

**Rural Health Network Effectiveness:  
An Analysis at the Network Level**

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**ABSTRACT**

Residents of rural communities have poorer health status than people living in more populated areas. For example, The Urban and Rural Health Chartbook notes that the age-adjusted death rate among younger (1-24 years of age) persons who live in the most rural counties is 31 percent higher than those who live in the most urban counties and 65 percent higher for those who live in suburban counties (Eberhardt, Ingram, Makuc et al., 2001). Explanation for the health disparity experienced by rural residents is complex due to the influence of both community factors and the socioeconomic and behavior patterns of individuals. Access to health care, including preventive care, as well as substantial challenges with health literacy, higher instances of smoking, and lack of health insurance among rural residents, are some of the main causes of this disparity.

Rural health networks have been touted by many involved with rural health issues as an effective way to address the health disparity experienced by rural areas. The last fifteen years have seen a growth in the development of rural health networks, with a growing number of grantors, e.g. the Health Resources and Services Administration, The Robert Wood Johnson Foundation and states such as New York, Florida, and West Virginia, funding their development. However, little research has been done on the effectiveness of rural health care networks. While some have evaluated rural health networks, Wellever explains that many questions are left unanswered with “the most fundamental question – whether rural health networks benefit either their members or the rural residents they serve” (1999, p. 133). Thus, it needs to be determined if health

networks are in fact a viable means for improving the disparity in rural health and, more importantly, what can be done to make them more effective.

This research provides insight into the correlates of effectiveness for a type of health network, vertically integrated rural health networks. Provan and Milward's (2001) framework for evaluating the effectiveness of public-sector organizational networks, which proposes three levels of analysis, i.e., the community, network, and organization/participant, was adapted to analyze the effectiveness of vertically integrated rural health networks. One-on-one interviews, questionnaires, and archival data were used to collect data on the networks sampled. Primarily, data was collected from four networks that were chosen from a larger sample of twenty-one networks to serve as best practices.

Analysis of the data collected revealed a few significant predictors for the effectiveness of vertically integrated rural health networks. Financing was found to be the most important predictor, as it was significant at both the community and network levels. Both cohesiveness and the number of problems in the rural environment were also found to be significant predictors but only at the network level. No significant predictors were found at the organizational level; however, organizational and network-level effectiveness were found to be strongly correlated with each other. Overall, networks were found to be more favorable about their effectiveness at the network and organizational levels.

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# CHAPTER ONE

## INTRODUCTION

### Context and Statement of the Problem

Rural areas are known for their health disparity. As the Rural Health Chartbook indicates, residents in most rural counties have the highest death rates for children and young adults with the age-adjusted death rate among younger (1-24 years of age) persons who live in the most rural counties 31 percent higher than those who live in the most urban counties and 65 percent higher than those who live in suburban counties. Residents in the most rural counties were also found to have the highest death rates for unintentional and motor vehicle traffic-related injuries and, among men, the highest mortality for ischemic heart disease and suicide (Eberhardt, Ingram, Makuc et al., 2001). Explanation for this disparity is complex due to the influence of both community and socioeconomic factors.

### *Community Factors*

There are many factors that contribute to the disparity experienced by rural communities, with the most prevalent factor being access to health care. Among the most prominent access issues are shortages of health care providers, particularly specialists. Rosenblatt and Hart comment that “about 20% of the U.S. population – over 50 million people – live in rural areas, but only 9% of the nation’s physicians practice in rural communities” (1999, p. 38). Schur and Franco (1999) further note that more than three times the number of physicians specialists per 100,000 residents practiced in metro than non-metropolitan areas (190 vs. 54.6). This is especially problematic given that rural residents are more likely to suffer from chronic diseases for which specialists are

necessary. As a result, fewer rural residents use specialist; seventy two of total visits to physicians in non-metropolitan counties are to primary care physicians (general internal medicine, family practice, general practice, and general pediatrics) as compared to 63 percent in metropolitan counties.<sup>1</sup> While visits by rural residents across all specialty types are lower than their metropolitan counterparts, this is especially true for obstetricians/gynecologists and psychiatrists. In rural areas, only 3 percent of physicians' visits are to obstetricians/gynecologists as compared to 9 percent in urban areas. Similarly, only 1 percent of visits to physicians are to psychiatrists as compared to 5 percent in urban areas (Schur and Franco, 1999).

Other access issues experienced by rural residents include transportation, lack of insurance, and paid leave for doctors visits. With regard to transportation, research has shown that rural residents travel further than their metropolitan counterparts to reach sources of medical care. Additionally, many rural areas do not have public transportation making it even harder for some of their rural residents to access medical care (Glasgow, 2000). Past research has also shown that rural residents are less likely to have private insurance coverage through their employers and more likely to have public insurance coverage. This is mainly due to the types of industries in which they work, as well as the prevalence of part-time workers. They are also likely to not have paid leave for the same reason. In a study done by the Robert Wood Johnson Foundation in 1994, it was found that 50 percent of urban residents had paid leave to visit the doctor, while only 43 percent of rural residents had paid leave (Schur and Franco, 1999).

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<sup>1</sup> In this study, rural residents who travel to urban areas to obtain specialist care were included in the count of metropolitan physician visits.

In addition to the access issues experienced by rural communities, there are other community factors contributing to the rural health disparity. As Glasgow, Johnson, and Morton (2004) convey, the lower population in rural communities limits the effective market demand for such things as structurally safe housing and fresh food, as well as the before mentioned access related problems such as providers and jobs that offer health insurance benefits. Furthermore, in rural areas, the types of jobs available for employment and in which many rural residents work have more hazards. Schulamn and Slesinger (2004) note that while the occupational fatality rate has decreased over the years, the rate for extractive industries (e.g. farming, fishing, mining, and logging) have exceeded the national average every year with hunters/fishers and trappers having the highest rate, followed by forestry and logging, mining, and then farming. The fatality rates for mining are seven times the national average. The types of industries present in rural areas not only contribute to higher occupational injuries and fatality but also contribute to environmental health effects. For example, Hodne (2004) highlights the health problems associated with both agricultural pesticides and concentrated feeding operations. With regard to agricultural pesticides, Hodne cites several studies illustrating a relationship between exposure to agricultural pesticide and such health effects as birth defects, cancer, neurobehavioral problems, Parkinson's disease, and depression. Besides the numerous environmental effects of concentrated feeding operations which impact quality of life, the associated health effects are respiratory problems, diarrhea, and sensory and thought process complications.

### *Socioeconomic Factors*

There are numerous socioeconomic factors that equally contribute to the health disparity experienced by rural residents. To begin, residents in rural areas were both more likely to smoke cigarettes and consume alcohol. For example, in 1997 and 1998, the prevalence of cigarette smoking was found to be 19 percent higher among adolescents and 32 percent higher among adults who lived in the most rural counties, as compared to their suburban counterparts (Eberhardt and Pamuk, 2004). The Urban and Rural Health Chartbook adds that adults living in the most rural counties are the most likely to smoke with 27 percent of women and 31 percent of men smoking, as compared to those living in the central and fringe counties of large metropolitan areas with only 20 percent of women and 24-25 percent of men smoking. The Chartbook notes that higher rates of smoking in the most rural counties can mostly be attributed to delayed access to medical and media resources that help change unhealthy behaviors and lower educational attainment which has been found to be strongly associated with smoking. Similarly, persons in rural areas were also more likely to consume alcohol. The Chartbook notes that among current drinkers (those who consumed at least one drink in the last year), men living in non-metropolitan counties were likely to consume five or more drinks in one day than those in metropolitan counties (56 percent compared to 48-52 percent) (Eberhardt, Ingram, Makuc et al., 2001).

Higher rates of obesity are also more prevalent among rural residents. McIntoch and Sobal (2004) proffer that while there is evidence that eating, diet, nutrition, and weight differ by residence, rural/urban differences have not been systematically investigated. However, research has shown rural/urban differences in obesity rates and

level of physical activity. The Urban and Rural Health Chartbook found that self-reported obesity portrays more of an urban/rural difference for women than for men. More specifically, women in the fringe counties of large metropolitan areas had the lowest age-adjusted prevalence of obesity (16 percent) compared to residence of the most rural counties who had the highest (23 percent). Similarly, physical activity, which influences body weight and health, was found to be less common among persons living in rural areas. The Chartbook specifically found that instances of inactivity during leisure time were more common for both men and women in the most rural counties as well as in the central counties of large metropolitan areas. However, urbanization patterns in leisure time inactivity were found to vary among regions. For example, in the Northeast leisure time inactivity is most frequent in the central counties of large metropolitan areas (51 percent of women and 47 percent of men). In contrary, in the South, leisure time inactivity is highest in non-metropolitan counties (56 percent of women and 52 percent or men). The Chartbook suggests that urban/rural differences in leisure time inactivity may be due to physically active occupations that decrease the likelihood of leisure time activity which are more prevalent in non-metropolitan areas (Eberhardt, Ingram, Makuc et al., 2001).

### *Rural Health Networks*

The health disparity experienced in rural areas proves to be a “wicked problem” for which alternative forms of organizing, such as networks, are being used. Such problems are often considered “wicked” because they have “no solutions, only temporary and imperfect resolutions” (Harmon and Meyer, 1986). Rittel and Webber (1973) note that “wicked problems” need to be dealt with via alternative forms of organizing such as

networks. They further note that because such problems are so complex, their pieces cannot be dealt with in isolation from each other. O'Toole (1997) cites several reasons why networks should be "treated seriously" by both public administration researchers and practitioners. The first is the growing complexity of policy issues. He further notes that "policies dealing with ambitious or complex issues are likely to require networked structures for execution" (p. 46).

The last fifteen years have seen a growth in the development of formal, structured rural health networks with a growing number of grantors, e.g. the Health Resources and Services Administration, The Robert Wood Johnson Foundation and states such as New York, Florida, and West Virginia, funding their development. An accurate census of rural health networks does not exist due to an absence of licensing requirements at the state and national levels and the absence of a trade association for rural health networks (Wellever, 2004). However, several studies offer some insight into their growing presence. For example, in 1997 researchers at the University of Minnesota identified one hundred and eight rural health networks with forty-nine being less than two years old, seventy-two being two to three years olds, and fifty-three being more than three years old (Moscovice, Wellever, and Krein, 1997). Additionally, from 2001 to 2005, the Rural Health Network Development Grant Program funded the development of approximately fifty-seven rural health networks.

While there is evidence of the increasing use of rural health networks, little research has been done on their effectiveness. Moscovice, Wellever and Christianson note that "there is widespread belief in the ability of networks to improve access to and quality of health care and to control health care costs, yet virtually no evidence exists to

support these conclusions” (1997, p. 568). While some evaluations have been done on rural health networks, Wellever explains that many questions are left unanswered with one being “whether rural health networks benefit either their members or the rural residents they serve” (1999, p. 133).

This dissertation intends to further explore the effectiveness of a type of rural health network, vertically integrated rural health networks. The Rural Assistance Center explains that networks are mainly distinguished by their structural characteristics and further clarifies that:

Networks have been described as being either horizontal, composed of similar types of entities, such as an all-hospital or all-nursing home network, that serve different geographic markets, or vertical, formed with organizations from different classes or with different purposes such as a network made up of a hospital, public health unit, nursing home, and ambulance system.

Thus, vertically integrated rural health networks consist of different kinds of health and health related service providers as opposed to horizontal health networks which consist of similar types of health services providers. The Office of Rural Health Policy more specifically defines vertically integrated rural health networks as:

a formal organizational arrangement among at least three separately owned health care providers or other entities that provide or support the delivery of health care services, each offering a different set of services or a different level of care, that is established for the delivery of health care on a cooperative basis in a rural area.

Moscovice, Christianson, and Wellever (1995, p. 10), further explain that vertically integrated rural health networks are “organizations composed of participants that are

themselves autonomous organizations or autonomous individuals.” For the purposes of this research, a vertically integrated rural health network is defined as a formal organizational structure, established for the delivery of health care on a cooperative basis in a rural area that consists of at least three autonomous organizations or individuals that provide or support the delivery of health care with each member providing a different set of services or a different level of care. It is through vertically integrated rural health networks that rural areas attempt to integrate the various, necessary health services for their population’s complex needs; therefore, they are the most pertinent type of rural health network upon which to focus this research. Furthermore, since various grantors devote funds to the development of vertically integrated rural health networks, more research needs to be done on what makes them effective. Thus, it is the intent of this dissertation to identify the barriers to and the facilitators of effective vertically integrated rural health networks.

#### Literature on Network Effectiveness

The literature on network and rural health network effectiveness has provided conceptual approaches, as well as identified possible correlates of effectiveness. For example, Moscovice, Christianson, and Wellever (1995) provide a conceptual approach to studying vertically integrated rural health networks that includes a typology of networks, a framework for assessing network performance, and examples of measurable performance indicators. Moscovice et al. distinguish between efficiency, distributional, and inter-organizational effects in their framework. Wellever, Wholey and Radcliff (2000) offer a typology of rural health networks categorizing networks according to their purposes as Defenders, Prospectors, Analyzers, or Reactors. They proffer that because

rural health networks differ it is important to link their functions with their goals. Finally, Provan and Milward (2001) offer a framework for evaluating the effectiveness of public-sector networks that includes three levels of analysis, i.e., the community, network, and organization/ participant levels, as well as their corresponding measures and key stakeholders. They argue that network effectiveness must be considered and measured at all three levels, “especially in a system that only works effectively through cooperation” (p.422).

Additionally, previous literature has identified important correlates of effectiveness. For example, several authors (e.g., Provan and Milward, 1995; Moscovice, Christianson, and Wellever, 1995; Wright, Wellever, Lake, and Sweetland, 1995) highlight the importance of integration of members. Similarly, complexity or membership diversity is also deemed relevant by several authors (e.g., Moscovice, Christianson, and Wellever, 1995 and Moscovice, Wellever, Christianson, Casey, Yawn and Hartley, 1996). Other important effectiveness correlates include the degree to which the network assumes assumption of risk, revenue sources, and the duration of the network. While several correlates of network effectiveness have been identified throughout the literature, as well as conceptual approaches provided, little research has utilized these approaches or any other approach to empirically analyze the possible correlates of network effectiveness, particularly for vertically integrated rural health networks.

### Research Design

Provan and Milward’s (2001) framework for evaluating public-sector organizational networks, which promotes three levels of analysis, i.e., the community,

network, and organization/participant levels, was adapted in this research to explore the correlates of effectiveness for vertically integrated rural health networks. Additionally, an empirical analysis was conducted using a field study and field survey approach to determine what factors impact network effectiveness. Initially, expert interviews were conducted with network affiliates to inform the creation of a questionnaire whose development was based on the “Rural Health network Profile Tool” prepared by the National Rural Health Resource (2000). The developed questionnaire was then given to the network directors in thirty-three different rural health networks, in order to identify four networks to serve as best practices for this research. Once the four networks were identified, a slightly modified version of the original questionnaire was given to affiliates of the four chosen networks. Data collected from these respondents was analyzed via descriptive statistics and correlation and regression analyses. Findings of the analyses from the questionnaires were then used to inform questions that were asked in follow-up interviews with affiliates from the four chosen networks. The main research questions guiding this dissertation were:

1. What structural and environmental correlates of effectiveness are identified by participants in vertically integrated rural health networks?
2. How are identified correlates of effectiveness related to each other and to the effectiveness of vertically integrated rural health networks?
3. What lessons do the findings offer for students, researchers, and practitioners of rural health policy and of public administration in general?

## Key Findings

The findings of this research illustrate that respondents from the sample of four effective networks were most favorable about the cohesiveness of their network and their network's personnel and least favorable about their network's financing. Furthermore, respondents were most optimistic about effectiveness at their network and organizational levels and least favorable about effectiveness at the community level, particularly in answer to the question of whether there was a public perception that their networks are solving the problems they intend to address. All of the proposed correlates, i.e., cohesiveness, financing, governance, planning and evaluation, personnel, and the number of rural problems, were found to be significantly related to all the measures of effectiveness at the network level. At the community and organizational levels, fewer correlates were found to be significantly related to the effectiveness measures. Most notably, the number of problems in the rural environment was not found to be significantly related to either organizational or community-level effectiveness.

Both correlation analyses and regression analyses conducted with the sample of four effective networks further revealed important relationships between some of the correlates and the measures of effectiveness at each of the three levels. At the community level, financing and governance were the most strongly correlated with there being a public perception that the network is solving problems, as was cohesiveness and governance for improvements in the incidence of the problem. However, the regression analyses revealed that financing was the only correlate significantly associated with

public perceptions that the network is solving problems and that the correlates used in this analysis do not do a good job of explaining effectiveness at this level.

At the network level, many of the correlates were found to be significantly related to the three criteria used to measure effectiveness. While many of the correlates were significantly related to the measures at this level, the regression analyses conducted pointed out that financing, the number of rural problems, and cohesiveness were the only significant predictors of effectiveness at this level. The regression analyses also illustrated that the correlates used in this analysis did a good job of explaining effectiveness at this level.

The correlation analyses also showed that many of the correlates were significantly related to organizational-level effectiveness. In spite of the various significant relationships found among the correlates and effectiveness at this level, the regression analysis with all respondents revealed that there were no significant predictors of organizational-level effectiveness. However, the regression analysis did reveal that the correlates used in this analysis do a good job of explaining organizational-level effectiveness.

Analyses comparing the four effective networks offer some interesting findings for understanding the effectiveness of vertically integrated rural health networks. Most significant was the importance of diverse funding for networks. Secondly, trust was found to be an important component of cohesiveness, the only correlate found to be a significant predictor of members' commitment to network goals. Comparison of the four networks also revealed that fewer problems in the rural environment may lead to less integration and coordination of services by networks. Many of the interviewees

explained that the more rural environment problems, the more likely providers are to coordinate and integrate their services. Finally, the interviews with respondents from the different networks similarly agreed that the older and more inclusive a network is, the more likely it is to be effective.

### Limitations

There were some limitations of this research. To begin, a majority of the analyses were based on the responses of respondents from four networks that were chosen to serve as best practices for vertically integrated rural health networks. However, it is possible that the chosen networks are not representative of all vertically integrated rural health networks and that selection bias occurred. Additionally, while it was the intent to survey a variety of respondents affiliated with the networks, mainly responses were obtained from network directors and steering committee members. While recognized as important, representatives from the community were unable to be surveyed, which may explain why the findings are more favorable about network and organizational-level effectiveness. A third limitation is that effectiveness criteria were imposed based on those suggested by Provan and Milward's framework. Thus, this research did not take into account the subjectivity or the differing effectiveness criteria among the networks' constituents but imposed the effectiveness criteria with some input from the initial expert interviews and according to the availability of data. As with all research, bias may have occurred during interview conduction and analysis. Appropriate precautionary methods, e.g. an interview schedule and triangulation, were used to minimize such bias. Another limitation is that findings of this research can only be generalized to vertically integrated rural health networks, as they differ from other types of networks in composition and

purpose. Finally, because emphasis was on effective networks, higher correlations may have been found due to network respondents being more positive in general about most things in their network.

### Organization of Dissertation

This dissertation begins with an overview of the literature on organizational, network, and rural health network effectiveness in order to provide a background for this research. This is followed by a methods chapter which 1) explains how the cases for analysis were selected, as well as offers some background information on each of them; 2) describes the methods of data collection which consists of preliminary expert interviews, a questionnaire, follow-up interviews, and archival research; 3) depicts the analyses that were done on the data which includes a description of the variables used in the analyses conducted; and 4) provides an overview of the limitations of this research. Following the methods chapter are three findings chapters. The first findings chapter is an overview of the preliminary findings from the expert interviews, the initial questionnaire conducted with the network directors, and the questionnaire conducted with respondents from the sample of four effective networks. The next two findings chapters provide an analysis of effectiveness among all respondents in the four chosen effective networks, as well as an analysis of effectiveness comparing the chosen networks. Finally, a concluding chapter is presented which offers a summary of the previous chapters and highlights some of the key findings and contributions of this research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Networks have been touted as an alternative form of governance for dealing with today's "wicked problems" (O'Toole, 1997). However, Provan and Milward (1995, 2001), leaders in the literature on network effectiveness, highlight that research on network effectiveness has been lacking. They note "evaluating network effectiveness is critical for understanding whether networks – and their forms of organizing – are effective in delivering needed services to community members" (2001, p. 415). O'Toole (1997) echoes this same concern if we are to "treat networks seriously." Thus, it may be premature to assume that networks are an effective way of delivering public services. To further explore the issue of network effectiveness, a review of the literature in the broader field of organizational effectiveness follows, as well as a review of the literature on network effectiveness.

#### **Organizational Effectiveness**

In early organizational studies, organizational effectiveness did not receive much attention in the literature as it was perceived as applied and practical and not theoretical. It was not until contingency theorists began to realize the theoretical implications of organizational effectiveness that the topic began to receive more attention. Contingency theorists illustrated that some structures were better suited than others to certain tasks or environments. As such, organizational effectiveness came to be viewed as a determinant as well as a consequence of organizational structure illustrating its variable nature. Recently, organizational effectiveness has received increased attention in the literature

due to increased global competition and the desire for enhanced productivity (Scott, 1998).

Scott (1998) defines organizational effectiveness as: the inquiry of how well an organization is doing, relative to some set of standards. While defining organizational effectiveness is seemingly simple, its definition is very complex and controversial due to the multiple bases for gathering effectiveness criteria and the multiple constituencies that have an interest in the effectiveness of an organization and their criteria that reflect this interest. As such, various authors have offered different frameworks to better understand organizational effectiveness. Scott offers three generic frameworks from which to understand organizational effectiveness: rational systems model, the natural systems model, and the open systems model. Cameron (1997) offers “ideal type approach” and “contingency approach” as conventional frameworks, while Tsui (1990) offers goal and systems approaches. Finally, Hatch (1997) distinguishes between classical, systems, symbolic-interpretive, and post-modern approaches. Scott’s frameworks will be reviewed as it offer a synthesis of the other approaches. The multiple constituency and competing values approaches will also be reviewed as they offer alternative approaches to understanding organizational effectiveness and are relevant to this research.

From the rational systems perspective which is synonymous with “goal model” described by Etzioni (1960), organizations are considered rational systems that exist to achieve desired ends. As such, focus is on the formalization of rules and individual roles in achieving the goals of an organization. Specific goals are the basis for measuring effectiveness criteria. Examples of effectiveness criteria are how many cars are

manufactured or how many clients are placed in positions. According to Robbins (1990) theories under the rational systems perspective are problematic for various reasons. One reason is that they are one-dimensional in that they do not account for an organization's various constituents and their multiple interests. Secondly, effectiveness is only determined by an organization's ability to fulfill stated goals set forth by the organization but does not account for whose goals are being fulfilled. Additionally, theories under the rational systems approach assume that there is a consensus on goals to be met which is often not the case. Rational systems theories also do not account for conflicting goals nor do they differentiate between long term and short term goals. Finally, order of importance of goals with regard to the diverse interests in an organization is not considered.

Scott's (1998) second framework from which to understand organizational effectiveness is the natural systems perspective. The natural system perspective largely developed from critical reactions to the rational system theorists. Natural theorists point out that the defining characteristics of organizations stressed by the rationalists are often not the most important features of organizational dynamics. They focus more on organization behavior and implementation rather than on decision-making. While the natural systems perspective focuses on achieving specified goals, it also considers other activities, which are required to maintain organizations as a social unit. Thus, support goals are added to the output goals and are expected to dominate output goals. Survival of the organization is most important. As such, examples of effectiveness criteria under the natural systems perspective could be measures of participant satisfaction and morale (Scott, 1998).

From the open systems perspective, organizations are considered as being highly interdependent with their environments and engaged in system-collaborating, as well as system-maintaining activities. Information acquisition and process is crucial. An organization's long term well-being is dependent on its ability to detect and respond to changes in its environment. Examples of effectiveness criteria under the open systems perspective are profitability (excess of returns over expenditures) and many theorists stress the importance of adaptability and flexibility. With the open systems perspective, attention is shifted from structure to process (Scott, 1998).

Other frameworks for understanding organizational effectiveness that are not highlighted by Scott (1998) are the multiple-constituency model of effectiveness and the competing values approach. The multiple-constituency model is proposed as a viable alternative to the goal and systems approaches for studying and measuring organizational effectiveness. The central tenet across all the variants of the multiple constituent model is that an organization is effective to the extent that it satisfies the interest of one or more constituencies associated with the organization. The multiple constituent approach involves at least two steps: identifying constituents and assessing the satisfaction of various constituents with regard to organizational performance. The multiple constituent approach may also involve ascertaining the criteria that constituents use to evaluate effectiveness and rank-ordering effectiveness criteria in terms of importance to a constituent (Tsui, 1990). Overall, the multiple constituent approach places emphasis on appeasing those constituents who most threaten an organization's survival (Robbins, 1998).

The competing values approach, another approach to organizational effectiveness, has four main premises. The first is that there is no best criterion for evaluating an organization's effectiveness. Furthermore, there is neither a single goal nor a consensus on which goals take precedence over another. Thirdly, the concept of organizational effectiveness is seen as subjective, i.e., the goals chosen by the evaluator are based on his or her personal values, preferences, and interests. Finally, the competing values approach is based on three sets of competing values: flexibility versus control, people versus the organization, and means versus ends. Unlike many other approaches, the competing values approach 1) illustrates that there is no one best criteria for evaluating an organization; 2) highlights that there is no clear connection between the inputs and outputs of an organization; 3) tries to synthesize a large number of organizational effectiveness criteria; and 4) takes into consideration changes in criteria over time. Overall, the competing values approach is most useful when an organization is unclear about its own emphases, whereas other perspectives are based on the assumption that an organization knows what it wants (Robbins, 1990).

#### Network Effectiveness

While the issue of organizational effectiveness is complex, network effectiveness is even more complex due to the involvement of multiple organizations. When multiple organizations are brought together such as in a network, evaluating the effectiveness of that network becomes even more complicated. Provan and Milward (1995, 2001) note the primary problems most scholars have in evaluating network effectiveness. The first is that networks utilize multiple agencies to produce one or more pieces of a single service, i.e. the joint-production problem, making it more complex than the evaluation of a single

organization. The second is that networks have multiple constituents due to their multiple organizations. Thus, it may be harder to satisfy the multiple constituents of a network. Often times, a network is more effective for some organizations' constituents than for the constituents of other participating organizations. While network effectiveness is hard to measure, a few scholars have attempted to do so.

Most of the literature on network effectiveness pertains to health and human services. Provan and Milward (1995) in their study of four community mental health organizations investigate the relationship between the structure and context of mental health networks and their effectiveness. In this study, effectiveness measures were tied to "enhanced client wellbeing" which was seen as the top priority of the constituent groups, i.e. the clients themselves, their families, and the clients' case managers or therapists. Findings suggest that network effectiveness could be explained by various structural and contextual factors (e.g. network integration, external control, system stability and environmental resource munificence). Specifically, their research suggests that networks are more effective when network integration is centralized, external fiscal control by the state is non-fragmented and direct, resources are sufficient, and the overall system is secure.

Provan and Sebastian (1998) continue to develop Provan and Milward's (1995) earlier research, again using client outcomes as their measure of network effectiveness, by exploring the relationship between network effectiveness and interorganizational ties among cliques of provider agencies or at the sub-network level. This is in contrast to Provan and Milward's (1995) earlier work which focuses on the relationship between network effectiveness and integration across full networks. Their findings suggest that

networks are more effective with regard to client outcomes if integration occurs at the clique, or sub-network, level instead of among the full network. Furthermore, networks, involving health and human services agencies, will be more effective achieving client outcomes if clique integration involves multiple and overlapping links at the client level.

Provan and Milward (2001) continue to build on this research by introducing three levels of analysis by which network effectiveness should be measured, i.e., community, network, and organization/participant levels. For each level of analysis, Provan and Milward provide suggested effectiveness criteria as well as key stakeholder groups. Their proposed effectiveness criteria at the community level are cost to the community, building social capital, public perception that the problem is being solved, changes in the incidence of the problem, and aggregate indicators of client well-being. At the network level, possible effectiveness criteria are network membership growth, range of services provided, absence of service duplication, relationship strength (multiplexity), creation and maintenance of network administrative organization (NAO), integration/ coordination of services, cost of network maintenance, and member commitment to network goals. For the organization/participant level, agency survival, enhanced legitimacy, resource acquisition, cost of services, services access, and client outcomes are possible effectiveness criteria. They argue that organization/participant and network-level effectiveness criteria can mostly be satisfied by focusing on community-level effectiveness goals. This is due to network employees' primary emphasis and commitment to their clients and the public good. In satisfying community-level goals, the primary effectiveness goals at both the network and organizational/participant-levels will be met. Furthermore, it is the community level stakeholders that will ultimately be

judging a network's effectiveness. The authors conclude that effectiveness at one level is contingent on the effectiveness of other levels; however, they caution that effectiveness at one level does not always lead to effectiveness at other levels, particularly for the participant/organization level. They further note that successful networks are likely to be successful at all three levels.

Weech-Maldonado, Beson, and Gamm (2003) employ a "stakeholder accountability approach" based upon Provan and Milward's (2001) community-based network effectiveness framework and Gamm's (1998) accountability framework which takes into consideration various levels of accountability (political, commercial, clinical/patient, and community). The stakeholder accountability approach posits that with each level of analysis (community, network, organizational/participant) there are different effectiveness criteria reflecting the needs of the various stakeholders. They use this approach to evaluate the effectiveness of community health partnerships (CHPs) associated with Community Care Networks which is a nationwide foundation initiative. The authors' findings suggest effectiveness should be achieved on multiple levels for CHPs to be successful. Furthermore, at each level of analysis different stakeholders are more significant for effectiveness measures. For example, at the organizational/participant level both political and client service gains are more significant network effectiveness measures. Thus, accountability to stakeholders is a critical factor in determining network effectiveness.

Both the literature on organizational and network effectiveness illustrates the complexity in determining whether or not an organization or network is effective. The literature on organizational effectiveness demonstrates that each of the various

perspectives (e.g. rational systems perspective, natural systems, open systems, multiple constituency models, and competing values approach) can have differing premises and effectiveness criteria. The literature on network effectiveness similarly reflects these differing perspectives on effectiveness. As networks have been touted as a viable means for dealing with complex problems, such as the health disparity experienced by rural areas, the remaining literature review will address the effectiveness of rural health networks which are a type of network utilized to improve rural health provision.

### Rural Health Network Effectiveness

Because rural areas experience lack of providers, higher occupational hazards, higher rates of obesity, higher prevalence of smoking and drinking as well as other factors that contribute to their health disparity, there are various challenges for rural health provision. Rural health networks have become a popular means for dealing with the complexities of rural health provision. However, little research has been done on the effectiveness of rural health networks. Moscovice, Christianson, and Wellever (1995) state: “The growing interest in health care networks is extraordinary given the lack of common understanding of what networks are and what they can accomplish” (p.9). Four years later, Wellever (1999, p. 131) states that “the effectiveness of rural health networks at achieving their goals is still unknown.” Wellever attributes this to the difficulties inherent in measuring rural health network effectiveness, as well as to the youth of most rural health networks. While Wellever does make note of a few evaluations that have been done on rural health networks, he comments that they are “far from conclusive” (1999, p. 131). Research over the past ten years, continues to echo concerns over the lack

of understanding about the effectiveness of rural health networks with little empirical research on what makes rural health networks effective.

*Earliest Literature: The 1990s*

In 1995, Moscovice, Christianson, and Wellever provide a conceptual approach to studying vertically integrated rural health networks, offering a network typology, a framework for assessing network performance, and examples of measurable performance indicators. Their provided network typology differentiates networks according to key dimensions that may affect their performance with the key dimensions being level of integration (the degree to which the independent organizations function as a single unit), complexity (variations in network participants and the type of work they carry out), and assumption of risk (the degree to which the network assumes financial risk for the health services they offer).

With regard to their framework for evaluating the impact of vertically integrated rural health networks, there are three different components: efficiency effects, distributional effects, and inter-organizational effects. Moscovice, Christianson, and Wellever (1995, p. 13) define efficiency effects as “the value placed by consumers on network outputs per dollar expended to produce those outputs.” In measuring efficiency effects, focus is placed on assessing the benefits and costs of health care provision for the network’s defined population. As such, measures of efficiency effects would include measures of benefits such as health outcomes, health status, and consumer satisfaction as compared to costs, such as monthly per capita cost and costs per episode of care by condition.

Moscovice, Christianson, and Wellever (1995, p. 13) define distributional effects as “the distribution across affected parties of the costs and benefits associated with provision of rural health care.” It is assumed that the benefits and costs associated with vertically integrated rural health networks will not be distributed equally among all affected parties. However, to better understand the significance of vertically integrated rural health networks, it is important to explore which groups benefit or lose from their formation. Some examples of measures of distributional effects are financial performance of network members, out migration of patients and services, and geographic dispersion of providers and services.

Finally, interorganizational effects are defined as “the relationships among providers of health services in rural areas” (Moscovice, Christianson, and Wellever 1995, p. 14). Moscovice et al. explain that to fully understand the effects of vertically integrated rural health networks an understanding of how they are governed and structured is necessary. They further comment that network structure and governance influence the type of activities networks pursue and the effect of those activities on the rural communities. For measures of interorganizational effects, Moscovice et al. state that their typology is a start to analyzing the structure and operations of the various types of vertically integrated rural health networks.

Moscovice, Christianson, and Wellever (1995) conclude with a list of proposed research questions concerning the relationships between the environment, structure, and performance of vertically integrated networks. Some of the questions are: 1) how does network structure effect network effectiveness; 2) what groups receive the greatest benefits from network development; 3) do networks change their organizational structure

and activities over time and how would this affect their economic efficiency; and 4) what are the organizational and environmental characteristics that predict successful network performance?

Also in 1995, Moscovice, Christianson, Johnson, Kralewski, and Manning do an evaluation on RWJF's Rural Hospital Network Program highlighting six major findings regarding rural health networks. The first is that few of the members in the networks shared decision making, contributed significant resources, or sacrificed autonomy. The second major finding is that rural hospital networks are unstable with one third of the networks in the study sample ceasing to exist within a three-year period. Moscovice et al. also observed that many of the networks added and deleted members. Thirdly, many of the rural hospital networks did not pay network dues with hospital executives making most of the network decisions. Thus, hospitals had very little financial commitment to the network and the network as a group had very little authority over network decisions. A fourth major finding is that many of the rural hospitals that joined the networks did not realize any short-term economic benefits from their membership, although this was one of the main reasons many of them stated for joining. A fifth finding is that mutual resource dependence of network members and the presence of a formalized management structure, both signs of a more permanent network organization, positively impacted the survival of the network. Finally, it was noted that the benefits of rural hospital networks may be seen outside of the communities in which the rural hospitals are located. This is due to the benefits, e.g., referral relationships, experienced by urban and large rural hospitals that are included in many of the rural hospital networks.

Wright, Wellever, Lake, and Sweetland (1995) similarly do an evaluation on the Essential Access Community Hospital (EACH) Program which was a program established to encourage the development of rural health networks. Their evaluation found several interesting findings regarding the rural health networks established under this program. Their findings were: 1) only 37 percent of EACH program grantees formed active formal networks; 2) both informal and formal relationships existed between the EACH networks and the Rural Primary Care Hospitals (RPCBs) before the networks were formed; 3) there were increased transfers and communication between EACHs and RPCBs although it is unclear if this was due to the establishment of the rural health network; 4) fewer than 50 percent of the rural health network participants reported positive changes as a result of their participation; and 5) rural health network participation was not found to be related to RPCB success. Overall, Wright et al. conclude that it is premature to conclude that the EACH networks can provide the needed assistance as intended to small hospitals that are struggling..

In 1996, Moscovice, Wellever, Christianson, Casey, Yawn and Hartley did a case study of six different integrated rural health networks as an attempt to measure the success of rural health networks in meeting the needs of their members and the rural communities. Moscovice et al. offer five lessons from their research. The first is that the formation and integration of integrated rural health networks is both a political and economic process that “requires a substantial amount of time” (1996, p.17). Secondly, product lines are needed to provide ongoing sources of revenue. Furthermore, these product lines need to be new and different from individual network members as well as other groups in which network members participate, so as not to be confused with

products provided by other entities. A third lesson learned was that from both the clinical and financial perspectives, rural health networks were not that integrated due to “diverse network membership, lack of organization of the primary care medical community, organizational complexity and changing missions, inability to create a stable funding base for the network, and the nascent stage of information development” (Moscovice et al., 1996, p. 19). The variety in organizational structure, i.e., loosely structured alliances to a web of contractual relationships, among integrated rural health networks is the fourth lesson offered. More hierarchical networks were more likely to have implemented financial planning and control mechanisms with all networks lacking integration of clinical and administrative activities. Finally, the authors note that the benefit of external catalysts to the development and growth of integrated rural health networks is unclear. In some cases, external entities can be helpful to the development of rural health networks by underwriting their initial expenses and by stimulating interest in network participation. On the other hand, external catalysts may inhibit bonds of commitment between the network members. Moscovice et al. conclude that rural health networks are not a “panacea for all the challenges health professionals and policymakers face” (1996, p. 28). However, there is potential for rural health networks to improve both the delivery and financing of rural health care.

#### *Subsequent Literature: 2000 to Present*

Wellever, Wholey and Radcliff (2000) offer insights on the effectiveness of rural health networks. In their review of one hundred and seventeen rural health networks, Wellever et al. illustrate that performance measures for networks vary according to their fundamental purposes. Unlike most categorizations of rural health networks which

typically focus on structural characteristics (e.g. horizontal or vertical), Wellever et al. categorize networks according to their functions. They utilize an organizational typology developed by Miles and Snow (1978) to assign the networks into one of four organizational types: Defenders, Prospectors, Analyzers, and Reactors. The authors note that each of the four organizational types is formed to serve different functions and as a result have differing primary goals along with differing performance measures and criteria for effectiveness.

For Defender rural health networks some of the goals are to 1) improve internal management systems; 2) reduce production costs through economies of scale; and 3) improve coordination. Because most of the goals of Defender rural health networks are related to cost reduction and improving the efficiency of network members, performance may be measured by improvements in the financial health of network members. Thus, an effective Defender network is one that can reduce resource and transaction costs for the network members. In contrast, Prospector networks are formed to protect the incomes of rural providers and make them more competitive in the market. As Prospector networks typically aim to enhance the availability of services to make them more competitive, performance measures may include the increased availability of services over time and the use of local services by residents. An effective Prospector network would be one that is able to maintain or increase the income of its network members. Wellever et al. (2000) deduce that because rural health networks differ in what they do (functions) and what they hope to achieve (goals) it is important to link their functions with their goals, i.e., a network's success is its ability to achieve its goals.

In conclusion, Wellever et al. (2000) pose various research studies relevant to rural health network policy, such as: 1) assessment of the effectiveness of various functions in achieving network goals; 2) determination of factors that influence the selection of goals by network members; 3) analysis of the effect of network structure on the selection of functions and the relationship to performance; and 4) improvement in the methods of rural health network performance.

Finally, the Health Resources and Services Administration's (HRSA, 2001) *The Network Sourcebook, Volume 1* provides a summary of the experiences of twenty-seven of the thirty-four rural health networks who received Rural Health Network Development Project funds in 1997. Included in the summaries are lessons learned for each of the networks. Some of the lessons learned, as revealed by the awardees, include the importance of mission and goals, specifically noting that they should be concise and clear as well as reevaluated, and the value of trust among members. Communication among members, diversity of membership, and leadership that can build consensus were also deemed important by the awardees, as were the significance of sufficient and adequately trained staff, the involvement of physicians, and having a management structure that is approved by all members. Finally, awardees documented the importance of sustainable revenue, capitalizing on existing community resources, a process for reviewing network activities and improvement efforts, and the worth of collecting and tracking data.

### Combining the Literature

The literature on organizational effectiveness illustrates the various perspectives on effectiveness to consider, many of which offer some insight into the effectiveness of vertically integrated rural health networks. Scott's open systems perspective illustrates

the importance of the environment on organizational effectiveness. For rural health networks, their ability to adapt to the conditions of the rural environment is of particular importance to their effectiveness. Conversely, Scott's natural systems perspective highlights the importance of support goals for organizational effectiveness which are also important to the effectiveness of vertically integrated rural health networks. With the multiple-constituency model, the importance of multiple constituents, in this case among the various persons affiliated with the networks, is realized. Finally, the competing values approach illuminates competing values among the multiple network affiliates, as well as the subjectivity of effectiveness criteria. This dissertation is nestled in the questions embedded in network effectiveness. However, a combination of insights from the open and natural systems, the multiple-constituency, and the competing values perspectives will be used to anchor the findings of this research within the broader literature that forms a support for the focus on network effectiveness.

Most of the literature on the effectiveness of rural health networks relates back to previous work on network effectiveness. More specifically, both literatures offer some consensus on possible correlates of effectiveness, as illustrated by Table 2.1. Most authors cited the degree of integration among members as significant. Moscovice, Christianson, and Wellever define integration as the measure of the "systemness" of the network. More specifically, it is "the degree to which the independent organizations function as a single unit through shared decision making, the contribution of resources, and the sacrifice of individual autonomy" (1995, p. 11). HRSA's (2001) *The Network Sourcebook, Volume 1* similarly highlights elements of integration as important, such as the value of having a management structure approved by all members and the

engagement of network members. Within the literature on network effectiveness, both Milward and Provan (1995) and Provan and Sebastian (1998) note the importance of network integration but among mental health networks. Provan and Milward explain that the concept of integration is “ill-defined, making operationalization difficult and interpretation of outcomes confusing” (1995, p.10). However, in their study, their treatment of integration mainly focuses on issues of interconnectedness among provider agencies and the extent to which provider agencies are integrated and coordinated through a central authority. Integration among member is hypothesized to be positively related to network effectiveness.

**Table 2.1. Agreement on Correlates of Effectiveness**

Indicators of Effectiveness	Provan and Milward 1995	Moscovice, Christianson, and Wellever 1995	Moscovice, Christianson, Johnson, Kralewski, and Manning 1995	Wright, Wellever, Lake, and Sweetland 1995	Moscovice, Wellever, Christianson, Casey, Yawn and Hartley 1996	Provan and Sebastian 1998	Wellever, Wholey, and Radcliff 2000	HRSA 2001
<b>Integration of Members</b> (integrated and coordinated through a central authority, contribution of resources by members, and sacrifice of individual autonomy)	X	X	X	X	X	X		X
<b>Stability in the External Environment</b>	X							
<b>Complexity</b> (diversity of network membership)		X			X			X
<b>Degree to which Network Assumes Assumption of Risk</b>		X						
<b>Distributional Effects</b> (Who benefits from the network beneficiaries and providers?)		X						
<b>Duration of Network</b>					X			
<b>Revenue Sources and Control</b> (e.g. product lines and stable funding base)	X				X			X
<b>Differ According to Network Functions</b>							X	
<b>Mission and Goals</b>								X
<b>Leadership</b>								X
<b>Staff</b>								X
<b>Trust among Members</b>								X
<b>Communication</b>								X
<b>Implementation Plan</b>								X
<b>Process for Reviewing Network Activities and Improvement Efforts</b>								X

Complexity (membership diversity and diversity and services) is also thought to impact network effectiveness with Moscovice, Christianson, and Wellever (1995),

Moscovice et al. (1996), and HRSA (2001) noting it. Increased membership diversity increases the need for network coordination and control. Furthermore, increasing network diversity may impact the scope of services that the network is able to provide, the productivity capacity of the network, and/ or alter its market position (Moscovice, Christianson, and Wellever, 1995).

Funding was also mentioned as significant to network effectiveness. Moscovice et al. (1996), HRSA (2001), as well as Provan and Milward (1995), mentioned funding. Moscovice et al. (1996) notes that networks need to be able to provide product lines to provide ongoing sources of revenue to be effective. HRSA (2001) states the importance of capitalizing on existing community resources, as well as having sustainable revenue. Finally, Provan and Milward (1995) note that networks are more likely to be effective when external fiscal control by the state is direct and not fragmented.

There were some correlates of effectiveness mentioned in the literature that only some authors acknowledged. The first is the relevance of who benefits from the network. Moscovice, Christianson, and Wellever (1995) point out that support for a network, both politically and by the participating networks, may depend upon whom the network is helping, i.e., certain beneficiaries or providers. Certain beneficiaries may be more politically favorable to support and thus, there may be more support from the community for the networks who choose to support certain populations. Additionally, a network is more likely to be effective if the network is benefiting those providers with more power and resources. Milward and Provan (1995) highlight the influence of system stability or changes in the network's environment on network effectiveness, proposing that networks will be more effective when there is system stability. Duration of network was also

mentioned by Moscovice et al., (1996, p. 17) who note that the formation and integration of a rural health network “requires a substantial amount of time.” While Wellever et al. (2000) do not offer indications of what may impact network effectiveness, they do highlight that rural health networks differ according to their functions. As such, it is important to determine a network’s function before trying to measure its effectiveness, as performance measures will vary according to function. Finally, HRSA indicates several possible correlates of network effectiveness not previously mentioned. They are the importance of mission and goals, leadership, staff, trust among members, communication, an implementation plan, and a process for reviewing network activities and improvement efforts.

