first ten implementations of MAPP in Virginia. Also, resources were leveraged through collaborations with community partners, volunteers, and academia.

- Obstacles to participation exist. Many community residents and agencies are inherently suspicious of government initiatives and have concern that a governmental entity or other organization will come into the community only to get what it needs and leave (Salem, Hooberman & Ramirez, 2005). It takes time to convince and assure some potential participants that they will control the MAPP project, not some other entity.
- Participation is further challenged by “meeting burnout.” For this reason, it is imperative that meetings be run efficiently to maximize the use of participants’ time.
- Another challenge pertains to the efforts entailed in engaging diverse coalition memberships. MAPP really encourages a new way of planning and implementing programs, one that utilizes the community and partner assets more than other traditional programs. As such, it may take a significant amount of time to motivate MAPP partners to work in a new way. Education and outreach is often needed to convince less traditional partners, for example, the business community, that they are a valued public health partner. Appealing to community residents, area organizations, businesses, and other stakeholders assures that a wide variety of perspectives will be creating a broad health improvement plan that is truly representative of the community (Salem et al., 2005).
- Some residents and local organizations that comprised the MAPP coalitions may be accustomed to working quickly to identify and address community issues. The MAPP process can be frustrating, particularly in its early stages, as it required a slower pace and greater deliberation to fully understand the community. Residents may be more inclined toward active participation in the implementation phase of MAPP where they can more quickly see the connection between their efforts and a desired outcome.

- Finally, the systems approach is a strength of MAPP, but also a challenge. It takes continual emphasis and re-emphasis that everyone is part of the LPHS, and hence, needs to be involved in the MAPP effort.

- There were challenges to implementing MAPP that were specific to rural communities, such as the NRV, including lack of resources, travel distances/restriction based on geography, pre-existing issue-specific groups, and small pools of community partners. However, the NRV MAPP effort was able to overcome these challenges by emphasizing multi-disciplinary partnerships, creating a strong support network, using participants' time well, and making a concerted effort not to "reinvent the wheel."

- The NRV MAPP process addressed its lack of resources by capitalizing on already existing community partnerships, especially PATH, as well as developing and utilizing new partnership efforts. The diverse NRV MAPP partners and participants had unique and complementary competencies and resources that were leveraged. For example, Radford University nursing students and their instructor, volunteers from RSVP, and a volunteer intern from the Virginia Rural Health Resource Center were utilized to complete the face-to-face interviews in the CHSA. New River Community Action funded and provided staff members to randomly mail the *NRV Community Health Assessment Survey*. A graduate student and program director in Virginia Tech's Center for Public Administration & Policy and Institute for Policy & Governance, respectively, as well as a retired academic statistician, provided the knowledge, skills, and expertise to perform the selective analyses of the three Surveys. The academic-public health practice linkages and the incredibly talented volunteers from RSVP were invaluable in implementing NRV MAPP. Also, Heidi Deutsch and her MAPP Program staff at NACCHO provided tremendous support and expertise to the NRV MAPP project.

- The importance of creating a strong support network by encouraging open communication among community partners was critical to the success of NRV MAPP.

- Using NRV MAPP participants' time well and involving as many participants as possible was extremely important. One strategy of ensuring effective time use was that NRV MAPP meetings were held geographically across the region and only held when there was an agenda and tangible tasks/items to discuss. This assured that the meetings involved as many geographically-diverse participants as possible (in an attempt to overcome the travel distance barrier) and were purposeful and beneficial for all participants. For the Action Cycle, it has been proposed that partners select a strategic area to commit only 90 minutes a month, and subsequently organize the work around objectives and activities so that partners have a clear sense of the outcomes toward which they are working.

- Although NRV MAPP was a new way of doing business, it was done within the context of pre-existing community efforts, therefore, avoiding “reinventing the wheel.”

Whenever possible, existing initiatives, data, and past experiences and successes were brought into the NRV MAPP process. Examples included partnering with the VICPP during its statewide healthcare listening tours in the NRV to field testing/pilot the Interview Instrument, as well as accessing other data sources and previously conducted health assessments from NRV community coalitions, hospitals and other organizations (i.e., *1994 New River Valley Community Health Need Assessment*, *1999/2000 PATH New River Valley Community Health Needs Assessment*, and *2009 Montgomery County HRSA FQHC Planning Project Needs Assessment*).

- If NRV MAPP partners and participants enjoyed coming to meetings, it was much easier to keep them engaged throughout the process. Providing food and refreshments was a great strategy for making meetings “fun” for partners and participants.

➤ The NPHPS/LPHSA seemed like a long and “tedious” process with “technical” terminology and bordered on the boring side for those individuals who did not understand the LPHS and/or their role and responsibility in improving the health status of the NRV community. However, orientation to and an understanding of the NPHPS, ten EPHS, and the critical nature of this Assessment component for strategic planning was of tremendous importance and benefit for both Retreat group leaders and partners prior to initiating the Assessment component process. That preparation time had long-term value, as it served as a public health marketing opportunity and a way for new partners to get a better understanding of their role within public health.

➤ Partners must understand, prior to the NPHPS/LPHSA, that the NPHPS and the ten EPHS address the LPHS, not the performance of the LHD. Defining the process as an assessment of the system affecting the health of the public assisted in this clarification.

➤ Certain partners were selected for specific EPHS and Model Standards. Perhaps selecting participants may have omitted the opportunity for contribution, opinions, and discussion among the entire partner membership, thus “slanting” the results. Involving all partners in the NPHPS/LPHSA may be important for consistency and may provide the opportunity for a robust discussion and diversified input.

➤ Working together on the LPHSA provided NRV MAPP partners with an opportunity to learn more detail about service, service delivery, and best practices in the community and to identify expertise in various areas, as well as a true sense of working together to improve the LPHS.

➤ Providing copies of the NPHPS/LPHSA document to each participant to use as a reference during the LPHSA was helpful so that each participant could refer to the glossary and to questions.

➤ The LPHSA was critical to the NRV MAPP strategic planning discussion because the partners were able to utilize the strengths of the LPHS in that discussion and realistically identify interventions that could be implemented (i.e., can it be done?, is it achievable?, is it cost effective?, does it meet the needs/gaps?, and what impact will the intervention actually have?).

➤ The LPHSA is an assessment tool; it does not, in and of itself, have a performance improvement component. The data obtained from this Assessment identifies how LPHS's are performing and identifies gaps in services and in the LPHS. Partners then determine what to do with the information and data obtained. Fortunately, the MAPP process helps put the performance standards data into context and provides the next steps on how to address LPHS weaknesses.

Recommendations for Practice

NRV MAPP primary and secondary data, strategic and priority issues, and goals/strategies.

There were numerous recommendations for practice apparent in the NRV MAPP primary and secondary data that were ultimately reflected in the Strategic Issues, Priority Issues, and Goals/Strategies. One of the most important findings of the study is that the NRV, a primarily rural area, frequently has different and, in some instances, greater challenges than other more urban areas in addressing a number of holistic healthcare and other public health system issues. There are health and social conditions and disparities in the NRV associated with particular preventable or chronic diseases and causes of death (i.e., heart and chronic obstructive pulmonary disease, diabetes, unintentional injury), communicable diseases (i.e., hepatitis C), and social problems such as housing and employment, as well as inequities in infrastructure or professional/community capacity to address needs. There is ample evidence from the study data

and information that some important rural health inequities exist in the NRV with respect to, for example, economic development and job opportunities, shortages of qualified primary care physicians (including obstetricians) and other health professionals such as mental health and dental health providers, prevalence of rural occupational and chronic health problems, and delays in health screening.

NRV residents, living in a primarily rural area, face a unique combination of factors that create disparities in their health status and well-being. Particular conditions such as economic factors, cultural and social differences, education limitations, geographic isolation, a growing aging population, lack of transportation systems, lack of access to specialty services, lack of health insurance, lack of adequate support to maintain quality of medical care, and limited rural infrastructure present obstacles to NRV residents seeking services and providers delivering those services. Access to insurance to support healthcare continues to be a growing problem in many rural areas, including the NRV—a problem associated with, in many instances, a lower paid workforce reliant upon limited job opportunities and small employers that are less likely than larger employers to offer health insurance. Although access to timely and effective primary care is deemed critical to avoiding hospitalizations for ambulatory care sensitive conditions, healthcare workforce shortages and the recruitment/retention of primary care and specialty healthcare providers continue to be identified as major rural health concerns for the NRV. Many of the holistic healthcare and other public health system challenges facing the NRV are similar to those facing rural residents in other areas of Virginia and across the nation (Virginia State Office of Rural Health, 2008).

Another important finding from this study demonstrated that underserved populations in the NRV (i.e., lower income and under-/un-insured)--that had a more dire need for community health services--were also the least able to access and/or pay for necessary services. The underserved NRV residents were more likely to lack access to holistic healthcare including dental, mental health, vision, and substance abuse services, as well as primary care, prenatal/delivery and geriatric services, prevention and health education, specialty services, and medication. This study also emphasized that underserved NRV populations faced many barriers to healthcare services such as lack of transportation, lack of insurance, cost of services, limited health literacy, and lack of affordable mental health and dental providers.

Overall, the most pressing problems of residents in the NRV are access to affordable holistic healthcare secondary to lack of health insurance; mental health issues such as stress, anxiety, depression, and suicide; transportation; and unhealthy lifestyle choices and behaviors leading to poor health outcomes. These problems and the other issues/concerns were captured in the top three NRV MAPP Priority Issues—access to affordable, holistic health care (both preventive and treatment) (including medical, dental, vision, hearing, mental health, substance abuse, medications, transportation, care coordination, case management, etc.); health disparities; and a “seamless web of community-based public health and social services to include linkages between stakeholders involved in community development, public health, and social services.

These findings were also clearly reflected in the three Strategic Issues which were essentially the overall summary recommendations for practice from the entire NRV MAPP process--establishment of a collaborative *holistic health-centric planning* process (including healthy community development with walking paths, good schools, jobs, etc. to clean air and water to affordable, quality healthcare) with community partners to improve the overall health

status in the NRV; designing, implementing, and evaluating community-based outreach and education interventions to improve prevention and care services for the Priority Issues; and developing policies at the local and state levels. The developed NRV MAPP Goals and Strategies further provided recommendations for practice in the NRV—focusing on and emphasizing interoperability and integration of holistic healthcare services; enhancing membership of PATH by including additional members from business, faith community, and local legislators; improving access to community services (establishing a uniform and effective intake, assessment, policy/procedure, and referral process; creating a single point of entry for human/public services; improving and simplifying DMAS application; and expanding existing insurance coverage and/or providing insurance for the under-/uninsured); collecting and analyzing data to inform policy change; and identifying state-level advocacy groups to represent PATH.

Quality of life—recurrent themes of communication/awareness and improved/needed services for children/adolescents and the elderly.

In spite of the issues and problems noted, the perceptions of quality of life in the NRV by community residents were generally positive. However, two themes became apparent during the CHSA interviews. One theme entailed communication and awareness. Although many interviewees reported numerous agencies and organizations providing services in the community, not all interviewees were aware of such services. This emphasizes the importance of coordinated public communication/media efforts to increase awareness about community agencies and organizations and the services they offer. To improve health communication, the current study's findings suggest that health and human service providers may reach the public more effectively by providing enhanced advertising of their services through posters displayed in

local doctors' offices, recreation centers, senior centers, churches, and other public locations. Other health communication efforts include advertisements in local newspapers and monthly newsletters, mail-out flyers to individual residences and in newspaper or bill delivery, and public service announcements on the radio. Collaboration among health and human service providers in the community and academic institutions could serve as an effective means of educating community residents on holistic health promotion and prevention, as well as increase their awareness of services that are available in the local community (Kemp, 2008).

A second theme involved improved/needed services for children/adolescents and the elderly. These two populations were frequently mentioned among the interview groups (Kemp, 2008). Therefore, community planners, health and human service providers, school system personnel, local governmental leaders, long-term care and retirement community administrators, and others should collaborate to better meet these populations' needs. Another population, those with special needs (e.g., mental illness, mental retardation, learning disabilities, disabled), was also mentioned and warrants further attention.

Holistic health promotion strategies and interventions.

Health promotion strategies need to be more holistic and redirect their focus on enhancing independence, quality of life, and a respect for individual perspectives of self-care, as well as an appreciation of the spiritual dimensions of health, an acceptance of different healing modalities, greater understanding of the negative effects of stereotyping, and cultural competence (Averill, 2003; Borders et al., 2004; Davis & Magilvy, 2000; Kemp, 2008; Jensen & Royeen, 2002; Roberts, 2004; Springett, 2001). Since lifestyle factors are modifiable, behavioral interventions among rural residents should be developed based on urban models, such as community education and outreach that considers rural social norms and issues of access to care

typical of urban communities. There needs to be a shift in focus on lifestyle changes and barriers to these changes that are typical among rural residents--barriers to change such as prohibitive costs of services; long distances to treatment; social stigmas concerning diagnosis and treatment; heavy patient load among physicians; lack of accessible continuing medical education for physicians; and community knowledge and attitudes about risk factors, prevention, and treatment, including vision care and foot care for diabetic individuals; and the continued and increased establishment of free clinics (Arcury et al., 2005; Ayanian et al., 2000; Beem, Machala, Holman, Wraalstad & Bybee, 2004; Berndt, Hevner & Studnicki, 2003; Borders et al., 2004; CFRHC, 2005; Davis, 2004; Dennis & Pallotta, 2001; Eberhardt & Pamuk, 2004; Glasser et al., 2003; Huttlinger et al., 2004; Jensen & Royeen, 2002; Kemp, 2008; Lee, Giuse & Sathe, 2003; Roux, 2001; Scariati & Williams, 2007).

Most preventable health problems in the NRV and in society—including about half of all deaths—are caused by tobacco use, improper diet, lack of physical activity, alcohol misuse, microbial agents, firearm use, unsafe sexual behavior, motor vehicle crash deaths, and illicit use of drugs. The values, as well as the opportunities available in the NRV and other communities, affect the choice residents make about health and safety. While universal access to personal healthcare and enforcement of laws and policies that protect the safety and the health of the environment are critical goals, these do not, in and of themselves, fully address the fundamental causes of homicide, suicide, injury, disability, premature death, communicable and chronic diseases, and the retrogression of natural resources. Increased attention to the elements of personal and community responsibility in making positive changes to preserve and improve health and to protect the environment is paramount in NRV's community improvement efforts.

Greater awareness of the urgency to improve lifestyle practices, reduce risk behaviors, and protect the environment is critical and will ultimately help contribute to an improved health status of the NRV community (Hershey, 1997).

In order for holistic healthcare delivery to be successful, a linkage between mental health and primary health care is necessary, and can include increasing the provision of mental health services by competent mental health professionals in the primary care setting. Results of this network may include enhanced real and perceived levels of confidentiality, improved referrals and earlier identification of individuals with mental health issues, interaction between professionals to reduce the sense of professional isolation, and reduced and more efficient operational costs due to the sharing of some overhead expenses (Averill, 2003; Ayanian et al., 2000; CFRHC, 2005; Davis, 2004; Eberhardt & Pamuk, 2004; Glasser et al., 2003; Kemp, 2008; Levin & Hanson, 2001; Roux, 2001; Wagenfeld et al., 1997).

Service delivery models—focus on community strengths/assets, capacity building, and community organizing.

Future research and service delivery models should focus on community strengths and assets to achieve population health, such as the Community Action Model (CAM) (Lavery et al., 2005), Community Health Action Model (CHA) (Racher & Annis, 2008), Community-Oriented Primary Care (COPC) (Glasser et al., 2003), and Community As Partner (CAPM) (Huttlinger et al., 2004). Emphasizing the shared strengths of a community has the potential to facilitate community empowerment and foster a movement toward positive change in the planning and delivery of a health care continuum (i.e., chronic disease management, medication management, rehabilitation therapies, environmental health policies), as well as promote related information that will enhance rural residents' health knowledge (Averill, 2003; Berkowitz, 2004; Berndt et

al., 2003; Borders et al., 2004; CFRHC, 2005; Davis, 2004; Eberhardt & Pamuk, 2004; Kemp, 2008; Leight, 2003; Laverack & Labonte, 2000; May et al., 1995; Potvin et al., 2005; Roux, 2001; Sampson, 2003; Scariati & Williams, 2007). Moreover, learning is not simply for experts or the community alone. Successful health promotion and community health improvement requires a mutual dialogue between community groups and stakeholders that offers a willingness and openness to discover the components that foster successful health promotion programs, processes, and outcomes that involve empowerment, active participation, holism, inter-sectoral qualities, equity, sustainability, and are multi-strategic in nature (Kemp, 2008; Leight, 2003; Potvin et al., 2005; Springett, 2001; Williams & Cutchin, 2002).

Many planning/service delivery models and community health improvement efforts, including MAPP and CAM, are based on capacity building and community organizing strategies and are designed to address issues that are important and relevant to the community. There are a number of challenges facing the implementation of planning/service delivery models rooted in community organizing. First, although the paradigm of public health is shifting, the primary focus remains on people changing their “unhealthy” behaviors or making “healthier” lifestyle decisions. As a result, many community-based organizations (CBOs) have traditionally received grants from funding sources that focus on behavior change models. These CBOs tend to lack the infrastructure necessary to coordinate a community-driven advocacy campaign based on action research and focusing on policy development. Second, lack of resources is a continual challenge, in that change at the environmental level requires sustained funding over time and is labor intensive, thereby limiting the number of projects that can be funded. Finally, categorical funding often requires the community action model to have a predetermined area of focus that, depending on the situation, may make it more difficult to ensure that an issue is relevant to the community

in question (Glasser et al., 2003; Huttlinger et al., 2004; Lavery et al., 2005; Racher & Annis, 2008). To overcome these obstacles, there is a tremendous need to build capacity and expertise for community health assessment and improvement planning through training and technical assistance in areas such as assessment, cross-cultural collaboration, establishing partnerships, developing goals and action plans, measuring success, using and analyzing quantitative and qualitative data, program evaluation, and writing community health status reports (Abarca, Grigg, Steele, Osgood & Keating, 2009; Garza, Abatamarco, Gizzi, Abegglen, and Johnson-Conley, 2009; Snyder & Spice, 2009; Stoto, Straus, Bohn & Irani, 2009).

Importance and usefulness of mixed methods research.

This study helps confirm the importance and usefulness of mixed methods research for community-based improvement efforts. However, there is need for more investigative studies on mixed methods research, as well as more utilization of this method, to help advance its concepts. The goal of mixed methods research is not to replace either quantitative or qualitative approaches, but rather to draw from the strengths and minimize the weaknesses of both in single research studies and across studies. Mixed methods research offers tremendous promise for developing techniques that are closer to what researchers actually use in practice. Mixed methods research as a third research paradigm can also help bridge the gap between quantitative and qualitative research and reduce some of the problems associated with singular methods (Collins & O’Cathain, 2009; Collins, Onwuegbuzie & Sutton, 2006; Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2004; Rocco, Bliss, Gallagher & Perez-Prado, 2003). Several authors have written books about the methodology and the mixed methods paradigm including Biber and Nagy (2010); Brewer and Hunter (1989); Creswell (2003); Creswell and Plano (2007); Greene (2007); Fry, Chantavanicht & Chantavanicht, 1981; Greene, Caracelli, and Graham (1989);

Johnson and Christensen (2004); Newman and Benz (1998); Reichart and Rallis (1994); and Tashakkori and Teddlie (1998, 2003). However, much work remains in the area of mixed methods research such as its philosophical positions, designs, data analysis, validity strategies, mixing and integrating procedures, and rationales (Collins & O’Cathain, 2009; Collins et al., 2006; Creswell, 2003; Fry, et al., 1981; Johnson & Onwuegbuzie, 2004; Onwuegbuzie & Leech, 2004; Rocco et al., 2003; Tashakkori & Teddlie, 2003).

Community-based participatory research (CBPR).

The NRV MAPP process served its primary purpose in assessing and improving the NRV LPHS by promoting systematic, rather than programmatic, approaches to community health improvement. However, academic institutions—such as Virginia Tech and Radford University--can benefit from the widespread use of MAPP and MAPP’s potential to promote the concept of community-based participatory research (CBPR)—one of the content areas identified in 2003 by an IOM report as needed for 21st century public health practitioners and needing increased emphasis within the curricula of schools of public health (IOM, 2003c). CBPR is defined as a collaborative process that equitably involves all partners in the research process and recognizes the unique strengths that each brings (Minkler et al., 2003). By offering a new way of doing business with and for the community, MAPP emphasizes strategic planning and performance management, rather than program planning, and places significant emphasis on the importance of engaging communities and creating community ownership for public health issues. Turnock and Long (2005) note that:

Involving communities in public health efforts is certainly not a new concept; however, public health practice and research have often approached communities as passive participants in public health efforts and have acted paternalistically on

their behalf. In recent years, critics of this approach have advanced a more community-based approach to public health practice and research. In addition there has been increasing interest from potential funding sources (private and governmental) in supporting efforts that are focused on community collaboration, partnership development, and capacity building (Amodeo, 2003; Parker, Margolis, Eng & Henriquez-Roldan, 2003). (p.484)

The CDC now funds more than two dozen community-based prevention research grants and allows states to use some of their emergency preparedness and response bioterrorism grants to support national public health standards-related activities including MAPP (Minkler et al., 2003).

Although the 2003 IOM report called for an increased emphasis on CBPR, it provided little to no guidance as to how that should be done. However, MAPP supports an environment in which CBPR can thrive--the concepts behind CBPR and MAPP are similar. As MAPP has a clear and applicable methodology and framework, it provides academia and future public health professionals with a clear understanding of how CBPR concepts can be translated into practical applications within the community (Turnock & Long, 2005). As Turnock and Long (2005) have concluded, "The community is the classroom for learning MAPP. Linking that community classroom with professional education and ongoing professional development strategies will be necessary for MAPP to be successful in promoting healthy communities" (p. 448).

PATH .

Additional recommendations for practice apply specifically to PATH and its coalition members. Although agency/organizational members of PATH have and continue to function collaboratively in a transparent and essentially "self-less" manner without hidden agendas, PATH needs to "officially" adopt and follow community-based research principles that call for

all partner organizations to participate in all aspects of the community-based research and improvement process with equal power in decision making. These principles follow the acronym RESPECTFUL: Respect each others' contributions; Encourage change and promote knowledge in ways that benefit communities; Share credit and responsibility for results; Promote an emphasis on locally relevant holistic health issues; Examine the social, economic, and cultural influences on health; Collaborate on all major phases of the research and community-based improvement process; Treat research and community-based participants ethically; Furnish results to the community in a useful manner; Use community strengths and expertise; and Link research to action to enhance community capacity (Schulz, Israel, Selig, Bayer & Griffin, 1998).

Another recommendation for practice targets acquisition of health status information and data in the NRV. The CDC's and Virginia's Behavioral Risk Factor Surveillance System (BRFSS) provides data to track the national, state, and local health status and health behaviors. These data are available at the national and state level; however, many times, as is the case in the NRV, sample sizes are not adequate for comparisons among or within counties at the local level. This creates a gap between health information collected on individual patients and aggregate county-level statistics. Therefore, it would be helpful to have a community survey that serves as a resource for health information for more precise geographical areas in the NRV than national or state healthy survey data. This community-based survey could be developed/designed (or "redesigned" from the existing *NRV Community Health Assessment Surveys*) and implemented, on a routine basis, to focus on health and social issues specifically important to the NRV community—primarily serving to strengthen the capacity of the NRV community to improve its

health. The entire process can be overseen by PATH and the PATH Steering Committee that would be responsible for developing the survey questionnaires; planning the sampling strategy; and overseeing data analysis, interpretation, and dissemination.

The goals of this survey--similar to one in Genesee County, Michigan--would be (1) to understand residents' health-related behaviors and perceptions; (2) to provide data for needs assessment for developing programs, informing policy, and writing proposals; (3) to identify community assets; (4) to obtain local information to develop community health priorities; (5) to provide information for evaluating the outcomes of public health interventions and initiatives; (6) to combine survey data with data from the census and other sources to understand the associations between residents' health-related behaviors and perceptions, environmental determinants, and health outcomes; (7) to provide training opportunities for practitioners and students; and (8) to enhance the capacity of local organizations to collect, analyze, and use survey and qualitative data to develop and evaluate programs (Kruger, Shirey, Morrel-Samuels, Skorcz & Brady, 2009). Since policies and intervention efforts often attempt to focus on areas and populations where needs are more prevalent, the results of this survey can be used not only to inform decisions about NRV community health priorities, but also to influence and address policy changes and strategic planning at the NRV LPHS level and in local health intervention programs. Since this survey would be a completely NRV-focused, community-based process involving a wide variety of local stakeholders, it would help gain the trust of NRV residents and ensure that the information would be utilized in local health promotion efforts. Additionally, this flexible process would customize and tailor the questionnaire items for the specific needs and interests of NRV community helping to ensure that the survey items were clearly and specifically designed for NRV residents.

Recommendations for Future Research

Recommendations for future research entail those that are specifically targeted to the NRV, as well as those that are more general and global.

Recommendations targeted to the NRV and Virginia.

The MAPP tool should be implemented as a coordinated statewide approach throughout Virginia in the remaining 25 health districts. When this is done, all LPHSs would complete MAPP and the NPHPSP local instrument within the same agreed-upon time period with coordination and assistance from VDH. The NPHPSP State Instrument should be implemented at the same time in VDH, and if appropriate, local government jurisdictions can use the NPHPSP Governance Instrument at the same time. A statewide approach provides opportunities to coordinate orientation activities, technical assistance, and improvement planning between state and LPHAs leading the assessments. The resulting information would provide an in-depth understanding of the strengths and weaknesses within the state and local public health systems and allows for comprehensive systems improvement planning. This would also allow for comparisons between urban and rural areas in Virginia—e.g., between localities in southwest Virginia and northern Virginia.

Another recommendation for the MAPP process in the NRV entails obtaining primary data (from the Community Themes and Strength and Community Health Status Assessments) with adequate sample sizes from numerous smaller communities (e.g., Dublin in Pulaski County and Narrows in Giles County) to further clarify differences/similarities between these communities, as well as allow the findings to be generalized and compared to similar communities in Virginia and the U.S. It would also be beneficial to obtain qualitative and quantitative data and information from additional sub-populations (e.g., the non-English

speaking Asian community and the homeless) utilizing individuals within these groups to serve as a facilitator. As mentioned previously, a shortened new design or “re-design” of the *NRV Community Health Assessment Survey*--with clearer questions in a Likert scale format that are easier to analyze and cross-tabulate--is needed. A shortened Survey may result in an increased return rate and allow more refined, focused, and weighted analyses between smaller communities and sub-populations in the NRV.

It would also be helpful to include additional interview questions in the Community Themes and Strengths Assessment to capture other information on quality of life and use of the local health care system such as “What does quality of life mean to you?” “In what ways do you think quality of life can be improved in your community?” “How many times in the past year have you accessed the local healthcare system directly and why?” “How many times have you or someone in your household used the emergency department in the last 24 months?” “What specific healthcare services would be most helpful to you or someone in your family?”

Finally, proposed future directions for community health assessment and health improvement planning in the NRV include developing strategies and tools to monitor and document impact and outcomes, launching Web-based training, and building resources for planning and implementing evidence-based intervention. The potential of MAPP to serve as a framework for public health undergraduate and graduate curricula in the NRV—with MAPP as a specific health improvement process of focus—needs to be further explored. The community health planning cycle of MAPP, as a framework for community health curricula can certainly be used in the classroom and field setting to teach nursing, medical, and MPH students in the NRV and Roanoke Valley.

General and global recommendations.

Unanswered questions.

Twenty-three years have passed since the IOM (1988) published its report on *The Future of Public Health*, naming assessment as one of the three core public health functions. And emphasis on community health assessment (CHA)—the work of gathering, analyzing, and disseminating information on local health issues to inform public health planning--has grown in the U.S., driven largely by its recognition as a core public health function. Concomitantly, information technology at the federal, state, and local health department and governmental levels has improved, making assessment easier to conduct. Despite this growth and improvement, limited literature exists on the impacts of community health assessment (Friedman & Parrish, 2009; Martin, 2009). The lack of knowledge in this area suggests several questions that need to be further investigated:

- Do we lack scientists/researchers trained in public health program evaluation?
- Are health departments overly focused on the immediate success of their CHAs, with less focus on their health impacts?
- Are data to support evaluation of impacts of CHA difficult to obtain?

Furthermore, in the 23 years since publication of *The Future of Public Health*, what verifiable, objective evidence have been collected that informs health departments and other community organizations about what types of assessments are more effective, under what circumstances is assessment more effective, and how does assessment impact population health? Is assessment worthwhile in and of itself, or is it an activity that should be conducted only if evaluations reveal that it has verifiable, positive intermediate and long-term impacts on population health?

Friedman and Parrish (2009) note that the richness of CHA (and strategic planning) as it has evolved over the last 23 years masks five fundamental, unanswered questions that should be examined and addressed in the future.

1. *What is assessment?* One caution faced by LPHAs and their community partners in adopting community health assessment is that as it has become more frequently used, the varieties of what is called “community health (needs) assessment” increase, making it difficult to define community health assessment in a way that distinguishes it from other planning or management activities that purport to accomplish similar things. A variety of planning models may potentially be adapted as a community health assessment. And while the business and public sector management literature offers practical guidelines on using elements of assessment, the advice must be translated within the context of a public health environment. LPHAs and their community partners, like other organizations before them, must be prepared to actively adapt community health assessment to the unique characteristics of the public/community health setting (Ginter & Duncan, 1991; Lenihan, 2005). Evidence-based decisions about whether and how to conduct assessment cannot be made until a clear, workable, and focused consensus definition of assessment is developed.

2. *What is the impact of assessment on community health and processes intended to improve it?* What have we learned about the impacts of CHAs since 1988? What lessons can LHDs and communities take from the literature in deciding whether and how to conduct CHAs? What is the nature and scale of investments in CHAs that produce the greatest impacts on the community health improvement process, and hopefully, on community health? Given the complexity and

variety of definitions of assessment as they have evolved and been applied since 1988, it comes as no surprise that comprehensive evaluations of CHAs are difficult, if not impossible, to locate (Myers & Stoto, 2006, p. 40).

In a context other than CHA, the Center for Global Development (2006) has pointed to the existence of “an ‘evaluation gap’ [that] has emerged because governments, official donors, and other funders do not demand or produce enough impact evaluations and because [those] that are conducted are often methodologically flawed.” The American Public Health Association (APHA) also recognized this “evaluation gap” in its 2006 policy statement on the need to “Conduct research to build an evidence-base of effective community health assessment practice,” and the Council of State and Territorial Epidemiologists (CSTE) made similar point in its 2007 position statement on “Research to study and disseminate evidence of effective community health assessments” (p. 4).

However, given that the CHA is a tool within a larger health improvement process, it is probably not reasonable to expect the CHA to directly impact community health. Therefore, a more reasonable approach would be to evaluate the CHA on its own terms—both on the quality of the information that it produces and on its usefulness to a larger community process. In fact, Curtis (2002) argues that “assessment has value independent of action taken to correct community health problems” (p. 25). By identifying the health problems of a community, the CHA must remain at the core of public health practice. The question, then, according to Friedman and Parrish (2009), is not “should we conduct a CHA,” but “what products presented and communicated in what ways are most effective in identifying the health problems of a community?” (p. 5)

3. *How should a CHA be evaluated?* Should the process or products of a CHA—or both—be evaluated? How should the impact of a CHA's products on other community health improvement processes be evaluated (Friedman & Parrish, 2009; Snyder & Spice, 2009; Stoto, Straus, Bohn & Irani, 2009)? Snyder and Spice (2009) identified ten common factors associated with positive outcomes of CHAs including a focus on a specific subpopulation or health issue; broad involvement of community and public health agency stakeholders in planning and conducting the CHA; use of multiple data collection methods, sources of data, and strategies for dissemination and communicating the results; and the collection and use of primary local data. Therefore, these factors should probably be considered in constructing instruments for future evaluations of CHAs. However, they concluded that additional studies were needed to identify evidence-based evaluation practices in the field.

It is also important to note that there are inherent difficulties in evaluating the effects of CHA such as untangling its effects from other important community and political factors, documenting outcomes that are distant in time from and indirectly related to the assessment, and culture or political restrictions on collecting sensitive evaluation data. However, despite these barriers to documenting the relative contribution of a CHA, a set of rigorous evaluation methods needs to be developed and tested to document the benefits of a CHA in a competitive funding environment (Solet et al., 2009).

4. *What tools should be developed and shared to foster evaluation of the CHA?* Various tools have been shown to support evaluations of CHAs including LHD surveys (Peppard, Kindig, Dranger, Jovaag & Remington, 2008; Rohan, Booske & Remington, 2009), Google searches (Rohan et al., 2009), Web-based questionnaires for evaluating CHA reports (Stoto et al., 2009), and forms for ongoing tracking of CHA impacts (Friedman & Parrish, 2009; Snyder &

Spice, 2009; Washington State Department of Health, 2007). However, future research needs to further explore this question and also determine the conditions that make instruments for evaluating CHAs useful.

5. *Who should evaluate CHAs?* The role of communities as partners in evaluating CHAs needs further exploration. In a 2004 policy statement, the APHA pointed out that “this lack of involvement of community members in the conduct of research...has resulted in distrust of and reluctance to becoming involved in such research” (APHA, 2004). *Community-based research in public health* has been defined as “a collaborative approach to research that equally involves community members, organizational representatives, and researchers in all aspects of the research process” (Israel, Shulz, Parker & Becker, 1998). Requirements for and issues relating to community-based research have been explored in both clinical medicine and public health generally (Green & Mercer, 2001; IOM, 2003; Israel et al., 1998; Lasker & Weiss, 2003; Minkler, Blackwell, Thompson & Tamir, 2003) and should also be explored for evaluations of CHAs (Gebbie, Rosenstock & Hernandez, 2003).

In considering community-based research and participatory evaluation as models for evaluating CHAs, it is important to realize that assessment practice and expertise remain largely based in state and local health departments. Hence, it is neither surprising nor inappropriate that most assessment-related evaluation is also based in health departments. Neither community-based research nor participatory evaluation is self-defining, and both rubrics include a range of community participation, purposes, and methods (Burke, 1998; Cousins & Whitmore, 1998; Marti-Costa & Serrona-Garcia, 1983). Given the current and likely future, mixed responsibilities of the evaluators, different types of community-based participatory research, and participatory evaluation should be explored such as empowerment evaluation, practical

participatory evaluation, and transformative participatory evaluation (Burke, 1998; Fetterman, Kaftarian & Wandersman, 1996; Fetterman & Wandersman, 2005; Wandersman et al., 2005).

A proposed public health services and systems research agenda for evaluating CHAs .

There is a need to propose a public health services and systems research agenda for assessment. As mentioned earlier, both the APHA and the CSTE have called for research on effective CHA. Twenty years after the publication of *The Future of Public Health*, it is clearly time to establish and embark upon a formal public health services and systems research evaluation agenda for the CHA (Mays, Halverson & Scutchfield, 2004; Scutchfield, Marks, Perez & Mays, 2007; Scutchfield & Patrick, 2007). A preliminary agenda could include the elements noted above--a clear definition of CHA that identifies its components, logic models for CHA that include each component, testable hypotheses concerning successful assessments, multi-site and multi-state analyses, and validated and replicable instruments. Given the obvious centrality of communities in CHAs, its evaluation should include communities throughout the evaluation process.

Before the development of MAPP, there was little guidance that was directly informed by public health practice on what to include in a community health assessment and strategic planning process—especially one focused on a LPHS. Until public health gains a greater experience with community health assessment and strategic planning and that experience finds its way into the practice literature in a more comprehensive way, LPHAs and their community partners will have to rely on the experience of other public health agencies and communities as reported in their planning documents and the direct advice that is generated by collaborative learning efforts, which has been established by the National Association of County and City Health Officials in developing MAPP (Lenihan, 2005).

MAPP—an opportunity for the classroom and a framework for academic-public health practice linkages in the community.

As MAPP becomes more and more important for community public health practice, it will be necessary to thoroughly evaluate how best to teach and “learn” MAPP from a competency-based education and training intervention standpoint, including possible barriers and benefits. According to Turnock and Long (2005), current public health education and training programs that prepare public health students and workers to effectively contribute to the implementation of MAPP in their communities face significant obstacles and are poorly positioned to enhance MAPP-related competencies. It will be important in future research to establish the community as the classroom for learning MAPP and link that “community classroom” with professional education and ongoing, lifelong professional development strategies—ultimately, making MAPP successful in promoting healthy communities.

Other suggestions.

Additional recommendations for future practice include further research directed toward integrating performance improvement processes such as MAPP, NPHPS, voluntary national accreditation of LHDs, NACCHO’s *Operational Definition*.

Conclusion

Although it is clear that community health needs assessment and strategic planning has become a valuable tool for identifying and addressing community health problems, the actual process associated with implementing a community health assessment and strategic planning process is also important. Engaging broad involvement in the process results in far more than data collection and generates public support. To effectively address the many holistic issues and problems affecting a community’s health (including social, cultural, environmental, etc.),

community organizations and community residents must be mobilized. The success and benefits of NRV MAPP has resulted from encouraging collaboration and strategic planning among LPHS partners to maximize the efficiency and effectiveness of community organizations, agencies, and other partners, ultimately influencing how the NRV improves its own health status.

The MAPP phases—Organize for Success/Partnership Development, Visioning, the four MAPP Assessments, Identify Strategic Issues, Formulate Goals and Strategies, and the Action Cycle—have played a critical role in building capacity of the NRV LPHS, evaluating its effectiveness, and ensuring sustainable public health improvement efforts. The NRV MAPP process helped educate the entire NRV community about its present health status, issues/problems that residents felt were important, and the capacity and performance of the LPHS. Finally, the NRV MAPP effort has helped PATH leverage an already-proven track record into further sustainable initiatives and collaboratively promoted holistic health and systematic change in the NRV community. By bringing together both traditional and new partners, MAPP has allowed the NRV community to be organized in a way in which it can work, not just to address specific health problems (such as infant mortality and diabetes), but to change and create systems that can address and overcome some of the multiple, underlying issues and barriers like access to healthcare. For practitioners who are considering, or are using MAPP, the NRV MAPP experience offers a good example of implementation of this tool in a fairly rural environment. The lessons learned and findings from this study may also assist users looking for concrete illustrations of how to improve their implementation of MAPP and inform users as to some of the requirements of MAPP implementation.

References

- Abbott, N., & Olness, K. (2001). Pediatric and adolescent health. In S. Loue & B. E. Quill (Eds.), *Handbook of Rural Health* (pp. 157-172). New York, NY: Kluwer Academic/Plenum.
- Abraida-Lanza, A., Dohrenwend, B., Ng-Mak, D., & Turner J. (1999). The latino mortality paradox: A test of the “salmon bias” and health migrant hypotheses. *American Journal of Public Health, 89(10)*, 1543-1548.
- Albrecht, G. L., & Devlieger, P. J. (1999). The disability paradox: High quality of life against all odds. *Social Science & Medicine, 48*, 977-988.
- Alinsky, S. D. (1989). *Rules for radicals*. New York, NY: Vintage Books.
- Altschuld, J. W., & Witkin, B. R. (2000). *From needs assessment to action: Transforming needs into solution strategies*. Thousand Oaks, CA: Sage Publications, Inc.
- Agency for Healthcare Research and Quality. (2008). *Disparities in health care quality among racial and ethnic minority groups: Findings from the national healthcare quality and disparities reports, 2008*. Retrieved January 28, 2011 from .
<http://www.ahrq.gov/qual/nhqrd08/nhqrdminority08.pdf>
- Amodeo, A. R. (2003). Developing and retaining a public health workforce for the 21st century: Readiness for a paradigm shift to community-based public health. *Journal of Public Health Management and Practice, 9(6)*, 500-503.
- American Hospital Association. (2009). *IRS Form 990 and Schedule H*. Retrieved March 16, 2011 from www.aha.org/aha/issues/Tax-Exempt-Status/irs.html

- American Lung Association. (2010). *State of lung disease in diverse communities 2010*. Retrieved February 16, 2011 from <http://www.lungusa.org/finding-cures/our-research/solddc-index.html>
- American Public Health Association. (1995, 1996, 1998, 1999). *American Public Health Association Annual Meeting and Exposition, Final Program and Abstracts*. Washington, DC: APHA.
- American Public Health Association. (2004). *Policy no. 2004-12: Support for community-based research in public health*. Washington, DC: APHA. Retrieved March 20, 2011 from <http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1298>
- American Public Health Association. (2006). *Policy no. 20066: Conduct research to build an evidence-base of effective community health assessment practice*. Washington, DC: APHA. Retrieved March 20, 2011 from <http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1330>
- Anandarajah, G., & Hight, E. (2001). Spirituality and medical practice: Using the HOPE questions as a practical tool for spiritual assessment. *American Family Physician*, 63, 81-89.
- Anderson, E., & McFarland, J. (2000). *Community as partner: Theory and practice in nursing* (2nd ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.
- Andreasen, A. (1995). *Marketing Social Change: Changing Behavior to Promote Health, Social Development, and the Environment*. San Francisco, CA: Jossey-Bass.
- Annie E. Casey Foundation. (2010). *KIDS COUNT Data Center and Data Book*. Baltimore, MD: Annie E. Casey Foundation. Retrieved January 15, 2011 from <http://datacenter.kidscount.org>

- Anspaugh, D. J., Dignan, M. B., & Anspaugh, S. L. (2000). *Developing health promotion programs*. Boston, MA: McGraw-Hill.
- Arbarca, C., Grigg, M., Steele, J. A., Osgood, L., & Keating, H. (2009). Building and measuring infrastructure and capacity for community health assessment and health improvement planning in Florida. *Journal of Public Health Management and Practice, 15*(1), 54-58.
- Arcury, T. A., Gesler, W. M., Preisser, J. S., Sherman, J., Spencer, J., & Perin, J. (2005a). The effects of geography and spatial behavior on health care utilization among the residents of a rural region. *Health Services Research, 40*(1), 135-156.
- Arcury, T. A., Preisser, J. S., Gesler, W. M., & Powers, J. M. (2005b). Access to transportation and health care utilization in a rural region. *The Journal of Rural Health, 21*(1), 31-38.
- Armitage, K. B., & Sinclair, G. I. (2001). Infectious diseases. In S. Loue & B. E. Quill (Eds.), *Handbook of Rural Health* (pp. 173-187). New York, NY: Kluwer Academic/Plenum.
- Association of State and Territorial Health Officials, Health Resources and Services Administration, National Association of County and City Health Officials, and Public Health Foundation. (2000). *Community Health Status Indicators (CHSI) Reports & Report Data CD-ROM*. Washington, DC: Health Resources and Services Administration. Retrieved January 2, 2010 from <http://bookstore.phf.org/prod156.htm>.
- Augustana College, Department of Nursing. (2002). The health action model for partnership I community (HAMPIC). Sioux Falls, SD: Augustana College. Retrieved January 19, 2010 from <http://www.augie.edu/dept/nurs/hampic.htm>.
- Averill, J. (2003). Keys to the puzzle: Recognizing strengths in a rural community. *Public Health Nursing, 20*, 449-455.

- Ayanian, J. Z., Weissman, J. S., Schneider, E. C., Ginsburg, J. A., & Zaslavsky, A. M. (2000). Unmet health needs of uninsured adults in the United States. *Journal of the American Medical Association, 284*, 2061-2069.
- Ayanian, J. Z., Zaslavsky, A. M., Weissman, J. S., Schneider, E. C., & Ginsburg, J. A. (2003). Undiagnosed hypertension and hypercholesterolemia among uninsured and insured adults in the Third National Health and Nutrition Examination Survey. *American Journal of Public Health, 93*, 2051-2054.
- Azjen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioral, normative, and control beliefs: an application of the theory of planned behavior. *Leisure Science, 13*, 185-204.
- Baker, E. L., Melton, R. J., & Stange, P. V. (1994). Health reform and the health of the public: forging community health partnerships. *JAMA, 272*, 16.
- Bakes-Martin, R., Corso, L. C., Landrum, L. B., Fisher, S., & Halverson, P. K. (2005). Developing national performance standards for local public health systems. *Journal of Public Health Management and Practice, 11*(5), 418-421.
- Bamberger, M., Rugh, J., Church, M., & Fort, L. (2004). Shoestring evaluation: Designing impact evaluations under budget, time, and data constraints. *American Journal of Evaluation, 25*, 5-37.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Baranowski, T. (1985). Methodologic issues in self-report of health behavior. *Journal of School Health, 55*(5), 179-182.

- Baranowski, T., Domel, S., & Gould, R. (1993). Increasing fruit and vegetable consumption among 4th and 5th grade students: Results from focus groups using reciprocal determinism. *Journal of Nutritional Education*, 25(3), 114-120.
- Baranowski, T., Perry, C. L., & Parcel, G. S. (2002). How individuals, environments, and health behavior interact: Social cognitive theory. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 165-184). San Francisco, CA: Jossey-Bass.
- Barnett, K. (1996). *Evolution of health planning and lessons to guide future efforts*. Washington, DC: Alpha Center & Western Consortium for Public Health.
- Barnett, K. (2009). *Beyond the numerical tally: Quality and stewardship in community benefit*. Oakland, CA: Public Health Institute.
- Barry, M. M., Doherty, A., Hope, A., Sixsmith, J., & Kelleher, C. C. (2000). A community needs assessment for rural mental health promotion. *Health Education Research*, 15, 293-304.
- Bartholomew, L. K., Parcel, G. S., Kok, G., & Gottlieb, N. H. (2006). *Planning health promotion programs: An intervention mapping approach* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Bartol, K. M., & Martin, D. C. (1991). *Management*. New York, NY: McGraw-Hill, Inc.
- Bartunek, J. M., & Murnighan, J. K. (1984). The nominal group technique: Expanding the basic procedure and underlying assumptions. *Group and Organization Studies*, 9, 417-432.
- Bashshur, R. L., Reardon, T. G., & Shannon, G. W. (2000). Telemedicine: A new health care delivery system. *Annual Review of Public Health*, 21, 613-637.
- Bates, I. J., & Winder, A. E. (1984). *Introduction to health education*. Palo Alto, CA: Mayfield.
- Beauchamp, D. E. (1990). Community: The neglected tradition of public health. *Health Affairs*, 9(2), 6-21.

- Beaulieu, J., & Scutchfield, F. D. (2002). Assessment of validity of the national public health performance standards: the local public health performance assessment instrument. *Public Health Reports*, 117(1), 28–36.
- Beaulieu, J., Scutchfield, F. D., & Kelly, A. V. (2003a). Content and criterion validity evaluation of the national public health performance standards measurement instruments. *Public Health Reports*, 118, 508–517.
- Beaulieu, J., Scutchfield, F. D., & Kelly, A. V. (2003b). Recommendations from testing of the national public health performance standards instruments. *Journal of Public Health Management and Practice*, 9(3), 188-198.
- Beem, S. E., Machala, M., Holman, C., Wraalstad, R. & Bybee, A. (2004). Aiming at “de feet” and diabetes: A rural model to increase annual foot examinations. *American Journal of Public Health*, 94, 1664-1666.
- Beetstra, S., Derksen, D., Ro, M., Powell, W., Fry, D. E., & Kaufman, A. (2002). A “health commons” approach to oral health for low-income populations in a rural state. *American Journal of Public Health*, 92(1), 12-13.
- Bella, M. A. (2001). *Turning Point: Collaborating for a new century in public health. A report on the last Turning Point forum*. Washington, DC: National Association of County and City Health Officials.
- Benveniste, G. (1989). *Mastering the Politics of Planning*. San Francisco, CA: Jossey-Bass.
- Berkowitz, B. (2004). Rural public health service delivery: Promising new directions. *American Journal of Public Health*, 94, 1678-1681.
- Berndt, D. J., Hevner, A. R., & Studnicki, J. (2003). The Catch data warehouse: Support for community health decision-making. *Decision Support Systems*, 35, 367-384.

- Bernhardt, J. M. (2004). Communication at the core of public health. *American Journal of Public Health, 94*(12), 2051-2052.
- Bertera, R. L. (1993). Behavioral risk factor and illness day changes with workplace health promotion: Two-year results. *American Journal of Health Promotion, 7*(5), 365-373.
- Biber, H., & Nagy, S. (2010). *Mixed methods research: Merging theory with practice*. New York, NY: Guilford Press.
- Biel, M. (2002). Interorganizational collaboration among health and social services providers: A symposium. *Journal of Health and Human Services Administration, 25*(1/2), 133-136.
- Bjorklund, R. W., & Pippard, J. L. (1999). The mental health consumer movement: Implications for rural practice. *Community Mental Health Journal, 35*, 347-359.
- Blank, M. B., Fox, J. C., Hargrove, D. S., & Turner, J. T. (1995). Critical issues in reforming rural mental health service delivery. *Community Mental Health Journal, 31*, 511-524.
- Blum, H. L. (1974). *Planning for Health: Development and Application of Social Change Theory*. New York, NY: Human Sciences Press.
- Blum, H. L. (1981). *Planning for Health: Generics for the Eighties*. New York, NY: Human Sciences Press.
- Borders, T. F., Aday, L. A., & Xu, K. T. (2004). Factors associated with health-related quality of life among an older population in a largely rural western region. *The Journal of Rural Health, 20*(1), 67-75.
- Bosworth, T. (1996). *Community Health Needs Assessment*. Chicago, IL: Irwin.
- Brewer, J., & Hunter, A. (1989). *Multimethod research: A synthesis of styles*. Newbury Park, CA: Sage.

- Brownson, R. C., Housemann, R. A., Brown, D. R., Jackson-Thompson, J., King, A. C., Malone, B. R., et al. (2000). Promoting physical activity in rural communities: Walking trail access, use, and effects. *American Journal of Preventive Medicine, 18*, 235-241.
- Bryson, J. M. (1990). *Strategic Planning for Public and Nonprofit Organizations*. San Francisco, CA: Jossey-Bass.
- Bryson, J. M. (2004). *Strategic Planning for Public and Nonprofit Organizations* (3rd Ed.). San Francisco, CA: Jossey-Bass.
- Burke, B. (1998). Evaluating for a change: Reflections on participatory methodology. *New Directions for Evaluation, 80*, 43-56.
- Butterfoss, F. D., & Kegler, M. C. (2002). Toward a comprehensive understanding of community coalitions: Moving from practice to theory. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research: Strategies for improving public health* (pp. 157-193). San Francisco, CA: Jossey-Bass.
- Byrne, M. (2001a). Disseminating and presenting qualitative research findings. *AORN Journal, 74*(5), 731-732.
- Byrne, M. M. (2001b). Evaluating the findings of qualitative research. *AORN Journal, 73*(3), 703-706.
- Byrne, M. M. (2001c). Linking philosophy, methodology, and methods in qualitative research. *AORN Journal, 73*(1), 207-210.
- Byrne, M. M. (2001d). Sampling for qualitative research. *AORN Journal, 73*(2), 494, 497-498.
- Cacioppo, J. T., & Hawkey, L. C. (2003). Social isolation and health, with an emphasis on underlying mechanisms. *Perspectives in Biology and Medicine, 46*, S39-S52.

- Carretero, O. A., & Oparil, S. (2000). Essential hypertension. *Circulation, 101*(3), 329–35.
- Carter, T. M., Adams, M. H., Judd, A. H., Leeper, J. D., Wang, L., & Yu, J. (2003). Children's health insurance status, access to and utilization of health services, and unmet health needs in a rural Alabama school system. *Journal of Rural Health, 19*, 511-513.
- Casey, M. M., Klingner, J., & Moscovice, I. (2002). Pharmacy services in rural areas: Is the problem geographic access or financial access? *The Journal of Rural Health, 18*, 467-477.
- Catholic Health Association. (2009). *IRS Form 990 videos: Community assessment*. Retrieved March 18, 2011 from www.chausa.org/pages/our_work/community_benefit/irs_form_990/form_990_videos/
- Catholic Health Association. (2010). *What counts as community benefit*. Washington, DC: Catholic Health Association.
- Centers for Disease Control and Prevention. (1999). *Best practices for comprehensive tobacco control—August 1999*. Atlanta, GA: Office on Smoking and Health.
- Centers for Disease Control and Prevention. (1999a). Framework for program evaluation in public health. *MMWR, 48*(No. RR-11).
- Centers for Disease Control and Prevention. (2000). *Measuring healthy days*. Atlanta, GA: Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention. (2000a). *Healthy plan-it: A tool for planning and managing public health programs. Sustainable Management Development Program*. Atlanta, GA: Centers for Disease Control and Prevention.
- Centers for Disease Control and Prevention. (2001). *Public health's infrastructure: A status report*. Atlanta, GA: Public Health Practice Program Office.

Centers for Disease Control and Prevention. (2003). *CDCynergy 3.0: Your guide to effective health communication* (CD-ROM Version 3.0). Atlanta, GA: Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2004). *Continuation guidance for cooperative agreement on public health preparedness and response for bioterrorism*. Atlanta, GA:

Centers for Disease Control and Prevention. Retrieved January 18, 2010 from

<http://www.bt.cdc.gov/planning/continuationguidance/pdf/readiness-attacha.pdf>

Centers for Disease Control and Prevention. (2005). *Introduction to program evaluation for public health programs: A self-study guide*. Atlanta, GA: Centers for Disease Control and Prevention.

Centers for Disease Control and Prevention, National Center for Health Statistics. (2010).

FASTSTATS--Leading Causes of Death. Retrieved December 24, 2010 from

<http://www.cdc.gov/nchs/fastats/lcod.htm>

Center for Global Development. (2006). *When will we ever learn: Improving lives through impact evaluation*. Report of the Evaluation Gap Working Group. Washington, DC:

Center for Global Development. Retrieved March 19, 2011 from

<http://www.cgdev.org/content/publications/detail/7973>

Chatters, L. M. (2000). Religion and health: Public health research and practice. *Annual Review of Public Health, 21*, 335-367.

Chatters, L. M., Levin, J. S., & Ellison, C. G. (1998). Public health and health education in faith communities. *Health Education & Behavior, 25*, 689-699.

- Chui-Lin, T., Griswold, S. K., Clark, S., & Carmago, C. A. (2007). Factors associated with frequency of emergency department visits for chronic obstructive pulmonary disease exacerbation. *Journal of General Internal Medicine*, 22(6), 799-804.
- Cohn, S. E., Berk, M. L., Berry, S. H., Duan, N., Frankel, M. R., Kelin, J. D., McKinney, M. M., Rastegar, A., Smith, S., Shapiro, M. F., & Bozzette, S. A. (2001). The care of HIV-infected adults in rural areas of the United States. *Journal of Acquired Immune Deficiency Syndromes*, 28, 385-392.
- Collins, K., & O’Cathain, A. (2009). Ten points about mixed methods research to be considered by the novice researcher. *Journal of Multiple Research Approaches*, 3, 2-7.
- Collins, K., Onwuegbuzie, A., & Sutton, I. (2006). A model incorporating the rationale and purpose for conducting mixed methods research in special education and beyond. *Learning Disabilities: A Contemporary Journal*, 4, 67-100.
- Committee on the Future of Rural Health Care [CFRHC] (2005). *Quality through collaboration: The future of rural health*. Institute of Medicine of the National Academies & Board on Health Care Services. Washington, DC: The National Academies.
- Congdon, P. (2001). Health status and healthy life measures for population health needs assessment: Modeling variability and uncertainty. *Health & Place*, 7, 13-25.
- Congress of the United States, Congressional Budget Office. (2006). *Nonprofit hospitals and the provision of community benefits*. Washington, DC: CBO. Retrieved March 18, 2011 from www.cbo.gov/ftpdocs/76xx/doc7695/12-06-nonprofit.pdf
- Corso, L. C., Wiesner, P. J., Halverson, P. K., & Brown, C. K. (2000). Using the essential services as a foundation for performance measurement and assessment of local public health systems. *Journal of Public Health Management and Practice*, 6(5), 1-17.

- Corso, L. C., Wiesner, P. J., & Lenihan, P. (2005). Developing the MAPP community health improvement tool. *Journal of Public Health Management and Practice*, 11(5), 387–392.
- Council of State and Territorial Epidemiologists. *Position statement 07-EC-01: Research to study and disseminate evidence of effective community health assessments*. Atlanta, GA: CSTE. Retrieved March 20, 2011 from <http://www.cste.org/PS/2007ps/2007psfinal/EC/07-EC-01.pdf>
- Council on Virginia's Future. (2009). *Virginia: Demographic profile 2009*. Richmond, VA: Council on Virginia's Future.
- Council on Virginia's Future (2010). *Virginia Performs: Health and Family*. Retrieved December 12, 2010 from <http://vaperforms.virginia.gov/indicators/healthyfamily/infantMortality.php>
- Cousins, J. B., & Whitmore, E. (1998). Framing participatory evaluation. *New Directions for Evaluation*, 80, 5-23.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed approaches*. Thousand Oaks, CA: Sage.
- Creswell, J., & Plano, C. V. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Crosby, R. A., Kegler, M. C., & DiClemente, R. J.. (2002). Understanding and applying theory in health promotion practice and research. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research: Strategies for improving public health* (pp. 1-15). San Francisco, CA: Jossey-Bass.
- Cummins, R. A. (2001). Living with support in the community: Predictors of satisfaction with life. *Mental Retardation and Developmental Disabilities Research Reviews*, 7, 99-104.

- Davis, K. (2004). Transformational change: A ten-point strategy to achieve better health care for all. *The Commonwealth Fund: President's Message, 2004 Annual Report* (Publication No. 803). New York, NY: The Commonwealth Fund.
- Davis, R., & Magilvy, J. K. (2000). Quiet pride: The experience of chronic illness by rural older adults. *Journal of Nursing Scholarship, 32*, 385-390.
- Delbecq, A. L., & VandeVen, A. H. (1971). A group process model for problem identification and program planning. *Journal of Applied Behavioral Science, VII*, 466-491.
- Delbecq, A. L., VandeVen, A. H., & Gustafson, D. H. (1975). *Group Techniques for Program Planners*. Glenview, IL: Scott Foresman and Company.
- Dennis, L. K., & Pallotta, S. L. (2001). Chronic disease in rural health. In S. Loue & B. E. Quill (Eds.), *Handbook of Rural Health* (pp. 189-207). New York, NY: Kluwer Academic/Plenum.
- Dennis, R. E., Williams, W., Giangreco, M. F., & Cloninger, C. J. (1993). Quality of life as context for planning and evaluation of services for people with disabilities. *Exceptional Children, 59*, 499-512.
- Department of State Police. (2009). *Crime in Virginia*. Richmond, VA: Virginia State Police.
- Dievler, A. (1997). Fighting tuberculosis in the 1990s: How effective is planning in policy making? *Journal of Public Health Policy, 18*(2), 67-187.
- Dignan, M.B., & Carr, P. A. (1992). *Program Planning for Health Education and Promotion* (2nd ed.). Philadelphia, PA: Lea & Febiger.
- Donatelle, R. J. (2008). Promoting healthy behavior change. In R. J. Donatelle (Ed.), *Access to Health* (pp. 3-37). New York, NY: Pearson/Benjamin Cummings.

- Donovan, R. J. (1995). Steps in planning and developing health communication campaigns: A Comment on CDC's framework for health communication. *Public Health Reports*, 110(2), 215-218.
- Dorfman, L., Wallack, L., & Themba, M. (1993). *Media Advocacy and Public Health: Power for Prevention*. Newbury Park, CA: Sage Publications.
- Druss, B. G., & Rosenheck, R. A. (1998). Mental disorders and access to medical care in the United States. *American Journal of Psychiatry*, 155, 1775-1777.
- Duncan, W. J, Ginter, P. M., Reeves, T., Samuelson, C., & Fleenor, M. (1998). Preparing for the future in a local public health organization. *Journal of Public Health Management and Practice*, 4(5), 13-25.
- Dwyer, S., Glenn, R., Hershey, J., March, T., Rutledge, M., Webster B., et al. (1999). *Turning Point: Community public health system improvement plan. The New Century Turning Point partnership*. Unpublished manuscript.
- Dyal, W. W. (1995). Ten organizational practices of public health: a historical perspective. *American Journal of Preventive Medicine*, 11(6), 6-8.
- Eberhardt, M. S. & Pamuk, E. R. (2004). The importance of place of residence: Examining health in rural and nonrural areas. *American Journal of Public Health*, 94, 1682-1686.
- Economos, C. D., Brownson, M. A., & Deangelis, M. A. (2001). What lessons have been learned from other attempts to guide social change? *Nutrition Review*, 59(3), 40-56.
- Economic Research Service. (2003). *Measuring rurality*. Washington, DC: United States Department of Agriculture. Retrieved October 4, 2010 from <http://www.ers.usda.gov/Briefing/Rurality/WhatisRural/>

- Elder, J. P., Ayala, G. X., Zabinski, M. F., Prochaska, J. J., & Gehrman, C. A. (2001). Theories, models, and methods of health promotion in rural settings. In S. Loue & B. E. Quill (Eds.), *Handbook of rural health* (pp. 295-314). New York, NY: Kluwer Academic/Plenum.
- Eng, T. R. (2001). *The eHealth Landscape: A Terrain Map of Emerging Information and Communication Technologies in Health and Health Care*. Princeton, NJ: The Robert Wood Johnson Foundation.
- Erlich, J. L., Rothman, J., & Teresa, J. G. (1999). *Taking Action in Organizations and Communities* (2nd ed.). Dubuque, IA: Eddie Bowers.
- Erwin, P. C., Hamilton, C. B., & Welch, S. (2005). Students in the community: MAPP as a framework for academic-public health practice linkages. *Journal of Public Health Management and Practice*, 11(5), 437-441.
- Evans, C. E. Jr., & Margolis, L. A. (1992). Public health week: marketing the concept of public health. *Public Health Reports*, 107(1), 110– 112.
- Eysenbach, G. (2001). What is e-health?. *Journal of Medical Internet Research*, 3(2), e20.
- Fawcett, S. B. (1995). Using empowerment theory in collaborative partnerships for community health and development. *American Journal of Community Psychology*, 23(5), 677-698.
- Fawcett, S. B., Francisco, V. T., Schultz, J. A., Berkowitz, B., Wolff, T. J., & Nagy, G. (2000). The community tool box: A web-based resource for building healthier communities. *Public Health Reports*, 115(2-3), 274–278.
- Fetterman, D. M., Kaftarian, S. J., & Wandersman, A. (Eds.). (1996). *Empowerment evaluation: Knowledge and tools for self-assessment and accountability*. Thousand Oaks, CA: Sage Publications.

- Fetterman, D. M., & Wandersman, A. (Eds.). (2005). *Empowerment evaluation principles in practice*. New York, NY: Guilford Press.
- Finnegan, C. J., Brookes, S. M., Johnson, N., Smith, J., Mansfield, K. L., Keene, V. L., et al. (2002). Rabies in North America and Europe. *Journal of the Royal Society of Medicine*, 95, 9-13.
- Finnegan, J. R., & Viswanath, K. (2002). Communication theory and health behavior change: The media studies framework. In K. Glanz, B. K. Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 361-388). San Francisco, CA: Jossey-Bass.
- Fisher, R. (1997). Social action community organization: Proliferation, persistence, roots, and prospects. In Minkler, M. (Ed.), *Community organizing and community building for health*. Rutgers, N.J.: Rutgers University Press, 1997.
- Freimuth, V., & Quinn, S. C. (2004). The contributions of health communication to eliminating health disparities. *American Journal of Public Health*, 94(12), 2053–2054.
- Freudenberg, N., Eng, E., Flay, B., Parcel, G., Rogers, T., & Wallenstein, N. (1995). Strengthening individual and community capacity to prevent disease and promote health: In search of relevant theories and principles. *Health Education Quarterly*, 22(3), 290-306.
- Frey, J. H., & Oishi, S. M. (1995). *How to conduct interviews by telephone and in person*. Thousand Oaks, CA: Sage.
- Friedman, D. J., & Parrish, R. G. (2009). Is community health assessment worthwhile? *Journal of Public Health Management and Practice*, 1, 3-9.

- Fry, G., Chantavanicht, S., & Chantavanicht, A. (1981). Merging quantitative and qualitative research techniques: Toward a new research paradigm. *The Council on Anthropology Education, 12*, 145-158.
- Garza, M. A., Abatemarco, D. J., Gizzi, C., Abegglen, L. M., & Johnson-Conley, C. (2009). Transforming the cross cultural collaborative of Pierce County through assessment capacity building. *Journal of Public Health Management and Practice, 15*(1), 70-74.
- Gebbie, K. M., Rosenstock, L., & Hernandez, L. (2003). *Who will keep the public healthy? Educating public health professionals for the 21st century*. Washington, DC: National Academy of Sciences. Retrieved March 1, 2011 from <http://www.nap.edu/catalog.php?record.id=10542#toc>
- German, R. R., Janes, G. R., & Romaguera, R. A. Lessons learned from the first funding period of the CDC assessment initiative. *Journal of Public Health Management and Practice, 7*(5), 50–57.
- Gielen, A. C., Bernstein-Cohen, L., & Radius, S. (1985). *Case study of program evaluation activities for child passenger safety programs in local health department settings*. Paper presented at the 113th Annual Meeting of the American Public Health Association, Washington, DC.
- Gielen, A. C., & McDonald, E. M. (2002). Using the precede-proceed planning model to apply health behavior theories. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 409-436). San Francisco, CA: Jossey-Bass.
- Gilmore, G. D., & Campbell, M. D. (2005). *Needs and capacity assessment strategies for health education and health promotion* (3rd ed.). Sudbury, MA: Jones & Bartlett Publishers.

- Ginter, P. M., Duncan, W. J., & Capper, S. A. (1991). Strategic planning for public health using macro-environmental analysis. *Public Health Reports*, 106(2), 134–141.
- Ginter, P. M., Duncan, W. J., & Capper, S. A. (1992). Keeping strategic thinking in strategic planning: macro-environmental analysis in a state department of public health. *Public Health Reports*, 106, 253–269.
- Ginter, P. M., Swayne, L., & Duncan, W. J. (1998). *Strategic Management of Health Care Organizations*. Malden, MA: Blackwell.
- Glanz, K. (2002). Perspectives on group, organization, and community interventions. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 389-403). San Francisco, CA: Jossey-Bass.
- Glanz, K., Rimer, B. K., & Lewis, F. M. (2002a). The scope of health behavior and health education. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 3-21). San Francisco, CA: Jossey-Bass.
- Glanz, K., Rimer, B. K., & Lewis, F. M. (2002b). Theory, research, and practice in health behavior and health education. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 22-39). San Francisco, CA: Jossey-Bass.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago, IL: Aldine.
- Glass, A. (2000). *PATH New River Valley community health needs assessment: Summary of key findings*. Unpublished manuscript.

- Glasser, M., Holt, N., Hall, K., Mueller, B., Norem, J., Pickering, J., et al. (2003). Meeting the needs of rural populations through interdisciplinary partnerships. *Family & Community Health, 26*, 230-245.
- Gold, R., Green, L. W., & Kreuter, M. W. (1997). *EMPOWER: Enabling Methods of Planning and Organizing with Everyone's Research*. Sudbury, MA: Jones & Bartlett.
- Goodman, R. M., Wandersman, A., Chinman, M., Imm, P., & Morrissey, E. (1996). An ecological assessment of community-based interventions for prevention and health promotion: Approaches to measuring community coalitions. *American Journal of Community Psychology, 24*, 33-61.
- Green, L. W. (1974). Toward cost-benefit evaluations of health education: Some concepts, methods, and examples. *Health Education Monographs, 2*(Suppl. 1), 34-64.
- Green, L. W. (1976). Methods available to evaluate the health education components of preventive health programs. In *Preventive Medicine, USA* (pp. 162-171). New York, NY: Prodist.
- Green, L. W. (1979). National policy on the promotion of health. *International Journal of Health Education, 22*, 161-168.
- Green, L. W. (1980). Healthy People: The Surgeon General's report and the prospects. In W. J. McNervey (Ed.), *Working for a healthier America* (pp. 95-110). Cambridge, MA: Ballinger.
- Green, L. W. (1982). Reconciling policy in health education and primary care. *International Journal of Health Education, 24* (Suppl. 3), 1-11.

- Green, L. W. (1984). Health education models. In J. D. Matarazzo, S. M. Weiss, & J. A. Herd (Eds.), *Behavioral health: A handbook of health enhancement and disease prevention* (pp. 181-198). New York, NY: Wiley.
- Green, L. W. (1986). Evaluation model: A framework for the design of rigorous evaluation of efforts in health promotion. *American Journal of Health Promotion*, 1(1), 77-79.
- Green, L. W. (1992). Prevention and health education. In J. M. Last, & R. B. Wallace (Eds.), *Maxcy-Rosnau-Last: Public Health and Preventive Medicine* (13th ed.) (p. 886). Norwalk, CT: Appleton & Lange.
- Green, L. W., & Kreuter, M. W. (1992). CDC's planned approach to community health as an application of PRECEDE and an inspiration for PROCEED. *Journal of Health Education*, 23(3), 140-147.
- Green, L. W., & Kreuter, M. W. (2005). *Health program planning: An educational and ecological approach* (4th ed.). Boston, MA: McGraw-Hill.
- Green, L. W., & Mercer, S. L. (2001). Can public health researchers and agencies reconcile the push from funding bodies and the pull from communities? *American Journal of Public Health*, 91(12), 1926-1929.
- Green, L. W., Kreuter, M. W., Deeds, S. G., & Partridge, K. B. (1980). *Health education planning: A diagnostic approach*. Palo Alto, CA: Mayfield.
- Green, L. W., Levine, D. M., & Deeds, S. G. (1975). Clinical trials of health education for hypertensive outpatients: Design and baseline data. *Preventive Medicine*, 4, 417-425.
- Green, L. W., Richard, L., & Potvin, L. (1996). Ecological foundations of health promotion. *American Journal of Health Promotion*, 10, 270-281.

- Green, L. W., Wang, V. L., Deeds, S. G., Fisher, A. A., Windsor, R., & Rogers, C. (1978). Guidelines for health education in maternal and child health programs. *International Journal of Health Education*, 21(suppl.), 1-33.
- Greene, J. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11, 255-274.
- Gustafson, D. H., Shukla, R. K., Delbecq, A. L., & Walster, G. W. (1973). A comparative study of differences in subjective likelihood estimates made by individuals, interaction group, Delphi groups, and nominal groups. *Organizational Behavior and Performance*, 9(2), 280-291.
- Haber, D. (2007). *Health promotion and aging: Practical applications for health professions* (4th ed.). New York, NY: Springer.
- Halverson, P. K., Mays, G. P., Kaluzny, A.D., & Richards, T. B. (1997). Not-so-strange bedfellows: models of interaction between managed care plans and public health agencies. *Milbank Quarterly*, 75(1), 113–138.
- Halverson, P. K., Miller, C. A., Kaluzny, A. D., Fried, B. J., Richards, T. B., & Schenck, S. E. (1996). Performing public health functions: the perceived contribution of public health and other community agencies. *Journal of Health and Human Services Administration*, 18(3), 288–303.
- Handler, A. S., & Turnock, B. J. (1996). Local health department effectiveness in addressing the core functions of public health: essential ingredients. *Journal of Public Health Policy*, 17(4), 460–483.

- Handler, A. S., Turnock, B. J., Hall, W., Potsic, S., & Munson J. (1995). A strategy for measuring local public health practice. *American Journal of Preventive Medicine*, 11(6 suppl.), 29–35.
- Hanlon, J.G., & Pickett, G. (1984). *Public Health Administration and Practice* (8th ed.). St. Louis, IL: Times Mirror/Mosby.
- Hartley, D., Britain, C., & Sulzbacher, S. (2002). Behavioral health: Setting the rural health research agenda. *The Journal of Rural Health*, 18(Suppl.), 242-255.
- Hatzell, T. A., Williams, E. S., Halverson, P. K., & Kaluzny, A. O. (1996). Improvement strategy for local health departments. *Quality Management in Health Care*, 4(3), 79–86.
- Hayden, W. (2004). Appalachian diversity: African-American, Hispanic/Latino, and other populations. *Journal of Appalachian Studies*, 10(3), 293-306.
- Hershey, J. H., Gunther, A. P., Burrus, B. B., Dunford, C. S., Wolford, R. B., Marcussen, V. B., et al. (1998, 2007). *Community health report card: New River Health District*. Christiansburg, VA: New River Health District. Available at <http://www.vdh.state.va.us/LHD/newriver/reportcard/>
- Hershey, J. H., Showalter L., & Bailey, S. B., (2005). *Public health perspective on vaccine-preventable hepatitis: integrating hepatitis A and B vaccines into public health settings*. *American Journal of Medicine*, 118(Suppl 10A), 100S-108S.
- Hovell, M. F., Wahlgren, D. R., & Gehrman, C. A. (2002). The behavioral ecological model: Integrating public health and behavioral science. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research: Strategies for improving public health* (pp. 347-385). San Francisco, CA: Jossey-Bass.

- Huttlinger, K., Schaller-Ayers, J., & Lawson, T. (2004). Health care in Appalachia: A population-based approach. *Public Health Nursing, 21*, 103-110.
- Hyman, H. (1982). *Health planning: A systematic approach*. Rockville, MD: Aspen.
- Illinois Department of Public Health. (2004). *Illinois Public Act 93–0975*. Retrieved February 18, 2010 from <http://www.legis.state.il.us/legislation/93/HB/PDF/09300HB46121v.pdf>
- Institute of Medicine. (1988). *The future of public health*. Washington, DC: National Academies Press.
- Institute of Medicine. (1997). *Improving health in the community: A role for performance monitoring*. Washington, DC: National Academies Press. Retrieved February 16, 2010 from http://www.nap.edu/catalog.php?record_id=5298
- Institute of Medicine. (1999). *The unequal burden of cancer: An assessment of NIH research and programs for ethnic minorities and the medically underserved*. Washington, DC: National Academies Press.
- Institute of Medicine. (2002a). *Speaking of health: Assessing health communications strategies for diverse populations*. Washington, DC: National Academies Press.
- Institute of Medicine. (2002b). *The future of the public's health in the 21st century*. Washington, DC: National Academies Press.
- Institute of Medicine. (2003a). *Exploring challenges, progress and new models for engaging the public in the clinical research enterprise: Clinical research roundtable workshop summary*. Washington, DC: National Academies Press.
- Institute of Medicine. (2003b). *The future of the public's health in the 21st century*. Washington, DC: National Academy Press.

- Institute of Medicine. (2003c). *Who will keep the public healthy? Educating public health professionals for the 21st century*. Washington, DC: National Academy Press.
- Isserman, A. M. (2005). In the national interest: Defining rural and urban correctly in public policy. *International Regional Science Review*, 28(4), 465-499.
- Israel, B. A., Checkoway, B., Shulz, A., & Zimmerman, M. (1994). Health education and community empowerment: Conceptualizing and measuring perceptions of individual, organizational and community control. *Health Education Quarterly*, 21, 149-170.
- Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review of community-based research: assessing partnership approaches to improve public health. *Annual Review of Public Health*, 19, 173–202.
- Jacobs, L. M., & Elligers, J. J. (2009). The MAPP approach: Using community health status assessment for performance improvement. *Journal of Public Health Management and Practice*, 15(1), 79-81.
- Jensen, G. M., & Royeen, C. B. (2002). Improved rural access to care: Dimensions of best practice. *Journal of Interprofessional Care*, 16, 117-128.
- Johnson, R. B., & Christensen, L. B. (2004). *Educational research: Quantitative, qualitative, and mixed approaches*. Boston, MA: Allyn and Bacon.
- Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Johnson, G., Scholes, K., & Sexty, R. W. (1989). *Exploring strategic management*. Scarborough, Ontario: Prentice-Hall.

- Johnson, R. B., & Turner, L. A. (2003). Data collection strategies in mixed methods research. In A. Tashakkori, & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 297-319). Thousand Oaks, CA: Sage.
- Julia, M. C. (1996). *Multicultural awareness in the health care professions*. Needham Heights, MA: Allyn & Bacon.
- Kane, C. F., & Ennis, J. M. (1996). Health care reform and rural mental health: Severe mental illness. *Community Mental Health Journal*, 32, 445-462.
- Keefe, S. E. (Ed.). (2005). *Appalachian cultural competency: A guide for medical, mental health, and social service professionals*. Knoxville, TN: University of Tennessee Press.
- Keener, S. R., Baker, J. W., & Mays, G. P. (1997). Providing public health services through an integrated delivery system. *Quality Management in Health Care*, 5(2), 27-34.
- Kegler, M. C., Crosby, R. A., & DiClemente, R. J. (2002). Reflections on emerging theories in health promotion practice. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research: Strategies for improving public health* (pp. 386-395). San Francisco, CA: Jossey-Bass.
- Kemp, A. J. (2008). *Quality of life and the health care system in New River Valley, Virginia: Residents' Perceptions and Experiences*. Retrieved January 5, 2010 from <http://scholar.lib.vt.edu/theses/available/etd-04032008-141550/>.
- Kent, R. M., Chandler, B. J., & Barnes, M. P. (2000). An epidemiological survey of the health needs of disabled people in a rural community. *Clinical Rehabilitation*, 14, 481-490.
- Keppel, K. G., & Freedman, M. A. (1995). "What is assessment?" *Journal of Public Health Management and Practice*, 1, 1-7.

- Keystone, J. S., & Hershey, J. H. (2008). The underestimated risk of hepatitis A and B: Benefits of an accelerated vaccination schedule. *International Journal of Infectious Diseases*, *12*(1), 3-11.
- Kline, M. V., & Huff, R. M. (1999). Tips for the practitioner. In R. M. Huff & M. V. Kline (Eds.), *Promoting health in multicultural populations* (pp. 103-111). Thousand Oaks, CA: Sage.
- Koenig, H. G. (2001). Religion, spirituality, and medicine: How are they related and what does it mean? *Mayo Clinic Proceedings*, *76*, 1189-1191.
- Koplin, A. N. (1993). A national program to restructure local public health agencies in the United States. *Journal of Public Health Policy*, *14*(4), 393–402.
- Krauss, H., Weber, A., Appel, M., Enders, B., Isenberg, H. D., Schiefer, H. G., et al. (2003). *Zoonoses: Infectious diseases transmissible from animals to humans*. Washington, DC: ASM Press.
- Kreps, G. L. (2002). Evaluating new health information technologies: Expanding the frontiers of health care delivery and health promotion. *Student Health Technology Information*, *80*, 205–12.
- Kretzmann, J. P., & McKnight, J. L. (1993). *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing A Community's Assets*. Chicago, Ill: ACTA Publications.
- Kreuter, M. W. (1992). PATCH: its origin, basic concepts, and links to contemporary public health policy. *Journal of Health Education*, *23*, 135–139.

- Kreuter, M. W., & Lezin, N. (2002). Social capital theory: Implications for community-based health promotion. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research: Strategies for improving public health* (pp. 228-254). San Francisco, CA: Jossey-Bass.
- Kruger, D. J., Shirey, L., Morrel-Samuels, S., Skorcz, S., & Brady, J. (2009). Using a community-based health survey as a tool for informing local health policy. *Journal of Public Health Management and Practice, 15*(1), 47-53.
- Kumpfer, K. L., & Turner, C. W. (1990). The social ecology model of adolescent substance abuse: Implications for prevention. *The International Journal of Addiction, 25*, 435-463.
- Lasker, R. D., & Weiss, E. S. (2003). Broadening participation in community problem-solving: A multidisciplinary model to support collaborative practice and research. *Journal of Urban Health, 80*(1), 14-60.
- Laverack, G., & Labonte, R. (2000). A planning framework for community empowerment goals within health promotion. *Health Policy and Planning, 15*, 255-262.
- Lavery, S. H., Smith, M. L., Esparza, A. A., Hrushow, A., Moore, M., & Reed, D. F. (2005). The community action model: A community-driven model designed to address disparities in health. *American Journal of Public Health, 95*(4), 611-616.
- Lee, P., Giuse, N. B., & Sathe, N. A. (2003). Benchmarking information needs and use in the Tennessee public health community.
- Leight, S. B. (2003). The application of a vulnerable populations conceptual model to rural health. *Public Health Nursing, 20*, 440-448.
- Lenihan, P. (2005). MAPP and the evolutions of planning in public health practice. *Journal of Public Health Management and Practice, 11*(5), 381-386.