Finally, there is agreement in the literature on the functions of vertically integrated rural health networks. Vertically integrated rural health networks are a newer type of rural cooperation organization that are primarily formed to reduce duplication of services across providers, to improve continuity of care, and to position providers to prosper in a managed care environment. Specifically, the vertically integrated rural health networks funded by the Rural Health Network Development Grant Program, which are serving as the study sample for this research, share one common goal, “to increase the access to health care for rural residents who otherwise may not have a reliable source for basic primary health care services.” In contrast, horizontal networks which are a more commonly known, older type of network consisting of one type of provider, differ in that they are primarily formed to share costly or difficult-to-supply services and to reduce costs (Moscovice et al., 1997). Wellever notes that horizontal networks typically consist of members who “do not compete actively with one another

and who come together to share information and services of strategic value to them” (1999, p. 120).

Using Wellever et al.’s (2000) classification of all types of rural health networks, vertically integrated rural health networks, if they are acting as they should, seem to most likely be Defenders, whose main objectives tend to be the reduction of member costs and improved coordination among members and member quality or Analyzers which predominately have Defender-like characteristics combined with some Prospector-like characteristics. Some vertically integrated rural health networks could also be classified as Reactors, which lack strategic orientation. Wellever et al. (2000) comment that twenty percent of Reactor networks have diverse memberships. Vertically integrated rural health networks seem least likely to be Prospectors, whose main objectives are to protect or increase the incomes of members. As such, performance measures for vertically integrated rural health networks would be most similar to those for Defender, Analyzer or Reactor networks. For Defender networks, some examples of performance measures are member financial ratios, cost per admission, and the unit cost of supplies purchased through group purchasing. For Analyzer networks, examples of performance measures would be similar to those for Defender and Prospector networks with emphasis varying by network. Examples of performance measures for Prospector networks include market share, income of members, and use of local services by residents. For Reactor networks, performance measures need to be determined on a case-by-case basis. Although Wellever et al.’s research contains some persuasive arguments, this classification system is not the primary focus of this research. However, their findings are a good reminder to

investigate how effectiveness criteria do relate to function and will be taken into consideration in developing the questionnaire and in determining their effectiveness.

Overall, the literature on organizational effectiveness illustrates the complexity in determining the effectiveness of rural health networks. Additionally, the literature on network and rural health network effectiveness highlights that there are many effectiveness measures and probably many correlates, both structural and environmental, of effectiveness for vertically integrated rural health networks. As many authors (e.g. Moscovice, Christianson, and Wellever, 1995; Wellever, 1999; Wellever et al., 2000) have expressed, not much is known about how these are intertwined, particularly for vertically integrated rural health networks. Thus, it is the intent of this research to explore the interrelationship among correlates and effectiveness for vertically integrated rural health networks.

## **CHAPTER THREE**

### **METHODOLOGY**

According to the literature on the effectiveness of rural health networks and on networks in general, various factors (e.g. network size and diversity, network governance structure, revenue) are thought to be correlated with the effectiveness of rural health networks. Given those findings, the main research questions of this research are:

- 1) What structural and environmental correlates of effectiveness are identified by participants in vertically integrated rural health networks?
- 2) How are identified correlates of effectiveness related to each other and to the effectiveness of vertically integrated rural health networks?

To further examine these questions and to explore the impact of network structure and the environment on the effectiveness of vertically integrated rural health networks, a descriptive approach, employing a cross-sectional design, was taken. Such an approach is useful in developing a “snapshot” of a particular phenomenon of interest for a sample of respondents. Furthermore, two different descriptive research approaches, i.e., field studies and field surveys, were used. Both field studies and field surveys involve going into greater depth on a fewer number of issues or items. Field studies collect data via face-to-face interviews or telephone personal-interviewing techniques, while field surveys collect data through a questionnaire (McNabb, 2004). A descriptive approach, employing both field studies and field surveys, was necessary for this research, as it assisted in describing the interrelationships among the correlates and the effectiveness of vertically integrated rural health networks.

## Case Selection

The thirty-three rural health networks that were awarded grants in the first year, 1997, of the Office of Rural Health Policy's (ORHP) Rural Health Network Development Grant Program served as the preliminary sample for this research, as they consisted of a variety of vertically integrated rural health networks in various rural settings across the United States. A comprehensive list of these networks was obtained from ORHP containing the addresses and phone numbers for the rural health networks and in some cases an email address for a contact person. The first grant cycle grantees were selected based on the age of their networks, as well as the fact that they are the largest cycle of awardees. It was expected that these grantees had more time to realize their effectiveness (or lack of effectiveness) and thus, serve as a revealing preliminary sample for this research. It was from this preliminary sample that four networks were chosen for a field study and survey.

### *Preliminary Expert Interviews*

This research began with selection of four networks from the preliminary sample within which to conduct expert interviews with persons representing various organizational aspects of the network (e.g. network director, steering committee member, network staff). To maximize the widest understanding of variables and possible perspectives on network effectiveness, cases were selected for their variety, as well as their availability. As such, selected networks varied according to characteristics such as size, purpose, and other variables thought to be important to this study. Appendix A contains a full list of the networks in the sample, as well as a brief summary of their

demographics, as reported at the time of receiving funds from the Rural Health Network Development Grant. This list was used, as well as any information provided on the Internet, to select the four networks for the preliminary expert interviews; however, because the information on this list was not current and not all of the networks had Internet sites, it was hard to ensure variety in case selection. Updated network demographics were obtained later in the study via the questionnaire completed by the networks' directors.

The first expert interview conducted was with two persons: an Executive Director and a Steering Committee Member/ Director of a member organization from a rural health network in New York. This network consists of sixteen member organizations with the network's main purpose to serve as a forum for coordinating regional health care. It was noted that their network did not actually provide any services. The second expert interview was conducted with the Executive Director of a network in Michigan. This network also consists of sixteen member organizations but with a differing main purpose, to achieve cost savings for their members via a group purchasing program. The third expert interview conducted was with an employee, i.e., the Director of Business Operations and the Regional Immunizations Coordinator, of a network in Minnesota. Network members include sixteen hospitals, clinics, long-term care facilities, tribal health facilities, higher education facilities and public health departments. This network's main purpose is to provide regional access to utilization of health care information to various types of providers. Education and group purchasing were also mentioned as functions of this network.

The final expert interview was conducted with the unpaid Executive Director of a network in Kansas that is currently out of operation but hopes to become active again. This network consisted of member organizations in seven different counties and included such members as Area Agencies on Aging, Health Departments, hospitals, and mental health services. The main purpose of this network was the coordination and integration of delivery systems to make health care more accessible to its residents. This was done through Community Health Resource Specialists that were hired and placed throughout the network's service area, mainly within existing Health Departments, to help refer clients to the proper care. Overall, these expert interviews were conducted with different types of people affiliated with the networks, i.e., Executive Directors, a network staff, and a Steering Committee Member/ Director of a member organization, to solicit the possible differences in opinion on network effectiveness. Additionally, the expert interviews were conducted with networks that differed in size and purpose, as well as other characteristics not realized at this point in the data collection, to further realize possible correlates of network effectiveness.

#### *Survey of Preliminary Sample*

The initial questionnaire was distributed to as many of the thirty-three network directors from the preliminary sample as possible. Initially, an attempt was made to contact each of the network directors to notify them of this research and to verify their contact information. Two of the networks were unable to be contacted due to outdated contact information or they were no longer in existence. The other thirty-one networks were contacted either via phone or email. Of the networks that were contacted, twenty-one of the network directors completed the questionnaire.

### *Field Study & Survey of Four Networks*

Responses from the questionnaire with the network directors were used to select the networks for the field study and survey. To begin, the questionnaire with the network directors offered various demographic information, such as age, size, services provided, and purpose, on each of the twenty-one networks that participated. This information was taken into consideration for case selection, as it was the intent, as with the preliminary expert interviews, to select a variety of networks in order to maximize the widest understanding of variables and possible perspectives on network effectiveness. However, case selection for the field study and survey was primarily based on their network characteristics and their effectiveness, as the chosen networks were to serve as best practices.

To measure the network characteristics, i.e. the network's mission, governance, planning, financing, leadership, staff, communication, and evaluation, for case selection, an index was created from the various questions in the questionnaire used to measure each characteristic. Additionally, a total index was created for all the characteristics combined. The higher the index for each characteristic, the more favorable respondents felt about that characteristic. The measurements used for case selection to measure network effectiveness were: 1) the number of organizations added to the network; 2) the number of services the network provided; 3) if the network had a network administrative organization (NAO); and 4) the index generated from the questions answered by the network directors about their network benefits. Because the four chosen networks were intended to serve as "best practices" only effective networks were chosen, i.e., the four chosen networks scored high on most of the effectiveness measures, as well as had high

indices for most of their network characteristics. Refer to tables D1 and D2 in Appendix D for a complete overview of the criteria used to choose the networks. For each selection criterion in the table, the top scoring networks were highlighted, i.e., the chosen networks were highlighted across various criteria. Choice of networks for the field study and survey was limited by agreement of the networks to participate.

While it was the intent to have the chosen networks serve as “best practices,” it was also the intent to provide insight into the paths, both similar and different, that were taken by each to achieve their effectiveness. As such, an effort was made to select networks that differed in their demographics, as well as their purpose. Following is a summary of the network demographics of the twenty-one networks who participated in the initial questionnaire. This information was also used in case selection of the four networks.

#### *Age of Network*

Of the twenty-one networks that responded, two of the networks were no longer in existence. The average number of years the networks had been in existence was eleven with one network being in operation for twenty-seven years. Six was the least number of years any of the networks had been in operation.

#### *Network Size*

Questionnaire responses also illustrated that the average number of counties served by the networks was twelve with the number of counties served ranging from one to forty-six with most of the counties serving no metropolitan areas. The average number of organizations in each network was forty-seven. Overall, network size ranged from two

to three hundred and forty-four. The average number of organizations added among the networks was thirty-eight.

*Network Composition*

Networks were also found to vary in composition with most of the networks having hospitals and Critical Access hospitals. The next common type of organization was mental health providers followed by independent family practices, independent specialists, nursing homes, and home health agencies. Finally, many of the networks responded that they had other types of organizations in their networks. The other types of organizations mentioned were: Independent Practice Association (2 mentioned), Planned Parenthood (2 mentioned), Federally Qualified Health Centers (2 mentioned), Physician-Hospital Organization, Chambers of Commerce, Community Health Centers, Air Ambulance, Medical School, Area Health Education Center, Hospice, Developmental Disabilities Association, Pregnancy Resource Center, Domestic Violence Center, County Government Representative, pharmacies, Community Access Program, Area Health Education Center, Managed Care Organizations, Hospice, Gospel Rescue Mission, Impact Theater, Women’s Crisis Center, schools, and a Drug and Alcohol program. Table 3.1 illustrates the breakdown of network composition by type of organization.

**Table 3.1: Network Composition, (N=21)**

<b>Types of Organizations</b>	<b>Number</b>	<b>Percent</b>
Department of Social Services	12	57
Health Departments	14	67
Family Practices (Independent)	15	71
Specialists (Independent)	15	71
Mental Health Providers (Independent)	16	76
Critical Access Hospitals	20	95
Other Hospitals	20	95
Ambulance Districts	14	67

Nursing Homes	15	71
Home Health Agencies	15	71
Area Agencies on Aging	14	67
Other Types of Organizations	16	76

*Populations Served and Services Provided*

Questionnaire responses also showed that the networks varied in the services they provided but were similar in the populations they served. All of the networks served adults (100%), while a majority served the remaining populations: disabled (95%), pregnant women and teens (90%), infants (90%), children (90%), elderly (90%), minorities (86%), and women (86%). With regard to services, twenty-nine percent responded that they did not provide direct client services. Of those that responded that they did provide direct client services, many provide education for health care professionals, followed by health promotion/ education services, and coordination of services. Fewer of the networks providing direct services offer advocacy, telemedicine, referrals, health fairs, case management, screenings, primary care, and immunizations, while even fewer offer counseling services, dental care, emergency medical services, Medicaid, Medicare, mental health, preventative health care, or public health services. Finally, some of the networks responded that they offer services not listed. These services are: telecommunications, emergency preparedness administration, quality improvement, recruitment, administrative consultation, facilitation of enrollment for subsidized insurance programs, and occupational health services. Table 3.2 illustrates the number and the percentage of networks who offer each type of service.

**Table 3.2: Services Provided by Networks, (N=21)**

<b>Services Provided</b>	<b>Number</b>	<b>Percent</b>
Advocacy	9	43
Case Management	5	24
Coordination of Services	10	48
Counseling Services	2	10
Dental Care	2	10
Education for Health Professionals	13	62
Emergency Medical Services	2	10
Health Fairs	7	33
Health Promotion/ Education	12	57
Immunizations	3	14
Media Coverage	6	29
Medicaid	2	10
Medicare	2	10
Mental Health Services	2	10
Preventative Health Care	2	10
Primary Care	4	19
Public Health	2	10
Referrals	7	33
Screenings (general)	4	19
Telemedicine	8	38
Other	5	24

*Network Purpose*

Finally, questionnaire results illustrated some variety in network purpose. Respondents were asked to rank a list of network functions in order of importance for their network and to exclude any functions from their ranking that did not apply. All of the networks noted improving integration and coordination of services among members as one of their functions, as did most answer improving access to health care services to clients. Many networks also responded that increasing the use of member services by residents, improving community health status, and improving member quality were one of their functions. Some networks noted other functions, such as inducing competition; collecting, analyzing, and disseminating data; shared technology; education and training

of health providers; payer contracting; and group purchasing. Refer to table 3.3 for more details.

**Table 3.3: Network Functions, (N=21)**

<b>Network Functions</b>	<b>Number</b>	<b>Percent</b>
Improve Community Health Status	17	81
Improve Access to Health Care Services for Clients	20	95
Improve Integration and Coordination of Services Among Members	21	100
Reduce Costs of Network Members	16	76
Stabilize or Improve Market Share of the Network Service Area	16	76
Improve Member Quality	17	81
Increase Use of Member Services by Residents	18	86
Other Functions	6	29

Taking rank into consideration, the networks were categorized according to the functions they labeled as their top three. Forty-three percent of the networks seemed divided about their overall purpose focusing on goals intended to improve the efficiency of members, protect or increase the incomes of members, and improve community health status. In this category, a majority of the networks (33% of all the networks) identified, as their top three functions, improving access to health care services for clients, improving integration and coordination of services among members, and improving community health status. The remaining networks in this category (10% of all the networks) noted improving access to health care services for clients, improving community health status, and reducing costs for network members.

Twenty-eight percent of the networks seemed to have improving the efficiency of members as their main purpose. Of these networks, most (24% of all of the networks) identified improving access to health care services for clients, improving integration and coordination of services among members, and reducing costs for network members as

their top three functions. One of these types of networks answered that it wanted to improve integration and coordination of services among members, reduce costs for network members, and improve community health status as their top three functions.

The remaining networks' main purpose seemed to be to protect and increase the incomes of members. Of these networks, most (10 percent of all the networks) noted improving integration and coordination of services among members, stabilizing or improving the market share of the network service area, and increasing use of member services by residents, as their top three functions. The same amount (10 percent of all of the networks) answered stabilizing or improving the market share of the network service area, increasing use of member services by residents, and improving member quality. One of these types of networks responded that its top three functions were to stabilize or improve the market share of the network service area, improve member quality, and improve access to health care services for clients. Similarly one network answered that it wanted to stabilize or improve the market share of the network service area, improve access to health care services for clients, and improve integration and coordination of services among members.

Thus, the four networks chosen for the filed study and survey differed with regard to various demographic characteristics and most importantly by purpose. While the survey results indicate that the networks are similar in purpose, i.e., they all seem to be what Wellever et al. (2000) classify as Analyzers which are networks whose organizational type is a combination of the Defender (goal is to improve efficiency of members) and Prospector (goal is to protect or increase incomes of members) organizational types, the results also indicate some variation. As such, two networks

were chosen for the defender like organizational type, one network was chosen for the analyzer like organizational type, and one network was chosen for its prospector like characteristics, although it too seemed to have many characteristics of an analyzer like organizational type. Following is more detail, as provided by the questionnaire and other sources, about the four networks chosen for the field study and survey.

### *Cases Selected*

#### *Tioga County Partnership for Community Health (TCPCH).*

The first chosen network for the field study and survey is the Tioga County Partnership for Community Health. The TCPCH serves Tioga County which is located in north, central Pennsylvania and consists of 1,143 square miles in the Alleghany Plateau (HRSA, 2001). According to the questionnaire completed by the network directors, lack of providers, lack of transportation, complexity of patient problems, a growing elderly population, a high rate of uninsured persons, and the geographic terrain are all problematic of the environment in which the TCPCH operates. Out of the twenty-nine townships and ten boroughs in Tioga County, all are designated Health Professional Shortage Areas and Medically Underserved Areas for physical, mental, and dental health services (HRSA, 2001).

The TCPCH has been in existence since 1994 and originally only consisted of three community agencies (HRSA, 2001). Currently, it has an annual budget of \$750,000 and more than twenty member organizations consisting of a Department of Services, a Health Department, a specialist, a mental health provider, two nursing homes, two home health agencies, one Area Agency on Aging, and more than ten other types of organizations. As stated on the TCPCH website, the main mission of their network is to

“improve the health and quality of life of individuals and communities in Tioga County”. As reported on the questionnaire, the top three purposes of TCPCH are to improve community health status, to improve integration and coordination of services among members, and to improve access to health care services for clients. As such, TCPCH appears to be an analyzer organizational type.

TCPCH offers no direct client services. Instead they plan, develop, and implement collaborative improvement projects with an emphasis on disease prevention. This is done via sixteen different Work Groups. The TCPCH work groups are: Alcohol, Tobacco, & Other Drugs; Charlie’s Place Advisory Board; Communities that Care; Community Awareness Work Group; Disabilities Awareness Network; Elder Services Work Group; Health Families; Ideal Health and Human Services Planning Committee; Immunization Work Group; Kids First Work Group; Measurement and Outcomes Work Group; Mental Health Work Group; National Alliance for the Mentally Ill, Tioga County Countryside Council; Tioga Early Care and Education Team, and Tobacco Coalition. Some of the work group accomplishments include: serving nutritious snacks, increasing the number of students doing homework, the annual Shape Up Tioga County Program, capacity building for health fairs and health related programming of partners, mobilizing community mental health partners to address mental health issues, and running tobacco counter marketing ads (Tioga County Partnership for Community Health, n.d.).

According to an interview conducted with an employee of the TCPCH (February 6, 2007), the TCPCH has twenty-five voting members on their board and five staff members. They also have a total of three hundred and eight two members which include many people from the same organizations, as well as non-agency community members,

and volunteers. The survey was sent to a total of twenty-two people in TCPCH, seventeen of which were board members and five were staff.

*Roaring Fork Valley Community Health Plan (RFVCHP).*

The second chosen network, the Roaring Fork Valley Community Health Plan, currently serves four counties, none of which are metropolitan, in western Colorado where the local economy is primarily recreation-based (Roaring Fork Valley Community Health Plan, n.d.). As reported on the questionnaire with the network directors, the following are said to be problematic about the environment in which RFVCHP operates: a complex health care regulatory environment, complexity of patient problems, lack of health literacy, lack of infrastructure for information technology, a growing elderly population, a growing immigrant population, a high rate of uninsured persons, and the geographic terrain. Within the RFVCHP service area, there are one hundred and forty-five (one hundred and forty-two doctors and three hospitals) designated Health Professional Shortage Areas, as well as three Medically Underserved Areas/ Medically Underserved Populations.

RFVCH is a not-for-profit corporation that was formed in 1993 to address the health care issues of the employers in the Roaring Fork valley (Roaring Fork Valley Community Health Plan, n.d.). As reported in the questionnaire with the network directors, RFVCH currently has an annual budget of \$250,000 and consists of ten member organizations. These member organizations include mental health providers, critical access hospitals, an independent practice association, a physician-hospital organization, and chambers of commerce.

The main goals of RFVCHP are:

1. to promote quality health care and health education to all community members at an affordable cost;
2. to cooperatively represent stakeholders (employers), providers, consumers) to ensure local ownership and control of the system;
3. to retain the highest percentage of health care dollars in the community; and
4. to maintain health responsibility and prevention orientation at the community level (Roaring Fork Valley Community Health Plan, n.d.).

In the survey completed by the network director, improving access to health services for clients, improving integration and coordination of service among members, and reduction in cost for network members were selected as the top three functions, in descending order, of the RFVCHP. As such, RFVCHP appears to be an analyzer organizational type with more defender than prospector organizational type qualities.

Faced with a high number of uninsured and underinsured, the main service offered by the RFVCHP is community-oriented health plans via Aetna Life Insurance. The health coverage offered by RFVCHP is available to businesses and individuals located in the cities of Aspen, Basalt, Battlement Mesa, Carbondale, Eagle, El Jebel, Glenwood Springs, New Castle, and Rifle. Health plans are endorsed by the local chambers of commerce within the service area with chamber members receiving various discounted health plan designs. In addition to offering health coverage, RFVCHP provides health fairs and seminars, as well as provides on-going review and oversight to research and analysis on health data for its service area to be used to determine necessary programs and practices for RFVCHP (Roaring Fork Valley Community Health Plan,

n.d.). It was noted in the survey completed by the network director that RFVCHP also offers the following services: advocacy, case management, coordination of services, dental care, education for health professionals, emergency medical services, immunizations, media coverage, mental health services, preventative health care, primary care, public health, referrals, and screenings (general).

RFVCHP is governed by a board of seventeen individuals that consist of such members as CEOs of local hospitals, physicians, and executive directors of chambers of commerce. Additionally, RFVCHP has an executive director, as well as two other staff members that include a technical director and an administrative staff support. RFVCHP relies on Van Gilder Insurance Corporation to manage their health plan. As such, the RFVCHP has a Van Gilder Insurance Team which consists of five members (Roaring Fork Valley Community Health Plan, n.d.). Twelve board members received the survey as did the Executive Director.

*Community Health Information Collaborative (CHIC).*

The third network chosen for the field study and survey is the Community Health Information Collaborative. The CHIC's headquarters are in Duluth which is located in Northeast Minnesota. Eighteen counties, two of which are metropolitan, are serviced by CHIC. According to an interview conducted with an employee of the CHIC (October 9, 2006), the CHIC service area suffers from a dwindling economy due to the closing of iron mines and lagging tourism. As reported in the questionnaire with the network directors, lack of providers, a complex health care regulatory environment, lack of infrastructure for information technology, a growing elderly population, and the geographic terrain are all problematic about the rural environment in which CHIC

operates. The CHIC service area has two hundred and sixty-four designated Health Professional Shortage Areas.

The CHIC began in 1997 with help from funds from the Federal Office of Rural Health Network Development Grant. It is currently a 501 (c)(3) corporation. According to findings from the questionnaire given to the network directors, CHIC has an annual budget of \$454,044.00 and consists of three hundred and forty-four organizations. The various member organizations include: seven Departments of Social Services, nineteen Health Departments, one hundred and fourteen family practices, fifty-two specialists, seventeen mental health providers, twenty critical access hospitals, twelve other types of hospitals, one ambulance district, seventy-four nursing homes, four home health agencies, and several other types of organizations such as The College of St. Scholastica.

As stated on the CHIC website, the mission of CHIC is to “provide regional access and utilization of healthcare information through collaboration”. Their stated goals are to:

1. develop linkages with health information resources both within and outside the region;
2. encourage compatibility of network members’ technology and equipment;
3. provide education to health care providers in the region to develop and enhance computer and technology skills;
4. provide continuing medical education to rural health providers and community-based training for health care students;
5. obtain discounts on equipment business applications and information services through group purchasing;

6. serve as a forum for discussion of information systems and telecommunication issues and for sharing of experiences; and
7. advocate for information systems' policies and legislation that will improve health care delivery in the region.

It was reported via the questionnaire with the network directors that the top three purposes of the CHIC are to improve integration and coordination of services among members, to reduce costs for network members, and to improve community health status. As such, the CHIC appears to be an analyzer organizational type with more defender organizational type qualities.

As indicated on the questionnaire with the network directors, the main services provided by the CHIC are education for health professionals, telecommunications, and emergency preparedness administration. Some of the projects the CHIC is involved in include the Minnesota Immunization Information Connection (MIIC), the Universal Services Administration Fund (USAC), Emergency Preparedness, and the Regional Health Information Organization (RHIO). The MIIC is a confidential, computerized network of shared immunization records that provides clinics, schools, and parents across Minnesota with up to date immunization records. The CHIC coordinates the eighteen counties within its service area for MIIC with duties including the provision of user manuals for each training site, the training of all site administrators and inventory control managers, and the maintenance of a Help Desk. With regard to USAC, CHIC provides all administrative services for filing the paperwork necessary for obtaining USAC funds which are intended to help health care providers in rural areas obtain the benefits of current telecommunications technology, such as T-3 or DS3 connections. The CHIC also

serves as the administrative coordinator for the Emergency Preparedness Planning in the Northeast Region of Minnesota. Finally, CHIC is the lead agency for the RHIO project in Northeastern Minnesota. The goal of RHIO is to provide secured access to electronic health care records for various healthcare providers throughout Northeastern Minnesota. Some of the CHIC's duties with RHIO include helping to create the necessary technology infrastructure within the region and developing a process to use electronic health records (CHIC, n.d.).

According to an interview conducted with an affiliate of the CHIC (October 9, 2006), the CHIC has a board of seventeen members that is in charge of directing the network. Board members meet three times a year with everyone on the board having a voice. In addition to their board members, they have twelve persons who sit on one or more of their three RHIO committees, i.e., the RHIO Policy Committee, the RHIO Work Group, and the RHIO Technical Group. The CHIC also has four full-time staff which includes an Executive Director, a Regional Immunization Registry Coordinator, USAC Administrator/Marketing Coordinator, and an Executive Administrative Coordinator. The survey was sent to all board and committee members, as well as the staff.

*Adirondack Rural Health Network (ARHN).*

The Adirondack Rural Health Network is the fourth network for the field study and survey. The ARHN service area covers six counties in upstate New York and encompasses a 4,300 square mile region. The two largest cities in the service area are Queensbury and Glens Falls which is the center of a Metropolitan Statistical Area (MSA). The economy in the ARHN service area is mainly based on manufacturing, retail trade, and service related industries with many in the area employed in tourism, the paper

and pulp industry, light manufacturing, and small family farms (ARHN, n.d.). According to the questionnaire completed by the network directors, problematic environmental factors for the ARHN include lack of providers, lack of public transportation, a complex health care regulatory environment, a complexity of patient problems, lack of health literacy, lack of infrastructure for information technology, a growing elderly population, a growing immigrant population, a high rate of uninsured persons, lack of scales of economy, harsh geographic terrain and weather. Within the ARHN service area, there are five designated Health Professional Shortage Areas and four Medically Underserved Areas/ Medically Underserved Populations.

The network began in 1992 and has been in operation for fourteen years. According to the questionnaire with the network directors, the annual budget of ARHN is \$220,000. The ARHN has seventeen member organizations which include six health departments, one mental health provider, one critical access hospital, five ambulance districts, one nursing home, five home health agencies, a Planned Parenthood and an Area Health Education Center.

The original intent of the ARHN was to coordinate planning and share resources among its members (Moscovice, Wellever, Christianson, Casey, Yawn and Hartley, 1996). The questionnaire completed by network directors indicates that the top three functions of the ARHN are to improve integration and coordination of services among its members, to stabilize or improve the market share of the network service area, and to increase the use of member services by residents. As such, the ARHN appears to be an analyzer organizational type with more prospector organizational type characteristics.

At its advent, the ARHN was not intended to provide direct client services but enhance the foundation of service delivery (Moscovice, Wellever, Christianson, Casey, Yawn and Hartley, 1996). According to the questionnaire with the network directors, the ARHN still does not provide direct client services. The ARHN website specifies that the main focus of the ARHN since its inception has been “on the development of a regional health care delivery system.” As such, some of the many the ARHN activities have included developing a first responder Medic car program, securing funding for the establishment of an Area Health Education Center, developing and implementing a five county oral health education program, and the creation of NYEMTInfo.com which is an online tool for EMS course providers to post up-coming courses (ARHN, n.d.).

The Upper Hudson Primary Care Consortium (UHPCC), a not-for-profit organization is the lead agency for the unincorporated ARHN. The ARHN is organized according to a memorandum of agreement and is governed by a steering committee that meets bi-monthly and consists of nineteen voting members. The ARHN has three staff members, i.e., one full-time Network Director, one part-time Program Coordinator, and one part-time Finance Director. The ARHN additionally has four work groups on which non-steering committee members participate (ARHN, n.d.). The survey was sent to all steering members and staff, as well as to ten others who participate in the ARHN work group activities.

## Data Collection

### *Preliminary Expert Interviews*

In the preliminary expert interviews used to inform the questionnaires, information regarding the possible correlates and measures of effectiveness were asked. The initial questions asked included:

- 1) In your opinion, how does your network determine its effectiveness?
- 2) What measures does your network employ in determining its effectiveness?
- 3) How effective would you say your network is?
- 4) What do you think would make your network more effective?
- 5) Think of a network that you judge to be effective. What is it that makes this network more effective?
- 6) After giving respondents a list of criteria: Of the listed effectiveness criteria, which ones are not relevant to the effectiveness of this network?
- 7) Of the listed effectiveness criteria, which ones are not measurable or are ones for which no data is available?
- 8) How does the rural environment impact the effectiveness of your network?
- 9) Do you communicate with other rural health networks?

Upon conducting the second interview, I realized that it was necessary to also ask about the main purpose of the respondents' networks, as respondents' responses to how and what measures they used to determine their effectiveness indicated that they may vary. As such, a tenth question was added to the interview schedule asking respondents what is the main purpose of their network. A consent form was signed by each of the participating respondents. A copy of the consent form is provided in Appendix B.

With the preliminary expert interviews, qualitative methods were used to understand how each of the rural health networks defines effectiveness and what structural and environmental factors were thought to impact their effectiveness. A qualitative approach is more useful when “relevant variables have yet to be identified” (Patton, 1987, p. 14). Because little research has been done on the effectiveness of rural health networks, a qualitative approach was necessary to identify those variables that may impact network effectiveness, as well as those variables that make a network effective. Furthermore, it is through a qualitative approach that a more informed quantitative methodology will be achieved. “Once qualitative impressions are developed; it is possible to form hypotheses about the expected pattern of some quantitative measures of program outcome” (Posavac and Carey, 2003, p. 249). This qualitative approach can and was also used to inform the development of the questionnaire, as well as to enrich the quantitative findings from the questionnaire.

#### *Survey of Preliminary Sample and Field Survey*

Questionnaires were the main sources used to collect information on both the preliminary sample of rural health networks and on the four networks for the field study and survey. Initially, a longer questionnaire was distributed to the network directors in the thirty-one networks in the preliminary sample to gather important demographic information to be used to select the four effective networks used in the field study and survey. Once selected, an abbreviated version of the initial questionnaire was sent out to the staff, steering committee members, and other members of the four networks in the field study and survey. The abbreviated questionnaire excluded questions regarding the networks’ demographics (e.g., age of the network, make-up and diversity of the network

members, network size) as this information was already collected in the longer questionnaire with the network directors. Both questionnaires collected data on the identified structural and environmental correlates of effectiveness, as well as on the selected effectiveness criteria. Copies of both questionnaires are provided in Appendix E.

The chosen effectiveness criteria, on which the questionnaires collected data, were based on those suggested by Provan and Milward's (2001) framework. They were also selected with input from the initial expert interviews and according to availability of data. As such, some of the measures of effectiveness included - improved integration and coordination of services, decreased service duplication, member commitment to goals, changes in the incidence of the problem, and increased agency survival.

With regard to correlates of effectiveness, data was collected on the various characteristics, both structural and environmental, thought to impact network effectiveness, as identified by the literature and the previously conducted expert interviews. Such structural characteristics included network governance, network leadership and staff, financing, trust, planning and evaluation. Information was also collected on the number and types of problems in the rural environment experienced by the networks to determine its impact.

The "Rural Health Network Profile Tool" prepared by the National Rural Health Resource (2000) is an instrument that allows one to develop a profile of a rural health network based on such network characteristics as purpose, governance/decision making, planning, financing, leadership and management, staffing, communication, and evaluation. This tool, along with the input collected from the preliminary expert

interviews, was used to form the questionnaire regarding possible network characteristics that may impact network effectiveness. Prior to distribution of the questionnaire, a pretest was conducted with one of the network directors, as well as with one of the network members.

*Survey.vt.edu* was the tool used to create and administer the survey. *Survey.vt.edu* is fully Web-based and free for use by students, faculty, and staff of Virginia Tech. The tool allows for the design of the survey, as well as collects, exhibits, and exports the responses. Although, the data analysis capabilities of *Survey.vt.edu* are limited, data can be exported to other software for data manipulation and analysis. Both Excel and SPSS were used to fully execute data analysis.

Questionnaire participation was done in accordance with Don A. Dillman's (2000) Tailored Design Method. As such, four attempts were made to contact and encourage the participation of the directors who did not respond. Contacts with respondents initially included an invitation letter with a link to the online questionnaire followed by a brief reminder email, a longer letter emphasizing the importance of the survey with a link to the online questionnaire, and a phone call. Fewer contacts were made with respondents in the field survey, as the network directors, in all but one of the networks, administered the survey to protect their members' privacy. Due to the limited time of the network directors, only one invitation letter with a link to the online questionnaire followed by a longer letter emphasizing the importance of the survey with a link to the online questionnaire was sent out to encourage participation in the field survey. Copies of these documents are provided in Appendix C.

### *Field Study of Four Networks*

Following analysis of the questionnaires with the four networks in the field survey, additional interviews were conducted with various persons within these networks. A list of the questions asked for each network respondent(s) are provided in Appendix F. These questions were dependent upon analysis of the questionnaires and were based upon the correlates found to be most significant to effectiveness and upon the patterns of the answers. These interviews served to corroborate and expand upon questionnaire findings, as well as to better understand the identified correlates of effectiveness for vertically integrated rural health networks.

Protocol for both the initial expert interviews and the follow-up interviews were similar with an interview schedule used for both. In some cases, more than one network affiliate was available and interviewed at the same time. Notes were taken of each interview with each interview analyzed after completion. To ensure anonymity, the names of those individuals interviewed were not divulged. Because this research involves human subjects, Virginia Tech Internal Review Board (IRB) approval was sought.

### *Archival Research*

Basic archival research was conducted before completing the questionnaire to identify possible network purposes and histories. More intensive archival research was also conducted for the networks in the field studies; both printed and Internet materials were collected and analyzed to provide additional insight into those correlates found to be significant to their effectiveness. McNabb notes that such materials can be valuable in

cross-checking interview and narrative study data and further comments that they can “contribute to improved validity through triangulation” (2004, p.454). Both printed and Internet materials regarding the field study networks were used to triangulate findings from both the interviews and the questionnaire.

## Data Analysis

### *Interviews*

Data collected through both the initial expert interviews and the follow-up field study interviews were analyzed via coding. Coding involves organizing the raw data collected from interviews into conceptual categories. According to Neuman, “coding is two simultaneous activities: mechanical data reduction and analytic categorization of data” (2004, p. 422). Thus, coding allowed themes to be identified, in the initial expert interviews, regarding the correlates of effectiveness and the possible measures of effectiveness. Additionally, in the follow-up interviews, coding was used to identify themes regarding significant correlates of effectiveness for vertically integrated rural health networks.

### *Survey of Sample and Field Studies*

A quantitative approach, based on the questionnaire, focused on understanding network effectiveness by providing insight into how different variables relate to the effectiveness of rural health networks. For this quantitative analysis, data from the second questionnaire, conducted with the sample of four effective networks, was used. The directors’ responses, collected in the first questionnaire for these four networks, were included in the quantitative analysis, as well as were their responses regarding their

network's demographics (e.g. size, populations served, number of organizations) to supplement findings.

Six independent and six dependent variables were used in the analysis. The independent variables used were: cohesiveness, financing, governance, planning & evaluation (P&E), personnel, and rural problems. The dependent variables used were: "perception problem solved" and "incidents improvements" to measure community level effectiveness; "goal commitment," "improve coordination" and "decrease service duplication" to measure network level effectiveness; and "organization" which is an index created from five questions used to measure effectiveness at the organizational level. Finally, a control variable "network employee" was used to differentiate possible differences in identified correlates of effectiveness between network employees and non-network employees. For the variable "network employee," respondents were either coded one for network employees which includes directors of the networks and other network employees or zero for non-network employees which includes employees of member organizations, board/ steering committee members, citizens of the community the network serves, or others. Table 3.4 provides a complete list of the independent and dependent variables used in this analysis, as well as provides their definition and the question number(s), as found within the second questionnaire conducted with the sample, used to measure them.

**Table 3.4: Description & Reliability of Variables**

<b>Variables</b>	<b>Definition</b>	<b>Question # in Survey</b>	<b>Cronbach's Alpha</b>
<b>Independent</b>			
<b>Cohesiveness</b>	the degree to which the independent organizations trust one another, have ongoing communication which utilizes multiple methods and mediums, and function as a single unit through shared decision making	14,15,17,23,38,39,40,41	.894
<b>Financing</b>	the amount to which the network is building and sustaining diverse sources of revenue	24, 25, 27, 28	.784
<b>Governance</b>	the extent to which there is a clear sense of the network's purpose and to which the network has a well defined governance and decision-making processes	10, 12, 13, 16 & 18	.777
<b>Planning &amp; Evaluation</b>	the extent to which the network's strategic planning is ongoing and inclusive of its members and to which the network has developed an implemented multiple methods of measuring the network's progress and impact	19, 20, 21, 42, 44, 45,46	.856
<b>Personnel</b>	the degree to which the network has strong and committed leadership and has adequate and qualified staff to carry out network goals and objectives	29, 30, 31, 32, 33, 34, 35, 37	.805
<b>Rural Problems</b>	the number of problems regarding the rural environment	47	
<b>Dependent</b>			

<b>Variables</b>	<b>Definition</b>	<b>Question # in Survey</b>	<b>Cronbach's Alpha</b>
<b>Perception Solving Problems</b>	the degree to which there is a public perception that the network is solving the problems it intends to address	48	
<b>Incidents Improvements</b>	the degree to which there were improvements in the incidence of the problem that the network addresses	49	
<b>Goal Commitment</b>	the degree to which network members are committed to network goals	11	
<b>Improve Coordination</b>	the degree to which the network has improved integration/ coordination of services	53	
<b>Decrease Service Duplication</b>	the degree to which the network has decreased service duplication since its inception	52	
<b>Organization</b>	the degree to which the network has enhanced the survival of its members, enabled its members to acquire resources, reduced the cost of services for its members, improved access to services for members' clients, and improved members' client outcomes	55, 56,57, 58, 59	.858
<b>Control</b>			
<b>NetworkEmployee</b>	Whether or not the respondent is an employee of the network	3	

For many of the variables in the analysis, indices were used. As such, Cronbach's alphas are also provided in Table 3.4 for those variables that are indices. To create these indices the answers strongly agree, agree, disagree, and strongly disagree were coded numerically with strongly agree being coded three, agree coded two, and disagree and strongly disagree coded one. Because fewer respondents chose disagree and strongly disagree, they were combined into one category. The questions constructing each index were then added together for each respondent. Tables 3.5 through 3.10 contain the inter-item correlation matrices for each index used.

**Table 3.5: Inter-Item Correlation Matrix for Cohesiveness Index**

Question #	Q14	Q15	Q17	Q23	Q38	Q39	Q40	Q41
Q14	1.00	-	-	-				
Q15	.483	1.00	-	-				
Q17	.513	.758	1.00	-				
Q23	.411	.585	.567	1.00				
Q38	.584	.419	.387	.379	1.00			
Q39	.600	.471	.513	.633	.566	1.00		
Q40	.452	.498	.600	.481	.599	.545	1.00	
Q41	.388	.429	.606	.454	.462	.574	.524	1.00

N=50

**Table 3.6: Inter-Item Correlation Matrix for Financing Index**

Question #	Q24	Q25	Q27	Q28
Q24	1.00	-	-	-
Q25	.523	1.00	-	-
Q27	.534	.527	1.00	-
Q28	.465	.521	.287	1.00

N=50

**Table 3.7: Inter-Item Correlation Matrix for Governance Index**

Question #	Q10	Q12	Q13	Q16	Q18
Q10	1.00	-	-	-	-
Q12	.479	1.00	-	-	-
Q13	.366	.234	1.00	-	-
Q16	.412	.593	.227	1.00	-
Q18	.458	.487	.306	.625	1.00

N=50

**Table 3.8: Inter-Item Correlation Matrix for Planning and Evaluation Index**

Question #	Q19	Q20	Q21	Q42	Q44	Q45	Q46
Q19	1.00	-	-	-	-	-	-
Q20	.653	1.00	-	-	-	-	-
Q21	.712	.727	1.00	-	-	-	-
Q42	.434	.417	.469	1.00	-	-	-
Q44	.305	.287	.369	.519	1.00	-	-
Q45	.410	.395	.468	.608	.838	1.00	-
Q46	.178	.181	.201	.450	.539	.672	1.00

N=50

**Table 3.9: Inter-Item Correlation Matrix for Personnel Index**

Question #	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q37
Q29	1.00	-	-	-	-	-	-	-
Q30	.871	1.00	-	-	-	-	-	-
Q31	.437	.539	1.00	-	-	-	-	-
Q32	.131	.178	.271	1.00	-	-	-	-
Q33	.272	.250	.339	.144	1.00	-	-	-
Q34	.488	.511	.249	.313	.356	1.00	-	-
Q35	.308	.357	.350	.324	.232	.592	1.00	-
Q37	.258	.250	.041	.450	.183	.432	.423	1.00

N=50

**Table 3.10 Inter-Item Correlation Matrix for Organization Index**

Question #	Q55	Q56	Q57	Q58	Q59
Q55	1.00	-	-	-	-
Q56	.622	1.00	-	-	-
Q57	.429	.378	1.00	-	-
Q58	.701	.722	.278	1.00	-
Q59	.697	.646	.398	.834	1.00

N=34

In some cases, there was missing data due to respondents either failing to answer the question or respondents not knowing the answer. These responses were coded 666

for no answer and 888 when respondents noted that they did not know. There were three respondents who neglected to answer more than half of the questions. They were taken out of the analysis. Additionally, there were a higher number of respondents who did not answer some of the questions regarding evaluation in their network. However, many of those who chose not to answer the questions about their network's evaluation processes also disagreed that their network had a method of evaluating their network's performance. For these respondents, a one was put in place of their no answer as it can be inferred that they disagreed about other characteristics of their network's evaluation processes. For other missing data, the question mean was put in place. For the questions measuring network effectiveness, i.e., questions 48-59, respondents were given the option to choose not applicable if they felt the statement did not apply to their network's purpose. Those responses were coded 999 and were not replaced with the mean.

Data collected from the questionnaire was analyzed via summary statistics, as well as other methods of more advanced statistical analysis, such as correlation and regression analyses. Correlation analyses were done with both the independent and dependent variables individually to determine the interrelationships among them. Additionally, a correlation analysis was conducted between the independent and dependent variables to determine which variables were significantly related to effectiveness at the three levels. Finally, regression analyses were conducted for each of the effectiveness criteria to offer insight into important predictors for each. Analyzing data gathered from a quantitative approach allows one to begin with an abstract, logical relationship among concepts and then move towards empirical evidence via various developed measures (e.g., a questionnaire) (Posavac and Carey, 2003).

## Limitations

One of the biggest limitations of this study was the small number of respondents which limited the amount and depth of data analysis. Initially, participation within the preliminary sample was restricted due to reliability of and lack of access to network contact information. First contact with the networks in the preliminary sample via phone and email revealed that approximately two-thirds of the networks were still in operation with one-third of the networks unreachable. Upon sending out the questionnaire to the directors in the preliminary sample, twelve (approximately one-third) of the thirty-three networks did not respond. In some of the cases, network directors chose not to respond; however, in most of the cases it seemed that the network was either no longer in existence or the contact information was incorrect. Attempts were made to track down current contact information for all of the networks, as well as to send to a questionnaire to networks no longer in existence. Two of the networks that responded to the questionnaire were no longer in existence. While thorough attempts were made to contact all the rural health networks in the preliminary sample, some were unreachable impacting the questionnaire response rate, as well as the number of networks from which to choose for the field study and survey. Finally, the number of respondents from the field survey was fifty percent with fifty respondents participating in the survey. Approximately, two attempts were made to contact and encourage the staff, steering committee members, and others from each of the four networks chosen for the field study and survey to participate. While the literature suggests that more contacts be made, access was limited due to network directors serving as gatekeepers.

Dependence on network directors for the field study and survey was a second limitation of this research, as it may have contributed to bias. To ensure the confidentiality of their network members, all but one of the directors of the four networks that participated in this study wanted to administer the distribution of the survey. The one network director that did not distribute the survey was relied upon to provide the necessary contact information. As such, it was at the discretion of the network directors to provide the information for or distribute the survey to staff, steering committee members and other affiliates of their network. It is possible that network directors may have been selective in the contact information they provided or in to whom they sent the survey, contributing to possible bias in the responses from a particular network or networks.

The use of the *Survey.vt.edu* software for data collection may be another limitation of this research. According to researchers at the University of Texas at Austin, the most questionable aspect of web-based survey data is whether a representative sample of the target population will have the opportunity to respond. They cite a National Geographic Society study done in 2000 that claims respondents to online surveys are younger, more highly educated, and more likely to be white than the general U.S. population. Thus, a web-based survey may provide better samples for researchers who are interested in populations who are likely to frequent the Internet, such as college students. However, the Internet may not provide a representative sample for those interested in non-white or older populations. While initial contact with the sample of rural health networks illustrated that most of the rural health networks have Internet access and use email, approximately one-third of the respondents did not respond to the

questionnaire. Calls were made to these networks to ensure that they had a viable opportunity to respond.

As with all social research, this research also runs the risk of interviewer bias. With regard to the conducted interviews various types of bias can occur: 1) influence due to the interviewer's expectations about the respondent's answers; 2) failure of an interviewer to probe or probe properly; 3) influence on answers due to the interviewer's appearance, tone, attitude, reactions to answers or comments made outside of the interview schedule; and 4) intentional subversion by the interviewer (e.g. alteration of questions, omitting questions, reading questions in the wrong order) (Neuman, 1997). Awareness of such types of interviewer bias hopefully prohibited these types of biases from occurring. An interview schedule was used to prevent some of these biases from occurring, as well as to ensure consistency in questioning across respondents.

Bias can also occur in the analysis of the interview data due to the subjectivity of the researcher. Data found via the questionnaire was corroborated with findings from the interviews and archival data. McNabb notes that archival data are less susceptible to researcher error and can improve the validity of research through triangulation. (McNabb, 2004).

The generalizability of research findings is also a concern for any type of research. Findings from this research can only be generalized to vertically integrated rural health networks as the Rural Health Network Development Grant only funds networks that are vertically integrated. While random sampling of all vertically integrated rural health networks may improve the generalizability of findings to all vertically integrated rural health networks, the rural health networks developed via the

first cycle of the Rural Health Network Development Grant Program consist of a variety of vertically integrated rural health networks throughout the United States, making the findings generalizable to other vertically integrated rural health networks. Additionally, there is no reason to think that these rural health networks would not be representative of the larger population of vertically integrated rural health networks.

A seventh limitation of this research is that the different ways in which effectiveness is viewed and clients' perspectives on the effectiveness of these networks will not be addressed. For this research, effectiveness criteria will be imposed based on those criteria suggested by Provan and Milward's framework and from feedback from the initial expert interviews. As the competing values approach to organizational effectiveness illustrates, effectiveness criteria are subjective. Further, as the multiple constituency model demonstrates, varying constituents have differing effectiveness criteria. This research did not take into account in the questionnaire either the subjectivity or the differing effectiveness criteria among constituents but imposed effectiveness criteria with some input from the initial expert interviews and according to availability of data.

Sample bias also may have occurred in choosing the four cases for the field studies and surveys, as random sampling was not used. In selecting the four cases based on their effectiveness, relevant elements to include in the sample population may have been excluded. Furthermore, a sample may have been selected that does not reflect the population that was studied. While the networks chosen for the fields study and survey were chosen based on their effectiveness as compared to the other networks, other differences in these networks may not be reflective of the population of vertically

integrated rural health networks in the larger sample. As much as possible, such differences in the sample population were noted and included in the research findings as they are valuable in understanding the significant correlates for network effectiveness.

Finally, because emphasis was on effective networks, higher correlations may have been found due to network respondents being more positive in general about most things in their network. Furthermore, by looking at only effective networks, differences between effective and ineffective networks are harder to determine. This research does, however, provide a close look at the effectiveness of networks that were chosen to serve as best practices.

### Conclusion

Thus, it is the intention, through various data collection methods, i.e., interviews, questionnaires, and a field study and survey, to better understand the possible correlates of effectiveness, both structural and environmental, and how they are interrelated. As mentioned in the literature review chapter, there hasn't been much research on the effectiveness of rural health networks in general and more specifically for vertically integrated rural health networks. Furthermore, the literature reveals the complexity of measuring effectiveness for all types of organizations, including vertically integrated rural health networks for which there are no measures in the literature that have been empirically tested. Thus, in order to complete the analysis of effectiveness for vertically integrated rural health networks, measurements of effectiveness had to be selected from many possibilities, as well as in some cases indices created. This was also the case for the correlates of effectiveness used in this analysis. As such, this research not only

intends to answer the stated research questions but to also provide some methodological insight into measuring the effectiveness of vertically integrated rural health networks.

## **CHAPTER FOUR**

### **PRELIMINARY FINDINGS**

In this chapter, findings from the expert interviews conducted with respondents from four networks from the preliminary sample and the results from the questionnaires conducted with both the network directors and the sample of four effective networks are provided. As you will remember from earlier chapters, the expert interviews were those done with different types of people affiliated with four networks; the one questionnaire was with the network directors from twenty-one networks in the preliminary sample and the other questionnaire was with various persons affiliated with the four networks selected to serve as best practices. The expert interviews and both questionnaires were utilized to offer some preliminary findings on the effectiveness of vertically integrated rural health networks. Below are the findings from the initial expert interviews that were conducted to inform the development of the questionnaire. Following are the answers from both of the questionnaires with a percent analysis of the responses for each question asked. Finally, comparisons between the questionnaire with the network directors and the questionnaire with the sample are made to highlight differences in the sample from the larger population of vertically integrated rural health networks.

#### **Expert Interviews**

As explained in more detail in the methodology chapter, expert interviews were conducted with five different persons affiliated with four of the networks within the preliminary sample to solicit a broad understanding of network effectiveness. Findings from these preliminary expert interviews were used to offer guidance in the construction of the questionnaire, as well as gave some initial insight into the effectiveness of

vertically integrated rural health networks. Following is a summary of the findings from the expert interviews.

To begin, findings from the interviews revealed that the networks differed in purpose and the measures they used to measure their network's effectiveness, as well as in opinions on the importance of the listed effectiveness criteria. For example, the main purpose of the second network, the Upper Peninsula Health Care Network, Inc., is cost savings for network members, according to the interview. As such, a main measure of their network's effectiveness is their members' return on their investments. In contrast, network number one, the Community Health Council, a network which is currently in hibernation, had the main purpose of coordination and integration of delivery systems; and measured their effectiveness by how many clients they saw and referred. In summary, the preliminary expert interviews implied variance in purpose, as well as differences in effectiveness criteria that needed to be taken into consideration among vertically integrated health networks. Furthermore, the interviews suggest that networks that give network and organization/ participant level effectiveness criteria higher priority may be more likely to succeed, where as the networks that give high priority to community level goals will be less likely to do so. Table 4.1 offers a summary of the different network's purposes and measures used to measure their network's effectiveness, as well as the listed effectiveness criteria identified by each respondent as most important for their network.

**Table 4.1: Summary of Expert Interviews**

<b>Expert Interview #</b>	<b>Main Purpose(s) of Network</b>	<b>Measure(s) Used to Determine Effectiveness</b>	<b>Listed Effectiveness Criteria Identified as Important</b>
<b>1</b>	Coordination and Integration of Delivery Systems	How many clients they saw and referred.	1) Changes in the incidence of the problem 2) Aggregate indicators of client well-being 3) Absence of service duplication 4) Improved integration/ coordination of services 5) Member commitment to network goals 6) Increased access to services 7) Enhanced client outcomes
<b>2</b>	Cost Savings for Network Members	1) Savings Report 2) How many contracts they have signed, renewed, or initiated 3) Cash value of the rebates they have negotiated with vendors 4) Their members return on investments	1) Increase in the range of services provided 2) Member commitment to network goals 3) Survival of the organizations involved 4) Resource acquisition for the organizations involved 5) Reduction in cost for the organizations involved
<b>3</b>	Serve as a Forum to Coordinate Regional Health Care		1) Resource acquisition for the organizations involved 2) Membership growth 3) Increase in the range of services provided 4) Improved integration and coordination of services 5) Member commitment to network goals
<b>4</b>	1) Provide Regional Access to Utilization of Health Care Services 2) Education 3) Secure Communications	Cost savings to their members.	1) Public Perception that the problem is being solved 2) Network membership growth 3) Increase in the range of services provided 4) Improved integration and coordination of services 5) Member commitment to network goals 6) Resource acquisition for the organizations involved 7) Increased access to services 8) Reduction in cost for the organizations involved

The preliminary expert interviews additionally highlighted certain correlates of effectiveness. To begin, cooperation among members was mentioned by two of the networks. These networks specifically mentioned getting the members to put the community's welfare ahead of their agencies and getting the members to cooperate with

one another as important for network effectiveness. Of related importance, one network mentioned the importance of the director and his/her ability to get members to come to a consensus. Another network mentioned strategic planning as important to network effectiveness. The importance of goals was also mentioned by two networks with one network noting the significance of having a clear goal to which network members stick and another network mentioning the importance of a commitment among members about what public health should do. Dedicated staff, more resources, and the involvement of and doing more things for physicians were also touted as significant for network effectiveness. Finally, some networks suggested that the services they provided to their members, such as having a quick response time at their member help desk and their group purchasing program, were important for network effectiveness. Many of these correlates were previously identified in the literature and included in the draft questionnaire. Questions in the draft questionnaire incorporated various questions regarding network purpose, governance and decision making, planning, financing, leadership/management, staffing, communication, and evaluation. The mention of these correlates in the preliminary expert interviews verified their inclusion in the questionnaire to be sent out to the networks' directors, as well as helped illuminate some important correlates.

Finally, the preliminary expert interviews offered some perspective on the environmental factors thought to impact network effectiveness. The first network interviewed mentioned the following regarding the rural environment in which they operate: 1) many of their services are concentrated in their more populated/urban areas; 2) they have extreme pockets of poverty; 3) they have no public transportation; 4) they have a growing aging population; 5) it is hard to get younger providers; and 6) the influx

of tourists adds additional strain. The second network also noted lack of transportation, specifically for the elderly, physician shortages, and communication problems with rural residents. The third network found the geographic dispersion of their members as an obstacle, as well as the lack of information technology (IT) infrastructure in their rural areas. They also mentioned having a dwindling economy. The final network interviewed saw the rural environment as an asset, whereby minimal competition due to few providers encouraged cooperation among members. As with the correlates of effectiveness, many of the networks responses confirmed what was previously found in the literature and included in the draft survey, particularly with regard to lack of public transportation and physician shortages. However, the interviews did draw attention to the significance of the growing elderly population and the lack of IT infrastructure for network effectiveness. Prior to the preliminary expert interviews, the rural environment was not thought of as a possible asset for network effectiveness as identified by the respondent in the final expert interview.

### Questionnaire with Network Directors

#### *Respondents*

Initially, a questionnaire was sent out to the directors of the thirty-three networks in the preliminary sample to collect information on their perceptions of their effectiveness so that four networks could be selected to serve as “best practices” for further study. From this questionnaire sent to the thirty-three networks, twenty-one persons responded. Eighteen of the respondents were network directors, one was a network director/director of business collaborations, with the other a board or steering committee member. The final respondent was a network employee for a network that was no longer in existence.

The director of this network was unreachable and the respondent was his replacement following the existence of the network but knew of the inactive network's happenings.

*Mission and Goals*

Three questions were asked regarding the respondents' network mission and goals. When asked if the network's purpose and mission were clearly understood by all members and if their network's mission was clearly expressed in writing, most respondents either answered strongly agree or agree. Fewer respondents believed that community leaders in their network's service area understood the purpose and mission of their network. See table 4.2 entitled "Structural Correlates" for more detail.

**Table 4.2: Structural Correlates as Identified by Directors, (N=21)**

Question	% Strongly Agree	% Agree	%Disagree	% Strongly Disagree	% No Answer	% Not Applicable
<b>Mission</b>						
The network's purpose and mission are understood by the network members.	43	57	0	0	0	
The network's mission is clearly expressed in writing.	71	24	5	0	0	
Generally speaking, key community leaders in the network service area understand the purpose and mission of the network.	10	57	29	5	0	
<b>Governance and Decision Making</b>						
The network has and maintains a network administrative organization.	71	10	19	0	0	
The network has a governing board or steering committee.	90	5	5	0	0	
The governing board or steering committee is representative of the members in the network.	95	5	0	0	0	
The governing board or steering committee was approved by all members.	85	5	10	0	0	
Decision making processes are stated clearly in writing.	62	24	14	0	0	
Network decision making involves input by key network members.	71	29	0	0	0	
There is a defined network mechanism for resolving internal conflict.	29	48	19	5	0	
<b>Planning</b>						

There is a defined strategic planning process in place for the network.	29	48	10	10	5	
Strategic planning is ongoing with opportunities for new input.	29	52	5	10	5	
The network's strategic plan has been distributed to all network members.	38	33	14	10	5	
The network's business plan identifies specific products and services, as well as targeted customers	14	38	29	10	10	
<b>Financing</b>						
The annual budget of the network has been developed with the input of network members.	38	43	14	5	0	
In the short-term (1-2 years), sources of network revenue are diverse.	19	52	5	19	5	
Sources of network revenue are sustainable.	24	48	19	10	0	
All members contribute money to support the network.	43	24	24	10	0	
A long range strategy (3-5 years) is articulated in writing for obtaining future network revenue and economic self-sufficiency.	19	24	43	14	0	
When your network receives funding from government entities, external fiscal control by the state is centralized.	19	33	10	5	0	33
Your network assumes financial risk for the direct client services that you provide.	14	19	0	10	10	48
Your network offers product lines that are unique from network participants or from services provided in the community.	24	48	14	14	0	
<b>Leadership</b>						
The network has a paid director.	71	14	5	10	0	
The network director has skill and experience in management of collaborative organizations.	76	19	0	0	5	
The network director is able to build consensus among network members.	57	38	0	0	5	
Network board members' sometimes conflicting leadership roles - doing what's best for the network versus doing what's best for individual organizations- is recognized and managed successfully.	33	62	5	0	0	
Physicians and other key health care providers have active roles in network leadership.	38	48	10	5	0	
<b>Staffing</b>						
Staffing levels are adequate to carry out network activities.	14	57	19	10	0	
Network staff are qualified.	43	52	0	0	5	

Staff are committed to the network.	48	43	0	0	10
Staff has the technology, equipment, and software needed to maximize productivity.	33	48	10	0	10
Turnover of key staffing positions is historically low.	43	43	0	5	10
<b>Communication/Trust</b>					
Network staff communicate regularly with network members.	48	43	5	0	5
Network members use the network as a forum for sharing information and/or problem solving.	48	48	5	0	0
Network members have electronic capability of communicating with one another.	67	24	10	0	0
Network members trust one another.	38	43	14	0	5
<b>Evaluation</b>					
The network has a defined method of evaluating its performance.	14	48	29	10	0
Evaluation is based on the impact of the network on the communities in its service area.	10	43	24	14	10
Evaluation findings are used to improve network performance, decision making, and strategic planning.	14	62	5	14	5
Evaluation is based on the impact of the network on its members.	19	38	19	10	14

### *Governance and Decision Making*

Seven questions were asked about governance and decision making in the networks. Most of the respondents considered their network to have a network administrative organization and a governing board or steering committee. Additionally, most respondents either strongly agreed or agreed that their governing board or steering committee was representative of their members, as well as was approved by all members. Most also felt that decision making in their networks involved input from key members. Finally, a majority of respondents, although fewer than with the previous questions, either strongly agreed or agreed that network decision making processes were clearly stated in writing and that there was a defined mechanism for resolving internal conflicts in their network. For more detail, refer back to table 4.2.

### *Planning*

In the questionnaire, four questions were asked about the strategic planning of the respondents' networks. Approximately, three-fourths of the respondents either strongly agreed or agreed that there was a defined strategic planning process in place for the network. The same percentage also believed that strategic planning was ongoing in their network with opportunities for member input. Compared to the previous questions, fewer respondents either strongly agreed or agreed that their network's strategic plan had been distributed to all members, while only half felt that their network's business plan identified specific products and services. Refer to table 4.2 for more detail.

### *Financing*

Ten questions were asked about the financing of the respondent's networks. It was the opinion of a majority of the respondents that their network's annual budget had been developed with the input of all members. When asked about the diversity of their network's sources of revenue over the past one to two years, approximately three-fourths of the respondents responded that their network's sources of revenue were diverse. A similar amount of respondents either strongly agreed or agreed that their network's sources of revenue were sustainable, as did the same amount of respondents believe that their network offered product lines that were unique from network participants or from services provide in the community. Fewer respondents either strongly agreed or agreed that all members contribute money to support their network, while half of the respondents considered external fiscal control by the state to be centralized when their network receives funding from government entities. Many of the respondents noted that this question was not applicable to their network. It was the opinion of less than half of the

respondents that there was a long-range strategy articulated in writing for obtaining future network revenue and economic self-sufficiency for their network. Similarly, less than half agreed that their network assumed financial risk for the direct client services they provided; with some of the respondents noting that this question was not applicable to their network. Finally, the average annual budget of the networks was \$1,011,770.31 with annual budgets ranging from \$220,000 to \$3,700,000.

#### *Leadership/Management*

Five questions were asked about the leadership and management of the respondents' networks. Most of the respondents considered their network to have a paid executive director. Most also either strongly agreed or agreed that their network director: 1) had skill and experience in the management of collaboration; 2) was able to build consensus among network members; and 3) was able to recognize and manage successfully the board member's sometimes conflicting leadership roles. Finally, a majority of respondents believed that physicians or other key health care providers had active roles in their network's leadership. Refer back to table 4.2 for more detail.

#### *Staffing*

Five questions were asked about the staffing of the networks. Most respondents replied that they either strongly agreed or agreed that their network staff is qualified; that their staff is committed to the network; that their staff have the technology, equipment, and software needed to maximize productivity; and that turnover of key staffing positions in their network is historically low. Fewer, although still a majority of respondents, felt that their staffing levels were adequate to carry out network activities. Refer back to table 4.2 for more detail on respondents' answers.

### *Communication/ Trust*

Four questions were asked regarding communication and trust in the respondents' networks. Most of the respondents believed that their network staff communicates regularly with network members. Similarly, most of the respondents either strongly agreed or agreed that the network members did use the network as a forum for sharing information and/ or problem solving, as well as felt that network members have the electronic capability of communicating with one another. Finally, when asked whether or not network members trust one another, it was the opinion of a majority of respondents that they did. For more detail refer back to table 4.2.

### *Evaluation*

Respondents were also asked five questions about the evaluation processes of their networks. As with the questions on network financing, responses were more varied with fewer of the respondents strongly agreeing or agreeing. For example, when asked whether or not their network had a defined method of evaluating its performance, only sixty-two percent responded either strongly agree or agree. Similarly, only fifty-three percent believed that evaluation in their network was based on the impact of the network on the communities in its service area with slightly more believing that evaluation was based on the impact of the network on its members. Finally, most respondents felt that evaluation findings were used to improve network performance, decision making, and strategic planning. Of those that responded that their network had an evaluation process, the noted performance measures listed by the respondents were: the number of members served, the annual assessment of success, annual evaluation, balance score card, quarterly progress reports, annual satisfaction surveys, external reviews, objectives developed by

the work groups and deliverables in grant contracts, a variety of process and outcome measures consistent with the annual overall work plan, adequate funding, continued growth, membership growth and retention, profitability, new services offered, cost benefit ratio, defined goals, documented services, a survey similar to this one, quality care rendered at an affordable cost, documented level of service expansion, number of education sessions per year, and the number of memoranda of agreement executed. Table 4.2 contains more detail on the break down of respondents' responses.

### *Rural Environment*

Respondents were asked about the rural environment in which their network operated. Specifically, they were asked whether or not certain effects (e.g. lack of providers, lack of transportation, lack of health literacy) were problematic for their network. The top four effects most chosen by respondents were lack of providers, growing elderly population, lack of infrastructure for information technology, and high rate of uninsured persons. Lack of transportation, geographic terrain, and lack of health literacy were mentioned by a majority of respondents, while approximately half noted the complex health care regulatory environment, the growing immigrant population, and complexity of patient problems as problematic for their network. Finally, some respondents sited other impacts of the rural environment. Some of the other impacts mentioned were: competition with urban based systems, great distances, lack of financial resources, language and cultural barriers, lack of scales of economy, harsh weather, and lack of public transportation. Refer to Table 4.3 for more detail.

**Table 4.3: Problems with the Rural Environment as Identified by Directors, (N=21)**

<b>Impacts</b>	<b>Count</b>	<b>Percent</b>
Lack of Providers	19	90
Growing Elderly Population	18	86
Lack of Infrastructure for Information Technology	15	71
High Rate of Uninsured Persons	15	71
Lack of Transportation	14	67
Lack of Health Literacy	12	57
Geographic Terrain	12	57
Complex Health Care Regulatory Environment	11	52
Complexity of Patient Problems	10	48
Growing Immigrant Population	10	48
Other	4	19

To get a better understanding of the rural environment in which the networks operate, respondents were also asked about the number of designated Health Professional Shortage Areas (HPSAs) their network served and about how many Medically Underserved Areas (MUAs)/ Medically Underserved Populations (MUPs) their networks served. With regard to the designated HPSAs, twenty-nine percent of respondents either did not know or did not answer. Of the respondents that gave a number, the average number of HSPAs per network was sixty-three. However, there was wide variety among networks with one network noting one HSPA and another noting two hundred and sixty-four HSPAs in their network service area.

As with the HSPAs, many of the respondents (48%) did not know how many MUA/MUPs their network served. One of the respondents answered that all of their counties had MUA/MUPs with one noting that thirteen of the eighteen counties in their network had designated MUA/ MUPs. Others responded that most of their counties had designated MUA/MUPs, while one stated that their whole service area was a MUA/MUP.

Of the respondents that gave a number, the average number of MUA/MUPs was seventeen with the number of MUA/MUPs ranging from three in two of the networks to twenty in one of the networks and sixty-eight in another.

### *Network Benefits*

In the final section of the questionnaire, respondents were asked about the various benefits of their network. Specifically, they were asked about the benefits of their network at the community, network, and member organization levels. Respondents were asked to select “not applicable” if they felt the mentioned benefit did not apply to their network’s purpose.

### *Community-Level Effectiveness*

To begin, the respondents were asked four questions about the community-level benefits of their network. As shown in Table 4.4, when asked whether or not there was a public perception that their network is solving the problem(s) that it intends to address most of the respondents either strongly agreed or agreed. Similarly, most of the respondents believed that there were improvements in the incidence of the problem that their network addresses. In an open ended question, respondent noted improvements in the problems addressed by their networks. These improvements are categorized into five different themes and are as follows:

#### 1) Improving Economic Viability of Members

- introducing competition to the marketplace for choice
- improving financial viability of our members
- saving members time & money by streamlining some activities
- decreasing the cost of technology

- creating shared services and discounts

## 2) Community Health Outcomes

- lowering drinking and smoking for youth
- decreasing the number of uninsured
- being a major advocate for rural health in multiple ways

## 3) Improving Access to Services

- connecting uninsured to services
- increasing the number of adults with access to health care through a discount plan
- improving access to care and improved coordination of care
- improving access to oral health services for Medicaid children and underserved adults via implementation of mobile dental clinic
- increasing access to dental by opening additional Article 28 clinics and recruiting additional dentists to practice in the area
- implementing a no-cost transportation program to medical and dental appointments
- investing in recruiting mental health providers
- providing a mobile wellness unit

## 4) Provision of Services to Members

- enabling members to submit government-sponsored and commercial insurance claims via a secure encrypted software system;
- increasing health information technology
- increasing local data collection

- improving technology
- allowing immunizations to be tracked in a state-wide registry
- enabling members that are eligible for Universal Services Admin Corp (USAC) funding to receive maximum dollars

#### 5) Improved Coordination among Members

- improving regional planning
- improving familiarity of partner agencies and people working within those agencies
- centralizing planning and decision-making

**Table 4.4: Network Benefits as Identified by Directors, (N=21)**

<b>Benefits</b>	<b>% Strongly Agree</b>	<b>% Agree</b>	<b>% Disagree</b>	<b>% Strongly Disagree</b>	<b>% No Answer</b>	<b>% Not Applicable</b>
<b>Community Level</b>						
There is a public perception that your network is solving the problem(s) it intends to address.	10	62	14	0	0	14
There are improvements in the incidence of the problem that your network addresses.	19	57	10	0	5	10
<b>Network Level</b>						
The range of services provided by your network has increased since the network was created.	33	38	10	5	0	14
Your network has been able to decrease service duplication since its inception.	14	48	24	0	0	14
Members are committed to network goals.	38	52	10	0	0	
Your network has improved integration/coordination of services.	24	67	5	5	0	0
<b>Organization Level</b>						
Your network has improved the survival of its members.	19	48	24	0	5	5
Your network has enhanced the status of its members.	14	67	14	0	0	5
Your network has enabled its members to acquire resources.	43	43	10	0	0	5
Your network has reduced the cost of services for its members.	19	52	14	5	0	10
Your network has improved access to services for members' clients.	38	52	5	0	0	5
Your network has improved members' client outcomes.	14	71	5	0	0	10

Finally, when asked to provide any types of aggregate indicators of client well-being that their network uses, seventy-one percent either noted that they did not use any or did not answer this questions. Other respondents gave such aggregate indicators as the prevalence of preventable disease, 5,000 clinical telemedicine consultants, childhood

immunization rates increasing by twenty-five percent, and the number of uninsured. Other responses to this question included, 1) the number of protected health information (PHI) exchanged, 2) the number of educational activities, 3) the number of people reached, 4) Behavioral Risk Factor Surveillance System (BRFSS) indicators, 5) the number of patient safety programs, 6) the number of public information programs, and 7) compliance.

#### *Network-Level Effectiveness*

Respondents were also asked five questions about the network-level benefits of their network. It was the opinion of a majority of the respondents that the range of services provided by their network had increased since the creation of their network. Some of the added services noted by respondents were: a mechanism to discuss health initiatives on a community-wide basis with input and assessment to help improve effectiveness and community participation; a forum to share information; a vehicle for developing and incubating ideas and programs that are not feasible in one location or without the critical mass to be feasible; a health plan; PBM contracting; centralized health plan credentialing; group purchase projects; contract services including IT services; patient satisfaction surveys including HCAHPS; centralized health plan; quality projects; members' staff networking; grant writing and project management; convening and facilitation advocacy. When asked whether or not the network had been able to decrease service duplication and if members were committed to network goals, a majority of the respondents either strongly agreed or agreed. Finally, most of the respondents felt that their network improved integration and coordination of services. Unlike any of the

other questions regarding network benefits, no respondents noted that this benefit was not applicable to their network. For a summary, refer back to Table 4.4.

#### *Organizational-Level Effectiveness*

Respondents were also asked six questions regarding the benefits of their network at the member organization level. Most respondents either strongly agreed or agreed that their network: 1) enhanced the status of their members; 2) enabled their members to acquire resources; 3) improved access to services for their members' clients; and 4) improved their members' client outcomes. Fewer, although still a majority of respondents, believed that the network had improved the survival of its members and reduced the cost of services for its members. For a summary, refer back to Table 4.4.

#### Questionnaire with Sample of Four Networks

##### *Respondents*

Following the questionnaire with the network directors, an abbreviated questionnaire was given to various persons affiliated with the four effective networks chosen for the field study and survey. The questionnaire was sent to one hundred persons with fifty-three responding. Three of the responses were thrown out due to more than half of the questions left unanswered. From the Roaring Fork Valley Community Health Plan (RFVCHP), seven out of thirteen possible respondents completed the questionnaire, as did eight out of a possible twenty two from the Tioga Community Partnership for Community Health (TCPCH). In the Community Health Information Collaborative (CHIC) sixteen out of a possible thirty-six respondents completed the questionnaire with nineteen out of twenty-nine possible respondents completing the questionnaire from the Adirondack Rural Health Network (ARHN). The overall response rate was fifty percent.

Respondents varied in their affiliation with the network. Approximately, twenty percent (19.1) of respondents were employed by the network, while the remaining respondents were not (80.9). Of those employed by the network, four were network directors and five were other network employees. Respondents not employed by the network included thirty board/ steering committee members, one citizen of the community the network services, five employees of network member organizations, and two consultants to the network. Three respondents chose not to answer this question. Of those that did answer, four percent had been in the network position described above for less than six months, with six percent being in the network position for six months to a year, eighteen percent for up to two years, and sixty-eight percent for more than two years. Respondents that were not network employees were also asked about their role within their organization. Of the eighty-eight percent that responded, twenty percent stated that they were administrators within their organization, while twenty-two percent noted that they were directors, twenty-eight percent executive directors, six percent physicians/ specialists, and twelve percent supervisors.

#### *Respondents' Organization*

Respondents that were not employees of the network were asked to respond to various questions about their organization. When asked how long the respondents' organizations had been members of the network, twenty-four percent responded that their organization had been a member for five years or less, while thirty-two percent responded that they had been members between six and ten years. Twenty-six percent of respondents noted that their organization had been members between eleven and fifteen years and less than one percent was a member for more than fifteen years. When asked

what type of organization the respondent represented most noted health departments (18%), while several (48%) of the respondents noted that their organization was something other than the provided selections, such as a chamber of commerce (8%) or a community health center (6%). Table 4.5 is a list of the different types of organizations the respondents represented. Nearly half of the member organizations (40%) responded that their organization had over one hundred employees, while fewer (24%) noted that they had one to ten employees. Ten percent responded that they had eleven to twenty employees and twelve percent responded that they had fifty to one hundred employees. Finally, a majority of the respondents noted that their organizations are non-profit (54%), while fewer respondents stated that their organization is public (28%) or for-profit (6%).

**Table 4.5: Types of Organizations in Sample, (N=50)**

<b>Types of Organizations</b>	<b>Number</b>	<b>Percent</b>
Department of Social Services	0	0
Health Departments	9	18
Family Practices (Independent)	0	0
Specialists (Independent)	0	0
Mental Health Providers (Independent)	2	4
Critical Access Hospitals	2	4
Other Hospitals	4	8
Ambulance Districts	0	0
Nursing Homes	0	0
Home Health Agencies	0	0
Area Agencies on Aging	1	2
Other Types of Organizations	23	46
Missing Responses	6	12

### *Mission and Goals*

As with the questionnaire completed by the network directors, four questions were asked regarding the respondents' network mission and goals. When asked if the network's purpose and mission were clearly understood by all members, if members were

committed to network goals, and if their network’s mission was clearly expressed in writing most respondents either strongly agreed or agreed. As with the questionnaire completed by the network directors, fewer respondents believed that community leaders in their network’s service area understood the purpose and mission of their network. See Table 4.6 for more detail.

**Table 4.6: Structural Correlates as Identified by Sample, (N=50)**

<b>Question</b>	<b>% Strongly Agree</b>	<b>% Agree</b>	<b>%Disagree</b>	<b>% Strongly Disagree</b>	<b>% No Answer</b>	<b>% Not Applicable</b>
<b>Mission</b>						
The network's purpose and mission are understood by the network members.	46	52	2	0	0	0
The network's mission is clearly expressed in writing.	48	48	4	0	0	0
Generally speaking, key community leaders in the network service area understand the purpose and mission of the network.	18	58	22	2	0	0
<b>Governance and Decision Making</b>						
The governing board or steering committee is representative of the members in the network.	60	38	2	0	0	0
The governing board or steering committee was approved by all members.	54	44	2	0	0	0
Decision making processes are stated clearly in writing.	32	60	6	0	2	0
Network decision making involves input by key network members.	56	42	2	0	0	0
There is a defined network mechanism for resolving internal conflict.	20	60	18	0	2	0
<b>Planning</b>						
There is a defined strategic planning process in place for the network.	42	50	6	2	0	0
Strategic planning is ongoing with opportunities for new input.	50	42	8	0	0	0
The network's strategic plan has been distributed to all network members.	46	40	14	0	0	0
The network's business plan identifies specific products and services, as well as targeted customers	34	48	12	6	0	0
<b>Financing</b>						
The annual budget of the network has been developed with the input of network members.	40	52	8	0	0	0
In the short-term (1-2 years), sources of network revenue are diverse.	22	48	26	4	0	0
Sources of network revenue are sustainable.	16	54	28	2	0	0

Question	% Strongly Agree	% Agree	%Disagree	% Strongly Disagree	% No Answer	% Not Applicable
All members contribute money to support the network.	6	32	42	18	0	0
A long range strategy (3-5 years) is articulated in writing for obtaining future network revenue and economic self-sufficiency.	10	44	36	10	0	0
Your network offers product lines that are unique from network participants or from services provided in the community.	32	50	16	2	0	0
<b>Leadership</b>						
The network director has skill and experience in management of collaborative organizations.	68	28	2	2	0	0
The network director is able to build consensus among network members.	60	34	6	0	0	0
Network board members' sometimes conflicting leadership roles - doing what's best for the network versus doing what's best for individual organizations-is recognized and managed successfully.	32	60	6	0	2	0
Physicians and other key health care providers have active roles in network leadership.	40	56	2	0	2	0
<b>Staffing</b>						
Staffing levels are adequate to carry out network activities.	14	70	14	0	2	0
Network staff are qualified.	42	50	2	0	2	0
Staff are committed to the network.	62	38	0	0	0	0
Staff has the technology, equipment, and software needed to maximize productivity.	26	64	10	0	0	0
Turnover of key staffing positions is historically low.	34	54	6	4	2	0
<b>Communication/Trust</b>						
Network staff communicate regularly with network members.	56	40	4	0	0	0
Network members use the network as a forum for sharing information and/or problem solving.	42	54	5	0	0	0
Network members have electronic capability of communicating with one another.	58	38	2	0	2	0
Network members trust one another.	30	66	2	2	0	0
<b>Evaluation</b>						
The network has a defined method of evaluating its performance.	8	62	28	2	0	0
Evaluation is based on the impact of the network on the communities in its service area.	18	66	8	0	8	0
Evaluation findings are used to improve network performance, decision making, and strategic planning.	18	68	6	0	8	0
Evaluation is based on the impact of the network on its members.	18	60	12	2	8	0

### *Governance and Decision Making*

Five of the seven questions asked in the questionnaire with the network directors were asked about governance and decision making in the networks in the second questionnaire. Most respondents either strongly agreed or agreed that their governing board or steering committee was representative of their members, as well as was approved by all members. Most also responded that decision making in their networks involved input from key members. Finally, as with the questionnaire with the network directors, a majority of respondents, although fewer than with the previous questions, either strongly agreed or agreed that network decision making processes were clearly stated in writing and that there was a defined mechanism for resolving internal conflicts in their network. For more detail, refer back to Table 4.6.

### *Planning*

In the questionnaire, the same four questions, as asked in the questionnaire with the network directors, were asked about the strategic planning of the respondents' networks. Most of the respondents strongly agreed or agreed that there was a defined strategic planning process in place for the network, as well as believed that strategic planning was ongoing in their network with opportunities for member input. Slightly fewer respondents either strongly agreed or agreed that their network's strategic plan had been distributed to all members, as well as felt that their network's business plan identified specific products and services. Refer back to Table 4.6 for more detail.

### *Financing*

Six of the ten questions asked about network financing in the questionnaire with the network directors were asked in the abbreviated questionnaire. A majority of the

respondents responded that their network's annual budget had been developed with the input of all members. However, fewer respondents agreed their network's sources of revenue were diverse over the past one to two years, as well as felt that their sources of revenue were sustainable. More than half of the respondents disagreed that all members contribute money to support their network, while slightly less than half felt a long range strategy had been articulated in writing for obtaining future network revenue and economic self-sufficiency. Finally, most respondents believed that their network offered product lines that were unique from network participants or from services provide in the community. Refer back to Table 4.6 for more detail.

#### *Leadership/Management*

Four questions were asked about the leadership and management of the respondents' networks. As with the questionnaire with the network directors, most of the respondents either strongly agreed or agreed that their network director: 1) had skill and experience in the management of collaboration; 2) was able to build consensus among network members; and 3) was able to recognize and manage successfully the board member's sometimes conflicting leadership roles. Finally, most of the respondents also believed that physicians or other key health care providers had active roles in their network's leadership. Refer back to Table 4.6 for more detail.

#### *Staffing*

Five questions were asked about the staffing of the networks. Most respondents replied that they either strongly agreed or agreed that their network staff is qualified and that their staff is committed to the network. Fewer, although still most, also either strongly agreed or agreed that their staff have the technology, equipment, and software

needed to maximize productivity; and that turnover of key staffing positions in their network is historically low. As with the questionnaire with the network directors, a greater number of respondents, although still a majority, felt that their staffing levels were adequate to carry out network activities. Refer to back to table 4.6 for more detail on respondents' answers.

#### *Communication/ Trust*

Four questions were asked regarding communication and trust in the respondents' networks. As with the questionnaire with the network directors, most of the respondents believed that their network staff communicates regularly with network members. Similarly, most of the respondents also either strongly agreed or agreed that the network members did use the network as a forum for sharing information and/ or problem solving, as well as felt that network members have the electronic capability of communicating with one another. Finally, when asked whether or not network members trust one another, it was the opinion of a majority of respondents that they did. For more detail refer back to Table 4.6.

#### *Evaluation*

Respondents were also asked five questions about the evaluation processes of their networks. Only thirty percent responded either strongly agree or agree that their network had a defined method of evaluating its performance. However, most believed that evaluation in their network was based on the impact of the network on the communities in its service area with slightly fewer believing that evaluation was based on the impact of the network on its members. Finally, most respondents felt that evaluation findings were used to improve network performance, decision making, and strategic

planning. A few of the noted performance measures listed by the respondents were: membership, members satisfaction with the services provided, performance to budget, web-based statistics, and the number of people impacted. Table 4.6 contains more detail on the break down of respondents' responses.

### *Rural Environment*

As with the questionnaire with the network directors, respondents were asked about the rural environment in which their network operated. The top four effects most chosen by respondents were, in order, lack of financial resources, growing elderly population, high rate of uninsured persons, and the geographic terrain. Other problems concerning the rural environment mentioned by a majority of respondents were the complex health care regulatory environment, lack of transportation, lack of providers, and lack of infrastructure for information technology. Approximately, one-third of respondents identified the complexity of patient problems, lack of health literacy, and lack of scales of economy as problems of the rural environment. A growing immigrant population, language and cultural barriers, and other rural environment problems were only identified by a few of the respondents. Some of the other impacts of the rural environment mentioned were: the stigma among residents of seeking help for certain services like mental health treatment, the harsh weather, lack of access for rural providers to even basic health information technology, retracting and retaining qualified staff, local politics, and apathy by the rural culture. Refer to table 4.7 for more detail.

**Table 4.7: Problems with the Rural Environment as Identified by Sample, (N=50)**

<b>Impacts</b>	<b>Count</b>	<b>Percent</b>
Lack of Financial Resources	35	70
Growing Elderly Population	34	68
High Rate of Uninsured Persons	34	68
Geographic Terrain	32	64
Complex Health Care Regulatory Environment	30	60
Lack of Providers	29	58
Lack of Transportation	29	58
Lack of Infrastructure for Information Technology	27	54
Lack of Health Literacy	19	38
Lack of Scales of Economy	18	36
Complexity of Patient Problems	16	32
Growing Immigrant Population	8	16
Other	7	14
Language and Cultural Barriers	3	6

*Network Benefits Reported by Sample*

*Community-Level Effectiveness*

As with the questionnaire with the network directors, respondents were asked about the benefits of their network at the three levels. With regard to the community-level benefits of their network, respondents were asked four questions. Out of the forty-three respondents who chose to answer whether or not there was a public perception that their network is solving the problem(s) that it intends to address, most of the respondents either strongly agreed or agreed. Similarly, most of the respondents believed that there were improvements in the incidence of the problem that their network addresses. Refer to Table 4.8 for a summary of responses to these two questions. Improvements in the problems addressed by their networks that were noted by some respondents in open ended questions were: efficiency and rural connectivity, the increase of immunization

rates by approximately 10%, and reduced adolescent risk behaviors. Examples of aggregate indicators of client well-being given by some respondents are Behavioral Risk Factor Surveillance System (BRFSS) indicators, prices for health care services, clients surveys, and immunization rates.

**Table 4.8: Network Benefits as Identified by Sample, (N=50)**

<b>Benefits</b>	<b>% Strongly Agree</b>	<b>% Agree</b>	<b>% Disagree</b>	<b>% Strongly Disagree</b>	<b>% No Answer</b>	<b>% Not Applicable</b>
<b>Community Level</b>						
There is a public perception that your network is solving the problem(s) it intends to address.	10	54	18	4	2	12
There are improvements in the incidence of the problem that your network addresses.	16	72	2	0	2	8
<b>Network Level</b>						
Members are committed to network goals.	50	48	2	0	0	0
Your network has been able to decrease service duplication since its inception.	34	56	4	2	0	4
Your network has improved integration/coordination of services.	50	48	2	0	0	0
<b>Organization Level</b>						
Your network has improved the survival of its members.	18	46	10	0	0	26
Your network has enhanced the status of its members.	14	68	6	0	2	10
Your network has enabled its members to acquire resources.	34	60	2	0	2	2
Your network has reduced the cost of services for its members.	20	46	14	0	4	16
Your network has improved access to services for members' clients.	28	62	4	0	2	4
Your network has improved members' client outcomes.	18	64	4	0	2	12

### *Network-Level Effectiveness*

Respondents were also asked three of the four questions about the network-level benefits of their network. When asked whether or not the network had been able to decrease service duplication, a majority of the respondents either strongly agreed or agreed, as did a majority feel that their network improved integration and coordination of services. Finally, when asked whether or not network members were committed to network goals, most respondents agreed that they are. Refer back to Table 4.8 for more detail.

### *Organizational- Level Effectiveness*

Lastly, respondents were asked six questions about the benefits of their network at the member organizational level. As with the questionnaire with the network directors, most respondents either strongly agreed or agreed that their network: 1) enhanced the status of their members; 2) enabled their members to acquire resources; 3) improved access to services for their members' clients; and 4) improved their members' client outcomes. Also similar to the questionnaire with the network directors, fewer respondents believed that the network had improved the survival of its members and reduced the cost of services for its members. Refer to back table 4.8 for an overview or responses about network benefits at the organizational level.

Respondents were also asked to note any other benefits of their network. Some of the respondents noted that the network serves as a clearinghouse for small grant applications and allows for multiple agencies to benefit from one grant. Others mentioned that their network allows for collaboration and for the sharing of information

and resources. For example, one respondent stated that their network was “the only regional forum for health care agencies to meet, discuss, gaps in the system, and deliver corrective action.” Other respondents noted such benefits as educating providers and immunization education.

Finally, respondents were asked both what makes their network effective and what would make it more effective. Responses to the question what makes their network effective were varied and reflective of the literature on network effectiveness. Some respondents mentioned the ability to collaborate, while others mentioned the common mission, interest, and goals of their network members. The importance of leadership was also talked about by a few of the respondents, as was the staff. Trust, openness, and honesty were also cited. Some respondents mentioned a common commitment to the community, a strong work ethic, and the ability to leave political agendas at the door as attributing to their network’s effectiveness. When asked what would make their network more effective respondents noted more strategic planning, more medical staff on the board, a long term financial business plan, more resources and funding, better communication, continued long-term evaluation, decreased staff turnover, expanded membership and technological improvements, such as electronic medical records.