- Leslie Harris & Associates. (2002). *Bringing a nation on-line: The importance of federal leadership*. The Leadership Conference on Civil rights Education Fund and the Benton Foundation. Retrieved March 25, 2010 from http://www.civilrights.org/publications/reports/nation_online/bringing_a_nation.pdf.
- Letvak, S. (2002). The importance of social support for rural mental health. *Issues in Mental Health Nursing*, 23, 249-261.
- Levin, B. L., & Hanson, A. (2001). Rural mental health services. In S. Loue & B. E. Quill (Eds.), *Handbook of Rural Health* (pp. 241-256). New York, NY: Kluwer Academic/Plenum.
- Leviss, P. S., & Hurtig, L. (1998). The role of local health units in a managed care environment: A case study of New York City. *Journal of Public Health Management & Practice*, 4(1), 12–20.
- Lieberman, D.A. (1997). Interactive video games for health promotion: Effects on knowledge, self-efficacy, social support, and health. R.L. Street, W.R. Gold, & T. Manning (Eds.), *Health promotion and interactive technology: Theoretical applications and future directions*. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 103–120.
- Lieberman, D. A. (2001). Management of chronic pediatric diseases with interactive health games: Theory and research findings. *Journal of Ambulatory Care Management*, 24(1), 26–38.
- Lynn, J., Straube, B. M., Bell, K. M., Jencks, S. F., Kambic, R. T. (2007). Using population segmentation to provide better health care for all: The “bridges to health” model. *The Milbank Quarterly*, 85, 185-208.

- Maibach, E. W., Rothschild, M. L., & Novelli, W. D. (2002). Using the PRECEDE-PROCEED planning model to apply health behavior theories. In K. Glanz, B. K. Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 409-436). San Francisco, CA: Jossey-Bass.
- Marine, R. (1997). Development of a community health service: a unique collaborative alliance. *Journal of Public Health Management & Practice*, 3(4), 34–38.
- Marti-Costa, S., & Serrona-Garcia, I. (1983). Needs assessment and community development: An ideological perspective. *Prevention in Human Services*, 2(4), 75-88.
- Martin, R. (2009). Examining the impact of public health assessments. *Journal of Public Health Management and Practice*, 15(1), 1-2.
- Masters, E. J., Olson, G. S., Weiner, S. J., & Paddock, C. D. (2003). Rocky Mountain Spotted Fever: A clinician's dilemma. *Archives of Internal Medicine*, 163, 769-774.
- May, K. M., Mendelson, C., & Ferketich, S. (1995). Community empowerment in rural health care. *Public Health Nursing*, 12(1), 25-30.
- Mayo Foundation for Medical Education and Research. (2008). *Secondary hypertension*. Rochester, MI: Mayo Foundation.
- Mays, G., Halverson, P., & Kaluzny, A. (1998). Collaboration to improve community health: trends and alternative models. *Journal of Quality Improvement*, 24(10), 518–539.
- Mays, G. P., Halverson, P., & Miller, C.A. (1998). Assessing the performance of local public health systems: a survey of state health agency efforts. *Journal of Public Health Management and Practice*, 4(4), 63–78.

- Mays, G. P., Halverson, P. K., & Scutchfield, F. D. (2004). Making public health improvement real: The vital role of systems research. *Journal of Public Health Management and Practice, 10*, 183-185.
- McElroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An Ecological Perspective on health promotion programs. *Health Education Quarterly, 15*, 351-377.
- McDowell, I., Spasoff, R. A., & Kristjansson, B. (2004). On the classification of population health measurements. *American Journal of Public Health, 94*, 388-393.
- McKenzie, J. F., Neiger, B. L., & Thackeray, R. (2009). *Planning, implementing, & evaluating health promotion programs* (5th ed.). San Francisco, CA: Pearson Education, Inc.
- McManus, M. A., Newacheck, P. W., & Weader, R. A. (1990). Metropolitan and nonmetropolitan adolescents: Differences in demographic and health characteristics. *Journal of Rural Health, 6*, 39-51.
- McMillen, J. H. (2008). *Educational research: Fundamentals for the consumer* (5th ed.). New York, NY: Pearson Education, Inc.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. (2nd ed.) San Francisco, CA: Jossey-Bass.
- Mertz, E., & O'Neil, E. (2002). The growing challenge of providing oral health care services to all Americans. *Health Affairs, 21*, 65-77.
- Miller, C. A., Moore, K. S., & Richards, T. B. (1993). The impact of critical events of the 1980s on core functions for a selected group of local health departments. *Public Health Reports, 108*, 695-700.

- Miller, C. A., Moore, K. S., Richards, T. B., Kotelchuck, M., Marolis, L., & Kaluzny, A. D. (1993). Longitudinal observations on a selected group of local health departments: a preliminary report. *Journal of Public Health Policy*, 14(1), 34–50.
- Miller, C. A., Moore, K. S., Richards, T. B., & McKaig, C. A. (1994). A screening survey to assess local public health performance. *Public Health Reports*, 109(5), 659–664.
- Miller, C. A., Moore, K. S., Richards, T. B., & Monk, J. D. (1994). A proposed method for assessing the performance of local public health functions and practices. *American Journal of Public Health*, 84(11), 1743–1749.
- Miller, C. A., Richards, T. B., Christenson, G. M., & Kock, G. C. (1995). Creating and validating practical measures for assessing public health practices in local communities. *American Journal of Preventive Medicine*, 11(6 suppl.), 24–28.
- Miller, C. A., Richards, T. B., Davis, S. M., McKaig, C. A., Koch, G. G., Sharp, T. J., et al. (1995). Validation of a screening survey to assess local public health performance. *Journal of Public Health Management and Practice*, 1(1), 63–71.
- Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health: An emerging research field. *American Psychologist*, 58(1), 24-35.
- Minkler, M., Blackwell, A. G., Thompson, M., & Tamir, H. (2003). Community-based participatory research: Implications for public health funding. *American Journal of Public Health*, 93(12), 1210-1213.
- Minkler, M., & Wallerstein, N. B. (2002). Improving health through community organization and community building. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 279-311). San Francisco, CA: Jossey-Bass.

- Mintzberg, H. (1994). *The Rise and Fall of Strategic Planning*. New York, NY: Free Press.
- Montano, D. E., & Kasprzyk, D. (2002). The theory of reasoned action and the theory of planned behavior. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 67-98). San Francisco, CA: Jossey-Bass.
- Moran-Ellis, J. (2006). Triangulation and integration: Processes, claims, and implications. *Qualitative Research*, 6(1), 45-59.
- Morisky, D. E., Levine, D. M., Green, L. W., Shapiro, S., Russell, R. P., & Smith, C. R. (1983). Five-year blood pressure control and mortality following health education for hypertensive patients. *American Journal of Public Health*, 73(2), 153-162.
- Mueller, P. S., Plevak, D. J., & Rummans, T. A. (2001). Religious involvement, spirituality, and medicine: Implications for clinical practice. *Mayo Clinic Proceedings*, 76, 1225-1235.
- Myers, S.S. & Stoto, M. A. (2006). *Criteria for Assessing the Usefulness of Community Health Assessments: A Literature Review*. Santa Monica, CA: RAND. Retrieved March 24, 2010 from http://www.rand.org/pubs/technical_reports/2006/RAND_TR314.pdf.
- National Association of County and City Health Officials. (1991). *APEXPH: Assessment Protocol for Excellence in Public Health*. Washington, DC: NACCHO. Summary retrieved April 4, 2010 from <http://wonder.cdc.gov/wonder/prevguid/p0000089/p0000089.asp> and Workbook retrieved April 5, 2010 from <http://www.naccho.org/topics/infrastructure/APEXPH.cfm>.
- National Association of County and City Health Officials. (1996). *Exploring APEXPH and Community Health Planning in Local Health Departments*. Washington, DC: NACCHO.

- National Association of County and City Health Officials. (1999). *Protocol for Assessing Excellence in Environmental Health (PACE-EH)*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2001). *A Strategic Approach to Community Health Improvement: MAPP Field Guide*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2004). *Achieving Healthier Communities Through MAPP: A User's Handbook*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2005). *Operational definition of a functional local health department and self-assessment tool*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2006). *Integrating MAPP with other national initiatives: Questions and answers*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2008). *Community health status assessment at-a-glance*. Washington, DC: NACCHO. Available at www.naccho.org/topocs/infratstructure/mapp/upload/chsa.pdf
- National Association of County and City Health Officials. (2009). *Integrating performance improvement processes: MAPP, national public health performance standards, and accreditation*. Washington, DC: NACCHO.
- National Association of County and City Health Officials. (2010). *MAPP and non-profit hospitals: Leveraging community benefit for community health improvement*. Washington, DC: NACCHO.
- National Cancer Institute. (2002). *Making health communication programs work* (NIH Publication No. 02-5145). Washington, DC: U.S. Department of Health and Human Services.

- National Commission for Health Education Credentialing, Inc. [NCHEC], Society for Public Health Education [SOPHE], & American Association for Health Education [AAHE]. (2006). *A competency-based framework for health education*. Whitehall, PA: NCHEC.
- National Kidney Foundation. (2011). *Kidney disease*. Retrieved February 16, 2011 from <http://www.kidney.org/kidneydisease/>
- Neiger, B. L., & Thackeray, R. (1998). *Social marketing: Making public health sense*. Unpublished paper presented at the annual meeting of the Utah Public Health Association, Provo, UT.
- Neiger, B. L., & Thackeray, R. (2002). Application of the SMART Model in two successful social marketing campaigns. *American Journal of Health Education*, 33, 291-293.
- Neiger, B. L., Thackeray, R., Merrill, R. M., Miner, K. M., Larsen, L., & Chalkley, C. M. (2001). The impact of social marketing on fruit and vegetable consumption and physical activity among public health employees at the Utah department of health. *Social Marketing Quarterly*, 7, 9-28.
- Nelson, J. C., Raskind-Hood, C., Galvin, V., & Essian, J. (1998). Positioning for partnerships: assessing public health agency readiness. *American Journal of Preventive Medicine*, 16(3S), 103-117.
- Neuhauser, L., & Kreps, G. (2003). Rethinking communication in the e-health era. *Journal of Health Psychology*, 8(1), 7-22.
- New Jersey Department of Health and Senior Services. (2003). *Public Health Practice Standards of Performance*. *N.J.A.C. 8:52*. Retrieved June 1, 2010 from <http://www.state.nj.us/health/commiss/bc/final%20adoption.pdf>.

- Newman, I., & Benz, C. R. (1998). *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale, IL: Southern Illinois University Press.
- New River Valley Planning District Commission (NRVPDC). (2009). *NRV Statistics*. Retrieved September 12, 2010 and January 3, 2011 from <http://www.nrvpdc.org/>
- New River Valley Planning District Commission. (2010). *Virginia's New River Valley 2010 Regional Data Book*. Retrieved November 5, 2010 and January 6, 2011 from <http://www.nrvpdc.org/10DataBook/10DataBook.html>
- New River Valley Planning District Commission. (2010b). *New River Valley Water Supply Plan*. Retrieved January 12, 2011 from http://www.dublintown.org/water/nrv_wsp_1010_final.pdf
- New York State Department of Health. (2006). *Community Health Assessment Clearinghouse Glossary*. Albany, NY: New York State Department of Health. Retrieved June 1, 2010 from <http://www.health.state.ny.us/statistics/chac/glossary.htm>.
- Ng, B., Bardwell, W. A., & Camacho, A. (2002). Depression treatment in rural California: Preliminary survey of nonpsychiatric physicians. *The Journal of Rural Health, 18*, 556-562.
- Nichter, M. (1999). Project community diagnosis: Participatory research as a first step toward community involvement in primary health care. In Hahn, R. A. (Ed.), *Anthropology in public health: Bridging the differences in culture and society* (pp. 300-326). New York, NY: Oxford University Press.
- North Carolina Department of Health and Human Services. (2008). *Healthy Carolinians: North Carolina community health assessment*. Retrieved April 29, 2010 from <http://www.healthycarolinians.org/assess.htm>.

- Norton, B. L., McLeroy, K. R., Burdine, J. N., Felix, M. R. J., & Dorsey, A. M.. (2002).
Community capacity: Concept, theory, and methods. In R. J. DiClemente, R. A. Crosby,
& M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research:
Strategies for improving public health* (pp. 194-227). San Francisco, CA: Jossey-Bass.
- Oberlender, P. J., & Maloney, M. E. (Eds.). (2002). *Appalachia: Social context past and present*
(4th ed.). Dubuque, IA: Kendall/Hunt Publishing.
- O’Cathain, A., Murphy, E., & Nicholl, J. (2007). Why, and how, mixed methods research is
undertaken in health services research in England: A mixed methods study. *BMC Health
Services Research*, 7, 85.
- Office of Cancer Communications, National Cancer Institute, U. S. Department of Health and
Human Services. (2001). *Making health communication programs work: A planner’s
guide*. Atlanta, GA: National Cancer Institute.
- One Hundred Eleventh Congress of the United States of America. (2010). *Patient protection
and affordable care act: H. R. 3590 (Pub. L. No. 111-148)*. Washington, DC:
Congressional Budget Office.
- Orenstein, D., Nelson, C., Speers, M., Brownstein, J. N., & Ramsey, D. C. (1992). Synthesis of
the four PATCH evaluations. *Journal of Health Education*, 23(3), 187-193.
- Owen, N., Fotheringham, M. J., & Marcus, B. H. (2002). Communication technology and
health behavior change. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health
behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 510-
529). San Francisco, CA: Jossey-Bass.
- Paloni, A., & Arias, E. (2004). Paradox lost: Explaining the Hispanic adult mortality
advantage. *Demography*, 41(3), 385-415.

- Parker, M. W., Bellis, J. M., Bishop, P., Harper, M., Allman, R. M., Moore, C. et al. (2002). Promotion incorporating spirituality into a successful aging intervention with African American and White elderly groups. *The Gerontologist*, 42, 406-415.
- Parker, E., Margolis, L. H., Eng, E., & Henriquez-Roldan, C. (2003). Assessing the capacity of health departments to engage in community-based participatory public health. *American Journal of Public Health*, 93, 472-476.
- Patton, M. (1990). *Qualitative evaluation and research methods*. (2nd ed.). London: Sage.
- Patton, R. P., Corey, J. M., Gettman, L. R., & Graff, J. S. (1986). *Implementing health/fitness programs*. Champaign, IL: Human Kinetics.
- Peppard, P. E., Kindig, D. A., Dranger, E., Jovaag, A., and Remington, P. L. (2008). Ranking community health status to stimulate discussion of local public health issues: the Wisconsin County Health Rankings. *American Journal of Public Health*, 98, 209-212.
- Petersen, D. J., & Alexander, G. R. (2001). *Needs assessment in public health: A practical guide for students and professionals*. New York: NY: Kluwer Academic/Plenum Publishers.
- Pickett, G., & Hanlon, J. (1990). *Public Health Administration and Practice* (9th ed.). St. Louis, IL: The C. V. Mosby Company.
- Potvin, L., Gendron, S., Bilodeau, A., & Chabot, P. (2005). Integrating social theory into public health practice. *American Journal of Public Health*, 95, 591-595.
- Pratt, M., McDonald, S., Libbey, P., Oberle, M., & Linge, A. (1996). Local health departments in Washington State use APEX to assess capacity. *Public Health Reports*, 111, 87-91.
- Prezza, M., & Costantini, S. (1998). Sense of community and life satisfaction: Investigation in three different territorial contexts. *Journal of Community and Applied Social Psychology*, 8, 181-194.

- Prochaska, J. O. (1979). *Systems of psychotherapy: A transtheoretical analysis*. Homewood, IL: Dorsey Press.
- Prochaska, J. O., & DiClemente, C. C. (1982). Trans-theoretical therapy - toward a more integrative model of change. *Psychotherapy: Theory, Research and Practice*, 19(3), 276-288.
- Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, 51(3), 390-395.
- Prochaska, J. O., & DiClemente, C. C. (1986). Toward a comprehensive model of change. In W. R. Miller, & N. Heather (Eds.), *Treating addictive behaviors: processes of change* (pp. 3-27). New York, NY: Plenum Press.
- Prochaska, J. O., & DiClemente, C. C. (2005). The transtheoretical approach. In J. C. Norcross, & M. R. Goldfried (Eds.), *Handbook of psychotherapy integration* (2nd ed.) (pp. 147-171). New York, NY: Oxford University Press.
- Prochaska, J. O., Redding, C. A., & Evers, K. E. (2002). In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 99-120). San Francisco, CA: Jossey-Bass.
- Public Health Functions Steering Committee. (1994). *Public Health in America*. Washington, DC: National Academy Press.
- Racher, F. A., & Annis, R. C. (2008). Community health action model: Health promotion by the community. *Research and theory for nursing practice*, 22(3), 182-91.
- Rahtz, D. R., & Sirgy, M. J. (2000). Marketing of health care within a community: A quality-of-life/needs assessment model and method. *48*, 165-176.

- Rausch, T. K., Sanddal, N. D., Sanddal, T. L., & Esposito, T. J. (1998). Changing epidemiology of injury-related pediatric mortality in a rural state: Implications for injury control. *Pediatric Emergency Care, 14*, 388-392.
- Rebhun, L. A., & Hansen, H. (2001). In S. Loue & B. E. Quill (Eds.), *Handbook of Rural Health* (pp. 257-276). New York, NY: Kluwer Academic/Plenum.
- Redding, C. A., Rossi, J. S., Rossi, S. R., Velicer, W. F., & Prochaska, J. O. (2000). Health Behavior Models. *The International Electronic Journal of Health Education, 3*(Special Issue), 180-193.
- Reichardt, S. S. & Rallis, S. F. (1994). Qualitative and quantitative inquiries are not incompatible: A call for a new partnership. In C. S. Reichard & S. F. Rallis (Eds.), *The qualitative-quantitative debate: New perspectives* (pp. 85-91). San Francisco, CA: Jossey-Bass.
- Reid, W. M. (1998). Local health departments: planning for a changed role in the new health care environment. *Journal of Public Health Management & Practice, 5*, 1-12.
- Resnicow, K., Braithwaite, R. L., Dilorio, C., & Glanz, K. (2002). Applying theory to culturally diverse and unique populations. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 485-509). San Francisco, CA: Jossey-Bass.
- Richards, T. B, Rogers, J. J., Christenson, G. M., Miller, C. A., Taylor, M. S., & Cooper, A. D. (1995). Evaluating local public health performance at a community level on a statewide basis. *Journal of Public Health Management and Practice, 1*(4), 70-83.

- Richards, T. B., Rogers, J. J., Christenson, G. M., Miller, C. A., Gatewood, D. D., & Taylor, M. S. (1995). Assessing public health practice: application of ten core function measures of community health in six states. *American Journal of Preventive Medicine*, 11(6 suppl.), 36–40.
- Ricketts, T. C. (2000). The changing nature of rural health care. *Annual Review of Public Health*, 21, 639-657.
- Rimer, B. (1995). Audiences and messages for breast and cervical cancer screenings. *Wellness Perspectives*, 11(2), 13-39.
- Rimer, B. K., & Glanz, K. U.S. (2005). *Theory at a glance: A guide for health promotion practice (2nd ed)*. Atlanta, GA: Department of Health and Human Services, National Institutes of Health, National Cancer Institute.
- Robert Wood Johnson Foundation & University of Wisconsin. (2010a). *County health rankings, mobilizing action toward community health*. Madison, WI: University of Wisconsin Population Health Institute.
- Robert Wood Johnson Foundation & University of Wisconsin. (2010b). *County health rankings, mobilizing action toward community health: 2010 Virginia*. Madison, WI: University of Wisconsin Population Health Institute.
- Roberts, L. W., Battaglia, J., & Epstein, R. S. (1999). Frontier ethics: Mental health care needs and ethical dilemmas in rural communities. *Psychiatric Services*, 50, 497-503.
- Roberts, N. (2004). Public deliberation in an age of direct citizen participation. *American Review of Public Administration*, 34, 315-353.
- Rogers, E. M. (1995). *Diffusion of Innovations (4th ed.)*. New York, NY: Free Press.

- Rohan, A. M. K., Booske, B. C., & Remington, P. L. (2009). Using the Wisconsin Health Rankings to catalyze community health improvement. *Journal of Public Health Management and Practice, 15*(1), 24-32.
- Rohrer, J. E. (1996). *Planning for community-oriented health systems*. Baltimore, MD: American Public Health Association/United Book Press.
- Rohrer, R. E., & Dominguez D. G. (1998). Determinants of successful community health system planning. *Journal of Healthcare Management, 43*(2), 155–168.
- Roper, W. L., Baker, E. L., & Nicola, R.M. (1992). Strengthening the public health system. *Public Health Reports, 107*, 609–615.
- Ross, H. S., & Mico, P. R. (1980). *Theory and practice in health education*. Palo Alto, CA: Mayfield.
- Rothman, J. Approaches to Community Intervention. (2001). In Rothman, J., Erlich, J. L., & Tropman, J. E. (Eds.), *Strategies of Community Intervention* (pp. 27-64). Itasca, IL: Peacock Publishers.
- Rothman, J., & Tropman, J. (1987). Models of community organization and macro-practice perspectives: Their mixing and phasing. In F. M. Cox, J. L. Erlich, J. Rothman, & J. Tropman (Eds.), *Strategies of community organization* (4th ed.) (pp. 3-25). Itasca, IL: Peacock and Publishers, Inc.
- Roux, A. V. D. (2001). Investigating neighborhood and area effects on health. *American Journal of Public Health, 91*, 1783-1789.
- Rural Policy Research Institute. (2010). *Choosing Rural Definitions: Implications for Health Policy*. Retrieved September 19, 2010 from <http://www.rupri.org/Forms/RuralDefinitionsBrief.pdf>

- Russ, K. A. (2010). *Working with clients of Appalachian culture*. Retrieved August 25, 2010 from http://counselingoutfitters.com/vistas/vistas10/Article_69.pdf
- Salem, E., Hooberman, J., & Ramirez, D. (2005). MAPP in Chicago: A model for public health systems development and community building. *Journal of Public Health Management and Practice, 11*(5), 393-400.
- Sallis, J. F., & Owen, N. (2002). Ecological models of health behavior. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 462-484). San Francisco, CA: Jossey-Bass.
- Sampson, R. J. (2003). The neighborhood context of well-being. *Perspectives in Biology and Medicine, 46*, S53-S64.
- San Francisco Department of Public Health. (2010). *Community Health Promotion & Prevention: Community Action Model*. San Francisco, CA: Department of Health. Retrieved May 8, 2010 from <http://www.sfdph.org/dph/comupg/oprograms/CHPP/CAM/default.asp>
- Scariati, P. D., & Williams, C. (2007). The utility of a health risk assessment in providing care for a rural free clinic population. *Osteopathic Medicine and Primary Care, 1*, 1-7.
- Schiff, E., Connor, B., Hershey, J., Mahoney, M., & Schaffner, W. (2007). Recommendations from a national conference on universal vaccination against hepatitis B and hepatitis A in adults. *The Journal of Applied Research, 7*(1), 3-16.
- Schmid, T. K., Pratt, M., & Howze, E. (1995). Policy as intervention: Environmental and policy approaches to the prevention of cardiovascular disease. *American Journal of Public Health, 85*, 1207-1211.

- Science Panel on Interactive Communication and Health. (1999). *Wired for health and Well-Being: The Emergence of Interactive Health Communications*. Washington, DC: U.S. Department of Health and Human Services, U.S. Government Printing Office.
- Schulz, A., Israel, B., Selig, S., Bayer, S., & Griffin, C. (1998). Development and implementation of principles for community-based research in public health. In R. McNair (Ed.), *Research strategies for community practice* (pp. 83-110). New York, NY: Haworth Press.
- Scutchfield, F. D., & Beaulieu, J. (2000). *Report on Florida site visits for validity checks, National Public Health Performance Standards Program*. Lexington, KY: University of Kentucky Center for Health Services Management and Research.
- Scutchfield, F. D., Marks, J. S., Perez, D. J., & Mays, G. P. (2007). Public health services and systems research. *American Journal of Preventive Medicine*, 33, 169-171.
- Scutchfield, F. D., & Patrick, K. (2007). Public health systems research: The new kid on the block. *American Journal of Preventive Medicine*, 32, 173-174.
- Seidman, I. (1998). *Interviewing as qualitative research: A guide for researchers in education and social sciences*. New York, NY: Teachers College Press.
- Silverman, D. (1993). *Interpreting qualitative data: Methods for analyzing talk, text, and interaction*. Thousand Oaks, CA: Sage.
- Simons-Morton, B. G., Greene, W. H., & Gottlieb, N. H. (1995). *Introduction to health education and health promotion* (2nd ed.). Prospect Heights, IL: Waveland Press.
- Simons-Morton, D. G., Simons-Morton, B. G., Parcel, G. S., & Bunker, J. F. (1988). Influencing personal and environmental conditions for community health: A multilevel intervention model. *Family and Community Health*, 11(2), 25-35.

- Simpson, M. R., & King, M. G. (1999). "God brought all these churches together": Issues in developing religion-health partnerships in an Appalachian community. *Public Health Nursing, 16(1)*, 41-49.
- Sirgy, M. J., & Cornwell, T. (2002). How neighborhood features affect quality of life. *Social Indicators Research, 59(1)*, 79-114.
- Sirgy, M. J., Rahtz, D. R., Cicic, M., & Underwood, R. (2000). A method for assessing residents' satisfaction with community-based services: A quality-of-life perspective. *Social Indicators Research, 49*, 279-316.
- Smedley, B. D., & Syme, S. L. (Eds). (2000). *Promoting health: Intervention strategies from social and behavioral sciences*. Washington, DC: National Academy Press.
- Smith, M. K. (1997, 2002). Paulo Freire and informal education. *The Encyclopaedia of Informal Education*. Retrieved July 13, 2010 from <http://www.infed.org/thinkers/et-freir.htm>
- Snyder, K., & Spice, C. L. (2009). Reviewing self-reported impacts of community health assessment in local health jurisdictions. *Journal of Public Health Management and Practice, 15(1)*, 18-23.
- Solet, D., Ciske, S., Gaonkar, R., Horsley, K., McNees, M., Nandi, P., et al. (2009). Effective community health assessments in King County, Washington. *Journal of Public Health Management and Practice, 15(1)*, 33-40.
- Soy, S. K. (2000). *The case study as a research method*. University of Texas. Retrieved July 12, 2010 from <http://www.gslis.utexas.edu/~ssoy/useusers/1391d1b.htm>
- Spector, R. E. (1985). *Cultural diversity in health and illness* (2nd ed.). Norwalk, CT: Appleton-Century-Crofts.

- Spiegel, A. D., & Hyman, H. H. (1978). *Basic health planning methods*. Germantown, MD: Aspen Systems Corporation.
- Springett, J. (2001). Appropriate approaches to the evaluation of health promotion. *Critical Public Health, 11*, 139-151.
- Srinivasan, S., O'Fallon, L. R., & Dearry, A. (2003). Creating healthy communities, healthy homes, healthy people: Initiating a research agenda on the built environment and public health. *American Journal of Public Health, 93*, 1446-1450.
- State Health Access Assistance Center. (2004). *Virginia health care insurance and access survey*. Retrieved on November 23, 2010 from <http://gunston.doit.gmu.edu/chpre/pdf/Virginia>
- Steckler, A., Dawson, L., Israel, B. A., & Eng, E. (1993). Community health development: An overview of the works of Guy W. Steuart. *Health Education Quarterly, Supplement 1*, S3-S20.
- Steckler, A., Goodman, R. M., & Kegler, M. C. (2002). Mobilizing organizations for health enhancement: Theories of organizational change. In K. Glanz, B. K., Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed.) (pp. 335-360). San Francisco, CA: Jossey-Bass.
- Steckler, A., McLeroy, K. R., Goodman, R. M., Bird, S. T., & McCormick, L. (1992). Toward integrating qualitative and quantitative methods: An introduction. *Health Education Quarterly, 19*, 1-8.
- Stokols, D. (1992). Establishing and maintaining healthy environments: Toward a social ecology of health promotion. *American Psychologist, 47*, 6-22.

- Stokols, D. (1996). Translating social ecological theory into guidelines for health promotion. *American Journal of Health Promotion*, 10, 282-298
- Stoto, M. A. (1992). Public health assessment in the 1990s. *Annual Review of Public Health*, 13, 59–78.
- Stoto, M. A., Straus, S. G., Bohn, C., & Irani, P. (2009). A web-based tool for assessing and improving the usefulness of community health assessments. *Journal of Public Health Management and Practice*, 15(1), 10-17.
- Studnicki, J., Steverson, B., Myers, B., Hevner, A., & Berndt, D. (1997). Comprehensive assessment for tracking community health (CATCH). *Best Practices in Benchmarking Healthare*, 2(5), 196–207.
- Studnicki, J., Steverson, B., Blais, H., Goley, E., Richards, T., & Thornton, J. (1994). An analysis of organizational practices: a methodology to describe the work activities of the local health department. *Public Health Reports*, 109, 485–490.
- Sue, D. W., & Sue, D. (2003). *Counseling the culturally diverse: Theory and practice* (4th ed.). New York: John Wiley & Sons, Inc.
- Sullivan, D. (1973). Model for comprehensive, systematic program development in health education. *Health Education Report*, 1(1), 4-5.
- Sutherland, M., Hale, C. D., & Harris, G. J. (1995). Community health promotion: The church as partner. *The Journal of Primary Prevention*, 16, 201-216.
- Tarmann, A. (2003). *Fifty Years of Demographic Change in Rural America*. Washington, DC: Population Reference Bureau. Retrieved October 10, 2010 from <http://www.prb.org/Articles/2003/FiftyYearsofDemographicChangeinRuralAmerica.aspx>

- Tashakkori, A., & Teddlie, C. (Eds.) (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.
- The Kaiser Commission on Medicaid and the Uninsured. (2006). *The Uninsured: A Primer. Key Facts About Americans Without Health Insurance. Fast Facts*. Washington, DC: The Kaiser Family Foundation.
- Theodori, G. (2001). Examining the effects of community satisfaction and attachment on individual well-being. *Rural Sociology*, 66, 618-628.
- Timmreck, T. C. (2003). *Planning, program development, and evaluation* (2nd ed.). Boston, MA: Jones and Bartlett Publishers.
- Tulchinsky, T. H., & Varavikova, E. A. (2009). *The new public health* (2nd ed.). Burlington, MA: Elsevier Academic Press.
- Turnock, B.J. (1997). *Public health: What it is and how it works*. Gaithersburg, MD: Aspen Publishers.
- Turnock, B. J., & Handler, A. (1996). Is public health ready for reform? The case for accrediting local health departments. *Journal of Public Health Management and Practice*, 2(3), 41–45.
- Turnock, B. J., & Handler, A. S. (1997). From measuring to improving public health practice [review]. *Annual Review of Public Health*, 18, 261–282.
- Turnock, B. J., Handler, A. S., & Dyal, W. W. (1994). Implementing and assessing organizational practices in local health departments. *Public Health Reports*, 109(4), 478–484.

- Turnock, B. J., Handler, A. S., Hall, W., Lenihan, D. P., & Vaughn E. (1995). Capacity-building influences on Illinois local health departments. *Journal of Public Health Management and Practice*, 1(3), 50–58.
- Turnock, B. J., Handler, A. S., & Miller, C. A. (1998). Core function-related local public health practice effectiveness. *Journal of Public Health Management and Practice*, 4(5), 26–32.
- Turnock, B. J., Handler, A. S., Hall, W., Potsic, S., Nalluri, R., & Vaughn, E. H. (1994). Local health department effectiveness in addressing the core functions of public health. *Public Health Reports*, 109(5), 653-658.
- Turnock, B. J., & Long, A. (2005). MAPP in the classroom: Oxymoron or opportunity? *Journal of Public Health Management and Practice*, 11(5), 442-447.
- United Way of Montgomery, Radford, and Floyd. (1994). *1994 New River Valley health and human services needs assessment*. Unpublished manuscript.
- U.S. Bureau of the Census (2008, 2010). *QuickFacts: Virginia and health insurance*. Washington, DC: U.S. Census Bureau. Retrieved December 18 and 21, 2010 from <http://quickfacts.census.gov/qfd/index.html>
- U.S. Bureau of the Census (2010). *Family classification*. Washington, DC: U.S. Census Bureau. Retrieved December 21, 2010 from <http://www.census.gov>
- U.S. Bureau of the Census (2000). *Urban and rural classification*. Washington, DC: U.S. Census Bureau. Retrieved September 19, 2010 from http://www.census.gov/geo/www/ua/ua_2k.html
- U.S. Bureau of the Census (2000b). *2000 Census*. Retrieved on November 25, 2010 from <http://factfinder.census.gov>

- U. S. Department of Commerce. (2002). *A nation on-line: How Americans are expanding their use of the internet*. Washington, DC: Economics and Statistics Administration, National Telecommunications and Information Administration.
- U. S. Department of Health and Human Services. (2000). *Healthy People 2010*. Washington, DC: U. S. Department of Health and Human Services.
- U. S. Department of Health and Human Services. (2001). *Healthy people in healthy communities: A community planning guide using Healthy People 2010*. Washington, DC: U. S. Department of Health and Human Services.
- U. S. Department of Health and Human Services. (2008). *Community health status report and statistical indicators 2008*. Retrieved December 29, 2010 from <http://communityhealth.hhs.gov>
- U. S. Department of Health and Human Services. (2007a). *National public health performance standards program (NPHPSP): Local public health system performance assessment instrument (version 2.0) and User guide*. Washington, DC: U. S. Department of Health and Human Services.
- U. S. Department of Health and Human Services. (2007b). *National public health performance standards program (NPHPSP): Local public health system performance assessment, report of results, New River Health District*. Washington, DC: U. S. Department of Health and Human Services.
- U. S. Department of Health and Human Services. (2010). *Shortage designation: HPSAs, MUAs & MUPs*. Retrieved December 29, 2010 from <http://bhpr.hrsa.gov/shortage/>

- U. S. Department of Health and Human Services, Agency for Healthcare Research and Quality. (2008). *National healthcare disparities report 2008*. Washington, DC: U.S. Department of Health and Human Services.
- U. S. Department of Health and Human Services, National Center for Health Statistics. (2010). *National vital statistics reports: Deaths, final data for 2007*. Retrieved February 14, 2010 from http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_19.pdf
- U. S. Environmental Protection Agency. (2010). *AirData*. Retrieved January 11, 2011 from www.epa.gov/oar/data/
- U. S. Environmental Protection Agency. Office of Water. (2009a). *Summary of the clean water act*. Retrieved January 12, 2011 from <http://www.epa.gov/lawsregs/laws/cwa.html>
- U. S. Environmental Protection Agency. Office of Water. (2009b). *Fact sheet: Introduction to clean water act section 303(d) impaired waters list*. Retrieved January 12, 2011 from http://www.epa.gov/owow/tmdl/results/pdf/aug_7_introduction_to_clean.pdf
- U. S. National Library of Medicine. (2009). *PubMed health*. Retrieved February 16, 2011 from <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002331>
- Valdiserri, R. O., & West, G. R. (1994). Barriers to the assessment of unmet need in planning HIV/AIDS prevention programs. *Public Administration Review*, 54(1), 25–30.
- VandeVen, A. H., & Delbecq, A. L. (1974). The effectiveness of nominal, delphi, and interacting group decision making processes. *The Academy of Management Journal*, 17(4), 605-621.
- Vargas, C. M., Ronzio, C. R., & Hayes, K. L. (2003a). Oral health status of children and adolescents by rural residence, United States. *Journal of Rural Health*, 19, 260-268.
- Vargas, C. M., Yellowitz, J. A., & Hayes, K. L. (2003b). Oral health status of older rural adults in the United States. *Journal of the American Dental Association*, 134, 479-486.

- Vedros, K. R. (1979). *The nominal group technique is a participatory, planning method in adult education*. Ph.D. dissertation, Florida State University, Tallahassee. Retrieved from ProQuest Dissertations & Theses: Full Text.
- Venable, J. M., Li, Q., Ginter, P. M., & Duncan, W. J. (1993). The use of scenario analysis in local public health departments: alternative futures for strategic planning. *Public Health Reports*, 108(6), 701–710.
- Veronica, A. T. (2001). The point of triangulation. *Journal of Nursing Scholarship*, 33(3), 253-258.
- Virginia Department of Behavioral Health and Developmental Services. (2009). *2009 biennial report on substance abuse services per Code of Virginia §37.2-310*. Richmond, VA: Department of Behavioral Health and Developmental Services.
- Virginia College of Osteopathic Medicine. (2009). *Building a sustainable, integrated community health center for the underserved in southwest Virginia: FQHC planning project final report*. Unpublished manuscript, Virginia College of Osteopathic Medicine in Blacksburg, VA.
- Virginia Department of Education. (2009). *Superintendent's annual report for Virginia: 2008 - 2009*. Retrieved December 27, 2010 from www.doe.virginia.gov/statistics_reports/.../index.shtml
- Virginia Department of Environmental Quality. (2010). *New river basin assessment summary*. Retrieved January 12, 2011 from www.deq.state.va.us/wqa/pdf/2010ir/ir10_Pt3_Ch3.2_Basin_Summary.pdf
- Virginia Department of Health. (2009). *Office of the chief medical examiner's annual report 2008*. Richmond, VA: Virginia Department of Health.

Virginia Department of Health. (2010a). *Chronic disease indicators by health district*. Retrieved December 23, 2010 from <http://www.vahealth.org/cdpc>

Virginia Department of Health. (2010b). *Designation of health professional shortage areas*. Retrieved December 29, 2010 from <http://www.vdh.virginia.gov/healthpolicy/primarycare/shortagedesignations/designations.htm>

Virginia Department of Health. (2010c). *Virginia behavioral risk factor surveillance system*. Retrieved December 23, 2010 from <http://www.vahealth.org/brfss/>

Virginia Department of Health, Division of Health Statistics. (2008). *Virginia health statistics annual reports 2001, 2002, 2003, 2004, 2005*. Richmond, VA: Virginia Department of Health.

Virginia Department of Health, Division of Health Statistics. (2010). *Statistical reports and tables 2008*. Retrieved December 9, 2010 from <http://www.vdh.virginia.gov/healthstats/stats.htm>

Virginia Department of Health, Infant Mortality Workgroup. (2010). *Virginia infant mortality workgroup*. Retrieved December 10, 2010 from <http://www.vdh.virginia.gov/infantmortality/index.htm>

Virginia Department of Health, Office of Epidemiology. (2010). *Virginia reportable disease surveillance data 2008*. Retrieved December 13, 2010 from <http://www.vdh.virginia.gov/Epidemiology/Surveillance/SurveillanceData/index.htm>

Virginia Department of Housing and Urban Development. (2010). *FY 2010*. Retrieved January 5, 2011 from www.dhcd.virginia.gov/

- Virginia Economic Development Partnership. (2009). *Community profiles*. Retrieved December 20, 2010 from <http://virginiascan.yesvirginia.org/communityprofiles/MapSearch.aspx?type=CITYCOUNTY>
- Virginia Employment Commission. (2010). *Population projections 2008, 2009, 2010*. Retrieved December 28, 2010 from www.vec.Virginia.gov/vecportal/about_vec.cfm
- Virginia Health Care Association. (2010). *Nursing homes, assisted living and long-term care facilities*. Retrieved January 7, 2011 from <http://www.vhca.org/>
- Virginia Health Information. (2008). *Data directory and report 2008: From numbers to knowledge*. Richmond, VA: Virginia Health Information.
- Virginia State Office of Rural Health. (2008). *Virginia rural health plan: Supporting rural health through action (VA-RHP)*. Retrieved September 19, 2010 from www.va-srhp.org
- Wagenfeld, M. O., Murray, J. D., Mohatt, D. F., & DeBruyn, J. C. (1997). Mental health service delivery in rural areas: Organizational and clinical issues. In National Institute on Drug Abuse (NIDA) Research Monograph Series 168 (NIH Publication No. 97-4177, pp. 418-437). Rockville, MD: National Institute of Health.
- Wallack, L., & Dorfman, L. (1997). *Issue 1*. Berkley, CA: Berkeley Media Studies Group.
- Wallerstein, N. (1992). Powerlessness, empowerment, and health: implications for health promotion programs. *American Journal of Health Promotion*, 6, 197–205.
- Wallerstein, N., & Bernstein, E. (Eds.). (1994). Community empowerment, participatory education, and health—Part I and part II. *Health Education Quarterly*, 21(2/3), 141-419.
- Walsh, D. C., Rudd, R. E., Moeykens, B. A., & Moloney, T. W. (1993). Social marketing for public health. *Health Affairs*, 12, 104-119.

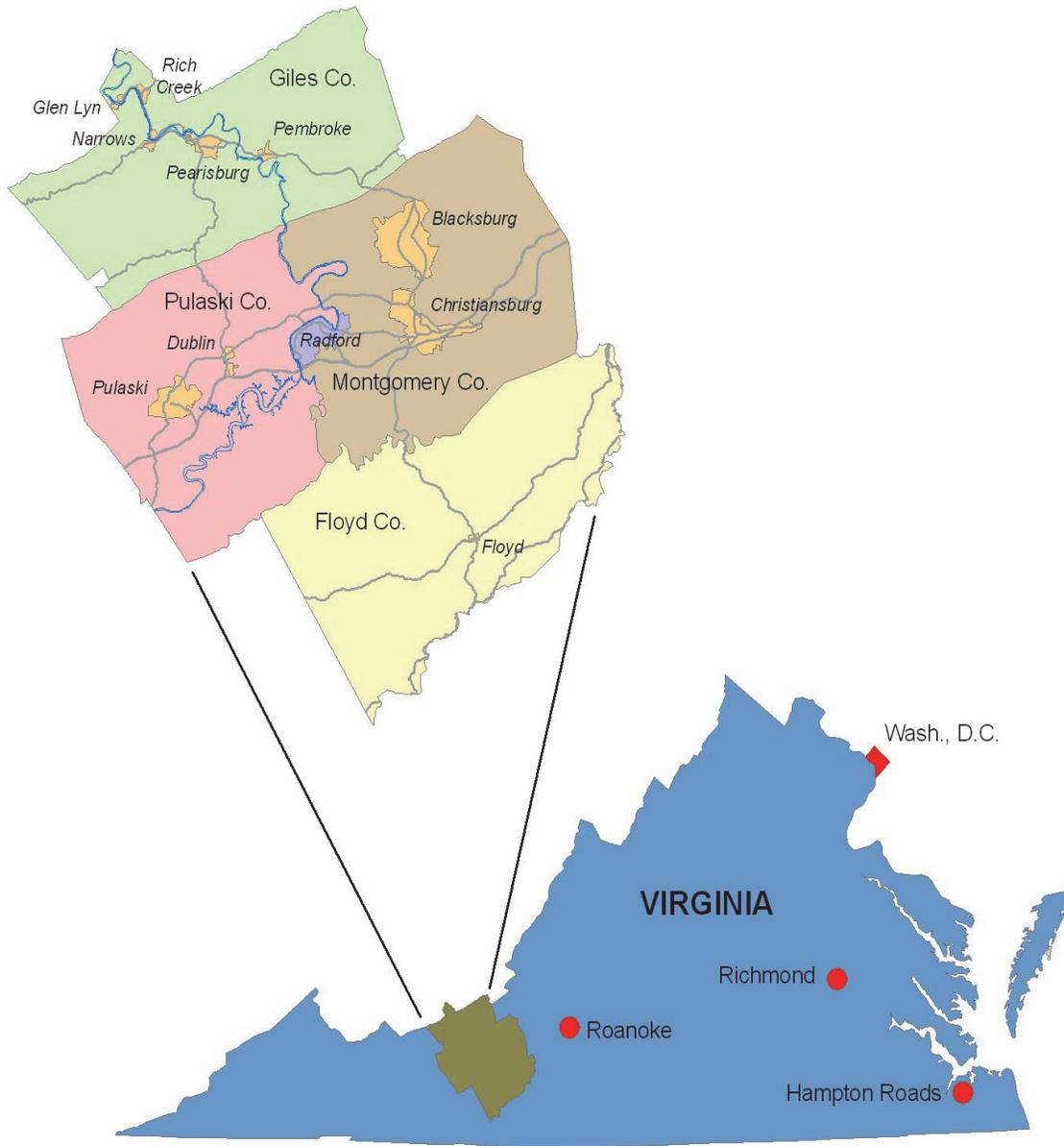
- Wandersman, A., Snell-Johns, J., Lentz, B. E., Fetterman, D. M., Keener, D. C., Livet, M., et. al. (2005). Chapter 2: The principles of empowerment evaluation. In D. M. Fetterman & A. Wandersman (Eds.), *Principles in practice* (pp. 27-41). New York, NY: Guilford Press.
- Warner, K. (2000). The need for, and value of, a multi-level approach to disease prevention: The case of tobacco control. In B. D. Smedley, & S. L. Syme (Eds.), *Promoting health: Intervention strategies from social and behavioral research* (pp. 417-449). Washington, DC: National Academy Press.
- Washington State Department of Health. (2007). *Community health assessment in Washington State: On-going Reports of the impacts of community health assessment activities*. Olympia, WA: Washington State Department of Health. Retrieved on March 10, 2011 from <http://www.assessnow.info/impactsofcha.doc>
- Washington State Department of Health. (2008). *Assess now*. Olympia, WA: Washington State Department of Health. Retrieved June 6, 2010 from <http://AssessNow.info/>.
- Welch, J. B. (1999). Uneven ground: Cultural values, moral standards, and religiosity in the heart of Appalachia. In B. J. Leonard (Ed.), *Christianity in Appalachia: Profiles in regional pluralism*. Knoxville, TN: University of Tennessee Press.
- Weldon Cooper Center for Public Service, University of Virginia. (2010c). *Demographics and workforce estimates for Virginia localities: Final 2008 and provisional 2009*. Retrieved November 30, 2010 from <http://www.coopercenter.org/demographics>
- Weldon Cooper Center for Public Service, University of Virginia. (2010b). *Local area adjusted gross income, per capita income*. Retrieved December 28, 2010 from www.coopercenter.org/econ/agi

- Weldon Cooper Center for Public Service, University of Virginia. (2010a). *Population estimates for Virginia localities, planning districts, and metropolitan areas: Final 2008 and provisional 2009*. Charlottesville, VA: Weldon Cooper Center for Public Service.
- Weldon Cooper Center for Public Service, University of Virginia. (2010d). *Virginia statistical abstract, 1989, 1996-1997*. Retrieved December 28, 2010 from <http://www.coopercenter.org/virginiastatisticalabstract/>
- Weinreich, N. D. (2009). Integrating quantitative and qualitative methods in social marketing research. *Weinreich Communications*. Retrieved September 24, 2010 from <http://www.social-marketing.com/research.html>
- Williams, A. M., & Cutchin, M. P. (2002). The rural context of healthcare provision. *Journal of Interprofessional Care*, 16 (2), pp. 77-86.
- Williams, J. A. (2001). Appalachian history: Regional history in the post-modern zone. *Appalachian Journal*, 28, 168-187.
- Williams, J. A. (2002). *Appalachia: A history*. Chapel Hill, NC: University of North Carolina Press.
- Windsor, R. A., Lowe, J. B., Perkins, L. L., Smith-Yoder, D., Artz, L., Crawford, M., et al. (1993). Health education for pregnant smokers: Its behavioral impact and cost benefit. *American Journal of Public Health*, 83(2), 201-206.
- Windsor, R., Clark, N., Boyd, N., & Goodman, R. M. (2004). *Evaluation of health promotion, health education, and disease prevention programs* (3rd ed.). Boston, MA: McGraw-Hill.
- Wood, K. (1989). *Families at risk*. New York, NY: Human Sciences Press.

- Worden, J. K., Solomon, L. J., Flynn, B. S., Costanza, M. C., Foster, R. S., Jr., Dorwaldt, A. L., et al. (1990). A community-wide program in breast self-examination training and maintenance. *Preventive Medicine*, 19(3), 254-269.
- Ying, L., Jia, C., Hui, L., Daikun, L., Yang, W., & Jia, H. (2009). Community health needs assessment with precede-proceed model: A mixed methods study. *BMC Health Services Research*, 9, 181-195.
- Xu, J., Kochanek, K. D., Murphy, S. L., & Tejada-Vera, B. (2010). Deaths: Final data for 2007. Washington, DC: CDC, National Center for Health Statistics.

Appendix A

Map of the New River Valley—Planning District IV



(NRVPDC, 2009, used under fair use guidelines, 2011)

Appendix B

Commonly Used Rural Definitions

| Definition | Definition Description | Geographic Unit Used | NRV Locality Designation |
|--|--|--|---|
| U.S. Census Bureau: Urban and Rural Areas | The Census Bureau's classification of rural consists of all territory, population, and housing units located outside of urbanized areas (UA) and urban clusters (UC). Urbanized areas include populations of at least 50,000, and urban clusters include populations between 2,500 and 50,000. The core areas of both urbanized areas and urban clusters are defined based on population density of 1,000 per square mile and then certain blocks adjacent to them are added that have at least 500 persons per square mile. http://www.census.gov/geo/www/ua/ua_2k.html http://www.raconline.org/info_guides/clinics/rhcfac.php#location | Census Block and Block Groups | Urbanized Areas Town of Blacksburg Urbanized Clusters Town of Pulaski City of Radford Rural Areas (non-UA, non-UC) Floyd County Giles County Pulaski County Montgomery County (except Blacksburg) |
| Economic Research Service, U.S. Department of Agriculture & WWAMI Rural Health Research Center: Rural-Urban Commuting Areas (RUCAs) | This classification scheme utilizes the U.S. Census Bureau's urbanized area and cluster definitions and work commuting information. The RUCA categories are based on the size of settlements and towns as delineated by the Census Bureau and the functional relationships between places as measured by tract level work commuting data. This taxonomy defines 33 categories of rural and urban census tracts. http://www.ers.usda.gov/briefing/Rurality/RuralUrbanCommutingAreas/ | Census Tract, ZIP Code approximation available | Rural Areas Floyd County Giles County Pulaski County Urban Areas Montgomery County Radford City |
| U.S. Office of Management and Budget (OMB): Core Based Statistical Areas (i.e., Metropolitan and Nonmetropolitan areas) | A metropolitan area must contain one or more central counties with urbanized areas. Nonmetropolitan counties are outside the boundaries of metropolitan areas and are subdivided into two types, micropolitan areas and noncore counties. Micropolitan areas are urban clusters of 10,000 or more persons. | County | Metropolitan Areas Giles County Montgomery County Pulaski County Micropolitan Areas None Rural Areas Floyd County Radford City |
| Economic Research Service, U.S. Department of Agriculture: Rural-Urban Continuum Codes (Beale Codes) | This classification scheme distinguishes metropolitan counties by the population size of their metropolitan area, and nonmetropolitan counties by degree of urbanization and adjacency to a metropolitan area or areas. All counties and county equivalents are grouped according to their official OMB metropolitan-nonmetropolitan status and further subdivided into three metropolitan and six nonmetropolitan groupings. | County | N/A |
| Economic Research Service, U.S. Department of Agriculture: Urban Influence Codes | This classification scheme subdivides the OMB metropolitan and nonmetropolitan categories into 2 metropolitan and 10 nonmetropolitan categories. Metropolitan counties are divided into two groups by the size of the metropolitan area. Nonmetropolitan-micropolitan counties are divided into three groups by their adjacency to metropolitan areas. Nonmetropolitan-noncore counties are divided into seven groups by their adjacency to metropolitan or micropolitan areas and whether they have their "own town" of at least 2,500 residents. | County | N/A |
| Office of Rural Health Policy, U.S. Department of Health and Human Services: RUCA Adjustment to OMB Metropolitan and Nonmetropolitan Definition | This method uses RUCAs 4-10 to identify small towns and rural areas within large metropolitan counties. In addition, census tracts within metropolitan areas with RUCA codes 2 and 3 that are larger than 400 square miles and have population density of less than 30 people per square mile are also considered rural. http://ruralhealth.hrsa.gov/funding/eligibilitytestv2.asp http://www.ers.usda.gov/briefing/Rurality/RuralUrbanCommutingAreas/ http://www.fammed.washington.edu/wvamirhc/rucas/rucas.html | Census Tract within OMB Metropolitan Counties | Rural Locality Floyd County RUCA Census Tracts Giles County Pulaski County Radford City Non-Rural Locality Montgomery County |

(Rural Policy Research Institute, 2010; Virginia State Office of Rural Health, 2008)

Appendix C

Partnership for Access to Healthcare (PATH) Member Organizations and Agencies

| | |
|--|--|
| American Cancer Society | New River Valley Senior Services |
| Beans and Rice Inc. | Partners for Self Sufficiency |
| Carilion CONNECT | Pulaski Community Hospital |
| Carilion Giles Community Hospital | Pulaski Cooperative Extension |
| Carilion Health System | Pulaski County Department of |
| Carilion New River Valley Medical Center | Social Services |
| Caring Pregnancy Center of | Pulaski County Public School |
| New River Valley | Radford City Department of Social Services |
| Center for Family Health | Radford University Department of |
| Community Foundation of the | Occupational Therapy |
| New River Valley | Radford University FAMIS Outreach |
| Council of Community Services | Radford University Psychology Department |
| Edward Via Virginia College of | Radford University School of Nursing |
| Osteopathic Medicine | Radford University School of Social Work |
| Empowerment for Healthy Minds | Radford University Waldron College of |
| Free Clinic of Pulaski County | Health and Human Services |
| Free Clinic of the New River Valley | Retired Senior Volunteer Program |
| Giles County Department of Social Services | Senior Navigator |
| Greater New River Valley Chapter of | Southwest Virginia Area Health |
| American Red Cross | Education Center |
| Intellectual Disabilities of the | Southwest Virginia Legal Aid Society Inc., |
| New River Valley | Christiansburg Office |
| Local Businesses | The Roanoke Times |
| Mental Health Association of | United Way of Montgomery-Radford-Floyd |
| New River Valley | United Way of Pulaski County |
| Mental Health Association of New River | Valley Interfaith Child Care Center, Inc. |
| Valley Pro Bono Counseling | Virginia Employment Commission |
| Montgomery County Department of | Virginia Interfaith Center for Public Policy |
| Social Services | Virginia Premier Health Plans Inc. |
| Montgomery County Public Schools | Virginia Rural Health Association |
| Montgomery Regional Hospital | Virginia Rural Health Resource Center |
| New River Community Action Inc. | Virginia Tech Department of Sociology |
| New River Community Action CHIP | Virginia Tech Human Resources |
| New River Community Action Head Start | Virginia Tech Institute for |
| New River Community Services | Community Health |
| New River Health District | Virginia Tech Institute for Policy and |
| New River Valley Agency on Aging | Governance |
| New River Valley CARES | Virginia Tech Learning Sciences and |
| New River Valley Community Residents | Technologies |
| New River Valley Planning | Women's Resource Center of |
| District Commission | New River Valley |

Appendix D

PATH Steering Committee

Harvey Barker
New River Valley Community Services

Cathy Callahan
Edward Via Virginia College of Osteopathic Medicine

David Cashwell
HCA Montgomery Regional Hospital

Vicky Collins
Radford Department of Social Services

Bill Finley
Virginia Interfaith Center for Public Policy

Jody Hershey
New River Health District

Susan West Marmagas
Virginia Tech

Beth O'Connor
Virginia Rural Health Resource Center

Terry Smusz
New River Community Action

Amy Forsyth-Stephens
Mental Health Association of the New River Valley

Patrick Earnest
Carilion New River Valley Medical Center

Lori Rakes
HCA Montgomery Regional Hospital

Ward Stevens
Edward Via Virginia College of Osteopathic Medicine

Les Saltzberg
New River Community Services

Raymond Linville
Radford University

Appendix E

NRV MAPP Volunteers

Karen Callahan, Retired Biostatistician

Tarah Coleman, Intern, Virginia Rural Health Association

Mary Beth Dunkenberger, Virginia Tech Institute for Policy and Governance

Deena Flinchum, Retired & Senior Volunteer Program

Bill Finley, Virginia Interfaith Center for Public Policy

Jean Finley, Virginia Interfaith Center for Public Policy

Stephanie Gilmore, Virginia Interfaith Center for Public Policy

Bob Gribben, New River Valley Agency on Aging

Dick Kates, Retired & Senior Volunteer Program

Georgeta Solomitchi-Lester, Graduate Student, Virginia Tech Public Administration/Public Affairs

Angela Little, Retired & Senior Volunteer Program

David Moore, Virginia Tech Institute for Policy and Governance

Jeremy Norman, Editor and Operations Manager of *The Southwest Times*

Tiffany Norman, New River Health District

Wanda Wylam, New River Health District

Appendix F

NRV MAPP Retreat Participants

MAPP Retreat: May 21, 2009

Carilion Giles Community Hospital
 Center for Family Health
 Edward Via Virginia College of Osteopathic Medicine
 Free Clinic of the New River Valley
 Local Government
 Mental Health Association of New River Valley
 New River Community Action Inc.
 New River Community Services
 New River Health District
 New River Valley Agency on Aging
 New River Valley Businesses
 New River Valley Community Residents
 Partners for Self Sufficiency
 Pulaski County Public Schools
 Radford City Department of Social Services
 Retired Senior Volunteer Program
 Virginia Interfaith Center for Public Policy
 Virginia Rural Health Association
 Virginia Tech Institute for Community Health
 Virginia Tech Institute for Policy and Governance
 Women's Resource Center of New River Valley

MAPP Retreat: June 14, 2007

Carilion New River Valley Medical Center
 Free Clinic of the New River Valley
 Local Government
 Mental Health Association of New River Valley
 Mental Health Association of New River Valley Pro Bono Counseling
 Montgomery County Public Schools
 National Association of County and City Health Officials
 New River Health District
 New River Valley Businesses
 New River Valley Community Residents
 Pulaski County Public Schools
 Radford City Department of Social Services
 Radford University School of Nursing
 Retired Senior Volunteer Program
 Virginia Interfaith Center for Public Policy
 Virginia Tech Institute for Policy and Governance
 Virginia Tech Learning Sciences and Technologies
 Women's Resource Center of New River Valley

Appendix G

National Public Health Performance Standards Program
Local Public Health System Assessment
Supplemental Questionnaire - Priority of Model Standards

OVERVIEW: This *optional* questionnaire is made available so that sites may consider the priority of each model standard to their system. Sites choosing to complete this supplemental questionnaire will receive an additional component to their reports which will depict their performance scores in relation to how they have prioritized model standards. This information may serve to catalyze or strengthen the performance improvement activities resulting from the assessment process.

INSTRUCTIONS: Using a scale of 1 to 10 (with 1 being the lowest and 10 being the highest), please rate the priority of each model standard without regard to performance scores or rank order. In considering this questionnaire, the following questions may be helpful for participants. *Example A: "On a scale of 1 to 10, what is the priority of this model standard to our public health system?" Example B: "On a scale of 1 to 10, how important is it to improve our performance in this activity (e.g., through a quality improvement process, increased emphasis or resources)?"* Sites may complete this questionnaire in a single group, either at the same time of the assessment or shortly thereafter, so that there is a consistent approach to responding to the questions across the model standards.

| Model Standard Number | Question | Response |
|---|---|----------|
| Essential Service #1 - Monitor health status to identify health problems | | |
| P1.1 | On a scale of 1 to 10, what is the priority of this model standard - Population-based Community Health Profile - to our local public health system? | 8 |
| P1.2 | On a scale of 1 to 10, what is the priority of this model standard - Current Technology to Manage and Communicate Population Health Data - to our local public health system? | 8 |
| P1.3 | On a scale of 1 to 10, what is the priority of this model standard - Maintenance of Population Health Registries - to our local public health system? | 7 |
| Essential Service #2 - Diagnose and investigate health problems and health hazards | | |
| P2.1 | On a scale of 1 to 10, what is the priority of this model standard - Identification and Surveillance of Health Threats - to our local public health system? | 9 |
| P2.2 | On a scale of 1 to 10, what is the priority of this model standard - Investigation and Response to Public Health Threats and Emergencies - to our local public health system? | 9 |
| P2.3 | On a scale of 1 to 10, what is the priority of this model standard - Laboratory Support for Investigation of Health Threats - to our local public health system? | 9 |

| Essential Service #3 - Inform, educate and empower people about health issues | | |
|---|---|-----------|
| P3.1 | On a scale of 1 to 10, what is the priority of this model standard - Health Education and Promotion - to our local public health system? | 9 |
| P3.2 | On a scale of 1 to 10, what is the priority of this model standard - Health Communication - to our local public health system? | 8 |
| P3.3 | On a scale of 1 to 10, what is the priority of this model standard - Risk Communication - to our local public health system? | 9 |
| Essential Service #4 - Mobilize community partnerships to identify and solve health problems | | |
| P4.1 | On a scale of 1 to 10, what is the priority of this model standard - Constituency Development - to our local public health system? | 6 |
| P4.2 | On a scale of 1 to 10, what is the priority of this model standard - Community Partnerships - to our local public health system? | 9 |
| Essential Service #5 - Develop policies and plans that support individual and community health efforts | | |
| P5.1 | On a scale of 1 to 10, what is the priority of this model standard - Governmental Presence at the Local Level - to our local public health system? | 9 |
| P5.2 | On a scale of 1 to 10, what is the priority of this model standard - Public Health Policy Development - to our local public health system? | 8 |
| P5.3 | On a scale of 1 to 10, what is the priority of this model standard - Community Health Improvement Process and Strategic Planning - to our local public health system? | 8 |
| P5.4 | On a scale of 1 to 10, what is the priority of this model standard - Plan for Public Health Emergencies - to our local public health system? | 10 |
| Essential Service #6 - Enforce laws and regulations that protect health and ensure safety | | |
| P6.1 | On a scale of 1 to 10, what is the priority of this model standard - Review and Evaluation of Laws, Regulations and Ordinances - to our local public health system? | 7 |
| P6.2 | On a scale of 1 to 10, what is the priority of this model standard - Involvement in the Improvement of Laws, Regulations, and Ordinances - to our local public health system? | 7 |
| P6.3 | On a scale of 1 to 10, what is the priority of this model standard - Enforcement of Laws, Regulations, and Ordinances - to our local public health system? | 10 |

| Essential Service #7 - Link people to needed personal health services and assure the provision of health care when otherwise unavailable | | |
|---|---|----------|
| P7.1 | On a scale of 1 to 10, what is the priority of this model standard - Identification of Personal Health Service Needs of Populations - to our local public health system? | 9 |
| P7.2 | On a scale of 1 to 10, what is the priority of this model standard - Linkage of People to Personal Health Services - to our local public health system? | 9 |
| Essential Service #8 - Assure a competent public health and personal health care workforce | | |
| P8.1 | On a scale of 1 to 10, what is the priority of this model standard - Workforce Assessment, Planning and Development - to our local public health system? | 9 |
| P8.2 | On a scale of 1 to 10, what is the priority of this model standard - Public Health Workforce Standards - to our local public health system? | 9 |
| P8.3 | On a scale of 1 to 10, what is the priority of this model standard - Life-Long Learning through Continuing Education, Training and Mentoring - to our local public health system? | 7 |
| P8.4 | On a scale of 1 to 10, what is the priority of this model standard - Public Health Leadership Development - to our local public health system? | 7 |
| Essential Service #9 - Evaluate effectiveness, accessibility, and quality of personal and population-based health services | | |
| P9.1 | On a scale of 1 to 10, what is the priority of this model standard - Evaluation of Population-based Health Services - to our local public health system? | 7 |
| P9.2 | On a scale of 1 to 10, what is the priority of this model standard - Evaluation of Personal Health Services - to our local public health system? | 7 |
| P9.3 | On a scale of 1 to 10, what is the priority of this model standard - Evaluation of the Local Public Health System - to our local public health system? | 6 |
| Essential Service #10 - Research for new insights and innovative solutions to health problems | | |
| P10.1 | On a scale of 1 to 10, what is the priority of this model standard - Fostering Innovation - to our local public health system? | 7 |
| P10.2 | On a scale of 1 to 10, what is the priority of this model standard - Linkage with Institutions of Higher Learning and/or Research - to our local public health system? | 6 |
| P10.3 | On a scale of 1 to 10, what is the priority of this model standard - Capacity to Initiate or Participate in Research - to our local public health system? | 6 |

Appendix H

National Public Health Performance Standards Program
Local Public Health System Assessment
Supplemental Questionnaire - Agency Contribution

OVERVIEW: This *optional* questionnaire is made available so that sites may consider the contribution of the local health department to each model standard in their system. Sites choosing to complete this supplemental questionnaire will receive an additional component to their reports which will depict their performance scores in relations to how they have prioritized model standards. This information may serve to catalyze or strengthen the performance improvement activities resulting from the assessment process.

INSTRUCTIONS: Please use this questionnaire to indicate the percent contribution of the local health department to each model standard. The response selections are in quartile percentage scales—0-25%, 26-50%, 51-75%, and 76-100%. The responses to this questionnaire can be developed at the same time of the assessment or shortly thereafter.

| Indicator Number | Question | Response |
|---|---|----------------|
| Essential Service #1 - Monitor health status to identify health problems | | |
| A1.1 | How much of this model standard - Population-based Community Health Profile - is achieved through the direct contribution of the local health department? | 76-100% |
| A1.2 | How much of this model standard - Current Technology to Manage and Communicate Population Health Data - is achieved through the direct contribution of the local health department? | 26-50% |
| A1.3 | How much of this model standard - Maintenance of Population Health Registries - is achieved through the direct contribution of the local health department? | 76-100% |
| Essential Service #2 - Diagnose and investigate health problems and health hazards | | |
| A2.1 | How much of this model standard - Identification and Surveillance of Health Threats - is achieved through the direct contribution of the local health department? | 76-100% |
| A2.2 | How much of this model standard - Investigation and Response to Public Health Threats and Emergencies - is achieved through the direct contribution of the local health department? | 76-100% |
| A2.3 | How much of this model standard - Laboratory Support for Investigation of Health Threats - is achieved through the direct contribution of the local health department? | 76-100% |
| Essential Service #3 - Inform, educate and empower people about health issues | | |
| A3.1 | How much of this model standard - Health Education and Promotion - is achieved through the direct contribution of the local health department? | 26-50% |
| A3.2 | How much of this model standard - Health Communication - is achieved through the direct contribution of the local health department? | 26-50% |
| A3.3 | How much of this model standard - Risk Communication - is achieved through the direct contribution of the local health department? | 51-75% |

| Essential Service #4 - Mobilize community partnerships to identify and solve health problems | | |
|---|---|----------------|
| A4.1 | How much of this model standard - Constituency Development - is achieved through the direct contribution of the local health department? | 26-50% |
| A4.2 | How much of this model standard - Community Partnerships - is achieved through the direct contribution of the local health department? | 26-50% |
| Essential Service #5 - Develop policies and plans that support individual and community health efforts | | |
| A5.1 | How much of this model standard - Governmental Presence at the Local Level - is achieved through the direct contribution of the local health department? | 0-25% |
| A5.2 | How much of this model standard - Public Health Policy Development - is achieved through the direct contribution of the local health department? | 0-25% |
| A5.3 | How much of this model standard - Community Health Improvement Process and Strategic Planning - is achieved through the direct contribution of the local health department? | 26-50% |
| P5.4 | How much of this model standard - Plan for Public Health Emergencies - is achieved through the direct contribution of the local health department? | 76-100% |
| Essential Service #6 - Enforce laws and regulations that protect health and ensure safety | | |
| A6.1 | How much of this model standard - Review and Evaluation of Laws, Regulations and Ordinances - is achieved through the direct contribution of the local health department? | 51-75% |
| A6.2 | How much of this model standard - Involvement in the Improvement of Laws, Regulations, and Ordinances - is achieved through the direct contribution of the local health department? | 26-50% |
| A6.3 | How much of this model standard - Enforcement of Laws, Regulations, and Ordinances - is achieved through the direct contribution of the local health department? | 76-100% |
| Essential Service #7 - Link people to needed personal health services and assure the provision of health care when otherwise unavailable | | |
| A7.1 | How much of this model standard - Identification of Personal Health Service Needs of Populations - is achieved through the direct contribution of the local health department? | 51-75% |
| A7.2 | How much of this model standard - Linkage of People to Personal Health Services - is achieved through the direct contribution of the local health department? | 51-75% |
| Essential Service #8 - Assure a competent public health and personal health care workforce | | |
| A8.1 | How much of this model standard - Workforce Assessment, Planning and Development - is achieved through the direct contribution of the local health department? | 0-25% |
| A8.2 | How much of this model standard - Public Health Workforce Standards - is achieved through the direct contribution of the local health department? | 0-25% |
| A8.3 | How much of this model standard - Life-Long Learning through Continuing Education, Training and Mentoring - is achieved through the direct contribution of the local health department? | 0-25% |
| A8.4 | How much of this model standard - Public Health Leadership Development - is achieved through the direct contribution of the local health department? | 26-50% |

| Essential Service #9 - Evaluate effectiveness, accessibility, and quality of personal and population-based health services | | |
|---|--|---------------|
| A9.1 | How much of this model standard - Evaluation of Population-based Health Services - is achieved through the direct contribution of the local health department? | 0-25% |
| A9.2 | How much of this model standard - Evaluation of Personal Health Services - is achieved through the direct contribution of the local health department? | 26-50% |
| A9.3 | How much of this model standard - Evaluation of the Local Public Health System - is achieved through the direct contribution of the local health department? | 0-25% |
| Essential Service #10 - Research for new insights and innovative solutions to health problems | | |
| A10.1 | How much of this model standard - Fostering Innovation - is achieved through the direct contribution of the local health department? | 0-25% |
| A10.2 | How much of this model standard - Linkage with Institutions of Higher Learning and/or Research - is achieved through the direct contribution of the local health department? | 26-50% |
| A10.3 | How much of this model standard - Capacity to Initiate or Participate in Research - is achieved through the direct contribution of the local health department? | 0-25% |

Appendix I

NRV MAPP Interview Guide for
Community Themes and Strengths Assessment

1. Are you satisfied with the quality of life in our community? (Prompt: *Think about your sense of safety, well-being, participation in community life and associations, etc.*)
2. Are you satisfied with the health care system in the community? (Prompt: *Think about access, cost, availability, quality, options in health care, etc.*)
3. Is this community a good place to raise children? (Prompt: *Think about school quality, day care, after-school programs, recreation, etc.*)
4. Is this community a good place to grow old? (Prompt: *Think about elder-friendly housing, transportation to medical services, churches, shopping; elder day care, social support for the elderly living alone, meals on wheels, etc.*)
5. Is this an easy place to find a job or start a business to make a living? (Prompt: *Think about locally owned and operated businesses, jobs with career growth, job training/higher education opportunities, affordable housing, reasonable commute, etc.*)
6. Is the community a safe place to live? Do you feel safe in this community? (Prompt: *Think about residents' perceptions of safety in the home, the workplace, schools, playgrounds, parks, the mall. Do neighbors know and trust one another? Do they look out for one another?)*)
7. When families and individuals need help in this community, are there agencies and organizations that can help? (Prompt: *Think about neighbors, support groups, faith community outreach, agencies, organizations*)

8. What kinds of agencies and organizations do you know of? Is it easy or hard to get services and help here? Do these helping organizations work together well in providing services?
9. What are some of the things that would make the community a better place to live?
10. (a) Do you think your *neighbors* know that they can, as individuals or in groups, help make this a better place to live? (b) Do you feel *you* personally can do things to help make this community a better place to live? What kinds of things?
11. Do you think most people in this community care about living here? Do you think most people here like to work together to keep this a good place to live?

Appendix J

NRV Community Health Assessment Mailed/On-line Survey

Questions and Response Frequencies

Created by J. Henry Hershey; Sent out by Audrey J. Kemp

1. What is your zip code?**552 responses** [view this question](#) [view all questions](#)**2. Where do you live?**

| | | |
|------------------------|-------------------------|---|
| Blacksburg | <u>127</u> (23%) |  |
| Christiansburg | <u>108</u> (19%) |  |
| Floyd | <u>31</u> (6%) |  |
| Pearisburg | <u>66</u> (12%) |  |
| Pulaski | <u>30</u> (5%) |  |
| Radford | <u>38</u> (7%) |  |
| Other (please specify) | <u>157</u> (28%) |  |
| <i>no answer</i> | 6 (1%) |  |

3. I would describe my RACE as:

| | | |
|------------------------|-------------------------|---|
| White | <u>534</u> (95%) |  |
| Black | <u>11</u> (2%) |  |
| Native American | <u>4</u> (1%) |  |
| Asian American | <u>2</u> (0%) |  |
| Other (please specify) | <u>6</u> (1%) |  |
| <i>no answer</i> | 6 (1%) |  |

4. Would you also describe yourself as being of HISPANIC origin?

| | | |
|------------------|-------------------------|---|
| Yes | <u>4</u> (1%) |  |
| No | <u>549</u> (98%) |  |
| <i>no answer</i> | 10 (2%) |  |

5. The number of adults (18 or older) living in my home, including me, is**541 responses** [view this question](#) [view all questions](#)**6. The number of children (under 18 years) living in my home is: 0-2 years; 3-6 years; 7-12 years; 13-18 years**(Specify number of children for each age category above) **417 responses** [view this question](#) [view all questions](#)

7. I have:

| | | |
|---------------------|------------------|---|
| Healthcare benefits | 516 (92%) |  |
| No benefits | 40 (7%) |  |
| <i>no answer</i> | 7 (1%) |  |

8. I have a primary care provider (such as a family doctor or nurse practitioner).

| | | |
|------------------|------------------|---|
| Yes | 513 (91%) |  |
| No | 37 (7%) |  |
| <i>no answer</i> | 13 (2%) |  |

9. If you don't have a primary care provider, why not? (check ONE only).

| | | |
|--|------------------|--|
| Don't know how to find a doctor | 1 (0%) |  |
| No doctor is close to where I live | 0 (0%) |  |
| Don't need a doctor | 7 (1%) |  |
| Can't pay for a doctor visit ("out of pocket" or with insurance) | 12 (2%) |  |
| Can't find a doctor I like or trust | 5 (1%) |  |
| Can't get an appointment | 0 (0%) |  |
| Other (please specify) | 21 (4%) |  |
| <i>no answer</i> | 517 (92%) |  |

10. I get most of my health care from: (check ONE only)

| | | |
|--|------------------|---|
| Family doctor | 472 (84%) |  |
| Medical doctor (specialist) other than family doctor | 39 (7%) |  |
| Free clinic or other clinic setting | 10 (2%) |  |
| Health department | 1 (0%) |  |
| Student health center | 7 (1%) |  |
| Emergency department | 2 (0%) |  |
| Non-medical doctor (acupuncturist, herbalist, etc.). | 2 (0%) |  |
| Other (please specify) | 18 (3%) |  |
| <i>no answer</i> | 12 (2%) |  |

11. About how long has it been since you last visited a doctor for a routine checkup (general physical exam -- not for a specific injury, illness, or condition)?

| | | |
|----------------------|------------------|---|
| Within the past year | 345 (61%) |  |
| 1 - 2 years ago | 113 (20%) |  |
| 3 - 4 years ago | 43 (8%) |  |
| 5 or more years ago | 53 (9%) |  |
| <i>no answer</i> | 9 (2%) |  |

12. During the PAST 12 MONTHS have you seen or talked to any of the following health care providers about your own health? (Check ALL that apply)

| | |
|---|---------------------|
| A mental health professional, such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker? | 55 (10%) ■ |
| A foot doctor? | 19 (3%) |
| A chiropractor? | 69 (12%) ■ |
| A physical therapist, speech therapist, respiratory therapist, audiologist, or occupational therapist? | 63 (11%) ■ |
| A nurse practitioner, physician assistant, or midwife? | 156 (28%) ■■ |
| Other? (please specify in box below) | 109 (19%) ■■ |
| other... | 123 (22%) ■■ |

13a. How long has it been since you have seen an EYE DOCTOR (ophthamologist, optician, or optometrist)?

| | |
|---------------------------|-----------------------|
| Within the past year | 284 (50%) ■■■■ |
| Within the past 2 years | 115 (20%) ■■ |
| Within the past 3 years | 47 (8%) ■ |
| Within the past 4-5 years | 38 (7%) ■ |
| 5 or more years | 57 (10%) ■ |
| Never | 18 (3%) |
| <i>no answer</i> | 4 (1%) |

13b. How long has it been since you have seen a FAMILY DOCTOR?

| | |
|---------------------------|-----------------------|
| Within the past year | 433 (77%) ■■■■ |
| Within the past 2 years | 63 (11%) ■ |
| Within the past 3 years | 20 (4%) |
| Within the past 4-5 years | 9 (2%) |
| 5 or more years | 23 (4%) |
| Never | 1 (0%) |
| <i>no answer</i> | 14 (2%) |

13c. How long has it been since you have seen a GYNECOLOGIST (doctor for female health needs)?

| | |
|---------------------------|-----------------------|
| Within the past year | 228 (40%) ■■■■ |
| Within the past 2 years | 57 (10%) ■ |
| Within the past 3 years | 23 (4%) |
| Within the past 4-5 years | 14 (2%) |
| 5 or more years | 52 (9%) ■ |
| Never | 71 (13%) ■ |
| <i>no answer</i> | 118 (21%) ■■ |

14a. I had my CHOLESTEROL checked by a health care provider (doctor, nurse, or other health care worker):

| | | |
|---------------------------|------------------|---|
| Within the past year | 337 (60%) |  |
| Within the past 2 years | 68 (12%) |  |
| Within the past 3 years | 36 (6%) |  |
| Within the past 4-5 years | 19 (3%) |  |
| 5 or more years | 37 (7%) |  |
| Never | 54 (10%) |  |
| <i>no answer</i> | 12 (2%) |  |

14b. I had my BLOOD PRESSURE checked by a health care provider (doctor, nurse, or other health care worker):

| | | |
|---------------------------|------------------|--|
| Within the past year | 486 (86%) |  |
| Within the past 2 years | 30 (5%) |  |
| Within the past 3 years | 6 (1%) |  |
| Within the past 4-5 years | 9 (2%) |  |
| 5 or more years | 12 (2%) |  |
| Never | 10 (2%) |  |
| <i>no answer</i> | 10 (2%) |  |

15. How long has it been since you have seen a DENTIST?

| | | |
|---------------------------|------------------|---|
| Within the past year | 387 (69%) |  |
| Within the past 2 years | 58 (10%) |  |
| Within the past 3 years | 23 (4%) |  |
| Within the past 4-5 years | 26 (5%) |  |
| 5 or more years | 60 (11%) |  |
| Never | 5 (1%) |  |

16. If you have not been able to ACCESS DENTAL CARE, it is because:

| | | |
|---|-----------------|---|
| Lack of dental coverage under health insurance plan | 67 (12%) |  |
| Dentist not located nearby | 2 (0%) | |
| Do not have a dentist | 17 (3%) |  |
| Other (please specify in box below) | 49 (9%) |  |
| other... | 50 (9%) |  |

17. What types of DENTAL CARE do you need?

| | | |
|--|------------------|---|
| General teeth cleaning (at least twice per year) | 428 (76%) |  |
| Cavity fillings | 131 (23%) |  |
| Root canals | 36 (6%) |  |
| Other (please specify in box below) | 53 (9%) |  |
| other... | 59 (10%) |  |

18. Do you have DENTAL INSURANCE?

| | | |
|------------------|------------------|---|
| Yes | 350 (62%) |  |
| No | 201 (36%) |  |
| <i>no answer</i> | 12 (2%) |  |

19. If you do not have dental insurance, do you have MEDICAL INSURANCE?

| | | |
|------------------|------------------|---|
| Yes | 225 (40%) |  |
| No | 36 (6%) |  |
| <i>no answer</i> | 302 (54%) |  |

20. Is your MEDICAL INSURANCE PLAN:

| | | |
|------------------------|------------------|---|
| Private coverage | 352 (63%) |  |
| Medicaid/FAMIS | 29 (5%) |  |
| Other (please specify) | 119 (21%) |  |
| <i>no answer</i> | 63 (11%) |  |

21. In the past year I got a FLU SHOT.

| | | |
|------------------|------------------|---|
| Yes | 255 (45%) |  |
| No | 289 (51%) |  |
| Don't know | 1 (0%) | |
| <i>no answer</i> | 18 (3%) |  |

**Please answer questions 22-25 if you are a woman (Men go to question 26).

22. I examine my BREASTS each month for LUMPS.

| | | |
|------------------|------------------|---|
| Yes | 204 (36%) |  |
| No | 188 (33%) |  |
| <i>no answer</i> | 171 (30%) |  |

23. A mammogram is an X-ray of each breast to look for breast cancer. How long has it been since you had your LAST MAMMOGRAM?

| | | |
|-----------------------|------------------|---|
| Within the past year | 174 (31%) |  |
| 1-2 years ago | 63 (11%) |  |
| 3-5 years ago | 35 (6%) |  |
| More than 5 years | 16 (3%) |  |
| Never had a mammogram | 107 (19%) |  |
| <i>no answer</i> | 168 (30%) |  |

24. How long has it been since a physician or other health professional has examined your breasts (CLINICAL BREAST EXAM)?

| | | |
|----------------------------------|------------------|---|
| Within the past year | 254 (45%) |  |
| 1-2 years ago | 79 (14%) |  |
| 3-5 years ago | 35 (6%) |  |
| More than 5 years | 14 (2%) |  |
| Never had a clinical breast exam | 13 (2%) |  |
| <i>no answer</i> | 168 (30%) |  |

25. A PAP smear is a test for cancer of the cervix. How long has it been since you had your last PAP SMEAR?

| | | |
|-----------------------|------------------|---|
| Within the past year | 230 (41%) |  |
| 1-2 years ago | 75 (13%) |  |
| 3-5 years ago | 50 (9%) |  |
| More than 5 years | 33 (6%) |  |
| Never had a Pap smear | 13 (2%) |  |
| <i>no answer</i> | 162 (29%) |  |

**Please answer questions 26-27 if you are a man (Women go to question 28).

26. How long has it been since you were checked for PROSTATE CANCER (a digital rectal exam or a PSA test):

| | | |
|--|------------------|--|
| Within the past year | 76 (13%) |  |
| 1-2 years ago | 35 (6%) |  |
| 3-5 years ago | 10 (2%) |  |
| More than 5 years | 9 (2%) |  |
| Never been checked for prostate cancer | 62 (11%) |  |
| <i>no answer</i> | 371 (66%) |  |

27. I examine my TESTICLES (male sex organs) each month for LUMPS.

Yes **76** (13%) 
 No **121** (21%) 
no answer **366** (65%) 

28a. Have you ever been told by a doctor that you have HIGH CHOLESTEROL or have BORDERLINE HIGH CHOLESTEROL?