### Summary

Responses from the expert interviews, the questionnaire conducted with the network directors, and the questionnaire conducted with the sample of four networks offer some insight into important correlates of effectiveness for vertically integrated rural health networks. To begin, the expert interviews identified many of the possible correlates (e.g. cooperation among members, the importance of leadership that can build

consensus among members, strategic planning, defined goals, adequate and capable staff, and financial resources) mentioned in the literature and confirmed their inclusion in the questionnaires. Additionally, analysis of the questionnaires highlighted some important network characteristics that may have an impact on the effectiveness of vertically integrated rural health networks. For example, analysis of both questionnaires, one sent to network directors and the other to the four networks in the sample, illustrates that financing is one network characteristic about which networks in general seem less favorable. The analysis also revealed that the respondents in the sample of effective networks were more favorable about many of their network characteristics than the larger, preliminary sample. Following is a more in-depth comparison of the findings from the questionnaire with the network directors and the questionnaire with the sample of four effective networks.

Findings from the initial questionnaire with the network directors revealed that vertically integrated rural health networks are optimistic about their network's mission, governance/decision making, leadership, staff, and communication and trust. On the contrary, findings also illustrate that vertically integrated rural health networks are overall less favorable about planning, financing, and evaluation in their networks. Analysis of the questionnaire with the sample of four effective networks illustrates that respondents in the sample are generally more favorable than the larger sample of vertically integrated rural health networks about their network characteristics with the exception of financing about which they are equally as negative. More specifically, respondents in the sample of four effective networks were most favorable about governance and decision making in their network, their network's leadership and staff, as well as communication and trust in

their network. They were less favorable about their network’s mission, planning, and evaluation but were not as unenthusiastic as the larger population of vertically integrated rural health networks. Table 4.9 provides the average percentage of respondents who disagreed with the questions measuring each network characteristic in both the questionnaire with the network directors and the questionnaire with the sample of four effective networks.

**Table 4.9: Average Percentage of Respondents Who Disagreed with Characteristics**

<b>Characteristic</b>	<b>Network Directors (N=21)</b>	<b>Sample (N=50)</b>
Mission	11.3%	10%
Governance & Decision Making	9.6%	6%
Planning	24.5%	12%
Financing	32.4%	32%
Leadership	5%	4.5%
Staffing	8.8%	7.2%
Communication/Trust	8.5%	3.75%
Evaluation	31.25%	14.5%

With regard to problems with the rural environment, a lesser percentage of respondents from the sample of four effective networks than the network directors noted certain effects were problematic for their network. The exceptions were complex health care regulatory environment and geographic terrain for which a higher percentage of respondents from the sample of four effective networks than the network directors noted these effects. The sample differed most from other vertically integrated rural health networks in that a much smaller percentage of respondents from the sample of four effective networks noted that lack of providers and the growing immigrant population was problematic for their network. Table 4.10 provides an overview of the percentage of

respondents, from both the questionnaire with the network directors and the questionnaire with the sample, who noted each effect of the rural environment as problematic.

**Table 4.10: Rural Environment: Percentage of Respondents Who Noted Each Effect**

<b>Impacts</b>	<b>Network Directors (N=21)</b>	<b>Sample (N=50)</b>
Lack of Providers	90%	58%
Lack of Transportation	67%	58%
Complex Health Care Regulatory Environment	52%	60%
Complexity of Patient Problems	48%	32%
Lack of Health Literacy	57%	38%
Lack of Infrastructure for Information Technology	71%	54%
Growing Elderly Population	86%	68%
Growing Immigrant Population	48%	16%
High Rate of Uninsured Persons	71%	68%
Geographic Terrain	57%	64%
Language and Cultural Barriers	NA	6%
Lack of Scales of Economy	NA	36%
Lack of Financial Resources	NA	70%
Other	19%	14%

Regarding the benefits of the network, respondents from the sample of four effective networks were also more optimistic than the network directors. More specifically, respondents from the sample of four effective networks were overall more optimistic about the questions used to measure the benefits of their network at the network and organizational levels. The sample respondents were similarly negative as the network directors about the benefits of their network at the community level. However, they did differ with regard to the two measures used at this level, i.e., the sample respondents were more favorable that there were improvements in the incidence of the problems that their network addresses than they were that there was a public perception that their network is solving the problem(s) it intends to address. The network

directors were equally negative about both measures of effectiveness at the community level. Table 4.11 provides the average percentage of respondents who disagreed with the questions used to measure the network benefits at each level.

**Table 4.11: Average Percentage of Respondents Who Disagreed with Network Benefits**

<b>Benefits</b>	<b>Network Directors (N=21)</b>	<b>Sample (N=50)</b>
Community	12%	12%
Network	14.6%	2.6%
Organization	12.8%	6.67%

These findings from the preliminary analyses suggest the need for further analysis. In particular, analysis needs to be conducted on the importance of financing, as many of the networks, including the sample of effective networks, were not very favorable about it. Secondly, the sample of effective networks was more favorable about most of the proposed structural correlates of effectiveness, namely their network’s governance, decision making, leadership, staff, communication, and trust. They were also less pessimistic about planning in evaluation in their network than the larger, preliminary sample. Thus, this brings to question whether or not these, i.e. good governance and decision making, trust, etc., are all qualities of effective networks or are some more important than others? Additionally, the sample of effective networks noted fewer rural environment problems which suggest that fewer problems in the rural environment may lead to more network effectiveness. The following two findings chapters offers more insight into important correlates of effectiveness for vertically integrated rural health networks by conducting a more in-depth analysis of the sample of four effective networks (Chapter 5), as well as a comparison of these networks (Chapter 6).

## CHAPTER FIVE

### ANALYSIS OF ALL RESPONDENTS

The expert interviews and responses from the questionnaires alluded to some important predictors of effectiveness for vertically integrated rural health networks. However, further analysis of these findings is needed to identify important correlates of effectiveness, as well as to better understand how these correlates are related to each other and to the effectiveness of vertically integrated rural health networks. To do this, an analysis of all the responses from the four networks chosen for the field study was conducted to identify correlates of effectiveness that exist among these vertically integrated rural health networks and to understand their interrelationships. As mentioned earlier, the sample consists of fifty respondents from four different networks. The four networks are the Tioga County Partnership for Community Health (TCPCH), the Roaring Fork Valley Community Health Plan (RFVCHP), the Community Health Information Collaborative (CHIC), and the Adirondack Rural Health Network (ARHN).

#### Descriptive Statistics

##### *Descriptive Statistics of Independent Variables*

Initially, descriptive statistics, such as measures of central tendency and measures of dispersion, were used to better understand the six identified correlates of effectiveness and the effectiveness criteria at each of the three levels. As explained in the methods chapter, a small number of variables were necessary due to the small sample size. Thus, for many of the variables indices were created using questions from various sections of the questionnaire and Cronbach's alphas were used to confirm their internal reliability. As shown in Table 5.1, to measure cohesiveness, the first correlate of effectiveness, eight

questions were used for a maximum index value of twenty-four per respondent (Three is the maximum value per question times eight questions). Among all respondents, the mean index value for cohesiveness was 19.67 and the median 20 which indicates that most respondents either agreed or strongly agreed with many of the statements used to measure cohesiveness. Furthermore, the mode (24.00) for cohesiveness shows that the most frequent index value among respondents was twenty-four which means that those respondents strongly agreed with all of the statements used to measure cohesiveness. Overall, these findings suggest that respondents are positive about the cohesiveness of their networks.

**Table 5.1: Descriptive Statistics for Independent Variables**

		Cohesiveness	Governance	Financing	P & E	Personnel	Rural Problems
N	Valid	50.00	50.00	50.00	50.00	50.00	50.00
	Missing	0.00	0.00	0.00	0.00	0.00	0.00
Max Index Value Possible		24.00	15.00	12.00	21.00	24.00	
Mean		19.67	11.11	7.56	14.92	19.10	6.62
Median		20.00	10.50	7.50	15.00	19.00	7.00
Mode		24.00	10.00	8.00	14.00	20.00	7.00
Std. Deviation		3.43	2.15	2.15	3.20	2.90	2.90
Minimum		10.00	7.00	4.00	7.00	13.00	1.00
Maximum		24.00	15.00	12.00	21.00	24.00	13.00

For governance, five questions were used giving it a maximum index value of fifteen per respondent (Three is the maximum value per question times five questions). The average index value for governance was 11.11 and the median value 10.50, meaning that most respondents agreed, but not strongly, with many of the statements used to measure governance. The mode (10.00) further suggests that many of the respondents

were in agreement with the statements about their network's governance. These findings imply that most of the respondents were favorable about governance in their network. Refer back to Table 5.1 for more detail.

As illustrated in table 5.1, four questions were used to measure financing giving it a maximum index value of twelve per respondent (Three is the maximum value per question times four questions). The average index value of financing was 7.56 and the median value 7.50. This suggests, along with the mode of eight, that many respondents agreed with many of the statements used to measure financing. However, these numbers also illustrate that there were many respondents who also disagreed with some of the statements. At least one respondent, as suggested by the minimum of four, disagreed with all of the questions used to measure financing. These statistics imply that not all of the respondents were positive about their network's financing.

For planning & evaluation (P&E), seven questions were used giving it a maximum index value of twenty-one per respondent. (Three is the maximum value per question times seven questions). The mean index value for P&E was 14.92 and the median fifteen. Both of these numbers signify that most respondents agreed, but not strongly, with many of the statements used to measure P&E. The mode (14.00) further suggests this. Overall, these results indicate that respondents were generally positive about P&E in their network. Refer back to Table 5.1 for a summary of these results.

As with cohesiveness, eight questions were used to measure personnel giving it a maximum index value of twenty-four per respondent (Three is the maximum value per question times eight questions). According to the mean (19.10) and the median (19.00) for personnel, most respondents either agreed or strongly agreed with many of the

questions used to measure personnel. The mode (20.00) further suggests that several of the respondents strongly agreed with many of the statements regarding their networks personnel. These findings imply that most respondents were very confident about their network's personnel. Table 5.1 provides a summary.

Finally, the variable, rural problems, represents the number of problems identified by each respondent about the rural environment in which their network operates. As suggested by the mean, median, and mode, most respondents identified seven problems with the rural environment in which their network operates. However, at least one of the respondents only identified one problem with at least another identifying thirteen problems. Refer back to Table 5.1 for an overview.

Overall, these findings signify that respondents were most favorable about their network's cohesiveness and personnel. They further suggest that respondents were slightly less positive about their network's governance and P&E, although still optimistic about them. Finally, these statistics indicate that respondents were least complimentary of their network's financing. Thus, these findings indicate that cohesiveness and personnel might be important correlates for network effectiveness, followed in importance by governance and P&E.

#### *Descriptive Statistics of Dependent Variables*

Examination of the descriptive statistics for the dependent variables, i.e., the effectiveness criteria used at each level of analysis, offers some perspective on the respondents' views about the different measures. As previously noted, at the community level, a public perception that the network is solving the problem(s) it intends to address and changes in the incidence of the problem that the network addresses were the two

criteria used to measure effectiveness. Decrease in service duplication, improved integration and coordination, and member commitment to network goals were the three criteria used to measure effectiveness at the network level and one index generated from a variety of criteria was used to measure organizational-level effectiveness. Because respondents were asked to select not applicable if a measure did not apply to their network, there are more missing cases for several of these variables than with the independent variables.

#### *Community Level*

As seen in Table 5.2, with regard to the variable perception solving problems, the mean (1.86) and the mode (2.00) imply that most of the respondents agreed that there is a public perception that their network is solving the problem(s) they intend to address. Similarly, as indicated by the mean (2.16) and the mode (2.00) for the variable incidence improvements, most respondents agree, with slightly more strongly agreeing than with perception solving problems, that there are changes in the incidence of the problem that their network addresses. Overall, respondents were most likely to agree, than strongly agree or disagree with these two measures of community-level effectiveness.

**Table 5.2: Descriptive Statistics for Dependent Variables**

		Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>N</b>	<b>Valid</b>	44.00	46.00	47.00	48.00	50.00	34.00
	<b>Missing</b>	6.00	4.00	3.00	2.00	0.00	16.00
<b>Max Index Value Possible</b>		3.00	3.00	3.00	3.00	3.00	15.00
<b>Mean</b>		1.86	2.16	1.93	2.29	2.48	11.04
<b>Median</b>		2.00	2.00	2.00	2.00	2.50	10.21
<b>Mode</b>		2.00	2.00	2.00	2.00	3.00	10.00
<b>Std. Deviation</b>		0.59	0.42	0.57	0.58	0.54	2.30
<b>Minimum</b>		1.00	1.00	1.00	1.00	1.00	5.00
<b>Maximum</b>		3.00	3.00	3.00	3.00	3.00	15.00

*Network Level*

For the network-level measures of effectiveness, respondents were overall more likely to strongly agree with the exception of the variable service duplication. For the variable service duplication, most of the respondents agreed, as indicated by the mean (1.93) and the mode (2.00) that their network has decreased service duplication since its inception. According to the mean (2.29) for the variable improve coordination, more respondents strongly agreed, than with the variable service duplication, that their network has increased coordination/ integration of services. Finally, even more respondents, than with the other two variables, agreed that their members are committed to the network goals, as indicated by the mean (2.48) and the mode (3.00). In summary, the descriptive statistics for the network-level measures of effectiveness reveal that respondents were more favorable about effectiveness at the network level, as compared to the community level. Refer to Table 5.2 for more detail.

### *Organizational Level*

Finally, for the one organizational-level measure of effectiveness, an index was used that was created from five questions giving it a maximum index value of fifteen per respondent (Three was the maximum value per question times five questions). More respondents, than with the previous measures, chose not to answer one or more of the questions used to measure effectiveness at the organizational level and were left out of this analysis. Of those that did respond to all of the questions, 11.04 was the mean response with a median of 10.21 and a mode of ten. These numbers imply that most respondents agreed or strongly agreed with many of the questions used to measure organizational-level effectiveness. Thus, respondents were generally positive about the effects of their network on the member organizations. Refer back to table 5.2 for all of these descriptive statistics.

Overall, the descriptive statistics for the dependent variables illustrate that respondents were more optimistic about the effectiveness of their network at the network and organizational levels. Respondents were least favorable about their network's community-level effectiveness, although they were optimistic that there were improvements in the incidence of the problem that their network addresses. Respondents were least positive about their being a public perception that their network is solving the problem(s) it intends to address and that their network has decreased service duplication. These findings suggest that network and organizational effectiveness may be more easily achieved by networks and that community level effectiveness is less likely to be achieved.

## Correlation Analysis

### *Correlations of Independent Variables*

Analysis of the correlations between variables further offers some insight into the correlates of effectiveness for vertically integrated rural health networks. To begin, many of the independent variables in this analysis are either moderately or strongly correlated with each other, as well as have a statistically significant relationship at the .01 level. For example, governance ( $r = .709$ ), P & E ( $r = .718$ ), and personnel ( $r = .726$ ) are all strongly correlated with a statistically significant ( $p < .01$ ) with cohesiveness. Financing is the only structural correlate not statistically significant or strongly correlated with cohesiveness. Additionally, the number of problems identified within the rural environment was found to be moderately correlated with cohesiveness but still significant at the .01 level. Only a few of the other independent variables were found to be moderately correlated with financing, i.e., governance ( $r = .372$ ), P&E ( $r = .331$ ), and personnel ( $r = .406$ ); however, these were found to be statistically significant at the .01 level. The number of identified problems in the rural environment was found to be minimally but negatively related to financing. For governance, cohesiveness ( $r = .709$ ), P&E ( $r = .712$ ), and personnel ( $r = .547$ ) were found to be strongly correlated and the number of identified rural problems ( $p = .256$ ) only moderately correlated. All were found to have a statistically significant relationship to governance. As previously illustrated, P & E is strongly correlated with many of the other dependent variables except for financing, with which it is moderately correlated but statistically significant ( $p < .01$ ) and the number of identified rural problems, with which it is minimally correlated but not statistically significant. Personnel too, as noted above, are strongly correlated

with the other structural correlates and significant. The number of identified rural problems is weakly correlated with personnel but statistically significant ( $p < .05$ ). Finally, the number of identified rural problems has the weakest correlations with the other dependent variables, as well as is not statistically significant for either financing and P & E. Table 5.3 provides the complete correlation matrix for the independent variables.

**Table 5.3: Correlation Matrix of Independent Variables for all Respondents (N = 50)**

	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
Cohesiveness	1					
Financing	0.197	1				
Governance	.709**	0.372**	1			
P&E	.718**	.331**	.712**	1		
Personnel	.726**	.406**	.547**	.666**	1	
Rural Problems	.396**	-0.152	.256*	0.196	.242*	1

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

Analysis of Table 5.3 reveals that most of the independent variables are significantly correlated with each other. Cohesiveness has the strongest significant relationship with all of the other variables with the exception of financing with which it has a weak and statistically insignificant relationship. Financing, has one of the weakest statistically significant relationships with all of the other independent variables, while rural problems has the weakest and the fewest statistically significant relationships. Thus, the correlation analysis of the independent variables illustrates that all of the structural correlates are highly correlated with each other suggesting that there may be an underlying dimension among these correlates. A factor analysis may be beneficial with a larger sample.

### *Correlations of Dependent Variables*

There are also various interrelationships among many of the dependent variables. As illustrated in Table 5.4, at the community-level, the measures of effectiveness are not strongly correlated with each other ( $r = .264$ ) nor is their relationship statistically significant. However, measures at the other levels are more strongly correlated and statistically significant to the measures at the community-level. With regard to the variable of whether or not there is a public perception that the network is solving the problem(s) it intends to address, the network-level measure of effectiveness, is strongly correlated in a statistically significant ( $p < .01$ ) relationship with decrease in service duplication. Whether or not the network improves coordination/ integration, another network-level measure of effectiveness, is moderately correlated and statistically significant with both measures of community-level effectiveness, as is the only measure of effectiveness at the organizational level.

**Table 5.4: Correlation Matrix of Dependent Variables for All Respondents**

	Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>Perception Solving Problems</b>	1					
<b>N</b>	44					
<b>Incidence Improvements</b>	0.264	1				
<b>N</b>	42	46				
<b>Decrease Service Duplication</b>	.542**	0.221	1			
<b>N</b>	43	44	47			
<b>Improve Coordination</b>	.372*	.386**	.586**	1		
<b>N</b>	42	44	46	48		
<b>Goal Commitment</b>	0.238	0.153	.582**	.489**	1	
<b>N</b>	44	46	47	48	50	
<b>Organization</b>	.353*	.423*	.597**	.659**	.585**	1
<b>N</b>	33	32	34	34	34	34

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

All three of the network-level measures of effectiveness, i.e., decrease in service duplication, improve coordination, and goal commitment, are strongly correlated and statistically significant at the .01 level with each other. Decreases in service duplication and improvements in the coordination/integration of services are the most strongly correlated with each other ( $r = .586$ ) followed closely by decreases in service duplication and members commitment to goals ( $r = .582$ ). The organizational-level measure of effectiveness is also strongly correlated and statistically significant, ( $p < .01$ ), with all of the network-level effectiveness measures. Refer back to Table 5.4 for more detail.

Finally, all of the measures of effectiveness at the community and network levels are moderately or strongly correlated and statistically significant to organizational-level effectiveness. More specifically, all of the network-level measures of effectiveness are strongly correlated and statistically significant, ( $p < .01$ ), to organizational-level effectiveness with improvements in coordination/ integration of services having the strongest correlation ( $r = .659$ ). In contrast, all the measures of effectiveness at the community level are only moderately correlated with organizational-level effectiveness and statistically significant at the .05 level. Refer back to Table 5.4 for more detail on the correlations between these effectiveness measures.

Overall, analysis of Table 5.4 reveals that the community-level measures of effectiveness are least correlated among themselves and with the measures at the other levels. Both measures at the network and organizational-levels are strongly and significantly related to each other with goal commitment being the only network-level criterion not significantly related to either of the community-level measures. Finally, organizational-level effectiveness is significantly related to measures at both levels but

stronger and more significantly related to those at the network level. Thus, network and organizational-level effectiveness are more closely related than is community-level effectiveness with either. This suggests that there may be an underlying dimension to effectiveness at both the network and organizational levels for which a factor analysis with a larger sample may be useful. While the community level measures of effectiveness are less closely related to the measures at the other levels, still some significant relationships were found. This suggests that there may be an underlying dimension to overall effectiveness for networks.

#### *Correlations of Independent Variables & Dependent Variables*

The previous two correlation matrices provided more depth in understanding by exploring the interrelationships among the correlates of effectiveness and the interrelationships among the measures of effectiveness. This was done to better understand the degree to which the correlates, as well as the measures of effectiveness, were related to each other. As noted, many of the correlates were found to be significantly related to each other, as were the measures of effectiveness suggesting that there may be an underlying dimension among all the correlates, as well as among the measures of effectiveness. The following is an analysis of the correlations between the proposed correlates and the effectiveness criteria. The intent is to get a better understanding of how each of the correlates is related to each of the measures of effectiveness so that important correlates of effectiveness for each of the three levels can be identified.

### *Community-Level Effectiveness*

For the community-level effectiveness measures, i.e., perception solving problems and incidence improvements, fewer of the possible correlates were strongly correlated or statistically significant, as illustrated in Table 5.5. For example, only financing was found to be strongly correlated ( $r = .579$ ,  $p < .01$ ) with perception solving problems and governance ( $r = .354$ ) and P & E ( $r = .257$ ) moderately correlated. All three were found to be statistically significant, with both financing and governance being significant at the .01 level. It should be noted that these results might slightly over-represent planning's correlation with whether or not there is a public perception that the network is solving the problems it intends to address, as respondents were more favorable about their network's evaluation than their network's planning. The number of identified problems with the rural environment was found to be negatively related to perception solving problems. For the second community level effectiveness measure, the degree to which there were changes in the incidence of the problem, none of the correlates were found to be highly correlated with only the correlates cohesiveness ( $r = .289$ ) and governance ( $r = .252$ ) being moderately correlated and statistically significant ( $p < .05$ ). These findings indicate that more of the correlates are significantly related to the community-level measure, perception solving problems than the second community-level measure, changes in the incidence of the problem. Furthermore, none of the correlates, with the exception of financing, were found to be strongly correlated with either of the measures suggesting that there is not a strong relationship between many of the correlates and community-level effectiveness.

**Table 5.5: Correlation Matrix of Dependent Variables & Independent Variables for all Respondents**

Dependent Variables	Independent Variables					
	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>Community Level</b>						
Perception Solving Problems N = 44	0.155	0.579**	.354**	.257*	0.197	-0.097
Incidence Improvements N = 46	.289*	0.161	.252*	0.227	0.194	0.031
<b>Network Level</b>						
Decrease Service Duplication N = 47	.525**	0.410**	.538**	.611**	.537**	0.295*
Improve Coordination N = 48	.598**	0.473**	.499**	.506**	.620**	0.337*
Goal Commitment\ N = 50	.699**	0.254*	.676**	.633**	.455**	0.286*
<b>Organizational Level</b>						
Organization N = 34	.528**	0.374*	.655**	.594**	.369*	0.177

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

*Network-Level Effectiveness*

At the network level, many of the correlates were found to be highly or moderately correlated, as well as statistically significant at the .01 level, with the effectiveness measures, i.e., decrease service duplication, improve coordination, and goal commitment. For example, the extent to which the network has decreased service duplication is highly correlated and statistically significant, ( $p < .01$ ), with all of the

correlates, except for with the number of rural problems with which it is only moderately correlated ( $r = .295$ ), but still statistically significant at the .05 level. Similarly, many of the correlates are strongly and significantly correlated, ( $p < .01$ ), with the extent to which the network has improved integration/coordination of services, a second measure of effectiveness at the network level. Once again, the number of problems identified within the rural environment was found to have a weaker correlation ( $r = .337$ ) but to be statistically significant ( $p < .05$ ). Finally, the extent to which network members are committed to network goals, the last measure of effectiveness at the network level, was also found to be strongly and significantly correlated, ( $p < .01$ ) with many of the correlates with the exceptions of network financing ( $r = .254$ ) and the number of identified problems within the rural environment ( $r = .284$ ) with which they were found to be statistically significant at the .05 level. Overall, this suggests that there is a strong relationship between the correlates used in this analysis and the measures of effectiveness at the network level. Refer to Table 5.5 for a summary of these statistics.

#### *Organizational-Level Effectiveness*

At the last level in which effectiveness was measured, the organizational level, many of the correlates were also found to be strongly or moderately correlated and statistically significant to organizational effectiveness. More specifically, governance ( $r = .655$ ), P&E ( $r = .594$ ) and cohesiveness ( $r = .528$ ) were found to be strongly correlated and statistically significant at the .01 level, while both financing ( $r = .374$ ) and personnel ( $r = .369$ ) were found to be only moderately correlated and statistically significant at the .05 level. The number of identified rural problems was found to have a very small and statistically insignificant relationship. It should be noted that for many of the

effectiveness measures, financing had the weakest correlation among the possible structural correlates with the exception of the effectiveness measure, perception solving problems, with which financing had the strongest relationship. For more detail on the correlates of effectiveness and their significance, refer back to Table 5.5 which illustrates the possible correlates of effectiveness for each measure of effectiveness and their corresponding Pearson's correlation coefficients.

In summary, correlation analysis of independent and dependent variables indicates that there were many significant relationships among the proposed correlates and measures of effectiveness with the network-level measures having the strongest and most significant relationships, as well as the only statistically significant relationship with rural problems. On the other hand, the community-level measures had the weakest and the fewest statistically significant relationships with the correlates. Of all of the correlates, governance was the strongest and the most statistically significant, followed by cohesiveness and P&E, and then personnel and financing. The number of identified rural problems had the weakest correlations, as well as the fewest statistically significant relationships with all of the measures of effectiveness. Interestingly, the number of rural problems was found to be positively associated with all of the measures at the network level.

#### *Non-Network Employees*

As part of the analysis, it was tested whether or not non-network employees identified different correlates of effectiveness. Controlling for the type of respondent, i.e., network employee or non-network employee; it was found that little variation in the identified correlates of effectiveness exists when network staff are taken out of the

sample. Minimal differences between network and non-network employees may be due to the fact that only nine respondents were network employees and removed from this analysis of non-network employees. The strength of the correlations, as identified by all of the respondents and by the non-network employees, was also fairly similar. Some minor differences were the following. For example, for the community-level effectiveness measure, incidence improvements, governance was not found to be significant as it was with all respondents. Additionally, the number of identified problems in the rural environment was not found to be significant for either decreased service duplication or member commitment to goals, as it was with all respondents. Due to the already small sample size that includes all respondents and the slight differences in identified correlates, no further analysis was conducted on the possible differences between the two. Table 5.6 illustrates the correlates of effectiveness as identified by non-network employees.

**Table 5.6: Correlation Matrix of Dependent Variables & Independent Variables for Non-Network Employees**

Dependent Variables	Independent Variables					
	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>Perception Solving Problems N = 33</b>	0.189	.602**	.347*	.309*	0.188	-0.208
<b>Incidence Improvements N = 36</b>	.279*	0.017	0.195	0.183	0.099	0.045
<b>Service Duplication N = 35</b>	.427**	.459**	.502**	.599**	.471**	0.174
<b>Improve Coordination N = 36</b>	.575**	.421**	.439**	.436**	.567**	0.323*
<b>Goal Commitment N = 38</b>	.730**	0.304*	.690**	.582**	.401**	0.258
<b>Organization N = 23</b>	.636**	0.363*	.766**	.643**	.377*	0.245

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

#### *Summary of Correlations*

The correlation analyses reveal many interesting relationships among the variables in this analysis. To begin, many of the independent variables are significantly correlated with each other. With regard to the dependent variables, i.e., measures of effectiveness, measures at the network level are strongly related to each other, as well as to organizational-level effectiveness. Community-level effectiveness measures were found to be least related to each other and to measures at the other levels. This suggests that there may be an underlying dimension among the correlates of effectiveness, as well as among the measures of effectiveness at the network and organizational levels. While not conducted in this research, factor analysis with a larger sample would assist in identifying these underlying dimensions. Finally, a correlation analysis of the dependent

and independent variables illustrates that more of the correlates were significantly related to effectiveness at the network and organizational-levels. This indicates that there is a stronger relationship between the correlates and effectiveness at the network and organizational levels than at the community level. An analysis with non-network employees revealed similar results.

### Regression Analysis

Following the correlation analyses, regression analyses were conducted to determine how much each of the correlates can predict each of the effectiveness criteria for the three levels. Results of the regression analyses revealed several statistically significant predictors. The results also indicated that the correlates used in this analysis did a good job of explaining both network and community-level effectiveness.

#### *Community-Level Effectiveness*

To begin, for the measures of effectiveness at the community-level, there were fewer statistically significant predictors. Financing was the only predictor found to be statistically significant for the criterion public perception that the network is solving problems. The R square for this regression (.370) was moderate to low suggesting that the predictors used in this analysis do not explain much of whether or not there is a public perception the network is solving the problem(s) it intends to address. For the other criterion for community-level effectiveness, improvements in the incidence of the problem, no predictors were found to be significant and the R Square (.104) was very low. Of all of the predictors, cohesiveness had the greatest impact on improvements in the incidence of the problem. Overall, the predictors used in this analysis do not do a very good job of explaining community-level effectiveness, with the exception of

financing. Refer to tables 5.7 and 5.8 for more detail on the regression analyses for the variables predicting the selected criteria at the community level.

**Table 5.7: Summary of Regression Analysis for Variables Predicting Public Perception the Network is Solving Problems (N = 33)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	.636	.262	
<b>Cohesiveness</b>	.014	.952	.010
<b>Financing</b>	.549	.001**	.495
<b>Governance</b>	.199	.339	.157
<b>P &amp; E</b>	.035	.876	.026
<b>Personnel</b>	-.157	.480	-.116
<b>Rural Problems</b>	-.019	.895	-.022

Note: R Square = .370, \*\*p<.001, \*<.05

**Table 5.8: Summary of Regression Analysis for Variables Predicting Improvements in the Incidence of the Problem (N = 36)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	1.458	.002	
<b>Cohesiveness</b>	.353	.259	.180
<b>Financing</b>	.113	.545	.097
<b>Governance</b>	.041	.873	.026
<b>P &amp; E</b>	-.015	.957	-.009
<b>Personnel</b>	-.112	.668	-.069
<b>Rural Problems</b>	-.062	.716	-.059

Note: R Square = .104, \*\*p<.001, \*<.05

### *Network-Level Effectiveness*

For the network-level criteria, the predictors used in this analysis were much more explanatory. For example, with regard to the criterion, decreases in the service duplication, both P & E and the number of rural environment problems were very close to being significantly significant with both having the greatest impact on decreasing service duplication. The R square for this regression, .483, indicates that the predictors used in this analysis account for close to half of the criterion, decreases in service duplication. Table 5.9 provides more detail for this analysis.

**Table 5.9: Summary of Regression Analysis for Variables Predicting Decrease in Service Duplication (N = 35)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	-.381	.415	
<b>Cohesiveness</b>	-.060	.813	-.038
<b>Financing</b>	.223	.139	.232
<b>Governance</b>	.112	.572	.090
<b>P &amp; E</b>	.370	.065	.288
<b>Personnel</b>	.126	.536	.098
<b>Rural Problems</b>	.234	.076	.277

Note R Square = .483, \*\*p<.001, \*<.05

The predictors explained even more of the second criterion for network-level effectiveness, improvements in the integration/ coordination of services, as indicated by the R square, .554. As with the criterion, decrease in service duplication, none of the predictors was significantly related at the .01 level. However, two predictors, financing and rural problems, were significantly related at the .05 level, with financing being the

most significant. This suggests that the more the network is building and sustaining resources the greater integration/ coordination of services will be. Similarly, the more problems there are in the rural environment the more coordinated/ integrated services will be. Cohesiveness was found to have a similar influence on integration/ coordination of services but not one that is statistically significant. Refer to table 5.10 for more detail on this regression.

**Table 5.10: Summary of Regression Analysis for Variables Predicting Increase in Coordination/ Integration of Services (N = 36)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	-.477	.276	
<b>Cohesiveness</b>	.332	.157	.151
<b>Financing</b>	.393	.006**	.301
<b>Governance</b>	-.055	.760	-.032
<b>P &amp; E</b>	.017	.921	.010
<b>Personnel</b>	.171	.357	.097
<b>Rural Problems</b>	.243	.046*	.215

Note: R Square = .554, \*\*p<.001, \*<.05

For the last measure of network-level effectiveness, member commitment to network goals, only one predictor, cohesiveness (.011) was found to be significantly related. However, the R square (.585) indicates that greater than half of member commitment to network goals can be explained by the predictors used in this analysis. While not statistically significant, the regression analysis indicates that both governance and P & E have a positive impact on member commitment to goals with personnel having a similar but negative impact. Table 5.11 provides more detail on this regression.

**Table 5.11: Summary of Regression Analysis for Variables Predicting Member Commitment to Network Goals (N = 38)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	.280	.461	
<b>Cohesiveness</b>	.504	.011*	.376
<b>Financing</b>	.099	.412	.125
<b>Governance</b>	.250	.128	.231
<b>P &amp; E</b>	.209	.209	.191
<b>Personnel</b>	-.241	.144	-.221
<b>Rural Problems</b>	.055	.627	.075

Note: R Square = .585, \*\*p<.001, \*<.05

*Organizational Level*

For organizational level effectiveness, none of the predictors were found to be statistically significant. However, several of the variables, with the exception of personnel, were found to have a positive association with organizational-level effectiveness. Furthermore, as suggested by the R square of .513, more than half of organizational-level effectiveness can be explained by the predictors used in this analysis. Refer to table 5.12 for more information on this regression analysis.

**Table 5.12: Summary of Regression Analysis for Variables Predicting Organizational-Level Effectiveness (N = 23)**

<b>Variable</b>	<b>Beta</b>	<b>Sig.</b>	<b>Partial Correlation</b>
<b>Constant</b>	2.730	.227	
<b>Cohesiveness</b>	.250	.394	.116
<b>Financing</b>	.227	.248	.159
<b>Governance</b>	.307	.195	.179
<b>P &amp; E</b>	.335	.191	.180
<b>Personnel</b>	-.346	.219	-.169
<b>Rural Problems</b>	.134	.364	.124

Note: R Square = .513, \*\*p<.001, \*<.05

*Summary of Regression Analysis*

While few of the variables are statistically significant predictors, the overall R Squares indicate that much of the criteria used to measure network and organizational-level effectiveness can be explained by the correlates used in this analysis. Of all of the correlates, financing had the most, two, statistically significant associations and was the only correlate found to be significant among the measures at the community level. Both personnel and rural problems were found to be negatively associated with the measures at the community level. The number of rural environment problems, financing, and cohesiveness were found to be significantly associated with measures at the network level. No correlates were found to be statistically significant at the organizational level, however, P&E was found to have the strongest influence. Overall findings from the regression analyses, suggest that financing is an important predictor of network

effectiveness. Furthermore, the correlates used in this analysis did a better job of predicting network level effectiveness than effectiveness at any other level.

### Interviews

As explained in more detail in the methods chapter, follow-up interviews were conducted with three of the four networks chosen for the field study. These follow-up interviews were used to clarify some of the findings regarding the analysis of all networks. Specifically, they were used to provide further insight into the results of the regression analyses and correlation analyses. There was some consensus among interviews regarding. For example, most interviewees shared similar views about the significant predictors and correlates of improved integration/ coordination of services. Many interviewees also had similar explanations for the significant, positive relationships found between the number of rural problems and improved integration/ coordination of services, as well as decreases in service duplication. Following is a summary of interviewees' responses to the questions asked about some of the findings from the questionnaire with the field survey networks. Table 5.13 provides an overview of these findings.

**Table 5.13: Overview of Interview Findings**

	<b>Cohesiveness</b>	<b>Governance</b>	<b>Financing</b>	<b>P &amp; E</b>	<b>Personnel</b>	<b>Rural Problems</b>
<b>Community</b>						
<b>Perception Solving Problems</b>		every competitor in the region working together	1) public saves \$ ; 2) \$ contributes to network survival; 3) network can do more things	data shows public what accomplished		
<b>Incidence Improvements</b>	1) unified team; 2) leave turf battles at the door; 3) public health centered so not competitive; 4) accommodating to all members	1) clear focus, defined process and bi-laws; 2) everyone in the network has a say; 3) good communication; 4) environment that supports change and diverse thinking				
<b>Network</b>						
<b>Decrease Service Duplication</b>	1) trust in other members; 2) risk is equalized by working together to provide services	members' involvement helps prevent duplication	\$ can improve technology which educates people where to go for services	planning helps ensure services are not duplicated	work to not duplicate services	more likely to work together and save \$
<b>Improve Integration</b>	1) members are friends that have know each other for a long time; 2) trust	keeps everyone organized	1) the less financing the more the need to coordinate; 2) more financing would allow for integrative technology	1) helps make sure that you are addressing the right issue; 2) helps to decide what services to provide	expertise of personnel	motivation for coordination
<b>Goal Commitment</b>	Trust makes members committed	1) mission helps keep focus on goals; 2) members have a say in the goals	\$ makes people excited to achieve goals	shows what can be achieved	skill level of personnel keeps members motivated	motivation for commitment
<b>Organizational</b>						
<b>Organization</b>	Improves efficiency which increase benefits	1) lends focus; 2) members' involvement ensures they benefit	1) helps decrease barriers; 2) members save money	brings members' needs to the forefront	expertise of personnel brings more benefits	

## *Community-Level Effectiveness*

### *Public Perception that the Network is Solving Problems*

Financing was found to be the only significant predictor of the dimension of a public perception that the network is solving the problems it intends to address. As such, interviewees were asked what it was about financing that might make it the most important predictor of there being a public perception. Responses varied among respondents with the respondent from the Tioga County Partnership for Community Health (TCPCH) explaining that if the public knows who you are and believes in your network they will be more likely to contribute money. The one Community Health Information Collaborative (CHIC) respondent noted their immunization program, the only program that the public really knows about, allows the public to get a copy of theirs or their child's health records for free. Without this program, it would cost them \$25.00 to get a copy of their records. Thus, the public is aware of the network because they save money, as a result of the network having money. The other CHIC interviewee noted that there is a public perception that their network is solving problems because of their network's survival which can mainly be attributed to their executive director being a good business manager who does not overspend and jump into anything too big without looking into the sustainability of it. This respondent also clarified that they are trying to make the public more aware of their network efforts and recently sponsored a conference in which an effort was made to bring divergent people, e.g., physicians, school nurses, public health, together to discuss such issues as the secure transmission of health information and emergent diseases. Finally, the Adirondack Rural Health Network (ARHN) respondents were somewhat unsure of why there was this relationship and

wondered if maybe there was a perception that if their network had more money, they could do more things. They explained that they try to put money in the right places and to address immediate needs but they felt their network did not have adequate money.

Interviewees were also asked to explain why governance was found to be significantly related to the perception of solving problems. The TCPCH interviewee explained that it was not really known why a network's governance might be related to their being a public perception that their network is solving problems. It was explained that although they felt that their network had strong governance they did not feel that the public was aware of their accomplishments. One of the CHIC interviewees explained that it could be due to the fact that in their network they have every competitor in their region involved in the network representing a variety of disciplines on their board of directors. Thus, if the public sees competitors working together they think the network must be doing something right.

Only one interviewee commented on the significant relationship between P&E and the perception that the network is solving problems. This TCPCH interviewee noted that P&E would be related to a public perception that the network is solving problems because if there is data available the network can show what they have accomplished. They can do this by putting articles in the local paper to show that they have achieved their goals.

#### *Improvements in the Incidence of the Problem*

With regard to the second measure of community-level effectiveness, improvements in the incidence of the problem, respondents were asked why cohesiveness and governance were found to be positively related among all respondents. With regard

to governance's relationship respondents explanations varied. The TCPCH interviewee explained that in their network it is their unified team, clear focus, and defined process and by-laws that keep everyone on track with a problem. Thus, with good network governance, improvements in the incidence of the problem are able to be made. The first CHIC respondent commented that network decisions are made with everyone having a vote or a say in the decisions that are made, i.e., they are very inclusive. The second CHIC respondent additionally noted that in their network they have positive communication between the board of directors and the executive director. Finally, both respondents from the ARHN answered that they have a network environment that supports changes, diverse thinking, and differences of opinion. Furthermore, their network has the ability to have an open dialogue in which no one feels threatened and no one is made to feel less powerful.

With regard to the positive relationship between cohesiveness and improvements in the incidence of the problem, respondents' justification also varied. For example, the first CHIC respondent commented that in their network they have every player in the market coming up with solutions and members leave their turf battles at the door. The second CHIC respondents further noted that the board members make a point to have their meetings in a different place each time to equalize the drive time for each member. This is done out of respect for each other which helps with cohesiveness in their network. It should be noted that in the CHIC, cohesiveness was not found to be significantly related to there being improvements in the incidence of the problem, while governance and financing were. Finally, the ARHN respondents explained that because their network is public health based, of which everyone is a friend, the competitive nature of the

network is toned down. Thus, it is easier to be a cohesive network and make improvements in the incidence of the problem(s) they are addressing.

### *Network-Level Effectiveness*

#### *Decreased Service Duplication*

Because none of the correlates were found to be significant predictors of decreased service duplication, the first measure of network-level effectiveness, questions were only asked about those correlates that were found to be significantly related. When asked about the positive relationship between a network's cohesiveness and decreased service duplication, the TCPCH interviewee responded that cohesiveness is the level of communication and trust among people in their network. In their network, their members believe they know when someone is doing a good job. Thus, they know they can refer someone to someone else if needed which helps to decrease service duplication. The ARHN respondents similarly explained that cohesiveness is likely if people are not territorial and work together which helps equalize the risk involved with implementing a service in a rural area and ultimately decreases service duplication.

The TCPCH interviewee was the only respondent to comment on the positive relationships found between governance, financing, personnel and the effectiveness measure decreases in service duplication. With regard to governance, the TCPCH interviewee explained that if members are involved in decisions then they can better keep an eye on where the network is going. Thus, service duplication can be prevented. For financing, they explained that financing would afford a network better technology which could decrease service duplication by educating people about where they need to go for

services. Finally, the TCPCH respondents explained that their personnel think about what they can do better and try to see to it that duplication is prevented.

With regard to the positive relationship found between planning and evaluation and decreases in service duplication, interviewees similarly suggest that planning helps ensure that services are not duplicated by members. More specifically, the TCPCH interviewee explained that in their network's planning process they go through who is doing what and where first to reduce service duplication among their members. It was also noted that they do not have many organizations in their community which decreases the opportunity for service duplication. The ARHN respondents explained that they take a regional approach in which they plan to have multiple agencies do pieces of a service to reduce duplication. They additionally try to avoid having multiple agencies applying and competing for the same grant.

Finally, when asked why the number of rural problems would be positively related to decreases in service duplication, interviewees generally agreed that the more problems there are in the rural environment the more likely members are to work together to not duplicate services. More specifically, the TCPCH respondent stated that decreases in service duplication can be attributed to a common need to overcome rural problems, such that each organization develops a specialty about what they need to do to help address the problems. Furthermore, it was explained that because there is an overwhelming need in their community it is hard to do things two times much less once. One of the CHIC respondents similarly stated that the more problems there are the more likely people are to work together. The other CHIC interviewee clarified that the more

rural problems there are the more cognizant people are of wasting money and the more willing they are to work together to save money.

### *Improved Integration and Coordination of Services*

Among all networks both financing and the number of rural environment problems were found to be important predictors of improved coordination/integration of services, the second measure of network-level effectiveness. As such, questions were asked about these predictors and other correlates found to be important to this measure of network-level effectiveness. With regard to financing, most respondents saw lack of financing as a predictor of improved integration and coordination. For example, the TCPCH interviewee noted that if financing is reduced the need to coordinate is greater. Furthermore, funding has to be stretched to cover the number of rural problems that exist. One of the CHIC interviewees similarly noted that if everyone had money they would just do it themselves rather than work together to equalize the advantages. The ARHN interviewee explained that they cannot have various agencies vying for limited money. One of the roles of the ARHN is to determine which of their members would be the best applicant for a given grant. Thus, they never have members competing against each other for money and there is open dialogue within their network about not competing with one another. Alternatively, the second CHIC interviewee explained that more financing is an important predictor of improved coordination/integration of services. She further stated that the ability of a provider to provide enhanced services may be directly related to data and internet communication lines. Thus, the more financing there is the more improved information technology tends to be which improves the coordination/ integration of services.

When asked about the importance of the number of rural problems to improved integration and coordination of services, interviewees have more similar answers with many expressing that problems are a motivation for coordination. For example, one of the CHIC respondents explained that the more problems there are the more likely people are to come together, i.e., there is a greater need for integration. The TCPCH interviewee similarly stated that there is a need to coordinate because people are spread out all over the county. Finally, interviewees from the ARHN pointed out that because their network is so underserved with so many HPSA designations, they try to determine what the five counties in their network can address together, such as emergency services and mental and dental health.

Explanations of the significant relationship between cohesiveness and improved coordination/ integration of services were similar with many emphasizing trust and friendship among their members. For example, the TCPCH interviewee explained that cohesiveness might be positively related to improved integration and coordination of services because there is an easy flow of ideas in their network as a result of many of their members being friends and colleagues and knowing each other for decades. Thus, their members are able to work well together to solve problems. Similarly, the ARHN respondents made clear that their network had been together for a long time with their board members coming together often and knowing what each other is doing. Finally, a respondent from the CHIC mentioned the importance of trust to their network's cohesiveness.

With regard to the significant relationship between governance and improved integration of services, only the TCPCH offered an explanation. They stated that

governance is positively related to improved integration and coordination because it can keep everyone in the network focused and organized. This can be hard because often in their network they have people get excited about an issue and take them off track. Thus, their network governance helps to keep them on track.

With regard to the positive relationship found between P&E and improved integration and coordination, it was stated by the TCPCH interviewee that in their network they are always trying to make sure that they are finding the root of the problem and focusing on it and not a symptom of the problem. By making sure they are addressing the right issue, they are better able to coordinate services to ensure that they are hitting the problem for which they are aiming. Evaluation then tells them whether or not they addressed the problem that they intended. One of the CHIC interviewees explained that their network does strategic planning every five years during which they see where their network has been and where they want to go. They also determine how fast they want to grow and what services they can provide. Thus, it is through their strategic planning that they are able to improve the integration and coordination of services. In summary, both interviewees acknowledged the importance of planning for improved integration/ coordination of services.

Finally, only the TCPCH respondent offered an explanation for why network personnel were found to be significantly related to improved integration/ coordination of services. She stated that the positive relationship between personnel and improved coordination and integration could be explained in their network by the expertise of the people on their board. Thus, their personnel and members are not just shooting in the dark on issues.

### *Commitment to Network Goals*

Inquiries were also made about the predictors and correlates of network members' commitment to network goals, the final measure of network-level effectiveness. Initially, interviewees were asked for some insight as to why a network's cohesiveness was found to be the most important predictor of network member's commitment to network goals. Overall, respondents mentioned the importance of trust to members being committed to network goals. For example, the TCPCH interviewee stated that goal commitment has to do with the level of trust the network has among them. It was further noted that in their network there is a belief in what their network does, as well as many of the people in their network are passionate about certain issues which is motivating to other members and the staff. Both CHIC respondents similarly highlighted the importance of trust with the first respondent explaining that in order to have goal commitment the first thing a network has to do is build trust. This respondent added that in their network the goals of the network are built together with input from all of the members so that the organizational goals are the network goals. Finally, ARHN respondents stated that if you don't have trust within your network then you are not going to get members committed.

Only the TCPCH interviewee elaborated on the positive relationships of the other variables to members' commitment to network goals. To begin, the TCPCH interviewee stated that the positive relationship between governance and member commitment to network goals is explained by the fact that when there is a difficult issue, it is helpful to have organized leadership. In their network, they always return to their mission which helps to keep their members focused and committed. The TCPCH interviewee also clarified that financing would be positively related to commitment to network goals

because it infuses people with excitement and hope that they have money to support what they are trying to do. Also, if a government or private agency believes in your work enough to support it, then it is motivating for the network members. With regard to the positive relationship between planning and evaluation and member commitment to network goals, the TCPCH respondent stated that in their network the planning process and the thought of moving ahead and solving problems gets people excited. Furthermore, evaluation can be rewarding because it can show how much progress the network has made in tackling the various problems it addresses which can help keep people motivated. This interviewee also suggested that the positive relationship between network personnel and member's commitment to network goals could be due to the fact that you can see the skill level of the people involved and what they have accomplished, which helps motivation. Additionally, experienced and committed personnel can increase everyone's level of commitment. Finally, the TCPCH interviewee explained that the more rural problems there are the more people tend to be committed, i.e., if the problems were minor then people would think they could be dealt with on their own by those experiencing the problem.

#### *Organizational-Level Effectiveness*

Interviewees were asked to explain the positive relationships between the various correlates and the only measure of organizational-level effectiveness, members benefiting from the network. The TCPCH respondent clarified that it is because of organizational efficiency that cohesiveness was found to be positively related to members benefiting from the network. Thus, more cohesive networks are more efficient and able to provide more benefits to their members.

The positive relationship of governance to members benefiting from the network was attributed by the TCPCH respondent to the focus that it lends. One of the CHIC respondents further explained that they have a clear understanding of what the network's goals are and they do not try and change them midstream. Input is encouraged from their board, as well as they try to obtain everyone's ideas through different task forces. Thus, their members are highly involved in their governance ensuring that the network benefits them.

With regard to financing's significant relationship with member benefits, the TCPCH interviewee attributed it to financing's ability to decrease barriers. One of the CHIC interviewees explained that their network tries to reduce costs for their members. The other CHIC interviewee similarly stated that organizations save money by being members of the network.

According to the TCPCH interviewee, the significant relationship between planning and evaluation and members receiving benefits from the network can be explained by planning and evaluation bringing important issues to the forefront. By bringing important issues to the forefront, the benefits members receive from the network can be improved. One of the CHIC interviewees similarly explained that their members are involved in their network's planning and evaluation. So, the benefits provided by the network are done with input from the members.

Finally, the TCPCH interviewee explained that a network's personnel can have a positive relationship on the members' benefits due to their expertise. The broader the expertise of the personnel the more benefits they are able to provide to the network

members. None of the other interviewees commented on the relationship of their personnel to their members' benefits.

### *Interrelationships Among the Correlates*

Because many of the correlates of effectiveness were found to be significantly related, interviewees were also asked to explain some of the interrelationships among them. Initially, respondents were asked to explain why financing was least related to the other correlates and more specifically not strongly or significantly related to cohesiveness. Explanations for the lack of relationship between cohesiveness and financing were similar with the respondent from the ARHN best summarizing the sentiment of the others by explaining that even if there was no financing their network would still be cohesive. An interviewee from the CHIC noted that their members trust that their executive director will find money and that the cohesiveness of their network does not depend on where the money is found. The interviewee from the TCPCH explained that they use volunteers who don't expect to get money from the partnership and who work together with limited resources. Thus, many of the interviewees felt that the cohesiveness of their network was not related to its financing. In fact, respondents from all networks were most favorable about their network's cohesiveness and least favorable about their network's financing.

Interviewees were also asked to explain why the number of rural problems was significantly related to a network's personnel, governance, and cohesiveness, as opposed to its financing and P&E. The ARHN interviewees explained that the number of problems in the rural environment would be related to a network's cohesiveness because people are willing to sit down and deal with the problems and recognize the necessity to

work together to solve them, a situation which increases their cohesiveness. Similarly, the TCPCH interviewee noted that increased problems require increased cohesiveness. They also explained that increased problems require stronger governance, as well as the need to develop a more experienced personnel that are clever about solving problems. A CHIC interviewee pointed out that the number of rural problems might impact who is brought to the table with the more people involved in an issue, the more active the network. In the CHIC, the number of rural problems was not found to be related to cohesiveness, governance, and personnel. It was explained that if there are a lot of problems that the personnel can feel fractured or the executive director can become dictatorial rather than listening to the board. Additionally, if a network takes on too many problems without a clear direction, then nothing gets done. Thus, if a network is working in an environment with tons of problems, then it is hard to be effective.

#### *Interrelationships Among the Measures of Effectiveness*

Measures of effectiveness at the network and organizational levels were found to be more strongly and significantly related to each other than to measures at the community level. Explanations for this varied with one of the CHIC interviewees noting that there really is not a public perception of what their network is and that there is more understanding of benefits at the network and organizational levels. The ARHN interviewees similarly explained that the network does not take the credit at the community level. They added that it is hard to measure a network's efficiency and effectiveness, as well as the network's ability to support the organizations. It is easier to measure effects at the organizational level. The second CHIC interviewee explained that their goals are made up with input from their members. Thus, the organizational and

network goals are the same. The interviewee from the TCPCH pointed out that the public's perception can be different from what is really happening. Overall, interviewees expressed a lack of network recognition or understanding among the public which may explain why respondents were least favorable about effectiveness at the community level.

### *Summary of Interviews*

An overview of the interviews reveals some consensus. While there was little consensus among interviewees about the lack of relationships found for community-level effectiveness, most interviewees expressed that there was a lack of public perception about their network and its accomplishments. With regard to the network-level measures of effectiveness, there was more consensus among interviewees about the significant relationships found. For example, interviewees similarly explained that through planning a network can decrease service duplication. Interviewees also generally agreed that the more rural problems there are the more likely people are to work together which decreases service duplication. Similarly, with regard to improvements in integration/coordination of services, interviewees were in consensus that rural problems are a motivation for improved integration/coordination of services. Interviewees also agreed that cohesiveness was important for improved integration/coordination of services because services are more likely to be integrated/ coordinated if network members are friends and have known each other for a long time. Finally, all interviewees noted trust as an important contributor to members' commitment to network goals, the final measure of network-level effectiveness. As with the community-level measures of effectiveness, there was little consensus among interviewees about the relationships found between the correlates and organizational-level effectiveness.

With regard to the interrelationships found among some of the correlates, there was some consensus among interviewees. Most interviewees were in agreement that financing was not important to a network's cohesiveness with the overall sentiment being that a network would still be cohesive without money. Additionally, there was agreement that the more rural problems there are, the more cohesive a network tends to be because there is more need for people to come together and solve them.

#### Summary of Analysis with All Respondents

Analysis of the correlates of effectiveness among all respondents revealed important correlates and predictors of effectiveness for each of the three levels. Most notably, financing was found to be one of the most important predictors of effectiveness, as it was found to be a significant predictor of both community and network-level effectiveness. However, correlation analyses revealed that financing was only moderately related to many of the measures of effectiveness. Both cohesiveness and the number of rural problems were also found to be important predictors of effectiveness but only at the network-level. Many of the correlates, namely cohesiveness, governance, P&E, and personnel, were found to have strong and significant relationships with effectiveness at the network and organizational levels, as well as were found to do a good job of explaining network and organizational-level effectiveness. Not surprisingly, effectiveness at the network and organizational levels were found to be more closely related to each other than effectiveness at the community-level. Table 5.14 offers a summary of the correlates' relationship to the measures of effectiveness. Bolded relationships are the ones that were also found to be significant predictors.

**Table 5.14: Summary of Important Correlates**

	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>Community Level</b>						
<b>Perception Solving Problems N = 44</b>	Weak	<b>Strong**</b>	Medium**	Weak*	Weak	Weak
<b>Incidence Improvements N = 46</b>	Weak*	Weak	Weak*	Weak	Weak	Weak
<b>Network Level</b>						
<b>Decrease Service Duplication N = 47</b>	Strong**	Medium**	Strong**	Strong**	Strong**	Weak*
<b>Improve Coordination N = 48</b>	Strong**	<b>Medium**</b>	Strong**	Strong**	Strong**	<b>Weak*</b>
<b>Goal Commitment N = 50</b>	<b>Strong**</b>	Medium*	Strong**	Strong**	Medium**	Weak*
<b>Organizational Level</b>						
<b>Organization N = 34</b>	Strong**	Medium*	Strong**	Strong**	Strong*	Weak

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

At the community level, financing, governance, and P&E were found to have a significant relationship to public perception that the network is solving problems. Furthermore, the regression analysis illustrated that financing is a significant predictor of there being a public perception that the network is solving problems. For the other measure of community-level effectiveness, improvements in the incidence of the problem, cohesiveness and governance had a statistically significant relationship; however, the regression analysis showed no statistically significant predictors. Furthermore, the regression analyses revealed that the predictors used in this analysis do not do a good job of explaining community-level effectiveness. There was not much

consensus on interviewees' explanations of these relationships with the exception that most of the interviewees thought there was a lack of recognition and understanding of their network by the public. Refer to table 5.14 for a summary of the significant correlates at the organizational level.

For the measures of effectiveness at the network level, many of correlates were found to be strongly correlated and statistically significant at the .01 level. The regression analyses further revealed that P&E and the number of rural environment problems were very close to being statistically significant predictors of decreases in service duplication, one measure of network-level effectiveness. Interviewees similarly explained that through planning a network can decrease service duplication, as well as the more rural problems there are the more likely people are to work together which decreases service duplication. For the second criterion, improvements in integration/ coordination, both financing and the number of rural environment problems were found to be statistically significant predictors. Interviewees were in consensus that rural problems are a motivation for improved integration/ coordination of services. Interviewees also agreed that cohesiveness, which was found to be strongly and significantly correlated with increased integration/ coordination, was important because services are more likely to be integrated/ coordinated if network members are friends and have know each other for a long time. Finally, for the last measure of effectiveness at this level, members' commitment to goals, cohesiveness was found to be a statistically significant predictor. All interviewees noted trust to be an important contributor to members' commitment to network goals. The regression analyses also pointed out that the correlates of effectiveness used in this analysis explain half of the measures used to

measure effectiveness at this level. Table 5.14 offers an overview of the correlates found to be important at the network level.

For organizational-level effectiveness, all of the correlates were significantly related with the exception of rural problems. However, the regression analysis revealed that there were no statistically significant predictors of organizational-level effectiveness. The regression analysis also illustrated that more than half of organizational effectiveness could be explained by the predictors used in this analysis. Refer to table 5.14 for a summary.

## **CHAPTER SIX**

### **COMPARING NETWORKS**

Analysis of all respondents in the previous chapter reveals some important correlates of effectiveness for all vertically integrated rural health networks. However, what makes one network effective may not be true for another. The following is an examination of effectiveness within each of the four field studies used in this research. Since the sample was small for both the Tioga County Partnership for Community Health (TCPCH) and the Roaring Fork Valley Community Health Plan (RFVCHP), analysis was limited to basic summary statistics for each. Because there were more respondents for the Community Health Information Collaborative (CHIC) and the Adirondack Rural Health Network (ARHN), more statistical analyses were run. Additionally, the TCPCH serves as an example of a network who is more analyzer-like in purpose, the RFVCHP and the CHIC serve as an examples of networks that are more defender-like in purpose, and the ARHN serves as an example of a network who is more prospector-like in purpose. Differences in network purpose may have some important implications for what makes each effective. Finally, interviews were conducted with representatives from each of the four selected networks, with the exception of the RFVCHP, which offer further insights into the findings of each network.

#### Tioga County Partnership for Community Health, PA

There were eight respondents from the TCPCH of which two were network employees and six were non-network employees. Of the network employees, one was the director and one was another type of employee of the network. Four of the non-network employees were board/ steering committee members and two were employees of

member organizations. Six (75%) of the respondents in this network responded that they had been in their network position for more than two years, while two responded that they had only been in their position for six months to a year. When asked about their role/position within their member organization, two (25%) responded that they were executive directors, two (25%) responded that they were physician/ specialists, and three (37.5%) responded that they were supervisor/managers.

### *Descriptive Statistics*

Descriptive statistics for the independent and dependent variables used in this analysis offer some insight into the effectiveness of TCPCH. The mean (21.88) and the mode (24.00) for cohesiveness indicate that most of the TCPCH respondents strongly agreed with many of the statements used to measure cohesiveness. This was also the case for governance where the mean among the TCPCH respondents was thirteen and the mode fifteen. Similarly, for personnel, many of the respondents agreed or strongly agreed with the questions used to measure personnel as indicated by the mean (18.13). Both the mean (15.75) and the mode (15.00) for P&E suggest that most respondents agreed, but not strongly, with many of the questions used to measure P&E. In contrast to the other correlates, more respondents disagreed with questions used to measure the financing of the TCPCH, as indicated by the mean (6.63) and the mode (4.00). Finally, for rural problems, eight was the average number of problems identified about the rural environment in which TCPCH operates with at least one respondent mentioning five and another eleven. In summary, TCPCH respondents were most favorable about their network's cohesiveness and governance and least favorable about financing in their network. For more descriptive statistics on these variables refer to table 6.1.

**Table 6.1: Descriptive Statistics for Independent Variables for the TCPCH**

		Cohesiveness	Financing	Governance	P & E	Personnel	Rural Problems
<b>N</b>	<b>Valid</b>	8.00	8.00	8.00	8.00	8.00	8.00
	<b>Missing</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Max Index Value Possible</b>		24.00	12.00	15.00	21.00	24.00	
<b>Mean</b>		21.88	6.63	13.00	15.75	18.13	8.25
<b>Median</b>		21.50	6.00	13.00	15.50	18.50	8.00
<b>Mode</b>		24.00	4.00	15.00	15.00	13.00	8.00
<b>Std. Deviation</b>		1.96	2.97	2.07	3.06	3.31	1.83
<b>Minimum</b>		19.00	4.00	9.00	10.00	13.00	5.00
<b>Maximum</b>		24.00	11.00	15.00	21.00	23.00	11.00

With regard to the dependent variables, i.e., the measures of effectiveness, many of the TCPCH respondents agreed or strongly agreed with many of the statements used to measure them. More respondents, than with the other measures, disagreed that there was a public perception that their network was solving the problem(s) it intends to address as indicated by the mean (1.75). In contrast, more respondents strongly agreed that there were changes in the incidence of the problem that the network addresses and that their network has improved coordination/ integration of services. In addition, most respondents strongly agreed that their members were committed to network goals, as indicated by the mean (2.75) and the mode (3.00). Finally, respondents mainly agreed or strongly agreed with many of the questions used to measure effectiveness at the organizational-level, as indicated by the mean (12.51) and the mode (12.00). Refer to table 6.2 for more descriptive statistics on these variables.

**Table 6.2: Descriptive Statistics for Dependent Variables for the TCPCH**

		Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>N</b>	<b>Valid</b>	8.00	8.00	8.00	8.00	8.00	6.00
	<b>Missing</b>	0.00	0.00	0.00	0.00	0.00	2.00
<b>Max Index Value Possible</b>		3.00	3.00	3.00	3.00	3.00	15.00
<b>Mean</b>		1.75	2.25	2.00	2.38	2.75	12.51
<b>Median</b>		2.00	2.00	2.00	2.00	3.00	12.00
<b>Mode</b>		2.00	2.00	2.00	2.00	3.00	12.00
<b>Std. Deviation</b>		0.71	0.46	0.53	0.52	0.46	2.06
<b>Minimum</b>		1.00	2.00	1.00	2.00	2.00	10.00
<b>Maximum</b>		3.00	3.00	3.00	3.00	3.00	15.00

*Interview Data*

One respondent was interviewed from the TCPCH, the Director of Finance and Operations. Initially, this respondent was asked about the characteristics in which their network respondents were least favorable, i.e., their network’s financing and the lack of a public perception that their network is solving the problems it intends to address. With regard to the network’s financing, the interviewee noted that respondents were most likely least favorable about their network’s financing because their network is entirely funded by grants. In board meetings, their network has discussed the need to be better at fund raising and they have just hired a sustainability counselor to aid in this process. The interviewee also explained that there is a lack of public perception that their network is solving the problems it intends to address because in the past they have not taken the credit for their network’s accomplishments. They recognize the need to change this, as a hired consultant for their network noted that the public would not be likely to donate if they don’t know who they are.

The interviewee was also asked about the many network correlates and measures of effectiveness about which their network respondents were favorable. When asked about the cohesiveness of their network, it was noted that this could be attributed to the personalities of their group, i.e., that the people in their network were selfless and concerned for the greater good. The interviewee also explained that their respondents were favorable about their network's governance because they have bi-laws and a very clear mission statement. When problems arise for the network, the mission statement is often referred to for clarity. Planning and evaluation was another network characteristic about which TCPCH respondents were favorable. It was noted by the interviewee that respondents were favorable about their P&E because they try to keep strategic planning on the forefront of the decision making process. Evaluation is also something that they try to keep strong and often evaluate the things that they do with surveys. For example, they give out a Youth Survey which asks sixth graders about such things as their drug use. They also have a survey for healthy lifestyles which helps them assess the health impacts they have had on the communities they serve.

With regard to the measures of effectiveness, TCPCH respondents were said to be favorable about there being improvements in the incidence of the problem their network addresses because they have improved quite a bit with regard to tobacco use; however, less improvement has been seen in other problem areas. With regard to the TCPCH respondents' positive perception about their network's ability to improve coordination/coordination of services, it was explained that their network has a number of work groups, about fifteen to twenty, which focus on certain problems. Within these work groups, members talk with each other and are able to determine if they have any

redundancies and try to make sure that their services do not overlap. Furthermore, network members are not competitive with each other and work together to achieve the network goals. These reasons were also given for why the TCPCH respondents were favorable about their network's ability to decrease service duplication. The TCPCH respondents were also said to be favorable about their member's commitment to network goals because it is easy to believe in what the network is doing when it is improving the health of the community. Additionally, among all of their work groups, there is usually something in which each of their members is interested, which helps to keep them committed to the network. Finally, the interviewee was asked why the respondents from the TCPCH were favorable about the benefits of their network for their members. It was noted that their members benefit most from the information they receive from the various network participants. Grant money for certain projects, such as for drug recovery month, was also mentioned as a benefit for network members.

Finally, the TCPCH respondent was asked to comment on the contribution of their network demographics (e.g. population served, years in existence, size, etc.) to their network's effectiveness. With regard to the population their network serves, it was noted that their population has many problems, such as low education and consequently low income and unhealthy behaviors. Lack of transportation is also a problem for much of the served population prohibiting them from receiving services. In sum, the multiplicity of problems experienced by their population make it harder for their network to be effective. The number of years the network has been in existence was said to have positively impacted their network's effectiveness. It was explained that because their network has been in existence for thirteen or fourteen years, their funders know who they are and they

have a good reputation with them. Additionally, their network also has been able to collect long-term data to show how effective their network has been. The strong relationships that their network has built over the years have also helped, as they feel the network is doing a good job and aid them. Finally, the composition and size of their network has also had an impact on their network's effectiveness. The composition has had a positive effect because everyone in education and counseling is involved in their network. Those involved in the network are also influential people within the community who will and do make any needed changes to make things happen. With regard to size, they have three hundred and fifty correspondents in the network. Because this is a large number of people, they use small work groups to deal with specific goals which make the size of their network more workable.

#### *Summary of TCPCH*

Overall, the respondents from the TCPCH seem to be most favorable about the cohesiveness and governance of their network which they attribute to their selfless members and their bylaws and clear mission statement. They also most strongly agree that their network members are committed to network goals, that their network has improved integration/coordination of services, that their network has made improvements in the incidence of the problem(s) that it addresses, and that their member organizations have benefited from the network in various ways. They are least favorable about financing in their network and that there is a public perception that their network is solving the problem(s) it intends to address. Responses from the TCPCH are similar to those of all respondents in that they are most favorable about their network's cohesiveness, as well as are most optimistic about the same measures of effectiveness

(e.g., members are committed to network goals). Similarly, like all respondents, the TCPCH respondents are least favorable about financing in their network and that there is a public perception that their network is solving the problem(s) it intends to address.

#### Roaring Fork Valley Community Health Plan, CO

Respondents from this network totaled seven and consisted of one network employee, which was the director of the network, and six non-employees. Non-network employees consisted of five (71.4%) board/ steering committee members and one (14.3%) development consultant. When asked how long each of the respondents had been in their network position, most (85.7%) responded more than two years, while one responded up to two years. Five (71.4%) of the respondents for this network responded that they held executive director positions within their organizations and two (28.6%) responded that they held administrator positions.

#### *Descriptive Statistics*

Descriptive statistics of the independent variables suggests that respondents in the RFVCHP mainly agreed or strongly agreed with many of the questions used to measure cohesiveness, as indicated by the mean (17.57) and mode (17.00). This was also the case with governance and personnel. Fewer respondents, however, were in agreement with questions regarding financing and P&E for the RFVCHP. The mean (7.86) for financing suggests that respondents did disagree with some of the statements regarding financing in their network. Similarly, the mean (17.43) for P&E suggests that some respondents disagreed with some of the questions regarding P&E in their network. Overall, these statistics infer that respondents were most favorable about the personnel in their network,

as indicated by the mean (17.43), and were least favorable about P & E and financing in their network. Refer to table 6.3 for more descriptive statistics for these variables.

**Table 6.3: Descriptive Statistics for Independent Variables for the RFVCHP**

		<b>Cohesiveness</b>	<b>Financing</b>	<b>Governance</b>	<b>P &amp; E</b>	<b>Personnel</b>	<b>Rural Problems</b>
<b>N</b>	<b>Valid</b>	7.00	7.00	7.00	7.00	7.00	7.00
	<b>Missing</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Max Index Value Possible</b>		24.00	12.00	15.00	21.00	24.00	
<b>Mean</b>		17.57	7.86	10.14	12.59	17.43	5.71
<b>Median</b>		17.00	8.00	10.00	12.00	17.00	6.00
<b>Mode</b>		17.00	8.00	8.00	12.00	17.00	4.00
<b>Std. Deviation</b>		2.70	1.46	2.61	3.37	2.82	2.14
<b>Minimum</b>		13.00	6.00	8.00	7.00	13.00	3.00
<b>Maximum</b>		21.00	10.00	15.00	18.00	21.00	9.00

Analysis of the descriptive statistics for the dependent variables, demonstrates that most of the respondents agree, but not strongly, that there is a public perception that the network is solving the problem(s) it intends to address and that the network is improving coordination/ integration of services. Respondents are less likely to agree that their network is decreasing service duplication, as suggested by the mean (1.83) and that their network is effective at the organizational-level, as suggested by the mean (9.83). On the contrary, more respondents strongly agree that there are changes in the incidence of the problem that their network addresses, as indicated by the mean (2.17) and minimum (2.00), and that network members are committed to network goals, as also indicated by the mean (2.29) and minimum (2.00). Refer to table 6.4 for more detail on these variables.

**Table 6.4: Descriptive Statistics for Dependent Variables for the RFVCHP**

		Perception Solving Problems	Incidence Improvements	Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>N</b>	<b>Valid</b>	7.00	7.00	6.00	5.00	7.00	5.00
	<b>Missing</b>	0.00	0.00	1.00	2.00	0.00	2.00
<b>Max Index Value Possible</b>		3.00	3.00	3.00	3.00	3.00	15.00
<b>Mean</b>		2.00	2.17	1.83	2.00	2.29	9.83
<b>Median</b>		2.00	2.00	2.00	2.00	2.00	10.00
<b>Mode</b>		2.00	2.00	2.00	2.00	2.00	10.00
<b>Std. Deviation</b>		0.82	0.37	0.41	0.71	0.49	1.80
<b>Minimum</b>		1.00	2.00	1.00	1.00	2.00	7.00
<b>Maximum</b>		3.00	3.00	2.00	3.00	3.00	12.00

*Interview Data*

No interview was obtained for this network. Attempts were made to arrange an interview with the main correspondent from this network; however, no interview was able to be arranged and no other network affiliates were able to be contacted.

*Summary of RFVCHP*

Overall respondents from the RFVCHP were most favorable about their network’s cohesiveness and personnel, as well as most strongly agreed that their network members were committed to network goals and that their network was making improvements in the incidence of the problem. RFVCHP respondents were least favorable about their financing and P&E and were least likely to agree that their network had decreased service duplication and benefited the member organizations. Responses from the RFVCHP respondents were similar to responses from all respondents in that they were most favorable about their network’s cohesiveness and personnel, as well as that their network members were committed to network goals and that their network had

made improvements in the incidence of the problem. Also like all respondents, the RFVCHP respondents were least optimistic about their network's financing and that it had decreased service duplication. They differed from other respondents in that they were not as favorable about their network's P&E and the benefits of their network for the member organizations.

#### Community Health Information Collaborative, MN

There were sixteen respondents from this network of which four (25%) were network employees and eleven (68.8%) were non-network employees. One respondent did not indicate whether they were a network employee or not. Of the network employees, one was the director, one was the executive administrative assistant, and two were other network employees. Most, nine, of the non-network employees were steering committee members for the network, while one was an employee of a member organization and one was a consultant/ project leader for the network. Slightly more than half (56%) of the respondents from this network indicated that they had been in their network position for more than two years, while fewer (37.5%) responded that they had been in their network position for up to two year. Five (31.3%) of the respondents replied that they were administrators in their organizations, with one noting that they were an executive director and another that they were a physician/ specialist. Three (18.8%) of the respondents responded that they were supervisor/ managers within their organizations and four (25%) responded that they were directors.

#### *Descriptive Statistics*

Descriptive statistics of the independent variables show that most CHIC respondents think favorably about the cohesiveness, financing, governance, P&E, and

personnel within their network. More specifically, CHIC respondents were more likely to strongly agree with the statements used to measure their network’s personnel, as indicated by the mean (19.02), the mode (20.00), as well as with the statements used to measure their networks cohesiveness, as indicated by the mean (18.44). They were slightly less likely to strongly agree with the statements measuring their network’s financing, governance, and P&E. For example, while the mean (10.56) for governance suggests that some respondents indicated the strong agreement choice with some of the statements measuring their network’s governance, the mode (10.00) indicates that more people just chose the choice of “agree” with many of the statements. Similarly, for financing, the mean (8.75) suggests that some respondents strongly agreed with some of the statements measuring financing in their network, while the mode (8.00) points out that most just agreed with many of the statements. This is also the case for P&E. Finally, five was the average number of problems identified in the rural environment in which this network operates with seven being the most frequent number of problems identified. Refer to table 6.5. for more descriptive statistics on these variables.

**Table 6.5: Descriptive Statistics for Independent Variables for the CHIC**

		<b>Cohesiveness</b>	<b>Financing</b>	<b>Governance</b>	<b>P &amp; E</b>	<b>Personnel</b>	<b>Rural Problems</b>
<b>N</b>	<b>Valid</b>	16.00	16.00	16.00	16.00	16.00	16.00
	<b>Missing</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Maximum Value</b>		24.00	12.00	15.00	21.00	24.00	
<b>Mean</b>		18.44	8.75	10.56	14.69	19.02	5.19
<b>Median</b>		18.50	8.00	10.00	14.00	19.00	5.00
<b>Mode</b>		16.00	8.00	10.00	14.00	20.00	7.00
<b>Std. Deviation</b>		3.86	1.91	1.86	3.05	2.75	3.27
<b>Minimum</b>		10.00	6.00	7.00	7.00	14.00	1.00
<b>Maximum</b>		24.00	12.00	14.00	20.00	24.00	12.00

For the dependent variables, the descriptive statistics demonstrate that most respondents agree that there is a public perception that their network is solving the problem(s) it intends to address, as well as agree that there are improvements in the incidence of the problem(s) their network addresses. Slightly fewer respondents agreed, as indicated by the mean (1.88) that their network had decreased service duplication since its inception. In contrast, more respondents strongly agreed that their network had improved coordination/ integration of services and that their network members were committed to network goals. Finally, respondents on average agreed with many of the statements measuring effectiveness at that organizational level suggesting that respondents thought favorably about their network’s accomplishments for the member organizations. Table 6.6 has the various descriptive statistics for these variables.

**Table 6.6: Descriptive Statistics for the Dependent Variables for the CHIC**

		Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>N</b>	<b>Valid</b>	14.00	15.00	16.00	16.00	16.00	10.00
	<b>Missing</b>	2.00	1.00	0.00	0.00	0.00	6.00
<b>Maximum Value</b>		3.00	3.00	3.00	3.00	3.00	15.00
<b>Mean</b>		2.00	2.00	1.88	2.13	2.31	10.70
<b>Median</b>		2.00	2.00	2.00	2.00	2.00	10.00
<b>Mode</b>		2.00	2.00	2.00	2.00	2.00	10.00
<b>Std. Deviation</b>		0.39	0.38	0.72	0.62	0.60	2.98
<b>Minimum</b>		1.00	1.00	1.00	1.00	1.00	5.00
<b>Maximum</b>		3.00	3.00	3.00	3.00	3.00	15.00

*Correlation Analysis*

Analysis of the correlations between these variables also offers some insight into the effectiveness of the CHIC. As with the analysis of all networks, all of the independent variables were strongly correlated with each other and significant at the .01

level with the exception of rural problems. The number of problems identified with the rural environment was not found to be significantly related to any of the other variables. Table 6.7 illustrates the correlation matrix for the independent variables for the CHIC respondents.

**Table 6.7: Correlation Matrix of Independent Variables for CHIC Respondents, N = 16**

	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
Cohesiveness	1					
Financing	.683**	1				
Governance	.826**	.865**	1			
P&E	.827**	.614**	.867**	1		
Personnel	.829**	.693**	.701**	.626**	1	
Rural Prob.	0.283	0.21	0.223	0.367	0.241	1

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

The correlation matrix for the dependent variables, table 6.8, shows that, as with all networks, the two measures at the community level are not strongly correlated with each other or significant. However, whether or not there is a public perception the network is solving the problems it intends to address is strongly correlated and significant at the .01 level with the variable service duplication. It is also moderately correlated and significant at the .05 level with the variables improve coordination and organization. The other measure of community-level effectiveness, incidence improvements, was only found to be moderately correlated and statistically significant with the variables improve coordination and organization. Measures at the network-level, i.e. service duplication, improve coordination, and goal commitment, were found to be both strongly correlated and significant at the .01 level with each other. Finally, organizational-level effectiveness was found to be moderately correlated and significant at the .05 level with both of the community-level measures of effectiveness and strongly correlated and significant at the

.01 level with all of the measures of network-level effectiveness. Refer to table 6.8 for more detail on these correlations.

**Table 6.8: Correlation Matrix of Dependent Variables for CHIC Respondents**

	Perception Solving Problems	Incidence Improvement	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>Perception Solving Problems</b> N = 14	1					
<b>Incidence Improvements</b> N = 15	0.264	1				
<b>Service Duplication</b> N = 16	.542**	0.221	1			
<b>Improve Coordination</b> N = 16	.372*	.386**	.586**	1		
<b>Goal Commitment</b> N = 16	0.238	0.153	.582**	.489**	1	
<b>Organization</b> N = 10	.353*	.423*	.597**	.659**	.585**	1

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

As with all respondents, correlation analysis of the independent and dependent variables reveals important information about the relationship between the proposed correlates of effectiveness and the CHIC effectiveness. To begin, for both measures of community-level effectiveness only financing and governance were found to be significant, as well as strongly correlated. P & E (p = .419) was found to be slightly less correlated than financing and governance with the perception that the network is solving its intended problems but was not found to be significant. This differs from the analysis of all networks combined where P&E was found to be significant with perception solving problems.

For the network-level measures of effectiveness, all of the structural correlates were found to be strongly and significantly related with the exception of the number of rural problems which was found to only be significantly related to decreased service

duplication. Overall, the structural correlates for the CHIC were much stronger than for those for all of the networks combined. This is particularly the case for financing in which it was very strongly correlated ( $p = .928$ ) with improvements in coordination. Governance was also very strongly correlated with all of the network-level effectiveness measures for the CHIC.

At the organizational level, both cohesiveness and personnel were not found to be statistically significant, although moderately correlated. This differs from the analysis with all networks, where all of the structural correlates were found to be significant. However, in the CHIC, financing ( $p = .833$ ), governance ( $p = .838$ ), and P & E ( $p = .579$ ) were found to be more strongly correlated with organizational-level effectiveness than they were in the analysis with all networks. Financing, in particular, in the CHIC was found to be much more strongly correlated. Refer to table 6.10 for more detail.

**Table 6.9: Correlation Matrix of Dependent Variables & Independent Variables for CHIC Respondents**

Dependent Variables	Independent Variables					
	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>Community Level</b>						
Perception Solving Problems N = 14	0.175	.521*	.598*	0.419	0.228	0
Incidence Improvements N = 15	0.144	.479*	.492*	0.24	0.2	0.059
<b>Network Level</b>						
Service Duplication N = 16	.597**	.799**	.804**	.681**	.597**	.521*
Improve Coordination N = 16	.617**	.928**	.861**	.622**	.586**	0.284
Goal Commitment N = 16	.768**	.766**	.844**	.783**	.720**	0.375
<b>Organizational Level</b>						
Organization N = 10	0.402	.883**	.838**	.739**	0.411	0.325

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

### *Interviews*

Two interviews were conducted with persons affiliated with this network. The first interview - was with the network executive director and the second was with a recently retired network employee, i.e., the Director of Business Operations and the Regional Immunizations Coordinator. The two respondents provided depth to the findings from the statistical analysis of the CHIC. In particular, the interview with the network employee offered insight into the leadership capabilities of the network's executive director.

To begin, the respondents were asked why they thought survey respondents from their network were least favorable about their network's ability to decrease service duplication. One of the respondents noted that it was because their network didn't really get involved in the provision of service. The other interviewee responded that there was a long standing competition between the two main hospitals in their network and that both were unwilling to work together to reduce duplication of services. It was noted that both hospitals had electronic medical records programs that were not compatible with each other but that neither was willing to give up their system.

Both respondents were also asked why survey respondents from their network were overall favorable about most things in their network, e.g., personnel, cohesiveness, financing, that there is a public perception they are solving problems, their network's ability to improve coordination/integration of services, their members commitment to network goals. With regard to personnel, one of the respondents noted that they don't have high turnover. The other respondents talked about the assets of the executive director noting that many have trust in her and that she refused to take a raise until the network was more established.

For cohesiveness, one of the respondents compared their network to Switzerland, whereby explaining that their network tries to be vary neutral and ensure that no one member gets more than the other. She further notes that they don't have turf battles. The second respondent also noted this explaining that members leave their own agendas at the door and focus on how they can best help each other. She also notes that their network makes a strong effort to keep members informed and therefore, their members trust them.

The Northern Minnesota attitude that people should work together was also attributed to their network's cohesiveness.

CHIC survey respondents were more favorable than other networks about their financing. When asked why one of the respondents explained that their network actually reduces its network membership fees if it can. She further explains that they have diverse sources of funding and often rely on grants to start a project but then only continue the project if it proves to be sustainable. They also have contracts with the State with whom they have done work in the past. The second interviewee attributed the optimism about financing in their network to the executive director explaining that she is very frugal and really tries to find programs that will best fit the network's needs.

Only one of the respondents chose to address why survey respondents in their network were favorable that there is a public perception that the networks is solving the problems it intends to address. Neither respondent really thought that the general public was aware that their network existed. However, the one interviewee noted that their network does have two highly visible projects, i.e., the immunization registry and emergency preparedness, that the public sees as two good projects,

Survey respondents were very favorable about their network's ability to improve integration/coordination of services. Interviewees' explanation for this varied. One respondent credited this to their RHIO project which is a patient data exchange that helps impact service utilization. The other respondent attributed the survey respondents' optimism to the fact that their network identifies what services are duplicated and looks for ways and partners who will improve coordination. This respondent gave several examples of how the CHIC has improved coordination/integration of services. One

example given was their VisionShare Program which provides DDE and direct claims submission to Medicare Part A & B and Homecare/Hospice for facilities in Minnesota and Wisconsin. Another example given was their Secured Password Program which manages website access and password assignment for business support staff. Prior to this program, business support staff in hospitals had to have a password for every insurance company to which they submitted claims. The Secured Password Program manages their passwords and assigns support staff one password to use for all insurance companies. The last example given was the USAC Program in which the CHIC helps providers apply for a small fee. The USAC program gives rebates to rural providers for their telecommunications costs. It was noted that one rural provider could receive as much as \$60,000 a year in rebates from being enrolled in this program.

Finally, when asked why survey respondents from their network were favorable about their members being committed to network goals one respondent replied that their network goals were developed together with the help of the members and that what the network does is done for the region's needs versus what one member or county wants. The other interviewee discussed the network director's business planning abilities and told of how a recent national award they received was passed around so that each member involved could have their turn housing it. The network wanted to make sure that everyone was able to share in the recognition of the reward.

#### *Community-Level Effectiveness*

CHIC respondents were asked to explain some of the differences between the findings from their network and among all networks. With regard to community-level effectiveness, respondents were asked why they thought their network's financing was

found to be positively related to their being improvements in the incidence of the problem that their network addresses, as it was not found to be so among all networks. The one respondent who answered this question attributed this to the network executive director's ability to deal with finances. She noted that they get one-third of their money from grants, one-third from membership fees, and one-third from long-term projects. They usually try an idea out with grants and then later decide if the idea is worth spending more money. In sum, she made clear that they don't want to put all of their eggs in one basket.

#### *Network-Level Effectiveness*

Among all respondents, the number of rural problems was found to be a significant predictor of improved integration/ coordination of services; however, in the CHIC the number of rural problems was not found to be significantly related. When asked about this, one of the respondents stated that rural providers maybe more likely to be isolated due to lower reimbursement rates for services in rural areas. As explained in the fifth chapter, respondents also offered explanations for why their network's personnel, cohesiveness, financing, P&E, and governance might be positively related to improved integration/ coordination of services.

. Among CHIC respondents, the number of rural problems was not found to be significantly related to the commitment of network members, as it was among all respondents. When asked to explain this relationship, one of the respondents explained that their network realizes it cannot solve all problems. Therefore, their network only chooses the ones to address that they think they can impact.

### *Organizational-Level Effectiveness*

Respondents were asked to address why cohesiveness and personnel were not found to be significantly related to member benefits in their network, while they were in other networks. Only one respondent commented and only about the lack of relationship between personnel and member benefits. They stated that no one person in their network thinks that the network would fall a part if they left, i.e., they realize that the network will continue with out them.

### *Overall Effectiveness of CHIC*

With regard to the CHIC's overall effectiveness, both governance and financing were found to be the most strongly related. As such, both respondents were asked why they thought these two correlates were found to be so strongly related to their effectiveness. The first respondent made it clear that their governance structure never decides to do something unless they think they will succeed at it. Furthermore, they don't do something unless the director knows that it will have a positive balance sheet. It was noted that their network has never raised their network dues but has increased the services provided. The second respondent explained that their network went through a strategic planning meeting, lasting one day, where they looked at their network's mission and goals and got input from all of their members. At this meeting, network members left their own agendas at the door and focused solely on the CHIC.

### *Network Demographics*

Questions about the contribution of their network demographics (e.g. population served, years in existence, size, etc.) to their network's effectiveness were also asked. With regard to their network's age, the first respondent explained that they have

legitimacy because of their age and that there is no question whether their network is going to survive or not. The second respondent stated that although their network was not that old, that both she and the director brought their expertise and connections to the network at its advent. Thus, the network was able to build on their previous expertise and connections. When asked about size, the first respondent stated that there is no exclusiveness in their network and that they try to include everyone along the continuum of health. This is advantageous because it allows the network to get various perspectives in the health arena. The second respondent made clear that the people in the network are very innovative and help one another out. Finally, when asked about the effect of the population they serve on their network's effectiveness, both respondents spoke of the eighteen counties in which they do the immunization registry. The second respondent explained that their services have been well received because many providers welcomed the service they were promoting. The first respondent also clarified that these eighteen counties are known for working well together.

#### *Summary of CHIC*

Overall, the CHIC respondents are most favorable about their network's personnel, although they are also very positive about cohesiveness, financing, governance and P&E in their network. CHIC respondents are also the most optimistic that their network is improving integration/ coordination of services and that their members are committed to network goals which are both measures of network-level effectiveness. The CHIC respondents are like all respondents in their optimism about their personnel, their member's commitment to network goals, and their network's ability to improve coordination/integration of services. Similarly, they are like other respondents in their

pessimism about their network's ability to decrease service duplication. Unlike other respondents, the CHIC respondents were favorable about their network's financing, as well as that there is a public perception that their network is solving the problems it intends to address. The correlation matrices further reveal that the CHIC is similar to other networks in that financing and governance are significantly related to their community-level effectiveness. Similarly, analysis of the CHIC responses also illustrates that the CHIC is similar to other networks in that all of the correlates, with the exception of rural problems, are strongly correlated and statistically significant at the .01 level with the network-level measures. Finally, at the organizational level, governance, financing, and P&E were all found to be significantly related to effectiveness among both the CHIC and all respondents. However, cohesiveness and personnel were not found to be significantly related, as they were for all respondents.

#### Adirondack Rural Health Network, NY

There were nineteen respondents from this network, two (10.5%) of which were network employees and fifteen (78.9%) were non-network employees. Two respondents did not respond to this question. Network employees consisted of one director and one other staff and non-network employees consisted of twelve board/steering committee members, two employees of member organizations, and one citizen of the community in which the network serves. Thirteen (68.4%) of the respondents in this network answered that they had been in these network positions for more than two years, while two (10.5%) responded that they had only been in their network position for up to two years and one responded six months to a year. These respondents varied as to their roles/positions

within their individual organizations. Three (15.8%) are administrators, six (31.6) are executive directors, and seven (36.8%) are directors.