Yes **254** (45%) 
 No **287** (51%) 
no answer **22** (4%) 

28b. Have you ever been told by a doctor that you have HIGH BLOOD PRESSURE?

Yes **192** (34%) 
 No **358** (64%) 
no answer **13** (2%) 

28c. Have you ever been told by a doctor that you have HEART PROBLEMS (heart attack, angina, stroke, or other heart disease)?

Yes **93** (17%) 
 No **455** (81%) 
no answer **15** (3%) 

28d. Have you ever been told by a doctor that you have LUNG CANCER?

Yes **5** (1%) 
 No **539** (96%) 
no answer **19** (3%) 

28e. Have you ever been told by a doctor that you have COLON or RECTAL CANCER?

Yes **5** (1%) 
 No **537** (95%) 
no answer **21** (4%) 

28f. Have you ever been told by a doctor that you have SKIN CANCER?

Yes **49** (9%) 
 No **493** (88%) 
no answer **21** (4%) 

28g. Have you ever been told by a doctor that you have BREAST CANCER?Yes 12 (2%) |No 525 (93%) |no answer 26 (5%) |**28h. Have you ever been told by a doctor that you have a SEXUALLY TRANSMITTED DISEASE (such as herpes, gonorrhea, genital warts, chlamydia, etc.)?**Yes 21 (4%) |No 521 (93%) |no answer 21 (4%) |**28i. Have you ever been told by a doctor that you have HIV/AIDS?**Yes 1 (0%) |No 535 (95%) |no answer 27 (5%) |**28j. Have you ever been told by a doctor that you have CERVICAL CANCER (per PAP test – women only)?**Yes 13 (2%) |No 450 (80%) |no answer 100 (18%) |**28k. Have you ever been told by a doctor that you have PROSTATE CANCER (men only)?**Yes 13 (2%) |No 312 (55%) |no answer 238 (42%) |**28l. Have you ever been told by a doctor that you have LUNG or RESPIRATORY DISEASE (COPD, asthma, chronic bronchitis)?**Yes 80 (14%) |No 459 (82%) |no answer 24 (4%) |**28m. Have you ever been told by a doctor that you have DIABETES?**Yes 64 (11%) |No 479 (85%) |no answer 20 (4%) |

28n. Have you ever been told by a doctor that you have ARTHRITIS?

Yes **175** (31%) 

No **369** (66%) 

no answer **19** (3%) 

28o. Have you ever been told by a doctor that you have MENTAL HEALTH or EMOTIONAL PROBLEMS?

Yes **75** (13%) 

No **470** (83%) 

no answer **18** (3%) 

28p. Have you ever been told by a doctor that you have ALCOHOL PROBLEMS?

Yes **7** (1%) 

No **536** (95%) 

no answer **20** (4%) 

28q. Have you ever been told by a doctor that you have OVERWEIGHT PROBLEMS?

Yes **155** (28%) 

No **388** (69%) 

no answer **20** (4%) 

29a. My family (blood relatives) have a history of CANCER?

Yes **358** (64%) 

No **167** (30%) 

Don't know **18** (3%) 

no answer **20** (4%) 

29b. My family (blood relatives) have a history of HEART DISEASE?

Yes **318** (56%) 

No **199** (35%) 

Don't know **24** (4%) 

no answer **22** (4%) 

29c. My family (blood relatives) have a history of HIGH BLOOD PRESSURE?

Yes **379** (67%) 

No **134** (24%) 

Don't know **32** (6%) 

no answer **18** (3%) 

29d. My family (blood relatives) have a history of STROKE?Yes **216** (38%) No **283** (50%) Don't know **34** (6%) *no answer* **30** (5%) **29e. My family (blood relatives) have a history of DIABETES (sugar)?**Yes **306** (54%) No **221** (39%) Don't know **16** (3%) *no answer* **20** (4%) **29f. My family (blood relatives) have a history of ARTHRITIS?**Yes **326** (58%) No **191** (34%) Don't know **26** (5%) *no answer* **20** (4%) **29g. My family (blood relatives) have a history of MENTAL HEALTH or EMOTIONAL PROBLEMS?**Yes **123** (22%) No **382** (68%) Don't know **27** (5%) *no answer* **31** (6%) **29h. My family (blood relatives) have a history of ALCOHOL PROBLEMS?**Yes **147** (26%) No **374** (66%) Don't know **11** (2%) *no answer* **31** (6%) **29i. My family (blood relatives) have a history of being OVERWEIGHT?**Yes **230** (41%) No **287** (51%) Don't know **17** (3%) *no answer* **29** (5%) 

Please indicate who pays for the health insurance for each of the family members listed below who have insurance (check ALL that apply -- leave blank for those not covered).

30a. Have insurance?

| | | |
|-------------------------------------|------------------|---|
| Myself | <u>472</u> (84%) |  |
| My spouse | <u>304</u> (54%) |  |
| No spouse | <u>31</u> (6%) |  |
| My children (under age 18) | <u>126</u> (22%) |  |
| No children | <u>70</u> (12%) |  |
| Other (please specify in box below) | <u>28</u> (5%) |  |
| other... | <u>35</u> (6%) |  |

30b. My employer?

| | | |
|-------------------------------------|------------------|---|
| Myself | <u>227</u> (40%) |  |
| My spouse | <u>96</u> (17%) |  |
| No spouse | <u>9</u> (2%) |  |
| My children (under age 18) | <u>40</u> (7%) |  |
| No children | <u>20</u> (4%) |  |
| Other (please specify in box below) | <u>11</u> (2%) |  |
| other... | <u>16</u> (3%) |  |

30c. My spouse's employer

| | | |
|-------------------------------------|------------------|---|
| Myself | <u>108</u> (19%) |  |
| My spouse | <u>158</u> (28%) |  |
| No spouse | <u>6</u> (1%) |  |
| My children (under age 18) | <u>50</u> (9%) |  |
| No children | <u>10</u> (2%) |  |
| Other (please specify in box below) | <u>9</u> (2%) |  |
| other... | <u>11</u> (2%) |  |

30d. Me or my spouse

| | | |
|-------------------------------------|------------------|---|
| Myself | <u>119</u> (21%) |  |
| My spouse | <u>66</u> (12%) |  |
| No spouse | <u>9</u> (2%) |  |
| My children (under age 18) | <u>23</u> (4%) |  |
| No children | <u>11</u> (2%) |  |
| Other (please specify in box below) | <u>8</u> (1%) |  |
| other... | <u>9</u> (2%) |  |

30e. Medicare

| | | |
|-------------------------------------|------------------|---|
| Myself | <u>123</u> (22%) | ■ |
| My spouse | <u>63</u> (11%) | ■ |
| No spouse | <u>4</u> (1%) | |
| My children (under age 18) | <u>4</u> (1%) | |
| No children | <u>10</u> (2%) | |
| Other (please specify in box below) | <u>6</u> (1%) | |
| other... | <u>5</u> (1%) | |

30f. Medicaid/medical assistance

| | | |
|-------------------------------------|----------------|---|
| Myself | <u>28</u> (5%) | ■ |
| My spouse | <u>9</u> (2%) | |
| No spouse | <u>2</u> (0%) | |
| My children (under age 18) | <u>21</u> (4%) | ■ |
| No children | <u>3</u> (1%) | |
| Other (please specify in box below) | <u>5</u> (1%) | |
| other... | <u>6</u> (1%) | |

30g. Military CHAMPUS or the VA

| | | |
|-------------------------------------|----------------|---|
| Myself | <u>27</u> (5%) | ■ |
| My spouse | <u>19</u> (3%) | ■ |
| No spouse | <u>2</u> (0%) | |
| My children (under age 18) | <u>4</u> (1%) | |
| No children | <u>4</u> (1%) | |
| Other (please specify in box below) | <u>3</u> (1%) | |
| other... | <u>4</u> (1%) | |

30h. Other

| | | |
|-------------------------------------|----------------|---|
| Myself | <u>15</u> (3%) | ■ |
| My spouse | <u>13</u> (2%) | |
| No spouse | <u>3</u> (1%) | |
| My children (under age 18) | <u>6</u> (1%) | |
| No children | <u>4</u> (1%) | |
| Other (please specify in box below) | <u>18</u> (3%) | ■ |
| other... | <u>31</u> (6%) | ■ |

31. During the past 12 months, the following problems have stopped me from getting the health care I need: (Check ALL that apply)

| | |
|---|--------------------|
| I don't know where to go for health services | <u>9</u> (2%) |
| I can't get transportation | <u>9</u> (2%) |
| Health services aren't close to where I live | <u>8</u> (1%) |
| I can't pay for health services | <u>45</u> (8%) ■ |
| My health insurance doesn't cover what I need | <u>50</u> (9%) ■ |
| I couldn't get an appointment | <u>19</u> (3%) |
| I couldn't get through on the telephone | <u>11</u> (2%) |
| The clinic/doctor's office wasn't open when I could get there. | <u>17</u> (3%) |
| My deductible or co-payment (my share of the cost) is too high | <u>35</u> (6%) ■ |
| Hospitals won't take my insurance or Medical Assistance (Medicaid) | <u>2</u> (0%) |
| My health care provider won't take my insurance, or Medical Assistance (Medicaid) | <u>9</u> (2%) |
| I couldn't find a health care provider I like and/or trust | <u>17</u> (3%) |
| None—I've gotten the health care I need | <u>343</u> (61%) ■ |
| Other (please specify in box below) | <u>13</u> (2%) |
| other... | <u>14</u> (2%) |

32a. During the past year, was there any time when you or a family member needed PRESCRIPTION MEDICINE, but did not get it because you couldn't afford it?

| | |
|-----------|--------------------|
| Yes | <u>73</u> (13%) ■ |
| No | <u>466</u> (83%) ■ |
| no answer | <u>24</u> (4%) |

32b. During the past year, was there any time when you or a family member needed EYEWEAR (contact lenses, glasses), but did not get it because you couldn't afford it?

| | |
|-----------|--------------------|
| Yes | <u>78</u> (14%) ■ |
| No | <u>460</u> (82%) ■ |
| no answer | <u>25</u> (4%) |

33. I am PREGNANT NOW or have been pregnant in the PAST 5 YEARS.

| | |
|---|--------------------|
| Yes (Please answer questions 34-39 for your most recent pregnancy.) | <u>46</u> (8%) ■ |
| No (Go to question 40) | <u>396</u> (70%) ■ |
| no answer | <u>121</u> (21%) ■ |

34. If you have had a CHILD in the LAST 5 YEARS, you delivered the baby at:

| | | | |
|----------------------------|--------------------|-------|---|
| Home | 0 | (0%) | |
| Medical center or hospital | 47 | (8%) | ■ |
| Other (please specify) | 0 | (0%) | |
| <i>no answer</i> | 516 | (92%) | ■ |

35. If you delivered your baby at a medical center or hospital, what was the NAME of the FACILITY?

46 responses [view this question](#) [view all questions](#)

36. If you have not had your baby yet, where do you PLAN TO DELIVER the baby?

7 responses [view this question](#) [view all questions](#)

37. If CURRENTLY PREGNANT, in what month are you?

(number) **8 responses** [view this question](#) [view all questions](#)

38a. During my pregnancy I see (or saw) a DOCTOR.

| | | | |
|------------------|--------------------|-------|---|
| Yes | 48 | (9%) | ■ |
| No | 1 | (0%) | |
| <i>no answer</i> | 514 | (91%) | ■ |

38b. During my pregnancy I follow(ed) a HEALTHY DIET.

| | | | |
|------------------|--------------------|-------|---|
| Yes | 44 | (8%) | ■ |
| No | 4 | (1%) | ■ |
| <i>no answer</i> | 515 | (91%) | ■ |

38c. During my pregnancy I take/took VITAMINS every day.

| | | | |
|------------------|--------------------|-------|---|
| Yes | 43 | (8%) | ■ |
| No | 5 | (1%) | ■ |
| <i>no answer</i> | 515 | (91%) | ■ |

38d. During my pregnancy I take/took classes on how to CARE FOR MY NEW BABY.

| | | | |
|------------------|--------------------|-------|---|
| Yes | 21 | (4%) | ■ |
| No | 27 | (5%) | ■ |
| <i>no answer</i> | 515 | (91%) | ■ |

38e. During my pregnancy I SMOKE(D).

| | | | |
|------------------|--------------------|-------|---|
| Yes | 0 | (0%) | |
| No | 48 | (9%) | ■ |
| <i>no answer</i> | 515 | (91%) | ■ |

38f. During my pregnancy I drink/drank ALCOHOL.

Yes 1 (0%)
 No 47 (8%) ■
 no answer **515** (91%) ■

38g. During my pregnancy I use(d) ILLEGAL STREET DRUGS.

Yes **0** (0%)
 No 47 (8%) ■
 no answer **516** (92%) ■

38h. During my pregnancy I am/was physically ABUSED.

Yes **0** (0%)
 No 50 (9%) ■
 no answer **513** (91%) ■

39. During which MONTH (1 to 9) in your pregnancy did you first see a doctor?

Seen a doctor (specify below) 3 (1%) |
 Have not seen a doctor **0** (0%)
 (number) 45 (8%) ■
 no answer **515** (91%) ■

40. There is a PERSON in my HOUSEHOLD UNDER AGE 18 (other than yourself) who is pregnant or was pregnant in the past 5 years.

Yes 1 (0%)
 No 445 (79%) ■
 Don't know 4 (1%) |
 no answer **113** (20%) ■

41. How many CHILDREN live in your household who are...

Less than 4 _____ (number) 56 (10%) ■
 5-12 _____ (number) 85 (15%) ■
 13-17 _____ (number) 56 (10%) ■
 No children live in my household (Go to question 50) **338** (60%) ■
 (please specify number of each child based on the age ranges above) 149 (26%) ■

42. The child or children had a PHYSICAL check-up or WELL-BABY EXAM in the past year.

Yes **139** (25%) 

No **25** (4%) 

Don't know **1** (0%)

no answer **398** (71%) 

43. The child or children (those age 3 or older) had a DENTAL check-up in the past year.

Yes **120** (21%) 

No **28** (5%) 

Don't know **0** (0%)

no answer **415** (74%) 

44. The child or children are up-to-date on all of their IMMUNIZATIONS (childhood shots).

Yes **159** (28%) 

No **4** (1%) 

Don't know **1** (0%)

no answer **399** (71%) 

45. The child or children age 2 or older eat at least THREE meals a day.

Rarely or never **0** (0%)

Sometimes **11** (2%) 

Often **18** (3%) 

Always **121** (21%) 

There is no child 2 or older **12** (2%) 

no answer **401** (71%) 

46. When riding in a car, my child or children under age 8 use a CHILD SEAT.

Always **75** (13%) 

Nearly always **2** (0%)

Sometimes **1** (0%)

Seldom **0** (0%)

Never **1** (0%)

Never rides **0** (0%)

There is no child under age 4 **85** (15%) 

no answer **399** (71%) 

47. When riding in a car, my child or children age 8 or older use a SEATBELT.

| | | |
|----------------------------------|------------------|---|
| Always | 124 (22%) |  |
| Nearly always | 6 (1%) | |
| Sometimes | 2 (0%) | |
| Seldom | 0 (0%) | |
| Never | 1 (0%) | |
| Never rides | 0 (0%) | |
| There is no child age 4 or older | 31 (6%) | |
| <i>no answer</i> | 399 (71%) |  |

48. In the past year, has your child or children age 14 or younger been injured from a fall and required treatment by a doctor?

| | | |
|-------------------------------------|------------------|---|
| Yes | 20 (4%) | |
| No | 116 (21%) |  |
| There is no child age 14 or younger | 28 (5%) | |
| <i>no answer</i> | 399 (71%) |  |

49a. In the past year, has your child or children used/abused DRUGS?

| | | |
|------------------|------------------|---|
| Yes | 1 (0%) | |
| No | 164 (29%) |  |
| Not sure | 2 (0%) | |
| <i>no answer</i> | 396 (70%) |  |

49b. In the past year, has your child or children used/abused ALCOHOL?

| | | |
|------------------|------------------|---|
| Yes | 3 (1%) | |
| No | 163 (29%) |  |
| Not sure | 3 (1%) | |
| <i>no answer</i> | 394 (70%) |  |

50a. How would you rate DRUG USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **455 responses** [view this question](#) [view all questions](#)

50b. How would you rate ALCOHOL USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **450 responses** [view this question](#) [view all questions](#)

51. During the past month I drank ALCOHOL:

| | | |
|---------------------------------|------------------|---|
| Less than once a month | 130 (23%) |  |
| A few times per month | 81 (14%) |  |
| About once a week | 40 (7%) |  |
| A few days a week | 48 (9%) |  |
| Every day | 32 (6%) |  |
| Never drink (Go to question 53) | 212 (38%) |  |
| <i>no answer</i> | 20 (4%) |  |

52. When I drink alcohol, the number of DRINKS I have is:

| | | |
|------------------|------------------|---|
| 1 or 2 | 277 (49%) |  |
| 3 or 4 | 44 (8%) |  |
| 5 or 6 | 10 (2%) |  |
| 7 to 10 | 2 (0%) | |
| More than 10 | 1 (0%) | |
| <i>no answer</i> | 229 (41%) |  |

53. Have you ever SMOKED?

| | | |
|--|------------------|---|
| Yes, I am currently a smoker (Go to question 54) | 77 (14%) |  |
| Yes, but I no longer smoke | 161 (29%) |  |
| No (Go to question 59) | 309 (55%) |  |
| <i>no answer</i> | 16 (3%) |  |

54. How many YEARS did you smoke?

(number) **227 responses** [view this question](#) [view all questions](#)

55. On the average, how much did you smoke EACH DAY?

| | | |
|---|------------------|---|
| 2 packs or less (10 or less cigarettes) | 99 (18%) |  |
| Between 2 packs and 1 pack (11-20 cigarettes) | 41 (7%) |  |
| Between 1 pack and 2 packs (21-40 cigarettes) | 43 (8%) |  |
| 2 or more packs (40 or more cigarettes) | 12 (2%) |  |
| Smoked, but not every day (Go to question 57) | 32 (6%) |  |
| <i>no answer</i> | 336 (60%) |  |

56. Do you NOW smoke each day:

| | | |
|---|------------------|---|
| 2 packs or less (10 or less cigarettes) | 34 (6%) |  |
| Between 2 packs and 1 pack (11-20 cigarettes) | 11 (2%) |  |
| Between 1 pack and 2 packs (21-40 cigarettes) | 24 (4%) |  |
| 2 or more packs (40 or more cigarettes) | 0 (0%) | |
| Smoke, but not everyday | 19 (3%) |  |
| <i>no answer</i> | 475 (84%) |  |

57. I smoke:

Cigars **6** (1%) |
 Pipe **6** (1%) |
 Cigarillos **14** (2%) |
 Bidis **3** (1%) |

58. I STARTED smoking at age

(number) **211** responses [view this question](#) [view all questions](#)

59. I use smokeless TOBACCO (snuff, chewing tobacco).

Yes **27** (5%) ■
 No **466** (83%) ■
no answer **70** (12%) ■

60. Someone ELSE in my home smokes cigarettes, cigars, or a pipe.

Yes **93** (17%) ■
 No **427** (76%) ■
no answer **43** (8%) ■

61. During the PAST MONTH, did you participate in any PHYSICAL ACTIVITIES or EXERCISES, such as running, calisthenics, active housework, gardening, or walking for exercise?

Yes **453** (80%) ■
 No (go to Question 64) **101** (18%) ■
no answer **9** (2%) |

62. Each WEEK, I exercise:

Less than 1 time **56** (10%) ■
 1 or 2 times **141** (25%) ■
 3 or 4 times **139** (25%) ■
 5 or more times **110** (20%) ■
no answer **117** (21%) ■

63. When I exercise, I EXERCISE FOR:

Less than 20 minutes **104** (18%) ■
 20-29 minutes **132** (23%) ■
 30 minutes or more **213** (38%) ■
no answer **114** (20%) ■

64. I use a SEATBELT:

| | | |
|---------------------|------------------|---|
| Always | 458 (81%) |  |
| Nearly always | 55 (10%) |  |
| Sometimes | 20 (4%) |  |
| Seldom | 9 (2%) |  |
| Never | 5 (1%) |  |
| Never drive or ride | 1 (0%) | |
| <i>no answer</i> | 15 (3%) |  |

65a. In the PAST month, I have driven a car/truck after I had too much to DRINK.

| | | |
|------------------|------------------|---|
| Yes | 8 (1%) |  |
| No | 534 (95%) |  |
| <i>no answer</i> | 21 (4%) |  |

65b. In the PAST month, I have driven a car/truck after taking DRUGS that could affect my ability to drive safely.

| | | |
|------------------|------------------|---|
| Yes | 8 (1%) |  |
| No | 540 (96%) |  |
| <i>no answer</i> | 15 (3%) |  |

65c. In the PAST month, I rode in a car/truck driven by someone who drank ALCOHOL.

| | | |
|------------------|------------------|---|
| Yes | 39 (7%) |  |
| No | 507 (90%) |  |
| <i>no answer</i> | 17 (3%) |  |

65d. In the PAST month, I rode in a car/truck driven by someone who had taken DRUGS.

| | | |
|------------------|------------------|---|
| Yes | 16 (3%) |  |
| No | 529 (94%) |  |
| <i>no answer</i> | 18 (3%) |  |

65e. In the PAST month, I used ILLEGAL drugs (cocaine, marijuana, etc.)

| | | |
|------------------|------------------|---|
| Yes | 10 (2%) |  |
| No | 532 (94%) |  |
| <i>no answer</i> | 21 (4%) |  |

65f. In the PAST year, I had more than one SEX PARTNER (leave blank if not having sex with anyone.)

Yes 22 (4%) 

No 447 (79%) 

no answer 94 (17%) 

65g. If yes, I always used CONDOMS (rubbers) with my sex partner(s).

Yes 22 (4%) 

No 90 (16%) 

no answer 451 (80%) 

66. Are any GUNS/FIREARMS now kept in or around your home? (Include those kept in a garage, outdoor storage area, car, truck or other motor vehicle.)

Yes 321 (57%) 

No 230 (41%) 

no answer 12 (2%) 

67. If yes, is there a firearm in or around your home that is USUALLY both loaded and unlocked?

Yes 86 (15%) 

No 286 (51%) 

no answer 191 (34%) 

68. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?

Yes 38 (7%) 

No 516 (92%) 

no answer 9 (2%) 

69. Because of any impairment or health problem, do you need the help of other persons in handling your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?

Yes 16 (3%) 

No 532 (94%) 

no answer 15 (3%) 

70a. In the PAST YEAR, I had a problem getting transportation to the grocery store (supermarket).

| | | |
|------------------|------------------|---|
| Rarely or never | 510 (91%) |  |
| Sometimes | 11 (2%) |  |
| Often | 1 (0%) | |
| Always | 5 (1%) |  |
| <i>no answer</i> | 36 (6%) |  |

70b. In the PAST YEAR, I had a problem getting transportation to social visits (visits to friends or family, meetings, etc.)

| | | |
|------------------|------------------|---|
| Rarely or never | 500 (89%) |  |
| Sometimes | 15 (3%) |  |
| Often | 6 (1%) |  |
| Always | 6 (1%) |  |
| <i>no answer</i> | 36 (6%) |  |

71a. Do you provide care for someone age 65 or older, or who is developmentally disabled?

| | | |
|-------------------------------|------------------|---|
| Yes, for one person | 37 (7%) |  |
| Yes, for more than one person | 4 (1%) |  |
| No (Go to question 75) | 502 (89%) |  |
| <i>no answer</i> | 20 (4%) |  |

71b. If yes, please indicate which of the following best describes the care you provide:

| | | |
|--|------------------|--|
| I provide most of the care | 13 (2%) |  |
| I provide some care on a regular basis | 14 (2%) |  |
| I help occasionally | 15 (3%) |  |
| Don't know | 0 (0%) | |
| <i>no answer</i> | 521 (93%) |  |

72. What is your RELATIONSHIP with this person (family, friend, employee)?
(please specify) **39 responses** [view this question](#) [view all questions](#)

73. What kind of HELP do you provide? (Check ALL that apply)

| | | |
|--|-----------------|---|
| Help with personal care (bathing, dressing, eating, etc.) | 14 (2%) |  |
| Help with household needs (cooking, shopping, driving, etc.) | 31 (6%) |  |
| Other (please specify) | 14 (2%) |  |

(If you are the MAIN caregiver, answer the following. If not, go to question 75.)

74a. As a caregiver, do you feel ASSISTED LIVING (housing with services to help people) is available for you and the person you care for, if you need them?

| | |
|--|---|
| Yes, and am using now | <u>5</u> (1%) |
| Yes, and have used in the past | <u>1</u> (0%) |
| Have not used, but think it is available | <u>16</u> (3%) |
| Don't think it is available | <u>4</u> (1%) |
| <i>no answer</i> | 537 (95%)  |

74b. As a caregiver, do you feel HOME HEALTH NURSING services are available for you and the person you care for, if you need them?

| | |
|--|---|
| Yes, and am using now | <u>5</u> (1%) |
| Yes, and have used in the past | <u>6</u> (1%) |
| Have not used, but think it is available | <u>10</u> (2%) |
| Don't think it is available | <u>4</u> (1%) |
| <i>no answer</i> | 538 (96%)  |

74C. As a caregiver, do you feel a GROUP HOME setting (i.e., staffed single-family residence for developmentally and/or mentally disabled people) is available for you and the person you care for, if you need them?

| | |
|--|----------------|
| Yes, and am using now | <u>2</u> (0%) |
| Yes, and have used in the past | <u>1</u> (0%) |
| Have not used, but think it is available | <u>6</u> (1%) |
| Don't think it is available | <u>4</u> (1%) |

74d. As a caregiver, do you feel help with HOUSEWORK AND HOME MAINTENANCE services are available for you and the person you care for, if you need them?

| | |
|--|---|
| Yes, and am using now | <u>5</u> (1%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>8</u> (1%) |
| Don't think it is available | <u>10</u> (2%) |
| <i>no answer</i> | 540 (96%)  |

74e. As a caregiver, do you feel that someone to LIVE-IN or STAY daily with the person is available for you and the person you care for, if you need them?

| | |
|--|---|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>9</u> (2%) |
| Don't think it is available | <u>13</u> (2%) |
| <i>no answer</i> | 541 (96%)  |

74f. As a caregiver, do you feel EDUCATION AND SUPPORT services for you and the person you care for are available, if you need them?

| | | |
|--|------------------|--|
| Yes, and am using now | 0 (0%) | |
| Yes, and have used in the past | <u>1</u> (0%) | |
| Have not used, but think it is available | <u>11</u> (2%) | |
| Don't think it is available | <u>10</u> (2%) | |
| <i>no answer</i> | 541 (96%) |  |

74g. As a caregiver, do you feel TRANSPORTATION services are available for you and/or the person you care for, if you need them?

| | | |
|--|------------------|--|
| Yes, and am using now | <u>3</u> (1%) | |
| Yes, and have used in the past | <u>1</u> (0%) | |
| Have not used, but think it is available | <u>12</u> (2%) | |
| Don't think it is available | <u>6</u> (1%) | |
| <i>no answer</i> | 541 (96%) |  |

74h. As a caregiver, do you feel help with PAYING FOR MEDICATIONS is available for you and the person you care for, if you need them?

| | | |
|--|------------------|--|
| Yes, and am using now | <u>5</u> (1%) | |
| Yes, and have used in the past | 0 (0%) | |
| Have not used, but think it is available | <u>11</u> (2%) | |
| Don't think it is available | <u>5</u> (1%) | |
| <i>no answer</i> | 542 (96%) |  |

74i. As a caregiver, do you feel ADULT DAYCARE services are available for you and the person you care for, if you need them?

| | | |
|--|------------------|--|
| Yes, and am using now | 0 (0%) | |
| Yes, and have used in the past | 0 (0%) | |
| Have not used, but think it is available | <u>14</u> (2%) | |
| Don't think it is available | <u>7</u> (1%) | |
| <i>no answer</i> | 542 (96%) |  |

75. If you are age 65 or older, OR are caring for an older or developmentally/mentally disabled family member, have you/they had an injury from a fall that required TREATMENT BY A DOCTOR during the past year?

| | | |
|------------------|------------------|---|
| Yes | <u>21</u> (4%) | |
| No | <u>125</u> (22%) |  |
| Doesn't apply | <u>323</u> (57%) |  |
| <i>no answer</i> | 94 (17%) |  |

76. Are you a GRANDPARENT?

Yes **206** (37%) 

No **336** (60%) 

no answer **21** (4%) 

77. If you are a grandparent, are you the MAIN PROVIDER and CAREGIVER for your grandchildren?

Yes **9** (2%) 

No **246** (44%) 

no answer **308** (55%) 

78a. During the past 30 days, did you feel so SAD that nothing could cheer you up?

All of the time **4** (1%) 

Most of the time **18** (3%) 

Some of the time **59** (10%) 

A little of the time **111** (20%) 

None of the time **348** (62%) 

no answer **23** (4%) 

78b. During the PAST 30 days, did you feel NERVOUS?

All of the time **10** (2%) 

Most of the time **21** (4%) 

Some of the time **107** (19%) 

A little of the time **185** (33%) 

None of the time **220** (39%) 

no answer **20** (4%) 

78c. During the PAST 30 days, did you feel RESTLESS or FIDGETY?

All of the time **11** (2%) 

Most of the time **24** (4%) 

Some of the time **107** (19%) 

A little of the time **169** (30%) 

None of the time **230** (41%) 

no answer **22** (4%) 

78d. During the PAST 30 days, did you feel HOPELESS?

| | | |
|----------------------|------------------|---|
| All of the time | <u>7</u> (1%) | |
| Most of the time | <u>12</u> (2%) | |
| Some of the time | <u>36</u> (6%) | ■ |
| A little of the time | <u>72</u> (13%) | ■ |
| None of the time | <u>410</u> (73%) | ■ |
| <i>no answer</i> | 26 (5%) | ■ |

78e. During the PAST 30 days, did you feel that everything was an EFFORT?

| | | |
|----------------------|------------------|---|
| All of the time | <u>13</u> (2%) | |
| Most of the time | <u>25</u> (4%) | |
| Some of the time | <u>82</u> (15%) | ■ |
| A little of the time | <u>141</u> (25%) | ■ |
| None of the time | <u>281</u> (50%) | ■ |
| <i>no answer</i> | 21 (4%) | ■ |

78f. During the PAST 30 days, did you feel WORTHLESS?

| | | |
|----------------------|------------------|---|
| All of the time | <u>6</u> (1%) | |
| Most of the time | <u>12</u> (2%) | |
| Some of the time | <u>25</u> (4%) | |
| A little of the time | <u>65</u> (12%) | ■ |
| None of the time | <u>429</u> (76%) | ■ |
| <i>no answer</i> | 26 (5%) | ■ |

79. In the past year, someone in my home had a MENTAL HEALTH or EMOTIONAL PROBLEM (such as depression, severe stress, severe phobia, etc.) that affected their ability to do daily activities.

| | | |
|------------------|------------------|---|
| Yes | <u>98</u> (17%) | ■ |
| No | <u>438</u> (78%) | ■ |
| Don't know | <u>14</u> (2%) | |
| <i>no answer</i> | 13 (2%) | |

80. IF YES, this person(s) was TREATED for a mental health problem (such as depression, severe stress, severe phobia, etc.)

| | | |
|------------------|------------------|---|
| Yes | <u>74</u> (13%) | ■ |
| No | <u>86</u> (15%) | ■ |
| Don't know | <u>12</u> (2%) | |
| <i>no answer</i> | 391 (69%) | ■ |

81. Are you personally aware of any abuse (e.g., neglect, psychological, physical, sexual) happening in the home?

Yes **12** (2%) |
 No **518** (92%) |
 Not sure **1** (0%)
no answer **32** (6%) |

82. I or someone in my home has tried to KILL him-/herself in the PAST 5 YEARS.

Yes **9** (2%) |
 No **527** (94%) |
 Not sure **3** (1%) |
no answer **24** (4%) |

I would like to ask you about various environmental factors that might influence your health. For each item, please INDICATE IF YOU FEEL IT IS A PROBLEM IN YOUR AREA:

83a. Outdoor air quality

Yes **80** (14%) |
 No **413** (73%) |
 Don't know **47** (8%) |
no answer **23** (4%) |

83b. Indoor air quality

Yes **74** (13%) |
 No **436** (77%) |
 Don't know **31** (6%) |
no answer **22** (4%) |

83c. Recreational water quality

Yes **84** (15%) |
 No **360** (64%) |
 Don't know **96** (17%) |
no answer **23** (4%) |

83d. Drinking water quality

Yes **84** (15%) |
 No **413** (73%) |
 Don't know **43** (8%) |
no answer **23** (4%) |

83e. Sewage disposal

Yes **36** (6%) ■
 No **453** (80%) ■
 Don't know **45** (8%) ■
no answer **29** (5%) ■

83f. Solid waste disposal (trash)

Yes **60** (11%) ■
 No **439** (78%) ■
 Don't know **39** (7%) ■
no answer **25** (4%) ■

83g. Hazardous materials handling

Yes **41** (7%) ■
 No **412** (73%) ■
 Don't know **85** (15%) ■
no answer **25** (4%) ■

83h. Food safety

Yes **61** (11%) ■
 No **424** (75%) ■
 Don't know **56** (10%) ■
no answer **22** (4%) ■

83i. Housing (adequate heat, plumbing)

Yes **57** (10%) ■
 No **455** (81%) ■
 Don't know **28** (5%) ■
no answer **23** (4%) ■

83j. Worker safety and health

Yes **48** (9%) ■
 No **416** (74%) ■
 Don't know **73** (13%) ■
no answer **26** (5%) ■

83k. Pest control

Yes 46 (8%) ■
 No 432 (77%) ■■■■■
 Don't know 63 (11%) ■
no answer 22 (4%) ■

84. What is the primary source of HEAT for your home?

Electricity 314 (56%) ■■■■■
 Wood burning stove 40 (7%) ■
 Oil 65 (12%) ■
 Natural gas 86 (15%) ■
 Propane powered heat 25 (4%) ■
 If yes, what? (please specify) 23 (4%) ■
no answer 10 (2%) ■

85. What is the source of your home's WATER?

Personal well 156 (28%) ■■■
 A well shared with several neighbors 13 (2%) ■
 City or community water 365 (65%) ■■■■■
 Bottled water 5 (1%) ■
 Other (please specify) 13 (2%) ■
no answer 11 (2%) ■

86. Does your home have INDOOR PLUMBING?

Yes 541 (96%) ■■■■■
 No 3 (1%) ■
no answer 19 (3%) ■

87a. I know where to go or where to call for DAYCARE for children.

Yes 375 (67%) ■■■■■
 No 54 (10%) ■
 Don't know 79 (14%) ■
no answer 55 (10%) ■

87b. I know where to go or where to call for ADULT DAYCARE (age 65 or older) or the handicapped.

Yes 291 (52%) ■■■■■
 No 120 (21%) ■
 Don't know 113 (20%) ■
no answer 39 (7%) ■

87c. I know where to go or where to call for HOME HEALTH SERVICES for the elderly (age 65 or older) or the handicapped.

Yes **308** (55%) 

No **113** (20%) 

Don't know **102** (18%) 

no answer **40** (7%) 

87d. I know where to go or where to call for TRANSPORTATION for the elderly (age 65 or the handicapped).

Yes **261** (46%) 

No **148** (26%) 

Don't know **114** (20%) 

no answer **40** (7%) 

87e. I know where to go or where to call for TREATMENT for alcohol or drug abuse.

Yes **334** (59%) 

No **106** (19%) 

Don't know **89** (16%) 

no answer **34** (6%) 

87f. I know where to go or where to call for COUNSELING for mental health or emotional problems.

Yes **386** (69%) 

No **76** (13%) 

Don't know **70** (12%) 

no answer **31** (6%) 

87g. I know where to go or where to call for CHILD IMMUNIZATIONS.

Yes **422** (75%) 

No **40** (7%) 

Don't know **57** (10%) 

no answer **44** (8%) 

87h. I know where to go or where to call for PARENTING EDUCATION.

Yes **311** (55%) 

No **114** (20%) 

Don't know **90** (16%) 

no answer **48** (9%) 

87i. I know where to go or where to call for FAMILY or MARRIAGE COUNSELING.

Yes **359** (64%) 

No **94** (17%) 

Don't know **66** (12%) 

no answer **44** (8%) 

87j. I know where to go or where to call for WOMEN'S HEALTH INFORMATION.

Yes **408** (72%) 

No **65** (12%) 

Don't know **46** (8%) 

no answer **44** (8%) 

87k. I know where to go or where to call for DOMESTIC VIOLENCE counseling or shelter.

Yes **326** (58%) 

No **105** (19%) 

Don't know **84** (15%) 

no answer **48** (9%) 

87l. I know where to go or where to call for PRENATAL CARE (care for pregnant women).

Yes **364** (65%) 

No **71** (13%) 

Don't know **68** (12%) 

no answer **60** (11%) 

87m. I know where to go or where to call for BIRTH CONTROL INFORMATION.

Yes **403** (72%) 

No **53** (9%) 

Don't know **51** (9%) 

no answer **56** (10%) 

87n. I know where to go or where to call for SEXUALLY TRANSMITTED DISEASE services and counseling.

Yes **354** (63%) 

No **83** (15%) 

Don't know **77** (14%) 

no answer **49** (9%) 

87o. I know where to go or where to call for HIV/AIDS infection services and counseling.

Yes **309** (55%) 

No **111** (20%) 

Don't know **92** (16%) 

no answer **51** (9%) 

88a. How often would you or someone in your household use LATE or WEEKEND DOCTOR HOURS?

Rarely or Never **296** (53%) 

Sometimes **164** (29%) 

Often **32** (6%) 

Always **8** (1%) 

Does not Apply **32** (6%) 

no answer **31** (6%) 

88b. How often would you or someone in your household use SCHOOL-BASED NURSING services?

Rarely or Never **239** (42%) 

Sometimes **65** (12%) 

Often **13** (2%) 

Always **7** (1%) 

Does not Apply **202** (36%) 

no answer **37** (7%) 

88c. How often would you or someone in your household use YOUTH PROGRAMS?

Rarely or Never **210** (37%) 

Sometimes **61** (11%) 

Often **44** (8%) 

Always **4** (1%) 

Does not Apply **205** (36%) 

no answer **39** (7%) 

89. I find out about NEWS or EVENTS in my community through: (Check ALL that apply)

| | | |
|--|------------------|--|
| Newspaper | 440 (78%) |  |
| Television | 459 (82%) |  |
| Radio | 297 (53%) |  |
| Church/mosque/temple bulletin | 197 (35%) |  |
| Word-of-mouth (friends, relatives, etc.) | 407 (72%) |  |
| None | 2 (0%) | |
| Other (please specify in box below) | 101 (18%) |  |
| other... | 106 (19%) |  |

These last questions will give us some general information about the people who have completed our survey. Again, no personally identifying information is or will be associated with this survey.

90. I am

| | | |
|------------------|------------------|---|
| Male | 164 (29%) |  |
| Female | 392 (70%) |  |
| <i>no answer</i> | 7 (1%) |  |

91. My height is

(specify feet and inches) **553 responses** [view this question](#) [view all questions](#)

92. My weight is

(pounds) **545 responses** [view this question](#) [view all questions](#)

93. I am

(age in years) **550 responses** [view this question](#) [view all questions](#)

94. I am (check ONE only):

| | | |
|-------------------------------|------------------|---|
| Never married | 42 (7%) |  |
| Member of an unmarried couple | 13 (2%) |  |
| Married | 395 (70%) |  |
| Divorced | 58 (10%) |  |
| Separated | 4 (1%) |  |
| Widowed | 42 (7%) |  |
| <i>no answer</i> | 9 (2%) |  |

95. I am getting the following: (Check ALL that apply)

| | | |
|---|------------------|---|
| Food stamps | <u>17</u> (3%) | ■ |
| Cash assistance (welfare) | <u>1</u> (0%) | |
| Disability payments (SSI, Worker's Comp) | <u>34</u> (6%) | ■ |
| Help with paying rent | <u>5</u> (1%) | ■ |
| Unemployment | <u>1</u> (0%) | |
| WIC (Women, Infants and Children - nutrition support program) | <u>7</u> (1%) | ■ |
| No assistance | <u>452</u> (80%) | ■ |
| Other (please specify) | <u>34</u> (6%) | ■ |

96. I am: (Check ALL that apply)

| | | |
|--|------------------|---|
| Employed full-time | <u>252</u> (45%) | ■ |
| Employed part-time | <u>66</u> (12%) | ■ |
| Self-employed | <u>33</u> (6%) | ■ |
| A homemaker | <u>74</u> (13%) | ■ |
| Retired | <u>142</u> (25%) | ■ |
| Unemployed | <u>13</u> (2%) | ■ |
| Unable to work because of a disability | <u>40</u> (7%) | ■ |
| A student | <u>29</u> (5%) | ■ |

97. I know of individuals who have had trouble getting work in the past year due to a lack of skills, or because he/she could not pass the employer's physical and/or drug screening.

| | | |
|------------------|------------------|---|
| Yes | <u>185</u> (33%) | ■ |
| No | <u>353</u> (63%) | ■ |
| <i>no answer</i> | <u>25</u> (4%) | ■ |

98. The highest level of schooling that I finished is:

| | | |
|--|------------------|---|
| Never attended | <u>1</u> (0%) | |
| Grade school | <u>6</u> (1%) | ■ |
| Junior high/middle school | <u>8</u> (1%) | ■ |
| Some high school, no diploma | <u>15</u> (3%) | ■ |
| High school diploma | <u>85</u> (15%) | ■ |
| GED | <u>11</u> (2%) | ■ |
| Vocational or trade school | <u>21</u> (4%) | ■ |
| Some college, no degree | <u>106</u> (19%) | ■ |
| College degree | <u>145</u> (26%) | ■ |
| Some graduate school, no advanced degree | <u>42</u> (7%) | ■ |
| Graduate degree | <u>115</u> (20%) | ■ |
| <i>no answer</i> | <u>8</u> (1%) | ■ |

99. My household income this year will be:

| | | | |
|-------------------|------------|-------|---|
| Under \$10,000 | 30 | (5%) | ■ |
| \$10,000-\$14,999 | 39 | (7%) | ■ |
| \$15,000-\$19,999 | 16 | (3%) | ■ |
| \$20,000-\$24,999 | 26 | (5%) | ■ |
| \$25,000-\$34,999 | 52 | (9%) | ■ |
| \$35,000-\$39,000 | 38 | (7%) | ■ |
| \$40,000-\$49,999 | 47 | (8%) | ■ |
| \$50,000-\$75,000 | 145 | (26%) | ■ |
| Over \$75,000 | 145 | (26%) | ■ |
| <i>no answer</i> | 25 | (4%) | ■ |

100. Comments on issues not asked about in survey (optional):

100 responses [view this question](#) [view all questions](#)

VOLUNTARY RAFFLE

To show my appreciation for your time and energy in completing the current survey, I am offering a voluntary raffle for one (1) of five \$150 gift cards to Kroger's! If you are interested in participating (there is NO OBLIGATION whatsoever), please provide your mailing address (home or place of employment) below. PLEASE NOTE: The mailing address will ONLY be used in the event that your name is randomly selected to win a gift card. The drawing will take place on May 31, 2008 at 4PM. The investigator, Audrey J. Kemp, will mail you your gift card on May 31st if you are a winner.

Mailing Address: **48 responses** [view this question](#) [view all questions](#)

Appendix K

NRV Community Health Assessment African-American Church Survey

Questions and Response Frequencies

Created by J. Henry Hershey; Sent out by Audrey J. Kemp

1. What is your zip code?**34 responses** [view this question](#) [view all questions](#)**2. Where do you live?**

| | |
|------------------------|------------------------|
| Blacksburg | 0 (0%) |
| Christiansburg | <u>1</u> (3%) |
| Floyd | 0 (0%) |
| Pearisburg | 0 (0%) |
| Pulaski | <u>15</u> (44%) |
| Radford | <u>14</u> (41%) |
| Other (please specify) | <u>4</u> (12%) |
| <i>no answer</i> | 0 (0%) |

3. I would describe my RACE as:

| | |
|------------------------|------------------------|
| White | 0 (0%) |
| Black | <u>33</u> (97%) |
| Native American | 0 (0%) |
| Asian American | 0 (0%) |
| Other (please specify) | <u>1</u> (3%) |
| <i>no answer</i> | 0 (0%) |

4. Would you also describe yourself as being of HISPANIC origin?

| | |
|------------------|------------------------|
| Yes | 0 (0%) |
| No | <u>33</u> (97%) |
| <i>no answer</i> | 1 (3%) |

5. The number of adults (18 or older) living in my home, including me, is**30 responses** [view this question](#) [view all questions](#)**6. The number of children (under 18 years) living in my home is: 0-2 years; 3-6 years; 7-12 years; 13-18 years**

(Specify number of children for each age category above) **7 responses**

[view this question](#) [view all questions](#)

7. I have:

| | | |
|---------------------|-----------|-------|
| Healthcare benefits | <u>29</u> | (85%) |
| No benefits | <u>4</u> | (12%) |
| <i>no answer</i> | <u>1</u> | (3%) |

8. I have a primary care provider (such as a family doctor or nurse practitioner).

| | | |
|------------------|-----------|-------|
| Yes | <u>29</u> | (85%) |
| No | <u>3</u> | (9%) |
| <i>no answer</i> | <u>2</u> | (6%) |

9. If you don't have a primary care provider, why not? (check ONE only).

| | | |
|--|-----------|-------|
| Don't know how to find a doctor | <u>0</u> | (0%) |
| No doctor is close to where I live | <u>0</u> | (0%) |
| Don't need a doctor | <u>0</u> | (0%) |
| Can't pay for a doctor visit ("out of pocket" or with insurance) | <u>1</u> | (3%) |
| Can't find a doctor I like or trust | <u>0</u> | (0%) |
| Can't get an appointment | <u>0</u> | (0%) |
| Other (please specify) | <u>1</u> | (3%) |
| <i>no answer</i> | <u>32</u> | (94%) |

10. I get most of my health care from: (check ONE only)

| | | |
|--|-----------|-------|
| Family doctor | <u>27</u> | (79%) |
| Medical doctor (specialist) other than family doctor | <u>3</u> | (9%) |
| Free clinic or other clinic setting | <u>1</u> | (3%) |
| Health department | <u>0</u> | (0%) |
| Student health center | <u>0</u> | (0%) |
| Emergency department | <u>0</u> | (0%) |
| Non-medical doctor (acupuncturist, herbalist, etc.). | <u>0</u> | (0%) |
| Other (please specify) | <u>0</u> | (0%) |
| <i>no answer</i> | <u>3</u> | (9%) |

11. About how long has it been since you last visited a doctor for a routine checkup (general physical exam -- not for a specific injury, illness, or condition)?

| | |
|----------------------|-----------------|
| Within the past year | <u>26</u> (76%) |
| 1 - 2 years ago | <u>4</u> (12%) |
| 3 - 4 years ago | <u>1</u> (3%) |
| 5 or more years ago | <u>1</u> (3%) |
| <i>no answer</i> | <u>2</u> (6%) |

12. During the PAST 12 MONTHS have you seen or talked to any of the following health care providers about your own health? (Check ALL that apply)

| | |
|---|----------------|
| A mental health professional, such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker? | <u>4</u> (12%) |
| A foot doctor? | <u>4</u> (12%) |
| A chiropractor? | <u>1</u> (3%) |
| A physical therapist, speech therapist, respiratory therapist, audiologist, or occupational therapist? | <u>2</u> (6%) |
| A nurse practitioner, physician assistant, or midwife? | <u>4</u> (12%) |
| Other? (please specify in box below) | <u>2</u> (6%) |
| other... | <u>2</u> (6%) |

13a. How long has it been since you have seen an EYE DOCTOR (ophthamologist, optician, or optometrist)?

| | |
|---------------------------|-----------------|
| Within the past year | <u>21</u> (62%) |
| Within the past 2 years | <u>8</u> (24%) |
| Within the past 3 years | <u>2</u> (6%) |
| Within the past 4-5 years | <u>0</u> (0%) |
| 5 or more years | <u>2</u> (6%) |
| Never | <u>0</u> (0%) |
| <i>no answer</i> | <u>1</u> (3%) |

13b. How long has it been since you have seen a FAMILY DOCTOR?

| | |
|---------------------------|-----------------|
| Within the past year | <u>29</u> (85%) |
| Within the past 2 years | <u>3</u> (9%) |
| Within the past 3 years | 0 (0%) |
| Within the past 4-5 years | <u>1</u> (3%) |
| 5 or more years | 0 (0%) |
| Never | 0 (0%) |
| <i>no answer</i> | 1 (3%) |

13c. How long has it been since you have seen a GYNECOLOGIST (doctor for female health needs)?

| | |
|---------------------------|-----------------|
| Within the past year | <u>13</u> (38%) |
| Within the past 2 years | <u>6</u> (18%) |
| Within the past 3 years | <u>1</u> (3%) |
| Within the past 4-5 years | 0 (0%) |
| 5 or more years | <u>4</u> (12%) |
| Never | <u>3</u> (9%) |
| <i>no answer</i> | 7 (21%) |

14a. I had my CHOLESTEROL checked by a health care provider (doctor, nurse, or other health care worker):

| | |
|---------------------------|-----------------|
| Within the past year | <u>22</u> (65%) |
| Within the past 2 years | <u>6</u> (18%) |
| Within the past 3 years | <u>1</u> (3%) |
| Within the past 4-5 years | <u>1</u> (3%) |
| 5 or more years | 0 (0%) |
| Never | <u>2</u> (6%) |
| <i>no answer</i> | 2 (6%) |

14b. I had my BLOOD PRESSURE checked by a health care provider (doctor, nurse, or other health care worker):

| | |
|---------------------------|-----------------|
| Within the past year | <u>29</u> (85%) |
| Within the past 2 years | <u>3</u> (9%) |
| Within the past 3 years | 0 (0%) |
| Within the past 4-5 years | 0 (0%) |
| 5 or more years | 0 (0%) |
| Never | 0 (0%) |
| <i>no answer</i> | 2 (6%) |

15. How long has it been since you have seen a DENTIST?

| | |
|---------------------------|-----------------|
| Within the past year | <u>21</u> (62%) |
| Within the past 2 years | 0 (0%) |
| Within the past 3 years | <u>2</u> (6%) |
| Within the past 4-5 years | <u>4</u> (12%) |
| 5 or more years | <u>6</u> (18%) |
| Never | 0 (0%) |

16. If you have not been able to ACCESS DENTAL CARE, it is because:

| | |
|---|----------------|
| Lack of dental coverage under health insurance plan | <u>7</u> (21%) |
| Dentist not located nearby | 0 (0%) |
| Do not have a dentist | <u>2</u> (6%) |
| Other (please specify in box below) | <u>4</u> (12%) |
| other... | <u>5</u> (15%) |

17. What types of DENTAL CARE do you need?

| | |
|--|-----------------|
| General teeth cleaning (at least twice per year) | <u>18</u> (53%) |
| Cavity fillings | <u>4</u> (12%) |
| Root canals | <u>2</u> (6%) |
| Other (please specify in box below) | <u>3</u> (9%) |
| other... | <u>3</u> (9%) |

18. Do you have DENTAL INSURANCE?

| | |
|------------------|-----------------|
| Yes | <u>17</u> (50%) |
| No | <u>14</u> (41%) |
| <i>no answer</i> | 3 (9%) |

19. If you do not have dental insurance, do you have MEDICAL INSURANCE?

| | |
|------------------|-----------------|
| Yes | <u>16</u> (47%) |
| No | <u>3</u> (9%) |
| <i>no answer</i> | 15 (44%) |

20. Is your MEDICAL INSURANCE PLAN:

Private coverage 19 (56%)
 Medicaid/FAMIS 4 (12%)
 Other (please specify) 5 (15%)
no answer 6 (18%)

21. In the past year I got a FLU SHOT.

Yes 20 (59%)
 No 13 (38%)
 Don't know 0 (0%)
no answer 1 (3%)

**Please answer questions 22-25 if you are a woman (Men go to question 26).

22. I examine my BREASTS each month for LUMPS.

Yes 16 (47%)
 No 8 (24%)
no answer 10 (29%)

23. A mammogram is an X-ray of each breast to look for breast cancer. How long has it been since you had your LAST MAMMOGRAM?

Within the past year 16 (47%)
 1-2 years ago 4 (12%)
 3-5 years ago 1 (3%)
 More than 5 years 0 (0%)
 Never had a mammogram 4 (12%)
no answer 9 (26%)

24. How long has it been since a physician or other health professional has examined your breasts (CLINICAL BREAST EXAM)?

Within the past year 15 (44%)
 1-2 years ago 8 (24%)
 3-5 years ago 2 (6%)
 More than 5 years 0 (0%)
 Never had a clinical breast exam 0 (0%)
no answer 9 (26%)

25. A PAP smear is a test for cancer of the cervix. How long has it been since you had your last PAP SMEAR?

| | |
|-----------------------|-----------------|
| Within the past year | <u>11</u> (32%) |
| 1-2 years ago | <u>12</u> (35%) |
| 3-5 years ago | <u>1</u> (3%) |
| More than 5 years | <u>3</u> (9%) |
| Never had a Pap smear | <u>0</u> (0%) |
| <i>no answer</i> | <u>7</u> (21%) |

**Please answer questions 26-27 if you are a man (Women go to question 28).

26. How long has it been since you were checked for PROSTATE CANCER (a digital rectal exam or a PSA test):

| | |
|--|-----------------|
| Within the past year | <u>2</u> (6%) |
| 1-2 years ago | <u>3</u> (9%) |
| 3-5 years ago | <u>0</u> (0%) |
| More than 5 years | <u>0</u> (0%) |
| Never been checked for prostate cancer | <u>2</u> (6%) |
| <i>no answer</i> | <u>27</u> (79%) |

27. I examine my TESTICLES (male sex organs) each month for LUMPS.

| | |
|------------------|-----------------|
| Yes | <u>8</u> (24%) |
| No | <u>1</u> (3%) |
| <i>no answer</i> | <u>25</u> (74%) |

28a. Have you ever been told by a doctor that you have HIGH CHOLESTEROL or have BORDERLINE HIGH CHOLESTEROL?

| | |
|------------------|-----------------|
| Yes | <u>19</u> (56%) |
| No | <u>15</u> (44%) |
| <i>no answer</i> | <u>0</u> (0%) |

28b. Have you ever been told by a doctor that you have HIGH BLOOD PRESSURE?

| | |
|------------------|-----------------|
| Yes | <u>24</u> (71%) |
| No | <u>10</u> (29%) |
| <i>no answer</i> | <u>0</u> (0%) |

28c. Have you ever been told by a doctor that you have HEART PROBLEMS (heart attack, angina, stroke, or other heart disease)?

Yes 8 (24%)
No 22 (65%)
no answer 4 (12%)

28d. Have you ever been told by a doctor that you have LUNG CANCER?

Yes 0 (0%)
No 31 (91%)
no answer 3 (9%)

28e. Have you ever been told by a doctor that you have COLON or RECTAL CANCER?

Yes 0 (0%)
No 31 (91%)
no answer 3 (9%)

28f. Have you ever been told by a doctor that you have SKIN CANCER?

Yes 1 (3%)
No 30 (88%)
no answer 3 (9%)

28g. Have you ever been told by a doctor that you have BREAST CANCER?

Yes 0 (0%)
No 30 (88%)
no answer 4 (12%)

28h. Have you ever been told by a doctor that you have a SEXUALLY TRANSMITTED DISEASE (such as herpes, gonorrhea, genital warts, chlamydia, etc.)?

Yes 1 (3%)
No 30 (88%)
no answer 3 (9%)

28i. Have you ever been told by a doctor that you have HIV/AIDS?

Yes 0 (0%)

No 29 (85%)*no answer* 5 (15%)**28j. Have you ever been told by a doctor that you have CERVICAL CANCER (per PAP test – women only)?**

Yes 0 (0%)

No 27 (79%)*no answer* 7 (21%)**28k. Have you ever been told by a doctor that you have PROSTATE CANCER (men only)?**Yes 1 (3%)No 15 (44%)*no answer* 18 (53%)**28l. Have you ever been told by a doctor that you have LUNG or RESPIRATORY DISEASE (COPD, asthma, chronic bronchitis)?**Yes 3 (9%)No 26 (76%)*no answer* 5 (15%)**28m. Have you ever been told by a doctor that you have DIABETES?**Yes 9 (26%)No 24 (71%)*no answer* 1 (3%)**28n. Have you ever been told by a doctor that you have ARTHRITIS?**Yes 17 (50%)No 14 (41%)*no answer* 3 (9%)

28o. Have you ever been told by a doctor that you have MENTAL HEALTH or EMOTIONAL PROBLEMS?Yes 3 (9%)No 28 (82%)*no answer* 3 (9%)**28p. Have you ever been told by a doctor that you have ALCOHOL PROBLEMS?**

Yes 0 (0%)

No 31 (91%)*no answer* 3 (9%)**28q. Have you ever been told by a doctor that you have OVERWEIGHT PROBLEMS?**Yes 19 (56%)No 13 (38%)*no answer* 2 (6%)**29a. My family (blood relatives) have a history of CANCER?**Yes 23 (68%)No 8 (24%)

Don't know 0 (0%)

no answer 3 (9%)**29b. My family (blood relatives) have a history of HEART DISEASE?**Yes 19 (56%)No 11 (32%)Don't know 2 (6%)*no answer* 2 (6%)**29c. My family (blood relatives) have a history of HIGH BLOOD PRESSURE?**Yes 32 (94%)No 2 (6%)

Don't know 0 (0%)

no answer 0 (0%)

29d. My family (blood relatives) have a history of STROKE?

Yes 18 (53%)
 No 9 (26%)
 Don't know 4 (12%)
no answer 3 (9%)

29e. My family (blood relatives) have a history of DIABETES (sugar)?

Yes 24 (71%)
 No 7 (21%)
 Don't know 1 (3%)
no answer 2 (6%)

29f. My family (blood relatives) have a history of ARTHRITIS?

Yes 26 (76%)
 No 6 (18%)
 Don't know 1 (3%)
no answer 1 (3%)

29g. My family (blood relatives) have a history of MENTAL HEALTH or EMOTIONAL PROBLEMS?

Yes 5 (15%)
 No 18 (53%)
 Don't know 3 (9%)
no answer 8 (24%)

29h. My family (blood relatives) have a history of ALCOHOL PROBLEMS?

Yes 11 (32%)
 No 18 (53%)
 Don't know 1 (3%)
no answer 4 (12%)

29i. My family (blood relatives) have a history of being OVERWEIGHT?

Yes 20 (59%)
 No 11 (32%)
 Don't know 0 (0%)
no answer 3 (9%)

Please indicate who pays for the health insurance for each of the family members listed below who have insurance (check ALL that apply -- leave blank for those not covered).

30a. Have insurance?

| | |
|-------------------------------------|-----------------|
| Myself | <u>30</u> (88%) |
| My spouse | <u>5</u> (15%) |
| No spouse | 0 (0%) |
| My children (under age 18) | <u>3</u> (9%) |
| No children | 0 (0%) |
| Other (please specify in box below) | <u>1</u> (3%) |
| other... | <u>1</u> (3%) |

30b. My employer?

| | |
|-------------------------------------|-----------------|
| Myself | <u>17</u> (50%) |
| My spouse | <u>2</u> (6%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | 0 (0%) |
| Other (please specify in box below) | <u>1</u> (3%) |
| other... | <u>1</u> (3%) |

30c. My spouse's employer

| | |
|-------------------------------------|---------------|
| Myself | <u>3</u> (9%) |
| My spouse | <u>3</u> (9%) |
| No spouse | 0 (0%) |
| My children (under age 18) | <u>1</u> (3%) |
| No children | 0 (0%) |
| Other (please specify in box below) | 0 (0%) |
| other... | 0 (0%) |

30d. Me or my spouse

| | |
|-------------------------------------|---------------|
| Myself | <u>3</u> (9%) |
| My spouse | 0 (0%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | 0 (0%) |
| Other (please specify in box below) | 0 (0%) |
| other... | 0 (0%) |

30e. Medicare

| | |
|-------------------------------------|-----------------|
| Myself | <u>10</u> (29%) |
| My spouse | <u>2</u> (6%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | 0 (0%) |
| Other (please specify in box below) | 0 (0%) |
| other... | 0 (0%) |

30f. Medicaid/medical assistance

| | |
|-------------------------------------|----------------|
| Myself | <u>5</u> (15%) |
| My spouse | 0 (0%) |
| No spouse | 0 (0%) |
| My children (under age 18) | <u>1</u> (3%) |
| No children | 0 (0%) |
| Other (please specify in box below) | <u>1</u> (3%) |
| other... | <u>1</u> (3%) |

30g. Military CHAMPUS or the VA

| | |
|-------------------------------------|---------|
| Myself | 0 (0%) |
| My spouse | 0 (0%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | 0 (0%) |
| Other (please specify in box below) | 0 (0%) |
| other... | 0 (0%) |

30h. Other

| | |
|-------------------------------------|----------------|
| Myself | <u>1</u> (3%) |
| My spouse | 0 (0%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | 0 (0%) |
| Other (please specify in box below) | 0 (0%) |
| other... | 0 (0%) |

31. During the past 12 months, the following problems have stopped me from getting the health care I need: (Check ALL that apply)

| | |
|---|-----------------|
| I don't know where to go for health services | 0 (0%) |
| I can't get transportation | 0 (0%) |
| Health services aren't close to where I live | 0 (0%) |
| I can't pay for health services | <u>4</u> (12%) |
| My health insurance doesn't cover what I need | <u>3</u> (9%) |
| I couldn't get an appointment | 0 (0%) |
| I couldn't get through on the telephone | 0 (0%) |
| The clinic/doctor's office wasn't open when I could get there. | 0 (0%) |
| My deductible or co-payment (my share of the cost) is too high | <u>2</u> (6%) |
| Hospitals won't take my insurance or Medical Assistance (Medicaid) | 0 (0%) |
| My health care provider won't take my insurance, or Medical Assistance (Medicaid) | <u>1</u> (3%) |
| I couldn't find a health care provider I like and/or trust | 0 (0%) |
| None—I've gotten the health care I need | <u>12</u> (35%) |
| Other (please specify in box below) | <u>1</u> (3%) |
| other... | <u>1</u> (3%) |

32a. During the past year, was there any time when you or a family member needed PRESCRIPTION MEDICINE, but did not get it because you couldn't afford it?

| | |
|------------------|-----------------|
| Yes | <u>5</u> (15%) |
| No | <u>25</u> (74%) |
| <i>no answer</i> | 4 (12%) |

32b. During the past year, was there any time when you or a family member needed EYEWEAR (contact lenses, glasses), but did not get it because you couldn't afford it?

| | |
|------------------|-----------------|
| Yes | <u>4</u> (12%) |
| No | <u>25</u> (74%) |
| <i>no answer</i> | 5 (15%) |

33. I am PREGNANT NOW or have been pregnant in the PAST 5 YEARS.

Yes (Please answer questions 34-39 for your most recent pregnancy.) 0 (0%)
 No (Go to question 40) 18 (53%)
no answer 16 (47%)

34. If you have had a CHILD in the LAST 5 YEARS, you delivered the baby at:

Home 0 (0%)
 Medical center or hospital 0 (0%)
 Other (please specify) 0 (0%)
no answer 34 (100%)

35. If you delivered your baby at a medical center or hospital, what was the NAME of the FACILITY?

0 responses

36. If you have not had your baby yet, where do you PLAN TO DELIVER the baby?

0 responses

37. If CURRENTLY PREGNANT, in what month are you?

(number) **0 responses**

38a. During my pregnancy I see (or saw) a DOCTOR.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38b. During my pregnancy I follow(ed) a HEALTHY DIET.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38c. During my pregnancy I take/took VITAMINS every day.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38d. During my pregnancy I take/took classes on how to CARE FOR MY NEW BABY.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38e. During my pregnancy I SMOKE(D).

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38f. During my pregnancy I drink/drank ALCOHOL.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38g. During my pregnancy I use(d) ILLEGAL STREET DRUGS.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

38h. During my pregnancy I am/was physically ABUSED.

Yes 0 (0%)
 No 0 (0%)
no answer 34 (100%)

39. During which MONTH (1 to 9) in your pregnancy did you first see a doctor?

Seen a doctor (specify below) 0 (0%)
 Have not seen a doctor 0 (0%)
 (number) 0 (0%)
no answer 34 (100%)

40. There is a PERSON in my HOUSEHOLD UNDER AGE 18 (other than yourself) who is pregnant or was pregnant in the past 5 years.

Yes 0 (0%)
 No 18 (53%)
 Don't know 0 (0%)
no answer 16 (47%)

41. How many CHILDREN live in your household who are...

Less than 4 _____ (number) 1 (3%)
 5-12 _____ (number) 5 (15%)
 13-17 _____ (number) 1 (3%)
 No children live in my household (Go to question 50) 20 (59%)
 (please specify number of each child based on the age ranges above) 6 (18%)

42. The child or children had a PHYSICAL check-up or WELL-BABY EXAM in the past year.

Yes 5 (15%)
 No 1 (3%)
 Don't know 0 (0%)
no answer 28 (82%)

43. The child or children (those age 3 or older) had a DENTAL check-up in the past year.

Yes 4 (12%)
 No 2 (6%)
 Don't know 0 (0%)
no answer 28 (82%)

44. The child or children are up-to-date on all of their IMMUNIZATIONS (childhood shots).

Yes 5 (15%)
 No 1 (3%)
 Don't know 0 (0%)
no answer 28 (82%)

45. The child or children age 2 or older eat at least THREE meals a day.

| | |
|------------------------------|----------------|
| Rarely or never | 0 (0%) |
| Sometimes | <u>1</u> (3%) |
| Often | <u>1</u> (3%) |
| Always | <u>4</u> (12%) |
| There is no child 2 or older | <u>1</u> (3%) |
| <i>no answer</i> | 27 (79%) |

46. When riding in a car, my child or children under age 8 use a CHILD SEAT.

| | |
|-------------------------------|----------------|
| Always | <u>2</u> (6%) |
| Nearly always | <u>1</u> (3%) |
| Sometimes | 0 (0%) |
| Seldom | 0 (0%) |
| Never | 0 (0%) |
| Never rides | 0 (0%) |
| There is no child under age 4 | <u>5</u> (15%) |
| <i>no answer</i> | 26 (76%) |

47. When riding in a car, my child or children age 8 or older use a SEATBELT.

| | |
|----------------------------------|----------------|
| Always | <u>8</u> (24%) |
| Nearly always | <u>1</u> (3%) |
| Sometimes | 0 (0%) |
| Seldom | 0 (0%) |
| Never | 0 (0%) |
| Never rides | 0 (0%) |
| There is no child age 4 or older | 0 (0%) |
| <i>no answer</i> | 25 (74%) |

48. In the past year, has your child or children age 14 or younger been injured from a fall and required treatment by a doctor?

| | |
|-------------------------------------|----------------|
| Yes | 0 (0%) |
| No | <u>7</u> (21%) |
| There is no child age 14 or younger | 0 (0%) |
| <i>no answer</i> | 27 (79%) |

49a. In the past year, has your child or children used/abused DRUGS?

Yes **0** (0%)
 No **7** (21%)
 Not sure **0** (0%)
no answer **27** (79%)

49b. In the past year, has your child or children used/abused ALCOHOL?

Yes **0** (0%)
 No **7** (21%)
 Not sure **0** (0%)
no answer **27** (79%)

50a. How would you rate DRUG USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **24 responses** [view this question](#) [view all questions](#)

50b. How would you rate ALCOHOL USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **23 responses** [view this question](#) [view all questions](#)

51. During the past month I drank ALCOHOL:

Less than once a month **5** (15%)
 A few times per month **2** (6%)
 About once a week **0** (0%)
 A few days a week **2** (6%)
 Every day **1** (3%)
 Never drink (Go to question 53) **19** (56%)
no answer **5** (15%)

52. When I drink alcohol, the number of DRINKS I have is:

| | |
|------------------|-----------------|
| 1 or 2 | <u>7</u> (21%) |
| 3 or 4 | <u>1</u> (3%) |
| 5 or 6 | <u>1</u> (3%) |
| 7 to 10 | 0 (0%) |
| More than 10 | <u>1</u> (3%) |
| <i>no answer</i> | 24 (71%) |

53. Have you ever SMOKED?

| | |
|--|-----------------|
| Yes, I am currently a smoker (Go to question 54) | <u>2</u> (6%) |
| Yes, but I no longer smoke | <u>12</u> (35%) |
| No (Go to question 59) | <u>16</u> (47%) |
| <i>no answer</i> | 4 (12%) |

54. How many YEARS did you smoke?

(number) **13 responses** [view this question](#) [view all questions](#)

55. On the average, how much did you smoke EACH DAY?

| | |
|---|-----------------|
| 2 packs or less (10 or less cigarettes) | <u>6</u> (18%) |
| Between 2 packs and 1 pack (11-20 cigarettes) | <u>2</u> (6%) |
| Between 1 pack and 2 packs (21-40 cigarettes) | <u>1</u> (3%) |
| 2 or more packs (40 or more cigarettes) | <u>1</u> (3%) |
| Smoked, but not every day (Go to question 57) | <u>3</u> (9%) |
| <i>no answer</i> | 21 (62%) |

56. Do you NOW smoke each day:

| | |
|---|------------------|
| 2 packs or less (10 or less cigarettes) | 0 (0%) |
| Between 2 packs and 1 pack (11-20 cigarettes) | 0 (0%) |
| Between 1 pack and 2 packs (21-40 cigarettes) | 0 (0%) |
| 2 or more packs (40 or more cigarettes) | 0 (0%) |
| Smoke, but not everyday | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

57. I smoke:

Cigars 0 (0%)
 Pipe 0 (0%)
 Cigarillos 0 (0%)
 Bidis 0 (0%)

58. I STARTED smoking at age

(number) **12 responses** [view this question](#) [view all questions](#)

59. I use smokeless TOBACCO (snuff, chewing tobacco).

Yes 1 (3%)
 No 20 (59%)
no answer 13 (38%)

60. Someone ELSE in my home smokes cigarettes, cigars, or a pipe.

Yes 4 (12%)
 No 22 (65%)
no answer 8 (24%)

61. During the PAST MONTH, did you participate in any PHYSICAL ACTIVITIES or EXERCISES, such as running, calisthenics, active housework, gardening, or walking for exercise?

Yes 25 (74%)
 No (go to Question 64) 7 (21%)
no answer 2 (6%)

62. Each WEEK, I exercise:

Less than 1 time 8 (24%)
 1 or 2 times 9 (26%)
 3 or 4 times 5 (15%)
 5 or more times 2 (6%)
no answer 10 (29%)

63. When I exercise, I EXERCISE FOR:

Less than 20 minutes 8 (24%)
 20-29 minutes 7 (21%)
 30 minutes or more 9 (26%)
no answer **10** (29%)

64. I use a SEATBELT:

Always 21 (62%)
 Nearly always 6 (18%)
 Sometimes 5 (15%)
 Seldom **0** (0%)
 Never 1 (3%)
 Never drive or ride **0** (0%)
no answer **1** (3%)

65a. In the PAST month, I have driven a car/truck after I had too much to DRINK.

Yes 1 (3%)
 No 31 (91%)
no answer **2** (6%)

65b. In the PAST month, I have driven a car/truck after taking DRUGS that could affect my ability to drive safely.

Yes **0** (0%)
 No 32 (94%)
no answer **2** (6%)

65c. In the PAST month, I rode in a car/truck driven by someone who drank ALCOHOL.

Yes 2 (6%)
 No 30 (88%)
no answer **2** (6%)

65d. In the PAST month, I rode in a car/truck driven by someone who had taken DRUGS.

Yes 1 (3%)
No 31 (91%)
no answer 2 (6%)

65e. In the PAST month, I used ILLEGAL drugs (cocaine, marijuana, etc.)

Yes 0 (0%)
No 32 (94%)
no answer 2 (6%)

65f. In the PAST year, I had more than one SEX PARTNER (leave blank if not having sex with anyone.)

Yes 2 (6%)
No 17 (50%)
no answer 15 (44%)

65g. If yes, I always used CONDOMS (rubbers) with my sex partner(s).

Yes 3 (9%)
No 0 (0%)
no answer 31 (91%)

66. Are any GUNS/FIREARMS now kept in or around your home? (Include those kept in a garage, outdoor storage area, car, truck or other motor vehicle.)

Yes 7 (21%)
No 23 (68%)
no answer 4 (12%)

67. If yes, is there a firearm in or around your home that is USUALLY both loaded and unlocked?

Yes 3 (9%)
No 4 (12%)
no answer 27 (79%)

68. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?

Yes 3 (9%)

No 29 (85%)

no answer 2 (6%)

69. Because of any impairment or health problem, do you need the help of other persons in handling your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?

Yes 1 (3%)

No 31 (91%)

no answer 2 (6%)

70a. In the PAST YEAR, I had a problem getting transportation to the grocery store (supermarket).

Rarely or never 25 (74%)

Sometimes 1 (3%)

Often 0 (0%)

Always 0 (0%)

no answer 8 (24%)

70b. In the PAST YEAR, I had a problem getting transportation to social visits (visits to friends or family, meetings, etc.)

Rarely or never 25 (74%)

Sometimes 0 (0%)

Often 0 (0%)

Always 0 (0%)

no answer 9 (26%)

71a. Do you provide care for someone age 65 or older, or who is developmentally disabled?

Yes, for one person 2 (6%)

Yes, for more than one person 0 (0%)

No (Go to question 75) 28 (82%)

no answer 4 (12%)

71b. If yes, please indicate which of the following best describes the care you provide:

| | |
|--|---------------|
| I provide most of the care | 0 (0%) |
| I provide some care on a regular basis | <u>1</u> (3%) |
| I help occasionally | <u>1</u> (3%) |
| Don't know | 0 (0%) |
| <i>no answer</i> | 32 (94%) |

72. What is your RELATIONSHIP with this person (family, friend, employee)?

(please specify) **1 response** [view this question](#) [view all questions](#)

73. What kind of HELP do you provide? (Check ALL that apply)

| | |
|--|---------------|
| Help with personal care (bathing, dressing, eating, etc.) | <u>1</u> (3%) |
| Help with household needs (cooking, shopping, driving, etc.) | <u>2</u> (6%) |
| Other (please specify) | 0 (0%) |

(If you are the MAIN caregiver, answer the following. If not, go to question 75.)

74a. As a caregiver, do you feel ASSISTED LIVING (housing with services to help people) is available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74b. As a caregiver, do you feel HOME HEALTH NURSING services are available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74C. As a caregiver, do you feel a GROUP HOME setting (i.e., staffed single-family residence for developmentally and/or mentally disabled people) is available for you and the person you care for, if you need them?

| | |
|--|---------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |

74d. As a caregiver, do you feel help with HOUSEWORK AND HOME MAINTENANCE services are available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74e. As a caregiver, do you feel that someone to LIVE-IN or STAY daily with the person is available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74f. As a caregiver, do you feel EDUCATION AND SUPPORT services for you and the person you care for are available, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74g. As a caregiver, do you feel TRANSPORTATION services are available for you and/or the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74h. As a caregiver, do you feel help with PAYING FOR MEDICATIONS is available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

74i. As a caregiver, do you feel ADULT DAYCARE services are available for you and the person you care for, if you need them?

| | |
|--|-----------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | 0 (0%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 34 (100%) |

75. If you are age 65 or older, OR are caring for an older or developmentally/mentally disabled family member, have you/they had an injury from a fall that required TREATMENT BY A DOCTOR during the past year?

| | |
|------------------|-----------------|
| Yes | <u>3</u> (9%) |
| No | <u>8</u> (24%) |
| Doesn't apply | <u>14</u> (41%) |
| <i>no answer</i> | <u>9</u> (26%) |

76. Are you a GRANDPARENT?

| | |
|------------------|-----------------|
| Yes | <u>18</u> (53%) |
| No | <u>14</u> (41%) |
| <i>no answer</i> | <u>2</u> (6%) |

77. If you are a grandparent, are you the MAIN PROVIDER and CAREGIVER for your grandchildren?

Yes **0** (0%)
 No **18** (53%)
no answer **16** (47%)

78a. During the past 30 days, did you feel so SAD that nothing could cheer you up?

All of the time **0** (0%)
 Most of the time **1** (3%)
 Some of the time **5** (15%)
 A little of the time **4** (12%)
 None of the time **18** (53%)
no answer **6** (18%)

78b. During the PAST 30 days, did you feel NERVOUS?

All of the time **0** (0%)
 Most of the time **1** (3%)
 Some of the time **7** (21%)
 A little of the time **9** (26%)
 None of the time **9** (26%)
no answer **8** (24%)

78c. During the PAST 30 days, did you feel RESTLESS or FIDGETY?

All of the time **1** (3%)
 Most of the time **1** (3%)
 Some of the time **9** (26%)
 A little of the time **4** (12%)
 None of the time **13** (38%)
no answer **6** (18%)

78d. During the PAST 30 days, did you feel HOPELESS?

All of the time **0** (0%)
 Most of the time **0** (0%)
 Some of the time **1** (3%)
 A little of the time **5** (15%)
 None of the time **21** (62%)
no answer **7** (21%)

78e. During the PAST 30 days, did you feel that everything was an EFFORT?

All of the time **0** (0%)
 Most of the time **0** (0%)
 Some of the time **6** (18%)
 A little of the time **8** (24%)
 None of the time **14** (41%)
no answer **6** (18%)

78f. During the PAST 30 days, did you feel WORTHLESS?

All of the time **0** (0%)
 Most of the time **0** (0%)
 Some of the time **0** (0%)
 A little of the time **7** (21%)
 None of the time **21** (62%)
no answer **6** (18%)

79. In the past year, someone in my home had a MENTAL HEALTH or EMOTIONAL PROBLEM (such as depression, severe stress, severe phobia, etc.) that affected their ability to do daily activities.

Yes **4** (12%)
 No **24** (71%)
 Don't know **1** (3%)
no answer **5** (15%)

80. IF YES, this person(s) was TREATED for a mental health problem (such as depression, severe stress, severe phobia, etc.)

Yes **3** (9%)
 No **1** (3%)
 Don't know **2** (6%)
no answer **28** (82%)

81. Are you personally aware of any abuse (e.g., neglect, psychological, physical, sexual) happening in the home?

Yes **0** (0%)
 No **28** (82%)
 Not sure **0** (0%)
no answer **6** (18%)

82. I or someone in my home has tried to KILL him-/herself in the PAST 5 YEARS.

Yes **0** (0%)
 No **29** (85%)
 Not sure **1** (3%)
no answer **4** (12%)

I would like to ask you about various environmental factors that might influence your health. For each item, please INDICATE IF YOU FEEL IT IS A PROBLEM IN YOUR AREA:

83a. Outdoor air quality

Yes **6** (18%)
 No **14** (41%)
 Don't know **4** (12%)
no answer **10** (29%)

83b. Indoor air quality

Yes **5** (15%)
 No **16** (47%)
 Don't know **3** (9%)
no answer **10** (29%)

83c. Recreational water quality

Yes **3** (9%)
 No **16** (47%)
 Don't know **6** (18%)
no answer **9** (26%)

83d. Drinking water quality

Yes **5** (15%)
 No **16** (47%)
 Don't know **4** (12%)
no answer **9** (26%)

83e. Sewage disposal

Yes 2 (6%)
No 16 (47%)
Don't know 7 (21%)
no answer 9 (26%)

83f. Solid waste disposal (trash)

Yes 5 (15%)
No 16 (47%)
Don't know 4 (12%)
no answer 9 (26%)

83g. Hazardous materials handling

Yes 3 (9%)
No 17 (50%)
Don't know 5 (15%)
no answer 9 (26%)

83h. Food safety

Yes 7 (21%)
No 16 (47%)
Don't know 2 (6%)
no answer 9 (26%)

83i. Housing (adequate heat, plumbing)

Yes 4 (12%)
No 18 (53%)
Don't know 3 (9%)
no answer 9 (26%)

83j. Worker safety and health

Yes 2 (6%)
No 19 (56%)
Don't know 4 (12%)
no answer 9 (26%)

83k. Pest control

Yes 4 (12%)
 No 13 (38%)
 Don't know 8 (24%)
no answer 9 (26%)

84. What is the primary source of HEAT for your home?

Electricity 18 (53%)
 Wood burning stove 0 (0%)
 Oil 5 (15%)
 Natural gas 6 (18%)
 Propane powered heat 1 (3%)
 If yes, what? (please specify) 2 (6%)
no answer 2 (6%)

85. What is the source of your home's WATER?

Personal well 2 (6%)
 A well shared with several neighbors 0 (0%)
 City or community water 29 (85%)
 Bottled water 1 (3%)
 Other (please specify) 0 (0%)
no answer 2 (6%)

86. Does your home have INDOOR PLUMBING?

Yes 31 (91%)
 No 1 (3%)
no answer 2 (6%)

87a. I know where to go or where to call for DAYCARE for children.

Yes 25 (74%)
 No 3 (9%)
 Don't know 1 (3%)
no answer 5 (15%)

87b. I know where to go or where to call for ADULT DAYCARE (age 65 or older) or the handicapped.

Yes 19 (56%)
 No 7 (21%)
 Don't know 2 (6%)
no answer 6 (18%)

87c. I know where to go or where to call for HOME HEALTH SERVICES for the elderly (age 65 or older) or the handicapped.

Yes 21 (62%)
 No 5 (15%)
 Don't know 2 (6%)
no answer 6 (18%)

87d. I know where to go or where to call for TRANSPORTATION for the elderly (age 65 or the handicapped).

Yes 21 (62%)
 No 5 (15%)
 Don't know 2 (6%)
no answer 6 (18%)

87e. I know where to go or where to call for TREATMENT for alcohol or drug abuse.

Yes 20 (59%)
 No 7 (21%)
 Don't know 1 (3%)
no answer 6 (18%)

87f. I know where to go or where to call for COUNSELING for mental health or emotional problems.

Yes 23 (68%)
 No 5 (15%)
 Don't know 0 (0%)
no answer 6 (18%)

87g. I know where to go or where to call for CHILD IMMUNIZATIONS.

Yes 23 (68%)
 No 3 (9%)
 Don't know 2 (6%)
no answer 6 (18%)

87h. I know where to go or where to call for PARENTING EDUCATION.

Yes 20 (59%)
 No 5 (15%)
 Don't know 3 (9%)
no answer 6 (18%)

87i. I know where to go or where to call for FAMILY or MARRIAGE COUNSELING.

Yes 22 (65%)
 No 5 (15%)
 Don't know 2 (6%)
no answer 5 (15%)

87j. I know where to go or where to call for WOMEN'S HEALTH INFORMATION.

Yes 20 (59%)
 No 4 (12%)
 Don't know 4 (12%)
no answer 6 (18%)

87k. I know where to go or where to call for DOMESTIC VIOLENCE counseling or shelter.

Yes 23 (68%)
 No 3 (9%)
 Don't know 2 (6%)
no answer 6 (18%)

87l. I know where to go or where to call for PRENATAL CARE (care for pregnant women).

Yes 20 (59%)
 No 3 (9%)
 Don't know 4 (12%)
no answer 7 (21%)

87m. I know where to go or where to call for BIRTH CONTROL INFORMATION.

Yes 24 (71%)
 No 2 (6%)
 Don't know 2 (6%)
no answer 6 (18%)

87n. I know where to go or where to call for SEXUALLY TRANSMITTED DISEASE services and counseling.

Yes 21 (62%)
 No 4 (12%)
 Don't know 4 (12%)
no answer 5 (15%)

87o. I know where to go or where to call for HIV/AIDS infection services and counseling.

Yes 19 (56%)
 No 4 (12%)
 Don't know 4 (12%)
no answer 7 (21%)

88a. How often would you or someone in your household use LATE or WEEKEND DOCTOR HOURS?

Rarely or Never 11 (32%)
 Sometimes 4 (12%)
 Often 4 (12%)
 Always 0 (0%)
 Does not Apply 7 (21%)
no answer 8 (24%)

88b. How often would you or someone in your household use SCHOOL-BASED NURSING services?

| | |
|------------------|-----------------|
| Rarely or Never | <u>8</u> (24%) |
| Sometimes | <u>4</u> (12%) |
| Often | 0 (0%) |
| Always | 0 (0%) |
| Does not Apply | <u>14</u> (41%) |
| <i>no answer</i> | 8 (24%) |

88c. How often would you or someone in your household use YOUTH PROGRAMS?

| | |
|------------------|-----------------|
| Rarely or Never | <u>6</u> (18%) |
| Sometimes | <u>4</u> (12%) |
| Often | <u>2</u> (6%) |
| Always | <u>1</u> (3%) |
| Does not Apply | <u>13</u> (38%) |
| <i>no answer</i> | 8 (24%) |

89. I find out about NEWS or EVENTS in my community through: (Check ALL that apply)

| | |
|--|-----------------|
| Newspaper | <u>29</u> (85%) |
| Television | <u>28</u> (82%) |
| Radio | <u>11</u> (32%) |
| Church/mosque/temple bulletin | <u>20</u> (59%) |
| Word-of-mouth (friends, relatives, etc.) | <u>26</u> (76%) |
| None | 0 (0%) |
| Other (please specify in box below) | <u>1</u> (3%) |
| other... | <u>1</u> (3%) |

These last questions will give us some general information about the people who have completed our survey. Again, no personally identifying information is or will be associated with this survey.

90. I am

| | |
|------------------|-----------------|
| Male | <u>6</u> (18%) |
| Female | <u>27</u> (79%) |
| <i>no answer</i> | 1 (3%) |

91. My height is

(specify feet and inches) **33 responses** [view this question](#) [view all questions](#)

92. My weight is

(pounds) **31 responses** [view this question](#) [view all questions](#)

93. I am

(age in years) **31 responses** [view this question](#) [view all questions](#)

94. I am (check ONE only):

| | |
|-------------------------------|-----------------|
| Never married | <u>5</u> (15%) |
| Member of an unmarried couple | 0 (0%) |
| Married | <u>14</u> (41%) |
| Divorced | <u>5</u> (15%) |
| Separated | <u>2</u> (6%) |
| Widowed | <u>7</u> (21%) |
| <i>no answer</i> | 1 (3%) |

95. I am getting the following: (Check ALL that apply)

| | |
|---|-----------------|
| Food stamps | <u>3</u> (9%) |
| Cash assistance (welfare) | 0 (0%) |
| Disability payments (SSI, Worker's Comp) | <u>4</u> (12%) |
| Help with paying rent | 0 (0%) |
| Unemployment | 0 (0%) |
| WIC (Women, Infants and Children - nutrition support program) | 0 (0%) |
| No assistance | <u>19</u> (56%) |
| Other (please specify) | <u>4</u> (12%) |

96. I am: (Check ALL that apply)

| | |
|--|-----------------|
| Employed full-time | <u>19</u> (56%) |
| Employed part-time | <u>1</u> (3%) |
| Self-employed | <u>2</u> (6%) |
| A homemaker | <u>1</u> (3%) |
| Retired | <u>6</u> (18%) |
| Unemployed | 0 (0%) |
| Unable to work because of a disability | <u>5</u> (15%) |
| A student | 0 (0%) |

97. I know of individuals who have had trouble getting work in the past year due to a lack of skills, or because he/she could not pass the employer's physical and/or drug screening.

Yes 13 (38%)
 No 14 (41%)
no answer 7 (21%)

98. The highest level of schooling that I finished is:

Never attended 0 (0%)
 Grade school 0 (0%)
 Junior high/middle school 0 (0%)
 Some high school, no diploma 2 (6%)
 High school diploma 7 (21%)
 GED 1 (3%)
 Vocational or trade school 1 (3%)
 Some college, no degree 10 (29%)
 College degree 4 (12%)
 Some graduate school, no advanced degree 2 (6%)
 Graduate degree 5 (15%)
no answer 2 (6%)

99. My household income this year will be:

Under \$10,000 2 (6%)
 \$10,000-\$14,999 4 (12%)
 \$15,000-\$19,999 3 (9%)
 \$20,000-\$24,999 4 (12%)
 \$25,000-\$34,999 3 (9%)
 \$35,000-\$39,000 1 (3%)
 \$40,000-\$49,999 2 (6%)
 \$50,000-\$75,000 6 (18%)
 Over \$75,000 3 (9%)
no answer 6 (18%)

Appendix L

NRV *Community Health Assessment* Senior Center Survey

Questions and Response Frequencies

Created by J. Henry Hershey; Sent out by Audrey J. Kemp

1. Where do you live?

| | |
|------------------|-----------------|
| Blacksburg | <u>7</u> (12%) |
| Christiansburg | <u>5</u> (8%) |
| Floyd | <u>1</u> (2%) |
| Pearisburg | <u>3</u> (5%) |
| Pulaski | <u>0</u> (0%) |
| Radford | <u>1</u> (2%) |
| <i>no answer</i> | 43 (72%) |

2. The number of adults (18 or older) living in my home, including me, is**57 responses** [view this question](#) [view all questions](#)**3. The number of children (under 18) living in my home, including me, is****57 responses** [view this question](#) [view all questions](#)**4. I have a primary care provider (such as a family doctor or nurse practitioner).**

| | |
|------------------|-----------------|
| Yes | <u>52</u> (87%) |
| No | <u>6</u> (10%) |
| <i>no answer</i> | 2 (3%) |

5. If you don't, why not? (check ONE only).

| | |
|--|-----------------|
| Don't know how to find a doctor | 0 (0%) |
| No doctor is close to where I live | 0 (0%) |
| Don't need a doctor | <u>1</u> (2%) |
| Can't pay for a doctor visit ("out of pocket" or with insurance) | <u>1</u> (2%) |
| Can't find a doctor I like or trust | 0 (0%) |
| Can't get an appointment | 0 (0%) |
| Other (please specify) | <u>4</u> (7%) |
| <i>no answer</i> | 54 (90%) |

6. I get most of my health care from: (check ONE only)

| | |
|--|-----------------|
| Family doctor | <u>52</u> (87%) |
| Medical doctor (specialist) other than family doctor | <u>2</u> (3%) |
| Free clinic or other clinic setting | <u>1</u> (2%) |
| Health department | <u>0</u> (0%) |
| Student health center | <u>2</u> (3%) |
| Emergency department | <u>1</u> (2%) |
| Non-medical doctor (acupuncturist, herbalist, etc.). | <u>0</u> (0%) |
| Other (please specify) | <u>1</u> (2%) |
| <i>no answer</i> | <u>1</u> (2%) |

7. About how long has it been since you last visited a doctor for a routine checkup (general physical exam -- not for a specific injury, illness, or condition)?

| | |
|----------------------|-----------------|
| Within the past year | <u>44</u> (73%) |
| 1 - 2 years ago | <u>6</u> (10%) |
| 3 - 4 years ago | <u>5</u> (8%) |
| 5 or more years ago | <u>1</u> (2%) |
| <i>no answer</i> | <u>4</u> (7%) |

8. During the PAST 12 MONTHS have you seen or talked to any of the following health care providers about your own health? (Check ALL that apply)

| | |
|---|-----------------|
| A mental health professional, such as a psychiatrist, psychologist, psychiatric nurse, or clinical social worker? | <u>7</u> (12%) |
| A foot doctor? | <u>11</u> (18%) |
| A chiropractor? | <u>3</u> (5%) |
| A physical therapist, speech therapist, respiratory therapist, audiologist, or occupational therapist? | <u>10</u> (17%) |
| A nurse practitioner, physician assistant, or midwife? | <u>11</u> (18%) |

9a. How long has it been since you have seen an EYE DOCTOR (ophthalmologist, optician, or optometrist)?

| | |
|---------------------------|-----------------|
| Within the past year | <u>43</u> (72%) |
| Within the past 2 years | <u>10</u> (17%) |
| Within the past 3 years | <u>2</u> (3%) |
| Within the past 4-5 years | <u>1</u> (2%) |
| 5 or more years | <u>1</u> (2%) |
| Never | <u>0</u> (0%) |
| <i>no answer</i> | <u>3</u> (5%) |

9b. How long has it been since you have seen a FAMILY DOCTOR?

| | |
|---------------------------|-----------------|
| Within the past year | <u>43</u> (72%) |
| Within the past 2 years | <u>5</u> (8%) |
| Within the past 3 years | <u>1</u> (2%) |
| Within the past 4-5 years | <u>2</u> (3%) |
| 5 or more years | <u>2</u> (3%) |
| Never | <u>0</u> (0%) |
| <i>no answer</i> | <u>7</u> (12%) |

9c. How long has it been since you have seen a DENTIST?

| | |
|---------------------------|-----------------|
| Within the past year | <u>21</u> (35%) |
| Within the past 2 years | <u>3</u> (5%) |
| Within the past 3 years | <u>3</u> (5%) |
| Within the past 4-5 years | <u>6</u> (10%) |
| 5 or more years | <u>8</u> (13%) |
| Never | <u>3</u> (5%) |
| <i>no answer</i> | <u>16</u> (27%) |

9d. How long has it been since you have seen a GYNECOLOGIST (doctor for female health needs)?

| | |
|---------------------------|-----------------|
| Within the past year | <u>16</u> (27%) |
| Within the past 2 years | <u>2</u> (3%) |
| Within the past 3 years | <u>6</u> (10%) |
| Within the past 4-5 years | <u>0</u> (0%) |
| 5 or more years | <u>3</u> (5%) |
| Never | <u>6</u> (10%) |
| <i>no answer</i> | <u>27</u> (45%) |

9e. I had my CHOLESTEROL checked by a health care provider (doctor, nurse, or other health care worker):

| | |
|---------------------------|-----------------|
| Within the past year | <u>33</u> (55%) |
| Within the past 2 years | <u>3</u> (5%) |
| Within the past 3 years | <u>1</u> (2%) |
| Within the past 4-5 years | <u>1</u> (2%) |
| 5 or more years | <u>2</u> (3%) |
| Never | <u>6</u> (10%) |
| <i>no answer</i> | 14 (23%) |

9f. I had my BLOOD PRESSURE checked by a health care provider (doctor, nurse, or other health care worker):

| | |
|---------------------------|-----------------|
| Within the past year | <u>53</u> (88%) |
| Within the past 2 years | <u>1</u> (2%) |
| Within the past 3 years | 0 (0%) |
| Within the past 4-5 years | 0 (0%) |
| 5 or more years | 0 (0%) |
| Never | <u>1</u> (2%) |
| <i>no answer</i> | 5 (8%) |

10. In the past year I got a flu shot.

| | |
|------------------|-----------------|
| Yes | <u>32</u> (53%) |
| No | <u>26</u> (43%) |
| Don't know | 0 (0%) |
| <i>no answer</i> | 2 (3%) |

**Please answer questions 11-14 if you are a woman (Men go to question 15).

11. I examine my breasts each month for lumps.

| | |
|------------------|-----------------|
| Yes | <u>27</u> (45%) |
| No | <u>17</u> (28%) |
| <i>no answer</i> | 16 (27%) |

12. A mammogram is an X-ray of each breast to look for breast cancer. How long has it been since you had your last mammogram?

| | |
|-----------------------|-----------------|
| Within the past year | <u>22</u> (37%) |
| 1-2 years ago | <u>12</u> (20%) |
| 3-5 years ago | <u>6</u> (10%) |
| Never had a mammogram | <u>5</u> (8%) |
| <i>no answer</i> | 15 (25%) |

13. How long has it been since a physician or other health professional has examined your breasts (a clinical breast exam)?

| | |
|----------------------------------|-----------------|
| Within the past year | <u>30</u> (50%) |
| 1-2 years ago | <u>7</u> (12%) |
| 3-5 years ago | <u>4</u> (7%) |
| More than 5 years | <u>3</u> (5%) |
| Never had a clinical breast exam | <u>2</u> (3%) |
| <i>no answer</i> | 14 (23%) |

14. A PAP smear is a test for cancer of the cervix. How long has it been since you had your last Pap smear?

| | |
|-----------------------|-----------------|
| Within the past year | <u>17</u> (28%) |
| 1-2 years ago | <u>10</u> (17%) |
| 3-5 years ago | <u>8</u> (13%) |
| More than 5 years | <u>8</u> (13%) |
| Never had a Pap smear | 0 (0%) |
| <i>no answer</i> | 17 (28%) |

**Please answer questions 15-16 if you are a man (Women go to question 17).

15. How long has it been since you were checked for prostate cancer (a digital rectal exam or a PSA test):

| | |
|--|-----------------|
| Within the past year | <u>5</u> (8%) |
| 1-2 years ago | 0 (0%) |
| 3-5 years ago | <u>1</u> (2%) |
| More than 5 years | <u>1</u> (2%) |
| Never been checked for prostate cancer | <u>3</u> (5%) |
| <i>no answer</i> | 50 (83%) |

16. I examine my testicles each month for lumps.Yes 6 (10%)No 2 (3%)*no answer* 52 (87%)**17a. Have you ever been told by a doctor that you have HIGH CHOLESTEROL?**Yes 22 (37%)No 30 (50%)*no answer* 8 (13%)**17b. Have you ever been told by a doctor that you have HIGH BLOOD PRESSURE?**Yes 30 (50%)No 22 (37%)*no answer* 8 (13%)**17c. Have you ever been told by a doctor that you have HEART PROBLEMS (heart attack, angina, stroke, or other heart disease)?**Yes 16 (27%)No 38 (63%)*no answer* 6 (10%)**17d. Have you ever been told by a doctor that you have LUNG CANCER?**Yes 2 (3%)No 47 (78%)*no answer* 11 (18%)**17e. Have you ever been told by a doctor that you have COLON or RECTAL CANCER?**Yes 5 (8%)No 46 (77%)*no answer* 9 (15%)

17f. Have you ever been told by a doctor that you have SKIN CANCER?Yes 5 (8%)No 46 (77%)*no answer* 9 (15%)**17g. Have you ever been told by a doctor that you have BREAST CANCER?**Yes 1 (2%)No 44 (73%)*no answer* 15 (25%)**17h. Have you ever been told by a doctor that you have a SEXUALLY TRANSMITTED DISEASE (such as herpes, gonorrhea, genital warts, chlamydia, etc.)?**Yes 2 (3%)No 49 (82%)*no answer* 9 (15%)**17i. Have you ever been told by a doctor that you have HIV/AIDS?**

Yes 0 (0%)

No 47 (78%)*no answer* 13 (22%)**17j. Have you ever been told by a doctor that you have CERVICAL CANCER (per PAP test – women only)?**

Yes 0 (0%)

No 38 (63%)*no answer* 22 (37%)**17k. Have you ever been told by a doctor that you have PROSTATE CANCER (men only)?**Yes 1 (2%)No 20 (33%)*no answer* 39 (65%)

17l. Have you ever been told by a doctor that you have LUNG or RESPIRATORY DISEASE (COPD, asthma, chronic bronchitis)?Yes 11 (18%)No 39 (65%)*no answer* 10 (17%)**17m. Have you ever been told by a doctor that you have DIABETES?**Yes 16 (27%)No 38 (63%)*no answer* 6 (10%)**17n. Have you ever been told by a doctor that you have ARTHRITIS?**Yes 34 (57%)No 22 (37%)*no answer* 4 (7%)**17o. Have you ever been told by a doctor that you have MENTAL HEALTH or EMOTIONAL PROBLEMS?**Yes 7 (12%)No 42 (70%)*no answer* 11 (18%)**17p. Have you ever been told by a doctor that you have ALCOHOL PROBLEMS?**

Yes 0 (0%)

No 49 (82%)*no answer* 11 (18%)**17q. Have you ever been told by a doctor that you have OVERWEIGHT PROBLEMS?**Yes 20 (33%)No 33 (55%)*no answer* 7 (12%)

18a. My family (blood relatives) have a history of CANCER?

Yes 30 (50%)
No 19 (32%)
Don't know 2 (3%)
no answer 9 (15%)

18b. My family (blood relatives) have a history of HEART DISEASE?

Yes 34 (57%)
No 15 (25%)
Don't know 2 (3%)
no answer 9 (15%)

18c. My family (blood relatives) have a history of HIGH BLOOD PRESSURE?

Yes 39 (65%)
No 10 (17%)
Don't know 5 (8%)
no answer 6 (10%)

18d. My family (blood relatives) have a history of STROKE?

Yes 26 (43%)
No 22 (37%)
Don't know 3 (5%)
no answer 9 (15%)

18e. My family (blood relatives) have a history of DIABETES (sugar)?

Yes 28 (47%)
No 24 (40%)
Don't know 2 (3%)
no answer 6 (10%)

18f. My family (blood relatives) have a history of ARTHRITIS?

Yes 35 (58%)
No 16 (27%)
Don't know 3 (5%)
no answer 6 (10%)

18g. My family (blood relatives) have a history of MENTAL HEALTH or EMOTIONAL PROBLEMS?

Yes 9 (15%)
 No 34 (57%)
 Don't know 3 (5%)
no answer 14 (23%)

18h. My family (blood relatives) have a history of ALCOHOL PROBLEMS?

Yes 9 (15%)
 No 37 (62%)
 Don't know 3 (5%)
no answer 11 (18%)

18i. My family (blood relatives) have a history of being OVERWEIGHT?

Yes 22 (37%)
 No 25 (42%)
 Don't know 3 (5%)
no answer 10 (17%)

Please indicate who pays for the health insurance for each of the family members listed below who have insurance (check ALL that apply -- leave blank for those not covered).

19a. Have insurance?

Myself 48 (80%)
 My spouse 5 (8%)
 No spouse 1 (2%)
 My children (under age 18) 0 (0%)
 No children 2 (3%)
 Other (please specify) 1 (2%)

19b. My employer?

| | |
|----------------------------|----------------|
| Myself | <u>6</u> (10%) |
| My spouse | <u>2</u> (3%) |
| No spouse | 0 (0%) |
| My children (under age 18) | <u>1</u> (2%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | <u>2</u> (3%) |

19c. My spouse's employer

| | |
|----------------------------|---------------|
| Myself | <u>2</u> (3%) |
| My spouse | <u>5</u> (8%) |
| No spouse | 0 (0%) |
| My children (under age 18) | <u>1</u> (2%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | <u>1</u> (2%) |

19d. Me or my spouse

| | |
|----------------------------|----------------|
| Myself | <u>8</u> (13%) |
| My spouse | <u>4</u> (7%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | 0 (0%) |

19e. Medicare

| | |
|----------------------------|-----------------|
| Myself | <u>32</u> (53%) |
| My spouse | <u>3</u> (5%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | <u>1</u> (2%) |

19f. Medicaid/medical assistance

| | |
|----------------------------|----------------|
| Myself | <u>8</u> (13%) |
| My spouse | <u>2</u> (3%) |
| No spouse | 0 (0%) |
| My children (under age 18) | 0 (0%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | <u>2</u> (3%) |

19g. Military CHAMPUS or the VA

| | |
|----------------------------|----------------|
| Myself | <u>4</u> (7%) |
| My spouse | <u>1</u> (2%) |
| No spouse | <u>1</u> (2%) |
| My children (under age 18) | <u>0</u> (0%) |
| No children | <u>2</u> (3%) |
| Other (please specify) | <u>0</u> (0%) |

19h. Other

| | |
|----------------------------|----------------|
| Myself | <u>0</u> (0%) |
| My spouse | <u>1</u> (2%) |
| No spouse | <u>0</u> (0%) |
| My children (under age 18) | <u>0</u> (0%) |
| No children | <u>1</u> (2%) |
| Other (please specify) | <u>1</u> (2%) |

20. During the past 12 months, the following problems have stopped me from getting the health care I need: (Check ALL that apply)

| | |
|---|-----------------|
| I don't know where to go for health services | <u>1</u> (2%) |
| I can't get transportation | <u>6</u> (10%) |
| Health services aren't close to where I live | <u>2</u> (3%) |
| I can't pay for health services | <u>5</u> (8%) |
| My health insurance doesn't cover what I need | <u>7</u> (12%) |
| I couldn't get an appointment | <u>1</u> (2%) |
| I couldn't get through on the telephone | <u>0</u> (0%) |
| The clinic/doctor's office wasn't open when I could get there. | <u>0</u> (0%) |
| My deductible or co-payment (my share of the cost) is too high | <u>6</u> (10%) |
| Hospitals won't take my insurance or Medical Assistance (Medicaid) | <u>0</u> (0%) |
| My health care provider won't take my insurance, or Medical Assistance (Medicaid) | <u>0</u> (0%) |
| I couldn't find a health care provider I like and/or trust | <u>1</u> (2%) |
| None—I've gotten the health care I need | <u>27</u> (45%) |
| Other (please specify) | <u>1</u> (2%) |

21a. During the past year, was there any time when you or a family member needed prescription medicine, but did not get it because you couldn't afford it?

Yes 8 (13%)

No 40 (67%)

no answer 12 (20%)

21b. During the past year, was there any time when you or a family member needed eyewear (contact lenses, glasses), but did not get it because you couldn't afford it?

Yes 11 (18%)

No 37 (62%)

no answer 12 (20%)

22. I am pregnant or have been pregnant in the past 5 years.

Yes (Please answer questions 24a-24h for your most recent pregnancy.) 0 (0%)

No (Go to question 26) 33 (55%)

no answer 27 (45%)

23. If currently pregnant, in what month are you?
(number) **0 responses**

24a. During my pregnancy I see (or saw) a DOCTOR.

Yes 0 (0%)

No 0 (0%)

no answer 60 (100%)

24b. During my pregnancy I follow(ed) a HEALTHY DIET.

Yes 0 (0%)

No 0 (0%)

no answer 60 (100%)

24c. During my pregnancy I take/took VITAMINS every day.

Yes 0 (0%)

No 0 (0%)

no answer 60 (100%)

24d. During my pregnancy I take/took classes on how to CARE FOR MY NEW BABY.

Yes 0 (0%)
 No 0 (0%)
no answer 60 (100%)

24e. During my pregnancy I SMOKE(D).

Yes 0 (0%)
 No 0 (0%)
no answer 60 (100%)

24f. During my pregnancy I drink/drank ALCOHOL.

Yes 0 (0%)
 No 0 (0%)
no answer 60 (100%)

24g. During my pregnancy I use(d) ILLEGAL STREET DRUGS.

Yes 0 (0%)
 No 0 (0%)
no answer 60 (100%)

24h. During my pregnancy I am/was physically ABUSED.

Yes 0 (0%)
 No 0 (0%)
no answer 60 (100%)

25. During which month (1 to 9) in your pregnancy did you first see a doctor?

Seen a doctor (specify below) 0 (0%)
 Have not seen a doctor 0 (0%)
 (number) 0 (0%)
no answer 60 (100%)

31. The child or children age 2 or older eat at least three meals a day.

| | |
|------------------------------|---------------|
| Rarely or never | 0 (0%) |
| Sometimes | 0 (0%) |
| Often | <u>1</u> (2%) |
| Always | 0 (0%) |
| There is no child 2 or older | <u>4</u> (7%) |
| <i>no answer</i> | 55 (92%) |

32. When riding in a family car, my child or children under age 4 use a child seat.

| | |
|-------------------------------|-----------------|
| Always | 0 (0%) |
| Nearly always | 0 (0%) |
| Sometimes | 0 (0%) |
| Seldom | 0 (0%) |
| Never | 0 (0%) |
| Never rides | 0 (0%) |
| There is no child under age 4 | <u>19</u> (32%) |
| <i>no answer</i> | 41 (68%) |

33. When riding in a family car, my child or children age 4 or older use a seat belt.

| | |
|----------------------------------|-----------------|
| Always | <u>1</u> (2%) |
| Nearly always | 0 (0%) |
| Sometimes | 0 (0%) |
| Seldom | 0 (0%) |
| Never | 0 (0%) |
| Never rides | 0 (0%) |
| There is no child age 4 or older | <u>20</u> (33%) |
| <i>no answer</i> | 39 (65%) |

34. In the past year, has your child or children age 14 or younger been injured from a fall and required treatment?

| | |
|-------------------------------------|-----------------|
| Yes | 0 (0%) |
| No | <u>1</u> (2%) |
| There is no child age 14 or younger | <u>17</u> (28%) |
| <i>no answer</i> | 42 (70%) |

35a. In the past year, has your child or children used/abused DRUGS?

Yes **0** (0%)
 No **4** (7%)
 Not sure **0** (0%)
no answer **56** (93%)

35b. In the past year, has your child or children used/abused ALCOHOL?

Yes **0** (0%)
 No **4** (7%)
 Not sure **0** (0%)
no answer **56** (93%)

36a. How would you rate DRUG USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **19** responses [view this question](#) [view all questions](#)

36b. How would you rate ALCOHOL USE/ABUSE for children under age 18 in your community? Please rate on a scale from 1 to 10, where 1 is "no problem with use/abuse" and 10 is "extreme problem with use/abuse."

(number 1-10) **18** responses [view this question](#) [view all questions](#)

37. During the past month I drank alcohol:

Less than once a month **3** (5%)
 A few times per month **1** (2%)
 About once a week **3** (5%)
 A few days a week **3** (5%)
 Every day **0** (0%)
 Never drink (Go to question 38) **40** (67%)
no answer **10** (17%)

38. When I drink alcohol, the number of drinks I have is:

| | |
|------------------|-----------------|
| 1 or 2 | <u>10</u> (17%) |
| 3 or 4 | 0 (0%) |
| 5 or 6 | 0 (0%) |
| 7 to 10 | 0 (0%) |
| More than 10 | 0 (0%) |
| <i>no answer</i> | 50 (83%) |

39. Have you ever smoked?

| | |
|--|-----------------|
| Yes, I am currently a smoker (Go to question 42) | <u>1</u> (2%) |
| Yes, but I no longer smoke | <u>22</u> (37%) |
| No (Go to question 45) | <u>32</u> (53%) |
| <i>no answer</i> | 5 (8%) |

40. How many years did you smoke?

(number) **21 responses** [view this question](#) [view all questions](#)

41. On the average, how much did you smoke each day?

| | |
|---|----------------|
| 2 packs or less (10 or less cigarettes) | <u>9</u> (15%) |
| Between 2 packs and 1 pack (11-20 cigarettes) | <u>2</u> (3%) |
| Between 1 pack and 2 packs (21-40 cigarettes) | <u>4</u> (7%) |
| More than 2 packs (more than 40 cigarettes) | <u>1</u> (2%) |
| Smoked, but not every day (Go to question 43) | <u>5</u> (8%) |
| <i>no answer</i> | 39 (65%) |

42. Do you now smoke each day:

| | |
|---|---------------|
| 2 packs or less (10 or less cigarettes) | <u>1</u> (2%) |
| Between 2 packs and 1 pack (11-20 cigarettes) | 0 (0%) |
| Between 1 pack and 2 packs (21-40 cigarettes) | 0 (0%) |
| More than 2 packs (more than 40 cigarettes) | 0 (0%) |
| Smoke, but not everyday | <u>1</u> (2%) |
| <i>no answer</i> | 58 (97%) |

43. I smoke cigars or a pipe.

| | |
|------------------|-----------------|
| Yes | 0 (0%) |
| No | <u>15</u> (25%) |
| <i>no answer</i> | 45 (75%) |

44. I started smoking at age

(number) **19 responses** [view this question](#) [view all questions](#)

45. I use smokeless tobacco (snuff, chewing tobacco).

Yes **3** (5%)

No **41** (68%)

no answer **16** (27%)

46. Someone else in my home smokes cigarettes, cigars, or a pipe.

Yes **3** (5%)

No **44** (73%)

no answer **13** (22%)

47. During the past month, did you participate in any physical activities or exercises, such as running, calisthenics, active housework, gardening, or walking for exercise?

Yes **41** (68%)

No (go to Question 50) **12** (20%)

no answer **7** (12%)

48. Each week, I exercise:

Less than 1 time **5** (8%)

1 or 2 times **11** (18%)

3 or 4 times **14** (23%)

5 or more times **14** (23%)

no answer **16** (27%)

49. When I exercise, I exercise for:

Less than 20 minutes **21** (35%)

20-29 minutes **11** (18%)

30 minutes or more **12** (20%)

no answer **16** (27%)

50. I use a seatbelt:

| | |
|---------------------|-----------------|
| Always | <u>50</u> (83%) |
| Nearly always | <u>2</u> (3%) |
| Sometimes | <u>2</u> (3%) |
| Seldom | 0 (0%) |
| Never | 0 (0%) |
| Never drive or ride | 0 (0%) |
| <i>no answer</i> | 6 (10%) |

51a. In the PAST month, I have driven a car/truck after I had too much to drink.

| | |
|------------------|-----------------|
| Yes | 0 (0%) |
| No | <u>48</u> (80%) |
| <i>no answer</i> | 12 (20%) |

51b. In the PAST month, I have driven a car/truck after taking drugs that could affect my ability to drive safely.

| | |
|------------------|-----------------|
| Yes | 0 (0%) |
| No | <u>48</u> (80%) |
| <i>no answer</i> | 12 (20%) |

51c. In the PAST month, I rode in a car/truck driven by someone who drank alcohol.

| | |
|------------------|-----------------|
| Yes | <u>3</u> (5%) |
| No | <u>43</u> (72%) |
| <i>no answer</i> | 14 (23%) |

51d. In the PAST month, I rode in a car/truck driven by someone who had taken drugs.

| | |
|------------------|-----------------|
| Yes | <u>1</u> (2%) |
| No | <u>46</u> (77%) |
| <i>no answer</i> | 13 (22%) |

51e. In the PAST month, I used illegal drugs (cocaine, marijuana, etc.)

| | |
|------------------|-----------------|
| Yes | 0 (0%) |
| No | <u>50</u> (83%) |
| <i>no answer</i> | 10 (17%) |

51f. In the PAST year, I had more than one sex partner (leave blank if not having sex with anyone.)

Yes 2 (3%)

No 32 (53%)

no answer 26 (43%)

51g. If yes, I always used condoms (rubbers) with my sex partner(s).

Yes 0 (0%)

No 3 (5%)

no answer 57 (95%)

52. Are any guns/firearms now kept in or around your home? (Include those kept in a garage, outdoor storage area, car, truck or other motor vehicle.)

Yes 18 (30%)

No 38 (63%)

no answer 4 (7%)

53. If yes, is there a firearm in or around your home that is now both loaded and unlocked?

Yes 6 (10%)

No 13 (22%)

no answer 41 (68%)

54. Because of any impairment or health problem, do you need the help of other persons in handling your ROUTINE needs, such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?

Yes 10 (17%)

No 42 (70%)

no answer 8 (13%)

55. Because of any impairment or health problem, do you need the help of other persons in handling your PERSONAL CARE needs, such as eating, bathing, dressing, or getting around the house?

Yes 5 (8%)

No 46 (77%)

no answer 9 (15%)

56a. In the PAST YEAR, I had a problem getting transportation to the grocery store (supermarket).

Rarely or never 43 (72%)
 Sometimes 4 (7%)
 Often 1 (2%)
 Always 0 (0%)
no answer 12 (20%)

56b. In the PAST YEAR, I had a problem getting transportation to social visits (visits to friends or family, meetings, etc.)

Rarely or never 42 (70%)
 Sometimes 4 (7%)
 Often 0 (0%)
 Always 0 (0%)
no answer 14 (23%)

57. Do you provide care for someone age 65 or older?

Yes, for one person 4 (7%)
 Yes, for more than one person 0 (0%)
 No (Go to question 61) 44 (73%)
no answer 12 (20%)

58. If yes, please indicate which of the following best describes the care you provide:

I provide most of the care 0 (0%)
 I provide some care on a regular basis 1 (2%)
 I help occasionally 3 (5%)
 Don't know 0 (0%)
no answer 56 (93%)

59. What is your relationship with this person (family, friend, employee)?

(please specify) **3 responses** [view this question](#) [view all questions](#)

60. What kind of help do you provide? (Check ALL that apply)

Help with personal care (bathing, dressing, eating, etc.) 2 (3%)
 Help with household needs (cooking, shopping, driving, etc.) 2 (3%)
 Other (please specify) 0 (0%)

(If you are the MAIN caregiver, answer the following. If not, go to question 62.)

61a. As a caregiver, do you feel ASSISTED LIVING (housing with services to help older people) is available for you and the older person you care for, if you need them?

| | |
|--|-----------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>2</u> (3%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61b. As a caregiver, do you feel HOME HEALTH NURSING services are available for you and the older person you care for, if you need them?

| | |
|--|-----------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>2</u> (3%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61c. As a caregiver, do you feel help with HOUSEWORK AND HOME MAINTENANCE services are available for you and the older person you care for, if you need them?

| | |
|--|-----------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>2</u> (3%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61d. As a caregiver, do you feel that someone to LIVE-IN or STAY daily with the older person is available for you and the older person you care for, if you need them?

| | |
|--|-----------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>2</u> (3%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61e. As a caregiver, do you feel EDUCATION AND SUPPORT services for you and the older person you care for are available for you and the older person you care for, if you need them?

| | |
|--|---------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>2</u> (3%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61f. As a caregiver, do you feel TRANSPORTATION services are available for you and/or the older person you care for, if you need them?

| | |
|--|---------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | <u>1</u> (2%) |
| Have not used, but think it is available | <u>1</u> (2%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

61g. As a caregiver, do you feel help with PAYING FOR MEDICATIONS is available for you and the older person you care for, if you need them?

| | |
|--|---------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | 0 (0%) |
| Have not used, but think it is available | <u>1</u> (2%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 59 (98%) |

61h. As a caregiver, do you feel ADULT DAYCARE services are available for you and the older person you care for, if you need them?

| | |
|--|---------------|
| Yes, and am using now | 0 (0%) |
| Yes, and have used in the past | <u>1</u> (2%) |
| Have not used, but think it is available | <u>1</u> (2%) |
| Don't think it is available | 0 (0%) |
| <i>no answer</i> | 58 (97%) |

62. If you are age 65 or older, OR are caring for an older family member, have you/they had an injury from a fall that required treatment during the past year?

Yes 6 (10%)
 No 21 (35%)
 Doesn't apply 12 (20%)
no answer 21 (35%)

63a. During the past 30 days, did you feel so SAD that nothing could cheer you up?

All of the time 0 (0%)
 Most of the time 1 (2%)
 Some of the time 7 (12%)
 A little of the time 6 (10%)
 None of the time 33 (55%)
no answer 13 (22%)

63b. During the PAST 30 days, did you feel NERVOUS?

All of the time 3 (5%)
 Most of the time 4 (7%)
 Some of the time 8 (13%)
 A little of the time 14 (23%)
 None of the time 19 (32%)
no answer 12 (20%)

63c. During the PAST 30 days, did you feel RESTLESS or FIDGETY?

All of the time 1 (2%)
 Most of the time 2 (3%)
 Some of the time 8 (13%)
 A little of the time 17 (28%)
 None of the time 17 (28%)
no answer 15 (25%)

63d. During the PAST 30 days, did you feel HOPELESS?

All of the time **0** (0%)
 Most of the time **1** (2%)
 Some of the time **3** (5%)
 A little of the time **8** (13%)
 None of the time **34** (57%)
no answer **14** (23%)

63e. During the PAST 30 days, did you feel that everything was an EFFORT?

All of the time **0** (0%)
 Most of the time **1** (2%)
 Some of the time **13** (22%)
 A little of the time **10** (17%)
 None of the time **23** (38%)
no answer **13** (22%)

63f. During the PAST 30 days, did you feel WORTHLESS?

All of the time **0** (0%)
 Most of the time **1** (2%)
 Some of the time **3** (5%)
 A little of the time **7** (12%)
 None of the time **35** (58%)
no answer **14** (23%)

64. In the past year, someone in my home had a mental health or emotional problem (such as depression, severe stress, severe phobia, etc.) that affected their ability to do daily activities.

Yes **6** (10%)
 No **37** (62%)
 Don't know **4** (7%)
no answer **13** (22%)

65. If yes, this person(s) was treated for a mental health problem (such as depression, severe stress, severe phobia, etc.)

Yes 3 (5%)
 No 6 (10%)
 Don't know 2 (3%)
no answer 49 (82%)

66. I or someone in my home has been abused by someone else in the home.

Yes 0 (0%)
 No 47 (78%)
 Not sure 0 (0%)
no answer 13 (22%)

67. I or someone in my home has tried to kill him-/herself in the past 5 years.

Yes 2 (3%)
 No 49 (82%)
 Not sure 0 (0%)
no answer 9 (15%)

I would like to ask you about various environmental factors that might influence your health. For each item, please INDICATE IF YOU FEEL IT IS A PROBLEM IN YOUR AREA:

68a. Outdoor air quality

Yes 10 (17%)
 No 34 (57%)
 Don't know 1 (2%)
no answer 15 (25%)

68b. Indoor air quality

Yes 8 (13%)
 No 36 (60%)
 Don't know 0 (0%)
no answer 16 (27%)

68c. Recreational water quality

Yes 7 (12%)
No 32 (53%)
Don't know 6 (10%)
no answer 15 (25%)

68d. Drinking water quality

Yes 4 (7%)
No 37 (62%)
Don't know 4 (7%)
no answer 15 (25%)

68e. Sewage disposal

Yes 2 (3%)
No 33 (55%)
Don't know 9 (15%)
no answer 16 (27%)

68f. Solid waste disposal (trash)

Yes 3 (5%)
No 36 (60%)
Don't know 6 (10%)
no answer 15 (25%)

68g. Hazardous materials handling

Yes 2 (3%)
No 30 (50%)
Don't know 12 (20%)
no answer 16 (27%)

68h. Food safety

Yes 3 (5%)
No 34 (57%)
Don't know 4 (7%)
no answer 19 (32%)

68i. Housing (adequate heat, plumbing)

Yes 4 (7%)
 No 34 (57%)
 Don't know 6 (10%)
no answer 16 (27%)

68j. Worker safety and health

Yes 7 (12%)
 No 32 (53%)
 Don't know 5 (8%)
no answer 16 (27%)

68k. Pest control

Yes 5 (8%)
 No 36 (60%)
 Don't know 3 (5%)
no answer 16 (27%)

69. What is the primary source of heat for your home?

Electricity 38 (63%)
 Wood burning stove 4 (7%)
 Oil 7 (12%)
 Natural gas 5 (8%)
 Propane powered heat **0** (0%)
 If yes, what? (please specify) **0** (0%)
no answer 6 (10%)

70. What is the source of your home's water?

Personal well 12 (20%)
 A well shared with several neighbors **0** (0%)
 City or community water 41 (68%)
 Bottled water **0** (0%)
 Other (please specify) 2 (3%)
no answer 5 (8%)

71. Does your home have indoor plumbing?

Yes 53 (88%)
 No 1 (2%)
no answer 6 (10%)

72a. I know where to go or where to call for DAYCARE for children.

Yes 16 (27%)
 No 8 (13%)
 Don't know 12 (20%)
no answer 24 (40%)

72b. I know where to go or where to call for ADULT DAYCARE (age 65 or older) or the handicapped.

Yes 19 (32%)
 No 15 (25%)
 Don't know 7 (12%)
no answer 19 (32%)

72c. I know where to go or where to call for HOME HEALTH SERVICES for the elderly (age 65 or older) or the handicapped.

Yes 28 (47%)
 No 12 (20%)
 Don't know 5 (8%)
no answer 15 (25%)

72d. I know where to go or where to call for TRANSPORTATION for the elderly (age 65 or the handicapped).

Yes 32 (53%)
 No 9 (15%)
 Don't know 4 (7%)
no answer 15 (25%)

72e. I know where to go or where to call for TREATMENT for alcohol or drug abuse.

Yes 22 (37%)
 No 15 (25%)
 Don't know 7 (12%)
no answer 16 (27%)

72f. I know where to go or where to call for COUNSELING for mental health or emotional problems.

Yes 28 (47%)
No 11 (18%)
Don't know 5 (8%)
no answer 16 (27%)

72g. I know where to go or where to call for CHILD IMMUNIZATIONS.

Yes 20 (33%)
No 6 (10%)
Don't know 12 (20%)
no answer 22 (37%)

72h. I know where to go or where to call for PARENTING EDUCATION.

Yes 19 (32%)
No 10 (17%)
Don't know 10 (17%)
no answer 21 (35%)

72i. I know where to go or where to call for FAMILY or MARRIAGE COUNSELING.

Yes 18 (30%)
No 11 (18%)
Don't know 10 (17%)
no answer 21 (35%)

72j. I know where to go or where to call for WOMEN'S HEALTH INFORMATION.

Yes 28 (47%)
No 7 (12%)
Don't know 7 (12%)
no answer 18 (30%)

72k. I know where to go or where to call for DOMESTIC VIOLENCE counseling or shelter.

Yes 18 (30%)
 No 12 (20%)
 Don't know 10 (17%)
no answer 20 (33%)

72l. I know where to go or where to call for PRENATAL CARE (care for pregnant women).

Yes 17 (28%)
 No 9 (15%)
 Don't know 11 (18%)
no answer 23 (38%)

72m. I know where to go or where to call for BIRTH CONTROL INFORMATION.

Yes 17 (28%)
 No 9 (15%)
 Don't know 11 (18%)
no answer 23 (38%)

72n. I know where to go or where to call for SEXUALLY TRANSMITTED DISEASE services and counseling.

Yes 16 (27%)
 No 10 (17%)
 Don't know 12 (20%)
no answer 22 (37%)

72o. I know where to go or where to call for HIV/AIDS infection services and counseling.

Yes 17 (28%)
 No 8 (13%)
 Don't know 13 (22%)
no answer 22 (37%)

73a. How often would you, your child(ren), or a member of your household use LATE or WEEKEND DOCTOR HOURS?

| | |
|------------------|-----------------|
| Rarely or Never | <u>26</u> (43%) |
| Sometimes | <u>12</u> (20%) |
| Often | <u>2</u> (3%) |
| Always | <u>0</u> (0%) |
| Does not Apply | <u>4</u> (7%) |
| <i>no answer</i> | <u>16</u> (27%) |

73b. How often would you, your child(ren), or a member of your household use SCHOOL-BASED NURSING services?

| | |
|------------------|-----------------|
| Rarely or Never | <u>11</u> (18%) |
| Sometimes | <u>1</u> (2%) |
| Often | <u>1</u> (2%) |
| Always | <u>0</u> (0%) |
| Does not Apply | <u>24</u> (40%) |
| <i>no answer</i> | <u>23</u> (38%) |

73c. How often would you, your child(ren), or a member of your household use YOUTH PROGRAMS?

| | |
|------------------|-----------------|
| Rarely or Never | <u>11</u> (18%) |
| Sometimes | <u>1</u> (2%) |
| Often | <u>1</u> (2%) |
| Always | <u>0</u> (0%) |
| Does not Apply | <u>26</u> (43%) |
| <i>no answer</i> | <u>21</u> (35%) |

**74. I find out about news or events in my community through:
(Check ALL that apply)**

| | |
|--|-----------------|
| Newspaper | <u>33</u> (55%) |
| Television | <u>41</u> (68%) |
| Radio | <u>23</u> (38%) |
| Church/mosque/temple bulletin | <u>23</u> (38%) |
| Word-of-mouth (friends, relatives, etc.) | <u>28</u> (47%) |
| None | <u>1</u> (2%) |
| Other (please specify) | <u>2</u> (3%) |

These last questions will give us some general information about the people who have completed our survey.

75. I am

Male [11](#) (18%)

Female [41](#) (68%)

no answer [8](#) (13%)

76. My height is

(specify feet and inches) **49 responses** [view this question](#) [view all questions](#)

77. My weight is

(pounds) **49 responses** [view this question](#) [view all questions](#)

78. I am

(age in years) **52 responses** [view this question](#) [view all questions](#)

79. My zip code is

(specify in numbers) **51 responses** [view this question](#) [view all questions](#)

80. I am (check ONE only):

Never married [8](#) (13%)

Member of an unmarried couple [5](#) (8%)

Married [7](#) (12%)

Divorced [8](#) (13%)

Separated [0](#) (0%)

Widowed [29](#) (48%)

no answer [3](#) (5%)

81. I am getting the following: (Check ALL that apply)

Food stamps [6](#) (10%)

Cash assistance (welfare) [3](#) (5%)

Disability payments (SSI, Worker's Comp) [16](#) (27%)

Help with paying rent [3](#) (5%)

Unemployment [0](#) (0%)

WIC (Women's, Infants and Children - nutrition support program) [0](#) (0%)

No assistance [22](#) (37%)

Other (please specify) [9](#) (15%)

82. I am: (Check ALL that apply)

| | |
|--|-----------------|
| Employed full-time | <u>3</u> (5%) |
| Employed part-time | <u>9</u> (15%) |
| Self-employed | <u>1</u> (2%) |
| A homemaker | <u>9</u> (15%) |
| Retired | <u>30</u> (50%) |
| Unemployed | <u>1</u> (2%) |
| Unable to work because of a disability | <u>2</u> (3%) |
| A student | <u>7</u> (12%) |

83. I know of individuals who have had trouble getting work in the past year due to a lack of skills.

| | |
|------------------|-----------------|
| Yes | <u>14</u> (23%) |
| No | <u>31</u> (52%) |
| <i>no answer</i> | 15 (25%) |

84. The highest level of schooling that I finished is:

| | |
|--|-----------------|
| Never attended | <u>1</u> (2%) |
| Grade school | <u>14</u> (23%) |
| Junior high/middle school | <u>8</u> (13%) |
| Some high school, no diploma | <u>6</u> (10%) |
| High school diploma | <u>6</u> (10%) |
| GED | <u>1</u> (2%) |
| Vocational or trade school | <u>4</u> (7%) |
| Some college, no degree | <u>8</u> (13%) |
| College degree | <u>3</u> (5%) |
| Some graduate school, no advanced degree | <u>1</u> (2%) |
| Graduate degree | <u>4</u> (7%) |
| <i>no answer</i> | 4 (7%) |

85. My household income this year will be:

| | | |
|-------------------|-----------|-------|
| Under \$10,000 | <u>21</u> | (35%) |
| \$10,000-\$14,999 | <u>5</u> | (8%) |
| \$15,000-\$19,999 | <u>1</u> | (2%) |
| \$20,000-\$24,999 | <u>5</u> | (8%) |
| \$25,000-\$34,999 | <u>5</u> | (8%) |
| \$35,000-\$39,000 | 0 | (0%) |
| \$40,000-\$49,999 | <u>1</u> | (2%) |
| \$50,000-\$75,000 | <u>3</u> | (5%) |
| Over \$75,000 | 0 | (0%) |
| <i>no answer</i> | 19 | (32%) |

86. I would describe my race as:

| | | |
|------------------------|-----------|-------|
| White | <u>50</u> | (83%) |
| Black | <u>5</u> | (8%) |
| Native American | 0 | (0%) |
| Asian American | 0 | (0%) |
| Other (please specify) | <u>1</u> | (2%) |
| <i>no answer</i> | 4 | (7%) |

87. Would you also describe yourself as being of Hispanic origin?

| | | |
|------------------|-----------|-------|
| Yes | <u>1</u> | (2%) |
| No | <u>47</u> | (78%) |
| <i>no answer</i> | 12 | (20%) |

Appendix M

Frequency Table and Crosstab Tabulated Responses to Selected Survey Questions
by Survey Group (Direct Mail Low-Income, Church, Senior)

| Data source | | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|---------|--------|-----------|---------|---------------|--------------------|
| Direct Mail list | Valid | Female | 80 | 72.1 | 72.7 | 72.7 |
| | | Male | 30 | 27.0 | 27.3 | 100.0 |
| | | Total | 110 | 99.1 | 100.0 | |
| | Missing | Total | 1 | 0.9 | | |
| | | Total | 111 | 100.0 | | |
| Church survey | Valid | Female | 27 | 79.4 | 81.8 | 81.8 |
| | | Male | 6 | 17.6 | 18.2 | 100.0 |
| | | Total | 33 | 97.1 | 100.0 | |
| | Missing | Total | 1 | 2.9 | | |
| | | Total | 34 | 100.0 | | |
| Senior center | Valid | Female | 41 | 68.3 | 78.8 | 78.8 |
| | | Male | 11 | 18.3 | 21.2 | 100.0 |
| | | Total | 52 | 86.7 | 100.0 | |
| | Missing | Total | 8 | 13.3 | | |
| | | Total | 60 | 100.0 | | |

Table M1. Gender Distribution—Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|---------|----------------|-----------|---------|---------------|--------------------|
| Direct Mail list | Valid | 35 and younger | 27 | 24.3 | 24.8 | 24.8 |
| | | 36-49 | 14 | 12.6 | 12.8 | 37.6 |
| | | 50-64 | 26 | 23.4 | 23.9 | 61.5 |
| | | 65 and older | 42 | 37.8 | 38.5 | 100.0 |
| | | Total | 109 | 98.2 | 100.0 | |
| | Missing | System | 2 | 1.8 | | |
| | | Total | 111 | 100.0 | | |
| Church survey | Valid | 35 and younger | 2 | 5.9 | 6.5 | 6.5 |
| | | 36-49 | 6 | 17.6 | 19.4 | 25.8 |
| | | 50-64 | 16 | 47.1 | 51.6 | 77.4 |
| | | 65 and older | 7 | 20.6 | 22.6 | 100.0 |
| | | Total | 31 | 91.2 | 100.0 | |
| | Missing | System | 3 | 8.8 | | |
| | | Total | 34 | 100.0 | | |
| Senior center | Valid | 35 and younger | 6 | 10.0 | 11.8 | 11.8 |
| | | 36-49 | 3 | 5.0 | 5.9 | 17.6 |
| | | 50-64 | 5 | 8.3 | 9.8 | 27.5 |
| | | 65 and older | 37 | 61.7 | 72.5 | 100.0 |
| | | Total | 51 | 85.0 | 100.0 | |
| | Missing | System | 9 | 15.0 | | |
| | | Total | 60 | 100.0 | | |

Table M2. Age Group Distribution (in years)--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent | |
|---------------------|-------|-----------|---------|---------------|--------------------|------|
| Direct Mail list | Valid | 19 | 1 | 0.9 | 0.9 | 0.9 |
| | | 20 | 6 | 5.4 | 5.5 | 6.4 |
| | | 21 | 1 | 0.9 | 0.9 | 7.3 |
| | | 22 | 2 | 1.8 | 1.8 | 9.2 |
| | | 23 | 1 | 0.9 | 0.9 | 10.1 |
| | | 24 | 1 | 0.9 | 0.9 | 11.0 |
| | | 25 | 3 | 2.7 | 2.8 | 13.8 |
| | | 26 | 1 | 0.9 | 0.9 | 14.7 |
| | | 27 | 1 | 0.9 | 0.9 | 15.6 |
| | | 28 | 1 | 0.9 | 0.9 | 16.5 |
| | | 30 | 1 | 0.9 | 0.9 | 17.4 |
| | | 32 | 3 | 2.7 | 2.8 | 20.2 |
| | | 34 | 3 | 2.7 | 2.8 | 22.9 |
| | | 35 | 2 | 1.8 | 1.8 | 24.8 |
| | | 37 | 1 | 0.9 | 0.9 | 25.7 |
| | | 38 | 2 | 1.8 | 1.8 | 27.5 |
| | | 41 | 2 | 1.8 | 1.8 | 29.4 |
| | | 43 | 1 | 0.9 | 0.9 | 30.3 |
| | | 44 | 3 | 2.7 | 2.8 | 33.0 |
| | | 45 | 1 | 0.9 | 0.9 | 33.9 |
| | | 46 | 2 | 1.8 | 1.8 | 35.8 |
| | | 49 | 2 | 1.8 | 1.8 | 37.6 |
| | | 51 | 1 | 0.9 | 0.9 | 38.5 |
| | | 52 | 1 | 0.9 | 0.9 | 39.4 |
| | | 53 | 1 | 0.9 | 0.9 | 40.4 |
| | | 54 | 2 | 1.8 | 1.8 | 42.2 |
| | | 55 | 1 | 0.9 | 0.9 | 43.1 |
| | | 57 | 3 | 2.7 | 2.8 | 45.9 |
| | | 58 | 2 | 1.8 | 1.8 | 47.7 |
| | | 59 | 3 | 2.7 | 2.8 | 50.5 |
| | | 60 | 2 | 1.8 | 1.8 | 52.3 |
| | | 61 | 2 | 1.8 | 1.8 | 54.1 |
| | | 62 | 1 | 0.9 | 0.9 | 55.0 |
| | | 63 | 5 | 4.5 | 4.6 | 59.6 |
| | | 64 | 2 | 1.8 | 1.8 | 61.5 |
| | | 65 | 4 | 3.6 | 3.7 | 65.1 |
| | | 67 | 4 | 3.6 | 3.7 | 68.8 |
| | 68 | 2 | 1.8 | 1.8 | 70.6 | |
| | 70 | 3 | 2.7 | 2.8 | 73.4 | |
| | 71 | 1 | 0.9 | 0.9 | 74.3 | |
| | 73 | 1 | 0.9 | 0.9 | 75.2 | |
| | 74 | 1 | 0.9 | 0.9 | 76.1 | |
| | 75 | 4 | 3.6 | 3.7 | 79.8 | |
| | 76 | 2 | 1.8 | 1.8 | 81.7 | |
| | 77 | 1 | 0.9 | 0.9 | 82.6 | |
| | 78 | 4 | 3.6 | 3.7 | 86.2 | |
| | 79 | 2 | 1.8 | 1.8 | 88.1 | |
| | 80 | 1 | 0.9 | 0.9 | 89.0 | |

| | | | | | | |
|--------|---------|--------|-----|-------|-------|-------|
| | | 81 | 2 | 1.8 | 1.8 | 90.8 |
| | | 82 | 1 | 0.9 | 0.9 | 91.7 |
| | | 83 | 1 | 0.9 | 0.9 | 92.7 |
| | | 85 | 2 | 1.8 | 1.8 | 94.5 |
| | | 86 | 2 | 1.8 | 1.8 | 96.3 |
| | | 87 | 3 | 2.7 | 2.8 | 99.1 |
| | | 90 | 1 | 0.9 | 0.9 | 100.0 |
| | | Total | 109 | 98.2 | 100.0 | |
| | Missing | System | 2 | 1.8 | | |
| | Total | | 111 | 100.0 | | |
| Church | Valid | 30 | 1 | 2.9 | 3.2 | 3.2 |
| survey | | 32 | 1 | 2.9 | 3.2 | 6.5 |
| | | 40 | 1 | 2.9 | 3.2 | 9.7 |
| | | 41 | 2 | 5.9 | 6.5 | 16.1 |
| | | 44 | 1 | 2.9 | 3.2 | 19.4 |
| | | 46 | 1 | 2.9 | 3.2 | 22.6 |
| | | 47 | 1 | 2.9 | 3.2 | 25.8 |
| | | 50 | 1 | 2.9 | 3.2 | 29.0 |
| | | 51 | 1 | 2.9 | 3.2 | 32.3 |
| | | 53 | 1 | 2.9 | 3.2 | 35.5 |
| | | 55 | 2 | 5.9 | 6.5 | 41.9 |
| | | 56 | 1 | 2.9 | 3.2 | 45.2 |
| | | 57 | 1 | 2.9 | 3.2 | 48.4 |
| | | 58 | 1 | 2.9 | 3.2 | 51.6 |
| | | 59 | 2 | 5.9 | 6.5 | 58.1 |
| | | 60 | 1 | 2.9 | 3.2 | 61.3 |
| | | 61 | 1 | 2.9 | 3.2 | 64.5 |
| | | 62 | 1 | 2.9 | 3.2 | 67.7 |
| | | 63 | 1 | 2.9 | 3.2 | 71.0 |
| | | 64 | 2 | 5.9 | 6.5 | 77.4 |
| | | 65 | 1 | 2.9 | 3.2 | 80.6 |
| | | 68 | 1 | 2.9 | 3.2 | 83.9 |
| | | 71 | 1 | 2.9 | 3.2 | 87.1 |
| | | 74 | 1 | 2.9 | 3.2 | 90.3 |
| | | 75 | 1 | 2.9 | 3.2 | 93.5 |
| | | 76 | 1 | 2.9 | 3.2 | 96.8 |
| | | 88 | 1 | 2.9 | 3.2 | 100.0 |
| | | Total | 31 | 91.2 | 100.0 | |
| | Missing | System | 3 | 8.8 | | |
| | Total | | 34 | 100.0 | | |
| Senior | Valid | 22 | 2 | 3.3 | 3.9 | 3.9 |
| center | | 23 | 1 | 1.7 | 2.0 | 5.9 |
| | | 24 | 1 | 1.7 | 2.0 | 7.8 |
| | | 25 | 1 | 1.7 | 2.0 | 9.8 |
| | | 34 | 1 | 1.7 | 2.0 | 11.8 |
| | | 39 | 1 | 1.7 | 2.0 | 13.7 |
| | | 45 | 2 | 3.3 | 3.9 | 17.6 |
| | | 54 | 1 | 1.7 | 2.0 | 19.6 |
| | | 61 | 1 | 1.7 | 2.0 | 21.6 |
| | | 62 | 1 | 1.7 | 2.0 | 23.5 |

| | | | | |
|----------------|----|-------|-------|-------|
| 63 | 1 | 1.7 | 2.0 | 25.5 |
| 64 | 1 | 1.7 | 2.0 | 27.5 |
| 65 | 1 | 1.7 | 2.0 | 29.4 |
| 66 | 2 | 3.3 | 3.9 | 33.3 |
| 69 | 4 | 6.7 | 7.8 | 41.2 |
| 70 | 1 | 1.7 | 2.0 | 43.1 |
| 71 | 1 | 1.7 | 2.0 | 45.1 |
| 74 | 1 | 1.7 | 2.0 | 47.1 |
| 75 | 1 | 1.7 | 2.0 | 49.0 |
| 76 | 1 | 1.7 | 2.0 | 51.0 |
| 77 | 1 | 1.7 | 2.0 | 52.9 |
| 78 | 3 | 5.0 | 5.9 | 58.8 |
| 79 | 1 | 1.7 | 2.0 | 60.8 |
| 80 | 3 | 5.0 | 5.9 | 66.7 |
| 81 | 3 | 5.0 | 5.9 | 72.5 |
| 82 | 1 | 1.7 | 2.0 | 74.5 |
| 83 | 1 | 1.7 | 2.0 | 76.5 |
| 84 | 1 | 1.7 | 2.0 | 78.4 |
| 85 | 4 | 6.7 | 7.8 | 86.3 |
| 86 | 2 | 3.3 | 3.9 | 90.2 |
| 87 | 2 | 3.3 | 3.9 | 94.1 |
| 89 | 2 | 3.3 | 3.9 | 98.0 |
| 99 | 1 | 1.7 | 2.0 | 100.0 |
| Total | 51 | 85.0 | 100.0 | |
| Missing System | 9 | 15.0 | | |
| Total | 60 | 100.0 | | |

Table M3. Age Distribution (in years)--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------|---------|-----------|---------|---------------|--------------------|
| Direct Mail survey | No | 21 | 18.9 | 23.1 | 23.1 |
| | Yes | 70 | 63.1 | 76.9 | 100.0 |
| | Total | 91 | 82.0 | 100.0 | |
| | Missing | 20 | 18.0 | | |
| Total | | 111 | 100.0 | | |
| Church survey | No | 3 | 8.8 | 15.8 | 15.8 |
| | Yes | 16 | 47.1 | 84.2 | 100.0 |
| | Total | 19 | 55.9 | 100.0 | |
| | Missing | 15 | 44.1 | | |
| Total | | 34 | 100.0 | | |

Table M4. Healthcare Coverage Distribution--Direct Mail Low-Income and Church Surveys (If you do not have dental insurance, do you have MEDICAL INSURANCE?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|--------------------|-----------|---------|---------------|--------------------|
| Direct | Private coverage | 45 | 40.5 | 49.5 | 49.5 |
| Mail | Medicaid/FAMIS | 21 | 18.9 | 23.1 | 72.5 |
| survey | Medicare | 19 | 17.1 | 20.9 | 93.4 |
| | Other | 1 | 0.9 | 1.1 | 94.5 |
| | None | 3 | 2.7 | 3.3 | 97.8 |
| | Medicare + Private | 2 | 1.8 | 2.2 | 100.0 |
| | Valid Total | 91 | 82.0 | 100.0 | |
| | Missing | 20 | 18.0 | | |
| | Total | 111 | 100.0 | | |
| Church | Private coverage | 19 | 55.9 | 67.9 | 67.9 |
| survey | Medicaid/FAMIS | 4 | 11.8 | 14.3 | 82.1 |
| | Medicare | 4 | 11.8 | 14.3 | 96.4 |
| | Medicare + Private | 1 | 2.9 | 3.6 | 100.0 |
| | Valid Total | 28 | 82.4 | 100.0 | |
| | Missing | 6 | 17.6 | | |
| | Total | 34 | 100.0 | | |

Table M5. Medical Insurance Coverage and Type--Direct Mail Low-Income and Church Surveys
(Is your MEDICAL INSURANCE PLAN...)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|------------------------|-----------|---------|---------------|--------------------|
| Direct Mail | Less than once a month | 19 | 17.1 | 17.8 | 17.8 |
| list | A few times per month | 13 | 11.7 | 12.1 | 29.9 |
| | About once a week | 6 | 5.4 | 5.6 | 35.5 |
| | A few days a week | 4 | 3.6 | 3.7 | 39.3 |
| | Every day | 3 | 2.7 | 2.8 | 42.1 |
| | Never drink | 62 | 55.9 | 57.9 | 100.0 |
| | Valid Total | 107 | 96.4 | 100.0 | |
| | Missing | 4 | 3.6 | | |
| | Total | 111 | 100.0 | | |
| Church | Less than once a month | 5 | 14.7 | 17.2 | 17.2 |
| survey | A few times per month | 2 | 5.9 | 6.9 | 24.1 |
| | A few days a week | 2 | 5.9 | 6.9 | 31.0 |
| | Every day | 1 | 2.9 | 3.4 | 34.5 |
| | Never drink | 19 | 55.9 | 65.5 | 100.0 |
| | Valid Total | 29 | 85.3 | 100.0 | |
| | Missing | 5 | 14.7 | | |
| | Total | 34 | 100.0 | | |
| Senior | Less than once a month | 3 | 5.0 | 6.0 | 6.0 |
| center | A few times per month | 1 | 1.7 | 2.0 | 8.0 |
| | About once a week | 3 | 5.0 | 6.0 | 14.0 |
| | A few days a week | 3 | 5.0 | 6.0 | 20.0 |
| | Never drink | 40 | 66.7 | 80.0 | 100.0 |
| | Valid Total | 50 | 83.3 | 100.0 | |
| | Missing | 10 | 16.7 | | |
| | Total | 60 | 100.0 | | |

Table M6. Alcohol Consumption--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|--------------|-----------|---------|---------------|--------------------|
| Direct Mail list | 1 or 2 | 31 | 27.9 | 66.0 | 66.0 |
| | 3 or 4 | 11 | 9.9 | 23.4 | 89.4 |
| | 5 or 6 | 3 | 2.7 | 6.4 | 95.7 |
| | 7 to 10 | 1 | 0.9 | 2.1 | 97.9 |
| | More than 10 | 1 | 0.9 | 2.1 | 100.0 |
| | Valid Total | 47 | 42.3 | 100.0 | |
| | Missing | 64 | 57.7 | | |
| Total | | 111 | 100.0 | | |
| Church survey | 1 or 2 | 7 | 20.6 | 70.0 | 70.0 |
| | 3 or 4 | 1 | 2.9 | 10.0 | 80.0 |
| | 5 or 6 | 1 | 2.9 | 10.0 | 90.0 |
| | More than 10 | 1 | 2.9 | 10.0 | 100.0 |
| | Valid Total | 10 | 29.4 | 100.0 | |
| Missing | | 24 | 70.6 | | |
| Total | | 34 | 100.0 | | |
| Senior center | 1 or 2 | 10 | 16.7 | 100.0 | 100.0 |
| | Missing | 50 | 83.3 | | |
| Total | | 60 | 100.0 | | |

Table M7. Alcohol Consumption by Number of Drinks—Direct Mail Low-Income, Church, and Senior Surveys (When I drink alcohol, the number of DRINKS I have is...)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 103 | 92.8 | 99.0 | 99.0 |
| | Yes | 1 | 0.9 | 1.0 | 100.0 |
| | Valid Total | 104 | 93.7 | 100.0 | |
| | Missing | 7 | 6.3 | | |
| Total | | 111 | 100.0 | | |
| Church survey | No | 31 | 91.2 | 96.9 | 96.9 |
| | Yes | 1 | 2.9 | 3.1 | 100.0 |
| | Valid Total | 32 | 94.1 | 100.0 | |
| | Missing | 2 | 5.9 | | |
| Total | | 34 | 100.0 | | |
| Senior center | No | 48 | 80.0 | 100.0 | 100.0 |
| | Missing | 12 | 20.0 | | |
| Total | | 60 | 100.0 | | |

Table M8. Alcohol Use and Driving--Direct Mail Low-Income, Church, and Senior Surveys (In the PAST month, I have driven a car/truck after I had too much to DRINK.)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------------------|---|-----------|---------|---------------|--------------------|
| Direct Mail list | 2 packs or less (10 or less cigarettes) | 8 | 7.2 | 30.8 | 30.8 |
| | Between 2 packs and 1 pack (11-20 cigarettes) | 6 | 5.4 | 23.1 | 53.8 |
| | Between 1 pack and 2 packs (21-40 cigarettes) | 9 | 8.1 | 34.6 | 88.5 |
| | Smoke, but not everyday | 3 | 2.7 | 11.5 | 100.0 |
| | Valid Total | 26 | 23.4 | 100.0 | |
| | Missing | 85 | 76.6 | | |
| | Total | 111 | 100.0 | | |
| Church survey Senior center | Missing | 34 | 100.0 | | |
| | 2 packs or less (10 or less cigarettes) | 1 | 1.7 | 50.0 | 50.0 |
| | Smoke, but not everyday | 1 | 1.7 | 50.0 | 100.0 |
| | Valid Total | 2 | 3.3 | 100.0 | |
| | Missing | 58 | 96.7 | | |
| | Total | 60 | 100.0 | | |

Table M9. Daily Tobacco Consumption--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 81 | 73.0 | 90.0 | 90.0 |
| | Yes | 9 | 8.1 | 10.0 | 100.0 |
| | Valid Total | 90 | 81.1 | 100.0 | |
| | Missing | 21 | 18.9 | | |
| | Total | 111 | 100.0 | | |
| Church survey | No | 20 | 58.8 | 95.2 | 95.2 |
| | Yes | 1 | 2.9 | 4.8 | 100.0 |
| | Valid Total | 21 | 61.8 | 100.0 | |
| | Missing | 13 | 38.2 | | |
| | Total | 34 | 100.0 | | |
| Senior center | No | 41 | 68.3 | 93.2 | 93.2 |
| | Yes | 3 | 5.0 | 6.8 | 100.0 |
| | Valid Total | 44 | 73.3 | 100.0 | |
| | Missing | 16 | 26.7 | | |
| | Total | 60 | 100.0 | | |

Table M10. Smokeless Tobacco (snuff, chewing tobacco) Use--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 73 | 65.8 | 73.0 | 73.0 |
| | Yes | 27 | 24.3 | 27.0 | 100.0 |
| | Valid Total | 100 | 90.1 | 100.0 | |
| | Missing | 11 | 9.9 | | |
| Total | | 111 | 100.0 | | |
| Church survey | No | 22 | 64.7 | 84.6 | 84.6 |
| | Yes | 4 | 11.8 | 15.4 | 100.0 |
| | Valid Total | 26 | 76.5 | 100.0 | |
| | Missing | 8 | 23.5 | | |
| Total | | 34 | 100.0 | | |
| Senior center | No | 44 | 73.3 | 93.6 | 93.6 |
| | Yes | 3 | 5.0 | 6.4 | 100.0 |
| | Valid Total | 47 | 78.3 | 100.0 | |
| | Missing | 13 | 21.7 | | |
| Total | | 60 | 100.0 | | |

Table M11. Exposure to Secondary Smoking in Home--Direct Mail Low-Income, Church, and Senior Surveys (Someone ELSE in my home smokes cigarettes, cigars, or a pipe.)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 101 | 91.0 | 95.3 | 95.3 |
| | Yes | 5 | 4.5 | 4.7 | 100.0 |
| | Valid Total | 106 | 95.5 | 100.0 | |
| | Missing | 5 | 4.5 | | |
| Total | | 111 | 100.0 | | |
| Church survey | No | 32 | 94.1 | 100.0 | 100.0 |
| | Missing | 2 | 5.9 | | |
| | Total | 34 | 100.0 | | |
| Senior center | No | 48 | 80.0 | 100.0 | 100.0 |
| | Missing | 12 | 20.0 | | |
| | Total | 60 | 100.0 | | |

Table M12. Drug Use and Driving--Direct Mail Low-Income, Church, and Senior Surveys (In the PAST month, I have driven a car/truck after taking DRUGS that could affect my ability to drive safely.)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 100 | 90.1 | 95.2 | 95.2 |
| | Yes | 5 | 4.5 | 4.8 | 100.0 |
| | Valid Total | 105 | 94.6 | 100.0 | |
| | Missing | 6 | 5.4 | | |
| Total | | 111 | 100.0 | | |
| Church survey | No | 31 | 91.2 | 96.9 | 96.9 |
| | Yes | 1 | 2.9 | 3.1 | 100.0 |
| | Valid Total | 32 | 94.1 | 100.0 | |
| | Missing | 2 | 5.9 | | |
| Total | | 34 | 100.0 | | |
| Senior center | No | 50 | 83.3 | 100.0 | 100.0 |
| | Missing | 10 | 16.7 | | |
| | Total | 60 | 100.0 | | |

Table M13. Illegal Drug Use--Direct Mail Low-Income, Church, and Senior Surveys
(In the PAST month, I used ILLEGAL drugs [cocaine, marijuana, etc.])