### *Descriptive Statistics*

Analysis of the descriptive statistics for the independent variables shows that respondents were favorable about their network's cohesiveness, governance, P&E, and personnel but were less favorable about their financing. More specifically, the ARHN respondents were most favorable about their network's cohesiveness as indicated by the mean (20.56) and mode (24.00) which illustrate that many respondents strongly agreed with many of the statements measuring their network's cohesiveness. Similarly, respondents were very favorable about their network's personnel, as indicated by the mean (20.19) and mode (20.00), as well as their P&E as indicated by the mean (15.63) and mode (15.00). Respondents were slightly less favorably of their network's governance but still agreed with many of the statements used to measure them both. As noted, ARHN respondents were less favorable about their network's financing as demonstrated by the mean (6.84) and the mode (6.00) which infers that many of the respondents disagreed with some of the statements measuring financing in their network. Finally, eight was the average number of rural environments problems identified by ARHN respondents. Table 6.10 provides more detail on these descriptive statistics.

**Table 6.10: Descriptive Statistics for the Independent Variables for ARHN Respondents**

		Cohesiveness	Financing	Governance	P & E	Personnel	Rural Problems
<b>N</b>	<b>Valid</b>	19.00	19.00	19.00	19.00	19.00	19.00
	<b>Missing</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Max Index Value Possible</b>		24.00	12.00	15.00	21.00	24.00	
<b>Mean</b>		20.56	6.84	11.12	15.63	20.19	7.47
<b>Median</b>		21.00	7.00	11.00	15.09	20.00	8.00
<b>Mode</b>		24.00	6.00	10.00	15.00	20.00	8.00
<b>Std. Deviation</b>		3.10	1.77	1.89	3.11	2.63	2.65
<b>Minimum</b>		16.00	4.00	8.00	10.00	16.00	2.00
<b>Maximum</b>		24.00	11.00	15.00	21.00	24.00	13.00

Analysis of the dependent variables for the ARHN respondents demonstrates that most respondents either agreed or strongly agreed that there were improvements in the incidence of the problem that their network addresses, that their network improved coordination/ integration of services, and that their members were committed to the network goals. As indicated by the mean (11.10) and mode (10.00) many of the ARHN respondents also either agreed or strongly agreed with many of the statements regarding their network's benefits for the member organizations, suggesting that many of the respondents were favorable about their network's effects on the member organizations. Fewer of the respondents agreed that there was a public perception that the network was solving the problem(s) it intends to address, as suggested by the mean (1.72). Additionally, fewer respondents agreed that their network had decreased service duplication, although most were in agreement as suggested by the mean (1.99) and the mode (2.00). Refer to table 6.11 for more detail on these variables.

**Table 6.11: Descriptive Statistics for Dependent Variables for ARHN Respondents**

		Perception Solving Problems	Incidence Improvements	Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>N</b>	<b>Valid</b>	15.00	16.00	17.00	19.00	19.00	13.00
	<b>Missing</b>	4.00	3.00	2.00	0.00	0.00	6.00
<b>Max Index Value Possible</b>		3.00	3.00	3.00	3.00	3.00	15.00
<b>Mean</b>		1.72	2.25	1.99	2.47	2.58	11.10
<b>Median</b>		2.00	2.00	2.00	2.00	3.00	11.00
<b>Mode</b>		2.00	2.00	2.00	2.00	3.00	10.00
<b>Std. Deviation</b>		0.59	0.45	0.50	0.51	0.51	1.79
<b>Minimum</b>		1.00	2.00	1.00	2.00	2.00	9.00
<b>Maximum</b>		3.00	3.00	3.00	3.00	3.00	15.00

*Correlation Analysis*

Correlation analysis of the independent variables offers some insight into their interrelationships within the ARHN. Unlike all the networks and the CHIC, financing in ARHN was not found to be highly correlated or significant with any of the other variables except for governance. Financing was found to be moderately correlated and significant at the .05 level with governance. As with all the networks and with the CHIC, all of the other variables, with the exception of rural problems, were found to be strongly correlated with each other and significant at the .01 level. The number of identified problems in the rural environment was, however, found to fairly strongly correlated and significant at the .05 level with cohesiveness. Table 6.12 contains the correlation matrix of independent variables for the ARHN respondents.

**Table 6.12: Correlation Matrix of Independent Variables for ARHN Respondents, N = 19**

	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>Cohesiveness</b>	1					
<b>Financing</b>	0.088	1				
<b>Governance</b>	.651**	.492*	1			
<b>P&amp;E</b>	.594**	0.218	.523*	1		
<b>Personnel</b>	.867**	0.18	.544**	.617**	1	
<b>Rural Prob.</b>	.495*	-0.361	0.202	-0.022	0.273	1

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

Similarly, correlation analysis of the dependent variables reveals important relationships among the effectiveness criteria within the ARHN. As with all networks and the CHIC, the community-level measures of effectiveness were weakly correlated and not significant with each other. Decreases in service duplication had the strongest correlation (.702) and was the most significant with perception the network is solving problems. Both improving coordination and goal commitment were moderately correlated and statistically significant at the .05 level with perception the network is solving problems. For the other measure of community-level effectiveness, incidence improvements, none of the other measures were statistically significant. Only improve coordination and organizational-level effectiveness was moderately correlated with it. All of the network-level measures of effectiveness were moderately to strongly correlated with each other, as well as were significant at the .01 level. Finally, effectiveness at the organizational level was moderately correlated with both measures at the community-level but not significant and was strongly correlated and significant at the .01 level with all of the measures at the network-level. Refer to table 6.13 for more detail.

**Table 6.13: Correlation Matrix of Dependent Variables for ARHN Respondents**

	Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
Perception Solving Problems N = 15	1					
Incidence Improvements N = 16	0.263	1				
Service Duplication N = 17	.702**	0.125	1			
Improve Coordination N = 19	.384*	0.332	.552**	1		
Goal Commitment N = 19	.350*	0.095	.557**	.434**	1	
Organization N = 13	0.407	0.383	.620**	.634**	.729**	1

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

Finally, correlation analysis of the dependent and independent variables further illustrates some interesting findings on the interrelationships between the possible correlates of effectiveness and the ARHN's effectiveness. Unlike with all the respondents and the non-network employees, governance ( $p = .682$ ) was found to have the strongest correlation with the extent to which there was a public perception that the network was solving the problem(s) it intends to address. Both governance and financing were the only two significant correlates. However, these results under-represent the significance of evaluation which, when separated from planning in a preliminary analysis, was found to be significant at the .05 level. Interview respondents did not offer further explanation about the significance of evaluation in their network. For the second measure of the community level effectiveness for the ARHN, i.e., incidence improvements, only personnel and cohesiveness were found to be statistically significant with personnel ( $p = .550$ ) the most strongly correlated. Refer to table 6.14 for more detail.

**Table 6.14 Correlation Matrix of Dependent Variables & Independent Variables for ARHN Respondents**

Dependent Variables	Independent Variables					
	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Prob.
<b>Community Level</b>						
Perception Solving Problems N = 15	0.277	.601**	.682**	0.374	0.226	0.027
Incidence Improvements N = 16	.433*	0.311	0.331	0.268	.550*	-0.185
<b>Network Level</b>						
Service Duplication N = 17	0.357	0.061	.439*	.564**	0.293	-0.003
Improve Coordination N = 19	.522*	.454*	.395*	0.254	.631**	0.193
Goal Commitment N = 19	.488*	0.107	.577**	.532**	0.27	0.198
<b>Organizational Level</b>						
Organization N = 13	.532*	.481*	0.429	.486*	.538*	-0.182

\*\* Correlation significant at .01 level (1-tailed)

\* Correlation significant at .05 level (1-tailed)

At the network level, for the measure “service duplication,” P & E ( $p = .564$ ) governance ( $p = .439$ ), and planning ( $p = .420$ ) were the only structural correlates found to be significant, as well as moderately to strongly correlated. For the second measure of network-level effectiveness, “improve coordination,” more of the structural correlates were found to be significant with the exception of P&E. Both personnel ( $p = .631$ ) and cohesiveness ( $p = .522$ ) were found to be strongly correlated with improved coordination in ARHN with financing ( $p = .454$ ) and governance (.395) less strongly correlated. For

the final measure of network-level effectiveness, goal commitment, only three of the five structural correlates were found to be significant with governance ( $p = .577$ ) being the most strongly correlated followed by P&E ( $p = .532$ ), and cohesiveness ( $p = .488$ ). These results, however, slightly over-represent the significance of evaluation, as it was not found to be significant alone. Overall, there were fewer significant structural correlates of effectiveness at the network-level for ARHN and the correlations tended to be less strong, as compared to those for all networks combined. Refer to table 6.14 for more detail.

For organizational-level effectiveness, governance was the only structural correlate found to not be significant, differing from the analysis of all the networks where all of the structural correlates were found to be significant. Both personnel ( $p = .538$ ) and cohesiveness ( $p = .532$ ) were found to be strongly correlated to organizational-level effectiveness followed closely by P&E ( $p = .486$ ) and financing ( $p = .481$ ). The number of identified problems in the rural environment was found to be negatively correlated with organizational-level effectiveness. For more detail on the correlates of effectiveness for the ARHN and their significance refer to table 6.14.

### *Interviews*

Interviews were conducted simultaneously with two respondents from the ARHN, the network director and the director of one of the member organizations. Initially, respondents were asked about the network characteristics, about which their respondents were least favorable. When asked why their members were least favorable about financing in their network, the respondents explained that their network does not provide direct services but serves as a facilitator and convener. They do provide matching funds

and administration services to members, as well as help obtain grant funds to generate a new idea for the network. It was noted that more recently their network has been flat funded with the exception of last year in which there was an increase in their funding. With regard to the lack of favorability about their network's ability to decrease service duplication, the respondents felt that the respondents from their network may not have understood the question. They feel that the members of their network use whatever resources that they can and that they try to enhance what each other does. It was further explained that their service area is completely HPSA designated for primary, mental, and dental health so there are not enough services for them to be duplicated. Finally, the respondents were asked why they thought respondents from their network were least favorable about their being a public perception that their network is solving problems. The respondents pointed out that their network works behind the scenes. They compared their network to a secret Santa, whereby when money is received, it is given to the members to do the hiring and implementing. As with the CHIC, it was explained that the public is not really aware of their network.

Both respondents were also asked about those characteristics that respondents from their network were most favorable, i.e. their network's cohesiveness, P&E, ability to improve integration/ coordination, members' commitment to network goals, and the benefits of their network for network members. With regard to their network's cohesiveness, the respondents noted that they live in an area where everyone is working together. The one respondent also mentioned that the other respondent is a strong leader in the region and has built a lot of trust among the network members. Furthermore, their network is the only regional form for professionals to discuss challenges and solutions.

The respondents explained that respondents from their network were favorable about their network's ability to improve integration and coordination of services because their members see that the network is a way to work together and they talk about how they can provide services together. Furthermore, before investing members' money in an idea the network tests the waters so that members do not assume the full financial responsibility. With regard to their members' commitment to network goals, the respondents explained that their network subcommittees really work to achieve goals in which everyone believes, i.e., the goals that are set are the ones in which everyone believes. Furthermore, goals are set through shared strategic processes which are then put forth in a work plan that goes to the state for approval. Finally, the respondents noted that the respondents from their network were favorable about the benefits of their network for its members because the grant money brought in by the network is phenomenal. Their network has gotten grant money for such things as mental health housing, programming, integration services, and planning. Grant money is shared among the network members with members taking turns as recipients, i.e., one year the network will focus on oral health and the next on mental health so that all members get their needs met and receive funds from the network at some point.

#### *Community-Level Effectiveness*

As with the CHIC respondents, ARHN respondents were asked to explain some of the ways in which their network's correlations varied from those with all respondents. To begin, at the community-level, governance was found, among all networks, to be positively related to improvements in the incidence of the problem; however, it was not found to be strongly related in the ARHN. When asked for a possible explanation, the

respondents clarified that their network is not incorporated, i.e., it is not a 501C3 and that they are under a lead agency, the Upper Hudson Primary Care Consortium (UHPCC), which is incorporated as a 501C3. Furthermore, the ARHN does not have a governance committee but has a steering committee and works with a memorandum of agreement (MOA) to which each network member agrees. The MOA is a nine to ten page document that outlines such things as how their network does decision making, how they operate, who the members will be, how they will get work done, how they will vote for a chairperson, how they will setup a committee, etc. Each member is expected to sign the MOA. Thus, the ARHN has no legal authority and employees of the ARHN are actually employees of the UHPCC.

#### *Network-Level Effectiveness*

With regard to network-level effectiveness, respondents were asked why they thought P&E was found to be insignificant to their network's ability to improve integration/ coordination of services, as it was found to be significant among all networks. Respondents explained that it may be due to their lack of evaluation. They stated that their network devotes so much time to planning but not to evaluation due to the difficulty of measurement, especially since their network does not provide direct services.

Respondents were also asked to explain why financing, personnel, and the number of rural problems were not found to be significant to their members' commitment to network goals. These variables were found to be significant among all networks. The respondents stated that they worry about financing, personnel, and the number of rural problems later and know that they will come.

### *Organizational-Level Effectiveness*

With regard to the organizational-level of effectiveness, respondents were asked to address why governance in their network was found to be least related to their network members benefiting from their network, while it was found to strongly and significantly related among all networks. Respondents explained that their members are not board members of the UHPCC, which is the lead agency, and do not make any decisions. The UHPCC provides oversight and approval of ARHN projects, with the ARHN steering committee determining budget and mission and goals. It is the impression of ARHN respondents that this sort of arrangement provides a friendlier environment. There are mixed feelings within the network about becoming incorporated because there is fear that one member may become more dominate.

### *Network Demographics*

Finally, the ARHN respondents were asked about the influence of their network demographics on their network's effectiveness. As time was running short in the interview, respondents only chose to address the age and composition of their network. With regard to age, the respondents explained that because they have been in existence for a number of years that have a strong base for good, honest dialogue. Furthermore, they have a history of successful collaboration which makes people want to be on their team because they know they are honest and fair. As for their composition, respondents stated that the natural geography lends itself to collaboration because members are in different markets reducing competition. For example, public health entities all have

different services and areas for which they are responsible and do not compete with one another. Additionally, because many of their members are public health agencies they are not competitive with each other like a for profit business making it easier for collaboration. It was also noted that the political environment in New York supports collaboration and efficiency and effectiveness in health care delivery.

#### *Summary of ARHN*

Analysis of the ARHN illustrates that the ARHN respondents are most favorable about their network's cohesiveness, personnel and P&E, as well as were most optimistic that their network has made improvements in the incidence of the problem, has improved integration/coordination of services, has provided benefits to their member organizations, and that their members are committed to network goals. ARHN respondents are least favorable about their networks financing, whether or not their network has decreased service duplication, and if there is a public perception that their network is solving problems. As such, responses of ARHN respondents mirror those of all respondents combined. However, analysis of the correlation matrices reveals several differences between ARHN respondents and all respondents. To begin, not all of the correlates were found to be significantly related to all of the network-level measures, as they were with all respondents. For example, both financing and personnel were found to be statistically insignificant and not very strongly correlated with two of the measures of network-level effectiveness. At the organizational level, governance was not found to be statistically significant or strongly correlated with effectiveness for the ARHN, where it was the most strongly correlated and significant among all respondents. Interestingly, the ARHN

differed from the CHIC most at the organizational level, where cohesiveness and personnel were the most significantly related, where they were not at all for the CHIC.

### Summary of Analysis Comparing Networks

#### *Independent Variables*

Analysis of the descriptive statistics for the correlates of effectiveness reveals some similarities among networks. To begin, respondents were most favorable about their network's cohesiveness and personnel. When asked why, the interviews revealed that the networks were favorable about their network's cohesiveness for a variety of similar reasons. One interviewee mentioned the lack of turf battles in their network and another mentioned the importance of keeping their members informed to promote trust. Two of the interviewees mentioned the ability of their members to work together with another noting the importance of their network leadership who has built a lot of trust among their network members. A last respondent explained that their network is cohesive due to the selflessness of their members and the fact that many of them having been working together for decades. With regard to their network personnel, there was less insight from interviewees. One interviewee commented that they don't have high turnover in their network and another noted that all the critical organizations were involved in their network and that they had eight employees. Respondents were also very favorable about governance in their network with respondents in the TCPCH being very positive about it and respondents from the other networks being slightly less. Only the interviewee from the TCPCH commented on their governance noting that they have bi-laws and a clear mission statement to which they often refer for clarity. Table 6.15 offers

a summary of how favorable each network was about the possible correlates of effectiveness with high meaning very favorable and low meaning least favorable.

**Table 6.15: Degree of Favorable Ratings for Independent Variable by Network**

	Cohesiveness	Financing	Governance	P&E	Personnel	Rural Problems
<b>TCPCH</b>	High	Low	High	Medium	High	8
<b>RFVCHP</b>	High	Low	Medium	Low	High	5.71
<b>CHIC</b>	High	Medium	Medium	Medium	High	5.19
<b>ARHN</b>	High	Low	Medium	High	High	7.47
<b>ALL Respondents</b>	High	Low	High	Medium	High	6.62

On the contrary, respondents were least favorable about financing in their networks with the exception of the CHIC who was moderately optimistic about it. Both the respondents from the ARHN and the TCPCH commented that they rely primarily on grant money for their network’s funding. One of these interviewees also noted the need for their network to do better at fund raising. CHIC respondents differed from other respondents noting that they have diverse funding which includes contracts from the State. The CHIC, unlike the ARHN and the TCPCH, also collect member fees and will reduce fees if they can. One of the CHIC respondents further explained that their executive director is very frugal and only searches for programs to fit their needs.

With regard to the remaining correlate of effectiveness, P&E, respondents were more mixed. The ARHN was very optimistic about P&E in their network, while RFVCHP was least favorable. The CHIC and the TCPCH were moderately complimentary of P&E in their network. The interviewee from the ARHN explained that their network is the only regional forum to discuss challenges and solutions. It was also

mentioned that a considerable amount of time was spent on planning in their network but that they lacked evaluation. The interviewee from the TCPCH noted that they try to keep strategic planning on the forefront of decision making in their network, as well as try to keep evaluation strong via the use of surveys. Overall, analysis of the descriptive statistics for the correlates of effectiveness reveals that networks were more favorable about their network's cohesiveness and personnel and least favorable about their network's financing. This suggests that both personnel and cohesiveness may be important correlates for overall network effectiveness, as the networks chosen for this analysis were chosen based on their effectiveness.

#### *Dependent Variables*

Analysis of the descriptive statistics for the measures of effectiveness also reveals some similarities across networks. Overall, most of the networks were very optimistic that their network had made improvements in the incidence of the problem it addresses. However, only one of the interviewees noted an improvement in the incidence of one of the problems they are addressing, i.e., decreased tobacco use. Most networks were also optimistic that their network had improved integration/ coordination of services and that their network members were committed to network goals. With regard to improved integration and coordination of services, two interviewees discussed the recognition of the network as a way for members to work together. One interviewee commented that in working together redundancies are realized and addressed by network members. The CHIC interviewees described the services that their network helps to provide in order to improve integration and coordination, such as a patient data exchange and password management for insurance billing. With regard to member commitment to network

goals, most of the interviewees noted the importance of developing goals together that everyone wants and believes. One of the interviewees commented that it is easy to believe in your network goal when it is to improve the health of the community. Refer to Table 6.16 for a summary of favorability regarding the effectiveness measures.

**Table 6.16: Degree of Favorable Ratings for Dependent Variables by Network**

	Perception Solving Problems	Incidence Improvements	Decrease Service Duplication	Improve Coordination	Goal Commitment	Organization
<b>TCPCH</b>	Low	High	Medium	High	High	High
<b>RFVCHP</b>	Medium	High	Low	Medium	High	Low
<b>CHIC</b>	Medium	Medium	Low	High	High	Medium
<b>ARHN</b>	Low	High	Low	High	High	High
<b>ALL Respondents</b>	Low	High	Low	High	High	High

Networks were more varied in their optimism about the benefits of their network for the member organizations and that there was a public perception that the network was solving the problem(s) it intends to address. For example, the ARHN and the TCPCH were very favorable about the benefits of their network for the member organizations, while RFVCHP was least favorable. Both interviewees from the ARHN and the TCPCH noted the benefits of grant money from network membership, with one of the interviewees mentioning the information received by collaborating as the primary benefit. Similarly, with regard to perception solving problems, both the ARHN and the TCPCH were not that positive, while the RFVCHP and the CHIC were moderately optimistic. It was explained by one of the CHIC respondents that their network has two highly visible good projects, the immunization project and the emergency preparedness project, which the public sees.

Finally, most of the networks, with the exception of the TCPCH, were least encouraging that their network had decreased service duplication. Interviewees noted a variety of explanations. One explained that they have two competing hospitals in their network each with their own incompatible electronic medical records systems which neither will change. Another explained that they were unsure why respondents were not that favorable about decreases in service duplication and that there were so few services in their area that it was hard to have duplication of services. The TCPCH respondent explained that their members work together to realize any redundancies and make efforts to ensure that their services do not overlap. Overall, a majority of the interviewees felt that their network did work to reduce duplication of services. Analysis of the descriptive statistics for the measures of effectiveness was similar to that with all respondents in that it revealed that respondents were overall more favorable about the effectiveness of their network at the network-level, with the exception of the measure decreases in service duplication. This suggests that network-level effectiveness may be more easier to achieve and that effectiveness at the community-level may be harder to reach.

#### *Correlation & Regression Analyses*

The correlation analyses conducted with all respondents from all four networks as reported in the previous chapter, as well as with the CHIC and the ARHN individually, illustrate a consensus on significant correlates of effectiveness for the effectiveness criteria at each level of analysis. Interviewees offered varying explanations for many of these correlations, as well as for the variables found to be significant predictors of effectiveness. Table 6.17 offers a comparison of the significant correlates for community, network, and organizational-level effectiveness for both the ARHN and the

CHIC, as well as for all respondents. Bolded correlates are ones with a strong correlation.

**Table 6.17: Significant Correlates for Measures of Effectiveness at the Community, Network and Organizational Levels for Two Networks and All Respondents**

<i>Level of Analysis</i>	<i>Community</i>		<i>Network</i>			<i>Organizational</i>
<i>Measures of Effectiveness</i>	<i>Perception Solving Problems</i>	<i>Incidence Improvements</i>	<i>Decrease Service Duplication</i>	<i>Improve Coordination</i>	<i>Goal Commitment</i>	<i>Organization</i>
<b>CHIC</b>	<b>Financing &amp; Governance</b>	<b>Financing and Governance</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Cohesiveness, Financing, Governance, P&amp;E &amp; Personnel</b>	<b>Cohesiveness, Financing, Governance, P&amp;E &amp; Personnel</b>	<b>Financing, Governance &amp; P&amp;E</b>
<b>ARHN</b>	<b>Financing &amp; Governance</b>	<b>Cohesiveness &amp; Personnel</b>	<b>Governance &amp; P&amp;E</b>	<b>Cohesiveness, Financing, Governance, &amp; Personnel</b>	<b>Cohesiveness, Governance &amp; P&amp;E</b>	<b>Cohesiveness, Financing, P&amp;E &amp; Personnel</b>
<b>ALL</b>	<b>Financing, Governance &amp; P&amp;E</b>	<b>Cohesiveness &amp; Governance</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Cohesiveness, Financing, Governance, P&amp;E &amp; Personnel</b>

*Community-Level Effectiveness*

At the community level, governance and financing were found to be the most significantly related to effectiveness for both networks, as well as among all networks. More specifically, governance and financing were the most significantly related to perception solving problems, where as governance and cohesiveness had the most significant relationship to improvements in the incidence of the problem, although not for each network. Additionally, financing was found to be the only significant predictor of

effectiveness at this level, as it was found to predict public perception solving problems among all respondents. Refer back to Table 6.17 for a comparison of the significant correlates for each measure of effectiveness for both the ARHN and the CHIC, as well as for all respondents.

When asked about the role of financing and governance and there being a public perception that the network is solving problems, interviewee's explanations varied. However, respondents generally expressed a lack of awareness of their network by the public, making it hard for them to clarify the relationships between financing and governance to public perceptions the network is solving problems. With regard to the role of governance and cohesiveness in improvements in the incidence of the problem, networks varied. For example, within the CHIC, financing was found to be positively related to there being improvements in the incidence of the problem that their network addresses, while it was not found to be positively related in other networks. It was explained that this was due to the ability of the network director to deal with finances. Also, within the ARHN, governance was not found to be positively related to their being improvements in the incidence of the problem. ARHN interviewees noted that this was most likely due to the fact that their network is unincorporated and under a lead agency.

#### *Network-Level Effectiveness*

For the three effectiveness measures at the network level, most of the correlates were found to be significantly related. The exception was the ARHN where fewer, although still a majority of the correlates, were found to be statistically significant. Refer back to Table 6.17 for a comparison of the significant correlates for each measure of

effectiveness at the network-level for both the ARHN and the CHIC, as well as for all respondents. Bolded correlates are ones with a strong correlation.

While numerous questions were asked about these significant relationships, the differences among networks are highlighted. For example, within the CHIC, the number of rural problems was not found to be a significant predictor of improved integration/coordination, as it was with other networks. A CHIC interviewee explained that this may be due to the isolation of rural providers due to low reimbursement rates. Similarly, P&E was not found to be significantly related to improved integration/ coordination of services in the ARHN, as it was in other networks. ARHN interviewees explained that this may be attributed to the lack of evaluation that their networks does due to measurement difficulties, as they do not provide direct services.

With regard to the effectiveness measure, member commitment to network goals, both the CHIC and the ARHN had some differences and similarities from the findings of all networks. To begin, in both the CHIC and the ARHN, the number of rural problems was not found to be significantly related to member commitment to network goals, as it was among all networks. One CHIC interviewee explained that their network realizes they cannot solve all problems and only tackle the ones they think they can impact. Additionally, within the ARHN, both personnel and financing were found to be statistically insignificant to member commitment to network goals. Interviewees explained that they worry about that later and know it will come.

#### *Organizational-Level Effectiveness*

For the last level of analysis, the organizational-level, P&E and financing were the only two correlates that were significantly related among all respondents and for both

the CHIC and the ARHN. As mentioned earlier, the CHIC and the ARHN differed most at this level of analysis in that cohesiveness and personnel were not found to be significantly related to organizational-level effectiveness in the CHIC, as they were in the ARHN and among all networks. Similarly, governance was not found to be significantly related to organizational-level effectiveness in the ARHN, as it was in the CHIC and among all networks. Refer back to Table 6.17 for a comparison of the significant correlates for each measure of effectiveness at the organizational-level for both the ARHN and the CHIC, as well as for all respondents.

When asked about some of these relationships, one respondent from the CHIC explained that the lack of relationship between personnel and member benefits may be due to the fact that no one person thinks the network would fall apart if they left. Interviewees from the ARHN explained that their network's governance was not found to be significantly related to organizational-level effectiveness in their network because their members are not board members of their lead agency, the Upper Hudson Primary Care Consortium (UHPCC), and do not make decisions. Thus, their members have no legal authority and are not legally bound to anything.

#### *Network Demographics*

Among interviewees, there was also some consensus about certain network demographics and their contribution to network effectiveness. For example, respondents felt that the more years a network was in existence the more effective it was likely to be, i.e., there network has more legitimacy with age. Two of the interviewees explained that due to their network's age people assume that they are stable and that they are not going to fall apart. One of these interviewees further noted that because of their network's age,

fundors know who they are and they have established a good relationship with them. A last respondent highlighted that age sets the base for good, honest dialogue and because their network has a history of successful collaboration people want to join them. Another respondent similarly noted the strong relationships that have been obtained in the community and the desire of these people to help the network due to its years of success.

Similarities between interviewees were also seen with regard to the impact of network size and composition on network effectiveness. For example, two of the interviewees explained that their network was inclusive with one noting that they try to incorporate everyone along the continuum of health care and another explaining that everyone involved in education and counseling, their network's emphasis, is involved. The first respondent explained that by having everyone involved in their network it helps them to get a variety of perspectives in the health arena. The second respondent stated that those involved make important decisions in the community and can do what is necessary to see that changes happen. A third respondent explained that their members, many of which are public health entities, are in different markets which decrease competition among members. A final interviewee pointed out that the people in their network were very innovative and helpful to each other. Furthermore, many of them have worked together for a long time prior to the network. Only one of the respondents addressed the issue of size explaining that because their network is so large, they break members into work groups to make it more workable and effective.

Finally, interviewees were asked about the influence of the population they serve and the services they provide on network effectiveness. None of the interviewees adequately addressed these questions. However, respondents from the same network

commented on the clinics, in this case the population served, involved in their immunization registry program. The clinics were said to welcome the services the network provided because it was a win/win situation for them. Additionally, they were said to be known for working together and to have a strong sense of geographic and cultural identity. Thus, a willing and unified population served is thought to contribute to network effectiveness.

### *Key Points*

Overall, comparison of the four networks' effectiveness highlights some important considerations for the effectiveness of vertically integrated rural health networks. To begin, the only network in which respondents were somewhat favorable about their financing was the CHIC. The CHIC was also the only network in which respondents were somewhat favorable that there was a public perception that their network was solving problems. As shown in the regression analysis, financing was found to be the only statistically significant predictor of their being a public perception that the network is solving problems. CHIC respondents explained that they have diverse funding sources and that they have two highly visible projects. Thus, having diverse funding sources may contribute to greater network effectiveness, particularly with regard to there being a public perception that the network is solving the problems it intends to address.

Also of interest is that all of the networks were favorable about their network's cohesiveness, as well as that their network members were committed to their network goals. Findings of the regression analysis showed that cohesiveness was the only significant predictor of network members' commitment to network goals. Several of the

interviewees spoke of the importance of trust, a component used to measure network cohesiveness, for member commitment to network goals.

As the regression analysis with all respondents illustrated, the number of rural problems was found, along with financing, to be a significant predictor of increased coordination and integration of services. The RFVCHP, as well as did the CHIC, reported fewer problems in the rural environment for their network. While all of the networks were very favorable that their networks were improving integration and coordination of services in their network, the RFVCHP was only moderately favorable. These findings further suggest that networks with more problems in the rural environment may be more motivated to have improved integration and coordination of services and thus, be more effective at the network level.

Financing was the other predictor found to be statistically significant to improved integration and coordination and services. As noted, only the CHIC was moderately favorable about their financing, while most of the networks were highly favorable about their network's ability to improve integration and coordination of services. This suggests, as do the correlation analyses, that many of the other variables are important for improved integration and coordination of services.

While no variables were found to be statistically significant predictors of organizational-level effectiveness, the correlation analyses with the respondents in the four field study networks illustrate that all of the structural correlates are significantly related to organizational-level effectiveness. However, within the ARHN, governance was not found to be statistically significant. This may be due to the fact that the ARHN is not incorporated and is run by a lead agency. While ARHN interviewees thought this

was an attribute of their network, results from the other analyses suggest that incorporation might lead to greater effectiveness, particularly at the organizational level.

Finally, review of the network demographics suggest that age is important for network effectiveness. While not tested empirically, results from the interviews suggest that the longer a network has been in existence the more likely it is to be effective, as older networks have more legitimacy. Additionally, network composition was highlighted as important by the interviewees. Interviewees generally expressed the need to be inclusive in network membership, as it contributes to a variety of perspectives, as well as increases the network's connections within the community.

## **CHAPTER SEVEN**

### **SUMMARY AND DISCUSSION**

#### Summary of Literature Review

Previous literature on organizational and network effectiveness has provided some evaluations and conceptual approaches for evaluating network effectiveness, but little research has empirically evaluated the correlates of effectiveness for vertically integrated rural health networks. Review of the literature on organizational effectiveness illustrates the complexity in determining the effectiveness of rural health networks, i.e., there are various perspectives (e.g. open and natural systems, multiple-constituency, competing values) from which to view effectiveness. Additionally, the literature on network and rural health network effectiveness highlights that there are many effectiveness measures and probably many correlates, both structural and environmental, of effectiveness for vertically integrated rural health networks. Furthermore, many authors (e.g. Moscovice, Christianson, and Wellever, 1995; Wellever, 1999; Wellever et al., 2000) expressed that not much is known about how the correlates and effectiveness are intertwined, particularly for vertically integrated rural health networks. Thus, it is the intent of this research to answer the following research questions:

- 1) What structural and environmental correlates of effectiveness are identified by participants in vertically integrated rural health networks?
- 2) How are identified correlates of effectiveness related to each other and to the effectiveness of vertically integrated rural health networks?
- 3) What lessons do the findings offer for students, researchers, and practitioners of rural health policy and of public administration in general?

## Findings

Several steps were taken to answer these three research questions. Initially, expert interviews were conducted with various persons affiliated with the thirty-three rural health networks in the preliminary sample. Findings from these interviews were used to construct the questionnaire that was completed by twenty-one of the networks directors in the preliminary sample. These questionnaire findings were used to select four networks to serve as best practices for further study. A similar questionnaire was given out to various persons affiliated with the four chosen networks. Findings from this questionnaire were employed to construct the independent and dependent variables, many of which were indices. Correlation and regression analyses were run to better identify important correlates of effectiveness. Follow-up interviews were subsequently used to enrich the findings from these statistical analyses.

### *Research Question #1: Identified Structural and Environmental Correlates*

Primarily, this research recognizes the structural and environmental correlates of effectiveness as identified by participants in vertically integrated rural health networks. While networks differed slightly, there was some consensus on important correlates at each level of effectiveness. Table 7.1 provides an overview of the identified correlates for each level of effectiveness. Bolded correlates are ones with a strong correlation.

**Table 7.1: Identified Structural and Environmental Correlates**

	<b>Community-Level Effectiveness</b>	<b>Network-Level Effectiveness</b>	<b>Organizational-Level Effectiveness</b>
<b>CHIC</b>	<b>Financing &amp; Governance</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Financing, Governance &amp; P&amp;E</b>
<b>ARHN</b>	<b>Financing, Governance Cohesiveness &amp; Personnel</b>	<b>Cohesiveness, Governance, P&amp;E, Personnel, &amp; Financing</b>	<b>Cohesiveness, Financing, P&amp;E &amp; Personnel</b>
<b>ALL RESPONDENTS</b>	<b>Financing, Governance, Cohesiveness, &amp; P&amp;E</b>	<b>Cohesiveness, Financing, Governance, P&amp;E, Personnel, &amp; Rural Problems</b>	<b>Cohesiveness, Financing, Governance, P&amp;E &amp; Personnel</b>
<b>CONSENSUS ON IMPORTANT CORRELATES</b>	<b>Financing &amp; Governance</b>	<b>Cohesiveness, Governance, P&amp;E, Personnel, &amp; Financing</b>	<b>Financing &amp; P&amp;E</b>

**Note:** Bolded Correlates are ones with strong correlations.

At the community-level, financing and governance were the only two correlates identified by respondents in the CHIC, the ARHN, and among all respondents, to be statistically significantly. Additionally, there was consensus that financing was the most strongly correlated with community-level effectiveness. Results from the regression analysis further found financing to be the only statistically significant predictor of community-level effectiveness. Thus, the most important correlates of effectiveness for community-level effectiveness are financing followed by governance.

At the network level, all of the structural correlates were found to be statistically significant. Additionally, respondents in both and among all networks identified cohesiveness, governance, P&E, and personnel as having stronger relationships with network level effectiveness. Results of the regression analyses found only cohesiveness, financing, and the number of rural problems to be statistically significant predictors of

effectiveness at this level. Thus, while all of the correlates were identified as important, cohesiveness stands out as being one of the most important correlates for network-level effectiveness.

At the organizational level, financing and P&E were the only two correlates for which there was a consensus among respondents on their importance. Regression analysis did not find any of these correlates to be significant predictors of effectiveness at this level. As such, findings highlight both financing and P&E to be important correlates at this level.

With regard to overall network effectiveness, i.e., effectiveness at all three levels, financing was the most significant correlate identified by respondents. Financing was also the only correlate that was found to be a significant predictor at more than one level. P&E and governance were similarly highlighted as important correlates for overall effectiveness, as respondents identified them as statistically significant correlates at more than one level of effectiveness.

### *Research Question #2: Relationships Between Variables*

#### *Relationships among Identified Correlates*

In addition to identifying the structural and environmental correlates of effectiveness for vertically integrated rural health networks, this research explores how the identified correlates of effectiveness are related to each other and to the effectiveness of vertically integrated rural health networks. To begin, analysis of all respondents revealed that many of the structural correlates of effectiveness are either moderately or strongly correlated with each other with the exception of financing which was not found to be statistically significant or strongly correlated with cohesiveness. Similar results

were found in the analysis of just the CHIC respondents. However, in the ARHN, financing was not found to be statistically significant to many of the correlates. The one environmental correlate, number of identified rural problems, was found to have the fewest and weakest correlations with the other correlates among all respondents and among respondents in the CHIC and the ARHN. Overall, the findings of the correlation analyses suggest that there may be an underlying dimension among the structural correlates of effectiveness for which a factor analysis would be beneficial among a larger sample.

#### *Relationships among Measures of Effectiveness*

Among the dependent variables, the community-level measures of effectiveness were found to be least correlated among themselves and with the measures at the other levels. On the contrary, measures at the network and organizational-levels were found to be more strongly and significantly related to each other. Interviews suggested that there was a lack of knowledge and understanding of the networks among the public. Additionally, all of the networks, in both the preliminary sample and among the four networks in the field studied, expressed less optimism about their networks accomplishments at the community-level. These findings suggest that many networks may not have realized community-level effects, as vertically integrated rural health networks are a newer form of rural health network. This may also explain why there is a slight disconnect between the community-level measures and those at the network and organizational levels. Overall, the findings do suggest that there may be an underlying dimension to the effectiveness of vertically integrated rural health networks for which a factor analysis with a larger sample would be useful.

## *Relationships among Identified Correlates and Measures of Effectiveness*

### *Community Level Effectiveness*

Both correlation analyses and regression analyses conducted with the sample of four effective networks further revealed important relationships between some of the correlates and the measures of effectiveness at each of the three levels. At the community level, fewer of the correlates were found to be significantly related to effectiveness. Additionally, financing was found to be the only significant predictor of effectiveness at this level about which fewer of the respondents were optimistic. Finally, the regression analyses revealed that the correlates used in this analysis do not do as good of a job of explaining effectiveness at this level as they do at the other two levels. Measures of effectiveness at this level were also found to be less strongly related to effectiveness at the other two levels suggesting a possible disconnect between community-level effectiveness and effectiveness at the other two levels.

Analysis of the case studies revealed that the CHIC was the only network that was somewhat optimistic about both their financing and that there was a public perception that the network was solving problems, the measure of community-level effectiveness for which financing was an important predictor. CHIC respondents explained that they have diverse sources of funding, i.e., they get one-third of their funding from grants, one-third from membership fees, and one-third from long-term projects. The CHIC differ from the other case study networks that are primarily reliant on grant funding. One of the CHIC respondents also attributed their network's optimism about funding to their network executive director and her fiscal abilities. Optimism, in the CHIC, regarding their being a public perception that their network was solving problems was attributed to two high

profile projects their network conducts, one of which saves the public money by providing them their immunization records for free. These two projects also serve as a main source of funding for the CHIC. Thus, diversity of funding is essential to the effectiveness of vertically integrated rural health networks.

#### *Network-Level Effectiveness*

At the network level, many of the correlates were found to be significantly related to the three criteria used to measure effectiveness with the exception of the ARHN in which fewer of the correlates were found to be significant. Also, the number of rural problems was the only variable found to be significantly related to the three measures of network-level effectiveness among all respondents, but not within the CHIC or the ARHN. While many of the correlates were significantly related to the measures at this level, the regression analyses conducted pointed out that financing, the number of rural problems, and cohesiveness were the only significant predictors of effectiveness at this level. The regression analyses also illustrated that the correlates used in this analysis do a good job of explaining effectiveness at this level.

In general, interviewees explained that their networks are cohesive due to the fact that their network members are more concerned about the greater good than their own agendas. This was particularly the case for the TCPCH and the CHIC. It was also noted by several of the case study interviewees that trust was an important component of their network's cohesiveness. Many of the interviewees explained that it was because their network members trusted each other that their networks were able to decrease service duplication, improve integration and coordination of services, and increase their

members' commitment to network goals. As such, trust emerged as another vital characteristic of effective networks.

As noted previously, most of the networks in the field study were not favorable about their financing with the exception of the CHIC. It was expressed by some of the interviewees in the field study that increased financing would allow for more technology that would aid in decreasing service duplication and improving the integration and coordination of services. It was also noted that having financing can improve member's commitment to network goals because it makes them more excited to achieve them. However, with regard to increased integration and coordination of services, the one measure for which financing was found to be an important predictor, most of the interviewees in the field study felt that lack of funding was motivation for increased integration and coordination of services. Thus, there are competing views on the impact of financing on network-level effectiveness.

Finally, the networks in the field study differed from those in the preliminary sample in that a lesser percentage of respondents from the sample of four effective networks noted that certain rural environment effects were problematic for their network. In particular, a much smaller percentage of respondents from the networks in the field study noted that lack of providers and a growing immigrant population were problematic for their network. In the preliminary sample, almost all of the network directors noted that lack of providers was problematic for their network. Consequently, this suggests that availability of providers may impact the effectiveness of vertically integrated rural health networks. Interestingly, the findings from the correlation and regression analysis infer that more rural problems contribute to increased integration and coordination of services,

one of the measures of network-level effectiveness. As a result, while more rural problems may motivate members to integrate and coordinate services, findings also suggest that greater availability of providers may improve the likelihood that a vertically integrated rural health network will be effective.

#### *Organizational-Level Effectiveness*

With regard to organizational-level effectiveness, the correlation analyses showed that many of the correlates were significantly related. However, P&E and financing were the only two correlates that were significantly related to organizational-level effectiveness in both the CHIC and the ARHN, as well as among all respondents. In spite of the various significant relationships found among the correlates and effectiveness at this level, the regression analysis with all respondents revealed that there were no significant predictors of organizational-level effectiveness. However, the regression analysis did reveal that the correlates used in this analysis do a good job of explaining organizational-level effectiveness.

As mentioned previously, most of the networks, with the exception of the CHIC, were not very optimistic about their network's financing. However, it was noted by a few of the interviewees in the field study that network members benefit from the network by saving money. It was also mentioned that network financing was thought to help decrease barriers. Overall, network financing seems to be most important to organizational-level effectiveness because it leads to increased savings for network members. As with the other two levels of effectiveness, financing again surfaces as an essential factor for effectiveness.

With regard to P&E, the other correlate identified by the field studies as important for organizational-level effectiveness, respondents in the field study were more favorable than the preliminary sample of network directors but were not as favorable about planning and evaluation as they were about some of the other correlates. The Tioga County Partnership for Community Health (TCPCH), one of the networks that was favorable about their P&E, explained that they try and keep planning and evaluation on the forefront of their decision-making process. One interviewee from this network noted using surveys to evaluate their network's accomplishments. A few of the interviewees in the field study explained that P&E is important to organizational-level effectiveness because it brings important issues to the forefront increasing members' benefits. This is particularly the case, as noted by one of the interviewees, if members are involved in their network's planning and evaluation. Member involvement helps to ensure that the benefits provided by the network are in-line with members' needs. In sum, the networks in the field study were in consensus on the importance of P&E for organizational-level effectiveness, as it appears to not only keep the network in tune with their progress in achieving their members' needs but it also keeps the networks in touch with their needs.

#### *Overall Effectiveness*

There were a few correlates that stuck out as being of particular importance to the overall effectiveness of vertically integrated rural health networks, i.e., financing, planning and evaluation (P&E), and governance. As mentioned previously, there was the most consensus among the networks in the field study about these correlates' importance, although the regression analysis revealed that financing was the only one of these correlates that was found to be a significant predictor of effectiveness. Analysis of the

networks in the field study revealed that having diverse sources of funding, i.e., not being solely reliant on grant money, is vital to a network's financing and thus, their overall effectiveness.

As also mentioned previously, P&E was found to be important to organizational-level effectiveness because it brought members' needs to the forefront and helped ensure that the network was meeting their needs. With regard to the other levels of effectiveness, P&E was thought to be important to community-level effectiveness because it can provide the necessary data to show the public what the network has accomplished; thus, improving the public's perception that the network is solving problems. At the network level, P&E was found to be strongly and significantly correlated with all three measures. Interviewees explained that planning can help to ensure that services are not duplicated, as well as can aid in the integration and coordination of services by deciding what services to provide. Similarly, evaluation improves integration and coordination of services because it can help make sure that the network is working together to address the right issue(s). Evaluation can also show what can be achieved which improves members' commitment to the network goals. While not found to be a significant predictor of effectiveness at any of the levels, analysis of the networks in the field study illustrates that P&E is an important correlate of overall effectiveness.

As with P&E, governance was not found to be a significant predictor of effectiveness at any of the three levels. However, there was consensus among the networks in the field study that it is a vital component of overall effectiveness. In general, most of the networks in the field study were optimistic about their network's

governance with the exception of the Adirondack Rural Health Network (ARHN) that was slightly less favorable. The ARHN differs from the other networks in that they are not incorporated but are under a lead agency. As such, the ARHN does not have a governance committee but has a steering committee that works with a memorandum of agreement. While those interviewed at the ARHN thought this was an attribute of their network because it was thought to contribute to a friendlier work environment, further analysis suggests that this may not be the case. Unlike the other networks in the field study, governance in the ARHN was not found to be as strongly related to there being a public perception that the network is solving problems and organizational effectiveness.

Comments from the interviews noted various reasons for governance's importance to their networks' effectiveness. At the community level, governance can improve the public perception that the network is solving problems, if they see that every competitor in the region is working together. Furthermore, governance can help make improvements in the incidence of the problem by providing a clear focus and a defined process in which members can work together. Good communication, inclusion of all network members, and an environment that supports change are also important elements for governance in a network. At the network level, interviewees explained that governance is critical because with members' involvement service duplication can be reduced and everyone is kept organized. The mission of a network also keeps members focused on the network's goals which can increase members' commitment. Inclusion of network members, via the network's governance, in the creation of network goals can also contribute to increased commitment to network goals among members. Finally at the organizational level, governance lends a focus to network goals which helps to ensure

network benefits are achieved. Furthermore, inclusion of network members in a network's governance ensures that the members benefit. Overall, analysis of the field study networks highlights inclusion of members as an essential element for a network's governance, as well as an important contributor to overall effectiveness.

*Research Question #3: Lessons Offered From Findings*

The findings of this research offer various lessons for students, researchers, and practitioners of rural health policy and of public administration in general. To begin, this research offers an alternative view of rural health problems and their impact on the effectiveness of rural health networks. In the past, an increased number of rural health problems were assumed to lead to decreased network effectiveness. However, this research indicates that more rural problems does prove to be a catalyst for increased coordination and integration of services, as well as decreased service duplication, for vertically integrated rural health networks. Thus, students, researchers, and practitioners of rural health policy should reconsider the motivational role that the rural environment plays in the provision of health related services. More generally, the significance of the environment to network effectiveness is highlighted which has important implications for all public administrators.

Although this is not a new finding, this research reaffirms the importance of financing for network effectiveness. Financing was the only variable that was found to be an important predictor of effectiveness at the community and network levels, as well as one of the few correlates significantly related to effectiveness at all three levels. As previously noted, it was also the one correlate about which respondents were least favorable about in their network. Thus, the importance of financing for network

effectiveness should be noted among students, researchers, and practitioners of rural health policy and of public administration in general. Furthermore, as highlighted by respondents in the CHIC who were the most optimistic about their funding, funding sources should be diverse and not just reliant on grant money.

The importance of cohesiveness for network effectiveness was also highlighted by these findings. Cohesiveness was one of the correlates about which respondents in the four effective networks were most favorable. Among all respondents, cohesiveness was also found to be strongly correlated to all of the measures of effectiveness with the exception of the measure public perception that the network is solving problems. At the network level, cohesiveness was found to be one of three significant predictors. The interviews highlighted trust as an important component of cohesiveness. Thus, students, researchers, and practitioners of rural health policy and of public administration in general should make note of the significance of cohesiveness and trust for network effectiveness.

Although not found to be significant predictors, both P&E and governance were found to be important correlates at all three levels. Thus, the importance of these two correlates should be acknowledged by researchers and practitioners. More specifically, these findings illustrate that P&E can be helpful in increasing the public's perception that the network is solving problems, as it provides the necessary data to do so. As also noted, P&E helps networks reduce service duplication and improve the integration and coordination of services. With regard to governance, analysis of the field study networks revealed the importance of incorporation for vertically integrated rural health networks.

As such, both researchers and practitioners should consider the role that incorporation has, as opposed to having a lead agency model, for overall network effectiveness.

Finally, this analysis calls into question the importance of or the ability to explain community-level effectiveness for vertically integrated rural health networks. This research illustrates a lack of effectiveness at the community level for vertically integrated rural health networks. As noted previously, this may be due to a difference in the purposes of vertically integrated rural health networks from those of only public-sector organizational networks. However, should vertically integrated rural health networks be more concerned about effectiveness at the community-level, particularly if some of their network members are from the public-sector? This is a valid question that should be addressed among students, researchers, and practitioners of rural health policy and among the larger community of public administrators, as networks are becoming a more common form of governance.

#### Contribution to the Literature

##### *Organizational Effectiveness Literature*

With regard to the broader literature on organizational effectiveness, this research illustrates the importance of both support goals, as highlighted by the natural systems perspective, and the environment, as noted by the open systems perspective, for network effectiveness. Specifically, analysis of the various correlates of effectiveness illustrated that for network-level effectiveness both financing and cohesiveness were important predictors, as was the rural environment. At the community level, only the support goal, financing, was found to be an important predictor.

It was also the intent of this research to explore both the multiple-constituency model and the competing values approach. With regard to the multiple-constituency model, attempts were made to include the identified network constituents, i.e., network staff, steering committee members, and other network affiliates, and assess their satisfaction with regard to network performance. Members of the community in which the networks serves were recognized as important constituents to include in this assessment but were not included due to access issues. Thus, this research recognized and measured the effectiveness of the vertically integrated rural health networks in the sample to the extent that they satisfied the interests of constituencies associated with the networks. However, not all network constituents were identified and thus, not all were included in this analysis. Additionally, effectiveness criteria were not selected with input from the various constituents but were imposed based on the criteria proposed by Provan and Milward's framework.

The competing values approach was also addressed in this research as a number of organizational effectiveness criteria were used to represent possible competing values at the community, network, and organizational levels. Much of the previous literature on effectiveness was conducted using one measure, which was the case with Provan and Milward (1995) and Provan and Sebastian (1998) who used client outcomes as their measure. While it was not determined if the measures used were in fact reflective of competing values among different types of network respondents, this research does serve as an example of effectiveness being measured with multiple, possibly competing, criteria. In summary, this research builds on various models of effectiveness already present within the literature on organizational effectiveness.

### *Network Effectiveness Literature*

Among the literature on network effectiveness, this research confirms some of the findings. To begin, Provan and Milward's (1995) research suggests that networks are more effective when network integration is centralized, external fiscal control by the state is non-fragmented and direct, resources are sufficient, and the overall system is secure. Findings from this research validate the importance of network integration to the network-level effectiveness measure, member commitment to network goals. Integration, in this research, was treated as a component of a network's cohesiveness, one of the independent variables used in this research. Cohesiveness was found to be an important predictor of network-level effectiveness. Unlike Provan and Milward, this research did not differentiate between centralized and decentralized integration.

Like Provan and Milward (1995), resources were found to be important to the effectiveness of vertically integrated rural health networks. Specifically, financing was found to be an important predictor of effectiveness at both the community and network levels. It was additionally, one of the only correlates significantly related to the effectiveness of vertically integrated rural health networks at all three levels. As noted via the interviews, the network that was most favorable about its finances explained that diverse funding sources were necessary.

Additionally, this research applies Milward and Provan's (2001) suggested framework for evaluating public-sector organizational networks to vertically integrated rural health networks. Overall, Proven and Milward proffer that effective networks are ones that are successful at all three levels. They further note that effectiveness at one level is contingent on the effectiveness of other levels; however, they caution that

effectiveness at one level does not always lead to effectiveness at other levels, particularly for the participant/organization level. Findings of this research confirm some of Provan and Milward's hypotheses. Among the sample of four networks that were chosen to serve as best practices, most of the effectiveness criteria at each of the three levels were found to be significantly related to each other with criteria at the network and organizational levels most strongly and significantly correlated with each other. This is in slight contrast to Provan and Milward who suggest that organization/participant outcomes often are sacrificed for community and network-level outcomes. This difference may be due to Provan and Milward's framework being based solely on public-sector organizational networks whereby most of the members are public or non-profit, the network is dependent on public money, and the primary goal of the network is to solve problems and serve clientele. In the sample for this research, not all members are public or non-profit and members pay dues to be a part of some of the networks. As noted by Provan and Milward (2001, p.422), in the for-profit world "financial performance of member firms is commonly seen as a viable way of assessing network effectiveness," as profit is their main goal. Thus, the interconnectedness of network and organization/participant level effectiveness may be more realized among the sample in this research, as members are more self-interested and network-level effectiveness is slightly more dependent on members' satisfaction. This is not to say the networks in the sample were not interested in enhancing the capacity of their organizations to solve problems and serve clientele, but many were also interested in protecting or increasing the incomes of their members. This calls into question our understanding of the goals of vertically integrated rural health networks, i.e., should they be more concerned with community-

level goals and thus be more outcome oriented? Overall, this research validates much of the previous literature on network effectiveness, as well as broadens its application to vertically integrated rural health networks.

#### *Rural Health Network Effectiveness Literature*

Much of the literature on the effectiveness of rural health networks offers evaluations of specific rural health network programs or suggested frameworks for assessing effectiveness. With regard to other evaluations of rural health networks, this research confirms some of the findings. For example, much of the literature on rural health networks acknowledges the importance of integration. In this research, integration was a component of the variable cohesiveness which was found to have one of the strongest and most significant relationships with the measures of effectiveness. Additionally, cohesiveness was found to be the only predictor of members being committed to network goals, the third measure of network-level effectiveness. Similarly, the literature on the effectiveness of rural health networks highlights the importance of funding which was also found to be significant in this research. While financing was not found to be as strongly and as significantly correlated as some of the other variables to the measures of effectiveness, it was found to be the only statistically significant predictor of effectiveness at the community-level. It was also found to be one of three statistically significant predictors of effectiveness at the network-level. In sum, cohesiveness, financing, and the number of problems in the rural environment were the main variables found to be statistically significant predictors of effectiveness among the effective networks in the sample. The relationship of complexity to effectiveness, while mentioned in the literature a couple of times, was not tested empirically in this research.

The work of Wellever, Wholey, and Radcliff (2000) was also taken into consideration, as differences in network purpose became apparent during initial review of the networks. While analysis of the networks in the initial sample suggests that many of the networks are Analyzers, many of the effective networks chosen for the case study had either Defender-like or Prospector-like characteristics (Refer to Appendix D for more detail). Additionally, two of the four chosen networks had more Defender-like characteristics. These findings suggest that vertically integrated rural health networks that are more Defender-like in nature, i.e., ones that improve the efficiency of their members by reducing member cost, improving coordination among members, and improving member quality, may be more effective. This is not surprising since vertically integrated networks, if they are acting as they should, seem to mostly resemble Defender and Analyzer networks. Analyzer networks predominately have Defender-like characteristics combined with some Prospector like characteristics. While it appears, according to this analysis, that networks with Defender-like characteristics are more likely to be effective, it should be noted that this could just be a reflection of the measures used to measure network effectiveness, i.e., other measures may be more appropriate for Prospector networks.

Thirdly, while several correlates of effectiveness have been identified throughout the literature, little research has empirically analyzed these correlates, particularly for vertically integrated rural health networks. Thus, this research contributes to the literature by offering an empirical analysis of many of these correlates for vertically integrated rural health networks. More specifically, it highlights three important

predictors of effectiveness, i.e., financing, cohesiveness, and the number of rural environment problems, for vertically integrated rural health networks.

Finally, this research provided some methodological insight into measuring the effectiveness of vertically integrated rural health networks. In order to complete this analysis of the effectiveness of vertically integrated rural health networks, correlates and measurements of effectiveness had to be selected from many possibilities. Indices also had to be created for some of the correlates and measures used. The regression analyses conducted indicated that the correlates used in this analysis did a good job of explaining the measures of effectiveness used, particularly at the network and organizational levels. Furthermore, the correlation analyses among the correlates and among the measures of effectiveness suggested that there might be an underlying dimension among each for which factor analyses would be beneficial. As such, while the correlates and measures used in this analysis seemed favorable, more research needs to be done to identify any underlying dimensions for both. Methodologically, this research illustrates the construction of various correlates to be used in understanding the effectiveness of vertically integrated rural health networks. It additionally tests the use of measures of effectiveness for vertically integrated rural health networks that were previously just used to measure the effectiveness of public sector networks.

#### Application to Public Administration

The field of public administration has long embraced effectiveness as one of its main values. In *Federalist 27*, Alexander Hamilton states: “I believe it may be laid down as a general rule that their [the people’s] confidence in and obedience to a government will commonly be proportioned to the goodness or badness of its administration.” Thus,

improving the effectiveness of public and nonprofit organizations may improve the public's confidence in the delivery of public services. Furthermore, by improving organizational effectiveness, democracy may be enhanced, which is an enduring aspiration of the field of public administration. This dissertation, then, contributes to the field of public administration by broadening the understanding of organizational effectiveness, particularly that of networks which are an emerging form of governance.

#### Need for Further Research

While this research empirically analyzes the correlates of effectiveness for vertically integrated rural health networks, more analyses are needed to better understand their effectiveness. Specifically, a more comprehensive analysis of both ineffective and effective networks would be beneficial, as this research was primarily based on findings from four networks that were identified as effective. Thus, inclusion of ineffective networks would offer a comparison for analysis.

More research is also needed on the effects of such variables as network size, composition, years the network has been in operation, the purpose of the network, and the population served. Because this research was an analysis of four effective vertically integrated rural health networks, empirical analysis of these variables was not possible. However, previous research and preliminary analysis of these variables in this research suggests that these variables may have an important impact on the effectiveness of vertically integrated rural health networks. Thus, analysis of a larger sample of vertically integrated rural health networks would offer some insight into the importance of these variables for network effectiveness.

A multiple constituency model approach to an understanding of the effectiveness of vertically integrated rural health networks would also be valuable. While this research attempts to do this by looking at effectiveness at the three levels, little effort was made to identify the various constituents at each level nor were constituents at the community level included. Because networks have multiple constituents, some of which include their funders, their organizational members, and the clients they serve, it is important to understand their effectiveness from these various perspectives for a comprehensive understanding.

A more in depth analysis of the importance of cohesion, financing, and the number of rural problems for network effectiveness also needs to be conducted. While this research identifies these variables as important predictors and offers some insight into their importance, a greater understanding would be useful. Of particular interest is the relationship between the greater number of rural environment problems and increased network effectiveness.

Additional research is also needed to identify the underlying dimension among the various correlates of effectiveness, as well as among effectiveness at the network and organizational levels. As illustrated, many of the structural correlates were found to be significantly related to each other, as were many of the measures of effectiveness at the network and organizational levels. A factor analysis with a larger sample would be beneficial to identify these underlying dimensions and to offer a more in depth understanding of important correlates of effectiveness.

Finally, this research suggests that effectiveness at the community level is lacking among vertically integrated rural health networks. More research needs to be conducted

to determine if this is true of most vertically integrated rural health networks or if this is just true of networks that are effective at the other levels, as was the case with the networks in this research. Milward and Provan (2001) give precedence to effectiveness at the community-level; however, is this the case for vertically integrated rural health networks that often consist of some private, for profit members? This raises the question of whether or not Milward and Provan's proposed framework holds for different sectors or just for the public sector. Furthermore, it brings into question whether or not vertically integrated rural health networks are more focused on outputs at the network level, where they appear to see their greater success, or successful outcomes at the community level, which many report not achieving.

### Conclusion

Initially, this research set out with various correlates of effectiveness, as highlighted by the literature on organizational and network effectiveness. Inclusion of these correlates in further analysis was confirmed via the expert interviews conducted prior to completion of the questionnaires. Comparison of responses from both questionnaires, i.e., the one completed by network directors and the other completed by various affiliates of the four chosen effective networks, highlighted the importance of financing, governance and decision making (components of the variable governance), leadership and staff (components of the variable personnel), communication and trust (components of the variable cohesiveness), and the number of rural environment problems for network effectiveness. Such inferences were taken into consideration in the next phase of analysis where the correlates used in the first phase were condensed into fewer variables, i.e., cohesiveness, financing, governance, P&E, personnel, and rural

problems, so that further, more complex analyses could be conducted on the four effective networks chosen for a field study.

Descriptive statistics, as well as correlation and regression analyses of the newly created variables further identified important correlates of effectiveness among the four effective networks studied. As suggested by the responses from both questionnaires, financing, upon analysis, was found to be a significant correlate and an important predictor of network effectiveness. As also indicated by the responses from both questionnaires, cohesiveness, with trust being noted as an important component, was also found to be an important correlate, as well as a predictor of effectiveness. Finally, as initially suggested in one of the expert interviews, the number of rural problems was found to be motivation for improved integration and coordination of services, one of the measures of effectiveness used.

Comparison of the four effective networks yielded a few differences which are worth noting. The first is the importance of diverse funding sources and lack of reliance on grant monies. The CHIC was the only network slightly favorable about its financing and they reported multiple funding sources, as well as collected member dues. Because financing, as originally highlighted by the literature, was found to be one of the most important correlates of effectiveness, diverse funding sources and member dues should be considered to improve network effectiveness.

The significance of being incorporated and having a governance committee, as opposed to having a lead agency was also highlighted. Respondents of the ARHN were not as favorable about their governance as they were about most of the other correlates and they are not incorporated and are run by a lead agency. Governance in the ARHN

was found to not be related to improvements in the incidence of the problem and to be less significantly related to organizational level effectiveness. Interviewees explained that this was most likely due to the fact that they are run by a lead agency. While not found to be a significant predictor, governance was found to be significantly related to network effectiveness. Thus, incorporation and governance by a network's own governing board, as opposed to a lead agency, might increase network effectiveness.

It should be noted that some of the intercorrelations found among the correlates in this research could be due to the context in which these vertically integrated rural health networks are operating. For example, the civic culture or pre-existing social capital of the communities in which these networks are operating could be an underlying influence on many of the correlates used in this research. Respondents from a few of the field study networks mentioned that many of their members had a history of working together prior to the advent of their network. Likewise, the emphasis on cooperative behavior in these networks could also be affecting the correlates and thus, the effectiveness of these networks. Finally, the culture of medical practice could be similarly shaping the correlates. Thus, there are various possible reasons for the intercorrelations found among the correlates in this research that could be affecting the effectiveness of the networks studied.

While not conclusive, this research builds on some of the existing research leaving many questions unanswered about the effectiveness of vertically integrated rural health networks, as indicated in the discussion about the need for further research. Because vertically integrated rural health networks are becoming more and more prevalent among in the rural landscape their efficacy needs to be better understood, as does that of all

networks. Thus, by better understanding what makes rural health networks effective, the problems in rural health may be reduced.

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**APPENDICES**  
**Appendix A: Original Sample Demographics**

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Another Step Forward/ Tioga County Partnership for Community Health</b>	1. improve health outcomes for rural residents	Adolescents and Elderly	Immunizations, Mental Health Services, and Health Promotion/ Disease Prevention - Child Abuse, Diabetes, Substance Abuse, and Tobacco Prevention	3 community agencies	1. Governance structure should be set early in the development of a partnership and should provide for a limited number of people who are directly involved in operational decisions 2. Setting up a governance structure is no easy task.
<b>Bamberg County Community Services Network</b>	1. link service providers through a community health information system 2. provide more collaboration between residents and the services provided	Elderly and Minorities/ African American	Case Management and Health Promotion/ Disease Prevention - General and Diabetes		1. Trust and working toward common goals takes considerable amount of time. 2. Any technological project needs to have a thorough training process
<b>CHOICE/ Mason General Hospital</b>	1. produce a managed care insurance product 2. develop a management information system to integrate providers				
<b>Community Choice Primary Health Care Organization</b>	1. integrate 3 local primary care organizations 2. promote the sharing of data between participants 3. managed care risk contracting 4. encourage the growth of independent providers 5. provide evaluation, assessment and benchmarking for all network members			23 medical organizations	1. Getting physicians involved is difficult. 2. Hospital members were supportive. 3. A monthly membership fee dropped enrollment. 4. The internet really helps provision of new network services.
<b>Community Health Council</b>	1. coordinate services 2. increase access 3. improve health of the community 4. improve cooperation among providers	Elderly and Minorities/ African American, Hispanic, and Native American	Health Promotion/ Disease Prevention - Tobacco Prevention		1. The top priority should always be strengthening the health of the community. 2. Volunteer leadership and support is essential.
<b>Community Health Information Collaborative</b>	1. develop linkages with health information resources 2. encourage compatibility of network members' technology and equipment 3. provide education to health care providers 4. provide continuing medical education 5. obtain discounts on equipment , equipment, business applications and information services 6. serve as a forum 7. advocate for information systems' policies and legislation	Minorities/ Native American	Immunizations, Public Health, and Telemedicine		1. Network members must build trust which takes time. 2. Diversity of membership was an asset.

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Delta Rural Health Network of Mississippi, Inc.</b>	1. vertically integrate the network 2. develop a management information system 3. establish pilot programs 4. develop a Community Training Center (CTC) 5. provide education and training services	Children, Elderly, and Pregnant Women and Teens	Medicaid, Medicare, and Telemedicine	developed 3 networks - one of the networks has 18 orgs.	1. Be proactive in creating sustainable revenue sources.
<b>Eastern Panhandle Integrated Delivery</b>	1. deliver or coordinate high-quality, cost-effective care to residents 2. create and implement a claims based management information system	Elderly	Mental Health Services	120 independent professionals and 20 mental health professionals	1. Try to stay open to include as many as possible members 2. Leadership and focus on mission is important. 3. Communications with providers is important. 4. External forces impact network activities and goals.
<b>Health Care Network of Park County, Colorado/ Rocky Mtn Rural Health Services</b>	1. coordinate services 2. increase access 3. reduce costs 4. improve quality of services	Adolescents, Children, and Infants	Advocacy, Emergency Medical Services, Mental Health Services, and Health Promotion and Disease Prevention - First Aid	10 members	1. Capitalize on existing community resources. 2. It is important to collect and track data.
<b>Healthy Communities Alliance Network</b>	1. improve coordination and cost-effectiveness of needed health and social services 2. minimize fragmentation in service delivery 3. improve quality of services 4. foster and strengthen working relationships between providers	Children, Elderly, and Minorities/ Native American	Mental Health Services and Telemedicine		1. Do not try to accomplish too much at once.
<b>Isabel Collier Read Immokalee Health Park</b>	1. ensure access to a broad range of private-sector service 2. coordinate health care services with social and economic services 3. create safety net funding services 4. reduce nonfinancial barriers to care (transportation)			Isabel Collier Read, Immokalee Health Park, The NCH Healthcare System, The First Bank of Immokalee, The State of Florida, The Collier County Public Health Unit, Collier Health Services, Inc., Collier County Government.	
<b>Kit Carson County Health Services Network</b>	1. expand membership 2. connect members through telecommunications systems 3. conduct health care needs assessment 4. expand service delivery system				
<b>Lake Okeechobee Rural Health Network</b>	1. stabilize revenue 2. improve quality care 3. centralize location of service 4. attract and retain businesses and residents 5. prevent unnecessary loss of revenue 6. regain confidence of rural health consumers				

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Lake Planes Community Care Network</b>	1. develop a multi-county health care plan that combines various services	Case Management, Counseling Services, Preventative Health, Public Health, Referrals, Screenings, and Telemedicine		16 agencies	1. Offer win-win situation for all stakeholders. 2. Trust and open communication are essential. 3. Networks should plan on incremental, sequential growth and development.
<b>Lamoille Valley Long Term Care Team</b>	1. network development and integration 2. volunteer coordination 3. expansion of services 4. training 5. case management 6. public information and education 7. payment of services	Elderly	Advocacy and Case Management	Community coalition of 12 service providers including: 1 health system, nursing home, hospice, meals on wheels, adult day care, assisted living center, diabetes clinic.	1. Establishing trust is key to success and it is work.
<b>MN Rural Health Cooperative</b>	1. maintain local health care access 2. sustain members' economic viability 3. develop a network of secondary services 4. launch cooperative quality improvement 5. develop a business and education support system for members 6. create cost-effective cooperative communication tools 7. save costs via group purchasing 8. establish accessible mental health services	Elderly	Advocacy, Mental Health Services, and Public Health	50 family practices, 28 non-family practices, 21 mid-level providers, hospitals. MN law prohibits public health orgs. to join.	1. Physicians should actively be involved. 2. Support frontline staff. 3. Keep network members actively engaged in the project.
<b>North Country Health Consortium</b>	1. collaborative planning, implementation and evaluation of community-based disease prevention and health promotion activities 2.increase capacity for community health status assessment and improved patient care outcomes 3. health professional training, continuing education and management services 4. coordinate responses to health care financing challenges	Advocacy, Case Management, Mental Health Services, Referrals, Screenings, Telemedicine, and Health Promotion/ Disease Prevention - General, Diabetes, Mental Health, and Substance Abuse		14 members	1. Attention spent on organizational structure and incorporation early on paid off by giving credibility. 2. It is challenging to balance the needs of various members with network goals. 3. It is important to emphasize the network mission.

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Northeastern Missouri Rural Health Network</b>	1. to establish and sustain an active network committed to coordinating and improving the quality of basic health care services 2. to enhance clinical education experiences for local medical and health professions students	Elderly, Pregnant Women and Teens, and Women	Counseling Services, Continuing Education for Health Personnel - Nurses, and Health Promotion/ Disease Prevention - General and Substance Abuse	4 agencies, 3 rural hospitals, 6 HDs, 4 ambulance districts, Area Health Education Center, 42 member Independent. Practice Association	1. Strategic plans may need to be reevaluated from time to time so that project priorities are consistent with local needs and that resources are appropriately allocated. 2. Trust is a powerful force that can either impede or promote progress.
<b>Northern Michigan Integrated Delivery System</b>	1) to improve the health status 2) to provide a seamless continuum of care 3) to combine resources and patient volumes 4) to provide more health care coverage choices; 5) to improve care processes and outcomes 6) to provide a good clinical mix of services; 7) to create a more cost-effective delivery system 8) to expand the network 9) to educate various groups		Case Management	4 hospitals and 1 physician	1. They had to have retreat to address concerns by members. 2. They had to work hard to get a common vision for network - lots of competition.
<b>Northern Sierra Rural Health Network</b>	1. increase access to care 2. improve quality of care 3. better coordinate services	Minorities/ Hispanic	Case Management, Emergency Medical Services, Mental Health Services, Primary Care, Public Health, Telemedicine, and Continuing Education for Health Care Professionals - Emergency Medical Technicians and Paramedics	46 orgs.	1. Start w/ concise goals and clear mission. 2. Need strong and flexible partnership.
<b>Northland Healthcare Alliance/ The Northland Integrated Network</b>	1. provide a working vehicle to insure the continuation of value-based healthcare in the Dakotas 2. have a far-reaching effect on the improvement of the health status of individuals in our communities, particularly in rural areas 3. reduce healthcare costs 4. improve Medicaid and Medicare managed care	Adolescents, Children, and Elderly	Medicare, Telemedicine, Health Promotion/ Disease Prevention - General and Diabetes	23 members	1. It is hard to find market-based reasons for providers to collaborate. 2. Need to decide between market driven or rural health care safety. 3. Network members need to share a common vision.
<b>Pathways to Care Network</b>	1. create accessible, cost-effective, and accountable health care delivery system 2. create non-profit structure 3. improve communication 3. develop integrative info. system 4. launch managed care education programs etc.	Adolescents, Children, Elderly, and Minorities/ African American, Hispanic, and Native American	Counseling Services, Emergency Medical Services, Dental Care, Mental Health Services, and Public Health	19 members	1. Use of tools to improve network is important.

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Redwood Coast Medical Service Network</b>	1. build emergency services infrastructure 2. integration of pertinent patient info 3. telehealth and telemedicine 4. patient education		Advocacy, Counseling Services, Emergency Medical Services, Health Fairs, Media Coverage, Primary Care, Telemedicine, and Health Promotion and Disease Prevention - General and Diabetes	Redwood Coast Medical Services, Coast Life Support District, Mendocino Coast District Hospital, Santa Rose memorial Hospital	1. It is hard to get staff. 2. Transportation is important. 3. Telemedicine hard to manage. 4. Need open communication between members.
<b>Roaring Fork Valley Community Health Plan</b>	1. develop a community health plan 2. health care management and utilization review 3. offer quality health care 4. cooperatively represent all stakeholders 5. keep health care \$ in the community	Minorities/ Hispanic	Advocacy and Case Management		1. Create an implementation plan. 2. Communication is important. 3. Establish an executive committee that is able to make decisions. 4. Have a process for regularly reviewing network activities and improvement efforts. 5. Need to be patient.
<b>Rural Comprehensive Care Network</b>	Focused on 6 goals that covered items such as agreements between the members, offering a range of managed care products, participate in local and regional health planning, and more.			South East Rural Physician Alliance, the Blue River Valley Health Care Network, and Community Access to Coordinated Healthcare	1. Be flexible and adaptable as the health care environment changes. 2. there is a natural conflict between certain groups of providers, as well as providers and administrators.
<b>Rural Zones of Collaboration/ Rural Wisconsin Health Cooperative</b>	1. increase collaboration among competing health plans along with rural hospitals and practitioners	Elderly		grew out of 3 networks which represent: 400 physicians, 25 community-based or Catholic hospitals and various others	1. Some network members do not know how to collaborate effectively. 2. Collaboration works best if the people involved have different skills. 3. Need orientation for new network members. 4. Many rural hospitals and clinics lack the hardware and software to participate.
<b>Southeastern Adirondack Health Care System</b>	1. conduct forums with community members 2. create community health care corp. 3. develop a system wide plan for service delivery			hospital, nursing home, primary care center, HD, rescue org., mental HD and family planning provider	
<b>Southern Virginia's Rural Health Network</b>	1. provide full continuum of care 2. create common financing system 3. develop a single health data system				
<b>Tohono O' Odham Nation Department of Human Services</b>	1. establish a centralized database	Minorities/ Native American	Advocacy and Primary Care		1. It is hard to get staff.

Name	Mission/ Objectives	Population Group Served	Services	Partners	Lessons
<b>Upper Peninsula Health Care Network, Inc.</b>	1. coordinate care 2. reduce cost of care		Advocacy, Mental Health Services, Telemedicine, and Health promotion/ Disease Prevention - Mental Health	OPIHN, Great Lakes Behavioral Health, consortium of mental health and substance abuse providers, Upper Peninsula Health Plan	1. Develop information system infrastructure. 2. Need leadership that can build consensus.
<b>Valley Regional Healthcare, Inc./ Partners in Health</b>	1. develop an integrated database system 2. develop a link between health care providers 3. integrated behavioral health care management	Children, Elderly, and Pregnant Women and Teens	Advocacy, Mental Health Service, and Referrals		1. The complexity of the health care regulatory environment cost them time. 2. Information technology is costly. 3. The staff require training to use the system.
<b>Western Plains Community Health Services</b>	1. expand the network both vertically and horizontally 2. develop a Medicaid managed care program 3. collect and evaluate regional health information		Medicaid, Medicare, and Health Promotion/ Disease Prevention - General	119 members	1. Be cautious before entering into an agreement with an insurance agency. 2. Make sure your network is not too dependent on agencies politically affected.
<b>Yavapai County Network Development Project</b>			Public Health		1. Frequently reevaluate the mission. 2. Make sure management structure is approved by all members and reviewed.

## **Appendix B**

### **Informed Consent Form**

#### **VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY**

##### **Informed Consent for Participants In Research Projects Involving Human Subjects**

**Title of Project:** Rural Health Network Effectiveness: An Analysis at the Network Level

**Investigator:** Heidi Morehead

#### **I. Purpose of this Research/Project**

Residents of rural communities have proven to have poorer health status than people living in more populated areas. For example, The Urban and Rural Health Chartbook notes that the age-adjusted death rate among younger (1-24 years of age) persons who live in the most rural counties is 31 percent higher than those who live in the most urban counties and 65 percent higher for those who live in suburban counties (Eberhardt, Ingram, Makuc et al., 2001). Explanation for the health disparity experienced by rural residents is complex due to the influence of both community factors and the socioeconomic and behavior patterns of individuals. Access to health care, including preventive care, as well as substantial challenges with health literacy, higher instances of smoking, and lack of health insurance among rural residents are some of the main causes of this disparity.

Rural health networks have been touted by many involved with rural health issues as an effective way to address the health disparity experienced by rural areas. The last fifteen years has seen a growth in the development of rural health networks, with a growing number of grantors, e.g. the Health Resources and Services Administration, The Robert Wood Johnson Foundation and states such as New York, Florida, and West Virginia, funding their development. However, little research has been undertaken on the problems and assets of rural health care networks.

The proposed research will provide insight into what factors impact the effectiveness of vertically integrated rural health networks. It is the overall intent of this dissertation to identify barriers to and the factors that lead to effective rural health networks. To examine this, one-on-one interviews and a questionnaire will be used to collect data from respondents affiliated with the networks sampled.

## **II. Procedures**

For the purpose of information gathering, the Virginia Tech researcher is conducting semi-structured interviews with persons in rural health networks. The interviews will last approximately one hour and will be conducted at an agreed upon place between the researcher and the interviewees. Additionally, questionnaires will be distributed to respondents in the rural health networks.

## **III. Risks**

While we do not anticipate that the semi-structured interview and questionnaire process will cause any harm, every precaution necessary will be taken to maintain a safe environment.

## **IV. Benefits**

Through conducting the semi-structured interviews and questionnaires, the Virginia Tech researcher hopes to gain valuable information about the effectiveness of rural health networks. This information will assist them in identifying indicators of effectiveness for rural health networks. While it is anticipated that their work can lead to accomplishing these goals, the Virginia Tech researcher can afford no promise, or guarantee, of these benefits to participants.

## **V. Confidentiality**

Participant responses will only be known by the investigator. For all intents and purposes, none of the information or ideas discussed in the semi-structured interviews setting (or any subsequent setting) or will, at any point in time, be identifiable to any one individual, or group of individuals. Participant identities will be kept strictly confidential. At no time will the investigator release the specific results of the interview to anyone without the written consent of the individual interviewees.

During the interviews, the Virginia Tech researcher will be taking extensive notes of the conversation. These notes will not be shared with anyone. Furthermore, the notes will be kept in a secure place and will only be accessible by the researcher.

## **VI. Compensation**

Neither Virginia Tech nor the investigator will be providing subjects with compensation for their participation in this study.

## **VII. Freedom to Withdraw**

Subject participation in this study is important. However, should a participant wish, at any time, to withdraw from the interview, he/she may do so without prejudice. A participant is also free not to answer any of the researcher's questions. The researcher does reserve the right to ask a participant(s) to leave the focus group, if deemed necessary.

## **VIII. Subjects Responsibilities**

I voluntarily agree to participate in this study. I have the following responsibilities:

1. To provide the investigator the extent of your ability and willingness (during the interview or at any subsequent time through e-mail) with any information you may deem relevant, or significant, to this study.
2. To listen to and communicate with the investigator in a manner that will not threaten other individuals or disturb the flow of conversation.

## **IX. Subjects Permission**

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

\_\_\_\_\_ Date \_\_\_\_\_  
Subject Signature

Should I have any pertinent questions about this research or its conduct, and research subjects' rights, and whom to contact in the event of a research-related injury to the subject, I may contact:

Heidi Morehead, Researcher  
PH.D. Candidate  
Center for Public Administration and Policy (0520)  
Virginia Tech  
104 Draper Road  
Blacksburg, VA 24061  
(540) 231-1188  
[hutz@vt.edu](mailto:hutz@vt.edu)

Larkin Dudley, Dissertation Chair  
Associate Professor  
Center for Public Administration and Policy (0520)  
Virginia Tech  
104 Draper Road  
Blacksburg, VA 24061  
(540) 231-5197  
[dudleyl@vt.edu](mailto:dudleyl@vt.edu)

Max O. Stephenson, Jr.  
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David M. Moore  
Chair, Virginia Tech Institutional Review Board for the Protection of Human Subjects  
Office of Research Compliance  
1880 Pratt Dr., Suite 2006 (0497)  
Blacksburg, VA 24061  
(540) 231-4991  
[moored@vt.edu](mailto:moored@vt.edu)

This Informed Consent is valid from the date the participant signs it until eternity.

## Appendix C: Invitation Letters to Participate in Questionnaire

### Figure C1: Invitation Letter to Network Directors

Dear Rural Health Network Director,

I am writing to ask your help in a study on the effectiveness of rural health networks that I, a Ph.D. student at Virginia Tech, am conducting for my dissertation research. To accomplish this, I am collecting data on the characteristics of effective rural health networks.

It is my understanding that you are the Director of one of the thirty-four rural health networks that received funding from the Office of Rural Health in 1997 for their Rural Health Network Development Grant Program. Each of the Directors of these thirty-four rural health networks is being asked to participate in this research.

Your participation is voluntary but very important. This information will assist in the determination of what makes rural health networks effective. Overall, these findings have the potential of improving the effectiveness of rural health networks which could raise the level of health care and, therefore, the quality of life for residents in rural areas.

To complete the online questionnaire, please use your Web browser to go to the following website: <http://survey.vt.edu/survey/entry.jsp?id=1164146945806>. Once in the questionnaire, please enter your study ID number in the space provided.

Your Study ID # =

Your answers will not be identified with you or with your network by name. All information will be aggregated to describe the overall trends. This voluntary questionnaire should take you approximately 20 to 25 minutes to complete.

Please feel free to contact me at [hutz@vt.edu](mailto:hutz@vt.edu) or 540-230-5460, if you have any questions or difficulties with the questionnaire. If you would like to see a summary of the survey results, please indicate this on the final question of the questionnaire.

Thank you very much for helping me with this important study.

Sincerely,

Heidi Morehead

Ph.D. Candidate, Center for Public Administration & Policy  
Virginia Polytechnic and State University

**Figure C2: Brief Reminder Email Correspondence with Network Directors**

Last week, I emailed a questionnaire to you that asked about your rural health network. Each of the Directors of the thirty-four rural health networks that received funding from the Office of Rural Health in 1997 for their Rural Health Network Development Grant Program is being asked to participate in this research.

To the best of my knowledge, your response has not yet been completed and received. Please do so today. I am especially grateful for your help because it is only by asking people like you to share your experiences that I can understand what makes rural health networks effective.

If you did not receive the questionnaire, or it was misplaced, please respond to this email and I will email you another one today.

Heidi Morehead  
Ph.D. Candidate, Center for Public Administration & Policy  
Virginia Polytechnic and State University

### **Figure C3: Final Invitation Letter to Network Directors**

Dear Director,

Prior to the holidays, I emailed a questionnaire to you that asked about your rural health network. To the best of my knowledge, it has not yet been completed.

The comments of people who have already responded include a wide variety of responses regarding their rural health network. Many have described both problems and assets of their network. I think the results are going to be very useful in improving the effectiveness of rural health networks which could raise the level of health care and, therefore, the quality of life for residents in rural areas.

I am writing again because of the importance that your questionnaire has for helping me get accurate results. Each of the Directors of the thirty-four rural health networks that received funding from the Office of Rural Health in 1997 for their Rural Health Network Development Grant Program is being asked to participate in this research. It is only by hearing from everyone in the sample that I can be sure that the results are truly representative.

If you are or were not the director of a rural health network that received funding from the Office of Rural Health in 1997, please let me know by responding to this email. If known, please include any contact information for the director. If your network is no longer in existence, please answer the questionnaire as if it were.

To complete the online questionnaire, please use your Web browser to go to the following website: <http://survey.vt.edu/survey/entry.jsp?id=1164146945806>. Once in the questionnaire, please enter your study ID number in the space provided.

Your Study ID # =

Your answers will not be identified with you or with your network by name. All information will be aggregated to describe the overall trends. This voluntary questionnaire should take you approximately 20 to 25 minutes to complete.

I hope that you will fill out the questionnaire soon, but if for any reason you prefer not to answer it, please let me know by responding to this email.

Sincerely,

Heidi Morehead

Ph.D. Candidate, Center for Public Administration & Policy  
Virginia Polytechnic and State University

P.S. Please feel free to contact me at [hutz@vt.edu](mailto:hutz@vt.edu) or 540-230-5460, if you have any questions or difficulties with the questionnaire.

#### **Figure C4: Invitation Letter to Network Affiliates**

Dear Rural Health Network Affiliate,

I am writing to ask your help in a study on the effectiveness of rural health networks that I, a Ph.D. student at Virginia Tech, am conducting for my dissertation research. To accomplish this, I am collecting data on the characteristics of effective rural health networks.

Your participation is voluntary but very important. This information will assist in the determination of what makes rural health networks effective. Overall, these findings have the potential of improving the effectiveness of rural health networks which could raise the level of health care and, therefore, the quality of life for residents in rural areas.

To complete the online questionnaire, please use your Web browser to go to the following website: <http://survey.vt.edu/survey/entry.jsp?id=1170082946733>. Once in the questionnaire, please enter your study ID number in the space provided.

Your Study ID # =

Your answers will not be identified with you or with your network by name. All information will be aggregated to describe the overall trends. This voluntary questionnaire should take you approximately 15 minutes to complete.

Please feel free to contact me at [hutz@vt.edu](mailto:hutz@vt.edu) or 540-230-5460, if you have any questions or difficulties with the questionnaire. Thank you very much for helping me with this important study.

Sincerely,

Heidi Morehead  
Ph.D. Candidate, Center for Public Administration & Policy  
Virginia Polytechnic and State University

## **Figure C5: Final Invitation Letter to Network Affiliates**

Dear Rural Health Network Affiliate,

Within the last three weeks, you were emailed a letter from your network director inviting you to participate in an online survey about the rural health network of which you are a part. Various persons affiliated with your rural health network are being asked to participate in this research.

The comments of people who have already responded include a wide variety of responses. Many have described both problems and assets of their network. I think the results are going to be very useful in improving the effectiveness of rural health networks which could raise the level of health care and, therefore, the quality of life for residents in rural areas.

If you have not completed this survey, please do so today. I am especially grateful for your help because it is only by asking people like you to share your experiences that I can understand what makes rural health networks effective.

To complete the online questionnaire, please use your Web browser to go to the following website: <http://survey.vt.edu/survey/entry.jsp?id=1170082946733>. Once in the questionnaire, please enter your study ID number in the space provided.

Your Study ID # =

Your answers will not be identified with you or with your network by name. All information will be aggregated to describe the overall trends. This voluntary questionnaire should take you approximately 15 minutes to complete.

Thank you for your help in this very important study.