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | Within the past year | 23 | 28.8 | 29.5 | 29.5 |
| | 1-2 years ago | 11 | 13.8 | 14.1 | 43.6 |
| | 3-5 years ago | 10 | 12.5 | 12.8 | 56.4 |
| | More than 5 years | 5 | 6.3 | 6.4 | 62.8 |
| | Never had a mammogram | 29 | 36.3 | 37.2 | 100.0 |
| | Valid Total | 78 | 97.5 | 100.0 | |
| | Missing | 2 | 2.5 | | |
| | Overall Total | 80 | 100.0 | | |
| Church survey | Within the past year | 16 | 59.3 | 64.0 | 64.0 |
| | 1-2 years ago | 4 | 14.8 | 16.0 | 80.0 |
| | 3-5 years ago | 1 | 3.7 | 4.0 | 84.0 |
| | Never had a mammogram | 4 | 14.8 | 16.0 | 100.0 |
| | Valid Total | 25 | 92.6 | 100.0 | |
| | Missing | 2 | 7.4 | | |
| Overall Total | | 27 | 100.0 | | |
| Senior center | Within the past year | 17 | 41.5 | 43.6 | 43.6 |
| | 1-2 years ago | 11 | 26.8 | 28.2 | 71.8 |
| | 3-5 years ago | 6 | 14.6 | 15.4 | 87.2 |
| | Never had a mammogram | 5 | 12.2 | 12.8 | 100.0 |
| | Valid Total | 39 | 95.1 | 100.0 | |
| | Missing | 2 | 4.9 | | |
| Overall Total | | 41 | 100.0 | | |

Table M14. Utilization of Mammography--Direct Mail Low-Income, Church, and Senior Surveys (female respondents only) (How long has it been since you had your LAST MAMMOGRAM?)

| Data source | | | Age Group | | | Total |
|------------------|-----------------------|--------|-----------|----------|--------------|--------|
| | | | Under 40 | 40 to 64 | 65 and older | |
| Direct Mail list | Within the past year | Count | 0 | 12 | 11 | 23 |
| | | % | 0.0% | 54.5% | 39.3% | 29.9% |
| | 1-2 years ago | Count | 0 | 3 | 8 | 11 |
| | | % | 0.0% | 13.6% | 28.6% | 14.3% |
| | 3-5 years ago | Count | 2 | 3 | 5 | 10 |
| | | % | 7.4% | 13.6% | 17.9% | 13.0% |
| | More than 5 years | Count | 1 | 2 | 2 | 5 |
| | | % | 3.7% | 9.1% | 7.1% | 6.5% |
| | Never had a mammogram | Count | 24 | 2 | 2 | 28 |
| | | % | 88.9% | 9.1% | 7.1% | 36.4% |
| Total | Count | 27 | 22 | 28 | 77 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | |
| Church survey | Within the past year | Count | 0 | 12 | 4 | 16 |
| | | % | 0.0% | 70.6% | 80.0% | 66.7% |
| | 1-2 years ago | Count | 0 | 2 | 1 | 3 |
| | | % | 0.0% | 11.8% | 20.0% | 12.5% |
| | 3-5 years ago | Count | 0 | 1 | 0 | 1 |
| | | % | 0.0% | 5.9% | 0.0% | 4.2% |
| | Never had a mammogram | Count | 2 | 2 | 0 | 4 |
| | | % | 100.0% | 11.8% | 0.0% | 16.7% |
| Total | Count | 2 | 17 | 5 | 24 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | |
| Senior center | Within the past year | Count | 1 | 2 | 13 | 16 |
| | | % | 20.0% | 28.6% | 52.0% | 43.2% |
| | 1-2 years ago | Count | 0 | 3 | 7 | 10 |
| | | % | 0.0% | 42.9% | 28.0% | 27.0% |
| | 3-5 years ago | Count | 0 | 1 | 5 | 6 |
| | | % | 0.0% | 14.3% | 20.0% | 16.2% |
| | Never had a mammogram | Count | 4 | 1 | 0 | 5 |
| | | % | 80.0% | 14.3% | 0.0% | 13.5% |
| | Total | Count | 5 | 7 | 25 | 37 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Table M15. Utilization of Mammography by Age Group--Direct Mail Low-Income, Church, and Senior Surveys (female respondents only)

| | | |
|----------------|---------|---------|
| Count | Valid | 544 |
| | Missing | 19 |
| Mean | | 27.5126 |
| Median | | 26.3625 |
| Std. Deviation | | 6.27707 |
| Minimum | | 15.60 |
| Maximum | | 68.65 |

Table M16. BMI Statistics—Direct Mail/On-Line Survey

| BMI Level | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------|-----------|---------|---------------|--------------------|
| Underweight | 5 | 0.9 | 0.9 | 0.9 |
| Normal | 210 | 37.3 | 38.6 | 39.5 |
| Overweight | 189 | 33.6 | 34.7 | 74.3 |
| Obese | 140 | 24.9 | 25.7 | 100.0 |
| Valid Total | 544 | 96.6 | 100.0 | |
| Missing | 19 | 3.4 | | |
| Total | 563 | 100.0 | | |

Table M17. BMI Distribution—Direct Mail/On-Line Survey

| BMI Level | | Told you have Overweight Problems? | | Total |
|-------------|-------|------------------------------------|-------|--------|
| | | No | Yes | |
| Underweight | Count | 5 | 0 | 5 |
| | % | 100.0% | 0.0% | 100.0% |
| Normal | Count | 193 | 11 | 204 |
| | % | 94.6% | 5.4% | 100.0% |
| Overweight | Count | 143 | 37 | 180 |
| | % | 79.4% | 20.6% | 100.0% |
| Obese | Count | 40 | 97 | 137 |
| | % | 29.2% | 70.8% | 100.0% |
| Total | Count | 381 | 145 | 526 |
| | % | 72.4% | 27.6% | 100.0% |

Table M18. Told by Doctor that they were Overweight by Actual BMI Level--Direct Mail/On-Line Survey
(Have you ever been told by a doctor that you have OVERWEIGHT PROBLEMS?)

| | | | |
|------------------|----------------|---------|---------|
| Direct Mail list | Count | Valid | 108 |
| | | Missing | 3 |
| | Mean | | 28.7891 |
| | Median | | 27.3544 |
| | Std. Deviation | | 7.39788 |
| | Minimum | | 17.18 |
| Church survey | Count | Valid | 31 |
| | | Missing | 3 |
| | Mean | | 31.2077 |
| | Median | | 29.7550 |
| | Std. Deviation | | 7.77762 |
| | Minimum | | 17.72 |
| Senior center | Count | Valid | 49 |
| | | Missing | 11 |
| | Mean | | 26.8027 |
| | Median | | 25.7905 |
| | Std. Deviation | | 6.55464 |
| | Minimum | | 14.63 |
| | Maximum | | 44.38 |

Table M19. BMI Statistics--Direct Mail Low-Income, Church, and Senior Surveys

| Data Source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------------------|-------------|-----------|---------|---------------|--------------------|
| Low income Direct Mail list | Underweight | 3 | 2.7 | 2.8 | 2.8 |
| | Normal | 37 | 33.3 | 34.3 | 37.0 |
| | Overweight | 30 | 27.0 | 27.8 | 64.8 |
| | Obese | 38 | 34.2 | 35.2 | 100.0 |
| | Valid Total | 108 | 97.3 | 100.0 | |
| | Missing | 3 | 2.7 | | |
| | Total | 111 | 100.0 | | |
| Church survey | Underweight | 1 | 2.9 | 3.2 | 3.2 |
| | Normal | 7 | 20.6 | 22.6 | 25.8 |
| | Overweight | 8 | 23.5 | 25.8 | 51.6 |
| | Obese | 15 | 44.1 | 48.4 | 100.0 |
| | Valid Total | 31 | 91.2 | 100.0 | |
| | Missing | 3 | 8.8 | | |
| | Total | 34 | 100.0 | | |
| Senior center | Underweight | 3 | 5.0 | 6.1 | 6.1 |
| | Normal | 19 | 31.7 | 38.8 | 44.9 |
| | Overweight | 12 | 20.0 | 24.5 | 69.4 |
| | Obese | 15 | 25.0 | 30.6 | 100.0 |
| | Valid Total | 49 | 81.7 | 100.0 | |
| | Missing | 11 | 18.3 | | |
| | Total | 60 | 100.0 | | |

Table M20. BMI Distribution--Direct Mail Low-Income, Church, and Senior Surveys

| Data Source | BMI Level | | Told that you have OVERWEIGHT PROBLEMS? | | Total |
|-----------------------------|-------------|-------|---|--------|--------|
| | | | No | Yes | |
| Low Income Direct Mail list | Underweight | Count | 3 | 0 | 3 |
| | | % | 100.0% | 0.0% | 100.0% |
| | Normal | Count | 33 | 4 | 37 |
| | | % | 89.2% | 10.8% | 100.0% |
| | Overweight | Count | 20 | 8 | 28 |
| | | % | 71.4% | 28.6% | 100.0% |
| | Obese | Count | 12 | 23 | 35 |
| | | % | 34.3% | 65.7% | 100.0% |
| | Total | Count | 68 | 35 | 103 |
| | | % | 66.0% | 34.0% | 100.0% |
| Church survey | Underweight | Count | 0 | 1 | 1 |
| | | % | 0.0% | 100.0% | 100.0% |
| | Normal | Count | 5 | 0 | 5 |
| | | % | 100.0% | 0.0% | 100.0% |
| | Overweight | Count | 4 | 4 | 8 |
| | | % | 50.0% | 50.0% | 100.0% |
| | Obese | Count | 4 | 11 | 15 |
| | | % | 26.7% | 73.3% | 100.0% |
| | Total | Count | 13 | 16 | 29 |
| | | % | 44.8% | 55.2% | 100.0% |
| Senior center | Underweight | Count | 3 | 0 | 3 |
| | | % | 100.0% | 0.0% | 100.0% |
| | Normal | Count | 17 | 1 | 18 |
| | | % | 94.4% | 5.6% | 100.0% |
| | Overweight | Count | 8 | 2 | 10 |
| | | % | 80.0% | 20.0% | 100.0% |
| | Obese | Count | 3 | 10 | 13 |
| | | % | 23.1% | 76.9% | 100.0% |
| | Total | Count | 31 | 13 | 44 |
| | | % | 70.5% | 29.5% | 100.0% |

Table M21. Told by Doctor that they were Overweight by Actual BMI Level--Direct Mail Low-Income, Church, and Senior Surveys (Have you ever been told by a doctor that you have OVERWEIGHT PROBLEMS?)

| Data source | | | Age Group | | | | Total |
|------------------|---------------------------|--------|-----------|----------|----------|----------|-------|
| | | | 19 to 35 | 36 to 49 | 50 to 64 | 65 to 94 | |
| Direct Mail list | Within the past year | Count | 14 | 5 | 11 | 14 | 44 |
| | | % | 53.8% | 35.7% | 45.8% | 37.8% | 43.6% |
| | Within the past 2 years | Count | 6 | 2 | 2 | 5 | 15 |
| | | % | 23.1% | 14.3% | 8.3% | 13.5% | 14.9% |
| | Within the past 3 years | Count | 1 | 3 | 1 | 3 | 8 |
| | | % | 3.8% | 21.4% | 4.2% | 8.1% | 7.9% |
| | Within the past 4-5 years | Count | 1 | 2 | 2 | 1 | 6 |
| | | % | 3.8% | 14.3% | 8.3% | 2.7% | 5.9% |
| | 5 or more years | Count | 3 | 2 | 8 | 12 | 25 |
| | | % | 11.5% | 14.3% | 33.3% | 32.4% | 24.8% |
| | Never | Count | 1 | 0 | 0 | 2 | 3 |
| | | % | 3.8% | 0.0% | 0.0% | 5.4% | 3.0% |
| Total | Count | 26 | 14 | 24 | 37 | 101 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |
| Church survey | Within the past year | Count | 1 | 4 | 11 | 3 | 19 |
| | | % | 50.0% | 66.7% | 68.8% | 50.0% | 63.3% |
| | Within the past 3 years | Count | 0 | 0 | 1 | 1 | 2 |
| | | % | 0.0% | 0.0% | 6.3% | 16.7% | 6.7% |
| | Within the past 4-5 years | Count | 0 | 1 | 2 | 0 | 3 |
| | | % | 0.0% | 16.7% | 12.5% | 0.0% | 10.0% |
| | 5 or more years | Count | 1 | 1 | 2 | 2 | 6 |
| | | % | 50.0% | 16.7% | 12.5% | 33.3% | 20.0% |
| Total | Count | 2 | 6 | 16 | 6 | 30 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |
| Senior center | Within the past year | Count | 5 | 1 | 1 | 12 | 19 |
| | | % | 83.3% | 33.3% | 25.0% | 44.4% | 47.5% |
| | Within the past 2 years | Count | 0 | 1 | 0 | 1 | 2 |
| | | % | 0.0% | 33.3% | 0.0% | 3.7% | 5.0% |
| | Within the past 3 years | Count | 0 | 0 | 1 | 1 | 2 |
| | | % | 0.0% | 0.0% | 25.0% | 3.7% | 5.0% |
| | Within the past 4-5 years | Count | 1 | 0 | 1 | 4 | 6 |
| | | % | 16.7% | 0.0% | 25.0% | 14.8% | 15.0% |
| | 5 or more years | Count | 0 | 1 | 0 | 7 | 8 |
| | | % | 0.0% | 33.3% | 0.0% | 25.9% | 20.0% |
| | Never | Count | 0 | 0 | 1 | 2 | 3 |
| | | % | 0.0% | 0.0% | 25.0% | 7.4% | 7.5% |
| Total | Count | 6 | 3 | 4 | 27 | 40 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |

Table M22. Length of Time Since Seeing a Dentist by Age Group--Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | | Age Group | | | | Total |
|------------------|-------|-------|-----------|----------|----------|----------|--------|
| | | | 19 to 35 | 36 to 49 | 50 to 64 | 65 to 94 | |
| Direct Mail list | No | Count | 16 | 10 | 22 | 33 | 81 |
| | | % | 59.3% | 71.4% | 84.6% | 82.5% | 75.7% |
| | Yes | Count | 11 | 4 | 4 | 7 | 26 |
| | | % | 40.7% | 28.6% | 15.4% | 17.5% | 24.3% |
| | Total | Count | 27 | 14 | 26 | 40 | 107 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Church survey | No | Count | 0 | 3 | 7 | 3 | 13 |
| | | % | 0.0% | 50.0% | 46.7% | 60.0% | 46.4% |
| | Yes | Count | 2 | 3 | 8 | 2 | 15 |
| | | % | 100.0% | 50.0% | 53.3% | 40.0% | 53.6% |
| | Total | Count | 2 | 6 | 15 | 5 | 28 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table M23. Dental Insurance by Age Group—Direct Mail Low-Income, Church, and Senior Surveys

| Data source | | | Age Group | | | | Total |
|------------------|---|--------|-----------|----------|----------|----------|--------|
| | | | 19 to 35 | 36 to 49 | 50 to 64 | 65 to 94 | |
| Direct Mail list | Lack of dental coverage under health insurance plan | Count | 6 | 4 | 11 | 9 | 30 |
| | | % | 54.5% | 50.0% | 73.3% | 45.0% | 55.6% |
| | Dentist not located nearby | Count | 0 | 1 | 0 | 0 | 1 |
| | | % | 0.0% | 12.5% | 0.0% | 0.0% | 1.9% |
| | Do not have a dentist | Count | 2 | 0 | 1 | 1 | 4 |
| | | % | 18.2% | 0.0% | 6.7% | 5.0% | 7.4% |
| | Have dentures | Count | 0 | 0 | 1 | 8 | 9 |
| | | % | 0.0% | 0.0% | 6.7% | 40.0% | 16.7% |
| | Can't afford | Count | 3 | 1 | 1 | 0 | 5 |
| | | % | 27.3% | 12.5% | 6.7% | 0.0% | 9.3% |
| | Other | Count | 0 | 2 | 1 | 2 | 5 |
| | | % | 0.0% | 25.0% | 6.7% | 10.0% | 9.3% |
| Total | Count | 11 | 8 | 15 | 20 | 54 | |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | |
| Church survey | Lack of dental coverage under health insurance plan | Count | 0 | 2 | 5 | 0 | 7 |
| | | % | 0.0% | 66.7% | 71.4% | 0.0% | 53.8% |
| | Do not have a dentist | Count | 0 | 1 | 1 | 0 | 2 |
| | | % | 0.0% | 33.3% | 14.3% | 0.0% | 15.4% |
| | Have dentures | Count | 0 | 0 | 0 | 2 | 2 |
| | | % | 0.0% | 0.0% | 0.0% | 100.0% | 15.4% |
| | Other | Count | 1 | 0 | 1 | 0 | 2 |
| | | % | 100.0% | 0.0% | 14.3% | 0.0% | 15.4% |
| | Total | Count | 1 | 3 | 7 | 2 | 13 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table M24. Reasons for Lack of Access to Dental Care by Age Group--Direct Mail Low-Income, Church, and Senior Surveys (If you have not been able to ACCESS DENTAL CARE, it is because...)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 2 | 1.8 | 2.0 | 2.0 |
| | Most of the time | 8 | 7.2 | 8.0 | 10.0 |
| | Some of the time | 18 | 16.2 | 18.0 | 28.0 |
| | A little of the time | 23 | 20.7 | 23.0 | 51.0 |
| | None of the time | 49 | 44.1 | 49.0 | 100.0 |
| | Valid Total | 100 | 90.1 | 100.0 | |
| | Missing | 11 | 9.9 | | |
| Total | | 111 | 100.0 | | |
| Church survey | Most of the time | 1 | 2.9 | 3.6 | 3.6 |
| | Some of the time | 5 | 14.7 | 17.9 | 21.4 |
| | A little of the time | 4 | 11.8 | 14.3 | 35.7 |
| | None of the time | 18 | 52.9 | 64.3 | 100.0 |
| | Valid Total | 28 | 82.4 | 100.0 | |
| | Missing | 6 | 17.6 | | |
| Total | | 34 | 100.0 | | |
| Senior center | Most of the time | 1 | 1.7 | 2.1 | 2.1 |
| | Some of the time | 7 | 11.7 | 14.9 | 17.0 |
| | A little of the time | 6 | 10.0 | 12.8 | 29.8 |
| | None of the time | 33 | 55.0 | 70.2 | 100.0 |
| | Valid Total | 47 | 78.3 | 100.0 | |
| | Missing | 13 | 21.7 | | |
| Total | | 60 | 100.0 | | |

Table M25. Recent Feelings of Severe Sadness--Direct Mail Low-Income, Church, and Senior Surveys
(During the past 30 days, did you feel so SAD that nothing could cheer you up?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 6 | 5.4 | 5.9 | 5.9 |
| | Most of the time | 7 | 6.3 | 6.9 | 12.9 |
| | Some of the time | 31 | 27.9 | 30.7 | 43.6 |
| | A little of the time | 20 | 18.0 | 19.8 | 63.4 |
| | None of the time | 37 | 33.3 | 36.6 | 100.0 |
| | Valid Total | 101 | 91.0 | 100.0 | |
| | Missing | 10 | 9.0 | | |
| | Total | 111 | 100.0 | | |
| Church survey | Most of the time | 1 | 2.9 | 3.8 | 3.8 |
| | Some of the time | 7 | 20.6 | 26.9 | 30.8 |
| | A little of the time | 9 | 26.5 | 34.6 | 65.4 |
| | None of the time | 9 | 26.5 | 34.6 | 100.0 |
| | Valid Total | 26 | 76.5 | 100.0 | |
| | Missing | 8 | 23.5 | | |
| | Total | 34 | 100.0 | | |
| Senior center | All of the time | 3 | 5.0 | 6.3 | 6.3 |
| | Most of the time | 4 | 6.7 | 8.3 | 14.6 |
| | Some of the time | 8 | 13.3 | 16.7 | 31.3 |
| | A little of the time | 14 | 23.3 | 29.2 | 60.4 |
| | None of the time | 19 | 31.7 | 39.6 | 100.0 |
| | Valid Total | 48 | 80.0 | 100.0 | |
| | Missing | 12 | 20.0 | | |
| | Total | 60 | 100.0 | | |

Table M26. Recent Feelings of Nervousness--Direct Mail Low-Income, Church, and Senior Surveys
(During the PAST 30 days, did you feel NERVOUS?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 6 | 5.4 | 6.0 | 6.0 |
| | Most of the time | 9 | 8.1 | 9.0 | 15.0 |
| | Some of the time | 26 | 23.4 | 26.0 | 41.0 |
| | A little of the time | 31 | 27.9 | 31.0 | 72.0 |
| | None of the time | 28 | 25.2 | 28.0 | 100.0 |
| | Valid Total | 100 | 90.1 | 100.0 | |
| | Missing | 11 | 9.9 | | |
| Total | | 111 | 100.0 | | |
| Church survey | All of the time | 1 | 2.9 | 3.6 | 3.6 |
| | Most of the time | 1 | 2.9 | 3.6 | 7.1 |
| | Some of the time | 9 | 26.5 | 32.1 | 39.3 |
| | A little of the time | 4 | 11.8 | 14.3 | 53.6 |
| | None of the time | 13 | 38.2 | 46.4 | 100.0 |
| | Valid Total | 28 | 82.4 | 100.0 | |
| | Missing | 6 | 17.6 | | |
| Total | | 34 | 100.0 | | |
| Senior center | All of the time | 1 | 1.7 | 2.2 | 2.2 |
| | Most of the time | 2 | 3.3 | 4.4 | 6.7 |
| | Some of the time | 8 | 13.3 | 17.8 | 24.4 |
| | A little of the time | 17 | 28.3 | 37.8 | 62.2 |
| | None of the time | 17 | 28.3 | 37.8 | 100.0 |
| | Valid Total | 45 | 75.0 | 100.0 | |
| | Missing | 15 | 25.0 | | |
| Total | | 60 | 100.0 | | |

Table M27. Recent Feelings of Restlessness or being Fidgety--Direct Mail Low-Income, Church, and Senior Surveys (During the PAST 30 days, did you feel RESTLESS or FIDGETY?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 5 | 4.5 | 5.2 | 5.2 |
| | Most of the time | 4 | 3.6 | 4.1 | 9.3 |
| | Some of the time | 10 | 9.0 | 10.3 | 19.6 |
| | A little of the time | 12 | 10.8 | 12.4 | 32.0 |
| | None of the time | 66 | 59.5 | 68.0 | 100.0 |
| | Valid Total | 97 | 87.4 | 100.0 | |
| | Missing | 14 | 12.6 | | |
| | Total | 111 | 100.0 | | |
| Church survey | Some of the time | 1 | 2.9 | 3.7 | 3.7 |
| | A little of the time | 5 | 14.7 | 18.5 | 22.2 |
| | None of the time | 21 | 61.8 | 77.8 | 100.0 |
| | Valid Total | 27 | 79.4 | 100.0 | |
| | Missing | 7 | 20.6 | | |
| | Total | 34 | 100.0 | | |
| Senior center | Most of the time | 1 | 1.7 | 2.2 | 2.2 |
| | Some of the time | 3 | 5.0 | 6.5 | 8.7 |
| | A little of the time | 8 | 13.3 | 17.4 | 26.1 |
| | None of the time | 34 | 56.7 | 73.9 | 100.0 |
| | Valid Total | 46 | 76.7 | 100.0 | |
| | Missing | 14 | 23.3 | | |
| | Total | 60 | 100.0 | | |

Table M28. Recent Feelings of Hopelessness--Direct Mail Low-Income, Church, and Senior Surveys (During the PAST 30 days, did you feel HOPELESS?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 7 | 6.3 | 7.2 | 7.2 |
| | Most of the time | 10 | 9.0 | 10.3 | 17.5 |
| | Some of the time | 19 | 17.1 | 19.6 | 37.1 |
| | A little of the time | 18 | 16.2 | 18.6 | 55.7 |
| | None of the time | 43 | 38.7 | 44.3 | 100.0 |
| | Valid Total | 97 | 87.4 | 100.0 | |
| | Missing | 14 | 12.6 | | |
| | Total | 111 | 100.0 | | |
| Church survey | Some of the time | 6 | 17.6 | 21.4 | 21.4 |
| | A little of the time | 8 | 23.5 | 28.6 | 50.0 |
| | None of the time | 14 | 41.2 | 50.0 | 100.0 |
| | Valid Total | 28 | 82.4 | 100.0 | |
| | Missing | 6 | 17.6 | | |
| | Total | 34 | 100.0 | | |
| Senior center | Most of the time | 1 | 1.7 | 2.1 | 2.1 |
| | Some of the time | 13 | 21.7 | 27.7 | 29.8 |
| | A little of the time | 10 | 16.7 | 21.3 | 51.1 |
| | None of the time | 23 | 38.3 | 48.9 | 100.0 |
| | Valid Total | 47 | 78.3 | 100.0 | |
| | Missing | 13 | 21.7 | | |
| | Total | 60 | 100.0 | | |

Table M29. Recent Feelings that Everything was an Effort--Direct Mail Low-Income, Church, and Senior Surveys (During the PAST 30 days, did you feel that everything was an EFFORT?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|----------------------|-----------|---------|---------------|--------------------|
| Direct Mail list | All of the time | 3 | 2.7 | 3.1 | 3.1 |
| | Most of the time | 6 | 5.4 | 6.1 | 9.2 |
| | Some of the time | 8 | 7.2 | 8.2 | 17.3 |
| | A little of the time | 15 | 13.5 | 15.3 | 32.7 |
| | None of the time | 66 | 59.5 | 67.3 | 100.0 |
| | Valid Total | 98 | 88.3 | 100.0 | |
| | Missing | 13 | 11.7 | | |
| | Total | 111 | 100.0 | | |
| Church survey | A little of the time | 7 | 20.6 | 25.0 | 25.0 |
| | None of the time | 21 | 61.8 | 75.0 | 100.0 |
| | Valid Total | 28 | 82.4 | 100.0 | |
| | Missing | 6 | 17.6 | | |
| | Total | 34 | 100.0 | | |
| Senior center | Most of the time | 1 | 1.7 | 2.2 | 2.2 |
| | Some of the time | 3 | 5.0 | 6.5 | 8.7 |
| | A little of the time | 7 | 11.7 | 15.2 | 23.9 |
| | None of the time | 35 | 58.3 | 76.1 | 100.0 |
| | Valid Total | 46 | 76.7 | 100.0 | |
| | Missing | 14 | 23.3 | | |
| | Total | 60 | 100.0 | | |

Table M30. Recent Feelings of Worthlessness--Direct Mail Low-Income, Church, and Senior Surveys
(During the PAST 30 days, did you feel WORTHLESS?)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 4 | 18.2 | 18.2 | 18.2 |
| | Yes | 18 | 81.8 | 81.8 | 100.0 |
| | Valid Total | 22 | 100.0 | 100.0 | |
| Church survey | No | 1 | 14.3 | 16.7 | 16.7 |
| | Yes | 5 | 71.4 | 83.3 | 100.0 |
| | Valid Total | 6 | 85.7 | 100.0 | |
| | Missing | 1 | 14.3 | | |
| | Total | 7 | 100.0 | | |
| Senior center | Yes | 1 | 50.0 | 100.0 | 100.0 |
| | Missing | 1 | 50.0 | | |
| | Total | 2 | 100.0 | | |

Table M31. Well-Child Care: Child(ren) Receiving Physical or Well-Baby Exam in Past Year—Direct Mail Low-Income, Church, and Senior Surveys
(The child or children had a PHYSICAL check-up or WELL-BABY EXAM in the past year.)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 6 | 27.3 | 30.0 | 30.0 |
| | Yes | 14 | 63.6 | 70.0 | 100.0 |
| | Valid Total | 20 | 90.9 | 100.0 | |
| | Missing | 2 | 9.1 | | |
| | Total | 22 | 100.0 | | |
| Church survey | No | 2 | 28.6 | 33.3 | 33.3 |
| | Yes | 4 | 57.1 | 66.7 | 100.0 |
| | Valid Total | 6 | 85.7 | 100.0 | |
| | Missing | 1 | 14.3 | | |
| | Total | 7 | 100.0 | | |
| Senior center | Yes | 1 | 50.0 | 100.0 | 100.0 |
| | Missing | 1 | 50.0 | | |
| | Total | 2 | 100.0 | | |

Table M32. Well-Child Care: Child(ren) Receiving Physical or Well-Baby Exam in Past Year—Direct Mail Low-Income, Church, and Senior Surveys
(The child or children [those age 3 or older] had a DENTAL check-up in the past year.)

| Data source | | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------|-------------|-----------|---------|---------------|--------------------|
| Direct Mail list | No | 1 | 4.5 | 4.5 | 4.5 |
| | Yes | 21 | 95.5 | 95.5 | 100.0 |
| | Valid Total | 22 | 100.0 | 100.0 | |
| Church survey | No | 1 | 14.3 | 16.7 | 16.7 |
| | Yes | 5 | 71.4 | 83.3 | 100.0 |
| | Valid Total | 6 | 85.7 | 100.0 | |
| | Missing | 1 | 14.3 | | |
| | Total | 7 | 100.0 | | |
| Senior center | Yes | 1 | 50.0 | 100.0 | 100.0 |
| | Missing | 1 | 50.0 | | |
| | Total | 2 | 100.0 | | |

Table M33. Well-Child Care: Child(ren) with Up-To-Date Immunizations—Direct Mail Low-Income, Church, and Senior Surveys (The child or children are up-to-date on all of their IMMUNIZATIONS [childhood shots].)

| Source | | Responses | | Percent of Cases |
|------------------|---|-----------|---------|------------------|
| | | Count | Percent | |
| Direct Mail list | I don't know where to go for health services | 3 | 2.1% | 3.2% |
| | I can't get transportation | 8 | 5.6% | 8.6% |
| | Health services aren't close to where I live | 4 | 2.8% | 4.3% |
| | I can't pay for health services | 27 | 18.9% | 29.0% |
| | My health insurance doesn't cover what I need | 16 | 11.2% | 17.2% |
| | I couldn't get an appointment | 3 | 2.1% | 3.2% |
| | I couldn't get through on the telephone | 1 | 0.7% | 1.1% |
| | The clinic/doctor's office wasn't open when I could get there. | 4 | 2.8% | 4.3% |
| | My deductible or co-payment (my share of the cost) is too high | 9 | 6.3% | 9.7% |
| | Hospitals won't take my insurance or Medical Assistance (Medicaid) | 1 | 0.7% | 1.1% |
| | My health care provider won't take my insurance, or Medical Assistance (Medicaid) | 5 | 3.5% | 5.4% |
| | I couldn't find a health care provider I like and/or trust | 6 | 4.2% | 6.5% |
| | None - I've gotten the health care I need | 50 | 35.0% | 53.8% |
| | Other | 6 | 4.2% | 6.5% |
| | Total | 143 | 100.0% | 153.8% |
| Church survey | I can't pay for health services | 4 | 17.4% | 19.0% |
| | My health insurance doesn't cover what I need | 3 | 13.0% | 14.3% |
| | My deductible or co-payment (my share of the cost) is too high | 2 | 8.7% | 9.5% |
| | My health care provider won't take my insurance, or Medical Assistance (Medicaid) | 1 | 4.3% | 4.8% |
| | None - I've gotten the health care I need | 12 | 52.2% | 57.1% |
| | Other | 1 | 4.3% | 4.8% |
| Total | 23 | 100.0% | 109.5% | |
| Senior center | I don't know where to go for health services | 1 | 1.8% | 2.4% |
| | I can't get transportation | 6 | 10.5% | 14.3% |
| | Health services aren't close to where I live | 2 | 3.5% | 4.8% |
| | I can't pay for health services | 5 | 8.8% | 11.9% |
| | My health insurance doesn't cover what I need | 7 | 12.3% | 16.7% |
| | I couldn't get an appointment | 1 | 1.8% | 2.4% |
| | My deductible or co-payment (my share of the cost) is too high | 6 | 10.5% | 14.3% |
| | I couldn't find a health care provider I like and/or trust | 1 | 1.8% | 2.4% |
| | None - I've gotten the health care I need | 27 | 47.4% | 64.3% |
| | Other | 1 | 1.8% | 2.4% |
| Total | 57 | 100.0% | 135.7% | |

Table M34. Barriers to Healthcare--Direct Mail Low-Income, Church, and Senior Surveys
(Problems that stopped me from getting the health care I need...)

| Data Source | | Responses | | Percent of Cases |
|------------------|--|-----------|---------|------------------|
| | | Count | Percent | |
| Direct Mail list | Food stamps | 17 | 13.6% | 16.3% |
| | Cash assistance (welfare) | 1 | 0.8% | 1.0% |
| | Disability payments (SSI, Worker's Comp) | 23 | 18.4% | 22.1% |
| | Help with paying rent | 5 | 4.0% | 4.8% |
| | WIC | 6 | 4.8% | 5.8% |
| | No assistance | 61 | 48.8% | 58.7% |
| | Other | 10 | 8.0% | 9.6% |
| | VA Comp | 2 | 1.6% | 1.9% |
| | Total | 125 | 100.0% | 120.2% |
| Church survey | Food stamps | 3 | 10.0% | 10.7% |
| | Disability payments (SSI, Worker's Comp) | 5 | 16.7% | 17.9% |
| | No assistance | 19 | 63.3% | 67.9% |
| | Other | 3 | 10.0% | 10.7% |
| | Total | 30 | 100.0% | 107.1% |
| Senior center | Food stamps | 6 | 10.2% | 12.8% |
| | Cash assistance (welfare) | 3 | 5.1% | 6.4% |
| | Disability payments (SSI, Worker's Comp) | 22 | 37.3% | 46.8% |
| | Help with paying rent | 3 | 5.1% | 6.4% |
| | No assistance | 22 | 37.3% | 46.8% |
| | Other | 3 | 5.1% | 6.4% |
| | Total | 59 | 100.0% | 125.5% |

Table M35. Sources of Financial Assistance--Direct Mail Low-Income, Church, and Senior Surveys (I am getting the following financial assistance.)

Appendix N

Additional Background, Supporting, and More Detailed

Secondary Statistical Data and Information for NRV MAPP CHSA

Because there is such a large amount of relevant secondary qualitative and quantitative data available for the NRV, additional supporting secondary data and information for the CHSA is included in this Appendix.

Demographic characteristics.

Population characteristics.

Over the next two decades, the 65 and over population is expected to grow significantly. In Virginia, males 65 and up will increase by 144%, while the number of females over 65 will increase by 125%. Even so, females over 65 will continue to outnumber males by almost 35%. Interestingly, the Census Bureau projects that females will comprise 51.4% of Virginia's population in 2030. But for the U.S. as a whole, the percent of the female population will drop slightly from 50.94% to 50.89% (Council on Virginia's Future, 2009; U.S. Census Bureau, 2008, 2010).

Population projections.

According to the Council on Virginia's Future and the University of Virginia's Weldon Cooper Center for Public Service, three critical trends will shape Virginia's (and the NRV's) population over the next few decades: selective decentralization, an aging population, and increasing racial and ethnic diversity (Council on Virginia's Future, 2009; Weldon Cooper Center for Public Service, 2010a).

Selective decentralization will increase. People are moving away from the State's central cities and counties to the surrounding suburbs and exurbs. As a result, the number of metropolitan areas is expected to increase, and the boundaries of existing metro areas are expected to expand. Rural counties adjacent to metro areas--such as Montgomery County—are likely to experience significant population growth as space and affordable housing become harder to obtain in the urban core areas. Counties with significant quality-of-life advantages like the NRV, those with access to urban amenities (either their own or nearby), and those with a diversified, service-based economy are particularly prone to rapid growth (Council on Virginia's Future, 2009; Weldon Cooper Center for Public Service, 2010a).

The population will continue to age. The average age of the population will increase as the baby boom generation enters retirement age. By 2030, nearly one in every five Virginians is projected to be 65 years or older. This population will be predominantly female, as women have a longer life expectancy than men. As the baby boomers age, the percentage of older workers will increase as will the average age of the labor force (Council on Virginia's Future, 2009; Weldon Cooper Center for Public Service, 2010a).

Racial and ethnic diversity will increase. Rising immigration and births to immigrant parents and racially-mixed couples will increase Virginia's racial and ethnic diversity. While non-Hispanic Whites will continue to be the majority of Virginia's (and the NRV's) population in the next few decades, the proportion of Asians and Hispanics will grow (Council on Virginia's Future, 2009; Weldon Cooper Center for Public Service, 2010a).

Socioeconomic characteristics.

Demographics provide an overall picture of households in the NRV, whereas socioeconomic characteristics serve as population indicators as to whether families are stable, economically sound, and if the members of the families are safe. Economic status and educational level are indications of an individual's ability to live a healthy life. Economic and employment information can also determine if there are financial and social support systems in place. This is important for both community and individual health, especially for those who are isolated from their family support system (Hershey et al., 1998, 2007).

Today, households vary from the traditional family of two parents and children. The term "household" refers to the people occupying a housing unit rather than the physical structure in which they live. Households exhibit diversity in their composition. The U.S. Census Bureau identifies two basic types of households: family and nonfamily. A family household is composed of at least two persons related by birth, marriage, or adoption. A nonfamily household is either a person living alone or a householder who is not related to any of the other persons sharing their home (U.S. Census, 2010).

Educational attainment.

The percentage of students graduating from high school is an important indicator of a community's success in educating its children and a predictor of adult success. A high school diploma is critical in obtaining post-secondary education or getting a job. Persons who drop out of school face enormous odds in their attempts to achieve financial success. Over their lifetime, high school dropouts earn only about 75% as much as high school graduates and less than half of what college graduates are likely to make during their lifetime. In any given year, the likelihood

of slipping into poverty is about three times higher for high school dropouts than for those who have finished high school (Annie E. Casey Foundation, 2010; Hershey et al., 1998, 2007).

According to *2010 KIDS COUNT Data Book*, there is a clear relationship between family structure and completing high school. Children who grow up in single parent families are twice as likely as those from married-couple families to drop out of high school. Excessive absenteeism, school performance, alcohol and drug abuse, teen pregnancy, and poverty are factors that contribute to dropping out of school. While student dislike of school, lack of strong educational or career goals, and parents who are unable or unwilling to provide support for educational efforts often lead to the gradual separation of the student from the educational system, it is important to recognize the impact that physical and emotional health have upon a student's absence and eventual dropping out (Annie E. Casey Foundation, 2010; Hershey et al., 1998, 2007).

Income.

Income is an important indicator of the economic condition of the NRV. Adequate income is essential to the well-being, stability, and self-sufficiency of families. Further, adequate family income is necessary for the well-being and development of children. *2010 KIDS COUNT Data Book* emphasizes that research overwhelmingly finds that growing up in poverty—especially deep and/or sustained poverty, particularly in the first years of life—has crippling and lifelong consequences. Childhood poverty is negatively correlated with school success, future earnings, and both physical and mental health. Children raised in poverty are far more likely than affluent or middle-class children to suffer abuse or neglect (Annie E. Casey Foundation, 2010; Hershey et al., 1998, 2007).

Unemployment.

The unemployment rate is another indicator of the community's health and the opportunities available to families. High unemployment rates increase the risk for family stability, child abuse and neglect, parental depression, and conflict. This is especially significant to youth and young adults, because if they spend a large part of their young adult years unemployed, they may have a difficult time finding and keeping a job later in life (Hershey et al., 1998, 2007).

*Health resource availability.**Healthcare resources.*

Carilion Saint Albans Behavioral Health, located at the Carilion New River Valley Medical Center in Montgomery County/Radford, provides comprehensive, confidential mental health services to patients from the New River Valley to far southwest Virginia. The services include inpatient and outpatient care, a chemical dependency program, geriatric psychiatry, partial hospitalization and CONNECT, a free assessment and referral resource (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

All of the hospitals have helicopter service (Lifeguard 10) from Roanoke Memorial Hospital for emergency services. The hospitals offer a full range of inpatient and outpatient services including surgical, pediatric, cardiac/cardiac rehabilitation, emergency and trauma, birthing/maternity, pharmacy and medical supplies, respiratory therapy, radiation and chemotherapy, senior services, home care services, nutritional counseling, occupational medicine, radiology, a sleep center, vascular services, patient/family support groups, health screenings for the public, and two wellness/fitness centers.

Healthcare coverage and workforce.

The U.S. Census Bureau reported that, in 2008, 86.7% of Virginia's population had a regular source of healthcare coverage with 72% of the total health care coverage provided through the private sector in which 77% was employment-based insurance (U.S. Census Bureau, 2008, 2010; Virginia State Office of Rural Health, 2008). The Virginia Health Care Insurance and Access Survey and the Virginia Health Care Association reported that those who are between 19- and 24 years old, individuals living below 150% of the federal poverty level, single adults, individuals with less than a high school education, unemployed individuals, and/or self-employed, part-time, temporary and/or seasonal workers are the most likely to be uninsured. In addition, African-Americans and Hispanics had significantly rates of uninsured persons compared to Whites. More than three-quarters (84%) of the rural uninsured are working or have workers in their families, and of these families, 73% have at least one full-time worker. Among the uninsured who are poor, 47% of those in rural areas are from families with full-time workers compared to 38% of the poor urban uninsured. Rural residents (24%) between the ages of 45 and 64 are more likely to be uninsured than urban residents (State Health Access Data Assistance Center, 2004; Virginia State Office of Rural Health, 2008).

Medical Care Research and Review reported that when health insurance is offered by employers, enrollment rates were similar for rural and urban workers at 68%. However, rural residents are less likely to have job-based coverage because their employers are less likely to offer them health insurance. This is primarily due to the types of business/industry employer located in rural areas. Small businesses that do not offer health insurance are very common in rural areas like the NRV, such as farming, general labor, service, and repair work. One-third of rural workers are employed in firms with less than 25 employees and a third of these workers are

self-employed. These combinations of small size businesses with lower wages are the major factors that contributed to the lower levels of job-based coverage (The Kaiser Commission on Medicaid and the Uninsured, 2006; Virginia State Office of Rural Health, 2008).

HRSA's Shortage Designation Branch develops shortage designation criteria to determine whether or not a geographic area, population group, or facility is a Health Professional Shortage Area (HPSA) or a Medically Underserved Area or Population (MUA/MUP). The specific criteria can be found at <http://bhpr.hrsa.gov/shortage/>. HPSAs are designated as having shortages of primary medical care, dental, or mental health providers and may be geographic (a county or service area), demographic (low income population) or institutional (comprehensive health center, federally qualified health center or other public facility). MUAs/MUPs are areas or populations designated by HRSA as having too few primary care providers, high infant mortality, high poverty, and/or a high elderly population (U. S. Department of Health and Human Services, 2010; Virginia Department of Health, 2010).

Barriers to healthcare and consequences.

Obvious barriers to accessing healthcare include lack of transportation, inability to get an appointment with a physician because s/he may not be taking new patients, untimely or inconvenient appointment and office hours, and lack of insurance. Most uninsured people cannot afford to go to a physician on a regular basis. Even if they do seek medical attention, most cannot bear the cost of filling prescriptions and, subsequently, either do not get prescribed medication or take a smaller dosage than is prescribed. Many of the uninsured seek attention for routine and acute medical conditions in the most costly of all settings--hospital emergency rooms. Consequently, access and prevention are intimately linked. When difficulty obtaining a physician is experienced, the ultimate result may lead to decreased emphasis on important

preventive care such as early prenatal care, immunizations, dental care, and early lifestyle changes which may largely prevent the onset or reduce serious complications of certain diseases (Hershey et al., 1998, 2007).

Quality of life.

Education.

The NRV--with over 45 primary and secondary schools (in five separate public school systems), several private primary and secondary schools, two universities, a community college, a veterinary college, and a medical school--is rich in educational opportunities. The NRV's current education and training system is undergoing a transition to make its twenty-first century workforce more productive. Primary schools are connecting students to the Internet and beginning to integrate industry input into their curriculum. Secondary institutions provide education in both liberal arts and technical fields. The Southwest Virginia Governor's School for Science, Math, and Technology is located on the campus of Pulaski County High School and serves students from the county public school systems of Pulaski, Giles, Bland, Floyd, Carroll, Grayson, Bland, Wythe, and Smyth, and the city of Galax (Hershey et al., 1998, 2007; NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The town of Blacksburg and the city of Radford are the homes of Virginia Tech (VT) and Radford University (RU). Virginia Polytechnic Institute and State University (VPI & SU) (also known as Virginia Tech)--Virginia's largest university with more than 23,500 undergraduate and approximately 7,300 graduate students-- is a four-year, co-educational, comprehensive land grant university and one of the top 50 research institutions in the Nation. It is world-renown for its engineering and architecture programs and has widely recognized graduate and undergraduate degree programs in these and other disciplines such as agriculture and life sciences, business,

natural resources and the environment. Additionally, The Virginia-Maryland Regional College of Veterinary Medicine and the Virginia College of Osteopathic Medicine (VCOM) are located on the campus of Virginia Tech (Hershey et al., 1998, 2007; NRVPC, 2009, 2010; Virginia Economic Development Partnership, 2009; Weldon Cooper Center for Public Service, 2010).

Radford University (RU)—a four-year, co-educational, State-supported university—serves over 8,800 undergraduate and graduate students. The University offers over 87 degree programs at the undergraduate and graduate level. It is known for its teaching, nursing, and business programs. Each of these universities and New River Community College provide exceptional opportunity for personal education and cultural growth. Concerts, plays, lectures, and musical programs are offered to the community throughout the year (Hershey et al., 1998, 2007; NRVPC, 2009, 2010; Virginia Economic Development Partnership, 2009; Weldon Cooper Center for Public Service, 2010).

New River Community College is a two-year, non-residential State institution of higher learning located just outside the Town of Dublin in Pulaski County and the Town of Christiansburg in Montgomery County. The College enrolls an average of 4,500 students per semester and offers a comprehensive spectrum of occupational and technical education, university parallel/college transfer education, general education, continuing adult education, special training and development programs, as well as specialized regional/commercial services (Hershey et al., 1998, 2007; NRVPC, 2009, 2010; Virginia Economic Development Partnership, 2009; Weldon Cooper Center for Public Service, 2010a).

Climate.

The climate of the NRV is classified as “moderate continental,” characterized by moderately mild winters and warm summers. The average annual temperature is 54 degree F., with highs rarely to 100 degrees F. and lows to 0 degrees F. The mean annual precipitation is 39 inches. Snowfall averages 17 inches annually, with a range of 15-20 inches. The prevailing winds are from the southwest at an average of 10 miles an hour (NRVPDC, 2010).

Forestry.

All counties in the NRV are quite similar with regards to type of land class—hardwood, pine, and mixed forests. The majority (68.3%) of land within the region is considered forested. The only county in the region with a different forestry profile is Giles where less than 19% of the total area is considered non-forest land. This percentage is much lower than the regional average of 31.7% non-forest land (NRVPDC, 2010).

Local government.

Virginia counties are unincorporated administrative subdivisions of the Commonwealth created by law and governed by an elected board of supervisors. Floyd, Giles, and Pulaski Counties each have a five-member board of supervisors; Montgomery County has a seven-member board. Supervisors are elected from each magisterial district within each county and serve terms of four years. A county administrator oversees the general administration of the county. Virginia cities are primarily political subdivisions, governmentally independent of the county or counties surrounding them. Radford is an independent city with a council-manager

form of government. Incorporated Towns include Blacksburg, Christiansburg, Dublin, Floyd, Glen Lyn, Narrows, Pearisburg, Pembroke, Pulaski, and Rich Creek, and also have council-manager forms of government (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

All of the NRV counties and Radford City provide educational, health, welfare, and recreational services, as well as law enforcement, fire, and rescue protection for their residents. Local governments or public service authorities also supply water, sewer, and sanitation services (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

All NRV jurisdictions maintain active planning commissions and have adopted comprehensive plans. Zoning (subdivision) regulations are established in Giles, Montgomery, and Pulaski Counties, and Radford City, as well as in the incorporated towns in those areas. Montgomery County has a strategic plan for economic development (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Law enforcement; fire and rescue.

The NRV is served by numerous law enforcement agencies (sheriff's and town/city police departments, Virginia State Police) that act in cooperation with one another. There are over 390 officers employed for the NRV and over 65 at Virginia Tech (VT) and Radford University (RU). Crime rates for localities of the NRV are much lower than the State and fall in the mid-range of all other localities in Virginia. Fire and rescue in the NRV is provided by approximately 34 fire companies and rescue squads that are staffed by about 1,300 full-time and volunteer personnel (Department of State Police, 2009; NRVPDC, 2010).

Transportation and accessibility.

Roughly half of both the nation's population and its manufacturing industries are within a 600 mile radius of the Valley. Excellent and well-developed rail and interstate highway systems place the NRV in a good position to take advantage of eastern regional markets. Interstate 81 travels through the counties of Pulaski and Montgomery and is centrally located within the Valley, allowing for relatively good accessibility to local communities. U.S. Highway 11 parallels the I-81 corridor through Pulaski and Montgomery Counties and serves local commuter traffic. Route 100 connects Giles County and Pulaski Counties. U.S. Highway 460 provides travelers from West Virginia and Giles County access to Montgomery County and Interstate 81. Route 8 connects Floyd County with Interstate 81 and Montgomery County. U.S. Highway 221 connects Floyd County with Roanoke County and the City of Roanoke. Interstates 81 and 77 intersect at a point about one half hour south of Pulaski County, thus providing access to an abundance of the nation's major markets all within a day's drive of the New River Valley (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The NRV has an established and developing public transportation system. Blacksburg Transit (BT), which is operated by the Town of Blacksburg with support from Virginia Tech, the Town of Christiansburg, and several mass transit and on-demand transit routes are provided. BT includes a variety of routes for area citizens ranging from employment oriented routes to neighborhood connectors to shopping/commerce routes and student transportation. For further information, visit www.btransit.org.

Pulaski Area Transit (PAT) is operated by the New River Valley Agency on Aging/Senior Services and is an on-demand, curb-to-curb service for residents of the Town of Pulaski and Pulaski County. Service extends from the Town of Pulaski to the New River Community College in Dublin and into the Fairlawn retail area. For further information, visit www.nrvseniorservices.org.

Radford University (RU) currently operates a transit service in Radford along the Tyler Avenue / Third Avenue corridor between RU / Downtown / Main Street and the Food Lion Shopping Center (located on Tyler Avenue) and Downtown Radford / Radford University dorms to the Walmart location in Fairlawn. The City of Radford and Radford University (RU) plan to establish a variety of fixed route mass transit services for students and residents beginning January 2011. The new service will expand the traditional Tartan system to increase accessibility within the City, Fairlawn in Pulaski County, medical centers in Montgomery County, and plans to create other regional connection opportunities. For further information, visit <http://www.drpt.virginia.gov/activities/files/Transit%20Service%20Plan%20for%20City%20of%20Radford-Radford%20University-12-2009- FINAL.pdf>.

SmartWay Bus (Valley Metro) links the Roanoke and New River Valleys and provides service between Roanoke and the Blacksburg/Christiansburg areas, Monday through Saturday. For further information, visit www.smartwaybus.com (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The NRV has a bus and limousine services that include transportation to and from Roanoke Regional Airport provided by Roanoke Airport Limousine Service and the SmartWay Bus. Home Ride of VA., Inc., provides weekend and holiday bus service between Virginia Tech/Radford University and Northern Virginia, Richmond, and the Tidewater area (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Package/parcel delivery services in the NRV are provided by United Parcel Service (UPS), Emery Worldwide, Airborne Express, Federal Express (FedEx), and the United States Postal Service. United Parcel Service has a terminal (and drop-off facility for walk-in customers) located at Dublin in Pulaski County. FedEx maintains a customer service/drop-off facility for walk-in customers in Christiansburg. FedEx and UPS maintain pickup points throughout the region (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Norfolk Southern (NS) Railway is the service provider for rail service in the NRV. The NS system extends over more than 21,600 route miles in 22 states and the District of Columbia, primarily in the Southeast, Midwest and the Province of Ontario, Canada. NS serves every major container port in the eastern United States and provides efficient connections to other rail carriers. For area businesses, switching services are provided daily. Container on flat car (COFC) and trailer on flat car (TOFC) services are offered with loading/unloading at Front Royal, Virginia, and Charlotte and Greensboro, North Carolina. Passenger service is available via Amtrak in Clifton Forge and Lynchburg (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Three airports serve the NRV, two of which are located in the Valley itself. The New River Valley Airport, located two miles north of Dublin in Pulaski County, offers a 6,200 foot runway with a full instrument landing system and an automated weather observation system.

Services available there include maintenance, charter service, and aircraft rental. The Virginia Tech-Montgomery Executive Airport, located in Blacksburg in Montgomery County, has a 4,539 foot runway capable of handling corporate jets and also has facilities for private planes. The third airport is the Roanoke Regional Airport. As of September 2010, passenger service at Roanoke Regional featured 27 departures and daily arrivals. Airlines serving the airport include U.S. Airways Express, United Express, Delta/Northwest Connection, and Allegiant Air. Daily non-stop flights are available to the following destinations/hubs--Atlanta, Charlotte, Chicago, Detroit, New York (LGA), Philadelphia, and Washington (Dulles). Nonstop flights to Orlando/Sanford and St. Petersburg/Clearwater, Florida are available several days a week. General aviation services include aircraft maintenance, storage, and air charters (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

In 1999, the NRV was designated a Foreign Trade Zone (FTZ) and the New River Valley International Airport a Customs Port of Entry (POE). Manufacturers in the New River Valley and surrounding regions may participate in the FTZ by having their sites designated as special purpose subzones of the New River Valley FTZ. Subzone benefits for private businesses can include cash flow savings, elimination of duties for merchandise exported from a subzone, and reduction of duties in some cases for merchandise sold for use in the U.S. Manufacturers and businesses are able to benefit from the convenience of a local Customs POE. Customs clearances/entries can be completed here in the NRV rather than waiting for such transactions at congested, high-volume ports (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Utilities.

Appalachian Power Company provides residential and industrial electricity throughout the NRV. Appalachian Power Company owns and operates more than 42,000 megawatts of generating capacity and is the largest electricity generator in the United States. Appalachian Power Company produces approximately 750,000 kilowatts of power at the Claytor Lake Dam. In addition, Radford City operates its own power distribution system, supplied by Appalachian Power Company and a 1,000 kilowatt dam on the Little River and parts of Blacksburg are served through the Virginia Tech Electric Service (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Natural gas is provided to Pulaski and Montgomery Counties and Radford City by ATMOS Energy, while Columbia Gas of Virginia serves Giles County. Bottled gas is the only type of gas service available in Floyd County (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Telephone and telecommunication service is available to residential and business customers throughout the area. These services are offered by Citizens Telephone Cooperative, AT&T, Verizon, nTelos, Sprint, and Pembroke Telephone Cooperative (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Public water in the NRV is plentiful, of good quality, and available for residential, commercial, and industrial use. Several public service authorities serve the area. Sewer service is provided by the localities, except where public service authorities are established (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

There are four jurisdictions and three regional authorities within the NRV providing solid waste disposal services. Floyd County is operating a greenbox collection system for household waste, a network of recycling drop-off bins throughout the County, a main recycling center, and a solid waste transfer station. The solid waste is currently being shipped out of state via a private hauler. The Town of Floyd provides weekly residential curbside recycling and solid waste pickup, and commercial solid waste and corrugated cardboard pickup. The New River Resource Authority (NRRA) has solid waste management area that is projected to accept the solid waste generated in this region for the next 100 years. The NRRA member jurisdictions are Pulaski and Giles Counties, the Town of Dublin, Radford City, and the Montgomery Regional Solid Waste Authority. NRRA services include the main solid waste disposal site, a debris fill, a wood waste operation, and recycling options, including tires, at the waste management area. NRRA members are responsible for their own collection and transportation systems (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The Giles County Public Service Authority is responsible for coordinating the solid waste and recycling services in Giles County. There are a variety of systems in place within each of the towns and the County for solid waste and recycling, including greenbox sites, consolidation centers, a recycling center, curbside pickup, and a business corrugated collection program. Most of the recycled materials are taken to the Montgomery Regional Solid Waste Authority's Recycling Processing Facility. Except for the Town of Glen Lyn, the solid waste is currently being shipped from the County to the NRRA. Glen Lyn is shipping their solid waste out of state to Mercer County, West Virginia. Pulaski County is a member of the NRRA, and provides curbside pickup throughout the County. Drop-off recycling is offered to residents at the three County sites--Pulaski, Dublin, and Fairlawn. In addition to weekly curbside pickup, Radford City

operates a curbside leaf collection system, a Christmas tree pickup service, a recycling drop-off center, and a special household items pickup for residential customers. Radford City also handles solid waste collection from greenboxes for commercial customers (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The Montgomery Regional Solid Waste Authority (MRSWA) was formed to represent the Towns of Christiansburg and Blacksburg, Montgomery County, and Virginia Tech in solid waste and recycling issues. The MRSWA was accepted as a member of the NRRA facility and started bringing their solid waste to the new NRRA facility in 1998. The MRSWA operates a substantial recycling processing facility which handles several grades of paper, glass bottles and jars, plastic containers, aluminum and steel food and beverage cans, non-ferrous and ferrous metal, and automotive batteries, tires, oil, and antifreeze. The MRSWA members are responsible for their own collection and transportation systems. Private haulers provide much of this service. The Town of Blacksburg offers curbside recycling for residents, while the Town of Christiansburg offers greenbox sites for recycling within the Town. Valley Curbside Recycling offers limited curbside services for residents of the Town of Christiansburg for a fee. Residents in the County can drop recyclable items at drop-sites (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

There are no hazardous waste disposal sites in the New River Valley. However, several localities offer hazardous materials drop off events at least once a year. Commercial recycling and disposal firms are readily available to remove and dispose of this type of waste (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Financial institutions.

Thirty-four banks and savings and loan institutions serve the NRV. With the federal government playing a smaller role in community development, private corporations and foundations such as the Montgomery, Blacksburg, Christiansburg Development Corporation (MBCDC) were organized to enhance, diversify, and broaden the employment base in the NRV. The MBCDC was organized to address small business needs by carrying out programs and activities that include forming venture capital, developing shell building projects, attracting new industry, developing existing industry, supporting start-up industries, and conducting related community projects. The New River Valley Development Corporation was organized with the primary purpose of furthering the economic development and social welfare of the NRV through the promotion of, and assistance to, the growth and development of small businesses (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Industrial revenue bonds can be made available through city and county industrial development authorities and the *Virginia's* First Regional Industrial Facility Authority with financing offered at below-market rates. Financing for new and expanding business and industry is also available from other sources. Among these sources are Rural Development, Virginia Small Business Financing Authority, Virginia Enterprise Initiative (Microenterprise Program - New Enterprise Fund) and the Community Development Block Grant Program (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Taxes.

Two state taxes are imposed on individuals--the individual income tax and the sales and use tax. The individual income tax applies to income received from Virginia sources by residents and non-residents. This tax is based on federal adjusted gross income, with certain modifications

and deductions allowed. In Virginia, cities and counties are separate taxing entities. Residents of towns, however, are subject to both town and county taxes, except for utility taxes, which are paid only to the town if levied by both the town and the county (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The major local taxes paid by manufacturers in Virginia are real estate, machinery, and tools taxes. In addition to these, businesses in the NRV are assessed utilities taxes based on their utility consumption. Individuals in all of the jurisdictions are also assessed real estate and utilities taxes, as well as taxes on tangible personal property. In addition, all jurisdictions collect a sales tax and use tax of 1% in conjunction with the state tax of 3.5%.

In general, tax rates in the NRV compare favorably with state and national figures. The real property tax rate is based on \$100 of assessed value. A number of localities have implemented use-value taxation, which bases assessed value of the real estate on its actual use rather than its potential value if developed to its "highest and best" use. Both real and personal property taxes usually total less than 2% of the actual assessed values (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Cultural and recreational opportunities.

There is an abundance of cultural and recreational opportunities available to residents of the NRV. The Jefferson National Forest offers recreational opportunities including picnicking, camping, hiking, hunting, and fishing. Claytor Lake State Park in Pulaski County, located on the 4,500 acre, 21- mile long Claytor Lake, offers a wide variety of activities for water and land enthusiasts and features the only full service marina in the state park system. In addition, there are miles of hiking trails, swimming, camping facilities, cabins, and a visitor center. Gatewood Reservoir Recreation Area is located just to the west of the Town of Pulaski and provides

facilities for swimming, tubing, canoeing, picnicking, camping, fishing, boating, volleyball, and horseshoes. The Appalachian Trail and the Cascades, located in Giles County, and the Blue Ridge Parkway in Floyd County, offer scenic views, hiking, picnicking, camping, swimming, fishing, horseback riding, and other outdoor recreational activities (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

The NRV has several significant trails throughout the region that provide outdoor recreation and alternative transportation options. The Appalachian Trail, a hiking trail running from Maine to Georgia, passes through Giles County and the Town of Pearisburg. The New River Trail State Park, designated an official National Recreation Trail by the U.S. Department of the Interior and parallels 39 miles of the New River. This is a 57-mile long state park that follows an abandoned railroad right-of-way for many popular activities such as walking, bicycling, and horseback riding. There are several entrances into this park, and the park meanders through Grayson, Carroll, Wythe and Pulaski counties in southwestern Virginia. The New River Trail is just minutes from Claytor Lake State Park. The Huckleberry Trail, a rail to trail project, connects the towns of Blacksburg and Christiansburg. Plans are underway to extend the Trail further into Christiansburg and to the Jefferson National Forest. Radford City has an extensive trail network in Bisset Park along the New River and Wildwood Park, one block away. Several other trail miles exist in other localities, and there is a Regional Bikeway-Walkway Plan to address their expansion and connectivity (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Several jurisdictions also operate independent recreation departments that administer parks and recreation facilities and programs. Organized sporting activities such as baseball, softball, basketball, and football are offered for participants of all ages. Pulaski is home to a

professional minor league baseball team, and semi-pro teams are active as well. In addition, numerous tennis and basketball courts, playgrounds, and ball fields are available throughout the NRV at public and private facilities. There are at least five 18-hole and one 9-hole golf course in the NRV. For sporting events, Virginia Tech and Radford University field a number of NCAA Division 1 athletic teams (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Numerous historical societies promote an appreciation of the region's heritage. There are many culturally significant sites in the area including the Smithfield Plantation, Ingles Ferry, Glencoe Museum, Olde Newberne, Snowville, and Downtown Pulaski Historical Districts. Many plays, concerts, dance performances, art exhibits, and lectures are sponsored by Virginia Tech and Radford University. The outdoor drama, "The Long Way Home," runs each summer in Radford, and Playmaker and Company and the New River Valley Symphony hold regular performances. Blacksburg and nearby communities of Roanoke and Salem also draw professional theatre and musical groups, including Broadway shows on a regular basis (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Libraries.

The NRV has an excellent network of libraries and library systems, which includes mobile units in certain areas. The largest library in the area is on the Virginia Tech campus and maintains over two million volumes. This library is also open to the general public, as is Radford University's library, which houses over 500,000 volumes. New River Community College's (NRCC) library allows students, faculty, staff, citizens, businesses, and industries of the NRV access to a collection of 33,000 books and periodicals, 35,000 electronic books, videotapes, DVDs, and other media. NRCC possesses a networked on-line electronic catalog of all NRCC library holdings, as well as the holdings of the other 22 community college libraries in

the State, through the Virginia Community College System's on-line library catalog system. Public libraries throughout the area complement educational systems. In Giles County, the Towns of Narrows, Pearisburg, Pembroke, and Rich Creek maintain libraries, in addition to those maintained by the School division. These libraries have a collection of volumes exceeding 70,000 units. The Montgomery-Floyd Regional Library has over 179,000 volumes, and Pulaski County's library system houses over 63,000. The City of Radford's public library has 74,000 available volumes. In all, NRV residents have 2.9 million volumes at their disposal (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Media.

Print media coverage available in the NRV includes the *Roanoke Times*, *Washington Post*, *Wall Street Journal*, and *New York Times*. Approximately eight local newspapers are published in the area to cover news and events of a more local nature. There are numerous radio stations serving the NRV, either AM, FM, or both. At least ten are now broadcasting locally and two more powerful FM stations can be received from Roanoke. Five television stations provide service to the NRV as well. WDBJ 7 and WSLS 10 in Roanoke are CBS and NBC affiliates, respectively, and WSET 13, an ABC affiliate, operates out of Lynchburg. WVVA broadcasts from Bluefield, West Virginia, and public television is brought to the region by Blue Ridge Public Television (WBRA) in Roanoke. Satellite and cable television is also available in the NRV which includes CNN, HBO, Showtime, and ESPN (NRVPDC, 2010).

Internet service.

There are several Internet providers in the Region. Services provided include Dialup, DSL, Cable, and T-1. The region has developed a telecommunications plan to ensure that the

NRV is well-wired to be competitive in the global economy (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Shopping facilities.

With over 18 downtown and neighborhood shopping centers/facilities and four malls, the NRV offers diverse shopping choices for residents. As a Virginia Main Street Community, the Radford downtown area is undergoing revitalization activities and offers a variety of unique clothing, furniture, and antique shops. There are over 200 retail outlets dispersed throughout Giles County. Montgomery County is the regional shopping center for the NRV, hosting the 456,000 square foot New River Valley Mall and the 300,000 square foot Market Place (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Hotels and motels.

There are approximately 50 lodging establishments in the NRV with over 1,800 lodging rooms, six of which offer conference space (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Religious and civic organizations.

A wide variety of religious denominations are represented in the NRV, including Baptist, Brethren, Catholic, Christian, Church of Christ, Church of God, B'hai, Jewish, Quaker, Mormons, Mennonites, Episcopal, Latter Day Saints, Lutheran, Pentecostal Holiness, Presbyterian, Methodist, Unitarian Universalist, and Wesleyan. Serving primarily Protestant and Catholic faiths, there are over 400 places of worship. Several non-denominational churches are established and growing as well (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

There are also many agencies dedicated to public service, some of which are the Boy Scouts of America, Boys Club, Girl Scouts of the USA, the YMCA, and the United Way. There are many youth-oriented activities. The NRV is home to Ruritan International and hosts numerous Lions clubs and other service organizations (NRVPDC, 2010; Virginia Economic Development Partnership, 2009).

Behavioral risk factors.

BRFSS.

For more than 20 years, CDC's BRFSS has helped states, including Virginia, and their localities survey U.S. adults to gather information about a wide range of behaviors that affect their health. The BRFSS is the largest continuously conducted telephone health surveillance system in the world. The primary focus of these surveys has been on behaviors that are linked with the leading causes of death including heart disease, cancer, stroke, diabetes, injury and other important health issues. Through the BRFSS surveys, CDC and the states have learned much about these and other harmful behaviors. This information is essential for planning, conducting and evaluating public health programs at the national, state and local levels. States use BRFSS data to identify emerging health problems; to establish health objectives and track their progress toward meeting them, and to develop and evaluate public health policies and programs to address identified problems. Private organizations also rely on the survey data to develop health promotion programs to reduce the prevalence of unhealthy behaviors and to document the effectiveness of these programs (VDH, 2010c).

Environmental health indicators.

The NRV consists of a diverse population nestled in the cradle of a primarily agrarian economy. Because of its rural character, the NRV has begun to draw people and industry from urban area. Such growth has, and will, continue to bring increasing strain on consumer health and environmental quality. Growth brings increased environmental impacts and public concern in many areas including air and water quality, food safety, communicable disease transmission (e.g., rabies), and child health safety. Many of our environmental indicators present a unique challenge in measuring their contribution toward health outcomes. Unlike other indicators of health status that can be associated with a single agent of causation or at-risk behaviors, environmental indicators measure the quality of our watersheds and disease prevalence that do not recognize geopolitical boundaries. The impact of environment on health outcome cannot be readily identified, in most cases, except through population-based studies. Environmental surveillance requires a collaborative approach involving interagency and intergovernmental cooperation to effectively address health outcomes and goals. From a public health standpoint, several strategies are utilized to manage current and anticipated issues including a combination of educating, inspecting, enforcing, monitoring, and planning. In this way, the spread of rabies can be controlled, elevated blood levels in children can be prevented, and air/water quality can be protected (Hershey et al., 1998, 2007).

Air quality.

Air quality information is obtained from two of the U.S. Environmental Protection Agency's (EPA) air pollution databases and summarized in a website, *AirData*, which has information about where air pollution comes from (emissions) and how much pollution is in the air outside our homes and workplaces (monitoring). Emissions--the quantity of pollutants

released into the air during a year--normally are estimated from amounts of material consumed or product

produced. Most emissions estimates are provided to EPA by state environmental agencies.

Ambient concentrations of pollutants in outdoor air are monitored in the U.S. at more than 4000 monitoring stations (including those in the NRV) owned and operated mainly by state environmental agencies (EPA, 2010).

The Clean Air Act of 1970 defined six *criteria pollutants* and established ambient concentration limits to protect public health—national air quality standards to protect public health. EPA periodically has revised the original concentration limits and methods of measurement, most recently in 1997. Monitoring sites report data to EPA for these six criteria air pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5} which are acronyms for particulate matter consisting of particles smaller than 10 and 2.5 micrometers, respectively), and lead (Pb) (EPA, 2010).

One would expect EPA to track emissions of the same six criteria air pollutants. But ozone is not emitted directly; it forms by chemical reactions of organic compounds with nitrogen oxides in the air, mediated by sunlight. Lead is both a criteria air pollutant and a hazardous air pollutant, and EPA tracks emissions of lead only as a hazardous air pollutant. Ammonia reacts with nitric and sulfuric acids in the atmosphere to form fine particulate matter, so EPA tracks ammonia emissions. Thus, EPA collects emissions data for three criteria air pollutants--carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5})--and three precursors/promoters of criteria air pollutants volatile organic compounds (VOC), nitrogen oxides (NO_x), and ammonia (NH₃) (EPA, 2010).

The Clean Air Act amendments of 1990 listed 189 pollutants known or suspected to cause serious health problems, and directed EPA to establish emission limits for them. The Act also provided a mechanism for amending the original list of pollutants, based on new information about health and environmental effects. There are now 188 hazardous air pollutants, which also are known as *toxic air pollutants* or *air toxics*. Monitoring of ambient concentrations of HAPs is not mandated by the Clean Air Act, and monitoring is not the norm. EPA is developing regulations to limit HAP emissions, thereby preventing ambient HAP concentrations from reaching levels that would pose significant health risks. AirData has reports of HAP emissions, but no HAP monitoring reports. Monitoring stations are sparsely distributed geographically, compared with criteria air pollutant monitoring, and there are none in the NRV (EPA, 2010).

The Department of Environmental Quality (DEQ) operates air quality monitors throughout Virginia. The Air Quality Index (AQI) is an index for reporting daily air quality and describes how clear or polluted the outdoor air is, and what associated health effects might be of concern. The EPA calculates the AQI for the six pollutants noted above that have established national air quality standards to protect public health. Presently, the air quality in the Roanoke Region of Virginia (which includes the NRV) is labeled as Good with an AQI of 0-50. This means that the air quality is considered satisfactory, and air pollution poses little or no risk. A higher AQI value indicates a greater level of air pollution and a greater the health concern (<http://www.airnow.gov>; NRVPDC, 2010).

Studies have linked air pollution to heart disease, cancer, asthma, other illnesses, and even death. Communities of color are especially vulnerable as both African Americans and Hispanics have been found to be more likely than Caucasians to live in areas with high levels of air toxics and that are disproportionately located near freeways and other areas with heavy traffic (DHHS, 2008; EPA, 2010).

Water quality.

The abundance of ground and surface water is one of the NRV's significant resources. The New River, a tributary of the Kanawa and Ohio rivers, is located in the Gulf of Mexico drainage basin. Thus, the development of property and the use of surface water do not affect water quality in the Chesapeake Bay and are not controlled by water quality standards specific to the Bay. The New River Basin is located in southwest Virginia and covers 3,070 square miles or approximately eight percent of the Commonwealth's total land area. The New River flows from its headwaters in Watauga County, North Carolina in a northeasterly direction to Radford, Virginia, and then in a northwesterly direction to Glen Lyn, where it exits into West Virginia. There it flows to the confluence of the Gauley River forming the Kanasha River, a tributary to the Ohio River.

The topography of the New River Basin is generally rugged; the upper reaches of its tributaries are extremely steep. The New River Basin is the least densely populated of the Commonwealth's major river basins. The higher elevations of the basin have steep slopes and are thickly forested, while the mount bases are mostly used for agriculture. Approximately 59% of its land is forested. Cropland and pasture make up another 35%, with approximately 3% considered urban. There are ten tributaries in the upper New River Basin each having more than 100 square miles in drainage, and many others with forty or more square miles. All or portions of

the following 11 counties lie within the basin--Bland, Carroll, Craig, Floyd, Giles, Grayson, Montgomery, Pulaski, Smyth, Tazewell, Wythe, and the cities of Galax and Radford (Department of Environmental Quality [DEQ], 2010).

The NRV has as Water Supply Plan to address the requirements of local and regional water supply planning regulations (9 VAC 25-780). Since 2006, this plan covers the New River Valley Planning District, except for the Towns of Blacksburg and Christiansburg in Montgomery County. The plan includes water source and use information, existing resources information, projected water demand into the future, water demand management, drought response and system needs and alternatives. As reported in this plan,

it is noteworthy that the New River in Virginia has the highest base flow per unit of drainage area to be found in any major tributary in the Ohio River Basin and the highest in Virginia. Most of the factors affecting movement of water in the hydraulic cycle have some influence upon base flow of a stream, but the ground water phase of the cycle is the predominant factor. (NRVPDC, 2010b, pp. 1-5).

The studies within the plan note that most wells in the NRV produce 30 gallons per minute with some wells yielding as much as 100 gallons per minute. The New River is capable of supplying 3.2 billion gallons per day during an average flow and 467 million gallons per day during drought flow. Claytor Lake and several small reservoirs provide over 5,000 acres of surface water (NRVPDC, 2010b).

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the

Act's common name with amendments in 1977. Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry and has set water quality standards for all contaminants in surface waters (EPA, 2009a).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (33 U.S.C §1251(a)). Under section 303(d) of the CWA, states, territories, and authorized tribes, collectively referred to in the Act as “states,” are required to develop lists of impaired waters. The term "303(d) list" is short for the list of impaired and threatened waters (e.g., stream/river segments, lakes) that all states are required to submit for EPA approval during even-numbered years. The main program result of this process is EPA’s national tracking system for impaired waters. A state’s 303(d) impaired waters list is comprised of all waters where the state has identified that required pollution controls are not sufficient to attain or maintain applicable water quality standards (EPA, 2009a).

The law requires that states establish a prioritized schedule for waters on the lists, and develop Total Maximum Daily Loads (TMDLs) for the identified waters based on the severity of the pollution and the sensitivity of the uses to be made of the waters, among other factors (40C.F.R. §130.7(b)(4)). A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards, and an allocation of that load among the various sources of the pollutant. States provide to EPA a long-term plan for completing TMDLs within 8 to 13 years from the first listing of the waterbody. EPA policy allows states to remove waterbodies from their 303(d) list after they have developed a TMDL or made other changes to correct water quality problems (EPA, 2009a, 2009b).

In addition to the 303(d) impaired waters list, the CWA requires each state report every two years on the health of *all* its waters, not just those that are impaired. Information from this report, known as the 305(b) report or "biennial water quality report," has historically been used to develop the "threatened and impaired waters" (303(d)) list. Most states compile the data and findings from the 305(b) report and add information from other sources to produce the 303(d) list. EPA recommends that states combine the threatened and impaired waters list with the 305(b) report to create an "Integrated Report," due April 1 of even-numbered years (EPA, 2009b).

In Virginia, the Department of Environmental Quality has this responsibility and utilizes water quality testing data from the U.S. Geological Survey (USGS) that maintains stream and groundwater monitoring stations throughout the New River Valley. There are no stream gauges in Floyd County, three in Giles County, two in Montgomery County and four in Pulaski County. USGS also maintains a groundwater monitoring well in Christiansburg and in Montgomery County, and two monitoring wells in Pulaski County (one near Claytor Lake and one outside Dublin) (Virginia Department of Environmental Quality [VA DEQ], 2008).

The Virginia Department of Environmental Quality (DEQ) released the Final *2008 305(b)/303(d) Water Quality Assessment Integrated Report (Integrated Report)* on December 22, 2008. The 2008 Integrated Report is a summary of the water quality conditions in Virginia from January 1, 2001, to December 31, 2006. The report satisfies the requirements of sections 305(b) and 303(d) of the CWA and the Virginia Water Quality Monitoring, Information and Restoration Act. The goals of Virginia's water quality assessment program are to determine whether waters meet water quality standards and to establish a schedule to restore waters with impaired water quality (VA DEQ, 2008).

Water quality standards designate uses for surface waters that are defined as either rivers, lakes, or estuaries. There are six designated uses for surface waters: aquatic life, fish consumption, public water supplies (where applicable), shellfish consumption, swimming, and wildlife. Additionally, several subcategories of aquatic life use have been adopted for the Chesapeake Bay and its tidal tributaries. The standards define the water quality needed to support each of these uses. If a water body contains more contamination than allowed by water quality standards, it will not support one or more of its designated uses. Such waters have "impaired" water quality, and a clean-up plan must be developed and implemented to restore impaired waters (VA DEQ, 2008).

Foodborne illness.

Outbreaks of salmonellosis increased dramatically over the decade of the 1980s, and this foodborne disease is often traced to eggs and chickens. This disease is particularly dangerous for infants, older adults, and immuno-compromised people (Hershey et al., 1998, 2007).

Campylobacteriosis is caused by the ingestion of bacterial organisms found in food, milk, and contaminated water. It is often associated with foods, especially chicken, unpasteurized milk, and contaminated water (Hershey et al., 1998, 2007).

E. coli (shiga toxin producing) is a common bacterial infection that gained national attention in 1993 when it was associated with undercooked hamburgers in fast-food restaurants. The *E. coli* bacteria is found in the intestinal tracts of infected humans and cows and can be transferred from animal to animal, animal to man, from animal to man on food, and from person to person (particularly among children in daycare) through close contact or food. Illness from this bacterium has been caused by food including undercooked ground beef, roast beef, raw milk, improperly processed cider, contaminated water, mayonnaise, cantaloupes, vegetables grown in

cow manure, and salami. Outbreaks have also started in cross-contamination at food service outlets—delicatessens, grocery carry-outs, and salad bars. The organism has been found in ground meat especially from dairy herds and processed milk products. Thorough cooking of ground meat to at least 160 degrees F. will destroy the bacteria (Hershey et al., 1998, 2007).

Shigellosis, a bacterial infection, is primarily transmitted by individuals who fail to thoroughly wash their hands with soap and water after defecation. Water and milk transmission may occur as a result of direct fecal contamination. Flies may also transfer the bacterial organisms onto a non-refrigerated food item where the organism can multiply to a sufficient number to cause an infectious disease (Hershey et al., 1998, 2007).

Lead poisoning.

Concern about the health effects of environmental contaminants is at an all-time high. Lead poisoning, one of the most preventable childhood health problems, is of particular interest because lead is detectable and can be removed from the environment. Lead can produce harmful effects in the body—the kidneys, nervous system, the reproductive system, and may cause high blood pressure—and is especially harmful to the developing brains of unborn babies and young children. Children are at higher risk for lead poisoning than adults because they have more hand-to-mouth activity and because their bodies readily absorb lead.

Maternal and child health.

Psycho-social and environmental factors play an important part in promoting the well-being of women and children. When babies are unplanned or born into families that are unable to offer emotionally and financially stable environments, they are more likely to suffer from the lack of adequate medical care, both prenatally and during childhood. They are also more likely to experience emotional neglect and physical abuse, therefore decreasing the chance that these

infants grow into physically and emotionally healthy children. The use of drugs, alcohol, and tobacco by pregnant women directly increases the occurrence of LBW infants, as well as increases infant morbidity and mortality rates. Economic factors, welfare reform, and managed care must be considered when tracking maternal-child health indicators. Poverty and difficulty accessing prenatal and pediatric care have long-term effects on individuals, families, and communities. Pregnancy outcomes can be improved through the use of technical advances. However, preventing unintended pregnancies, promoting healthy lifestyles, and improving access to health care for childbearing women and children can also make a difference. Healthy children are vital to the health and well-being of the NRV (Hershey et al., 1998, 2007).

Infant mortality (IMR).

The infant mortality (IMR) is a reliable indicator of overall infant health and is an important factor in the overall quality of life within a community. The IMR is defined as the ratio of the number of infants who die between birth and one year of age during a given year to the number of live births during the same year. The IMR is usually expressed as the number of infant deaths per 1,000 live births (<http://www.answers.com/topic/infant-mortality-rate-1#ixzz1DxJK6Yzi>). The leading causes of death for infants are congenital anomalies, sudden infant death syndrome (SIDS), respiratory distress syndrome, accidents, and disorders/conditions relating to preterm birth. Other factors that contribute to infant mortality and morbidity are the health and behaviors of the mother before and throughout her pregnancy; family and social support; psycho-social conditions; economic factors; and access to early, consistent and appropriate healthcare. Women who live in poverty suffer high levels of stress, have limited access to healthcare, and/or are exposed to tobacco, drugs, alcohol are more likely to endure the loss of an infant (<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4838a2.htm>).