Sincerely,

Heidi Morehead  
Ph.D. Candidate, Center for Public Administration & Policy  
Virginia Polytechnic and State University

## Appendix D: Criteria for Choosing Networks for Field Study and Survey

**Table D1: Correlates of Effectiveness**

Name	Years	Purpose	Mission	Governance	Planning	Financing	Leadership	Staff	Communication	Evaluation	TOTAL
Roaring Fork Valley Community Health Plan	10	Defender/Analyzer	11	21	12	18	15	11	11	11	110
Northeast Missouri Rural Health Network	9	Defender/ Analyzer	9	18	6	13	10	10	7	7	80
CHOICE Regional Health Network	11	Analyzer	11	20	10	18	14	8	8	4	93
Northland Healthcare Alliance	10	Defender/Analyzer	9	18	12	18	13	10	8	8	96
Rural Wisconsin Health Cooperative	27	Prospector/Analyzer	8	21	13	22	12	14	12	10	112

Name	Years	Purpose	Mission	Governance	Planning	Financing	Leadership	Staff	Communication	Evaluation	TOTAL
Tioga County Partnership for Community Health	13	Analyzer	12	21	12	8	14	14	12	11	104
Lake Plains Community Care Network	13	Prospector/Analyzer	10	21	8	12	15	14	11	6	97
Community Health Council	10	Analyzer	8	19	7	0	7	6	7	0	54
Northern Sierra Rural Health Network	10	Analyzer	10	18	12	12	13	10	10	8	93
Community Health Information Collaborative	9	Defender/Analyzer	11	21	13	21	15	15	12	9	117

Name	Years	Purpose	Mission	Governance	Planning	Financing	Leadership	Staff	Communication	Evaluation	TOTAL
Yavapai County Community Health Services	6	Analyzer	6	11	6	8	9	10	8	6	64
Minnesota Rural Health Cooperative	11	Prospector/Analyzer	7	19	2	12	13	10	10	8	81
Community Choice	15	Defender/analyzer	8	20	9	19	12	14	10	8	100
RCCN	9	Prospector/Analyzer	7	17	6	12	14	11	8	1	76
North Country Health Consortium	9	Analyzer	9	17	9	17	13	14	10	8	97
EPIDS	10	Analyzer	5	17	9	11	12	10	7	8	79
Upper Peninsula Health Care Network	12	Defender/Analyzer	10	18	0	10	12	12	8	2	72
Western Plains Community Health Services	13	Prospector/Analyzer	7	16	3	6	11	10	8	0	61

Name	Years	Purpose	Mission	Governance	Planning	Financing	Leadership	Staff	Communication	Evaluation	TOTAL
Delta Rural Health Network	8	Analyzer	9	18	9	14	11	6	12	8	<b>87</b>
Adirondack Rural Health Network	14	Analyzer/Prospector	11	20	8	9	14	12	11	6	<b>91</b>
Pathways to Care	8	Analyzer	11	17	6	15	6	0	9	3	<b>67</b>

**Table D2: Measures of Effectiveness**

Name	Total Network Benefits	Number of Orgs. Added	Number of Services Provided	Whether or not has a NAO?
Roaring Fork Valley Community Health Plan	27	3	16	Yes
Northeast Missouri Rural Health Network	22	45	5	No
CHOICE Regional Health Network	22	thousands	9	Yes
Northland Healthcare Alliance	24	9	5	Yes
Rural Wisconsin Health Cooperative	25	26	7	Yes

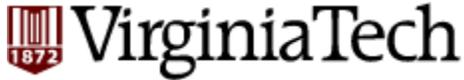
Name	Total Network Benefits	Number of Orgs. Added	Number of Services Provided	Whether or not has a NAO?
Tioga County Partnership for Community Health	24	20	Do not provide direct services	Yes
Lake Plains Community Care Network	21	Static	7	Yes
Community Health Council	10	20	6	Yes
Northern Sierra Rural Health Network	23	33	3	Yes
Community Health Information Collaborative	29	322	3	Yes
Yavapai County Community Health Services	16	5	9	No

Name	Total Network Benefits	Number of Orgs. Added	Number of Services Provided	Whether or not has a NAO?
Minnesota Rural Health Cooperative	24	80	Do not provide direct services.	Yes
Community Choice rccn	24 17	4	9 3	Yes Yes
North Country Health Consortium	25	4	10	Yes
EPIDS	10		Do not provide direct services.	No
Upper Peninsula Health Care Network	19	1	5	Yes
Western Plains Community Health Serives	5	80	Do not provide direct services.	Yes
Delta Rural Health Network	23	17	13	Yes

Name	Total Network Benefits	Number of Orgs. Added	Number of Services Provided	Whether or not has a NAO?
Adirondack Rural Health Network	19		3 Do not provide direct services.	Yes
Pathways to Care	29		4 Do not provide direct services.	No

## Appendix E: Questionnaires

Figure EI: Questionnaire with Network Directors



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### **Rural Health Network Survey**

Rural health networks have been touted as an effective way to address the health disparity experienced by rural areas. The last fifteen years have seen a growth in the development of a type of rural health network, vertically integrated rural health networks which are formal organizations consisting of various types of separately owned organizations that cooperatively provide or support the delivery of health care services. However, little research has been undertaken on their problems and assets. Your answers to this questionnaire are very important in describing the state of vertically integrated rural health networks.

Please take 20 to 25 minutes to complete the questionnaire ...

**1. Study ID #:**

**2. Name of affiliated network:**

**3. What is your main affiliation with the network?**

- Director of the network
- Other network employee
- Employee of a member organization
- Board/ Steering Committee Member
- Citizen of the community the network serves
- other:



**4. Is your network still in operation?**

- Yes
- No

**If no, please answer the remaining questions in the past tense or as if your network were still in existence.**

**5. How many counties does your network serve?**

**6. How many metropolitan counties does your network serve? (The OMB defines a metropolitan county as: a central county with (1) one or more urbanized areas each having a population of 50,000 or more residents, plus (2) any outlying counties in which at least 25 percent of the working age population commute to the central county for work or in which 25 percent of the outlying county's workers commute from the central county.) If you are not sure how many metropolitan counties your network serves, please list the two largest cities serviced by your network.**

**7. How many years has your network been in existence?**

**8. How many organizations are in your network?**

**9. If you have had network growth, please indicate the number of member organizations that you have added since your network began.**

**10. Please indicate how many of each type of organization are in your network?**

**Departments of Social Service:**

**Health Departments:**

**Family Practices (Independent):**

**Specialists (Independent):**

**Mental Health Providers (Independent):**

**Critical Access Hospitals (a hospital that is certified to receive cost-based reimbursement from Medicare):**

**Other Hospitals:**

**Ambulance Districts:**

**Nursing Homes:**

**Home Health Agencies:**

**Area Agencies on Aging:**

**Other types of organizations:**

**11. What population does your network serve? Please check all that apply.**

- Infants
- Children
- Adults
- Elderly
- Minorities
- Pregnant Women and Teens
- Disabled
- Women

other:

**12. What direct client services does your network provide? Please check all that apply.**

- Advocacy
- Case Management
- Coordination of Services
- Counseling Services
- Dental Care
- Education for Health Professionals
- Emergency Medical Services
- Health Fairs
- Health Promotion/ Education
- Immunizations
- Media Coverage
- Medicaid
- Medicare
- Mental Health Services
- Preventative Health Care
- Primary Care
- Public Health
- Referrals
- Screenings (general)
- Telemedicine
- Do not provide direct client services.

other:

**13. Please rank from top to bottom the functions of your network. Please give a 1 to your network's main function,**

**2 to the second function, and so on until you have ranked all the functions of your network. Please exclude from your ranking any functions that do not apply to your network.**

**Improve community health status.**

**Improve access to health care services for clients.**

**Improve integration and coordination of services among members.**

**Reduce costs for network members.**

**Stabilize or improve the market share of the network service area.**

**Improve member quality.**

**Increase use of member services by residents.**

**Other functions of your network (please include ranking):**

***Mission and Goals: The following is a list of statements regarding the mission and goals of your network. Please indicate how much you agree or disagree with each statement.***

**14. The network's purpose and mission are understood by the network members.**

Strongly Agree    Agree    Disagree    Strongly Disagree

**15. Members are committed to network goals.**

Strongly Agree    Agree    Disagree    Strongly Disagree

**16. The network's mission is clearly expressed in writing.**

Strongly Agree    Agree    Disagree    Strongly Disagree

**17. Generally speaking, key community leaders in the network service area (government officials, clergy, business people, etc.) understand the purpose and mission of the network.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Governance and Decision Making: The following is a list of statements regarding governance and decision making in your network. Please tell me how much you agree with each statement.***

**18. The network has and maintains a network administrative organization (NAO). A NAO is a central, local administrative entity that leads, coordinates, and governs the network.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**19. The network has a governing board or a steering committee.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**If disagree, please skip to question 22.**

**20. The governing board or steering committee is representative of the members of the network.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**21. The governing board or steering committee was approved by all members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**22. Decision making processes are stated clearly in writing.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**23. Network decision making involves input by key network members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**24. There is a defined network mechanism for resolving internal conflicts.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Planning: The following is a list of statements regarding the strategic planning process of your network. Please tell me how much you agree or disagree with each statement.***

**25. There is a defined strategic planning process in place for the network.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**26. Strategic planning is ongoing with opportunities for member input.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**27. The network's strategic plan has been distributed to all network members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**28. The network's business plan identifies specific products and services, as well as targeted customers.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Financing: The following is a list of statements regarding the financing of your network. Please tell me how much you agree or disagree with each statement.***

**29. The annual budget of the network has been developed with the input of network members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**30. What is your network's annual budget?**

**31. In the short-term (1-2 years), sources of network revenue are diverse.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**32. Sources of network revenue are sustainable.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**33. What are your network's main sources of revenue?**

**34. All members contribute money to support the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**35. A long-range strategy (3-5 years) is articulated in writing for obtaining future network revenue and economic self-sufficiency.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**36. When your network receives funding from government entities, external fiscal control by the state is centralized, i.e., not delegated to a local funding authority.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**37. Your network assumes financial risk for the direct client services that you provide.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**38. Your network offers product lines that are unique from network participants or from services provided in the community.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Leadership/Management: The following is a list of statements regarding the leadership/ management of your network. Please tell me how much you agree or disagree with each statement.***

**39. The network has a paid director.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**40. The network director has skill and experience in management of collaborative organizations.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**41. The network director is able to build consensus among network members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**42. Network board members' sometimes conflicting leadership roles – doing what's best for the network versus doing what's best for their individual organizations – is recognized and managed successfully.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**43. Physicians or other key health care providers have active roles in network leadership.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Staffing: The following is a list of statements regarding your network staffing. Please tell me how much you agree or disagree with each statement.***

**44. Staffing levels are adequate to carry out network activities.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**45. Network staff are qualified.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**46. Staff are committed to the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**47. Staff has the technology, equipment, and software needed to maximize productivity.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**48. Turnover of key staffing positions is historically low.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Communication/ Trust: The following is a list of statements regarding communication and trust in your network. Please tell me how much you agree or disagree with each statement.***

**49. Network staff communicate regularly with network members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**50. Network members use the network as a forum for sharing information and/or problem solving.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**51. Network members have electronic capability of communicating with one another.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**52. Network members trust one another.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Evaluation: The following is a list of statements regarding the evaluation processes of your network. Please tell me how much you agree or disagree with each statement.***

**53. The network has a defined method of evaluating its performance.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**54. If agree, what are your network's performance measures?**

**55. Evaluation is based on the impact of the network on the communities in its service area.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**56. Evaluation findings are used to improve network performance, decision making, and strategic planning.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**57. Evaluation is based on the impact of the network on its members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Rural Environment: Please answer the following questions regarding the rural environment in which your network operates.***

**58. Following is a list of statements regarding the rural environment. Which of these are problematic for your network? Please check all that apply.**

- Lack of providers (e.g., mental health, family physicians and dentists)
- Lack of transportation
- Complex health care regulatory environment
- Complexity of patient problems
- Lack of health literacy
- Lack of infrastructure for information technology
- Growing elderly population
- Growing immigrant population
- High rate of uninsured persons
- Geographic terrain

Other impacts of the rural environment on your network:

**59. How many designated Health Professional Shortage Areas does your network serve? Health Professional Shortage Areas (HPSAs) have 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).**

**60. How many Medically Underserved Areas/ Medically Underserved Populations (Index of Medical Underservice of 62.0 or less) does your network serve?**

***Network Benefits: The following is a list of statements regarding the possible benefits of your network. Please tell me how much you agree or disagree with each. If a***

***statement does not apply to your network's purpose, please check not applicable.***

**61. There is a public perception that your network is solving the problem(s) it intends to address.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**62. There are improvements in the incidence of the problem that your network addresses.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**63. Please explain any improvements that your network has made in the problem(s) it addresses.**

**64. Please provide any types of aggregate indicators of client well-being that your network uses (e.g., suicide rates or prevalence of preventable disease).**

**65. The range of services provided by your network has increased since the network was created.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**66. If the range of services provided by your network has increased, how many and what services has it added?**

**67. Your network has been able to decrease service duplication since its inception.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**68. Your network has improved integration/ coordination of services.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not

Applicable

**69. Your network has improved the survival of its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**70. Your network has enhanced the status of its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**71. Your network has enabled its members to acquire resources.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**72. Your network has reduced the cost of services for its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

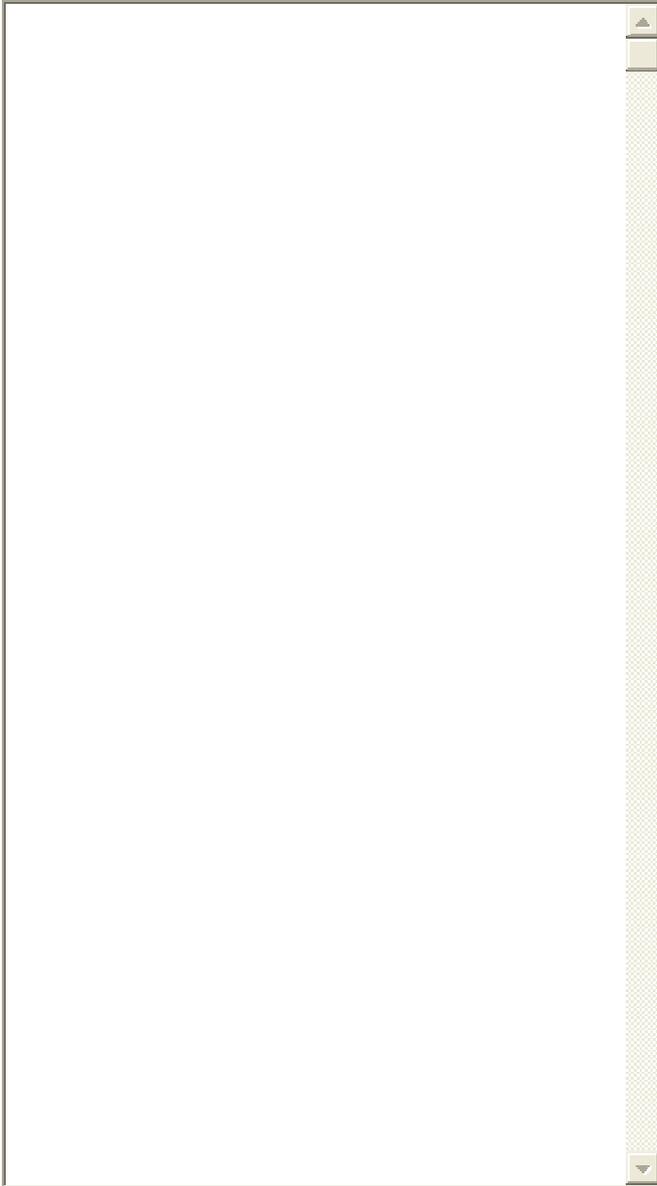
**73. Your network has improved access to services for members' clients.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

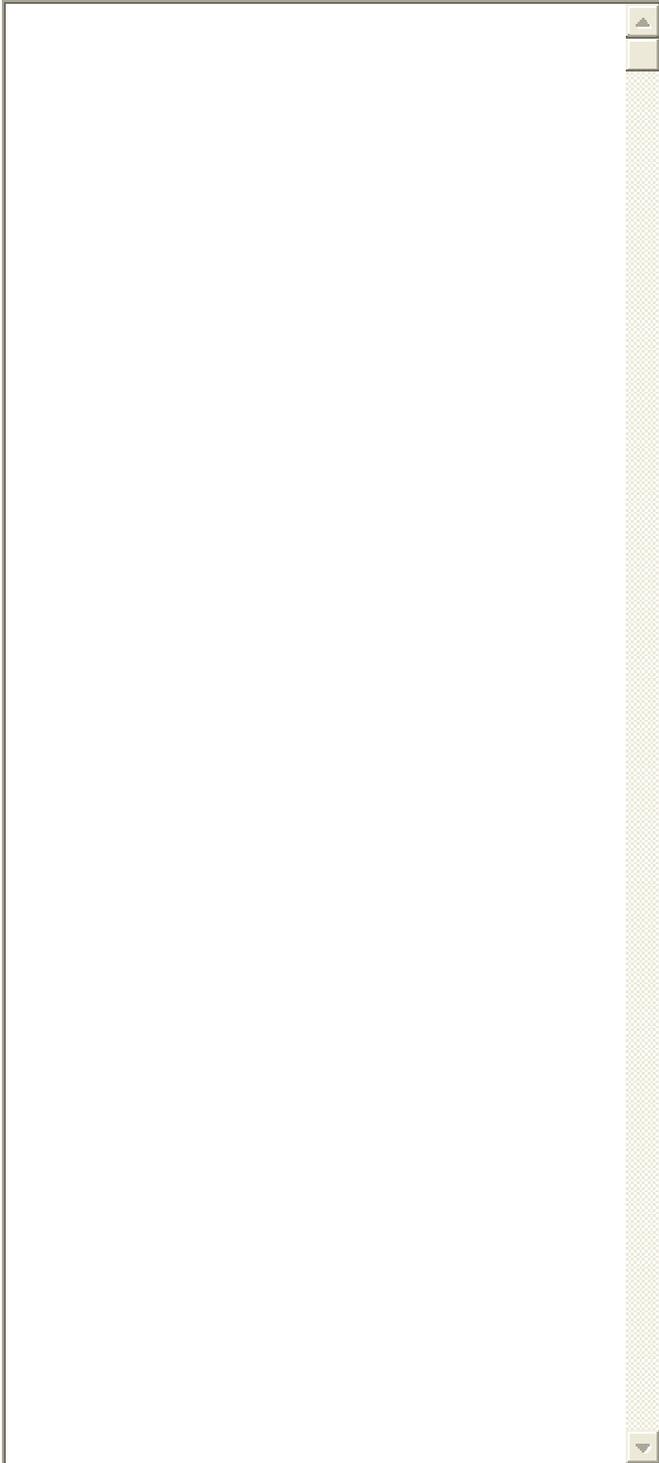
**74. Your network has improved members' client outcomes.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

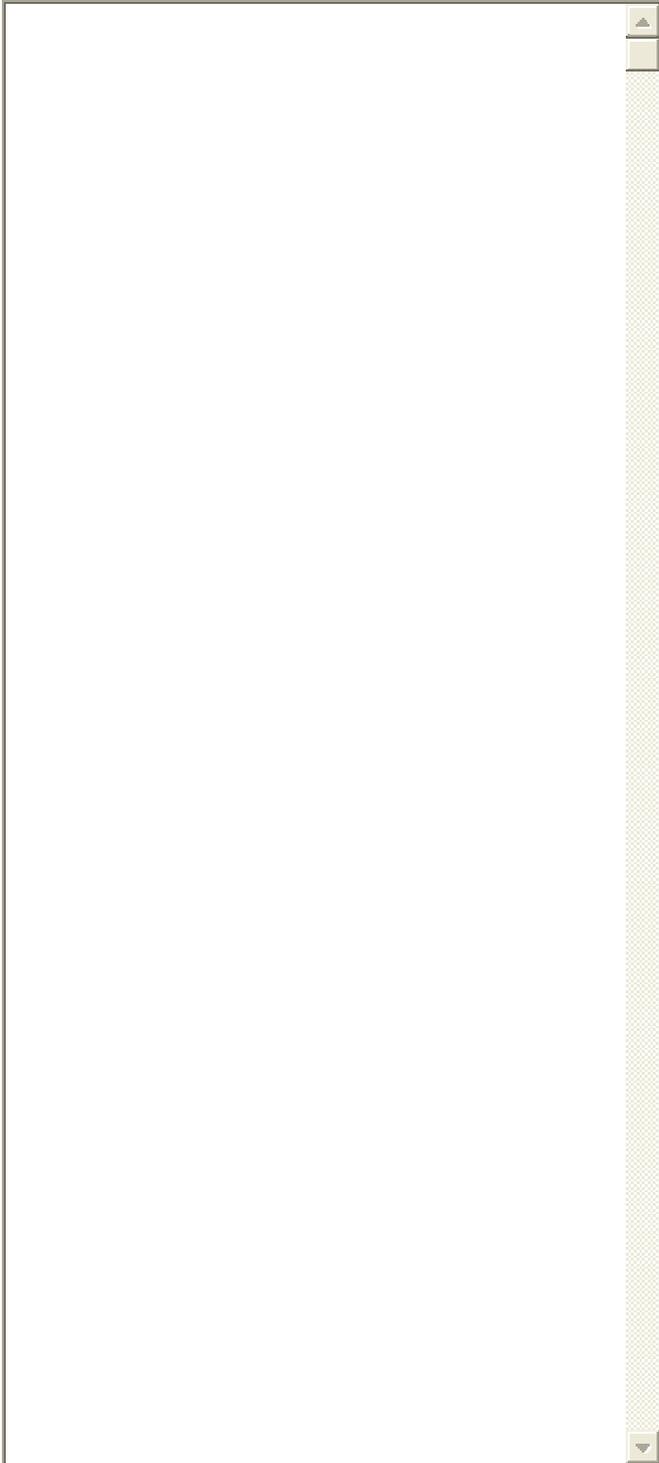
**75. Please note any other benefits of your network.**



**76. What about your network makes it successful?**



**77. What would make your network more effective?**



**78. I would like to receive a copy of the survey results.**

- Yes
- No



Figure E2: Questionnaire with Other Network Affiliates



## **Rural Health Network Survey**

Rural health networks have been touted as an effective way to address the health disparity experienced by rural areas. The last fifteen years have seen a growth in the development of a type of rural health network, vertically integrated rural health networks which are formal organizations consisting of various types of separately owned organizations that cooperatively provide or support the delivery of health care services. However, little research has been undertaken on their problems and assets. Your answers to this questionnaire are very important in describing the state of vertically integrated rural health networks.

Please take 15 minutes to complete the questionnaire ...

**1. Study ID #:**

**2. Name of affiliated network:**

**3. What is your main affiliation with the network?**

- Director of the network
- Other network employee
- Employee of a member organization
- Board/ Steering Committee Member
- Citizen of the community the network serves
- other:



**4. How long have you been in the NETWORK position described above?**

- Less than six months
- Six months to a year

- Up to two years
- More than two years

***Your Organization: Please answer the following questions regarding your organization (not the network). If you are not affiliated with a member organization, please skip to question number 10.***

**5. What is your role/ position within the member organization?**

- Executive Director
- Director
- Administrator
- Supervisor/ Manager
- Physician/ Specialist

**6. How many years has your organization been a member of the network?**

**7. Approximately, how many employees does your organization have?**

- One to ten
- Eleven to twenty
- Twenty to fifty
- Fifty to one hundred
- Over one hundred

**8. What type of organization is your organization?**

- Department of Social Service
- Health Department
- Family Practice (Independent)
- Specialist (Independent)
- Mental Health Provider (Independent)

- Critical Access Hospital
- Other Hospital
- Ambulance District
- Pharmacy
- School
- Nursing Home
- Home Health Agency
- Area Agency on Aging
- Other type of organization:



**9. What designation is your organization?**

- For-profit
- Non-profit
- Public

***Mission and Goals: The following is a list of statements regarding the mission and goals of your network. Please indicate how much you agree or disagree with each statement.***

**10. The network's purpose and mission are understood by the network members.**

- Strongly Agree    Agree    Disagree    Strongly Disagree

**11. Members are committed to network goals.**

- Strongly Agree    Agree    Disagree    Strongly Disagree

**12. The network's mission is clearly expressed in writing.**

- Strongly Agree    Agree    Disagree    Strongly Disagree

**13. Generally speaking, key community leaders in the network service area (government officials, clergy, business people, etc.) understand the purpose**

and mission of the network.

Strongly Agree  Agree  Disagree  Strongly Disagree

***Governance and Decision Making: The following is a list of statements regarding governance and decision making in your network. Please tell me how much you agree or disagree with each statement.***

**14. The governing board or steering committee is representative of the members of the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**15. The governing board or steering committee was approved by all members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**16. Decision making processes are stated clearly in writing.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**17. Network decision making involves input by key network members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**18. There is a defined network mechanism for resolving internal conflicts.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Planning: The following is a list of statements regarding the strategic planning process of your network. Please tell me how much you agree or disagree with each statement.***

**19. There is a defined strategic planning process in place for the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**20. Strategic planning is ongoing with opportunities for member input.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**21. The network's strategic plan has been distributed to all network members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**22. The network's business plan identifies specific products and services, as well as targeted customers.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Financing: The following is a list of statements regarding the financing of your network. Please tell me how much you agree or disagree with each statement.***

**23. The annual budget of the network has been developed with the input of network members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**24. In the short-term (1-2 years), sources of network revenue are diverse.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**25. Sources of network revenue are sustainable.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**26. All members contribute money to support the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**27. A long-range strategy (3-5 years) is articulated in writing for obtaining future network revenue and economic self-sufficiency.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**28. Your network offers product lines that are unique from network participants or from services provided in the community.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Leadership/Management: The following is a list of statements regarding the leadership/ management of your network. Please tell me how much you agree or disagree with each statement.***

**29. The network director has skill and experience in management of collaborative organizations.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**30. The network director is able to build consensus among network members.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**31. Network board members' sometimes conflicting leadership roles – doing what's best for the network versus doing what's best for their individual organizations – is recognized and managed successfully.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**32. Physicians or other key health care providers have active roles in network leadership.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Staffing: The following is a list of statements regarding your network staffing. Please tell me how much you agree or disagree with each statement.***

**33. Staffing levels are adequate to carry out network activities.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**34. Network staff are qualified.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**35. Staff are committed to the network.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**36. Staff has the technology, equipment, and software needed to maximize productivity.**

Strongly Agree  Agree  Disagree  Strongly Disagree

**37. Turnover of key staffing positions is historically low.**

Strongly Agree  Agree  Disagree  Strongly Disagree

***Communication/ Trust: The following is a list of statements regarding communication and trust in your network. Please tell me how much you agree or disagree with each statement.***

**38. Network staff communicate regularly with network members.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**39. Network members use the network as a forum for sharing information and/or problem solving.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**40. Network members have electronic capability of communicating with one another.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**41. Network members trust one another.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

***Evaluation: The following is a list of statements regarding the evaluation processes of your network. Please tell me how much you agree or disagree with each statement.***

**42. The network has a defined method of evaluating its performance.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**43. If agree, what are your network's performance measures?**

**44. Evaluation is based on the impact of the network on the communities in its service area.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**45. Evaluation findings are used to improve network performance, decision making, and strategic planning.**

- Strongly Agree  Agree  Disagree  Strongly Disagree

**46. Evaluation is based on the impact of the network on its members.**

- Strongly Agree    Agree    Disagree    Strongly Disagree

***Rural Environment: Please answer the following question regarding the rural environment in which your network operates.***

**47. Which of these are problematic for your network. Please check all that apply.**

- Lack of providers (e.g., mental health, family physicians and dentists)
- Lack of transportation
- Complex health care regulatory environment
- Complexity of patient problems
- Lack of health literacy
- Lack of infrastructure for information technology
- Growing elderly population
- Growing immigrant population
- High rate of uninsured persons
- Geographic terrain
- Language and cultural barriers
- Lack of scales of economy
- Lack of financial resources

Other impacts of the rural environment:

***Network Benefits: The following is a list of statements regarding the possible benefits of your network. Please tell me how much you agree or disagree with each. If a statement does not apply to your network's purpose, please check not applicable.***

**48. There is a public perception that your network is solving the problem(s) it intends to address.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**49. There are improvements in the incidence of the problem that your network addresses.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**50. Please explain any improvements that your network has made in the problem(s) it addresses.**

**51. Please provide any types of aggregate indicators of client well-being that your network uses (e.g., suicide rates or prevalence of preventable disease)**

**52. Your network has been able to decrease service duplication since its inception.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**53. Your network has improved integration/ coordination of services.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**54. Your network has improved the survival of its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**55. Your network has enhanced the status of its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**56. Your network has enabled its members to acquire resources.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

**57. Your network has reduced the cost of services for its members.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

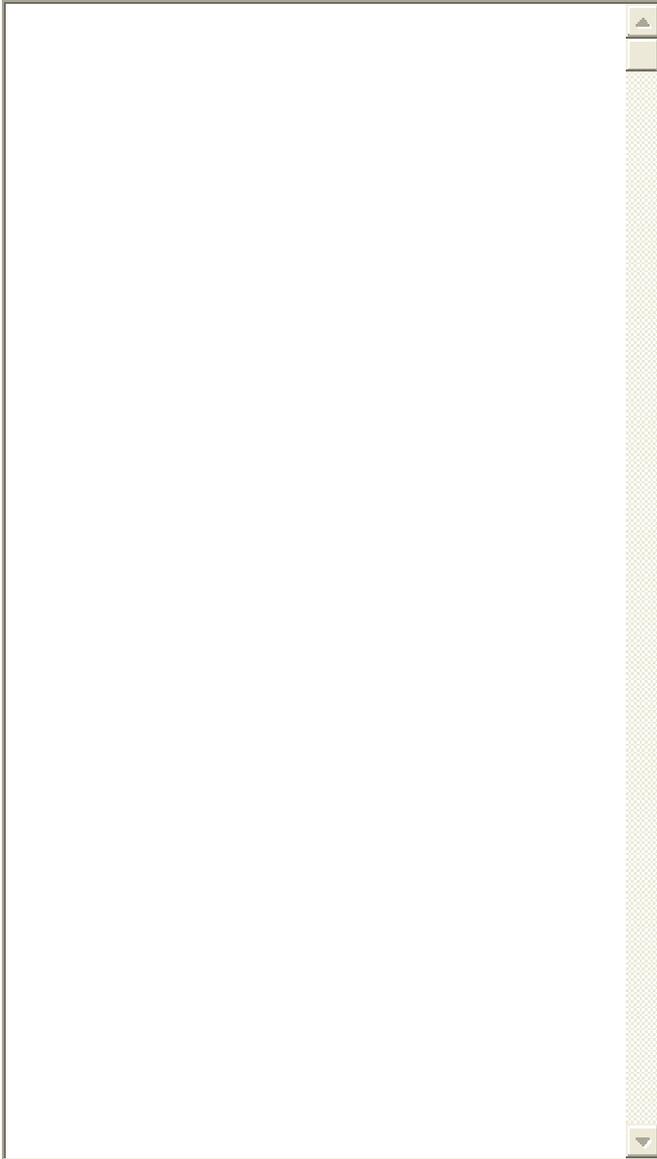
**58. Your network has improved access to services for members' clients.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

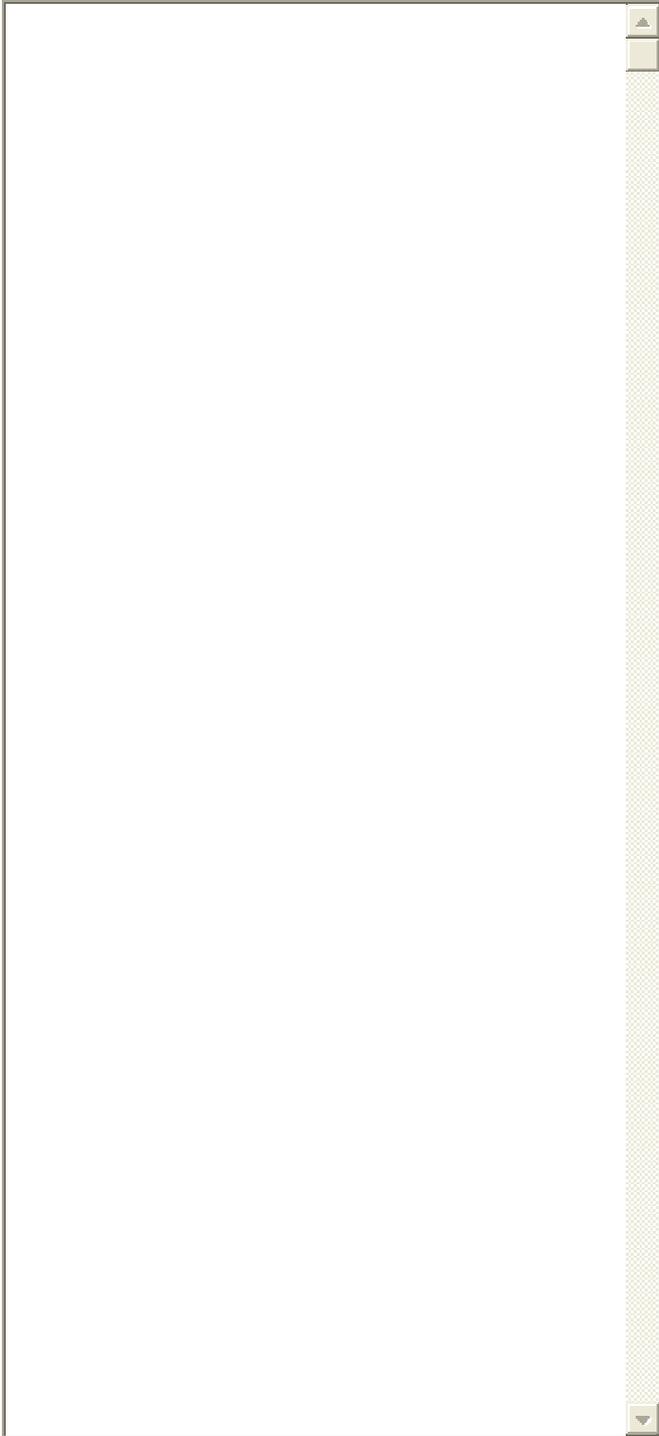
**59. Your network has improved members' client outcomes.**

Strongly Agree  Agree  Disagree  Strongly Disagree  Not Applicable

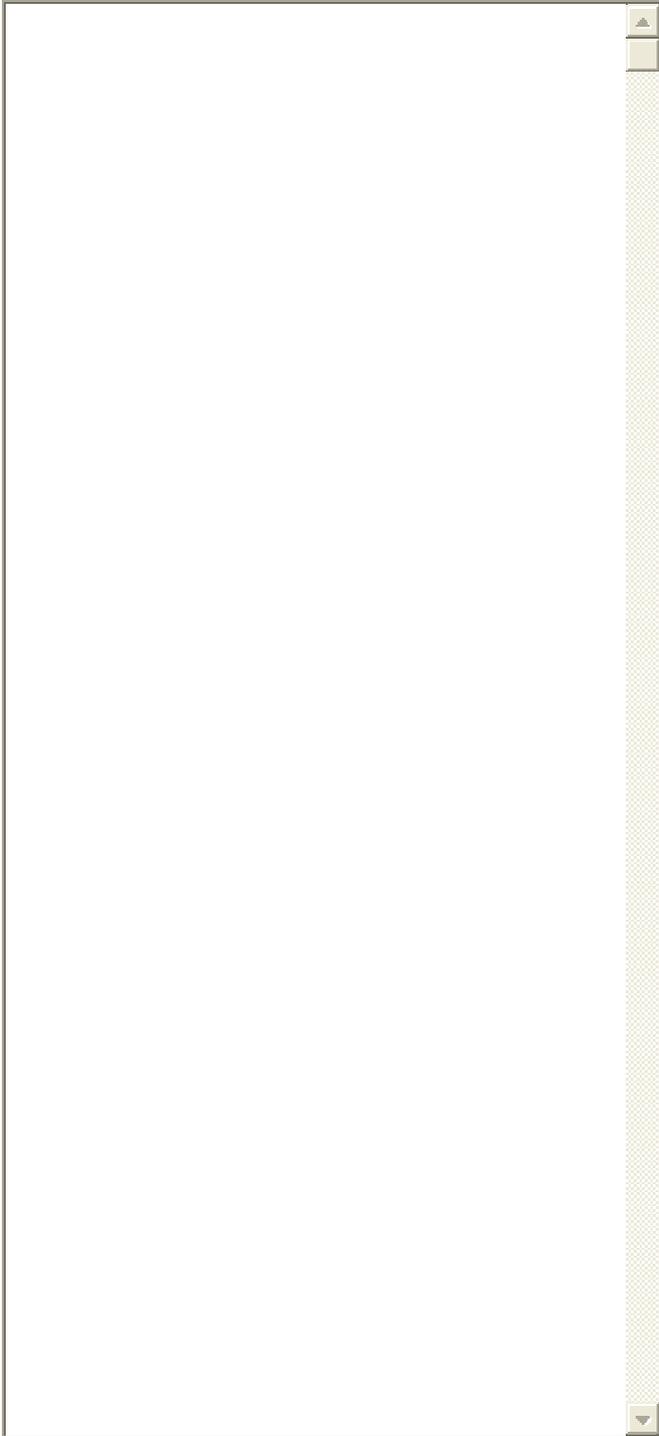
**60. Please note any other benefits of your network.**



**61. What about your network makes it successful?**



**62. What would make your network more effective?**





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### **Figure F.1: Questions for Follow-Up Interviews with the ARHN**

1. Why do you think respondents in your network were least favorable about:
  - a) financing in your network?
  - b) your network's ability to decrease service duplication?
  - c) there being a public perception that your network is solving the problem(s) it intends to address?
  
2. Why do you think respondents in your network were more favorable about:
  - a) your networks personnel?
  - b) the cohesiveness of your network?
  - c) P&E in your network?
  - d) your network's ability to improve integration/ coordination of services?
  - e) commitment of your members to network goals?
  - f) there being improvements in the incidence of the problem your network addresses?
  - g) the benefits of their network for member organizations?
  
3. What is it about financing that would make it the most important predictor of there being a public perception the network is solving the problem(s) it intends to address?
  - a) What is it about governance that would make it positively related to public perceptions?
  - b) What is it about P&E that would also make it positively related to public perceptions?
  
4. Why do you think cohesiveness and personnel were strongly related to there being improvements in the incidence of the problem that your network addresses?
  - a) Why would governance in your network not be related to there being improvements in the incidence of the problem the network addresses? (Note: Among all networks it was found to be strongly related but not at all in ARHN)
  
5. Why do you think financing and the number of problems in the rural environment would be significant predictors of improved integration/ coordination of services?

- a) Why might the number of problems in the rural environment not be related to improved integration and coordination in your network?
  - b) Why do you think P&E was found to be insignificant to your network's ability to improve integration/ coordination of services?
  - c) How might your network's personnel, cohesiveness, and governance be related to its ability to improve integration/ coordination of services?
6. Why do you think governance and P&E were most strongly related to your network's ability to decrease service duplication?
- a) Why might cohesiveness, personnel, financing, and the number of rural environment problems be positively related to decreasing service duplication in other networks?
7. What about the cohesiveness of a network would make it an important predictor of member's commitment to the network goals?
- a) Why do you think cohesiveness, governance, and P&E were found to be most significant to your members' commitment to network goals?
  - b) Why not financing, personnel, and the number of rural environment problems?
8. Why do you think your network's cohesiveness, financing, P&E, and personnel are positively related to your members benefiting from the network?
- a) What is it about your network's governance that would not make it least related to your members benefiting from the network? (Note: Among all networks it was found to be strongly and significantly related but not at all in ARHN)
  - b) Why do you think governance is more strongly related in other networks?
  - c) Why not the number of rural environment problems?
9. What is it about financing that makes it positively related to your network's governance?
- a) What is it about a network's financing that makes it not related to its cohesiveness and the number of problems in the rural environment?
10. Why/ How would the number of problems in the rural environment in which your network operates be positively related to your network's cohesiveness?
- a) How might it also be positively related to a network's governance and personnel?

11. Why do you think the effectiveness measures at the organizational and network levels are more strongly related to each other than with the measures at the community-level? (Refer to list of measures for each level.)

**Figure F2: Questions for Follow-Up Interviews with the RFVCHP**

1. Why were respondents in your network most favorable about:
  - a) your network's cohesiveness?
  - b) your network's personnel?
  - c) there being improvements in the incidence of the problem your network addresses?
  - d) commitment of your members to network goals?
  - e) there being improvements in the incidence of the problem your network addresses?
  - f) there being a public perception that your network is solving the problems it intends to address?
  
2. Why were respondents in your network least favorable about:
  - a) your network's financing?
  - b) about P&E in your network?
  - b) your network's ability to decrease service duplication?
  - c) the benefits of your network for member organizations?
  
3. What is it about financing that would make it the most important predictor of there being a public perception the network is solving the problem(s) it intends to address?
  - a) What is it about governance that would make it positively related to public perceptions?
  - b) What is it about P&E that would also make it positively related to public perceptions?
  
4. What is it about a network's cohesiveness and governance that makes it strongly related to there being improvements in the incidence of the problem the network addresses?
  
5. Why do you think financing and the number of problems in the rural environment would be significant predictors of improved integration/ coordination of services?

- a) What about cohesiveness would make it positively related to improved integration/ coordination of services?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?
6. What is it about the cohesiveness of a network that would make it positively related to decreases in service duplication?
- a) What about financing would make it positively related to improved integration/ coordination of services?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?
  - e) What about the number of rural environment problems?
7. What about the cohesiveness of a network would make it an important predictor of member's commitment to the network goals?
- a) What about financing would make it positively related to improved integration/ coordination of services?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?
  - e) What about the number of rural environment problems?
8. Why would cohesiveness, financing, governance, P&E, and personnel all be strongly related to the network benefiting its member organizations?
- a) Why not the number of rural environment problems?
9. What is it about financing that makes it least related to a network's governance, P&E and personnel?
- a) What is it about a network's financing that makes it not related to its cohesiveness?
10. Why would the number of problems in the rural environment in which the network operates be positively related to a network's cohesiveness, governance, and personnel?

11. Why do you think the effectiveness measures at the organizational and network levels are more strongly related to each other than with the measures at the community-level? (Refer to list of measures for each level.)

12. What is it about the population that your network serves that might impact your network's effectiveness?

13. What is it about the services your network provides that might impact its effectiveness?

14. What is it about the number of years that your network has been in existence that might impact your effectiveness?

15. What is it about the size and composition of your network that might impact its effectiveness?

**Figure F3: Questions for Follow-Up Interviews with the TCPCH**

1. Why were respondents in your network most favorable about:
  - a) your network's cohesiveness?
  - b) your network's governance?
  - c) your network's P&E
  - d) your network's personnel
  - e) there being improvements in the incidence of the problem your network addresses?
  - f) your network's ability to improve integration/ coordination of services?
  - g) your network's ability to decrease service duplication?
  - h) commitment of your members to network goals?
  - i) the benefits of their network for member organizations?
  
2. Why were respondents in your network least favorable about:
  - a) your network's financing?
  - b) there being a public perception that your network is solving the problem(s) it intends to address?
  
3. What is it about financing that would make it the most important predictor of there being a public perception the network is solving the problem(s) it intends to address?
  - a) What is it about governance that would make it related to public perceptions?
  - b) What is it about P&E that would also make it related to public perceptions?
  
4. What is it about a network's cohesiveness and governance that makes it strongly related to there being improvements in the incidence of the problem the network addresses?
  
5. Why do you think financing and the number of problems in the rural environment would be significant predictors of improved integration/ coordination of services?
  - a) What about cohesiveness would make it positively related to improved integration/ coordination of services?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?

6. What is it about the cohesiveness of a network that would make it positively related to decreases in service duplication?
  - a) What about financing would make it positively related to improved integration/coordination of services?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?
  - e) What about the number of rural environment problems?
  
7. What about the cohesiveness of a network would make it an important predictor of member's commitment to the network goals?
  - a) What about financing would make it positively related to members commitment to goals?
  - b) What about governance?
  - c) What about P&E?
  - d) What about your network's personnel?
  - e) What about the number of rural environment problems?
  
8. Why would cohesiveness, financing, governance, P&E, and personnel all be strongly related to the network benefiting its member organizations?
  
9. What is it about financing that makes it least related to a network's governance, P&E and personnel?
  - a) What is it about a network's financing that makes it not related to its cohesiveness?
  
10. Why would the number of problems in the rural environment in which the network operates be positively related to a network's cohesiveness, governance, and personnel?
  
11. Why do you think the effectiveness measures at the organizational and network levels are more strongly related to each other than with the measures at the community-level? (Refer to list of measures for each level.)
  
12. What is it about the population that your network serves that might impact your network's effectiveness?
  
13. What is it about the services your network provides that might impact its effectiveness?

14. What is it about the number of years that your network has been in existence that might impact your effectiveness?

15. What is it about the size and composition of your network that might impact its effectiveness?

## Appendix G: IRB Approval



### Office of Research Compliance

1880 Pratt Drive (0497)  
Blacksburg, Virginia 24061  
540/231-4358 Fax: 540/231-0959  
E-mail: [ctgreen@vt.edu](mailto:ctgreen@vt.edu)  
[www.irb.vt.edu](http://www.irb.vt.edu)

FWAD000572( expires 7/20/07)  
IRB # is: IRB0000567.

DATE: September 15, 2006

### MEMORANDUM

TO: Larkin S. Dudley  
Heidi Morehead

FROM: Carmen Green 

SUBJECT: **IRB Exempt Approval:** "Rural Health Effectiveness: An Analysis at the Organization, Network, and Community Levels", IRB # 06-492

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of September 14, 2006.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File  
Department Reviewer: Max O. Stephenson

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*An equal opportunity, affirmative action institution*

DATE: November 27, 2006

FWA0000573 expires 7/20/07  
IRB # 16 IRB0000667.

MEMORANDUM

TO: Larkin S. Dudley  
Heidi Morehead

FROM: Carmen Green 

SUBJECT: **IRB Amendment 1 Approval:** "Rural Health Effectiveness: An Analysis at the Organization, Network, and Community Levels", IRB # 06-492

This memo is regarding the above referenced protocol which was previously granted approval by the IRB on September 14, 2006. You subsequently requested permission to amend your IRB application. Approval has been granted for requested protocol amendment, effective as of November 27, 2006.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File

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*An equal opportunity, affirmative action institution*

DATE: July 27, 2007

MEMORANDUM

TO: Larkin S. Dudley  
Heidi Morehead

FROM: Carmen Green 

SUBJECT: **IRB Amendment 2 Approval:** "Rural Health Effectiveness: An Analysis at the Organization, Network, and Community Levels", IRB # 06-492

This memo is regarding the above referenced protocol which was previously granted approval by the IRB on September 14, 2006. You subsequently requested permission to amend your IRB application. Approval has been granted for requested protocol amendment, effective as of July 27, 2007.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File  
Department Reviewer: Max O. Stephenson

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