Public and private healthcare providers throughout the State are dedicated to reducing infant mortality rates, as Virginia has consistently experienced rates higher than the national average between 1982 and 2007 (with the exception of 2000). The southwest region of Virginia (which includes the NRV) has consistently had some of the highest rates in Virginia. In 2008, the Southwest region had the highest rate of infant mortality at 10.5 deaths per 1,000 live births. Since 2007, VDH has been working with local health districts and community health leaders to combat infant mortality in especially vulnerable areas of the State. Improvement in perinatal services, including advanced technology of newborn intensive care units, high quality prenatal care, and use of obstetrical diagnostic and treatment technologies have helped Virginia's infant mortality rate drop from 12.9 per 1,000 live births in 1982 to 6.7 per 1,000 in 2008, ranking it 32nd in the Nation. In 2008, the IMR for the U.S. was 6.7 infant deaths per 1,000 live births. (CDC, National Center for Health Statistics, 2010; Council on Virginia's Future, 2010; Hershey et al., 1998, 2007; VDH, Virginia Infant Mortality Workgroup, 2010).

Low birth weight (LBW).

Infants born weighing less than 2,500 grams (5.5. pounds) regardless of the length of pregnancy are considered to be low birth weight (LBW). These infants have a higher IMR. If they survive, they are much more likely to spend an extended time in the hospital. They are also more likely to suffer from life-long disorders such as neurodevelopmental disabilities, learning disorders, behavioral problems, and respiratory problems. Infants with a LBW, who may have one or more of these life-long disabilities, often contribute to long-term emotional and financial strain for both the family and the community. Factors associated with increased risk for delivering a LBW infant include maternal age younger than 18 years or older than 35 years. High parity, history of a previous LBW infant, low socioeconomic status, low level of education, late

entry into prenatal care, low pregnancy weight gain or low pre-pregnant weight, and smoking and substance abuse also increase the chance of having a LBW baby. Twenty to 30% of all LBW infants in the U.S. have mothers who smoked while pregnant. Recent studies show that women who use marijuana or cocaine while pregnant also have significantly smaller infants than nonusers. Efforts to improve nutrition and to eliminate alcohol, drug, and tobacco use during pregnancy, along with early and continual prenatal care can reduce the incidence of LBW infants in our communities. (Hershey et al., 1998, 2007; VDH, Infant Mortality Workgroup, 2010).

Non-marital births.

The majority of non-marital births are the result of unplanned, unintended, or mistimed pregnancies. These women are less likely to seek early and adequate prenatal care. They are more likely to engage in risk behaviors such as the use of drugs, alcohol, and tobacco during their pregnancies. These babies are at increased risk for low weight at birth and infant mortality. As these infants progress through childhood, they suffer more health and emotional problems than children whose parents are married. They are more likely to be abused, more likely to live in poverty, and they are more likely to become out-of-wedlock parents themselves. Fathers often assume a less active role in the lives of these children than do fathers in traditional family households (Hershey et al., 1998, 2007; VDH, Infant Mortality Workgroup, 2010).

Prenatal care.

Prenatal care should ideally begin with preconception counseling. The identification of medical illness or genetic disorders prior to conception provides prospective parents the opportunity for counseling, appropriate treatment, pregnancy planning, early prenatal care, or avoidance of pregnancy. Families have the opportunity to modify personal behaviors, lifestyles, or change environmental conditions that are known to impact pregnancy outcomes. Early

pregnancy diagnosis and high quality prenatal care are directly related to the delivery of healthy babies. The first trimester of pregnancy is a critical time for fetal development, and prenatal care within those first 13 weeks effectively improves pregnancy outcomes. Research shows that women who plan their pregnancies are more likely to seek obstetrical care within the first trimester. However, more than half of all pregnancies in the U.S. each year are either unplanned or mistimed. Other maternal characteristics associated with receiving late or no prenatal care include low income, less than a high school education, teenage pregnancy, and already having a large number of children. Lack of insurance and changing Medicaid guidelines often prevent women from seeking prenatal care in a timely manner (Hershey et al., 1998, 2007; VDH, Infant Mortality Workgroup, 2010).

Teenage pregnancy.

Teen pregnancy is a critical public health issue with long-term consequences for the teen parents, the baby, and the community as a whole. Teenagers are more likely to become sexually-active if they are from low socioeconomic households, if they have low self-esteem, and/or if they view themselves to be in poor communication with their families. Teens that are sexually active are at risk for sexually transmitted diseases, including HIV. They are also likely to engage in other high-risk behaviors such as the use of illegal drugs, alcohol, and tobacco. Girls who become parents as teenagers are often unaware of or unable to access community resources. Consequently, prenatal care often is initiated late in pregnancy and is sporadic at best, increasing the chance of complications for both the mother and baby (Hershey et al., 1998, 2007; VDH, Infant Mortality Workgroup, 2010).

Teen mothers often suffer interruption in their formal education and are more likely to experience life-long economic strife. Many have not completed the developmental process themselves and are emotionally, intellectually, and economically unprepared to parent a child. Many also lack the support of the baby's father. As these babies grow, they are also more likely to suffer health problems and cognitive delays than other children, and they are at increased risk for abuse and neglect. Delaying sexual activity and pregnancy until adolescents reach adulthood is advantageous in many ways. Efforts that are designed to address self-esteem, relationship building, behavior modification, and role modeling for both male and female adolescents must be promoted in our communities (Hershey et al., 1998, 2007; VDH, Infant Mortality Workgroup, 2010).

Death, illness, and injury.

Leading causes of death.

There were noted age, sex, and race/ethnicity differences in the leading causes of death in the U.S., as well as in Virginia and the NRV. The leading cause of death in youth from birth to age 24 was unintentional injury, but homicide and suicide were also important causes of death in these age categories. In the older age groups, mortality due to chronic diseases—specifically cancer and heart disease--was most prevalent (Xu, Kochanek, Murphy & Tejada-Vera, 2010).

Generally, women tend to have a lower mortality rate at every age, and men are more likely to die from most of the leading causes of death than women. The relative risk of death in one population group compared to another can be expressed as a ratio. Ratios based on age-adjusted death rates show that males have higher rates than females for 12 or the 15 leading causes of death (except for cerebrovascular disease, Alzheimer's disease, and essential hypertension and renal disease) with rates for males being at least two times those for females for

five leading causes. The largest ratio, 3.9 was for suicide. Other large ratios were evident for homicide (3.8), Parkinson's disease and chronic liver disease (2.2 each), unintentional injury (2.1), heart disease (1.5) and cancer, diabetes, influenza and pneumonia, and kidney disease (1.4 each) (Xu et al., 2010).

Age-adjusted death rates for the black population were higher than those for the white population for nine of the 15 leading causes of death. The largest ratio was for homicide, at 5.7. Other causes for which the ratio was high include hypertension (2.5), kidney disease and septicemia (2.2 each), diabetes (2.1), stroke (1.5), heart disease (1.3), and cancer (1.2). For six of the leading causes, age-adjusted rates were lower for the black population than for the white population. The smallest black-to-white ratios were for suicide (0.4); that is, the risk of dying from suicide is more than double for the white population than for the black population. Other conditions with a low black-to-white ratio were Parkinson's disease (0.5), Chronic lower respiratory disease (0.7), Alzheimer's disease and chronic liver disease (0.8) each, and unintentional injury (Xu et al., 2010).

Age-adjusted death rates were lower for the Hispanic population for 11 of the 15 leading causes of death compared with the non-Hispanic white population. The smallest ratios were for chronic lower respiratory diseases and suicide (0.4 each). Other causes for which the ratio was considerably smaller include cancer, Alzheimer's disease and Parkinson's disease (0.6 each), heart disease and unintentional injuries (0.7 each), and stroke, influenza and pneumonia, and septicemia (0.8 each). Age-adjusted death rates for the Hispanic population were greater than for the non-Hispanic white population for three of the 15 leading causes of death. The largest ratio was for homicide (2.5), followed by chronic liver disease (1.6) and diabetes (1.5) (Xu et al., 2010). It is important to note that the Hispanic population has lower age-specific death rates than

the non-Hispanic white population, particularly at older ages. Part of the difference is attributable to underreporting of Hispanic origin on death certificates. In addition, various hypotheses have been proposed to explain Hispanic's favorable mortality outcomes. The most common include the healthy migrant effect, which argues that Hispanic immigrants are selected for their good health and robustness, and the "salmon bias" effect, which posits that U.S. residents of Hispanic origin may return to their country of origin to die or when ill (Abraida-Lanza, Dohrenwend, Ng-Mak & Turner, 1999; Palloni & Arias, 2004).

Age-adjusted death rates were lower for the American Indian/Alaskan native (AIAN) population than the white population for nine of the 15 leading causes. The smallest ratios were for Alzheimer's disease and Parkinson's disease (0.5 each), then heart disease, cancer, stroke, and chronic lower respiratory diseases (0.7 each). Age-adjusted rates were higher for the AIAN population than the white population for five leading causes. The largest ratio was for chronic liver disease (2.6). Other causes for which the ratio was high include homicide and diabetes (1.8 each) and unintentional injuries (1.3) (Xu et al., 2010).

For the Asian/Pacific Islander (API) population, age-adjusted death rates were lower than those for the white population for 14 of the 15 leading causes. The largest ratios were for influenza and pneumonia (0.9), stroke and diabetes (0.8 each), and kidney disease (0.7). The smallest ratios were for chronic lower respiratory diseases and Alzheimer's disease (0.3 each), and unintentional injuries and chronic liver disease (0.4 each). The risk of dying from septicemia, suicide, or Parkinson's disease for the API population is about half that for the white population.

Although mortality for heart disease has declined in recent years, coronary heart disease continues to be the leading cause of death. Many risk factors influence an individual's risk for heart disease. Individuals have little control over certain risk factors such as genetic predisposition, gender, and advancing age. However, most risk factors for heart disease are associated with modifiable risk factors including diet, exercise, smoking, blood cholesterol, blood pressure, excessive body weight, stress, and proper health education. Residents and professionals who live and work in the NRV should begin to look closely at immediate interventions that can reduce the incidence of heart disease (Hershey et al., 1998, 2007).

Cancer is the second leading cause of death in the U.S., Virginia, and the NRV. It is a disease that strikes more frequently with advancing age, but may occur at any age. Some communities in the NRV such as Giles County have expressed concern that they have a higher rate of cancer as compared to other communities in Virginia, but no evidence has yet shown this to be conclusive. Lifestyle, environment, and genetic factors-- individually or in combination-- can increase a person's risk of developing cancer. Dietary modifications and reduction of tobacco use appear to be the most promising strategies to achieve long-range improvement levels. In addition, early detection and intervention activities can reduce the number of deaths for some cancer such as breast and colon. Increased access to prevention and education efforts, along with improved access to early detection activities and facilities throughout the NRV should contribute to a continued downward trend in cancer death rates (Hershey et al., 1998, 2007).

Stroke is a major cause of disability that creates severe physical, emotional, and financial hardship for survivors and their families. The major risk factor for a stroke is hypertension (high blood pressure), and individuals with high blood pressure have up to seven times the risk of experiencing a stroke compared to individuals with normal blood pressure. In addition to high

blood pressure, strokes are attributable to many modifiable risk factors such as improper diet, obesity, smoking, stress, and lack of exercise. Males, African-Americans, persons with diabetes or atherosclerosis in the carotid artery, those who have had transient ischemic attacks (TIAs), and those with a family history of stroke are also at an increased risk of having a stroke. It is important for all NRV residents to continue to prevent stroke deaths by learning about and committing to a healthy lifestyle (Hershey et al., 1998, 2007).

Chronic lower respiratory disease is also known as chronic obstructive pulmonary disease (COPD) and is characterized by permanent obstruction of airflow to the lungs. It is an incurable disease in which the lungs are able to take in less air as time progresses. Cigarette smoking is attributable to more than 80% of deaths from this disease. Other lifestyle factors including lack of exercise and exposure to air pollution also contribute (Hershey et al., 1998, 2007). Caucasians in the U.S. are more likely to develop and die from COPD than other racial or ethnic groups. However, Hispanics are more likely to go to the emergency room for COPD, suggesting that they are not receiving the routine treatment they need to control their COPD. In addition, African Americans without private insurance are significantly less likely to receive a lung transplant than Caucasians (American Lung Association, 2010; Chui-Lin, Griswold, Clark & Camargo, 2007).

Unintentional injury deaths occur as a result of an accident and are not associated with the willful act of another individual. Unintentional injury statistics cover a broad range of classifications—including deaths from falls, fires, poisonings, motor vehicle accidents, drowning, choking, head injuries, spinal cord injuries, sports injuries, and roadway injuries (such as motor vehicle accidents). All are preventable. Motor vehicle crashes rank first as the leading cause of unintentional injury, followed by falls, poisoning, drowning, and residential fires. Most of these injuries are predictable and potentially preventable by using basic public health

prevention practices. Some of the major originating factors that surround unintentional injury deaths include inappropriate use of alcohol and drugs, lack of safety education and knowledge, and lack of governmental and business safety protection and prevention. Unintentional injuries claim more lives than chronic or infectious diseases in the first four decades of life (Hershey et al., 1998, 2007).

Alzheimer's is the most common form of progressive dementia accounting for 50-70% of dementia cases in the U.S. The greatest known risk factor is increasing age, and the majority of people with Alzheimer's are 65 and older; however, up to 5% of people with the disease have early-onset Alzheimer's appearing about 40- 50 years of age. Alzheimer's has no current cure, but there are treatments for symptoms. Risk factors include age, genetics, high blood pressure, heart disease, stroke, diabetes, high cholesterol, lack of exercise, and a diet rich in fats. African-Americans and Hispanics are at higher risk for developing Alzheimer's. African-Americans are about twice as likely to have Alzheimer's than whites, and Hispanics are about 1.5 times more likely than whites to develop the disease (<http://www.alz.org/>).

An estimated 23.6 million people in the United States—7.8 percent of the population—have diabetes mellitus (DM), a set of related diseases in which the body cannot regulate the amount of sugar (specifically, glucose) in the blood. The disease has been on the increase in the U.S. with risk factors including viral infections, genetics, obesity, high blood pressure, high cholesterol, high fat diet, excessive alcohol intake, sedentary lifestyle, age, ethnicity (e.g., African Americans, American Indians, some Asian Americans, Native Hawaiians and other Pacific Islander Americans, and Hispanics/Latinos) (<http://diabetes.webmd.com/diabetes-overview>).

Influenza and pneumonia are leading causes of death each year. The sad part of these diseases is that they can easily be prevented by a vaccination, yet continue to cause disease and death for thousands each year. In the U.S., influenza—a highly contagious viral infection—is responsible for 226,000 hospitalizations and an average of 36,000 deaths annually. Pneumonia has multiple causes including bacteria, viruses, other infectious agents, and various chemicals and kills over 50,000 people annually. Influenza is often complicated by pneumonia, especially in the elderly. Nearly 90% of deaths occur among people 65-years of age and older. Studies show that the flu shot can be up to 70-90% effective in preventing hospitalizations for both influenza and pneumonia. African Americans and Hispanics are significantly less likely to receive influenza or pneumonia vaccinations than their Caucasian counterparts. A recent report on healthcare disparities found that one of the three largest disparities facing Asian Americans (compared to Caucasians) was in rates of adults 65 and over who had never received a pneumococcal vaccination. Influenza and pneumonia are the fourth leading cause of death in the U.S. among Asian Americans and Pacific Islanders over the age of 65; this ranking is higher than what is seen among other racial groups (Agency for Healthcare Research and Quality, 2008; American Lung Association, 2010).

Chronic kidney disease (CKD), also known as chronic renal disease, is a progressive loss in renal function over a period of month or years. Twenty-six million Americans have CKD, and high risk groups include those with diabetes, hypertension, and a family history of kidney disease. Together, these cause approximately 75% of all adult cases. The leading cause of death in patients with chronic kidney disease is cardiovascular disease. African Americans, Hispanics, Pacific Islanders, Native Americans are at increased risk (http://en.wikipedia.org/wiki/Chronic_kidney_disease; National Kidney Foundation, 2009).

Septicemia refers to the presence of pathogenic organisms in the bloodstream that kills over 37,000 people a year--claiming more lives than breast or bowel cancer. Causes of septicemia include infections of cuts, surgical wounds, or throughout the body (including infections in the lungs, abdomen, and urinary tract); as well as infections burns and internal injuries (U.S. National Library of Medicine, 2009).

There are many social and environmental factors that are associated with suicide. Communities that have higher rates of unemployment, homelessness, and other indicators of limited economic opportunity may tend to have higher rates of suicide, as compared to communities that have greater economic stability. Suicide affects nearly every age group, but certain groups of individuals have higher suicide rates—youth ages 15-19, men ages 20-24, white men ages 65 and older, and American Indian/Alaskan Native men. In past NRV needs assessments, almost a third of the individuals who were surveyed reported stress, anxiety, and depression as a major to moderate problem. While medical problems were reported as the most significant problem facing most NRV residents, Giles County residents have reported the occurrence of stress, anxiety, and depression as the most significant problem. Currently, the most promising approach to suicide prevention appears to be the early identification and treatment of individuals suffering from emotional or mental distress. Increased public awareness and access to prevention services can give hope to those who are at risk of suicide. Public awareness and prevention services can also assist friend, family members, or other support persons in learning how to prevent suicide and its consequences (Hershey et al., 1998, 2007).

Chronic liver disease (CLD) is a disease process that involves progressive destruction and regeneration of the liver leading to fibrosis and cirrhosis—leading to over 4,000 deaths annually in the U.S. It has many causes including viral (e.g., hepatitis B and C), toxic and drugs (e.g.,

alcohol liver disease), metabolic (e.g., non-alcoholic fatty liver disease, hemochromatosis), autoimmune (e.g., autoimmune chronic hepatitis), and right heart failure. The most common cause of CLD is alcohol abuse. The risk of CLD can be reduced through appropriate vaccination, avoiding high risk behaviors such as illegal drug use and multiple sex partners, avoiding or protecting oneself from environmental chemical exposure, and lifestyle modification (healthy diet, exercise, weight control) (Hershey, Showalter & Bailey, 2005; Keystone & Hershey, 2008; Schiff, Connor, Hershey, Mahoney, & Schaffner, 2007).

About 90–95% of all hypertension (high blood pressure) cases are primary (essential) which refers to high blood pressure for which no medical cause can be found. The remaining five to 10% of cases (secondary hypertension) are caused by other conditions that affect the kidneys, arteries, heart, or endocrine system. Although no direct cause has been identified for essential hypertension, there are many factors such as sedentary lifestyle, smoking, stress, visceral obesity, potassium deficiency (hypokalemia), obesity (more than 85% of cases occur in those with a body mass index greater than 25), salt (sodium) sensitivity, alcohol intake, and vitamin D deficiency that increase the risk of developing hypertension. Risk also increases with aging, some inherited genetic mutations, and having a family history of hypertension. An elevated level of renin, a hormone secreted by the kidney, is another risk factor, as is sympathetic nervous system over-activity. Insulin resistance, a component of syndrome X (or the metabolic syndrome), is also thought to contribute to hypertension. Recent studies have implicated low birth weight as a risk factor for adult essential hypertension. Persistent hypertension is one of the risk factors for stroke, myocardial infarction, heart failure and arterial aneurysm, and is a leading cause of chronic kidney failure. Moderate elevation of arterial blood pressure leads to shortened life

expectancy. Preventive lifestyle modifications--such as the dietary changes (reduced sugar and salt), regular physical exercise, and weight loss--have all been shown to significantly reduce blood pressure in people and decrease the risk of associated complications, although drug treatment may prove necessary in patients for whom lifestyle changes prove ineffective or insufficient (<http://en.wikipedia.org/wiki/Hypertension>; Carretero & Oparil, 2000; Mayo Foundation for Medical Education and Research, 2008).

Over two million people are victims of violent injury each year. The U.S. ranks first among industrialized nations in violent death rates and deaths caused by violent or unintentional misuse of firearms—exceeding in number the combined total of some 17 different nations. Men, teenagers, young adults, and minority group members—particularly Blacks and Hispanics—are most likely to be murder victims. Homicide affects every age group. Poverty has been identified as an extremely important factor in homicide. This strong association should activate all communities to target primary prevention interventions toward all persons in their community who live in poverty. Another important factor associated with homicide is the use, manufacture, and distribution of drugs. Violence may occur as a consequence of the pharmacological effects of drugs in economically motivated crimes that support drug use or the interactions related to the manufacturing, buying, and selling of drugs (Hershey et al., 1998, 2007).

Manner of death—OCME cases.

It is interesting to note that in recent years, intentional (homicide and suicide) and unintentional (accidents) injury deaths and their causes have begun to receive attention as a major public health problem. Violence, abusive, and self-destructive behaviors continue to be a major cause of death, injury and stress in the U.S. Interpersonal violence has also become a common part of social interaction in many domestic settings (Hershey et al., 1998, 2007).

In 2008, the OCME investigated 5,811 deaths, representing 9.9% of the estimated deaths in Virginia. Accidents accounted for the greatest proportion of deaths by any manner. Motor vehicle deaths were the most common cause of accidental deaths with 39.9% of all accidents, followed by drug use with 23.8%. Seniors, 85 and older, had the highest rate of accidental falls (VDH, 2009).

The number of homicides decreased 9.9% from the previous year. As previous years have shown, homicides most frequently occurred in males (74.9%), in blacks (55.9%), and those aged 25-34 years old (23.6%). Sixty-six percent of homicides were committed using a firearm, with handguns the most common type used in 47.1% of all homicides cases and 71.2% of all firearm homicides. Black males died from homicidal violence at a rate of 23.2 per 100,000; this was 3.1 times that of Hispanic males, 7.5 times that of white males, and 9.0 times that of Asian males (VDH, 2009).

The number of suicides in Virginia has been increasing over the past ten years while the rate has had a modest increase. In 2008, as in previous years, suicides were most frequently in males (78%) and those aged 45-54 years old (22%). Whites committed suicide 3.7 times that of Hispanics, 2.3 times that of blacks, and 2.1 times that of Asians. Males were 3.7 times more likely to commit suicide than females. The female Asian suicide rate was higher than their male counterpart; this was the only racial/ethnic group where female rates were higher than the male rates where population numbers were available. Handguns were used in 42% of suicides, followed by 19.1% by hangings, then 14.3% by drug use (VDH, 2009).

Natural deaths enter the medical examiner system as deaths that are sudden, unexpected or suspicious, which upon examination and investigation are established as natural. These deaths may also fall under the OCME's jurisdiction as the individuals may not have had a

primary care physician. Natural deaths accounted for 35% of all deaths investigated by the OCME in 2008. The number of natural deaths investigated by the OCME is at a 10-year low. For children 17 years and younger, the highest number of deaths occurred for those under the age of one year, but overall it was the 55-64 year old age group that had the highest number of OCME natural deaths (VDH, 2009).

Undetermined deaths have increased substantially in the last few years mostly due to establishing the category of death, Sudden Unexpected Infant Death (SUID). Cases where the cause of death was established, but the manner of death was undetermined, represented 33.8% of deaths with handguns, the most frequently associated cause of death (40.4%), followed by drug use (29.8%). Forty-five percent of the undetermined manner and cause of death deaths were in children under the age of one. Sixty percent of the undetermined manner and cause of death cases were designated as SUID. SUID cases increased 27.9% from 2007 (VDH, 2009).

Communicable disease.

The last century saw extraordinary progress in the fight against infectious diseases, also known as communicable diseases. Notable advance such as the eradication of smallpox and the discovery of penicillin, antimicrobial drugs, and the development and use of vaccines have been realized. Despite these noteworthy gains in modern disease prevention, some of society's practices still cause and spread many preventable illnesses and death. Overcrowding in cities and towns, rural migrant camps, homelessness, the increasing use of day care centers and nursing homes, and unsafe sexual practices are examples of a few instances where communicable disease could be better controlled through good hygiene, proper handling of food and water, and basic disease prevention education (Hershey et al., 1998, 2007).

Sections 32.1-36 and 32.1-37 of the *Code of Virginia* and 12 VAC 5-90-80 and 12 VAC 5-90-90 of the Board of Health *Regulations for Disease Reporting and Control* (www.vdh.virginia.gov/epidemiology/regulations.htm) mandate the reporting and control of diseases. Specifically, Section 32.1-35 of the Health Laws of Virginia directs the Board of Health to promulgate regulations specifying which diseases occurring in the Commonwealth are to be reportable and the method by which they are to be reported to the Virginia Department of Health (VDH). Section 32.1-36 and 32.1-37 designate those individuals who are required to report diseases including every physician practicing in the Commonwealth, every director of any laboratory doing business in the Commonwealth, and person(s) in charge of any medical care facility, residential or day program, service or facility licensed or operated by any agency of the Commonwealth, school, or summer camp. Section 3.1 of the Board of Health Regulations for Disease Reporting and Control specifies those diseases, toxic effect, conditions that need to be reported, and the manner in which they are to be reported. The *Virginia Reportable Disease List* has 76 reportable diseases (or occurrences) and can be found at http://www.vdh.state.va.us/Epidemiology/Disease_List.htm?mode=printable (Hershey et al., 1998, 2007).

Health regulations for disease reporting are designed to enhance and promote uniform reporting of diseases that are of public health importance. These regulations ensure that appropriate control measures may be instituted to interrupt the transmission of disease. Additionally, the local health director of each health district in Virginia is responsible for the surveillance and investigation of those diseases specified by these regulations which occur in his/her jurisdiction. The health director is also responsible for instituting measures for disease control, which may include recommendations for quarantine or isolation for purposes of

observation or treatment. Public health personnel are caretaker of health and have a duty and legal responsibility to control infectious disease. This includes contact tracing, follow-up, and treatment for infectious diseases such as HIV/AIDS, syphilis, gonorrhea, and tuberculosis (Hershey et al., 1998, 2007).

Infectious diseases are a major public health problem and remain the leading cause of death worldwide. While infectious diseases are the leading cause of death among children, people of all ages, races, and socio-economic groups have the potential of developing a vaccine-preventable or other communicable disease. Over the past century, the profile of disease has changed dramatically. New infectious organisms are emerging. Emerging infectious diseases are those that have appeared in a population within the past two decades or threaten to increase in the near future. “New” infectious disease can emerge from genetic changes in existing organisms and appear suddenly in new populations. At least 40 new disease agents have been identified over the past two decades, and new agents are being added regularly. These emerging diseases include AIDS, Ebola infection, *Escherichia coli* bacteria, Hepatitis C, Hantavirus, Lyme disease, Legionnaires’ disease, SARS, and 2009 H1N1 influenza. Once thought to be on the verge of being eliminated as a public health problem, many infectious diseases are making a deadly comeback. Termed “re-emerging infectious diseases,” these are illnesses from well-understood microorganisms that were once under control, but are now resistant to common antimicrobial drugs or have gained new footholds in society. These re-emerging diseases include malaria, meningitis, and drug resistant tuberculosis, gonorrhea, and *Staphylococcus* bacteria (Hershey et al., 1998, 2007).

Public health ensures that all relevant infectious diseases are reported and that proper procedure are in place for prompt and appropriate responses that help to control the spread of disease. Investigation, prophylactic treatment, and intense public education, as well as the excellent cooperation of the healthcare community to report disease are imperative in minimizing the transmission of infection and reducing the incidence of communicable disease to normal levels (Hershey et al., 1998, 2007).

Chlamydia trachomatis is the most common sexually transmitted bacterial pathogen in the U.S. accounting for more than three million infections annually. The CDC estimates the morbidity due to this organism to be twice that of gonorrhea. The infection is common in sexually active adolescents and young adults. Chlamydia can be treated inexpensively; however, symptoms are often absent or minor among most infected women and men. Women and children bear much of the burden of chlamydial infection in terms of its complications (acute pelvic inflammatory disease, known as PID; infant conjunctivitis and pneumonia) (<http://www.cdc.gov/std/chlamydia/stdfact-chlamydia.htm>). Although Virginia's health laws require the reporting of chlamydial infections, the reported cases are an underestimate of the number of actual cases due to under-reporting by physicians and other healthcare professionals and facilities. Furthermore, Virginia's data does underestimate the incidence of *C. trachomatis* infections because (1) screening has been limited to high-risk females and males attending certain public health clinics, (2) as many as 75% of women and 25% of men with uncomplicated *C. trachomatis* infections are asymptomatic, and (3) persons with gonorrhea presumptively treated for *C. trachomatis* infections are not included in the case counts (Hershey et al., 1998, 2007).

Gonorrhea is a bacterial infection that typically causes infection of the lower urinary and genital tract in men and a more extensive infection of the reproductive organs in women.

Gonorrhea is the most frequently reported communicable disease in the U.S. it is used as a key indicator of progress in reducing STIs among populations that suffer from the highest infection rates. Gonorrhea control efforts began in 1972 and have had remarkable success. Low-income youth and minority populations remain at high-risk for gonorrhea. Young adults (ages 20-29) are also more likely to have gonorrhea than any other age group (Hershey et al., 1997, 2008; <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0004526>).

Syphilis was the first sexually transmitted infection (STI) for which public health control measures were developed and tested, and the number of cases reached a low point nationally in the mid-1980s before starting to climb again. This venereal disease typically causes mild symptoms at the time of initial infection. If the disease is left untreated, it can result in progressive tissue damage in multiple organs. The history of syphilis illustrates the role of public health in prevention and control of STIs. Syphilis rates were at a national all-time high of 575,600 in 1943; however, with the initiation of intense public health programs that included health education, as well as mandatory contact tracing of partners, treatment, and follow-up, the number of cases dramatically declined through 1986. The national climb in syphilis rates in the past 20 years reinforces the need for continued support and expansion of the public health role in STI prevention (Hershey et al., 1998, 2007; <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002303>).

Pulmonary tuberculosis (TB) is a communicable disease which is spread through droplets expelled into the air. The disease often has serious and even fatal consequences. Tuberculosis poses a substantial public health challenge because it is highly contagious. Without treatment, a

person who has active TB disease can spread the infection to many other people. At the beginning of the twentieth century, TB was a common illness and a major threat in the U.S. Drug treatment became available and was widely used in the 1940s, and the number of cases declined as newer, more aggressive treatments became successful. TB is still a very common infection in other countries, particularly third world countries. There is a resurgence of tuberculosis cases among vulnerable populations in cities across the U.S., as well as new multi-drug resistant strains of TB. This increased number of cases is attributed to a variety of factors including people with HIV infection, crowded living conditions in prisons and homeless shelters, and immigrants from countries where tuberculosis is endemic (Hershey et al., 1998, 2007; <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001141>).

Meningococcal infections are caused by a type of bacteria called *Neisseria meningitidis* (also known as “meningococci”). A very small number of people exposed to this organism develop a serious illness from it, such as meningitis (swelling of the tissues around the brain). Meningococci are spread by direct contact with secretions from the nose and throat of an infected person. Spread is almost always by close contact with a person who is not ill (an asymptomatic carrier). Antibiotics are generally effective in treating meningococcal infection. However, even with appropriate therapy about 10% of the people who have a meningococcal infection die, and 20% have permanent complications, such as hearing loss, brain injury, or loss of a limb. In the United States, a vaccine is available that protects against certain strains of the bacteria. Vaccination is currently recommended for young adolescents at their routine preadolescent visit (11-12 years of age), as well as any unvaccinated adolescents at high school entry (15 years of age). Vaccination is also recommended for others at high-risk including military recruits, college freshmen who are living in dormitories, and persons with certain health

conditions (e.g., damaged spleen). The vaccine is also used in outbreak situations and for persons who are traveling to areas of the world where high rates of the disease are known to occur (<http://www.vdh.state.va.us/epidemiology/factsheets/Meningococcal.htm>).

CDC estimates that more than one million people are living with HIV in the U.S. One in five (21%) of those people living with HIV is unaware of their infection. Despite increases in the total number of people living with HIV in the U.S. in recent years, the annual number of new HIV infections has remained relatively stable. However, new infections continue at far too high a level, with an estimated 56,300 Americans becoming infected with HIV each year. More than 18,000 people with AIDS still die each year in the U.S. Through 2007, more than 576,000 people with AIDS in the U.S. have died since the epidemic began. Of interest, Virginia has reported 19,029 AIDS cases to CDC, cumulatively, from the beginning of the epidemic through December 2008. Virginia ranks 13th highest among the 50 states in cumulative reported AIDS cases (VDH, Office of Epidemiology, 2010; <http://www.cdc.gov/hiv/resources/factsheets/index.htm#pop>).

Gay, bisexual, and other men who have sex with men (MSM) are strongly affected and represent the majority of persons who have died. By risk group, gay, bisexual, and other MSM of all races remain the population most severely affected by HIV. MSM account for more than half (53%) of all new HIV infections in the U.S. each year, as well as nearly half (48%) of people living with HIV. Heterosexuals and injection drug users also continue to be affected by HIV. Individuals infected through heterosexual contact account for 31% of annual new HIV infections and 28% of people living with HIV. As a group, women account for 27% of annual new HIV infections and 25% of those living with HIV. Injection drug users represent 12% of annual new HIV infections and 19% of those living with HIV.

Among racial/ethnic groups, African Americans face the most severe burden of HIV and AIDS in the nation. While blacks represent approximately 12% of the U.S. population, they account for almost half (46%) of people living with HIV in the U.S., as well as nearly half (45%) of new infections each year. HIV infections among blacks overall have been roughly stable since the early 1990s. At some point in their life, approximately one in 16 black men will be diagnosed with HIV, as will one in 30 black women. The rate of new HIV infections for black men is about six times as high as that of white men, nearly three times that of Hispanic/Latino men, and more than twice that of black women. The HIV incidence rate for black women is nearly 15 times as high as that of white women, and nearly four times that of Hispanic/Latino women. Hispanics/Latinos are also disproportionately impacted. Hispanics/Latinos represent 15% of the population but account for an estimated 17% of people living with HIV and 17% of new infections. HIV infections among Hispanics/Latinos overall have been roughly stable since the early 1990s. The rate of new HIV infections among Hispanic/Latino men is more than double that of white men and the rate among Hispanic/Latino women is nearly four times that of white women (<http://www.cdc.gov/hiv/resources/factsheets/us.htm>).

Since many HIV-infected people do not know that they have the virus, increased efforts to educate the public on risks and precautions are essential to slowing the spread of the disease. Combating the spread of HIV poses different problems from those associated with other infectious diseases. As no vaccine or cure is available, the transmission of HIV can only be halted by changing risky behaviors. A critical public health component in the effort to change behaviors and reduce transmission of HIV is education for the general public and specific groups at high-risk of having HIV and AIDS (Hershey et al., 1998, 2007).

Viral hepatitis is inflammation or swelling of the liver caused by infection with any of at least six distinct viruses, of which the three most commonly identified in the U.S. are hepatitis A virus (HAV), hepatitis B virus (HBV) and hepatitis C virus (HCV). All three of these unrelated viruses can produce an acute illness characterized by nausea, malaise, abdominal pain, and jaundice. HBV and HCV also can produce a chronic infection that is associated with an increased risk for chronic liver disease and hepatocellular carcinoma (Hershey et al., 2005; Keystone & Hershey, 2008; Schiff et al., 2007).

HAV enters through the mouth, multiplies in the body, and is passed in the feces (stool). The virus can then be carried on an infected person's hands and can be spread by direct contact, or by consuming food or drink that has been handled by an infected individual. In some cases, it can be spread by sexual contact, intravenous or illegal drug use, or by consuming water or food (e.g., raw shellfish, vegetables) contaminated by sewage. Asymptomatic infection is common among young children, and symptomatic cases in children younger than six years of age represent a limited proportion of infections that occur in this age group.

Effective vaccines to prevent HAV infection have been available in the U.S. since 1995. In 1996, CDC's Advisory Committee on Immunization Practices (ACIP) recommended administration of hepatitis A vaccine for persons at increased risk including international travelers, men who have sex with men (MSM), injection- and non-injection-drug users, and children living in communities with high rates of disease. In 1999, ACIP also recommended routine vaccination for children living in 11 states (i.e., Alaska, Arizona, California, Idaho, Nevada, New Mexico, Oklahoma, Oregon, South Dakota, Utah, and Washington) with average hepatitis A rates during 1987-1997 of ≥ 20 cases per 100,000 population and be considered for children in six states (i.e., Arkansas, Colorado, Missouri, Montana, Texas, and Wyoming) with

rates of 10-20 cases per 100,000 population. In 2006, ACIP expanded these recommendations to include routine vaccination of children in all 50 states (Hershey et al., 2005; (<http://www.cdc.gov/hepatitis/Statistics/2008Surveillance/Commentary.htm>; http://www.vdh.state.va.us/epidemiology/factsheets/Hepatitis_A.htm; Keystone & Hershey, 2008; Schiff et al., 2007).

HBV is transmitted by percutaneous or mucosal exposure to the blood or body fluids of an infected person, most often through injection-drug use (IDU), sexual contact with an infected person, or contact from an infected mother to her infant during delivery. HBV can be found in the blood and, to a lesser extent, saliva, semen and other body fluids of an infected person. Others that are at high-risk of infection include certain health care workers who have contact with infected blood and hemodialysis patients. Transmission of HBV also can occur in settings involving nonsexual interpersonal contact for an extended period (e.g., among household contacts of a person with chronic HBV infection, people who live in institutions such as developmental centers). The risk of chronic HBV infection decreases as the age of HBV infection increases; approximately 5% of all acute HBV infections progress to chronic infection. Of infants who acquire HBV infection at birth from their mothers, as many as 90% become chronically infected. Among children between one and five years of age who become infected with HBV, 30% to 50% become chronically infected. In the U.S., Hepatitis kills about 3,000-4,000 people a year.

Effective vaccines to prevent hepatitis B virus infection have been available in the U.S. since 1981. In 1991, a comprehensive strategy was recommended for the elimination of HBV transmission in the United States. The four elements of this strategy are (1) universal vaccination of infants beginning at birth; (2) prevention of perinatal HBV infection through routine screening

of all pregnant women for HBV infection and the provision of immunoprophylaxis to infants born either to infected women or to women of unknown infection status; (3) routine vaccination of previously unvaccinated children and adolescents; (4) vaccination of adults at increased risk for infection (including health-care workers, dialysis patients, household contacts and sex partners of persons with chronic HBV infection, recipients of certain blood products, persons with a recent history of multiple sex partners or a sexually transmitted disease, MSM, and injection drug-users. A special hepatitis B immune globulin is also available for people who have been exposed to the virus. It may help prevent the disease if it is given within two weeks of exposure (Hershey et al., 2005; <http://www.cdc.gov/hepatitis/Statistics/2008Surveillance/Commentary.htm>; http://www.vdh.state.va.us/epidemiology/factsheets/Hepatitis_B.htm; Keystone & Hershey, 2008; Schiff et al., 2007).

HCV is transmitted primarily through percutaneous exposure spread primarily through contact with infected blood, such as shared needles used for injection drug use. However, transmission can occur through unapparent percutaneous or mucosal exposures (e.g., persons with evidence of high-risk sexual practices). HCV can also be transmitted to the baby of an infected mother during delivery. However, this occurs in only five out of 100 deliveries involving HCV-positive women. HCV is not spread by breastfeeding. The risk of sexual transmission of HCV is believed to be low. Up to eight out of 10 people infected with HCV develop a chronic infection and are at high-risk for developing liver cancer. With an estimated 3.2 million chronically infected persons nationwide, HCV infection is the most common blood-borne infection in the U.S. killing 8,000-10,000 persons annually. There is no laboratory distinction between acute and chronic infection. The risk of HCV infection is higher in anyone

who has ever injected drugs, people who have had a blood transfusion before 1992, healthcare workers with a blood exposure (e.g., by an accidental needle stick), children born to HCV-infected mothers, long-term dialysis patients, and people who have had multiple sex partners. Chronic HCV infection can be treated. At present, treatment (medicine) is effective in about half of patients. To protect their liver, anyone infected with HCV should also avoid drinking any alcohol or taking medications that could damage the liver. Also, if not already immune, persons with HCV should be vaccinated to prevent Hepatitis A and B.

Unfortunately, a vaccine against HCV infection does not exist. National recommendations for prevention and control of HCV infection, issued in 1998, emphasize primary prevention activities to reduce the risk for HCV transmission. These activities include screening and testing of blood donors, viral inactivation of plasma-derived products, risk-reduction counseling (avoid behaviors that may spread HCV such as contact with blood, unprotected sex, injectable or illegal drug use, and tattooing or body piercing) and screening of persons at risk for HCV infection, and routine practice of infection control in health-care settings (Hershey et al., 2005; <http://www.cdc.gov/hepatitis/Statistics/2008Surveillance/Commentary.htm>; http://www.vdh.virginia.gov/epidemiology/factsheets/Hepatitis_C.htm; Keystone & Hershey, 2008; Schiff et al., 2007).

Sentinel events.

Vaccines represent one of the top public health success stories of the 20th century. Immunization as a disease-prevention strategy is challenged, however, when vaccine-preventable diseases occur in persons who are appropriately vaccinated for their age and when outbreaks occur among highly vaccinated groups or populations. These outbreaks serve as a reminder that

these often-overlooked, vaccine-preventable diseases are still a threat. As clinicians and public health officials investigate these outbreaks, they discover gaps in immunization recommendations and other issues/problems, such as limitations of diagnostic testing. These resurgences also highlight the importance of disease surveillance and ongoing evaluation of immunization and other disease-prevention and control strategies. It is important to note that vaccines are not 100% effective. The success of immunization programs depends on 2 strategies: (1) maximizing immunity in the population in order to minimize disease introduction and transmission, and (2) implementing public health interventions to minimize exposure such as social distancing (any effort to limit social contact), decrease case infectiousness (e.g., antimicrobial treatment of pertussis cases), or prevent disease in people who have contact with someone who is infected (e.g., administering measles postexposure vaccination and/or immune globulin)

<http://www.minnesotamedicine.com/PastIssues/PastIssues2007/February2007/ClinicalMumpsFebruary2007/tabid/1710/Default.aspx>).

In response to measles outbreaks among adolescents and young adults during the 1980s, the national Advisory Committee on Immunization Practices (ACIP) recommended in 1989 that all school-aged children receive two doses rather than one of the combined measles, mumps, and rubella (MMR) vaccine. Increasing outbreaks of pertussis since the 1980s in adolescents and adults have resulted in ACIP-recommended boosters of tetanus, diphtheria, acellular pertussis vaccine (Tdap) to adolescents, adults, and certain high-risk groups including post-partum women, healthcare professionals, and anyone having close contact with infants less than one year of age. Recent outbreaks of mumps in 2005 and 2006 in Iowa and several other states in the mid-west among adolescents and college students resulted in CDC informally recommending that all

health care workers in states where outbreaks occur receive 2 doses of mumps vaccine. The ACIP published this recommendation in June of 2006, stating that routine vaccination for health care workers should include two doses of mumps vaccine for persons born during or after 1957 without other evidence of immunity (i.e., physician-diagnosed mumps or serologic evidence of the disease) and one dose of mumps vaccine for persons born before 1957. Previously issued ACIP recommendations for the control and elimination of mumps in 1998 included having a first dose of MMR vaccine at 12 to 15 months of age, and a second dose at four to six years of age. Two doses of MMR vaccine also were recommended for students attending college and other post-high school institutions. In addition, national guidelines from the ACIP and the Hospital Infection Control Practices Advisory Committee published in 1997 recommended that health care workers receive one dose of mumps and rubella vaccine and two doses of measles vaccine. Because of the focus on measles and rubella immunity, documentation of immunity to mumps was often not included in their employee health record. For that reason, prior to the 2006 mumps resurgence, the immune status of college students and health care workers to mumps was largely unknown

(<http://www.minnesotamedicine.com/PastIssues2007/February2007/ClinicalMumpsFebruary2007/tabid/1710/Default.aspx>; http://www.mass.gov/Edohhs2/docs/dph/cdc/immunization/alerts_tdap_acip_recommendations.pdf).

Appendix O

Themes for NRV MAPP Vision and Values Statements

| What does a healthy NRV mean to you? | Characteristics of healthy community | Where do you see the local health system in next 5-10 years? | Overall themes |
|--|---|--|--|
| Healthy environment (air, water) | Reduced poverty | Proactive (service leadership; we are going to do all we can to help all we can) | Healthcare and mental healthcare for all |
| Safety (needs to be a safe environment – injury prevention) | Access to healthcare for all | Increased citizen participation in health-related issues | Increased citizen participation |
| Reduce domestic violence (maximize efforts to prevent domestic violence) | People who value health | Healthcare and mental healthcare for all | Healthy environment |
| Helping people to make good choices | Low unemployment and a living wage for all employed persons | Integrative holistic healthcare system available to <u>all</u> persons. | Access, affordability & availability of services (e.g., mental & physical health, transportation) |
| Access to healthcare for all | Safe, decent, and affordable housing | | Regulation to promote healthy community and economic development via health communication and range of safety net services (e.g., elder and domestic abuse services) |
| | Clean, cost-effective, efficient, integrated & regulated public transportation system | | Education in schools and workplaces for improved nutrition and physical activity (e.g., wellness programs) |

| What does a healthy NRV mean to you? | Characteristics of healthy community | Where do you see the local health system in next 5-10 years? | Overall themes |
|--|---|--|----------------|
| Significant focus on early intervention, prevention and education | Preservation of natural beauty and greenspace | | |
| Services rendered in a holistic fashion in: primary care, behavioral health, and dental care | Good public education | | |
| Services are co-located and geographically dispersed throughout the NRV in “Centers of Excellence” | | | |
| Wellness mindset embraced by business community and public policymakers | | | |
| Everyone has access to basic needs (bio, psycho, social, spiritual & those needs are available) | | | |
| Safe, clean, healthy environment | | | |

Appendix P

Matrix of Participation and Roles within Each Phase of NRV MAPP

| MAPP Phase | Participants and Roles | | | | |
|---|--|--|---|---|---|
| | Principal Investigator(s) | PATH Steering Committee | PATH membership | Expert Work Group(s) | Community |
| Phase 1: Organize for Success/ Partnership Development | <ul style="list-style-type: none"> • Get the process "off the ground" • Informal meetings, discussions to begin collecting information, organizing, and planning the MAPP process. • Preparing and obtaining \$20,000 start-up grant funding. • Recruit graduate student as additional investigator. • Serves as the lead manager for the process. • Conducted extensive literature search • Recruit additional participants and volunteers as needed. • Coordinate broader public communication, information dissemination; do MAPP presentations throughout community. | <ul style="list-style-type: none"> • Serve as the MAPP Steering Committee • Get the process "off the ground." • Committee assumes oversight of MAPP process during this phase. • Organize and plan the process. • Identify additional resources as needed. • Conduct readiness assessment. • Recruit additional participants and volunteers as needed. | <ul style="list-style-type: none"> • Members provide input into other recruits, especially to assure broad community participation. • Approve plan for MAPP process (as determined by PATH Steering Committee). • Identify additional resources as needed. | None. | <ul style="list-style-type: none"> • Additional NRV community residents and volunteers recruited to participate in MAPP process. • Broader NRV community made aware of the new initiative. |
| Phase 2: Visioning | <ul style="list-style-type: none"> • Plan 2007 Retreat to include Visioning session (with PATH Steering Committee). • Recruit Heidi Deutsch, MAPP Program Manager, to facilitate 2007 "Kick Off" Retreat. • Plan and coordinate pre-Retreat training of volunteer facilitators and recorders. • Ensure facilitation and work with the 2007 Retreat facilitator. • Summarize the results of the Visioning session by developing a list of themes. • Draft Vision and Values Statements (with PATH Steering Committee). | <ul style="list-style-type: none"> • Develop a plan for gaining broad community participation and identify community representatives. • Plan 2007 Retreat to include Visioning session. • Work with the 2007 Retreat facilitator. • Oversee and participate in the Visioning phase. • Provide expert input to Draft Vision and Values statements. | <ul style="list-style-type: none"> • Participate in Visioning at the 2007 Retreat. • Edit and approve final Vision and Values Statements. | <ul style="list-style-type: none"> • PATH Steering Committee served as an Expert Work Group to draft Vision and Values statements. | <ul style="list-style-type: none"> • Broad community participation is essential. • Announcements made broadly through community mechanisms (media, etc.). • Visioning session logistics promoted broad community participation including Key Informant Discussions/Interviews with legislators and governmental officials from all NRV localities. |
| Phase 3: Local Public Health System Assessment (LPHSA) | <ul style="list-style-type: none"> • Plan 2007 Retreat to include LPHSA (with PATH Steering Committee). • Prepare for LPHSA activities and ensure effective implementation. • Plan and coordinate pre-Retreat training of volunteer facilitators and recorders for LPHSA. • Ensure facilitation and work with the 2007 Retreat facilitator. • Collect Focus Groups' final LPHSA ratings from the 2007 Retreat and submit to CDC for analysis. • Presented final analyzed CDC Report to PATH Steering Committee and PATH membership. | <ul style="list-style-type: none"> • Plan 2007 Retreat to include LPHSA. • Prepare for LPHSA activities and ensure effective implementation. • Ensure facilitation/recording of all Focus Group sessions. • Serve as 2007 Retreat facilitators and recorders for the LPHSA Focus Group sessions and work with the 2007 Retreat facilitator. • Oversee and participate in the LPHSA. • Discuss LPHSA results/identify challenges and opportunities. | <ul style="list-style-type: none"> • Participate in LPHSA at 2007 Retreat. • Discuss LPHSA results/identify challenges and opportunities. | None | <ul style="list-style-type: none"> • Community participation occurred at the 2007 Retreat where community members were recruited. |

| MAPP Phase | Participants and Roles (continued) | | | | |
|--|---|--|---|---|--|
| | Principal Investigator(s) | PATH Steering Committee | PATH membership | Expert Work Group(s) | Community |
| Phase 3: Community Themes and Strengths Assessment | <ul style="list-style-type: none"> • Work with Heidi Deutsch of NACCHO, PATH Steering Committee, and PATH membership to develop face-to-face Interview Instrument re: quality of life in NRV. • Partnered with VIC, VICPP, and retired volunteer team to field/pilot test the Interview Instrument. • Partnered with three volunteer teams (retired seniors, Radford University nursing students/faculty, and Rural Health intern to conduct face-to-face interviews in all localities of the NRV. • Ensure facilitation/ recording of all sessions. • Compile results. | <ul style="list-style-type: none"> • Identify appropriate activities and plan how to undertake them. • Provide expert input to refine/ develop face-to-face Interview Instrument • Oversee implementation of activities. | <ul style="list-style-type: none"> • Support PATH Steering Committee activities. • Provided recommendations for gaining broad community participation. • Provide expert input to refine/develop face-to-face Interview Instrument. • Participate in activities as needed. | <ul style="list-style-type: none"> • Two expert Work Groups-- PATH Steering Committee and Heidi Deutsch of NACCHO-- provided expert advice/input to develop face-to-face Interview Instrument re: quality of life in NRV. | <p>Broad community participation is essential.</p> <ul style="list-style-type: none"> • Announcements made broadly through community mechanisms (media, etc.). • All activities promoted broad community participation. • Community members participated in Focus Groups that field/pilot tested the Interview Instrument |
| Phase 3: Community Health Status Assessment | <ul style="list-style-type: none"> • Select locally-appropriate indicators and identify sources for data (with help of PATH Steering Committee and PATH membership). • Collect, analyze, and summarize a broad range of qualitative and quantitative secondary data (with help of NRHD Epidemiologist). • Work with PATH Steering Committee and PATH membership to refine NRV <i>Community Health Assessment</i> Survey Instrument. • Partner with VIC, VICPP, and retired volunteer team to field/pilot test the Survey Instrument. • Ensure facilitation/ recording of all field/pilot testing sessions. • Partner with three volunteer teams (retired seniors, Radford University nursing students/faculty, and Nurse Manager of NRHD) to target Surveys to Senior Centers and African-American Churches. • Mail Survey to random sample of NRV residents (with the help of retired volunteers and New River Community Action staff) and provide on-line availability. • Enter data from completed Surveys (with help of retired volunteers). • Summarize and compile basic response frequency Survey results. • Oversee select analyses of data by Expert Work Group. • Compile <i>Community Health Profile</i> and present/disseminate results to PATH Steering Committee, PATH membership, 2009 Retreat participants, and community. • Facilitate identification, refinement, and ranking of Priority Community Health Status Issues in PATH Steering Committee and PATH membership meetings and during 2009 Retreat. | <ul style="list-style-type: none"> • Provide expert input to select locally-appropriate indicators, identify sources for data, and refine Survey Instrument. • Provide input into Community Health Profile development. • Provide expert input to examine and analyze CHSA data to identify ten proposed Priority Community Health Status Issues. | <ul style="list-style-type: none"> • Provide expert input to select locally-appropriate indicators, identify sources for data, and refine Survey Instrument. • Provide input into Community Health Profile development. • Provide input to proposed Priority Community Health Status Issues. | <ul style="list-style-type: none"> • An Expert Work Group with expertise in data analysis performed data cleansing and selective analyses on low income Mailed/On-line, African-American Church, and Senior Center Surveys. • Two expert Work Groups— PATH Steering Committee and Heidi Deutsch and her MAPP team at NACCHO— examined and analyzed CHSA data to identify a proposed list of ten Priority Community Health Status Issues | <ul style="list-style-type: none"> • Community members participated in Focus Groups that field/pilot tested the NRV <i>Community Health Assessment</i> Survey Instrument. • Community participation occurred through the Surveys. • The <i>Community Health Profile</i> was presented to and disseminated throughout the community. |

| MAPP Phase | Participants and Roles (continued) | | | | |
|---|---|--|--|---|--|
| | Principal Investigator(s) | PATH Steering Committee | PATH membership | Expert Work Group(s) | Community |
| Phase 3: Forces of Change Assessment | <ul style="list-style-type: none"> • Prepare for and plan trainstorming sessions (with PATH Steering Committee and PATH membership). • Facilitate structured brainstorming sessions. • Summarize and compile the results of the sessions. | <ul style="list-style-type: none"> • Entire Committee participates in brainstorming sessions. • Provide expert input to identify a draft Forces of Change list (including threats and opportunities). • Prepare for and plan brainstorming sessions with PATH membership. | <ul style="list-style-type: none"> • Participate in brainstorming sessions to finalize a comprehensive Forces of Change list (including threats and opportunities). | <ul style="list-style-type: none"> • PATH Steering Committee served as an Expert Work Group to identify a draft Forces of Change list (including threats and opportunities). | <ul style="list-style-type: none"> • Community participation occurred through PATH membership. |
| Phase 4: Identify Strategic Issues | <ul style="list-style-type: none"> • Prepare information to assist in developing Strategies and Goals. • Prepare compilation of results from Phase 2: Vision and four MAPP Assessments. • Facilitate brainstorming sessions and discussions with PATH Steering Committee and PATH membership to identify Strategic Issues. • Summarize the results of the sessions. | <ul style="list-style-type: none"> • Entire Committee participates in brainstorming sessions. • Provide expert input to identify three potential Strategic Issues | <ul style="list-style-type: none"> • Participate in brainstorming sessions to identify and analyze the final three Strategic Issues. | <ul style="list-style-type: none"> Two expert Work Groups-- PATH Steering Committee and Heidi Deutsch and her MAPP team at NACCHO— examined and analyzed the compiled results to identify potential Strategic Issues. | None. |
| Phase 5: Formulate Goals and Strategies | <ul style="list-style-type: none"> • Prepare information to assist in developing Strategies and Goals. • Plan 2009 Retreat (with PATH Steering Committee) • Prepare for Retreat activities and ensure effective implementation. • Ensure facilitation and recording of all Retreat sessions and work with the 2009 Retreat facilitator (with help of PATH Steering Committee). • Collect and summarize confirmed Strategies and Goals for each of the top three Priority Community Health Status Issues from the 2009 Retreat. • Draft the Planning Report. • Presented Planning Report to PATH Steering Committee and PATH membership for discussion, refinement, and adoption. | <ul style="list-style-type: none"> • Plan 2009 Retreat. • Prepare for Retreat activities and ensure effective implementation. • Ensure facilitation/ recording of all Focus Group sessions. • Serve as 2009 Retreat facilitators and recorders for Focus Group sessions and work with the 2009 Retreat facilitator. • Oversee development of the Planning Report and refine/adopt the plan. | <ul style="list-style-type: none"> • Refine and adopt the Plan. | None. | Community buy-in of strategies and goals should occur. |
| Phase 6: The Action Cycle | <ul style="list-style-type: none"> • Provide oversight and support to assure process sustains itself and action occurs (with PATH Steering Committee). | <ul style="list-style-type: none"> • Oversee action planning, implementation, and evaluation. • Recruit additional participants as needed. | <ul style="list-style-type: none"> • Actively participate in action planning, implementation, and evaluation. | <ul style="list-style-type: none"> • Expert Work Groups will be formed to oversee planning, implementation, and evaluation. • Focus Groups and Expert Work Groups will be formed to oversee action plans for each strategy. | <ul style="list-style-type: none"> • Broad community awareness of implementation. • Community participation in action plan implementation. |

Appendix Q

NPHPSP Final Report—New River Health District



Local Public Health System
Performance Assessment

Report of Results

New River Health District

12/11/2007

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Appendix

Resources for Next Steps

The National Public Health Performance Standards Program

Local Public Health System Performance Assessment Report of Results

A. The NPHPSP Report of Results

I. INTRODUCTION

The National Public Health Performance Standards Program (NPHPSP) assessments are intended to help users answer questions such as "What are the activities and capacities of our public health system?" and "How well are we providing the Essential Public Health Services in our jurisdiction?" The dialogue that occurs in answering these questions can help to identify strengths and weaknesses and determine opportunities for improvement.

The NPHPSP is a partnership effort to improve the practice of public health and the performance of public health systems. The NPHPSP assessment instruments guide state and local jurisdictions in evaluating their current performance against a set of optimal standards. Through these assessments, responding sites consider the activities of all public health system partners, thus addressing the activities of all public, private and voluntary entities that contribute to public health within the community..

Three assessment instruments have been designed to assist state and local partners in assessing and improving their public health systems or boards of health. These instruments are the:

- State Public Health System Performance Assessment Instrument,
- Local Public Health System Performance Assessment Instrument, and
- Local Public Health Governance Performance Assessment Instrument.

The NPHPSP is a collaborative effort of seven national partners:

- Centers for Disease Control and Prevention, Office of Chief of Public Health Practice (CDC/OCPHP)
- American Public Health Association (APHA)
- Association of State and Territorial Health Officials (ASTHO)
- National Association of County and City Health Officials (NACCHO)
- National Association of Local Boards of Health (NALBOH)
- National Network of Public Health Institutes (NNPHI)
- Public Health Foundation (PHF)

This report provides a summary of results from the NPHPSP Local Public Health System Assessment (OMB Control number 0920-0555, expiration date: August 31, 2010). The report, including the charts, graphs, and scores, are intended to help sites gain a good understanding of their performance and move on to the next step in strengthening their public system.

II. ABOUT THE REPORT

Calculating the scores

The NPHSP assessment instruments are constructed using the Essential Public Health Services (EPHS) as a framework. Within the Local Instrument, each EPHS includes between 2-4 model standards that describe the key aspects of an optimally performing public health system. Each model standard is followed by assessment questions that serve as measures of performance. Each site's responses to these questions should indicate how well the model standard - which portrays the highest level of performance or "gold standard" - is being met.

Sites responded to assessment questions using the following response options below. These same categories are used in this report to characterize levels of activity for Essential Services and model standards.

| | |
|----------------------|---|
| NO ACTIVITY | 0% or absolutely no activity. |
| MINIMAL ACTIVITY | Greater than zero, but no more than 25% of the activity described within the question is met. |
| MODERATE ACTIVITY | Greater than 25%, but no more than 50% of the activity described within the question is met. |
| SIGNIFICANT ACTIVITY | Greater than 50%, but no more than 75% of the activity described within the question is met. |
| OPTIMAL ACTIVITY | Greater than 75% of the activity described within the question is met. |

Using the responses to all of the assessment questions, a scoring process generates scores for each first-tier or "stem" question, model standard, Essential Service, and one overall score. The scoring methodology is available from CDC or can be accessed on-line at <http://www.cdc.gov/od/ocphp/nphpsp/Conducting.htm>.

Understanding data limitations

Respondents to the self-assessment should understand what the performance scores represent and potential data limitations. All performance scores are a composite; stem question scores represent a composite of the stem question and subquestion responses; model standard scores are a composite of the question scores within that area, and so on. The responses to the questions within the assessment are based upon processes that utilize input from diverse system participants with different experiences and perspectives. The gathering of these inputs and the development of a response for each question incorporates an element of subjectivity, which can be minimized through the use of particular assessment methods. Additionally, while certain assessment methods are recommended, processes can differ among sites. The assessment methods are not fully standardized and these differences in administration of the self-assessment may introduce an element of measurement error. In addition, there are differences in knowledge about the public health system among assessment participants. This may lead to some interpretation differences and issues for some questions, potentially introducing a degree of random non-sampling error.

Because of the limitations noted, the results and recommendations associated with these reported data should be used for quality improvement purposes. More specifically, results should be utilized for guiding an overall public health infrastructure and performance improvement process for the public health system. These data represent the collective performance of all organizational participants in the assessment of the local public health system. The data and results should not be interpreted to reflect the capacity or performance of any single agency or organization.

Presentation of results

The NPHPSP has attempted to present results - through a variety of figures and tables - in a user-friendly and clear manner. Results are presented in a Microsoft Word document, which allows users to easily copy and paste or edit the report for their own customized purposes. Original responses to all questions are also available.

For ease of use, many figures in tables use short titles to refer to Essential Services, model standards, and questions. If in doubt of the meaning, please refer to the full text in the assessment instruments.

Sites may choose to complete two optional questionnaires - one which asks about priority of each model standard and the second which assesses the local health department's contribution to achieving the model standard. Sites that submit responses for these questionnaires will see the results included as an additional component of their reports. Recipients of the priority results section may find that the scatter plot figures include data points that overlap. This is unavoidable when presenting results that represent similar data; in these cases, sites may find that the table listing of results will more clearly show the results found in each quadrant.

III. TIPS FOR INTERPRETING AND USING NPHPSP ASSESSMENT RESULTS

The use of these results by respondents to strengthen the public health system is the most important part of the performance improvement process that the NPHPSP is intended to promote. Report data may be used to identify strengths and weaknesses within the local public health system and pinpoint areas of performance that need improvement. The NPHPSP User Guide describes steps for using these results to develop and implement public health system performance improvement plans. Implementation of these plans is critical to achieving a higher performing public health system. Suggested steps in developing such improvement plans are:

1. Organize Participation for Performance Improvement
2. Prioritize Areas for Action
3. Explore "Root Causes" of Performance Problems
4. Develop and Implement Improvement Plans
5. Regularly Monitor and Report Progress

Refer to the User Guide section, "After We Complete the Assessment, What Next?" for details on the above steps.

Assessment results represent the collective performance of all entities in the local public health system and not any one organization. Therefore, system partners should be involved in the discussion of results and improvement strategies to assure that this information is appropriately used. The assessment results can drive improvement planning within each organization as well as system-wide. In addition, coordinated use of the Local Instrument with the Governance Instrument or state-wide use of the Local Instrument can lead to more successful and comprehensive improvement plans to address more systemic statewide issues.

Although respondents will ultimately want to review these results with stakeholders in the context of their overall performance improvement process, they may initially find it helpful to review the results either individually or in a small group. The following tips may be helpful when initially reviewing the results, or preparing to present the results to performance improvement stakeholders.

Examine performance scores

First, sites should take a look at the overall or composite performance scores for Essential Services and model standards. These scores are presented visually in order by Essential Service (Figure 1) and in ascending order (Figure 2). Additionally, Figure 3 uses color designations to indicate performance level categories. Examination of these scores can immediately give a sense of the local public health system's greatest strengths and weaknesses.

Review the range of scores within each Essential Service and model standard

The Essential Service score is an average of the model standard scores within that service, and, in turn, the model standard scores represent the average of stem question scores for that standard. If there is great range or difference in scores, focusing attention on the model standard(s) or questions with the lower scores will help to identify where performance inconsistency or weakness may be. Some figures, such as the bar charts in Figure 4, provide "range bars" which indicate the variation in scores. Looking for long range bars will help to easily identify these opportunities.

Also, refer back to the original question responses to determine where weaknesses or inconsistencies in performance may be occurring. By examining the assessment questions, including the subquestions and discussion toolbox items, participants will be reminded of particular areas of concern that may most need attention.

Consider the context

The NPHPSP User Guide and other technical assistance resources strongly encourage responding jurisdictions to gather and record qualitative input from participants throughout the assessment process. Such information can include insights that shaped group responses, gaps that were uncovered, solutions to identified problems, and impressions or early ideas for improving system performance. This information should have emerged from the general discussion of the model standards and assessment questions, as well as the responses to discussion toolbox topics.

The results viewed in this report should be considered within the context of this qualitative information, as well as with other information. The assessment report, by itself, is not intended to be the sole "roadmap" to answer the question of what a local public health system's performance improvement priorities should be. The original purpose of the assessment, current issues being addressed by the community, and the needs and interests for all stakeholders should be considered.

Some sites have used a process such as Mobilizing for Action through Planning and Partnerships (MAPP) to address their NPHPSP data within the context of other community issues. In the MAPP process, local users consider the NPHPSP results in addition to three other assessments - community health status, community themes and strengths, and forces of change - before determining strategic issues, setting priorities, and developing action plans. See "Resources for Next Steps" for more about MAPP.

Use the optional priority rating and agency contribution questionnaire results

Sites may choose to complete two optional questionnaires - one which asks about priority of each model standard and the second which assesses the local health department's contribution to achieving of the model standard. The supplemental priority questionnaire, which asks about the priority of each model standard to the public health system, should guide sites in considering their performance scores in relationship to their own system's priorities. The use of this questionnaire can guide sites in targeting their limited attention and resources to areas of high priority but low performance. This information should serve to catalyze or strengthen the performance improvement activities resulting from the assessment process.

The second questionnaire, which asks about the contribution of the public health agency to each model standard, can assist sites in considering the role of the agency in performance improvement efforts. Sites that use this component will see a list of questions to consider regarding the agency role and as it relates to the results for each model standard. These results may assist the local health department in its own strategic planning and quality improvement activities.

IV. FINAL REMARKS

The challenge of preventing illness and improving health is ongoing and complex. The ability to meet this challenge rests on the capacity and performance of public health systems. Through well equipped, high-performing public health systems, this challenge can be addressed. Public health performance standards are intended to guide the development of stronger public health systems capable of improving the health of populations. The development of high-performing public health systems will increase the likelihood that all citizens have access to a defined optimal level of public health services. Through periodic assessment guided by model performance standards, public health leaders can improve collaboration and integration among the many components of a public health system, and more effectively and efficiently use resources while improving health intervention services.

B. Performance Assessment Instrument Results

I. How well did the system perform the ten Essential Public Health Services (EPHS)?

Table 1: Summary of performance scores by Essential Public Health Service (EPHS)

| EPHS | Score |
|---|-------|
| 1 Monitor Health Status To Identify Community Health Problems | 52 |
| 2 Diagnose And Investigate Health Problems and Health Hazards | 95 |
| 3 Inform, Educate, And Empower People about Health Issues | 66 |
| 4 Mobilize Community Partnerships to Identify and Solve Health Problems | 59 |
| 5 Develop Policies and Plans that Support Individual and Community Health Efforts | 67 |
| 6 Enforce Laws and Regulations that Protect Health and Ensure Safety | 92 |
| 7 Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 59 |
| 8 Assure a Competent Public and Personal Health Care Workforce | 72 |
| 9 Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 47 |
| 10 Research for New Insights and Innovative Solutions to Health Problems | 86 |
| Overall Performance Score | 70 |

Figure 1: Summary of EPHS performance scores and overall score (with range)

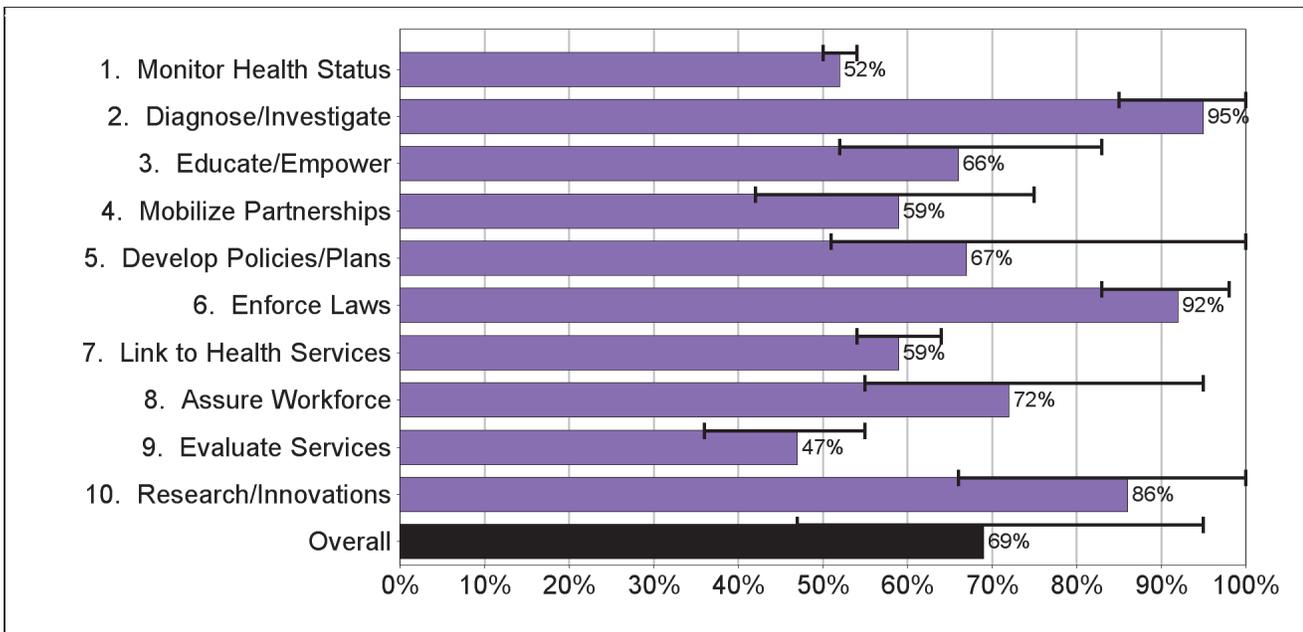


Table 1 (above) provides a quick overview of the system's performance in each of the 10 Essential Public Health Services (EPHS). Each EPHS score is a composite value determined by the scores given to those activities that contribute to each Essential Service. These scores range from a minimum value of 0% (no activity is performed pursuant to the standards) to a maximum of 100% (all activities associated with the standards are performed at optimal levels).

Figure 1 (above) displays performance scores for each Essential Service along with an overall score that indicates the average performance level across all 10 Essential Services. The range bars show the minimum and maximum values of responses within the Essential Service and an overall score. Areas of wide range may warrant a closer look in **Figure 4** or the raw data.

Figure 2: Rank ordered performance scores for each Essential Service

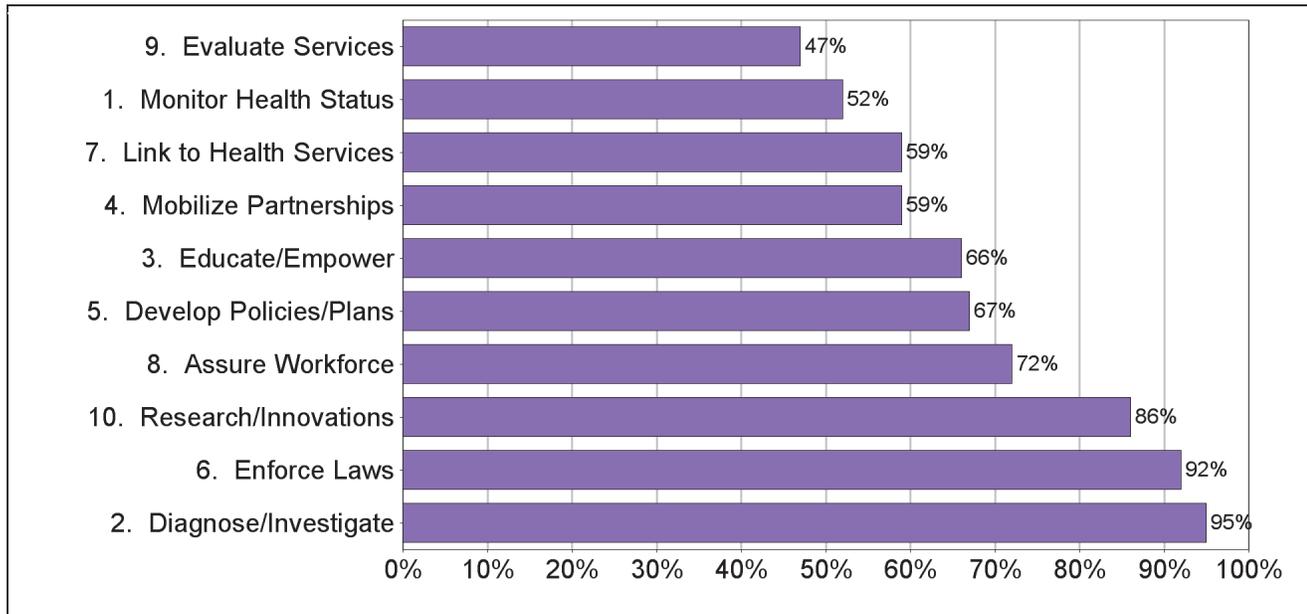


Figure 3: Rank ordered performance scores for each Essential Service, by level of activity

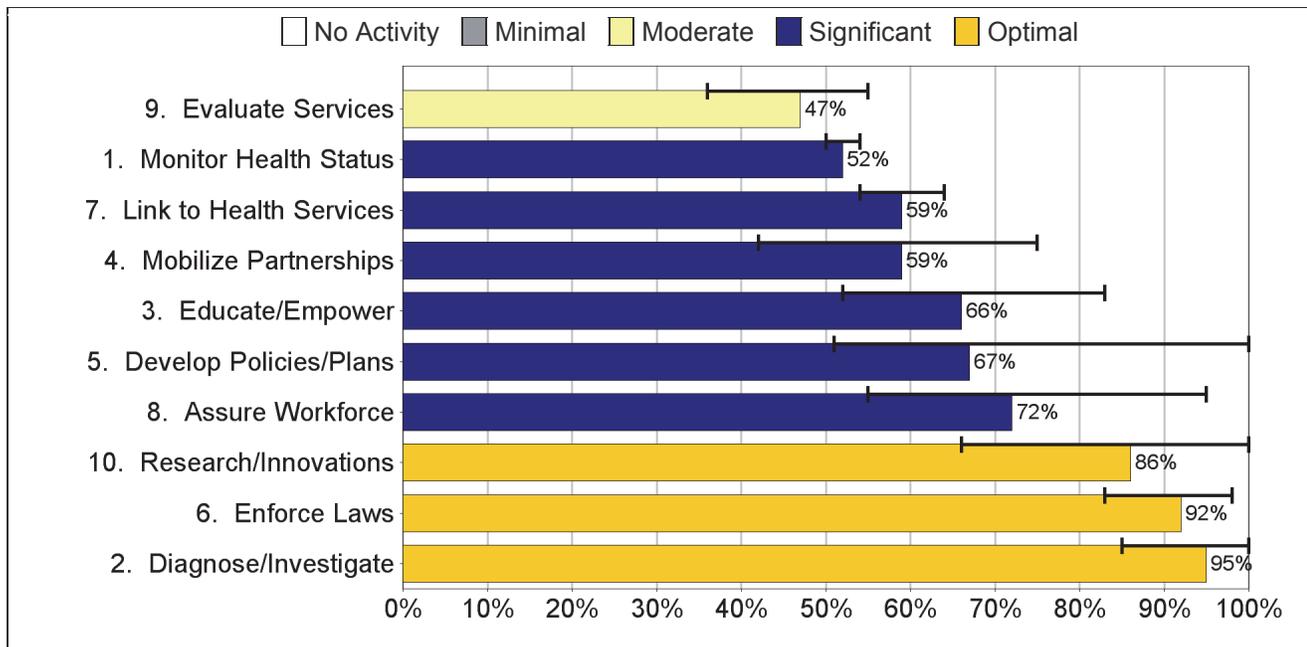


Figure 2 (above) displays each composite score from low to high, allowing easy identification of service domains where performance is relatively strong or weak.

Figure 3 (above) provides a composite picture of the previous two graphs. The range lines show the range of responses within an Essential Service. The color coded bars make it easier to identify which of the Essential Services fall in the five categories of performance activity.

Figure 4 (next page) shows scores for each model standard. Sites can use these graphs to pinpoint specific activities within the Essential Service that may need a closer look. Note these scores also have range bars, showing sub-areas that comprise the model standard.

II. How well did the system perform on specific model standards?

Figure 4: Performance scores for each model standard, by Essential Service

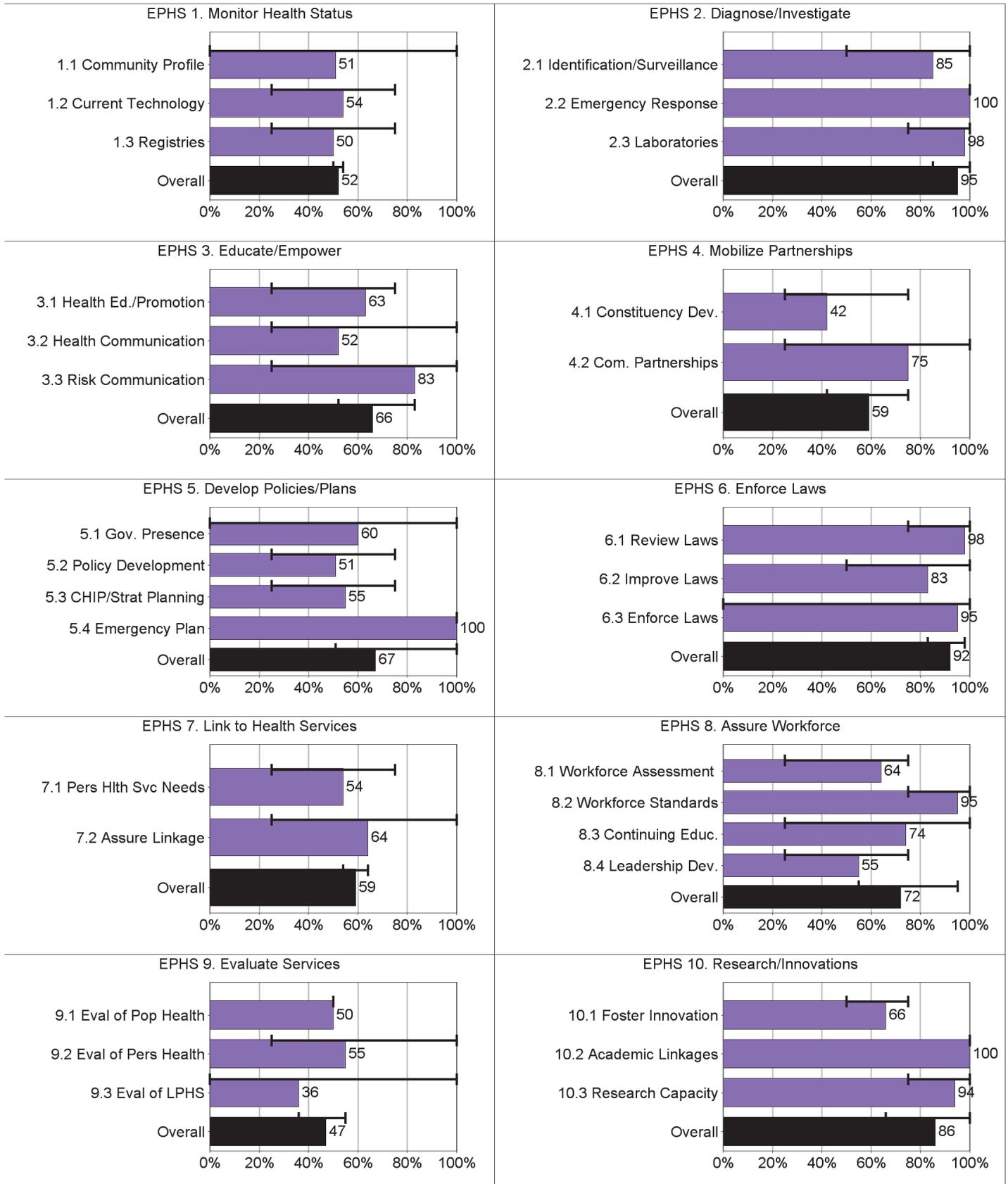


Table 2: Summary of performance scores by Essential Public Health Service (EPHS) and model standard

| Essential Public Health Service | Score |
|--|-------|
| EPHS 1. Monitor Health Status To Identify Community Health Problems | 52 |
| 1.1 Population-Based Community Health Profile (CHP) | 51 |
| 1.1.1 Community health assessment | 53 |
| 1.1.2 Community health profile (CHP) | 75 |
| 1.1.3 Community-wide use of community health assessment or CHP data | 25 |
| 1.2 Access to and Utilization of Current Technology to Manage, Display, Analyze and Communicate Population Health Data | 54 |
| 1.2.1 State-of-the-art technology to support health profile databases | 38 |
| 1.2.2 Access to geocoded health data | 50 |
| 1.2.3 Use of computer-generated graphics | 75 |
| 1.3 Maintenance of Population Health Registries | 50 |
| 1.3.1 Maintenance of and/or contribution to population health registries | 75 |
| 1.3.2 Use of information from population health registries | 25 |
| EPHS 2. Diagnose And Investigate Health Problems and Health Hazards | 95 |
| 2.1 Identification and Surveillance of Health Threats | 85 |
| 2.1.1 Surveillance system(s) to monitor health problems and identify health threats | 88 |
| 2.1.2 Submission of reportable disease information in a timely manner | 75 |
| 2.1.3 Resources to support surveillance and investigation activities | 94 |
| 2.2 Investigation and Response to Public Health Threats and Emergencies | 100 |
| 2.2.1 Written protocols for case finding, contact tracing, source identification, and containment | 100 |
| 2.2.2 Current epidemiological case investigation protocols | 100 |
| 2.2.3 Designated Emergency Response Coordinator | 100 |
| 2.2.4 Rapid response of personnel in emergency / disasters | 100 |
| 2.2.5 Evaluation of public health emergency response | 100 |
| 2.3 Laboratory Support for Investigation of Health Threats | 98 |
| 2.3.1 Ready access to laboratories for routine diagnostic and surveillance needs | 100 |
| 2.3.2 Ready access to laboratories for public health threats, hazards, and emergencies | 94 |
| 2.3.3 Licenses and/or credentialed laboratories | 100 |
| 2.3.4 Maintenance of guidelines or protocols for handling laboratory samples | 100 |
| EPHS 3. Inform, Educate, And Empower People about Health Issues | 66 |
| 3.1 Health Education and Promotion | 63 |
| 3.1.1 Provision of community health information | 69 |
| 3.1.2 Health education and/or health promotion campaigns | 63 |
| 3.1.3 Collaboration on health communication plans | 56 |
| 3.2 Health Communication | 52 |
| 3.2.1 Development of health communication plans | 53 |
| 3.2.2 Relationships with media | 42 |
| 3.2.3 Designation of public information officers | 63 |
| 3.3 Risk Communication | 83 |
| 3.3.1 Emergency communications plan(s) | 100 |
| 3.3.2 Resources for rapid communications response | 56 |
| 3.3.3 Crisis and emergency communications training | 75 |
| 3.3.4 Policies and procedures for public information officer response | 100 |

| Essential Public Health Service | Score |
|--|-------|
| EPHS 4. Mobilize Community Partnerships to Identify and Solve Health Problems | 59 |
| 4.1 Constituency Development | 42 |
| 4.1.1 Identification of key constituents or stakeholders | 69 |
| 4.1.2 Participation of constituents in improving community health | 31 |
| 4.1.3 Directory of organizations that comprise the LPHS | 38 |
| 4.1.4 Communications strategies to build awareness of public health | 31 |
| 4.2 Community Partnerships | 75 |
| 4.2.1 Partnerships for public health improvement activities | 96 |
| 4.2.2 Community health improvement committee | 93 |
| 4.2.3 Review of community partnerships and strategic alliances | 38 |
| EPHS 5. Develop Policies and Plans that Support Individual and Community Health Efforts | 67 |
| 5.1 Government Presence at the Local Level | 60 |
| 5.1.1 Governmental local public health presence | 71 |
| 5.1.2 Resources for the local health department | 60 |
| 5.1.3 Local board of health or other governing entity (not scored) | 0 |
| 5.1.4 LHD work with the state public health agency and other state partners | 50 |
| 5.2 Public Health Policy Development | 51 |
| 5.2.1 Contribution to development of public health policies | 46 |
| 5.2.2 Alert policymakers/public of public health impacts from policies | 50 |
| 5.2.3 Review of public health policies | 58 |
| 5.3 Community Health Improvement Process | 55 |
| 5.3.1 Community health improvement process | 52 |
| 5.3.2 Strategies to address community health objectives | 50 |
| 5.3.3 Local health department (LHD) strategic planning process | 63 |
| 5.4 Plan for Public Health Emergencies | 100 |
| 5.4.1 Community task force or coalition for emergency preparedness and response plans | 100 |
| 5.4.2 All-hazards emergency preparedness and response plan | 100 |
| 5.4.3 Review and revision of the all-hazards plan | 100 |
| EPHS 6. Enforce Laws and Regulations that Protect Health and Ensure Safety | 92 |
| 6.1 Review and Evaluate Laws, Regulations, and Ordinances | 98 |
| 6.1.1 Identification of public health issues to be addressed through laws, regulations, and ordinances | 100 |
| 6.1.2 Knowledge of laws, regulations, and ordinances | 100 |
| 6.1.3 Review of laws, regulations, and ordinances | 94 |
| 6.1.4 Access to legal counsel | 100 |
| 6.2 Involvement in the Improvement of Laws, Regulations, and Ordinances | 83 |
| 6.2.1 Identification of public health issues not addressed through existing laws | 100 |
| 6.2.2 Development or modification of laws for public health issues | 100 |
| 6.2.3 Technical assistance for drafting proposed legislation, regulations, or ordinances | 50 |
| 6.3 Enforce Laws, Regulations and Ordinances | 95 |
| 6.3.1 Authority to enforce laws, regulation, ordinances | 75 |
| 6.3.2 Public health emergency powers | 100 |
| 6.3.3 Enforcement in accordance with applicable laws, regulations, and ordinances | 100 |
| 6.3.4 Provision of information about compliance | 100 |
| 6.3.5 Assessment of compliance | 100 |

| Essential Public Health Service | Score |
|---|-------|
| EPHS 7. Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 59 |
| 7.1 Identification of Populations with Barriers to Personal Health Services | 54 |
| 7.1.1 Identification of populations who experience barriers to care | 75 |
| 7.1.2 Identification of personal health service needs of populations | 50 |
| 7.1.3 Assessment of personal health services available to populations who experience barriers to care | 38 |
| 7.2 Assuring the Linkage of People to Personal Health Services | 64 |
| 7.2.1 Link populations to needed personal health services | 75 |
| 7.2.2 Assistance to vulnerable populations in accessing needed health services | 50 |
| 7.2.3 Initiatives for enrolling eligible individuals in public benefit programs | 100 |
| 7.2.4 Coordination of personal health and social services | 31 |
| EPHS 8. Assure a Competent Public and Personal Health Care Workforce | 72 |
| 8.1 Workforce Assessment Planning, and Development | 64 |
| 8.1.1 Assessment of the LPHS workforce | 75 |
| 8.1.2 Identification of shortfalls and/or gaps within the LPHS workforce | 66 |
| 8.1.3 Dissemination of results of the workforce assessment / gap analysis | 50 |
| 8.2 Public Health Workforce Standards | 95 |
| 8.2.1 Awareness of guidelines and/or licensure/certification requirements | 100 |
| 8.2.2 Written job standards and/or position descriptions | 100 |
| 8.2.3 Annual performance evaluations | 75 |
| 8.2.4 LHD written job standards and/or position descriptions | 100 |
| 8.2.5 LHD performance evaluations | 100 |
| 8.3 Life-Long Learning Through Continuing Education, Training, and Mentoring | 74 |
| 8.3.1 Identification of education and training needs for workforce development | 85 |
| 8.3.2 Opportunities for developing core public health competencies | 50 |
| 8.3.3 Educational and training incentives | 88 |
| 8.3.4 Interaction between personnel from LPHS and academic organizations | 75 |
| 8.4 Public Health Leadership Development | 55 |
| 8.4.1 Development of leadership skills | 69 |
| 8.4.2 Collaborative leadership | 63 |
| 8.4.3 Leadership opportunities for individuals and/or organizations | 50 |
| 8.4.4 Recruitment and retention of new and diverse leaders | 38 |

| Essential Public Health Service | Score |
|---|-------|
| EPHS 9. Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 47 |
| 9.1 Evaluation of Population-based Health Services | 50 |
| 9.1.1 Evaluation of population-based health services | 50 |
| 9.1.2 Assessment of community satisfaction with population-based health services | 50 |
| 9.1.3 Identification of gaps in the provision of population-based health services | 50 |
| 9.1.4 Use of population-based health services evaluation | 50 |
| 9.2 Evaluation of Personal Health Care Services | 55 |
| 9.2.1. In Personal health services evaluation | 42 |
| 9.2.2 Evaluation of personal health services against established standards | 100 |
| 9.2.3 Assessment of client satisfaction with personal health services | 25 |
| 9.2.4 Information technology to assure quality of personal health services | 81 |
| 9.2.5 Use of personal health services evaluation | 25 |
| 9.3 Evaluation of the Local Public Health System | 36 |
| 9.3.1 Identification of community organizations or entities that contribute to the EPHS | 100 |
| 9.3.2 Periodic evaluation of LPHS | 25 |
| 9.3.3 Evaluation of partnership within the LPHS | 21 |
| 9.3.4 Use of LPHS evaluation to guide community health improvements | 0 |
| EPHS 10. Research for New Insights and Innovative Solutions to Health Problems | 86 |
| 10.1 Fostering Innovation | 66 |
| 10.1.1 Encouragement of new solutions to health problems | 63 |
| 10.1.2 Proposal of public health issues for inclusion in research agenda | 75 |
| 10.1.3 Identification and monitoring of best practices | 75 |
| 10.1.4 Encouragement of community participation in research | 50 |
| 10.2 Linkage with Institutions of Higher Learning and/or Research | 100 |
| 10.2.1 Relationships with institutions of higher learning and/or research organizations | 100 |
| 10.2.2 Partnerships to conduct research | 100 |
| 10.2.3 Collaboration between the academic and practice communities | 100 |
| 10.3 Capacity to Initiate or Participate in Research | 94 |
| 10.3.1 Access to researchers | 100 |
| 10.3.2 Access to resources to facilitate research | 100 |
| 10.3.3 Dissemination of research findings | 75 |
| 10.3.4 Evaluation of research activities | 100 |

III. Overall, how well is the system achieving optimal activity levels?

Figure 5: Percentage of Essential Services scored in each level of activity

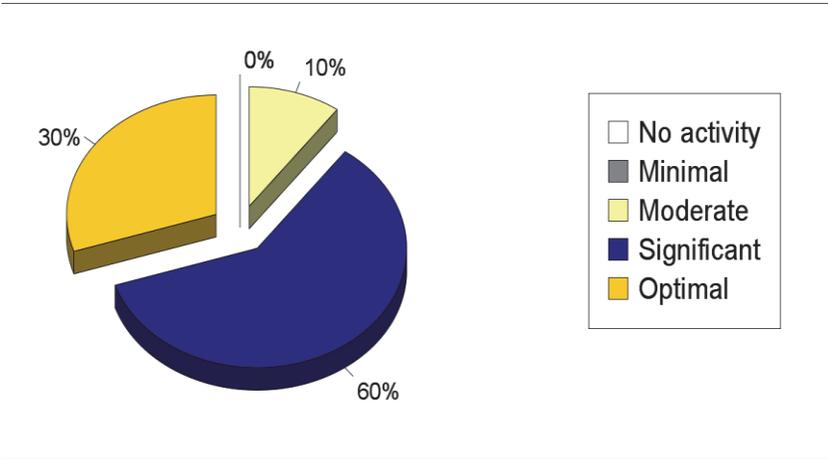


Figure 5 displays the percentage of the system's Essential Services scores that fall within the five activity categories. This chart provides the site with a high level snapshot of the information found in Figure 3.

Figure 6: Percentage of model standards scored in each level of activity

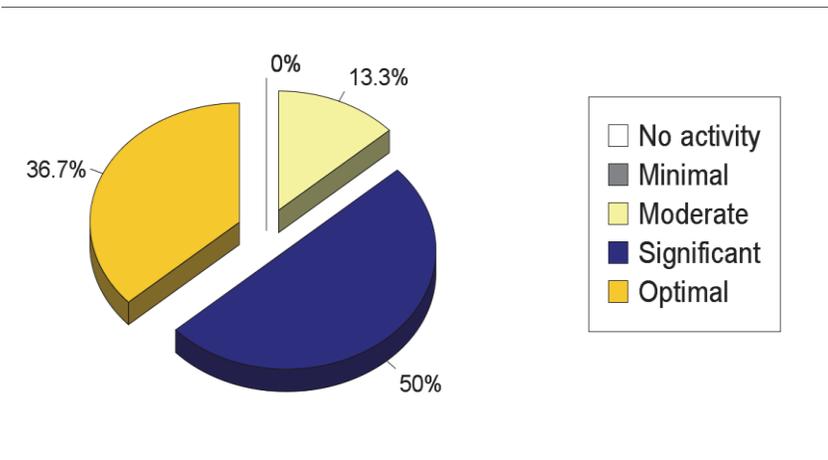


Figure 6 displays the percentage of the system's model standard scores that fall within the five activity categories.

Figure 7: Percentage of all questions scored in each level of activity

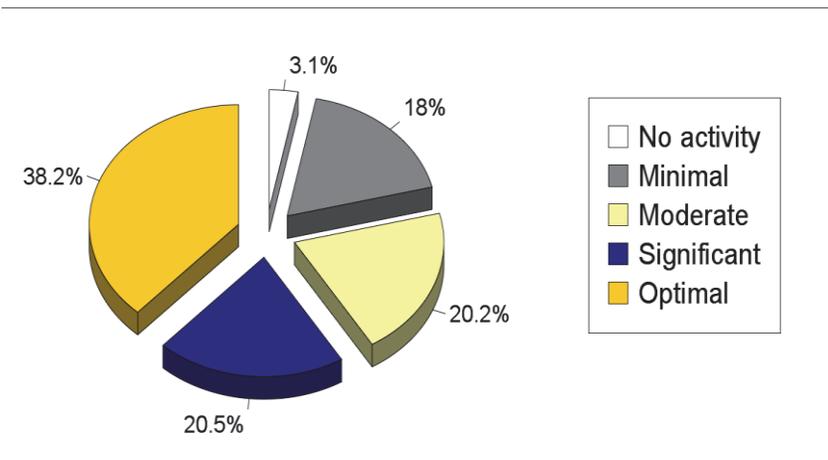


Figure 7 displays the percentage of all scored questions that fall within the five activity categories. This breakdown provides a closer snapshot of the system's performance, showing variation that may be masked by the scores in Figures 5 and 6.

C. Optional Priority Rating Results

What are potential areas for attention, based on the priority ratings and performance scores?

Tables 3 and 4 show priority ratings (as rated by participants on a 1-10 scale, with 10 being the highest) and performance scores for Essential Services and model standards, arranged under the four quadrants in Figures 8 and 9, which follow the tables. The four quadrants, which are based on how the performance of each Essential Service and/or model standard compares with the priority rating, should provide guidance in considering areas for attention and next steps for performance improvement.

Table 3: Essential Service by priority rating and performance score, with areas for attention

| Essential Service | Priority Rating | Performance Score (level of activity) |
|--|-----------------|---------------------------------------|
| Quadrant I (High Priority/Low Performance) - These important activities may need increased attention. | | |
| 1. Monitor Health Status To Identify Community Health Problems | 8 | 52 (Significant) |
| 3. Inform, Educate, And Empower People about Health Issues | 9 | 66 (Significant) |
| 4. Mobilize Community Partnerships to Identify and Solve Health Problems | 8 | 59 (Significant) |
| 5. Develop Policies and Plans that Support Individual and Community Health Efforts | 9 | 67 (Significant) |
| 7. Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 9 | 59 (Significant) |
| Quadrant II (High Priority/High Performance) - These activities are being done well, and it is important to maintain efforts. | | |
| 2. Diagnose And Investigate Health Problems and Health Hazards | 9 | 95 (Optimal) |
| 6. Enforce Laws and Regulations that Protect Health and Ensure Safety | 8 | 92 (Optimal) |
| 8. Assure a Competent Public and Personal Health Care Workforce | 8 | 72 (Significant) |
| Quadrant III (Low Priority/High Performance) - These activities are being done well, but the system can shift or reduce some resources or attention to focus on higher priority activities. | | |
| 10. Research for New Insights and Innovative Solutions to Health Problems | 6 | 86 (Optimal) |
| Quadrant IV (Low Priority/Low Performance) - These activities could be improved, but are of low priority. They may need little or no attention at this time. | | |
| 9. Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 7 | 47 (Moderate) |

Table 4: Model standards by priority and performance score, with areas for attention

| Model Standard | Priority Rating | Performance Score (level of activity) |
|--|-----------------|---------------------------------------|
| Quadrant I (High Priority/Low Performance) - These important activities may need increased attention. | | |
| 1.1 Population-Based Community Health Profile (CHP) | 8 | 51 (Significant) |
| 1.2 Access to and Utilization of Current Technology to Manage, Display, Analyze and Communicate Population Health Data | 8 | 54 (Significant) |
| 3.1 Health Education and Promotion | 9 | 63 (Significant) |
| 3.2 Health Communication | 8 | 52 (Significant) |
| 5.1 Government Presence at the Local Level | 9 | 60 (Significant) |
| 5.2 Public Health Policy Development | 8 | 51 (Significant) |
| 5.3 Community Health Improvement Process | 8 | 55 (Significant) |
| 7.1 Identification of Populations with Barriers to Personal Health Services | 9 | 54 (Significant) |
| 7.2 Assuring the Linkage of People to Personal Health Services | 9 | 64 (Significant) |
| 8.1 Workforce Assessment Planning, and Development | 9 | 64 (Significant) |
| Quadrant II (High Priority/High Performance) - These activities are being done well, and it is important to maintain efforts. | | |
| 2.1 Identification and Surveillance of Health Threats | 9 | 85 (Optimal) |
| 2.2 Investigation and Response to Public Health Threats and Emergencies | 9 | 100 (Optimal) |
| 2.3 Laboratory Support for Investigation of Health Threats | 9 | 98 (Optimal) |
| 3.3 Risk Communication | 9 | 83 (Optimal) |
| 4.2 Community Partnerships | 9 | 75 (Significant) |
| 5.4 Plan for Public Health Emergencies | 10 | 100 (Optimal) |
| 6.3 Enforce Laws, Regulations and Ordinances | 10 | 95 (Optimal) |
| 8.2 Public Health Workforce Standards | 9 | 95 (Optimal) |
| Quadrant III (Low Priority/High Performance) - These activities are being done well, but the system can shift or reduce some resources or attention to focus on higher priority activities. | | |
| 6.1 Review and Evaluate Laws, Regulations, and Ordinances | 7 | 98 (Optimal) |
| 6.2 Involvement in the Improvement of Laws, Regulations, and Ordinances | 7 | 83 (Optimal) |
| 8.3 Life-Long Learning Through Continuing Education, Training, and Mentoring | 7 | 74 (Significant) |
| 10.2 Linkage with Institutions of Higher Learning and/or Research | 6 | 100 (Optimal) |
| 10.3 Capacity to Initiate or Participate in Research | 6 | 94 (Optimal) |
| Quadrant IV (Low Priority/Low Performance) - These activities could be improved, but are of low priority. They may need little or no attention at this time. | | |
| 1.3 Maintenance of Population Health Registries | 7 | 50 (Significant) |
| 4.1 Constituency Development | 6 | 42 (Moderate) |
| 8.4 Public Health Leadership Development | 7 | 55 (Significant) |
| 9.1 Evaluation of Population-based Health Services | 7 | 50 (Significant) |
| 9.2 Evaluation of Personal Health Care Services | 7 | 55 (Significant) |
| 9.3 Evaluation of the Local Public Health System | 6 | 36 (Moderate) |
| 10.1 Fostering Innovation | 7 | 66 (Significant) |

Figures 8 and 9 (below) display Essential Services and model standards data within the following four categories using adjusted priority rating data:

Quadrant I (High Priority/Low Performance) - These important activities may need increased attention.

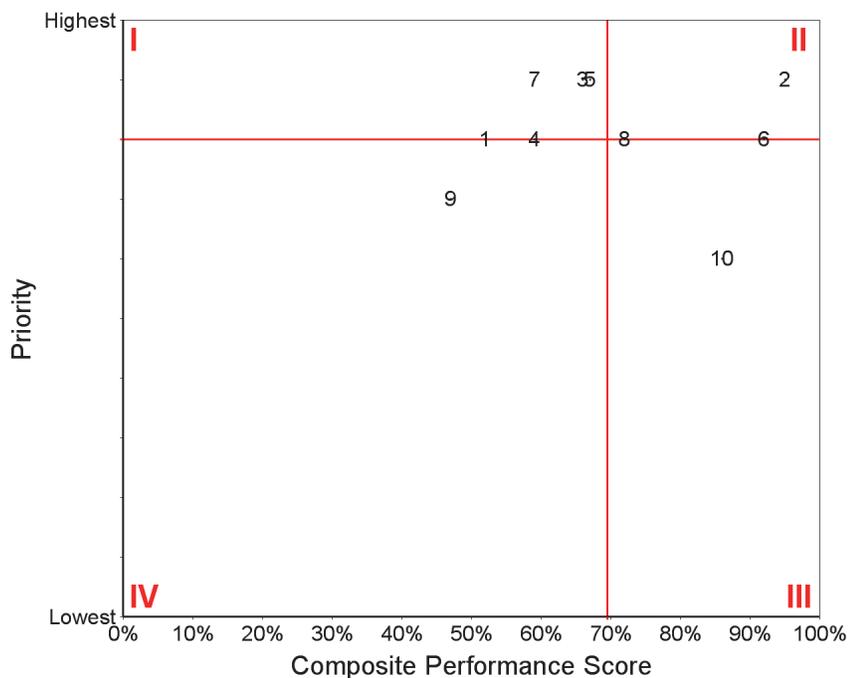
Quadrant II (High Priority/High Performance) - These activities are being done well, and it is important to maintain efforts.

Quadrant III (Low Priority/High Performance) - These activities are being done well, but the system can shift or reduce some resources or attention to focus on higher priority activities.

Quadrant IV (Low Priority/Low Performance) - These activities could be improved, but are of low priority. They may need little or no attention at this time.

The priority data are calculated based on the percentage standard deviation from the mean. Performance scores above the median value are displayed in the "high" performance quadrants. All other levels are displayed in the "low" performance quadrants. Essential Service data are calculated as a mean of model standard ratings within each Essential Service. In cases where performance scores and priority ratings are identical or very close, the numbers in these figures may overlap. To distinguish any overlapping numbers, please refer to the raw data or Table 4.

Figure 8: Scatter plot of Essential Service scores and priority ratings



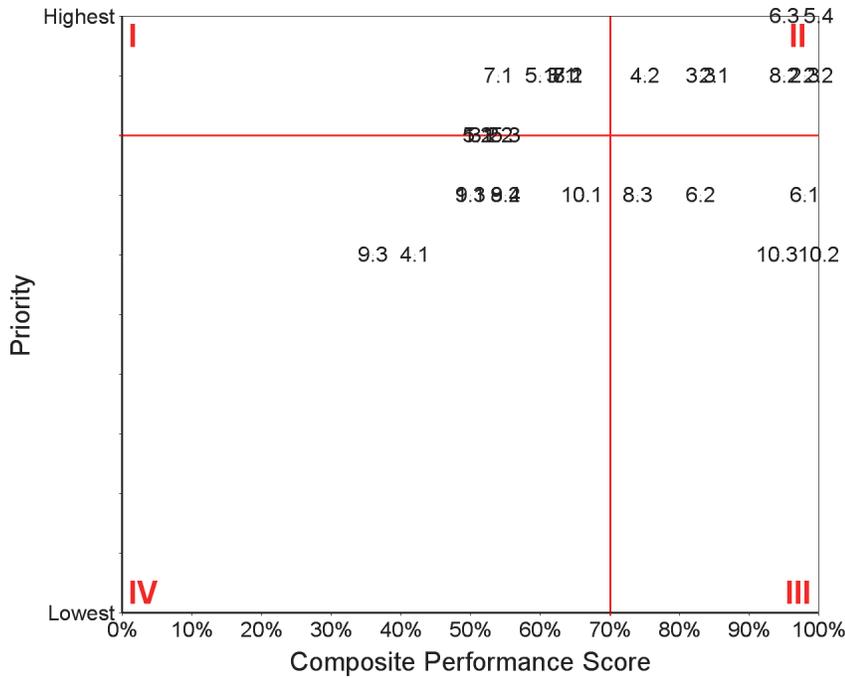
I (High Priority/Low Performance) - may need increased attention.

II (High Priority/High Performance) - important to maintain efforts.

III (Low Priority/High Performance) - potential areas to reduce efforts.

IV (Low Priority/Low Performance) - may need little or no attention.

Figure 9: Scatter plot of model standards scores and priority ratings



I (High Priority/Low Performance) - may need increased attention.

II (High Priority/High Performance) - important to maintain efforts.

III (Low Priority/High Performance) - potential areas to reduce efforts.

IV (Low Priority/Low Performance) - may need little or no attention.

D. Optional agency contribution results

How much does the Local Health Department contribute to the system's performance, as perceived by assessment participants?

Tables 5 and 6 (below) display Essential Services and model standards arranged by Local Health Department (LHD) contribution (Highest to Lowest) and performance score. Sites may want to consider the questions listed before these tables to further examine the relationship between the system and Department in achieving Essential Services and model standards. Questions to consider are suggested based on the four categories or "quadrants" displayed in Figures 10 and 11.

| Quadrant | | Questions to Consider |
|----------|--|---|
| I. | Low Performance/High Department Contribution | <ul style="list-style-type: none"> • Is the Department's level of effort truly high, or do they just do more than anyone else? • Is the Department effective at what it does, and does it focus on the right things? • Is the level of Department effort sufficient for the jurisdiction's needs? • Should partners be doing more, or doing different things? • What else within or outside of the Department might be causing low performance? |
| II. | High Performance/High Department Contribution | <ul style="list-style-type: none"> • What does the Department do that may contribute to high performance in this area? Could any of these strategies be applied to other areas? • Is the high Department contribution appropriate, or is the Department taking on what should be partner responsibilities? • Could the Department do less and maintain satisfactory performance? |
| III. | High Performance/Low Department Contribution | <ul style="list-style-type: none"> • Who are the key partners that contribute to this area? What do they do that may contribute to high performance? Could any of these strategies be applied to other areas? • Does the low Department contribution seem right for this area, or are partners picking up slack for Department responsibilities? • Does the Department provide needed support for partner efforts? • Could the key partners do less and maintain satisfactory performance? |
| IV. | Low Performance/Low Department Contribution | <ul style="list-style-type: none"> • Who are the key partners that contribute to this area? Are their contributions truly high, or do they just do more than the Department? • Is the total level of effort sufficient for the jurisdiction's needs? • Are partners effective at what they do, and do they focus on the right things? • Does the low Department contribution seem right for this area, or is it likely to be contributing to low performance? • Does the Department provide needed support for partner efforts? • What else might be causing low performance? |

Table 5: Essential Service by perceived LHD contribution and score

| Essential Service | LHD Contribution | Performance Score | Consider Questions for: |
|--|------------------|-------------------|-------------------------|
| 1. Monitor Health Status To Identify Community Health Problems | 83% | Significant (52) | Quadrant I |
| 2. Diagnose And Investigate Health Problems and Health Hazards | 100% | Optimal (95) | Quadrant II |
| 3. Inform, Educate, And Empower People about Health Issues | 58% | Significant (66) | Quadrant I |
| 4. Mobilize Community Partnerships to Identify and Solve Health Problems | 50% | Significant (59) | Quadrant I |
| 5. Develop Policies and Plans that Support Individual and Community Health Efforts | 50% | Significant (67) | Quadrant I |
| 6. Enforce Laws and Regulations that Protect Health and Ensure Safety | 75% | Optimal (92) | Quadrant II |
| 7. Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable | 75% | Significant (59) | Quadrant I |
| 8. Assure a Competent Public and Personal Health Care Workforce | 31% | Significant (72) | Quadrant III |
| 9. Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services | 33% | Moderate (47) | Quadrant IV |
| 10. Research for New Insights and Innovative Solutions to Health Problems | 33% | Optimal (86) | Quadrant III |

Table 6: Model standards by perceived LHD contribution and score

| Model Standard | LHD Contribution | Performance Score | Consider Questions for: |
|--|------------------|-------------------|-------------------------|
| 1.1 Population-Based Community Health Profile (CHP) | 100% | Significant (51) | Quadrant I |
| 1.2 Access to and Utilization of Current Technology to Manage, Display, Analyze and Communicate Population Health Data | 50% | Significant (54) | Quadrant I |
| 1.3 Maintenance of Population Health Registries | 100% | Significant (50) | Quadrant I |
| 2.1 Identification and Surveillance of Health Threats | 100% | Optimal (85) | Quadrant II |
| 2.2 Investigation and Response to Public Health Threats and Emergencies | 100% | Optimal (100) | Quadrant II |
| 2.3 Laboratory Support for Investigation of Health Threats | 100% | Optimal (98) | Quadrant II |
| 3.1 Health Education and Promotion | 50% | Significant (63) | Quadrant I |
| 3.2 Health Communication | 50% | Significant (52) | Quadrant I |
| 3.3 Risk Communication | 75% | Optimal (83) | Quadrant II |
| 4.1 Constituency Development | 50% | Moderate (42) | Quadrant I |
| 4.2 Community Partnerships | 50% | Significant (75) | Quadrant II |
| 5.1 Government Presence at the Local Level | 25% | Significant (60) | Quadrant IV |
| 5.2 Public Health Policy Development | 25% | Significant (51) | Quadrant IV |
| 5.3 Community Health Improvement Process | 50% | Significant (55) | Quadrant I |
| 5.4 Plan for Public Health Emergencies | 100% | Optimal (100) | Quadrant II |
| 6.1 Review and Evaluate Laws, Regulations, and Ordinances | 75% | Optimal (98) | Quadrant II |
| 6.2 Involvement in the Improvement of Laws, Regulations, and Ordinances | 50% | Optimal (83) | Quadrant II |
| 6.3 Enforce Laws, Regulations and Ordinances | 100% | Optimal (95) | Quadrant II |
| 7.1 Identification of Populations with Barriers to Personal Health Services | 75% | Significant (54) | Quadrant I |
| 7.2 Assuring the Linkage of People to Personal Health Services | 75% | Significant (64) | Quadrant I |
| 8.1 Workforce Assessment Planning, and Development | 25% | Significant (64) | Quadrant IV |
| 8.2 Public Health Workforce Standards | 25% | Optimal (95) | Quadrant III |
| 8.3 Life-Long Learning Through Continuing Education, Training, and Mentoring | 25% | Significant (74) | Quadrant III |
| 8.4 Public Health Leadership Development | 50% | Significant (55) | Quadrant I |
| 9.1 Evaluation of Population-based Health Services | 25% | Significant (50) | Quadrant IV |
| 9.2 Evaluation of Personal Health Care Services | 50% | Significant (55) | Quadrant I |
| 9.3 Evaluation of the Local Public Health System | 25% | Moderate (36) | Quadrant IV |
| 10.1 Fostering Innovation | 25% | Significant (66) | Quadrant IV |
| 10.2 Linkage with Institutions of Higher Learning and/or Research | 50% | Optimal (100) | Quadrant II |
| 10.3 Capacity to Initiate or Participate in Research | 25% | Optimal (94) | Quadrant III |

Figure 10: Scatter plot of Essential Service scores and LHD contribution scores

Essential Service data are calculated as a mean of model standard ratings within each Essential Service.

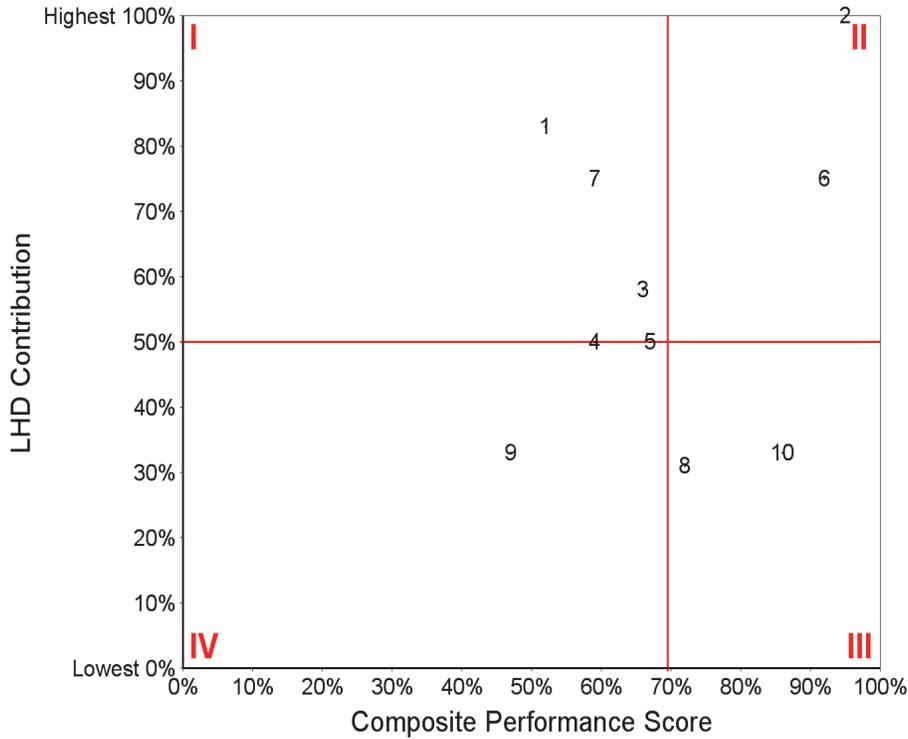
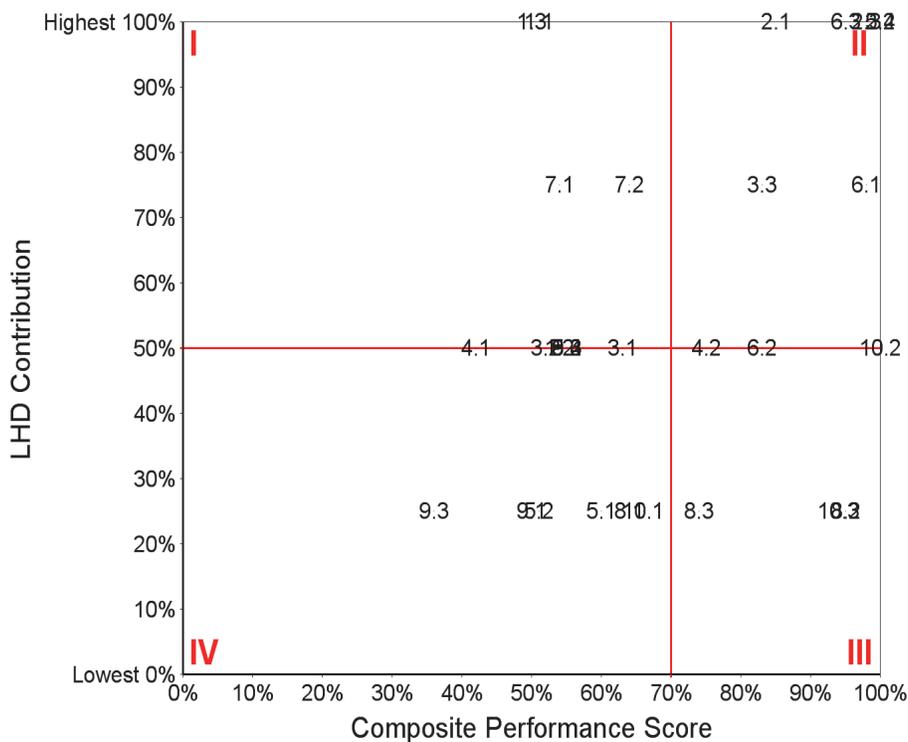


Figure 11: Scatter plot of model standard scores and LHD contribution scores



APPENDIX: RESOURCES FOR NEXT STEPS

The NPHPSP offers a variety of information, technical assistance, and training resources to assist in quality improvement activities. Descriptions of these resources are provided below. Other resources and websites that may be of particular interest to NPHPSP users are also noted below.

- **Technical Assistance and Consultation** - NPHPSP partners are available for phone and email consultation to state and localities as they plan for and conduct NPHPSP assessment and performance improvement activities. Contact 1-800-747-7649 or phpsp@cdc.gov.
- **NPHPSP User Guide** - The NPHPSP User Guide section, "After We Complete the Assessment, What Next?" describes five essential steps in a performance improvement process following the use of the NPHPSP assessment instruments. The NPHPSP User Guide may be found on the NPHPSP website (www.cdc.gov/od/ocphp/nphpsp/).
- **NPHPSP Online Tool Kit** - Additional resources that may be found on, or are linked to, the NPHPSP website (www.cdc.gov/od/ocphp/nphpsp/) under the "Post Assessment/ Performance Improvement" link include sample performance improvement plans, quality improvement and priority-setting tools, and other technical assistance documents and links.
- **NPHPSP Online Resource Center** - Designed specifically for NPHPSP users, the Public Health Foundation's online resource center (www.phf.org/nphpsp) for public health systems performance improvement allows users to search for State, Local, and Governance resources by [model standard](#), [essential public health service](#), and [keyword](#). Alternately, users may read or print the resource guides available on this site.
- **NPHPSP Monthly User Calls** - These calls feature speakers and dialogue on topic of interest to users. They also provide an opportunity for people from around the country to learn from each other about various approaches to the NPHPSP assessment and performance improvement process. Calls occur on the third Tuesday of each month, 2:00 - 3:00 ET. Contact phpsp@cdc.gov to be added to the email notification list for the call.
- **Annual Training Workshop** - Individuals responsible for coordinating performance assessment and improvement activities may attend an annual two-day workshop held in the spring of each year. Visit the NPHPSP website (www.cdc.gov/od/ocphp/nphpsp/) for more information.
- **Improving Performance Newsletter and the Public Health Infrastructure Resource Center at the Public Health Foundation** - This website (www.phf.org/performance) presents tools and resources that can help organizations streamline efforts and get better results. A five minute orientation presentation provides an orientation on how to access quality improvement resources on the site. The website also includes information about the *Improving Performance* Newsletter, which contains lessons from the field, resources, and tips designed to help NPHPSP users with their performance management efforts. Read past issues or sign up for future issues at: www.phf.org/performance.
- **Mobilizing for Action through Planning and Partnerships (MAPP)** - MAPP has proven to be a particularly helpful tool for sites engaged in community-based health improvement planning. Systems that have just completed the NPHPSP may consider using the MAPP process as a way to launch their performance improvement efforts. Go to www.naccho.org/topics/infrastructure/MAPP to link directly to the MAPP website.

Appendix R

Strengths and Areas of Concern Identified for Each EPHS

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|--|--|---|
| 1. Monitor health status to identify community health problems (52) | <p>Data about the community is widely available; however, it is sometimes difficult to obtain county-specific data.</p> <p>Individual organizations conduct a variety of community assessments and rely on these intra-organizational assessments to inform policy and planning decisions.</p> <p>Some individual organizations use data to monitor progress toward health-related objectives.</p> <p>State-of-the-art technology exists to support health profile databases. For example, VDH, Radford University, and Virginia Tech have GIS systems to collect data, and Carilion uses web-based systems.</p> <p>Population health registries are maintained.</p> | <p>Lack of coordination of community assessment data with other available data to provide a comprehensive community health profile.</p> <p>There needs to be greater accessibility of available data beyond the Internet.</p> <p>Much of the available general health data is not geocoded and not compiled to be easily accessible.</p> <p>Limited use of public health registries within the LPHS.</p> <p>Sustaining assessments and programs is dependent upon funding.</p> <p>Inadequate data communication between systems.</p> <p>Limited information on animals (dog/cat vaccinations, etc.) in spite of having Virginia's only vet school as part of the LPHS</p> |
| 2. Diagnose and investigate health problems and health hazards (95) | <p>Communicable disease surveillance and investigative laboratory services in the NRV are excellent.</p> <p>Emergency preparedness and response funding supports health hazard surveillance and investigative activities.</p> <p>LPHS has tremendous integration throughout the entire system to support any response and investigation to a public health threat or emergency.</p> | <p>Surveillance of non-communicable disease, particularly chronic diseases needs improvement and is linked to lack of resources.</p> <p>Emergency planning can dominate and monopolize time and resources, and ultimately reduce assets for other public health activities.</p> |

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|--|---|--|
| <p>3. Inform, educate, and empower individuals and communities about health issues (66)</p> | <p>A significant amount of health information is disseminated throughout the NRV by many organizations. A good example of this was pandemic influenza.</p> <p>Educational materials are available in both English and Spanish, and these are being developed in other languages.</p> <p>There is good access to mass media health education material.</p> <p>Many agencies and healthcare facilities offer free or low cost health education programs.</p> <p>Certain activities and organizations have a strong, active volunteer base (e.g., The Free Clinic of the NRV, fire/EMS).</p> <p>Emergency planning, communication, training, and coordination work well in the NRV.</p> <p>There are only a small number of public information officers in the Region. Larger organizations have designated public information officers.</p> | <p>Health promotion and education information could be improved by the development of a health communication plan(s) that would improve collaboration among agencies—reducing duplication and improving coordination and distribution systems.</p> <p>There is a need for more timely and immediately available data.</p> <p>It was noted that educational materials are commonly prepared at too “high” a level. Health literacy can hamper effective health promotion. Language and cultural literacy were noted as limitations in health communication.</p> <p>There is a need for more education on basic anatomy, prevention, and public health starting earlier within the school systems.</p> <p>Lack of emphasis on educating the general public about chronic disease and basic everyday health issues is a problem.</p> <p>A stronger collaborative relationship between the LPHS and the media is needed.</p> <p>There is limited exposure, as well as health education and promotion, in the NRV jails from non-governmental LPHS partners.</p> <p>Limited resources exist for rapid communications response. Often a staffing/organizational commitment to emergency communications is lacking, particularly in smaller agencies.</p> <p>In some locations, wireless and technical tools do not function well due to inadequate coverage.</p> |

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|---|--|---|
| <p>4. Mobilize community partnerships to identify and solve health problems (59)</p> | <p>Some organizations (such as The Free Clinic of the NRV and local fire/EMS) have a strong, active volunteer pool.</p> <p>The NRV has a long-standing and successful partnership, PATH, which has been in existence since 1995 and has many successful community health improvement efforts.</p> | <p>NRV LPHS lacks strong “grass-roots” constituent participation in improving community health.</p> <p>There is a lack of communication strategies to build awareness of public health.</p> <p>There is a need for interoperability, i.e., better coordination and reduced duplication of services, as well as leveraging of resources—among agencies and organizations.</p> <p>Further needs-based assessment data would help to identify key “grass-roots” constituents and general/specific health issues to address.</p> <p>Some opportunities for community partnerships and strategic alliances are being lost due to “turf” issues and a lack of stated/underlying community goals.</p> <p>More partnerships with the business community are needed.</p> |
| <p>5. Develop policies and plans that support individual and community health efforts (67)</p> | <p>The current LPHSA is happening and participation from system partners is strong!</p> <p>The local health departments and the NRHD leadership team have a strong and well-respected presence in the NRV.</p> <p>NRHD, other state agencies, and community partners in the NRV regularly review public health policies.</p> <p>Several examples of lobbying efforts and advocacy by LPHS partners were discussed included hospitals, NRV Mental Health Association, and the Virginia Interfaith Council.</p> <p>There is an all-hazards plan, developed collaboratively, and a regional community task force for emergency preparedness and response.</p> | <p>The NRHD does not have enough resources to perform optimally.</p> <p>The local health departments have current documentation describing their responsibilities and activities, but many system partners and community members are not aware of the documentation.</p> <p>Most members of the LPHS do not contribute to the development of public health policy at the state and national levels. The LPHS has local input with other agencies.</p> <p>It was noted that the disenfranchised have very little to no voice in public policy at any level.</p> <p>Funding is more likely to influence programs than community needs. For example, funding for emergency preparedness and response, as well as funding for maternal and child health services have resulted in strong partnerships and health department visibility.</p> <p>A system is needed to bring together system partners to advocate for policies that improve the community’s health at a local, state, and national level.</p> |

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|--|--|---|
| <p>6. Enforce laws and regulations to protect health and ensure safety (92)</p> | <p>There was a consistently optimal performance in all aspects of regulation and enforcement.</p> <p>A good example of enforcement is the NRHD enforcing restaurant regulations and closing restaurants for major violations.</p> <p>It was noted that all LPHS partners must comply with certain laws, etc. such as due process and civil rights protections.</p> | <p>Access to legal counsel is available, but not always timely. Technical assistance for drafting proposed legislation, regulations, and ordinance was noted to be moderate.</p> <p>Updating public health laws, regulations, and ordinances is in the hands of the State legislature due to the “Dillon Rule;” a review/updating process for the LPHS is not available.</p> |
| <p>7. Link people to needed personal health services and assure the provision of healthcare when otherwise unavailable (59)</p> | <p>NRV health and human service providers are working collaboratively to identify problems of various populations and strengthening their databases to connect more clients to community services through case management.</p> <p>It was noted that, in 1995, PATH was instrumental in initially identifying specific NRV populations needed healthcare services that were needed for specific populations and barriers to care faced by these populations.</p> <p>NRV health and human service providers are working to integrate their provision of services including their interoperability and provide better access.</p> | <p>The LPHS identifies, but does not quantify, personal health service needs of populations; and there is no systematic approach in place. The LPHS is unable to identify how populations are using multiple services because there is no tracking system.</p> <p>Many barriers were identified including 1) difficulty linking Medicaid clients to personal healthcare providers due to limited numbers of providers in certain areas such as dental, mental health, and obstetrics, as well as providers who limit the number of Medicaid patients accepted in their practices; and 2) limited transportation services available for those with special needs.</p> <p>Reaching vulnerable and special needs populations in an emergency is a problem, but is presently being addressed in emergency preparedness and response planning.</p> <p>There are some limitations in linking and providing services to specific populations (e.g., mental health, HIV) because of legal restrictions.</p> <p>There are many partnerships in the NRV focused on linking high-risk and vulnerable populations to and assuring healthcare, but very few of these are with businesses.</p> <p>There is need for better coordination of personal health and social services.</p> |

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|---|--|---|
| <p>8. Assure a competent public and personal healthcare workforce (72)</p> | <p>Some workforce assessments have been conducted (hospital, NRHD). For example, the United Way of the NRV requires this as part of its funding of community organizations. It was felt that the private sector does a better job of this.</p> <p>The LPHS workforce has significant opportunities for meeting licensure requirements, receiving performance evaluations, and developing competencies.</p> <p>There are numerous distance learning opportunities available.</p> <p>There is an optimal level of interaction between NRV LPHS workforce and academia—particularly in service provision; program planning, development, and implementation.</p> <p>The resources of the academic community (e.g., student interns, work study, etc.) are regularly utilized by NRV LPHS partners; however, we need to do more.</p> | <p>There is a need for more comprehensive, system-wide workforce assessment(s). Those that are available have not been comprehensively analyzed to determine LPHS gaps.</p> <p>Community leaders are aware of the existing workforce assessments, but not the community.</p> <p>With decreasing budgets, funding for training and workforce development is one of the first budget items to be cut.</p> <p>Limited funding prevents monetary incentives for training and staff development, as well as distance learning opportunities.</p> <p>Increased education and training does not necessarily correlate with career advancement.</p> <p>Smaller organizations may not have the staffing depth needed to allow staff to take advantage of distance learning opportunities during work time.</p> <p>Healthcare providers' offices may have computers, but do not always take advantage of distance learning opportunities.</p> <p>Better recruitment and retention of new and diverse leaders is needed.</p> |

| Essential Public Health Service (composite score) | Strengths | Areas of Concern |
|---|---|--|
| <p>9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services (47)</p> | <p>Optimal evaluation of personal health services against established standards by many organizations.</p> <p>The amount of data available from assessments including water quality, environmental health inspections, youth and adult risk behavior survey, and immunization rate tracking was noted to be excellent.</p> <p>Within specific organizations such as the NRHD, there was excellent use of information technology to assure quality of personal health services (e.g., immunizations); larger LPHS entities exhibited a greater ability to achieve this goal.</p> <p>Program goals are evaluated as driven by funding requirements.</p> <p>Optimal identification of community organizations that contribute to the EPHS.</p> | <p>The evaluation process of personal health services can sometimes be challenging in scope and measure, with ultimate assessments that are unfocused and inconsequential. A few agencies and organizations are not using personal health services evaluations.</p> <p>Smaller LPHS providers are not evaluating effectiveness.</p> <p>Moderate use of information technology to assure quality of personal health services.</p> <p>Questions were raised as to whether the LPHS possessed all the necessary tools to adequately assess the entire systems performance within specific healthcare avenues and specific population groups.</p> <p>Many NRV LPHS partners are not obtaining client satisfaction surveys.</p> <p>There was minimal activity in periodically assessing the LPHS activities and performance.</p> <p>There was minimal activity in the evaluation of the partnership within the LPHS.</p> <p>There was no use of the LPHS evaluation to guide community health improvements.</p> |
| <p>10. Research for new insights and innovative solutions to health problems (86)</p> | <p>The LPHS moderately to significantly encourages community participation in fostering new innovations and practices to solving and evaluating community health problems; however, this depends on the nature of the research.</p> <p>NRV's LPHS has access and strong links to institutions of higher learning including Virginia Tech, Radford University, and New River Community College.</p> <p>The system encourages collaboration through these links and furthers access to researchers through shared contacts among the LPHS members.</p> <p>Regulatory organizations conduct significant research activity within the LPHS.</p> | <p>Time availability was identified as a major barrier for research within the majority of LPHS organizations.</p> <p>A lack of structured, systematic communication lines has often led to limited sharing of database information between organizations.</p> <p>Larger organizations, such as Virginia Tech, were noted as being in a better position to develop partnership opportunities with their research resources.</p> <p>The perception is that there is not enough involvement sought from community representatives for research efforts.</p> |

Appendix S

Summary of Community Themes and Strengths Assessment Interview Data

| Code or code group | Positive example(s) | Negative example(s) |
|------------------------------------|--|--|
| Community quality of life | <ul style="list-style-type: none"> Promote a good quality of life Somewhat progressive community Very good place to grow old; support programs Good schools and homes One of the best places I've ever lived | <ul style="list-style-type: none"> Jobs are not plentiful I don't know if it costs more or less here—it just costs |
| Community safety | <ul style="list-style-type: none"> Doors are often unlocked, neighbors know and take care of each other Interesting, inspiring, safe to raise children Sherriff patrols neighborhood regularly | <ul style="list-style-type: none"> Character is changing and problems starting to creep in Others are afraid of people breaking in |
| Community opportunities | <ul style="list-style-type: none"> Government is welcoming of citizen participation and input Plenty of volunteer opportunities Schools have been excellent Plenty of recreational activities Sufficient things for young people to do | <ul style="list-style-type: none"> None |
| Community cohesion | <ul style="list-style-type: none"> Easy to get involved; closeness of community People concerned about neighbors Fairly cohesive group Common vision of the town I don't hear of a lot of people moving People in church help me | <ul style="list-style-type: none"> None |
| Community healthcare system | <ul style="list-style-type: none"> Good access and wide variety of doctors Excellent experience in the after-hours Carilion Clinic Pleased with practitioner and pediatricians Good access with being close to Roanoke | <ul style="list-style-type: none"> We would leave the area for better care |
| Awareness of agencies | <ul style="list-style-type: none"> United Way, Christmas Store, Boys and Girls Club, Big Brothers/Big Sisters, Food Pantry, Food Bank, Christmas Store, Women's Resource Center, Humane Society, Habitat for Humanity, Salvation Army Retired Senior Volunteer Program | <ul style="list-style-type: none"> None |
| Community needs | <ul style="list-style-type: none"> Not applicable | <ul style="list-style-type: none"> More things needed for high school students to do; they seem left out Housing/assisted living opportunities may be limited Limited growth potential with VA Tech and other large employers Harder now for small businesses with Big Box and other large retail stores moving in (e.g., Walmart) Better control of growth |

Table S1. Thematic Codes and Examples per the Blacksburg Group

| Code or code group | Positive example(s) | Negative example(s) |
|------------------------------------|---|--|
| Community quality of life | <ul style="list-style-type: none"> • Nothing in Roanoke that we don't have here • I like the lack of heavy traffic • Rural makes it better • Good place to raise children • Housing is good • Especially coming from Pittsburg—I'm very happy to have escaped the big city! | <ul style="list-style-type: none"> • None |
| Community safety | <ul style="list-style-type: none"> • Neighbors trust one another • Lots of crime in Roanoke, but not here • SW VA is better place for my children | <ul style="list-style-type: none"> • Not as safe as 10 years ago |
| Community opportunities | <ul style="list-style-type: none"> • Good volunteer opportunities • Lots of retirement centers • Lots of learning opportunities for seniors; terrific recreation centers | <ul style="list-style-type: none"> • You can find jobs, but not necessarily good ones—Corning, Echo Star, etc. |
| Community cohesion | <ul style="list-style-type: none"> • Relies on friends for transportation • Neighbors pitch in where needed • Encourage more empathy among community residents | <ul style="list-style-type: none"> • People should get more involved; they should care more about the community and not be so self-absorbed • Neighbors don't know each other |
| Community healthcare system | <ul style="list-style-type: none"> • None | <ul style="list-style-type: none"> • Free Clinic needs more people/resources (e.g., pharmacists) • Good medical care isn't universal • Getting health care can be difficult and expensive if not through employer |
| Awareness of agencies | <ul style="list-style-type: none"> • Free Clinic, Social Services, RSVP, Rescue Squad • Red Cross Blood Bank and local hospital • Agency on Aging, police department • Med Ride, County Health Department | <ul style="list-style-type: none"> • Never heard of Meals on Wheels |
| Community needs | <ul style="list-style-type: none"> • Not applicable | <ul style="list-style-type: none"> • Better transportation • Better schools • Children need more activities in winter • Not many jobs • More entertainment • Employers don't offer much training • More shelters or counseling • More support for low income individuals • More help for elderly • Affordable health insurance • More funds for health • Need community leadership |

Table S2. Thematic Codes and Examples per the Christiansburg Group

| Code or code group | Positive example(s) | Negative example(s) |
|------------------------------------|---|--|
| Community quality of life | <ul style="list-style-type: none"> • Large number of women over 50 • Stable community, sense of responsibility • Safe, beautiful, not commercialized • More help for baby boomers here | <ul style="list-style-type: none"> • Hard for single parents • Drugs and peer pressure |
| Community safety | <ul style="list-style-type: none"> • Very safe • People don't lock their cars • No one locks their doors | <ul style="list-style-type: none"> • Car accidents among teens |
| Community opportunities | <ul style="list-style-type: none"> • Lots of home-schooling • Lots of music, arts, and crafts • Blue Mountain School • Easy to start a small business • Better schools than other counties | <ul style="list-style-type: none"> • None |
| Community cohesion | <ul style="list-style-type: none"> • People are friendly, helpful, supportive • People pull together; there is a sense that we are all in this together • Neighbors are kind, look out for others • People pull together here | <ul style="list-style-type: none"> • Neighbors do not care • Friction between newcomers and old-timers/natives to the area |
| Community healthcare system | <ul style="list-style-type: none"> • No hospitals • Herbalists/alternative medicine • You can get care here, even without insurance | <ul style="list-style-type: none"> • Drive 45 minutes to Christiansburg for health care • Options are limited |
| Awareness of agencies | <ul style="list-style-type: none"> • Barter Clinic w/reasonable prices • Carillion Clinic • New River Community Action • Floyd Pharmacy • Head Start • State Children's Health Insurance Program • Family Preservation Group • Montgomery County Emergency Assistance Program | <ul style="list-style-type: none"> • Free Clinic (only twice per month) • Not aware of any particular services |
| Community needs | <ul style="list-style-type: none"> • Not applicable | <ul style="list-style-type: none"> • No public transportation • No manufacturing • Not enough daycare • More jobs • More jobs for teens • Lower cost of living • Better wells/septic systems • Improved schools • Reduce drugs • Better screening of people who receive services • Not commercial enough • Need more parks and recreation • Intergenerational opportunities |

Table S3. Thematic Codes and Examples per the Floyd Group

| Code or code group | Positive example(s) | Negative example(s) |
|------------------------------------|---|---|
| Community quality of life | <ul style="list-style-type: none"> • Excellent community for children Good after-school programs • Very elder-friendly • After living in 26 different places in the country, this is the best place I've been! • School system is good | <ul style="list-style-type: none"> • None |
| Community safety | <ul style="list-style-type: none"> • It's a safe community • There's good police protection • Good place for children and safe | <ul style="list-style-type: none"> • Most neighbors know, trust each other, although I have had problems with my nearby neighbors. |
| Community opportunities | <ul style="list-style-type: none"> • Many social and community activities • Taxi services available • Seems like businesses are starting up • Plenty of shopping • Lots of community service volunteer s | <ul style="list-style-type: none"> • Many factories have closed • Best place to find a job is Roanoke (~1.5 hours each way) |
| Community cohesion | <ul style="list-style-type: none"> • People look in on each other • Everybody is friendly • Neighbors take care of one another, look out for weaker members | <ul style="list-style-type: none"> • It's hard to deal with big corporations • People don't interact that much |
| Community healthcare system | <ul style="list-style-type: none"> • Doctors are handy • It's easier to get good health care here | <ul style="list-style-type: none"> • I have good insurance, but I still feel "insurance poor." • Access to Free Clinic is a problem • Work-related insurance is a problem |
| Awareness of agencies | <ul style="list-style-type: none"> • Meals on Wheels • Montgomery County Emergency Assistance Program • Senior bus • Free Clinic is good for pro bono access • Food/clothing bank • Retired Senior Volunteer Program • Salvation Army • Recreation Center publicizes agencies • Med Ride, home health care | <ul style="list-style-type: none"> • None |
| Community needs | <ul style="list-style-type: none"> • Not applicable | <ul style="list-style-type: none"> • Rough to find good jobs • A new Commonwealth Attorney – no justice in Montgomery Co. • Government doesn't pay enough for prescriptions • More business here • Better water • Lack of industry • Affordable school activities • Petition for community to come together for a cause |

Table S4. Thematic Codes and Examples per the Giles Group

| Code or code group | Positive example(s) | Negative example(s) |
|----------------------------------|---|---|
| Community quality of life | <ul style="list-style-type: none"> • Police car seen multiple times daily • Town has cleaned up all areas by removing old buildings, so great visual impression • Active in the community • Resident and children are well cared for in community • Very satisfied—lives next door to a preacher, near fire station • Neighbors greatly enhance quality of life • Great place to raise children • Faith communities are strong • Area offers reasonably-priced homes, quiet neighborhoods, safety, and security, and an overwhelming sense of community • A good place to grow old • The area offers many of the amenities of a more urban setting while maintaining the quaintness of a small town—an important quality for an elderly population • Most people like it here | <ul style="list-style-type: none"> • Concerns regarding increasing problems with drugs use and consequences such as crime • Very little in this town that enriches life • Appears to be in decay and rich history disappears with demolition of each building • Poor due to lack of education, job opportunities, healthcare, substance abuse, etc. |
| Community safety | <ul style="list-style-type: none"> • Feels very safe • Always “float” to the top with overall satisfaction of safety, drugs, and educational opportunities when compared to other areas • For the most part, it is a safe community • Workplaces, schools, and playgrounds are safe • Many people know and trust one another | <ul style="list-style-type: none"> • Raped in April and caused to feel unsafe in own community • Not confident about citizens’ safety when only time law enforcement is seen is during a drug bust on the block • Doors and windows are locked now, because there is no trust • Increase in drug usage, crime • There are very few neighbors in my neighborhood that I trust |
| Community opportunities | <ul style="list-style-type: none"> • Housing is available and affordable • Easy commute to Montgomery County • Higher education and job training opportunities are easily accessed in nearby universities, community colleges, etc. | <ul style="list-style-type: none"> • Not at this time • Very limited—great many businesses and manufacturers have closed such as Volvo • Finding job in Pulaski with career growth is challenging • Not a lot of jobs in the area • Many are unemployed and unemployment rates are high • Must travel to Christiansburg for a good job • Limited employment opportunities for those with higher education • Locally owned businesses seem to struggle • A lot of businesses have left the area • If not for Walmart and Volvo, people would be in trouble • Most younger people choose to move elsewhere |

| | | |
|------------------------------------|--|--|
| Community cohesion | <ul style="list-style-type: none"> • Yes, by becoming more involved • Volunteer more • Overall community cares & works together • Always willing to lend helping hand • Everyone looks out for each other • If won the lottery, would open homeless shelter here • Same people still live here after many years • Be a resource for others • Raised children to be interested and involved in the community • Encourage community involvement • Very active in church, food pantry, make Christmas baskets, hold Fall Festival to raise money for less fortunate • Community rich with skilled volunteers • Neighbors are resourceful and helpful • People care about this community being a good place to live • More and more people making efforts to get along, work and play together • Neighbors look out for one another • Most people want to work to keep Pulaski a nice place to live | <ul style="list-style-type: none"> • Neighbors know they can make this a better place, but they aren't always willing to give the effort. • One person can't do it all • Majority of people look out for themselves • Voice of the elite is heard the loudest • Most affected don't have a voice • Making a difference on global scale is difficulty, so why bother? • People are out to survive versus living • No pride evident in the town right now • Neighbors know that they can help make Pulaski a better place to live, but due to family constraints, they do not have time to do anything to make it a better place |
| Community healthcare system | <ul style="list-style-type: none"> • Good area hospitals • Availability to medical resources outside of area • Good access to healthcare in this county • Pulaski County offers quality healthcare for its residents • Depends on doctor, as everyone has a favorite doctor • Physicians are good • Tremendous improvement in Free Clinic • Wonderful community hospital in County | <ul style="list-style-type: none"> • Concerns about those who do not have health insurance and hope the Free Clinic can help meet their needs • Has difficult time accessing care due to lack of insurance • Widowed—health insurance keeps raising rates, but pays 100%, so satisfied • Cost of healthcare is high • Physical layout of PCHD not accessible for physically challenged • Limited geriatric health professionals • Limited women's issues specialists • Healthcare system is male dominated—need more female healthcare providers • Physicians' business offices are difficult to deal with • Community hospital not accessible to its constituents • Community hospital does not offer maternity services • Community hospital and medical practices too much involved in "corporate medicine" rather than concern about their patients—for example, physician time with patient limited • Healthcare better in Cleveland Clinic (e.g., chemotherapy) |

| | | |
|--|---|---|
| Community healthcare system (continued) | | <ul style="list-style-type: none"> • Under-/uninsured lack the knowledge, skills, and ability to find alternatives and navigate through the healthcare arena • Difficult to get an appointment with physicians • A person may have to drive 30-40 minutes or even an hour to receive a certain test(s) or procedure(s) |
| Awareness of agencies | <ul style="list-style-type: none"> • Free Clinic • Health Department • SCHIP • DSS • Daily Bread • Community Action • Beans-n-Rice • Head Start Program • Church • Kiwanis Club • Lions Club • New River Community Action • NRV Senior Services • Salvation Army • NRV Community Services Board • Agency on Aging • SHARE Program • Meals on Wheels • Home Extension Office • RSVP • Habitat for Humanity • Food banks • Caring Pregnancy Center • Brain Injury Foundation • Many formal and informal networks of agencies—transportation services, income-based medical clinics, faith-based groups, food banks, counseling services, shelters, etc. • Many programs designed to assist the aging population from meal-on-wheels to food banks, elder day care at Virginia Tech to senior services, a variety of churches, and related activities to many other social support networks • Agencies work well together in providing services | <ul style="list-style-type: none"> • Many individuals not aware of agency services • More support groups for caregivers would be helpful • Know of many health and human services agencies and organizations, but not sure how to obtain the services • To obtain help, one must go through lots of red tape, but it is worth it in the end if you have the need • Fragmentation of services and limited collaborative efforts among agencies • For state organizations, you have to drive for their services • Limited funding for services ongoing concern, barrier, and problem • With failing economy and growing needs of people, the capabilities of many of these organizations are stretched and exceeded due to lack of resources • Becoming more difficult to get help for those that are in need • Individuals may encounter a waiting period before receiving assistance, e.g., Agency on Aging has an ongoing waiting list for meals on wheels and home-maker services • Communication between agencies could certainly be improved |

| | | |
|-------------------------------|---|---|
| <p>Community needs</p> | <ul style="list-style-type: none"> • Wouldn't change a thing—beautiful views; natural beauty greatly adds to QoL • Many day care programs available • Numerous after-school and community-based recreation programs, as well as Claytor Lake State Park, the NRV fairgrounds, Bissett Park, Randolph Park, YMCA, etc. that offer unique activities for children • Pulaski Area Transit • Supports its older residents informally | <ul style="list-style-type: none"> • Let governing bodies know the need for recreation center • Limited recreation that is not always affordable or accessible • Volunteer more • Town council members that will welcome more organizations and opportunities to come into our area—Walmart had to relocate to Dublin • More local government funding for service/support programs, especially for older adults • Adult day care program • Recreational center open to the public • Additional government-assisted housing for the elderly • Housing is a problem with too many “slum” landlords allowed to rent sub-standard places • Concerted effort to fight/eliminate litter on the roadside • Indoor recreation center that can be used by all age groups • Needs improvement in providing day care for low income families • Need for more recreational opportunities and affordable child care • Need for more accessible after-school programs • More jobs and businesses • Better housing options • Improved community communication • Increased involvement of individuals in the community • Increased industry • More good doctors • Need for more cultural diversity • More entertainment options • Revitalization of the town center • Development of senior living communities • Restructuring of the management team of the town • Better and more affordable and accessible public transportation • More visible law enforcement/high profile • Outside investors making a commitment to invest in the community • Healthcare services that focus more on senior and women's health issues |
|-------------------------------|---|---|

| | | |
|---|--|---|
| <p>Community needs (continued)</p> | | <ul style="list-style-type: none"> • Agency on Aging has an ongoing waiting list for meals on wheels and home-maker services • Need more hands-on social support for the elderly that live alone • Limited retirement communities/apartments—a few low-income apartment houses exist but there's a long waiting list, and many elderly cannot afford some of the high end patio homes or retirement villas in the County • Need for economic and work-force development • Strengthen programs for our children that will help build self-esteem in an effort to address issues such as bullying, drug activity, pregnancy, and gang activity • Need for more pre-school programs that prepare children for public school • School system needs to have more emphasis in reading, writing, math, and the sciences rather than SOLs • Need a homeless shelter • Increased public sewer and water access • Wish the locality would wake-up and provide better roads, better schools, and business and residential areas provided with public sewer and water |
|---|--|---|

Table S5. Thematic Codes and Examples per the Pulaski Group

| Code or code group | Positive example(s) | Negative example(s) |
|----------------------------------|--|---|
| Community quality of life | <ul style="list-style-type: none"> • Feels safe • Resources for people • People in community are generous and very giving folk • Knowing neighbors helps increase quality of life • Easy to get services if needed • Excellent schools, day care for school-age children • Lots of activities that promote community life • Good/excellent place to live and raise children • Much community pride | <ul style="list-style-type: none"> • No jobs, too many people • Lack of new businesses, restaurants • Questionable public school quality • Lack of entertainment opportunities • Lack of cultural stimulation • Limited opportunities for community life participation |
| Community safety | <ul style="list-style-type: none"> • Policeman lives nearby, so I feel safe • Very little crime • Police do an excellent job • Neighbors look out for those living alone • Feels very comfortable here • Very safe • Not afraid to go out alone at night | <ul style="list-style-type: none"> • Scared to walk down street alone at night due to threats of living in a college town • Problems caused by newcomers • Increasing crime related to drugs and more violent crimes |
| Community opportunities | <ul style="list-style-type: none"> • Relatively easy to start a business here • Lots of employment opportunities; relatively easy to find a job • Good higher education (Radford University) • Affordable housing • Excellent public school system including the Southwest Virginia Governor's School • Many opportunities for cultural enrichment, i.e., plays, musical events, speakers because of Radford University | <ul style="list-style-type: none"> • Not enough jobs to go around. • Housing here very high • Only opportunities for minimum wage jobs • Difficult place to find a job • Shortage of jobs, especially blue collar • Not easy to start a business • Radford City does not work well with Radford University to promote business growth |
| Community cohesion | <ul style="list-style-type: none"> • Lots of community bonding • Neighbors always willing to help out and watch out for each other • Good community cooperation • Small business owners really band together • Most people living here care about Radford • People from here try to keep community a good place to live • People work individually and in groups to make community better • Mentorship programs and talking with high schoolers re: benefits of college • People care, are considerate, and take pride in homes • Sense of community | <ul style="list-style-type: none"> • Willing to help, but doesn't know what to do • Feels helpless in problems facing the community • Doesn't think that neighbors know how to help • People work together somewhat, but there is room for improvement • Without better leadership, impossible to make major improvements • Children need to be mentored • Too many faculty at Radford University live outside Radford |

| | | |
|------------------------------------|--|--|
| Community healthcare system | <ul style="list-style-type: none"> • Easy access to healthcare with Medicare benefits • Excellent care at Carilion Clinic • Outstanding health department | <ul style="list-style-type: none"> • Doesn't know much about it • Limited availability of healthcare providers in Radford City • Limited doctors to provide care to elderly • Need more elder care services/help • Minimal mental health services, especially for those without insurance • Lack of healthcare providers accepting Medicaid, especially dentists • Need dental care for poor, under-/un-insured |
| Awareness of agencies | <ul style="list-style-type: none"> • Social Services • NRV Community Services • Employment services • Local churches—Radford Worship Center, Main Street Methodist, Central Methodist • Church support; afterschool program and food bank • Beans and Rice Program • Against All Odds • Women's Resource Center • Radford University Speech and Hearing • Radford Clothes Bank • Pulaski Recreation Center for Youth • Red Cross • New River Community Action • Carilion Home Health • Good emergency medical services (EMS) • Good fire department • Police are very helpful • Most agencies/organizations have a good mission statement and attitude for helping those who need it | <ul style="list-style-type: none"> • Doesn't know—sees advertisements for different types of services • Difficult to obtain services • Churches not doing much public outreach • People need to be informed about agencies/organizations that may help them |

| | | |
|-------------------------------|--|---|
| <p>Community needs</p> | <ul style="list-style-type: none"> • Organizations work together well • Easy to obtain & services work together • Many services available to reach out and help those in need | <ul style="list-style-type: none"> • Difficult to obtain services • Very difficult to obtain help, esp. for older adult without help to fill out forms • Organizations don't work together well • Local governments/organizations need to communicate/collaborate on regional projects and share/utilize existing resources • Make the community look cleaner • Shopping areas that reflect the community • Lower prices in local stores • Public transportation, especially for the elderly (for medical appointments and shopping) • Improve public transportation • More nightly hangouts for youth • More jobs • More industry • Better care/services/social support for older adults • Retirement communities • More doctors • Services/programs for youth—after-school programs practically non-existent • More services for disabled • Majority of people don't know the needs of citizens • More entertainment options • Day care for infants • Encourage recycling • Recycling facilities • Well-marketed community events offering stimulation to all age groups • More cultural events • Affordable housing |
|-------------------------------|--|---|

Table S6. Thematic Codes and Examples per the Radford City Group

Appendix T

2010 County Health Rankings—Summary New River Health District

| ROBERT WOOD JOHNSON FOUNDATION - FUNDED COUNTY RANKING REPORT | | | | | | | | | |
|---|--|---|---|----------------|-----------|------------|------------|------------|----------|
| 2010 - VIRGINIA | NEW RIVER HEALTH DISTRICT | | | LOCALITIES | | | | | |
| | Measures | Data Source | Years of Data | Floyd | Giles | Montgomery | Pulaski | Radford | VA Value |
| HEALTH OUTCOMES: | | | | 27 | 91 | 39 | 114 | 88 | |
| Mortality (50%) | | | | 29 | 99 | 39 | 102 | 73 | |
| | Premature Death (YPLL-75) | National Center for Health Statistics | 2004-2006 | 6,517 | 9,738 | 7,002 | 9,981 | 8,522 | 6,872 |
| Morbidity (50%) | | | | 24 | 81 | 44 | 123 | 106 | |
| | Self-reported health status - 10% | Behavioral Risk Factor Surveillance System | 2002-2008 | 13% | 19% | 13% | 23% | 23% | 13% |
| | Poor physical health days - 10% | Behavioral Risk Factor Surveillance System | 2002-2008 | 2.8 | 5.7 | 3.6 | 4.7 | 7.4 | 3.2 |
| | Poor mental health days - 10% | Behavioral Risk Factor Surveillance System | 2002-2008 | 3.6 | 4.4 | 3.9 | 5.5 | 4.6 | 3.2 |
| | Low Birthweight - 20% | National Center for Health Services | 2000-2006 | 7% | 7% | 7% | 9% | 7% | 8% |
| HEALTH FACTORS: | | | | 55 | 50 | 27 | 97 | 54 | |
| Health Behaviors (30%) | | | | 48 | 17 | 10 | 91 | 15 | |
| | Tobacco Use (10%) | Adults >100 cigs., current smoker | Behavioral Risk Factor Surveillance System | 2002-2008 | | 26% | 15% | 29% | 20% |
| | Diet & Exercise (10%) | Adult obesity (BMI >=30) | Nat. Center for Chronic Prevention & Health Promotion | 2002-2008 | 26% | 24% | 25% | 28% | 25% |
| | Alcohol Use (5%) | Adult self reported binge drinking - 30 days (2.5%) | Behavioral Risk Factor Surveillance System | 2002-2008 | 14% | 6% | 19% | 10% | 14% |
| | | Motor vehicle death rate (2.5%) | National Center for Health Statistics | 2000-2006 | 36 | | 12 | 15 | 13 |
| | High Risk Sexual Behavior (5%) | Chlamydia Rate | National Center for Health Statistics | 2000-2006 | 81 | 178 | 182 | 166 | 482 |
| | | Teen Birth Rate | National Center for Health Statistics | 2000-2006 | 32 | 48 | 14 | 53 | 8 |
| Clinical Care (20%) | | | | 110 | 96 | 127 | 87 | 109 | |
| | Access to Care (10%) | Uninsured Adults (5%) | U.S. Census | 2006 | 21% | 13% | 26% | 12% | 25% |
| | | Primary Care Provider Rate (5%) | Health Resources & Services Administration | 2005-2006 | 74 | 80 | 98 | 91 | 200 |
| | Quality of Care (10%) | "Preventable Hospital Stays" (5%) | Medicare claims / Dartmouth Atlas | 2005-2006 | 70 | 116 | 79 | 118 | 81 |
| | | Diabetic Screening (HgbA1c) (2.5%) | Medicare claims / Dartmouth Atlas | 2005-2006 | 79% | 84% | 81% | 81% | 79% |
| | | Hospice Use (2.5%) | Medicare claims / Dartmouth Atlas | 2005-2006 | 30% | 22% | 30% | 26% | 33% |
| Socioeconomic Factors (40%) | | | | 51 | 66 | 29 | 99 | 68 | |
| | Education (10%) | High School Graduation Rate (5%) | National Center for Educational Statistics | 2001-2005 | 77% | 72% | 76% | 69% | 72% |
| | | College Graduates - 4 year degree or > (5%) | U.S. Census / American Community Survey | 2000/ 2005-7 | 14% | 14% | 42% | 13% | 37% |
| | Employment (10%) | Unemployment Rate - age 16+ | Bureau of Labor Statistics | 2008 | 4% | 6% | 4% | 7% | 5% |
| | Income (10%) | Children in Poverty Rate (7.5%) | U.S. Census | 2007 | 16% | 14% | 14% | 20% | 17% |
| | | Income Inequality (Household) (2.5%) | U.S. Census | 2000/ 2005-7 | 41 | 42 | 45 | 41 | 49 |
| | Family & Social Support (5%) | Lack of Social/Emotional Support (2.5%) | Behavioral Risk Factor Surveillance System | | | | 15% | | 19% |
| | | Single-parent Households (2.5%) | U.S. Census | 2000/ 2005-7 | 7% | 7% | 6% | 10% | 7% |
| | Community Safety (5%) | Violent Crime/ Homicide Rate | Uniform Crime Reporting / FBI | 2005-7, 2000-6 | 87 | 144 | 191 | 186 | 340 |
| Physical Environment (10%) | | | | 75 | 29 | 30 | 40 | 44 | |
| | Environmental Quality (5%) | Unhealth Air - Particulate Matter (2.5%) | EPA / CDC | 2005 | 0 | 0 | 0 | 0 | 1 |
| | | Unhealthy Air - Ozone (2.5%) | EPA / CDC | 2005 | 0 | 0 | 0 | 0 | 2 |
| | Built Environment (5%) | Access to Healthy Food Outlet (2.5%) | Census / Zip Code Business Patterns | 2006 | 20% | 44% | 36% | 25% | 33% |
| | | Liquor Store Density (2.5%) | Census / Zip Code Business Patterns | 2006 | 0.7 | 0.6 | 0.3 | 0.3 | 0.6 |
| Total of 132 Localities | <i>NOTE: Blank values reflect unreliable or missing data</i> | | | | | | | | |

Appendix U

Response Frequencies Summary—

*NRV Community Health Assessment Mailed/On-Line Survey***DEMOGRAPHICS****Location - County of Residence**

| | |
|------------|-----|
| Floyd | 6% |
| Giles | 20% |
| Montgomery | 53% |
| Pulaski | 14% |
| Radford | 7% |

Age

| | |
|----------|-----|
| Under 20 | 1% |
| 20-29 | 16% |
| 30-39 | 11% |
| 40-49 | 10% |
| 50-59 | 13% |
| 60-69 | 19% |
| 70-79 | 18% |
| 80+ | 12% |

Sex

| | |
|--------|-----|
| Male | 30% |
| Female | 70% |

Race

| | |
|-----------------|-----|
| White | 95% |
| Black | 2% |
| Native American | 1% |
| Asian American | 0% |
| Other | 1% |

*Other includes biracial/"mixed" and Native American; additionally, 4% of respondents also described themselves as of Hispanic origin.

Employment Status

| | |
|--|-----|
| Employed full-time | 45% |
| Employed part-time | 12% |
| Self-employed | 6% |
| Homemaker | 13% |
| Retired | 25% |
| Unemployed | 2% |
| Unable to work because of a disability | 7% |
| Student | 5% |

Marital Status

| | |
|-------------------------------|-----|
| Never married | 7% |
| Member of an unmarried couple | 2% |
| Married | 70% |
| Divorced | 10% |
| Separated | 1% |
| Widowed | 7% |

Education

| | |
|----------------------------|-----|
| No high school or GED | 5% |
| High school diploma/GED | 17% |
| Vocational or trade school | 4% |
| Some college | 19% |
| Undergraduate degree | 33% |
| Graduate degree | 20% |

Household Income

| | |
|-------------------|-----|
| Under \$20,000 | 15% |
| \$20,000-\$49,999 | 29% |
| \$50,000-\$75,000 | 26% |
| Over \$75,000 | 26% |

HEALTH CARE**Health Insurance Status**

| | |
|----------------------|-----|
| Healthcare benefits* | 92% |
| -Private Coverage | 63% |
| -Medicaid/FAMIS | 5% |
| -Other | 21% |
| No benefits | 7% |

*40% of those with health insurance do not have dental coverage.

Primary Care Doctor (family doctor or nurse practitioner)

| | |
|-----|-----|
| Yes | 91% |
| No | 7% |

Most Healthcare Received From:

| | |
|--|-----|
| Family doctor | 84% |
| Medical doctor (specialist) other than family doctor | 7% |
| Free clinic or other clinic setting | 2% |
| Student health center | 1% |
| Other* | 5% |

*Other includes health department, emergency department, non-medical doctor (acupuncturist, herbalist, etc.), etc.

Last Routine Checkup (general physical exam -- not for a specific injury, illness, or condition):

| | |
|----------------------|-----|
| Within the past year | 61% |
| 1 - 2 years ago | 20% |
| 3 - 4 years ago | 8% |
| 5 or more years ago | 9% |

Doctor Visit within the Past Year (by type)*:

| | |
|---------------------------|-----|
| Eye doctor* | 50% |
| Family doctor** | 77% |
| Gynecologist [±] | 40% |
| Dentist ^{±±} | 69% |
| Flu shot | 45% |

*25% of respondents have not seen an eye doctor in 3 or more years while 3% have never seen an eye doctor.

**10% of respondents have not seen a family doctor in 3 or more years.

[±]15% of respondents have not seen a gynecologist in 3 or more years and 3% have never seen a gynecologist.

^{±±}20% of respondents have not been to a dentist in 3 or more years while 1% has never seen a dentist.

Reasons for Not Accessing Dental Care*:

| | |
|---|-----|
| Lack of dental coverage under health insurance plan** | 12% |
| Do not have a dentist | 3% |
| Other | 9% |

*23% of respondents needed cavity fillings.

**62% of respondents have dental coverage.

During the Past 12 Months, the Following Prevented the Necessary Health Care:

| | |
|---|-----|
| I don't know where to go for health services | 2% |
| I can't get transportation | 2% |
| Health services aren't close to where I live | 1% |
| I can't pay for health services | 8% |
| My health insurance doesn't cover what I need | 9% |
| I couldn't get an appointment | 3% |
| I couldn't get through on the telephone | 2% |
| The clinic/doctor's office wasn't open when I could get there. | 3% |
| My deductible or co-payment (my share of the cost) is too high | 6% |
| My health care provider won't take my insurance, or Medical Assistance (Medicaid) | 2% |
| I couldn't find a health care provider I like and/or trust | 3% |
| None—I've gotten the health care I need | 61% |

During the Past Year, Could Not Afford Necessary Prescription Medication:

| | |
|-----|-----|
| Yes | 13% |
| No | 83% |

During the Past Year, Could Not Afford Necessary Eyewear (eye glasses, contact lenses):

Yes 14%

No 82%

Frequency of Utilization for the Following Services (self or someone in household):**Late or weekend doctor hours**

Rarely or Never 53%

Sometimes 29%

Often 6%

Always 1%

Does not Apply 6%

In the Past Year, Someone in the Home with a Mental Health or Emotional Problem (depression, severe stress, severe phobia, etc.) that Affected Ability to do Daily Activities:

Yes 17%

No 78%

Don't Know 2%

RISK BEHAVIORS**Consumed Alcohol During the Past Month*:**

Less than once a month 23%

A few times per month 14%

About once a week 7%

A few days a week 9%

Every day 6%

Never drink 38%

*Of those who have consumed alcohol, 49% report consuming 1-2 drinks.

Ever Smoked*:

Yes, I am currently a smoker 14%

Yes, but I no longer smoke 29%

No 55%

*Of those who have smoked, 10% reported smoking more than 1 pack a day; 5% reported using smokeless tobacco.

During the Past Month, Participation in Physical Activity/Exercise:

Yes 80%

No 18%

Seatbelt Use:

Always 81%

Nearly always 10%

Sometimes 4%

Seldom 2%

Never 1%

Never drive or ride 0%

Drugs/Alcohol and Driving:**In the past month, rode in a car/truck driven by someone who drank alcohol**

-Yes 7%

-No 90%

In the past month, rode in a car/truck driven by someone who had taken drugs

-Yes 3%

-No 94%

Guns/Firearms in/around home (kept in a garage, outdoor storage area, or motor vehicle):

Yes* 57%

No 41%

*15% of respondents have a loaded and unlocked firearm in the home.

ENVIRONMENTAL HEALTH**Belief that the Following is a Problem in Local Area:**

Outdoor Air Quality 14%

Indoor Air Quality 13%

Recreational Water Quality 15%

Drinking Water Quality 15%

Sewage Disposal 6%

Solid Waste Disposal (trash) 11%

Hazardous Materials Handling 7%

Food Safety 11%

Housing (adequate heat, plumbing) 10%

Worker Safety and Health 9%

Pest Control 8%

COMMUNITY AWARENESS

Awareness of the Following Available Services:

| | |
|--|-----|
| Child daycare | 67% |
| Adult daycare (i.e., 65+ or disabled) | 52% |
| Home health services (i.e., 65+ or disabled) | 55% |
| Transportation (i.e., 65+ or disabled) | 46% |
| Treatment for alcohol or drug abuse | 59% |
| Counseling for mental health or emotional problems | 69% |
| Child immunizations | 75% |
| Parenting education | 55% |
| Family or marriage counseling | 64% |
| Women's health information | 72% |
| Domestic violence counseling/shelter | 58% |
| Prenatal care | 65% |
| Birth control information | 72% |
| STD services and counseling | 63% |
| HIV/AIDS services and counseling | 55% |

Frequency of Utilization for the Following Services (self or someone in household):

Youth programs

| | |
|-----------------|-----|
| Rarely or Never | 37% |
| Sometimes | 11% |
| Often | 8% |
| Always | 1% |

Find Out About News or Community Events Via:

| | |
|--|-----|
| Newspaper | 78% |
| Television | 82% |
| Radio | 53% |
| Church/mosque/temple bulletin | 35% |
| Word-of-mouth (friends, relatives, etc.) | 72% |
| Other* | 19% |

*Other includes internet/email, billboards, books/magazines, flyers/mailings, health education center, community center, "The Link," school/work, and community events.

CARE-GIVING**Provide care for 65+ or developmentally disabled (one or more person):**

| | |
|----------------|-----|
| Yes | 8% |
| -Family member | 90% |
| -Friend | 10% |
| No | 89% |

Kind of help provided

| | |
|--|----|
| Help with personal care (bathing, dressing, eating, etc.) | 2% |
| Help with household needs (cooking, shopping, driving, etc.) | 6% |
| Other | 2% |

Services available to self and care receiver when needed:

| | |
|---|-----|
| Feel assisted living is available | 50% |
| Feel <i>home health nursing</i> is available | 50% |
| Feel <i>group home setting</i> is available | 13% |
| Feel <i>help with housework and home maintenance services</i> are available | 25% |
| Feel <i>someone to live-in or stay with care receiver</i> is available | 25% |
| Feel <i>education and support services</i> are available | 25% |
| Feel <i>transportation services</i> are available | 38% |
| Feel <i>help with paying for medications</i> is available | 38% |
| Feel <i>adult daycare services</i> are available | 25% |

Appendix V

Response Frequencies Summary—

*NRV Community Health Assessment African-American Church Survey***DEMOGRAPHICS****Location - County of Residence**

| | |
|------------|-----|
| Floyd | 0% |
| Giles | 0% |
| Montgomery | 3% |
| Pulaski | 44% |
| Radford | 41% |

Age

| | |
|-------|-----|
| 30-39 | 6% |
| 40-49 | 20% |
| 50-59 | 32% |
| 60-69 | 26% |
| 70-79 | 13% |
| 80+ | 3% |

Sex

| | |
|--------|-----|
| Male | 18% |
| Female | 82% |

Race

| | |
|-------|-----|
| White | 0% |
| Black | 97% |
| Other | 3% |

*0% of respondents also described themselves as of Hispanic origin.

Employment Status

| | |
|--|-----|
| Employed full-time | 56% |
| Employed part-time | 3% |
| Self-employed | 6% |
| Homemaker | 3% |
| Retired | 18% |
| Unemployed | 0% |
| Unable to work because of a disability | 15% |
| Student | 0% |

Marital Status

| | |
|-------------------------------|-----|
| Never married | 15% |
| Member of an unmarried couple | 0% |
| Married | 41% |
| Divorced | 15% |
| Separated | 6% |
| Widowed | 21% |

Education

| | |
|----------------------------|-----|
| No high school or GED | 6% |
| High school diploma/GED | 24% |
| Vocational or trade school | 3% |
| Some college | 29% |
| Undergraduate degree | 18% |
| Graduate degree | 15% |

Household Income

| | |
|-------------------|-----|
| Under \$20,000 | 27% |
| \$20,000-\$49,999 | 30% |
| \$50,000-\$75,000 | 18% |
| Over \$75,000 | 9% |

HEALTH CARE**Health Insurance Status**

| | |
|----------------------|-----|
| Healthcare benefits* | 88% |
| -Private Coverage | 56% |
| -Medicaid/FAMIS | 12% |
| -Other | 15% |
| No benefits | 12% |

*50% of those with health insurance do not have dental coverage.

Primary Care Doctor (family doctor or nurse practitioner)

| | |
|-----|-----|
| Yes | 85% |
| No | 9% |

Most Healthcare Received From:

| | |
|--|-----|
| Family doctor | 79% |
| Medical doctor (specialist) other than family doctor | 9% |
| Free clinic or other clinic setting | 3% |

Last Routine Checkup (general physical exam -- not for a specific injury, illness, or condition):

| | |
|----------------------|-----|
| Within the past year | 76% |
| 1 - 2 years ago | 12% |
| 3 - 4 years ago | 3% |
| 5 or more years ago | 3% |

Doctor Visit within the Past Year (by type)*:

| | |
|---------------|-----|
| Eye doctor | 62% |
| Family doctor | 85% |
| Gynecologist* | 38% |
| Dentist | 62% |
| Flu shot | 59% |

*15% of respondents have not seen a gynecologist in 3 or more years while 9% have never seen a gynecologist.

Reasons for Not Accessing Dental Care*:

| | |
|---|-----|
| Lack of dental coverage under health insurance plan** | 21% |
| Do not have a dentist | 6% |
| Other | 12% |

*12% of respondents needed cavity fillings.

**50% of respondents have dental coverage.

During the Past 12 Months, the Following Prevented the Necessary Health Care:

| | |
|---|-----|
| I can't pay for health services | 12% |
| My health insurance doesn't cover what I need | 9% |
| My deductible or co-payment (my share of the cost) is too high | 6% |
| My health care provider won't take my insurance, or Medical Assistance (Medicaid) | 3% |
| None—I've gotten the health care I need | 35% |

During the Past Year, Could Not Afford Necessary Prescription Medication:

| | |
|-----|-----|
| Yes | 15% |
| No | 74% |

During the Past Year, Could Not Afford Necessary Eyewear (eye glasses, contact lenses):

| | |
|-----|-----|
| Yes | 12% |
| No | 74% |

Frequency of Utilization for the Following Services (self or someone in household):**Late or weekend doctor hours**

| | |
|-----------------|-----|
| Rarely or Never | 32% |
| Sometimes | 12% |
| Often | 12% |
| Does not apply | 21% |

In the Past Year, Someone in the Home with a Mental Health or Emotional Problem (depression, severe stress, severe phobia, etc.) that Affected Ability to do Daily Activities:

| | |
|------------|-----|
| Yes | 12% |
| No | 71% |
| Don't Know | 3% |

RISK BEHAVIORS**Consumed Alcohol During the Past Month*:**

| | |
|------------------------|-----|
| Less than once a month | 15% |
| A few times per month | 16% |
| A few days a week | 6% |
| Every day | 3% |
| Never drink | 56% |

*Of those who have consumed alcohol, 21% report consuming 1-2 drinks.

Ever Smoked*:

| | |
|------------------------------|-----|
| Yes, I am currently a smoker | 6% |
| Yes, but I no longer smoke | 35% |
| No | 47% |

*Of those who have smoked, 12% reported smoking more than 1 pack a day; 3% reported using smokeless tobacco.

During the Past Month, Participation in Physical Activity/Exercise:

| | |
|-----|-----|
| Yes | 74% |
| No | 21% |

Seatbelt Use:

| | |
|---------------|-----|
| Always | 62% |
| Nearly always | 18% |
| Sometimes | 15% |
| Never | 3% |

Drugs/Alcohol and Driving:**In the past month, rode in a car/truck driven by someone who drank alcohol**

| | |
|------|-----|
| -Yes | 6% |
| -No | 88% |

In the past month, rode in a car/truck driven by someone who had taken drugs

| | |
|------|-----|
| -Yes | 3% |
| -No | 91% |

Guns/Firearms in/around home (kept in a garage, outdoor storage area, or motor vehicle):

Yes* 21%

No 68%

*9% of respondents have a loaded and unlocked firearm in the home.

ENVIRONMENTAL HEALTH**Belief that the Following is a Problem in Local Area:**

| | |
|-----------------------------------|-----|
| Outdoor Air Quality | 18% |
| Indoor Air Quality | 15% |
| Recreational Water Quality | 9% |
| Drinking Water Quality | 15% |
| Sewage Disposal | 6% |
| Solid Waste Disposal (trash) | 15% |
| Hazardous Materials Handling | 9% |
| Food Safety | 21% |
| Housing (adequate heat, plumbing) | 12% |
| Worker Safety and Health | 6% |
| Pest Control | 12% |

COMMUNITY AWARENESS**Awareness of the Following Available Services:**

| | |
|--|-----|
| Child daycare | 74% |
| Adult daycare (i.e., 65+ or disabled) | 56% |
| Home health services (i.e., 65+ or disabled) | 62% |
| Transportation (i.e., 65+ or disabled) | 62% |
| Treatment for alcohol or drug abuse | 59% |
| Counseling for mental health or emotional problems | 68% |
| Child immunizations | 68% |
| Parenting education | 59% |
| Family or marriage counseling | 65% |
| Women's health information | 59% |
| Domestic violence counseling/shelter | 68% |
| Prenatal care | 59% |
| Birth control information | 71% |
| STD services and counseling | 62% |
| HIV/AIDS services and counseling | 62% |

Frequency of Utilization for the Following Services (self or someone in household):**Youth programs**

| | |
|-----------------|-----|
| Rarely or Never | 18% |
| Sometimes | 12% |
| Often | 6% |
| Always | 3% |
| Does not apply | 38% |

Find Out About News or Community Events Via:

| | |
|--|-----|
| Newspaper | 85% |
| Television | 82% |
| Radio | 32% |
| Church/mosque/temple bulletin | 59% |
| Word-of-mouth (friends, relatives, etc.) | 76% |
| Other | 3% |

CARE-GIVING**Provide care for 65+ or developmentally disabled (one or more person):**

| | |
|-----|-----|
| Yes | 6% |
| No | 82% |

Kind of help provided

| | |
|--|----|
| Help with personal care (bathing, dressing, eating, etc.) | 3% |
| Help with household needs (cooking, shopping, driving, etc.) | 6% |

Appendix W

Response Frequencies Summary—

*NRV Community Health Assessment Senior Center Survey***DEMOGRAPHICS****Location - County of Residence**

| | |
|------------|-----|
| Floyd | 2% |
| Giles | 5% |
| Montgomery | 20% |
| Pulaski | <1% |
| Radford | 2% |

Age

| | |
|-------|-----|
| 20-29 | 9% |
| 30-39 | 4% |
| 40-49 | 4% |
| 50-59 | 2% |
| 60-69 | 21% |
| 70-79 | 20% |
| 80+ | 40% |

Sex

| | |
|--------|-----|
| Male | 21% |
| Female | 79% |

Race*

| | |
|-------|-----|
| White | 83% |
| Black | 8% |
| Other | 2% |

*2% of respondents also described themselves as of Hispanic origin.

Employment Status

| | |
|--|-----|
| Employed full-time | 5% |
| Employed part-time | 15% |
| Self-employed | 2% |
| Homemaker | 15% |
| Retired | 50% |
| Unemployed | 2% |
| Unable to work because of a disability | 3% |
| Student | 12% |

Marital Status

| | |
|-------------------------------|-----|
| Never married | 13% |
| Member of an unmarried couple | 8% |
| Married | 12% |
| Divorced | 13% |
| Separated | 0% |
| Widowed | 48% |

Education

| | |
|----------------------------|-----|
| No high school or GED | 48% |
| High school diploma/GED | 12% |
| Vocational or trade school | 7% |
| Some college | 13% |
| Undergraduate degree | 7% |
| Graduate degree | 7% |

Household Income

| | |
|-------------------|-----|
| Under \$20,000 | 45% |
| \$20,000-\$49,999 | 18% |
| \$50,000-\$75,000 | 5% |
| Over \$75,000 | 0% |

HEALTH CARE**Health Insurance Status**

| | |
|------------------------------|-----|
| Healthcare benefits | 88% |
| -Medicare | 58% |
| -Medicaid/Medical Assistance | 16% |
| -Military CHAMPUS or VA | 9% |
| No benefits | 5% |

Primary Care Doctor (family doctor or nurse practitioner)

| | |
|-----|-----|
| Yes | 87% |
| No | 10% |

Most Healthcare Received From:

| | |
|--|-----|
| Family doctor | 87% |
| Medical doctor (specialist) other than family doctor | 3% |
| Free clinic or other clinic setting | 2% |
| Student health center | 3% |
| Other | 2% |

Last Routine Checkup (general physical exam -- not for a specific injury, illness, or condition):

| | |
|----------------------|-----|
| Within the past year | 73% |
| 1 - 2 years ago | 10% |
| 3 - 4 years ago | 8% |
| 5 or more years ago | 2% |

Doctor Visit within the Past Year (by type)*:

| | |
|---------------|-----|
| Eye doctor | 72% |
| Family doctor | 72% |
| Gynecologist* | 27% |
| Dentist** | 35% |
| Flu shot | 53% |

*15% of respondents have not seen a gynecologist in 3 or more years and 10% have never seen a gynecologist.

**28% of respondents have not been to a dentist in 3 or more years while 5% have never seen a dentist.

During the Past 12 Months, the Following Prevented the Necessary Health Care:

| | |
|--|-----|
| I don't know where to go for health services | 2% |
| I can't get transportation | 10% |
| Health services aren't close to where I live | 3% |
| I can't pay for health services | 8% |
| My health insurance doesn't cover what I need | 12% |
| I couldn't get an appointment | 2% |
| My deductible or co-payment (my share of the cost) is too high | 10% |
| I couldn't find a health care provider I like and/or trust | 2% |
| None—I've gotten the health care I need | 45% |

During the Past Year, Could Not Afford Necessary Prescription Medication:

| | |
|-----|-----|
| Yes | 13% |
| No | 67% |

During the Past Year, Could Not Afford Necessary Eyewear (eye glasses, contact lenses):

| | |
|-----|-----|
| Yes | 18% |
| No | 62% |

Frequency of Utilization for the Following Services (self or someone in household):**Late or weekend doctor hours**

| | |
|-----------------|-----|
| Rarely or Never | 43% |
| Sometimes | 20% |
| Often | 3% |
| Always | 0% |
| Does not Apply | 7% |

In the Past Year, Someone in the Home with a Mental Health or Emotional Problem (depression, severe stress, severe phobia, etc.) that Affected Ability to do Daily Activities:

| | |
|------------|-----|
| Yes | 10% |
| No | 62% |
| Don't Know | 7% |

RISK BEHAVIORS**Consumed Alcohol During the Past Month*:**

| | |
|------------------------|-----|
| Less than once a month | 5% |
| A few times per month | 2% |
| About once a week | 5% |
| A few days a week | 5% |
| Every day | 0% |
| Never drink | 67% |

*Of those who have consumed alcohol, 17% report consuming 1-2 drinks.

Ever Smoked*:

| | |
|------------------------------|-----|
| Yes, I am currently a smoker | 2% |
| Yes, but I no longer smoke | 37% |
| No | 53% |

*Of those who have smoked, 12% reported smoking more than 1 pack a day; 5% reported using smokeless tobacco.

During the Past Month, Participation in Physical Activity/Exercise:

| | |
|-----|-----|
| Yes | 68% |
| No | 20% |

Seatbelt Use:

| | |
|---------------------|-----|
| Always | 83% |
| Nearly always | 3% |
| Sometimes | 3% |
| Seldom | 0% |
| Never | 0% |
| Never drive or ride | 0% |

Drugs/Alcohol and Driving:**In the past month, rode in a car/truck driven by someone who drank alcohol**

| | |
|------|-----|
| -Yes | 5% |
| -No | 72% |

In the past month, rode in a car/truck driven by someone who had taken drugs

| | |
|------|-----|
| -Yes | 2% |
| -No | 77% |

Guns/Firearms in/around home (kept in a garage, outdoor storage area, or motor vehicle):

Yes* 30%

No 63%

*10% of respondents have a loaded and unlocked firearm in the home.

ENVIRONMENTAL HEALTH**Belief that the Following is a Problem in Local Area:**

| | |
|-----------------------------------|-----|
| Outdoor Air Quality | 17% |
| Indoor Air Quality | 13% |
| Recreational Water Quality | 12% |
| Drinking Water Quality | 7% |
| Sewage Disposal | 3% |
| Solid Waste Disposal (trash) | 5% |
| Hazardous Materials Handling | 3% |
| Food Safety | 5% |
| Housing (adequate heat, plumbing) | 7% |
| Worker Safety and Health | 12% |
| Pest Control | 8% |

COMMUNITY AWARENESS**Awareness of the Following Available Services:**

| | |
|--|-----|
| Child daycare | 27% |
| Adult daycare (i.e., 65+ or disabled) | 32% |
| Home health services (i.e., 65+ or disabled) | 47% |
| Transportation (i.e., 65+ or disabled) | 53% |
| Treatment for alcohol or drug abuse | 37% |
| Counseling for mental health or emotional problems | 47% |
| Child immunizations | 33% |
| Parenting education | 32% |
| Family or marriage counseling | 30% |
| Women's health information | 47% |
| Domestic violence counseling/shelter | 30% |
| Prenatal care | 28% |
| Birth control information | 28% |
| STD services and counseling | 27% |
| HIV/AIDS services and counseling | 28% |

Frequency of Utilization for the Following Services (self or someone in household):**Youth programs**

| | |
|-----------------|-----|
| Rarely or Never | 18% |
| Sometimes | 2% |
| Often | 2% |
| Does not apply | 43% |

Find Out About News or Community Events Via:

| | |
|--|-----|
| Newspaper | 55% |
| Television | 68% |
| Radio | 38% |
| Church/mosque/temple bulletin | 38% |
| Word-of-mouth (friends, relatives, etc.) | 47% |
| Other | 3% |

CARE-GIVING**Provide care for 65+ (one or more person):**

| | |
|-----|-----|
| Yes | 7% |
| No | 73% |

Kind of help provided

| | |
|--|-----|
| Help with personal care (bathing, dressing, eating, etc.) | 43% |
| Help with household needs (cooking, shopping, driving, etc.) | 43% |

Services available to self and care receiver when needed:

| | |
|---|-----|
| Feel assisted living is available | 43% |
| Feel <i>home health nursing</i> is available | 43% |
| Feel <i>group home setting</i> is available | 43% |
| Feel <i>help with housework and home maintenance services</i> are available | 43% |
| Feel <i>someone to live-in or stay with care receiver</i> is available | 43% |
| Feel <i>education and support services</i> are available | 43% |
| Feel <i>transportation services</i> are available | 57% |
| Feel <i>help with paying for medications</i> is available | 29% |
| Feel <i>adult daycare services</i> are available | 57% |

Appendix X

Summary of Forces of Change Assessment

| | Forces | Threats Posed | Opportunities Created |
|---|--|--|---|
| | Economic | | |
| 1 | Growth in disparity between "haves and have-nots" | Growth in dissention between economic classes, races, ethnic groups and neighborhoods; health disparities | Interest in reducing some racial and ethnic disparities at Federal, State and local levels; more services to vulnerable populations |
| 2 | Increasing global economy | Increased demand for limited resources; accelerating environmental degradation | Improved health prosperity and quality of life worldwide |
| 3 | Shortfalls in local, state, and federal government budgets and private funding | Reduced funding for health and human services; reduction in State public health services; reduction in funding to State agencies and departments for public health and human services; loss of Federal funds due to loss in matching State funds | Increased need to operate health and social service agencies more efficiently; local residents will become less dependent on State services and funding |
| 4 | Slow U.S. economy | Increased unemployment due to lay-offs (Volvo, etc.), crime, homelessness and poverty; decreased quality of life | Justification for improvement of health and social services "safety net"; increased collaboration among health and human services agencies |
| 5 | Rising cost of energy | Lack of transportation; prioritizing purchases | Alternative energy; new jobs; decentralization of services; growth of budgeting services; sustainability (i.e., canneries) |

| | Forces | Threats Posed | Opportunities Created |
|---|---|--|--|
| | Environmental | | |
| 1 | Emerging/re-emerging infectious diseases | Outbreaks of serious diseases that were formerly confined to isolated areas can be spread worldwide in a matter of weeks | Improvement in disease surveillance; growing interest in combating diseases that were formerly not perceived as a threat to the US |
| 2 | Global hunger/malnutrition | Famine, disease, and unrest in other parts of the world; unstable governments without the resources to control diseases; increased migration to US; global deforestation to develop more farmland; etc. | Increased investment and effort to produce food more efficiently; market for US surplus agricultural products |
| 3 | Global warming & weather effects; declining air quality | Increased death and illness due to heat; potentially drier climate and more demand on aquifer; increased demand on electric utility to support additional air conditioning; more incidents of violent weather (floods, tornados) expected; increase in asthma and other respiratory illnesses and deaths | Potential for warmer temperatures to bring more rain to this area; continuing efforts to reduce auto emissions; increasing support for ozone action plan; increasing interest in "hybrid" cars |
| 4 | Lead-based paint on old homes | Potential lead poisoning, especially to young children exposed to peeling lead-based paint | Justification for increased effort to renovate/ demolish residences with lead-based paint |
| 5 | Limited numbers of citizens on public water and sewer | Possible limits to growth and development | Greater emphasis on funding and commitment to provide public water and sewer to as many citizens as possible |
| 6 | Deterioration of housing stock | Increased energy costs; high risk of personal injury; accessibility | Engagement of faith-based community; increased opportunity for and awareness of community service and vocational training |

| | Forces | Threats Posed | Opportunities Created |
|---|---|--|---|
| | Healthcare Delivery | | |
| 1 | Decreasing health literacy and satisfaction with healthcare system | Residents will be less able to make informed decisions about maintaining and improving their health; less likely to obtain needed services | New communications technologies can be used to address this issue |
| 2 | Drug companies marketing directly to the public | Higher medical costs due to preference of name brands over generic equivalents; physicians feel pressured to prescribe medications that may not be the most appropriate for the situation | Consumer becoming better informed about his/her illness and taking an active role in addressing it |
| 3 | Focus from general to specialty health care | Fewer providers will be available to provide general health care and referrals to specialists | More providers will be available to treat illnesses requiring special knowledge and skills; use health education |
| 4 | Growing population of elderly (baby boomers) | Growth in elderly population will require additional resources for adult day care, nursing homes, et al; needs are resource intensive | Growth in elderly population due to aging of baby boomers can add to the voice of older residents |
| 5 | Inadequate funding for mental health | Residents with treatable mental illness will not be able to achieve their potential; some will become criminals, some will become victims and some will become homeless; jail population will contain individuals who would be more appropriately located in a mental health facility; etc. | Community can develop sustainable and effective mental health programs through local resources |
| 6 | Healthcare providers affecting change such as focus on specialty care over general, rising malpractice costs, and healthcare providers wanting reasonable working hours | Fewer providers will be available to provide general health care and referrals to specialists; loss of health care professionals and services; percentage of family income needed for medical costs continuing to rise; more providers are needed per capita; more difficulty obtaining care outside normal business hours | More providers will be available to treat illnesses requiring special knowledge and skills; increased costs may provide incentives for other insurance companies to compete in this area; providers can attain a personal life that includes family and other priorities; utilize mid-level practitioners |

| | | | |
|----|---|--|--|
| 7 | Rising healthcare costs and increasing number of uninsured | Less people receiving needed health services; large segment of workforce with low wages & w/o healthcare; high use of emergency room for care; health of uninsured population compromised due to limited access to care; poor quality of life for low-income families; damage to economy | Recognition of need to focus on prevention and primary care; compelling case for funding could be made to improve health care access; several grant opportunities exist to address issue |
| 8 | Uneven distribution of health care providers | Patients in some areas must travel considerable distances to obtain health care | Well-placed ancillary services can support multiple providers more efficiently |
| 9 | Vaccine shortages | Populations not protected against diseases where vaccine is unavailable; increased cost for vaccines | Health providers required to use available vaccines more efficiently; more interest in producing vaccines by manufactures if demand remains high |
| 10 | Increasing complexity of health care system | Poor service; increased stress; potential for health care "drop-out" leading to decreased prevention and increased health problems/complications | Opportunities for more medical/social workers, patient advocacy |
| 11 | Health insurance companies' influence/control of health care | Lack of adequate care leading to poor health outcomes | Healthcare system reform |
| 12 | Health care provider shortages--dental, primary care, mental health, etc. | Lack of health care; inappropriate use of ER; patient pain and suffering | Increased funding/support for healthcare education; increased importance of complementary medicine |

| | Forces | Threats Posed | Opportunities Created |
|---|--|--|---|
| | Legal/Political | | |
| 1 | 9-11 and repercussions; War on terrorism | Injury/death due to continued acts of terrorism; increased public anxiety and stress; increased costs for domestic security to be passed on to consumers/taxpayers; resources diverted from health/social services to homeland security; Public health becomes overly focused on emergency preparedness with fewer resources available for disease and injury prevention | Additional funding for public health infrastructure; Increased effort to reduce threats of terrorism and weapons of mass destruction; greater coordination among public health system partners; improved emergency preparedness including disease surveillance; better coordination among government programs under Homeland Security |
| 2 | Emphasis on outcomes, accountability, and community collaboration/partnerships | Building data infrastructure; time lapse between system performance and health outcomes; forces outside the public health system have an effect on health outcomes; encouragement of "evidence-based programs" and Best Practices; can quell innovative programs | Increased desire for accountability; LPHS focuses on outcomes and accountability; MAPP helps identify issues which lead to Best Practices in those areas; ensures community-driven process and development of traditional and non-traditional partnerships |
| 3 | Health Insurance Portability & Accountability Act | Sharing of information for purposes of coordinating patient care and disease surveillance will be more difficult | More protection of personal medical information; continuity of health insurance coverage |
| 4 | Immigration | Possible loss of jobs to immigrant workers; introduction of communicable diseases not found or rare in US; increased burden to safety net if immigrants cannot support themselves | Infusion to community of new ideas, cultures and art bringing new resources for problem-solving, development of new businesses, products etc. |
| 5 | Increasing local support for smoking ban | Potential negative impact to restaurants if patrons decide to go elsewhere | Reduction in environmental tobacco smoke; decrease in respiratory illness and death |

| | | | |
|---|--|---|---|
| 6 | Virginia Tech shootings | Taxpayer costs of potential lawsuits and injuries; diversion of potential charitable dollars | Increased attention and funding directed at college/university safety, mental health, and gun control; improvements of college/university safety at Tech and nation-wide; improvements in mental health detection and treatment |
| 7 | Welfare reform and changes in Medicaid funding as well as widespread changes to the foster care system | Reductions in funding for many programs; not all residents who are eligible for Medicaid will obtain coverage; increased use of emergency rooms for health care; more reliance on local resources to finance health care for the indigent; rising cost to taxpayers; competing funds; development of institutionalization characteristics | Families on welfare will have strong incentives to achieve more self sufficiency with less reliance on State and Federal aid; impetus for local effort to ensure access to care |
| 8 | Political conservatism | Reduced resources; closer scrutiny of public funds; funding diverted to "socially conservative" programs; potential for loss of other programs | Trend toward quality improvement; chance to make it clear that PH is unique; new collaborators; opportunity for businesses to provide funding for otherwise lost services |
| 9 | Increasing jail/prison populations | Rising cost to taxpayers; development of institutionalization characteristics | Justice reform |

| | Forces | Threats Posed | Opportunities Created |
|---|--|--|---|
| | Social | | |
| 1 | Continued urban sprawl | Increasing traffic and air quality problems due to long commutes; growing threat to water supply as building over aquifer continues; growing dependency on automobiles for transportation; loss of area farmland; waning commitment to address inner-City redevelopment; increased expense to provide infrastructure, etc. | Reduction in population density; increase in tax base as new subdivisions are annexed |
| 2 | Crisis of community and community values; slow erosion of community spirit | Charitable giving becoming counter-cultural; Resources available for indigent health care and social services declining; decreasing sense of social responsibility in community; wants becoming needs; residents on a destructive path of excessive personal debt and unhappiness with economic status irrespective of income; no sense of community; loss of connection with others; erosion of community mental health; etc. | Partnering efforts |
| 3 | Decreased local educational attainment | Emerging local workforce will not be equipped to obtain more skilled (higher paying) jobs | Increased certificate and vocational programs; increased distance learning |
| 4 | Increasing Hispanic and other populations; more diffused (mixed) families | Increased need for workforce diversity, written materials, signage; increasing need for cultural competency; increasing threat of illnesses that seem to disproportionately affect Hispanics (e.g. diabetes), etc; loss of sense of belonging; more challenges to parenting; etc. | Blended cultures add to uniqueness of NRV; connection with other countries strengthened; local economy becoming more diverse and, therefore, more resistant to recessions; increased interest in adequacy of services for a diverse population; exposure to more diverse viewpoints; larger extended families |

| | | | |
|---|---|--|--|
| 5 | Increasing incidence of substance abuse | Increased physical and mental illness; increased crime; more family and marital problems; drain on local economy due to poor work performance, absenteeism, etc.; limited health resources must be devoted to detoxification & treatment; increased incidence of child abuse and neglect | It can be argued that local investments to prevent substance abuse and treat addicts can yield significant long-term benefits for the community; development of drug court in New River Valley |
| 6 | Over-reliance on faith community for social services | Some residents in need unable to obtain services due to limited funds available | Develop more creative and collaborative networks of services; increased communication between churches |
| 7 | Complexity of health issues (poor nutrition, sedentary lifestyles, mental health, etc.) | Increased obesity, poor health, and chronic disease (heart, diabetes, etc.); increasing health care costs; decrease in quality of life; loss of mobility; may lead to severe crisis in healthcare system before properly addressed | Resources are increasing to assist residents in losing weight, improving diet, becoming active; more local efforts to change behavior (e.g. Fit City Campaign); more effort to develop nutritious food options that are compatible with busy lifestyles; local leadership promoting fitness; partnering efforts to address chronic diseases in the NRV |
| 8 | Teen pregnancy | Poor birth outcomes; negative impact on physical and mental well-being of mother; increased burden on health care and social service providers; risk for child abuse; etc. | Continued and increased partnering of local agencies to address this issue (e.g. schools, LHDs) |
| 9 | Workforce changes | Aging workforce means loss of experienced staff; smaller workforce can lead to shortages in professions | Allows younger staff to infuse organizations with fresh ideas; realization of the need to work smarter |

| | Forces | Threats Posed | Opportunities Created |
|---|---|---|---|
| | Technological/Scientific | | |
| 1 | Availability of new vaccines | Higher cost for vaccines | Fewer injections needed during a routine well child visit, when multivalent vaccines are used; more effective vaccines with fewer side effects |
| 2 | Advances in communication technology | Segments of the population are being left behind due to lack of computer access | Health care training can be facilitated and enhanced; health care information can be transmitted and be made very portable; consumers can obtain more information about disease prevention and health maintenance |
| 3 | Advances in genetic engineering | Unwarranted fears by consumers that genetically engineered food products are harmful; widespread use of genetic engineering techniques could lead to accidental development of harmful organisms; introduction of a genetically engineered food product with deleterious long-term health effects; new techniques can facilitate efforts of bioterrorists | Medical advances; cheaper food products; agricultural products that are more resistant to insects and disease; lower costs to manufacture medications; etc. |
| 4 | Advances in medical care | Higher costs for health care due to more expensive equipment and pharmaceuticals; additional training needed for medical professionals to maintain current expertise | Improved quality of life; increased life span for consumers |
| 5 | Growing biotechnology industry | Increased cost of health care | Increase in high-tech jobs; impetus for more residents to pursue science education; increased tax revenue |
| 6 | Overuse of genetics in food and drug production | Potential introduction of a genetically engineered food product with deleterious long-term health effects | |

Appendix Y

Initial DRAFT NRV MAPP Strategic Issues

1. How do we design a plan for informing/educating our diverse population and for creating policies that improve preventative health strategies focused on residents of the New River Valley. This includes, but is not limited to, our higher-risk populations (un/under-insured, elderly, minorities, and low income).

- *How do we leverage our educational opportunities to disseminate health knowledge, skills, and dispositions (attitudes)?*
- *How do we increase the “valuing” of education by our population?*
- *How do we create awareness and acceptance of diversity?*
- *How do we promote positive cultural change and involvement?*
- *How do we involve, connect, and engage people in health community living?*
- *How do we promote an inclusive and comprehensive healthcare system?*
- *How do we increase knowledge and awareness of health resources?*
- *How do we promote healthy lifestyle choices?*

This would include many issues such as chronic disease and underlying causes such as obesity, housing deterioration.

2. How do we complete a holistic health-centric planning process to address community development and access to affordable, quality healthcare?

- *How do we promote safe and strong families and communities?*
- *How do we promote the well-being of our children within and across community agencies?*
- *How do we ensure the community, especially our high-risk populations (i.e., un/under-insured), has access to holistic healthcare and preventive services (i.e., dental, mental health, vaccination) and effectively utilize health and human services?*
- *How do we effectively motivate and sustain individual involvement in Community Health Improvement Initiatives?*
- *How do we impact fragmented healthcare services to provide more seamless, integrated comprehensive care?*
- *How do we ensure the quality of the public health system?*
- *How do we achieve and maintain optimal health and independence for older adults?*

This would include issues such as healthcare provider shortages, alcohol and other drugs, etc.

3. How do we gather, analyze, use, and share data for program planning, evaluation, and resource allocation?

- *How do we ensure adequate funding and appropriate allocation of resources?*
- *How do we know we are effective with our programs?*
- *How do we prioritize available community resources to fund programs?*
- *How do we creatively allocate and utilize the spectrum of resources available to us (not just money)?*

Appendix Z

NRV MAPP Top Five Priority Community Health Status Issues,

Contributing Community Partners, Problems, and Voting Scores

- Access to Affordable, Holistic Healthcare (both prevention and treatment)
(includes medical, dental, vision, hearing, mental health, substance abuse, medications, transportation, care coordination, case management, etc.)

- All PATH members
- FQHCs
- Free Clinics
- Hospitals
- Health Departments
- Private healthcare providers
- CHIP
- Head Start
- Medical Assistants

- Health Disparities
(includes socio-economic status, cultural competency, race/ethnicity, unemployment)

- Education/Schools
- Unemployment/Underemployment
- Poverty
- Some racial/ethnic disparities
- Language
- Cultural
- Disability
- Pre-existing health conditions
- Lifestyle

All working on it
Need more business involvement
Faith community
Travis Jackson/USDA
Robert Wood Johnson Foundation
Schools

- “Seamless” Web of community-based public health and social services (including linkages between stakeholders involved in community development, public health, and social services)

- PATH
- Business community
- Faith community
- Elected officials
- Opportunity of tele-health
- Silos--not working together
- Avoid duplication and gaps

Need leadership to support the web

- Transit/Planning/Community Design (includes access to healthcare, jobs, air quality)

- Inter-connectedness within the NRV
- Blacksburg Transit
- Planning District
- Pulaski – small rural transit
- Radford – transit process received a new grant
- Montgomery County – EPA grant proposal
- Senior transit grant
- Med-Ride
- Ride Solutions
- Regional Working Group (NRVPDC)

- Aging/Disabled/Mentally-Ill Population

- Data are being updated/assembled
- Real problem
- Caregiving issues
- Housing/Long-Term Care

Voting Scores:

- 54 votes** Access to Affordable Holistic Healthcare (both prevention and treatment)
(includes medical, dental, vision, hearing, mental health, substance abuse, medication, transportation, care coordination, case management, etc.)
- 33 votes** Health Disparities
(includes socio-economic status, cultural competency, race/ethnicity, unemployment)
- 30 votes** “Seamless Web” of community-based, public health, and social services (including linkages between stakeholders involved in community development, public health, and social services)
- 24 votes** Transit/Planning/Community Design (includes access to healthcare, jobs, air quality)
- 21 votes** Aging/Disabled/Mentally-Ill Population (includes care-giving)
- 15 votes** Chronic Diseases (cardiovascular, diabetes, respiratory, etc.)
- 9 votes** Environmental (includes air quality [outdoor and indoor], water quality [drinking and recreational], food safety, solid waste disposal, walkable/green community)
- 6 votes** Affordable and Healthy Housing (includes universal design)
- 6 votes** Built Environment (includes schools/educational institutions, home, workplaces)
- 3 votes** Infectious Diseases
- 3 votes** Data gathering, analysis, use, and integration for program planning, evaluation, and resource allocation
- 0 votes** Obesity

Appendix AA

Definition of Terms

Access: The potential for or actual entry of a population into the health system. Entry is dependent upon the wants, resources, and needs that individuals bring to the care-seeking process. The ability to obtain wanted or needed services may be influenced by many factors, including travel, distance, waiting time, available financial resources, and availability of a regular source of care.

Action: In the Community Action Model, an action refers to the series of steps resulting in an outcome that is achievable, long-term, sustainable, and compels another entity to do something to change the environment for the well-being of all.

Activity: An activity is an educational intervention that leads up to and supports an action.

Age-adjusted rates: Age-adjustment is the most commonly required type of adjustment for in-depth health data analysis that accounts for the effect of variations in the age distribution of the population of each locality. Age-adjusted rates present one summary figure for a population. To calculate age-adjusted rates, statistical procedures are conducted to “remove the effect” of the differences in composition of various populations. For example, a community with a predominant population younger than 65 years of age may have a lower death rate from influenza and pneumonia because there are fewer persons among whom these infections cause the greatest mortality. To examine and remove this effect of age, an age-adjusted rate would be used.

Assessment: As one of the three major core functions of public health as defined in the 1988 IOM Report, *The Future of the Public's Health*, assessment involves the systematic collection and analysis of data in order to provide a basis for decision-making. This may include

collecting statistics on local health status, health needs, and/or other public health issues.

Assessment encompasses “all the activities involved in the concept of community diagnosis, such as surveillance, identifying needs, analyzing the causes of problems, collecting and interpreting data, case-finding, monitoring and forecasting trends, research, and evaluation of outcomes. These data are the “objective factors” utilized by communities to base decisions about policy development and resources.

Assessment Protocol for Excellence in Public Health (APEX-PH): A flexible assessment and planning tool developed by NACCHO for local health officials to assess the organization and management of the health department, provide a framework for working with community members and other organizations to assess the health status of the community, and establish the leadership role of the health department in the community.

Asset mapping: A tool for mobilizing community resources. It is the process by which the capacities of individuals, civic associations, and local institutions are inventoried.

Assurance: One of the three major functions of public health as defined in the 1988 IOM Report, *The Future of the Public's Health*. “Public health makes sure that services necessary to achieve agreed upon goals are provided, either by encouraging actions by other entities (private or public sector), by requiring such action through regulation, or by providing services directly.”

Behavioral risk factors: Risk factors in this category include behaviors that are believed to cause, or to be contributing factors to most accidents, injuries, disease, and death during youth and adolescence, as well as significant morbidity and mortality in later life. This is a category recommended for collection in the Community Health Profile.

Behavioral risk factor surveillance survey (BRFSS): A national survey of behavioral risk factors conducted by state with CDC support. On-line at <http://www.cdc.gov/brfss/>

Benchmarks: Points of reference or a standard against which measurements can be compared. In the context of indicators and public health, a benchmark is an accurate data point, which is used as a reference for future comparisons (similar to a baseline). Sometimes it also refers to “best practices” in a particular field. Communities compare themselves against these standards. Many groups use benchmark as a synonym for indicator or target.

Best practice(s): Recommendations for establishing a practical, effective, and comprehensive approach. The best clinical or administrative practice or approach at the moment, given the situation, the consumer’s or community’s needs and desires, the evidence about what works for this situation/need/desire, and the resources available. Organizations also often use *promising practices*, which are defined as clinical or administrative practices for which there is considerable evidence or expert consensus and which show promise in improving outcomes, but which are not yet proven by the highest or strongest scientific evidence. *Birth rate:* The birth rate—also called natality—is the ratio of total live births to total population in a specified community or area over a specified period of time. The birth rate is often expressed as the number of live births per 1,000 of the population per year.

Body mass index: This index mathematically relates height and weight for a result that is a good indicator of body fat. It is a better predictor of health risk than weight alone. This formula is most accurate for adults other than body builders, competitive athletes, and pregnant or breastfeeding women. BMI is determined by calculating the weight in kilograms divided by the height in meters squared. $BMI = (\text{weight in kilograms}) / (\text{height in meters})$.

Capacity to initiate or participate in research: Internal capacity to initiate or participate in timely epidemiologic, economic, and health services research begins with ready access to researchers having skills to design and conduct research in those areas. Capacity also includes

the availability of analytic tools (databases, information technology) and facilities (offices) for analyses, and the ability to disseminate and use research findings. For purposes of assessing the LPHS performance, the phrase “health services research” includes research on the management, configuration, organization, operation, and administration of public health systems.

Catchment area(s): A defined geographical area that includes the residents, households, or customers that are served by a particular organization, governmental agency, or business. For example, a catchment area can refer to residents that live within an identified geographical area and whom certain healthcare providers and hospitals serve.

Cause of death: Any condition that leads to or contributes to death and is classifiable according to the *International Classification of Diseases*.

Collaborative leadership: A type of leadership that engages others by designing constructive processes for working together, convenes appropriate stakeholders, and facilitates and sustains their interaction. In collaborative leadership, leaders promote and safeguard the collaborative process through shared leadership, rather than taking unilateral action. Collaborative leaders perform their work in coalitions, alliances, and partnerships.

Communicable disease (data): Measures within this category include diseases which are usually transmitted through person-to-person contact or shared use of contaminated instruments or materials. Many of these diseases can be prevented through a high level of vaccine coverage of vulnerable populations, or through the use of protective measures, such as condoms for the prevention of sexually-transmitted diseases.

Communications strategy: A statement that describes the situation, audience, behavior change objectives, strategic approach, key message points, channels, management, and evaluation plans.

Community(ies): The aggregate of persons with common characteristics such as geographic, professional, cultural, racial, religious, or socio-economic similarities; communities can be defined by location, race, ethnicity, age, occupation, interest in particular problems or outcomes, or other common bonds.

Community Action Model (CAM): The CAM is asset-based and focuses on the strengths or capacity of a community to create changes from within. The CAM moves away from projects that focus solely on changing individual lifestyle and behavior to projects that mobilize community members and agencies to change environmental factors promoting economic and environmental inequalities.

Community Action Team (CAT): Community Action Team (CAT) members are recruited and trained to develop skills, increase knowledge and build capacity. The participants will use this knowledge and skills to design and implement an action.

Community assets: Contributions made by individuals, citizen associations, and local institutions that individually and/or collectively build the community's capacity to assure the health, well-being, and quality of life for the community and all its members.

Community-based participatory research (CBPR): A collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community, has the aim of combining knowledge with action and achieving social change to improve health outcomes and eliminate health disparities.

Community collaboration: A relationship of working together cooperatively toward a common goal. Such relationships may include a range of levels of participation by organizations and members of the community. These levels are determined by the degree of partnership

between community residents and organizations, the frequency of regular communication, the equity of decision making, access to information, and the skills and resources of residents. Community collaboration is a dynamic, ongoing process of working together, whereby the community is engaged as a partner in public health action.

Community health: A perspective on public health that regards “community” as an essential determinant of health and an indispensable ingredient for effective public health practice. It takes into account the tangible and intangible characteristics of the community, its formal and informal networks and support systems, its norms and cultural nuances, and its institutions, politics, and belief systems.

Community health assessment: Community health assessment calls for regularly and systematically collecting, analyzing, and making available information on the health of a community, including statistics on health status, community health needs, epidemiologic and other studies of health problems. Often this can take the form of community needs assessments, which are intended to assist the community in adapting and responding to important health problems and risks. Increasingly, moving beyond problems and deficits toward an analysis of community strengths and resources is becoming recognized as a critical part of understanding a community’s health.

Community health improvement: Focuses on the combined effects of individual and community, physical and social environments, and the policies and interventions used to promote health, prevent disease, and ensure access to quality healthcare. The ultimate measure of success in any health improvement effort is the health status of the target population.

Community health improvement plan: A long-term, systematic effort to address health problems on the basis of the results of assessment activities and the community health

improvement process. This plan is used by health and other governmental education and human service agencies, in collaboration with community partners, to set priorities and coordinate and target resources. A HIP is critical for developing policies and defining actions to target efforts that promote health. It should define the vision for the health of the community inclusively and should be done in a timely way.

Community health improvement process: Community health improvement is not limited to issues classified within traditional public or health services categories, but may include environmental, business, economic, housing, land use, and other community issues indirectly affecting the public's health. The community health improvement process involves an ongoing collaborative, community-wide effort to identify, analyze, and address health problems; assess applicable data; develop measurable health objectives and indicators; inventory community health assets and resources; identify community perceptions; develop and implement coordinated strategies; identify accountable entities; and cultivate community "ownership" of the entire process. An example of a community health improvement tool is MAPP.

Community health professional: An individual who provides a community-based service related to the preservation or improvement of the health of individuals, or the treatment or care of individuals who are injured, sick, disabled, or infirm.

Community health profile: A comprehensive compilation of measures representing multiple categories that contribute to a description of health status at a community level and the resources available to address health needs. Measures within each category may be tracked over time to determine trends, evaluate health interventions or policy decisions, compare community data with peer, state, national, or benchmark measures, and establish priorities through an informed community process.

Community health status: Refer to *health status*. Measured in terms of mortality (rates of death within a population) and morbidity (the incidence and prevalence of disease). Mortality may be represented by crude rates or age-adjusted rates (AAM); by degree of premature death (Years of Productive Life Lost [YPLL]); and by cause (disease—cancer and non-cancer or injury—intentional, unintentional). Morbidity may be represented by age-adjusted (AA) incidence of disease.

Community partnerships: A continuum of relationships that foster the sharing of resources, responsibility, and accountability in undertaking activities within a community.

Community support: Actions undertaken by those who live in the community that demonstrate the need for and value of a healthy community and an effective local public health system. Community support often consists of, but is not limited to, participation in the design and provision of services, active advocacy for expanded services, participation at board meetings, support for services that are threatened to be curtailed or eliminated, and other activities that demonstrate that the community values a healthy community and an effective local public health system.

Community water system (CWS): A public water system that regularly serves 25 or more people or has at least 15 year-round service connections.

Competencies: Refer to *core legal public health competencies* and *core public health competencies*.

Consultation: A process, act, or conference through which advice is given, information is shared, or views are exchanged.

Contributing factors (direct and indirect): Those factors that, directly or indirectly, influence the level of a risk factor (determinant).

Core competencies: A set of skills that is essential for an individual to be accepted as competent in a particular discipline or topic. See also *core legal public health competencies* and *core public health competencies*.

Core function(s) of public health: Three basic roles for public health for assuring conditions in which people can be healthy. As identified in the Institute of Medicine's landmark report, *The Future of Public Health*, these are assessment, policy development, and assurance.

Core indicators: Data element that MAPP recommends all communities collect and track. The core indicators have a higher priority based on the critical nature of the data, potential for comparative value, and relevance to most communities.

Core legal public health competencies: A set of law-specific skills and knowledge desirable for the practice of public health. These competencies are intended to serve as guides to workforce development efforts for public health leaders [policy makers] who have specialized roles related to public health law, as well as for front-line staff who need a basic understanding of the role of law in protecting the public's health.

Core public health competencies: The core public health competencies encompass the individual skills desirable for the delivery of EPHS. They transcend the boundaries of the specific disciplines within public health and help to unify the profession. The competencies are divided into the following eight domains: Analytic Assessment Skills, Basic Public Health Science Skills, Cultural Competency Skills, Communication Skills, Community Dimensions of Practice Skills, Financial Planning and Management Skills, Leadership and Systems Thinking Skills, Policy Development/Program Planning Skills. Intended levels of mastery, and therefore learning objective for public health workers within each competency, will differ depending upon their backgrounds and job duties.

Credentialing: A process that results in formal recognition of professional, technical, or managerial competence through certification, licensure, or the award of a degree or diploma.

Cultural competence: A set of skills that result in an individual understanding and appreciation of cultural differences and similarities within, among, and between groups and individuals. This competence requires that the individual draw on the community-based values, traditions, and customs to work with knowledgeable persons of and from the community in developing targeted interventions and communications.

Death, illness, and injury (data): Health status in a community is measured in terms of mortality (rates of death within a population) and morbidity (rates of the incidence and prevalence of disease). Mortality may be represented by crude rates or age-adjusted rates (AAM); by degree of premature death (Years of Productive Life Lost or YPLL); and by cause (disease - cancer and non-cancer or injury - intentional, unintentional). Morbidity may be represented by age-adjusted (AA) incidence of cancer and chronic disease.

Demographic characteristics: These include measures of total population as well as percent of total population by age group, gender, race and ethnicity, where these populations and sub-populations are located, and the rate of change in population density over time, due to births, deaths, and migration patterns.

Determinants of health (or risk factors): Direct causes and risk factors which, based of scientific evidence or theory, are thought to influence directly the level of a specific health problem. These may be defined as the “upstream” factors that affect the health status of populations and individuals. Roughly divided into the social environment (cultural, political, policy, economic systems, social capital, etc), the physical environment (natural and built), and genetic endowment. The determinants of health affect both individual response (behavior and

biology) and the prevalence of illness and disease.

Dialogue: The skillful exchange or interaction between people that develops shared understanding as the basis for building trust, fostering a sense of ownership, facilitating genuine agreement, and enabling creative problem solving.

Effectiveness: The improvement in health outcome that a strategy can produce in typical community-based settings.

Environmental hazards: Situations or materials that pose a threat to human health and safety in the built or natural environment, as well as to the health and safety of other animals and plants, and to the proper functioning of an ecosystem, habitat, or other natural resource.

Environmental health: The quality of our physical environment, including air, water, and food, directly impacts health and quality of life, including the interrelationships between people and their environment that promote human health and well-being and foster a safe and healthful environment.

Environmental health indicators: The physical environment directly impacts health and quality of life. Clean air and water, as well as safely prepared food, are essential to physical health. Exposure to environmental substances such as lead or hazardous waste increases risk for preventable disease. Unintentional home, workplace, or recreational injuries affect all age groups and may result in premature disability or mortality. This is a category recommended for collection in the Community Health Profile.

Environments: Totalities of circumstances where individuals live, work, learn, and play.

Environmental risk: The likelihood of eating, drinking, breathing, or contacting some unhealthy factor in the environment and the severity of the illness that may result; the probability of loss or injury; a hazard or peril.

Epidemiologic investigations: The examination and analysis of data leading to epidemiologic conclusions. They are usually concerned with identifying or measuring the effects of risk factors or exposures. The common types of analytic study are case-control studies, cohort studies, and cross-sectional studies.

Epidemiology: The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.

Essential public health services (EPHS): The services identified in *Public Health in America*: monitoring health status; diagnosing and investigating health problems; informing, educating, and empowering people; mobilizing community partnerships; developing policies and plans; enforcing laws and regulations; linking people to needed services; assuring a competent workforce; conducting evaluations; and conducting research. Representatives from federal agencies and national organizations developed the statement made in *Public Health in America*. This statement includes two lists: one that describes what public health seeks to accomplish and the second that describes how it will carry out its basic responsibilities. The second list, the Essential Services, provides a list of 10 public health services that define the practice of public health.

Ethnicity: The classification of a population that shares common characteristics, such as religion, traditions, culture, language, and tribal or national origin.

Evaluation(s): Systematic approaches to determine whether stated objectives are being met.

Events: An occurrence, especially one of some importance. In the context of strategic planning, events can be Forces of Change that are one-time occurrences. Examples of events include the closing of a hospital, a natural disaster, or the passage of a piece of legislation.

Evidence-based interventions: The systematic selection, implementation, and evaluation of strategies, programs, and policies with evidence from the scientific literature that they have demonstrated effectiveness in accomplishing intended outcomes.

Exposure: The amount of a stressor that an organism contacts over a certain period of time.

Faith-based organizations: A general term used to refer to a religious congregation (church, mosque, synagogue, or temple); an organization, program, or project sponsored/hosted by a religious congregation (may or may not be incorporated); a nonprofit organization founded by a religious congregation or religiously-motivated incorporators and board members the clearly states its name, incorporation, or mission statement that is a religiously motivated institution; or a collaboration or organizations that clearly and explicitly includes organizations from the previously described categories.

Food safety: The responsibility of federal, state, and local food protection programs to ensure that food that is produced and delivered for consumption is safe, wholesome, and unadulterated.

Forces: A broad all-encompassing category that includes trends, events, and factors.

Goals: Broad, long-term aims that define a desired result associated with identified strategic issues.

Governing body(ies): The individual, board, council, commission, or other body with legal authority of the public health functions of a jurisdiction of local government; or region, or district, or reservation as established by state, territorial, or tribal constitution or statute; or by local charter, bylaw, or ordinance as authorized by state, territorial, or tribal constitution or statute.

Governmental public health agency: An officially authorized entity concerned with the prevention and control of disease and disability, and the promotion of physical and mental health of the population on the international, national, state, or municipal level.

Guide to Clinical Preventive Services: A compilation of current evidence-based recommendation on screening, counseling, and preventive medications for adults and children, developed by the U.S. Preventive Services Task force for clinicians in the primary care setting.

Guide to Community Preventive Services: A compilation of evidence-based recommendations for community prevention services developed by the Task Force on Community Preventive Services. The Community Guide summarizes what is known about the effectiveness, economic efficiency, and feasibility of interventions to promote community health and prevent disease.

Health: A dynamic state of complete physical, mental, spiritual and social well-being and not merely the absence of disease or infirmity.

Health assessment: The process of collecting, analyzing, and disseminating information on health status, personal health problems, population groups at greatest risk, availability and quality of services, resource availability, and concerns of individuals. Health assessment may lead to decision making about the relative importance of various public health problems.

Health belief model: A theory stating that the likelihood of taking a preventive health action will be determined by one's perceived susceptibility (the individual's perception about his or her own likelihood of contracting a condition); perceived severity (the seriousness the individual would assign to such a condition were it to happen); perceived benefits of the proposed action (the individual's perception about the likelihood that a given action would succeed in reducing or eliminating harm); and perceived barriers (factors that would interfere

with the individual's taking the desired action).

Healthcare provider: A person, agency, department, unit, subcontractor, or other entity that delivers a health-related service, whether for payment or as an employee of a governmental or other entity. Examples include hospitals, clinics, free clinics, community health centers, private practitioners, the local health department, etc.

Health communication: The art and technique of informing, influencing, and motivating individual, institutional, and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, healthcare policy, and the business of healthcare, as well as enhancement of the quality of life and health of individuals within the community.

Health education: Any planned combination of learning experiences designed to predispose, enable, and reinforce voluntary behavior conducive to health in individuals, groups, or communities. An educational process by which the public health system conveys information to the community regarding community health status, health needs, positive health behaviors and health care policy issues.

Health hazard: Health problems associated with exposure to air pollution, nuclear radiation, lead, and other toxicants, as well as hazards resulting from natural and technological disasters.

Health information: Information regarding medical or health-related subjects that individuals may use to make appropriate health decisions.

Health Insurance Portability and Accountability Act of 1996 (HIPAA): The Health Insurance Portability and Accountability Act of 1996 (HIPAA) consists of two Titles. Title I protects health insurance coverage for workers and their families when they change or lose their

jobs. Title II requires the Department of Health and Human Services (HHS) to establish national standards for electronic health care transactions and addresses the security and privacy of health information. HIPAA was first proposed with the simple objective to ensure health insurance coverage after leaving a job. In addition to these portability provisions, however, Congress added an Administrative Simplification section, with the goal of saving money in mind. The Administrative Simplification section was requested and supported by the health care industry because it standardized electronic transactions and required standard record formats, code sets, and identifiers. Following this standardization effort, Congress recognized the need to enhance the security and privacy of individually identifiable health information in all forms. In 1999, Congress directed the Department of Health and Human Services (DHHS) to develop privacy and security requirements in accordance with HIPAA's Title II.

Health marketing: The creation, communication, and delivery of health information and interventions using customer-centered and science-based strategies to promote the health of diverse populations.

Health needs: Demands required by a population or community.

Health problem: A situation or condition for people and their environment measured in death, disease, disability, or risk that is believed to persist in the future and is considered undesirable.

Health professional shortage areas: Areas that have been federally designated as having a shortage of primary medical care, dental or mental health providers and may be urban or rural areas, population groups or medical or other public facilities.

Health promotion: Planned combinations of educational, political, regulatory, and organizational supports for actions and conditions of living conducive to the health of

individuals, groups, or communities.

Health promotion activities: Any combination of education and organizational, economic, and environmental supports aimed at the stimulation of healthy behavior in individuals, groups, or communities.

Health resource availability: This domain represents factors associated with health system capacity, which may include both the number of licensed and credentialed health personnel and the physical capacity of health facilities. In addition, the category of health resources includes measures of access, utilization, cost and quality of health care and prevention services. Service delivery patterns and roles of public and private sectors as payers and/or providers may also be relevant.

Health risk: A condition of humans that can be represented in terms of measurable health status or quality-of-life indicators.

Health status: The current state of a given population using a variety of indices, including morbidity, mortality, and available health resources.

Health status indicator: A single measure that purports to reflect the health status of an individual or defined group.

Health threats: Any circumstances or events with the potential to adversely impact the health of the population.

Healthy people: *Healthy People* is a national health promotion and disease prevention initiative that brings together national, state, and local government agencies; nonprofit, voluntary, and professional organizations; businesses; communities; and individuals to improve the health of all Americans, eliminate disparities in health, and improve years and quality of healthy life. In *Healthy People 2010*, 467 health promotion and disease prevention objectives

were identified for achievement by the year 2010. A *Healthy People 2020* has just been developed.

Incidence: Rate of occurrence of new cases of a specified condition in a specified population within some time interval, usually a year.

Indicator: A measurement that reflects the status of a system. Indicators reveal the direction of a system (a community, the economy, and the environment), whether it is going forward or backward, increasing or decreasing, improving or deteriorating, or staying the same.

Impact objective: The level to which a direct determinant or risk factor is expected to be reduced within a specified time period—intermediate (1-5 years), realistic, and measurable.

Impact objectives relate directly to risk factors or determinants of the health or LPHS problem.

These are statements about *how much* and *when* the program should affect the determinant.

Impact objectives are quantitative measurements of determinants at some future date.

Example—90% of the school age children in the U.S. will have been immunized against rubella by December 31, 2011.

Infant mortality rate: A death rate calculated by dividing the number of infant deaths during a calendar year by the number of live births reported in the same year. It is expressed as the number of infant deaths per 1,000 live births.

Infectious diseases: A disease caused by a living organism. An infectious disease may, or may not, be transmissible from person to person, animal to person, or insect to person.

Infectious disease measures: The incidence of diseases that are usually transmitted through person-to-person contact or shared use of contaminated materials. Many of these diseases can be prevented through a high level of vaccine coverage of vulnerable populations or through the use of protective measures, such as condoms for the prevention of sexually-trans-

mitted diseases.

Infrastructure: The systems, competencies, relationships, and resources that enable performance of public health's core functions and essential services in every community. Categories include human, organizational, informational, and fiscal resources.

Injury: Injuries can be classified by the intent or purposefulness of occurrence in two categories: intentional and unintentional injuries. Intentional injuries are ones that are purposely inflicted and often associated with violence. These include child abuse, domestic violence, sexual assault, aggravated assault, homicide, and suicide. Unintentional injuries include only those injuries that occur without intent of harm and are not purposely inflicted.

Integrated information systems: Include both human resources and technological components. These systems facilitate the linkage of constituents to personal health care and to other related services in the public health arena.

Jurisdiction: Jurisdiction can refer to any area within geo-political boundaries, such as a city, a county, multiple counties, a state, a region, or a nation, within which a governmental agency has legal authority to perform a clearly defined function.

Key informants: Strategically-placed individuals who have knowledge and ability to report on the needs of those in the priority population. They may or may not be in positions with formal authority, but they are often respected by others in the community and thus possess informal authority.

Local health department: An administrative or service unit of local or state government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than the state; the governmental public health presence at the local level, which may be a locally governed health department, a branch of the state health department, a state-created district or

region, a department governed by and serving a multi-county area, or any other arrangement that has governmental authority and is responsible for public health functions at the local level.

(National Association of County and City Health Officials.

Local health officer: An individual who is hired or appointed by the appointing authority for a local governmental public health agency and who has direct responsibility for the day-to-day operations, management, and direction of the local governmental public health agency. Such individuals are generally called “director,” “administrator,” “commissioner,” “health officer,” or similar terms. The title of health official can also be applied to an individual hired by the health director of the local governmental public health agency and given authority and responsible for the medical oversight, external liaison with physicians, and for enacting the emergency powers authorize by statute. Such individuals are generally physicians and may be called “physician health officer,” or “medical director.” Both types of local health officials generally report to a board of health, city or county executive, or elected official.

Locally-established health priorities: Preferentially rated health-related activities or functions to be used in establishing local health planning goals.

Local public health agency (LPHA): Refer to *Local health department*. May vary in different jurisdictions, but usually includes the local health department, local board of health, and/or other local governmental entity designed to provide public health services to the jurisdiction. In many communities, the LPHA is a major player in the LPHS. The State also may provide services, and may comprise a part of the local public health system.

Local public health governance: Every community must be served by a governmental public health entity (typically the local health department, board of health, or office of the state health department) working in partnership with the community to assure the development and

maintenance of a flexible and dynamic community system that delivers services essential to the protection and promotion of the public's health. Effective governance in public health requires that individual members of governing entities within a local jurisdiction understand and exercise personal, board, agency, and other appropriate legal authority; fully appreciate obligations and responsibilities; assure the availability of adequate resources (including legal, financial, personnel, capital, equipment, and supplies) to perform essential public health services; develop policies to support public health activities and goals; routinely evaluate, monitor and set goals for improving community health status; and assure that all relevant stakeholders participate in achieving public health objectives.

Local public health system (LPHS): The collection of public, private and voluntary entities, as well as individuals and informal associations that contribute to the public's health within a jurisdiction.

Mandated: Any responsibility, action, or procedure that is imposed by one sphere of government on another through constitutional, legislative, administrative, executive, or judicial action as a direct order, or that is required as a condition of aid.

Maternal and Child Health (MCH): One of the most significant areas for monitoring and comparison relates to the health of a vulnerable population: infants and children. This category focuses on birth data and outcomes as well as mortality data for infants and children. Because maternal care is correlated with birth outcomes, measures of maternal access to, and/or utilization of, care is included. Births to teen mothers is a critical indicator of increased risk for both mother and child.

Media advocacy: The processes by which individuals or groups use the media to bring about social and/or organizational change on behalf of a particular health goal, program, interest, or population.

Media strategy: Designed to inform the community about the benefits of public health and the role of the public health system in improving community health. Media strategy is implemented through formal and informal community networks, which may include schools, the faith community, and community associations.

Mentoring: The pairing of more experienced with less experienced staff to provide the latter with needed advice, skills development, and other career resources.

Mission statement: A description of the unique purpose of an organization. The mission statement serves as a guide for activities and outcomes and inspires the organization to make decisions that will facilitate the achievement of goals.

Mobilizing for Action through Planning and Partnerships (MAPP): A community-wide strategic planning tool developed by National Association of County and City Health Officials (NACCHO) and Centers for Disease Control (CDC).

Morbidity: Illness or lack of health caused by infection, dysfunction, or injury. Most illnesses are not reportable to the board of health. Available morbidity data is often not population-based and is partially available from either public or private sources.

Mortality: A measure of the incidence of deaths in a population.

Multiple determinants of health: A variety of factors that influence health status in populations. Health determinants include biology and genetics, lifestyle, environment, social and cultural factors and access to health services.

National Public Health Performance Standards Program (NPHPS): A partnership effort

to improve the practice of public health and the performance of public health systems. Includes three instruments: the State Public Health System Performance Assessment; the Local Public Health System Performance Assessment; and the Local Public Health Governance Performance Assessment.

Network: An association of individuals or organizations having a common interest and formed to provide mutual assistance, helpful information, or the like.

Objectives: Defined as results of specific activities or outcomes to be achieved over a stated time. Objectives are specific, measurable, and realistic statements of intention. Objectives state *who* will experience *what change or benefit* and *how much* change is to be experienced in *what time*. The three types of objectives commonly used are *outcome*, *impact*, and *process*.

Opinion leaders: Individuals who are well-respected in a community and who can accurately represent the views of the priority population. Examples include political figures, chief executive officers of companies, administrators of local school districts, and other highly visible and respected individuals.

Operational definition of a functional local health department: A statement to create a shared understanding of what people in any community, regardless of size, can expect from their local health department.

Ordinances: A statute or regulation, especially one enacted by a county, city, or municipal government.

Other governing body: In those local jurisdictions where there is no local board of health, or where the local board of health has only advisory functions, another governmental entity (e.g., county commissioners, mayor, city council) will have the legal responsibility for overseeing

local public health functions. In some states (e.g., Rhode Island, Florida, Louisiana) there may be no local governing body for local public health, that function residing in state agencies.

Outcome objective: The level to which a health or LPHS problem should be reduced within a specified time period—long term, realistic, and measurable. Outcome objectives should relate directly to strategic goals. These are statements about *how much* and *when* the program should affect the health or LPHS problem. The desired outcome objective is the quantitative measurement of the health or systems problem at some future date and is something that the program can and should accomplish. Example—By 2010, reported rubella incidence in the U.S. will be less than 500 cases per year.

PACE-EH: Protocol for Assessing Community Excellence in Environmental Health. A community environmental assessment and planning tool developed by NACCHO to assist local health departments and their communities in prioritizing environmental health risks.

Partnership: A collaborative relationship of individuals and/or organizations within which partners set aside personal or organizational agendas to achieve the agenda of the partnership. In a partnership, the partners engage as equals in the decision-making process. In effective partnerships, partners share a vision, are committed to the integrity of the partnership, agree on specific goals, and develop a plan of action to accomplish the goals.

Performance management: The practice of actively using performance data to improve the public's health. This practice involves strategic use of performance measures and standards to establish performance targets and goals. Performance management practices can also be used to prioritize and allocate resources; to inform managers about needed adjustments or changes in policy or program directions to meet goals; to frame reports on the success in meeting performance goals; and to improve the quality of public health practice.

Performance standard: A generally accepted, objective form of measurement that serves as a rule or guideline against which an organization's level of performance can be compared.

Personal healthcare: Healthcare provided to individuals, including primary care, specialty care, hospital care, emergency care, and rehabilitative care.

Personal health services: Services provided to individuals, such as those provided by local health department maternal and child health programs. Personal health services may include health promotion and health education services that are delivered on an individual basis.

Personal healthcare workforce: The medical and allied health professionals who are engaged in the delivery of clinic or hospital based primary, secondary or tertiary services designed to protect or remediate the health of individuals.

Policy development: One of the three major functions of public health as defined in the 1988 IOM Report, *The Future of the Public's Health*. Policy development is defined as developing "comprehensive public health policies by promoting use of the scientific knowledge base in decision-making about public health and by leading in developing public health policy." It is the means by which problem identification, technical knowledge of possible solutions, and societal values converge to set a course of action. As such, policy development is an outgrowth of the assessment and monitoring activities described with respect to all other Essential Services. Policy development is not synonymous with the development of laws, rules, and regulations (which are the focus of Essential Service #6). Laws, rules, and regulations may be adopted as tools among others to implement policy. Policy development is a process that enables informed decisions to be made concerning issues related to the public's health.

Population-based health (programs/services): Interventions aimed at disease prevention and health promotion that affect an entire population and extend beyond medical treatment by

targeting underlying risks, such as tobacco, drug, and alcohol use; diet and sedentary lifestyles; and environmental factors.

Populations with barriers to the health care system: Populations with barriers to the health care system include the uninsured, the under-insured, and socially disadvantaged people. Socially disadvantaged people include all people who, for reasons of age, lack of education, poverty, culture, race, language, religion, national origin, physical disability, or mental disability, may encounter barriers to entry into a coordinated system of public health services and clinical care.

Process objective: Action statements aimed at affecting one or more of the contributing factors that influence the level of risk factors and determinants—short term (usually one year), realistic, and measurable. Example—Increase the proportion of school districts that are effectively enforcing the school entry immunization law by 75% to 90% by October 31, 2011.

Public health: The science and the art of preventing disease, prolonging life, and promoting physical health and mental health and efficiency through organized community efforts toward a sanitary environment; the control of community infections; the education of the individual in principles of personal hygiene; the organization of medical and nursing service for the early diagnosis and treatment of disease; and the development of the social machinery to ensure to every individual in the community a standard of living adequate for the maintenance of health. The mission of public health is to fulfill society's desire to create conditions so that people can be healthy.

Public health director: The person responsible for the total management of the local health department. The governing authority, often the board of health or the Governor, appoints this person. The public health director is responsible for the day-to-day operations of the health

department and its component institutions, often sets policy or implements policies adopted by the Board of Health, and is responsible for fiscal and programmatic matters.

Public health services: The provision of services to fulfill the mission of public health in communities. See Essential Public health Services.

Public health system: All public, private, and voluntary entities that contribute to the delivery of essential public health services within a jurisdiction. These systems are a network of entities with differing roles, relationships, and interactions that contribute to the health and well-being of the community or state.

Quality of Life (QOL): This is a construct that “connotes an overall sense of well-being when applied to an individual” and a “supportive environment when applied to a community” (Moriarty, 1996). While some dimensions of QOL can be quantified using indicators research has shown to be related to determinants of health and community well-being, other valid dimensions of QOL include perceptions of community residents about aspects of their neighborhoods and communities that either enhance or diminish their quality of life.

Risk Assessment: The scientific process of evaluating adverse effects caused by a substance, activity, lifestyle, or natural phenomenon. Risk assessment is the means by which currently available information about public health problems arising in the environment is organized and understood.

Risk communication: An interactive process of sharing knowledge and understanding so as to arrive at well-informed risk management decisions. The goal is a better understanding by experts and non-experts alike of the actual and perceived risks, the possible solutions, and the related issues and concerns.

Risk factors: See Determinants.

Risk management: The goal of risk management is to direct limited available resources to those areas and strategies where the greatest amount of risk can be reduced for the least amount of resources. In that "greatest risk" can be defined in a number of different ways, it is a value-laden process.

Safety-net providers: Individuals and organizations that provide health care to low-income and other vulnerable populations, including the uninsured and those covered by Medicaid. Major safety net providers include public hospitals and community health centers, as well as teaching and community hospitals, private physicians, and other providers who deliver a substantial amount of care to these populations.

Sentinel (health) events: Cases of unnecessary disease, disability, or untimely death that could be avoided if appropriate and timely preventive services or medical care were provided. These include vaccine-preventable illness, avoidable hospitalizations (those patients admitted to the hospital in advanced stages of disease which potentially could have been detected or treated earlier), late stage cancer diagnosis, and unexpected syndromes or infections. Sentinel events may alert the community to health system problems such as inadequate vaccine coverage or lack of primary care and/or screening, a bio- or other terrorism event, or the introduction of globally transmitted infections.

Social and mental health: This category represents social and mental factors and conditions, which directly or indirectly influence overall health status and individual and community quality of life. Mental health conditions and overall psychological well-being and safety may be influenced by substance abuse and violence within the home and within the community.

Social capital: A composite measure that reflects both the breadth and depth of civic

community (i.e., staying informed about community life and participating in its associations), as well as the public's participation in political life. It is characterized by a sense of social trust and mutual interconnectedness, which is enhanced over time through positive interaction and collaboration in shared interests.

Socioeconomic characteristics: These include measures that have been shown to affect health status, such as income, education, and employment, and the proportion of the population represented by various levels of these variables.

Stakeholders: All persons, agencies and organizations with an investment or "stake" in the health of the community and the local public health system. This broad definition includes persons and organizations that benefit from and/or participate in the delivery of services that promote the public's health and overall well-being.

Strategic planning: A disciplined effort to produce fundamental decisions and actions that shape and guide what an organization (or other entity) is, what it does, and why it does it. Strategic planning requires broad-scale information gathering, an exploration of alternatives, and an emphasis on the future implications of present decisions. It can facilitate communication and participation, accommodate divergent interests and values, and foster orderly decision-making and successful implementation.

Strategies: Patterns of action, decisions, and policies that guide a group toward a vision or goals. Strategies are broad statements that set a direction. They are pursued through specific actions, i.e., those carried out in the programs and services of individual components of the local public health system.

Surveillance: The systematic collection, analysis, interpretation, and dissemination of health data to assist in the planning, implementation, and evaluation of public health interventions and programs.

Sustainability: The long-term health and vitality — cultural, economic, environmental, and social — of a community. Sustainable thinking considers the connections between various elements of a healthy society, and implies a longer time span (i.e., in decades, instead of years).

Underlying cause of death: The disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence that produced the fatal injury.

Underserved populations: Populations with barriers to the health care system include the uninsured, the underinsured, and socially disadvantaged people. Socially disadvantaged people include all people who, for reasons of age, lack of education, poverty, culture, race, language, religion, national origin, physical disability, or mental disability, may encounter barriers to entry into a coordinated system of public health services and clinical care. Refer to *Populations with barriers to the health care system* above.

Values: The fundamental principles and beliefs that guide a community-driven process. These are the central concepts that define how community members aspire to interact. The values provide a basis for action and communicate expectations for community participation.

Vectors: Used in terms of public health, it refers to animals or other living organisms that carry or transmit diseases (e.g. rats, mosquitoes, fox).

Vector control: Programs designed to reduce or eliminate a disease-carrying insect or rodent population (e.g., mosquito control programs).

Vision: A compelling and inspiring image of a desired and possible future that a

community seeks to achieve. A health vision states the ideal, establishes a link explicitly to strategies, inspires commitment, and draws out community values. A vision expresses goals that are worth striving for and appeals to ideals and values that are shared throughout the local public health system.

Vital events: Live births, deaths, fetal deaths, marriages, divorces, and induced terminations of pregnancy, together with any change in civil status that may occur during an individual's lifetime.

Vital statistics: Data derived from certificates and reports of birth, death, fetal death, induced termination of pregnancy, marriage, (divorce, dissolution of marriage, or annulment) and related reports.

Vulnerable populations: A group of people with certain characteristics that cause them to be at greater risk of having poor health outcomes. These characteristics include, but are not limited to, age, culture, disability, education, ethnicity, health insurance, housing status, income, mental health, and race.

Years of potential life lost (YPLL): This measure of premature mortality is the number of years between the age at death and age 65, that is, the number of years which are "lost" by persons who die before age 65.