

Public Health Officials' Perspectives on the Determinants of Health:  
Implications of Health Frames on Policy Implementation in State Health Departments

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Abstract

Recent public health scholarship finds that health outcomes are explained by the social and individual determinants of health rather than the individual-level determinants alone. The individualistic perspective has dominated the 20<sup>th</sup> century institutionalization of public health in the United States where the public health system has tended to focus largely, if not exclusively, on individual factors. This persistent orientation lies in contrast to another set of perspectives that have also persisted, focused on social causes, which are currently dominant in contemporary public health academic literature and in major, international health organizations. Whether the orientation within the United States is due to a prevailing paradigm among public health officials or is the result of new ideas about health causation being dampened under organizational weight is unknown. Despite public health being central to decreasing morbidity and mortality in the 20<sup>th</sup> century, significant gaps remain in researchers' understanding of what influences practice in the American public health system.

My dissertation research investigates the broad outlines of the determinants of health as understood by state public health administrators. I study how the understanding of the determinants of health affects the practice of public health through analyzing how the ideas of state public health administrators interact with the organizational dynamics of the public health organizations they lead. This mixed-methods dissertation research uses survey research and in-depth interviews and quantitative and qualitative analysis.

I find that state public health officials' professionalization, length of tenure, level of education, and gender affect the perspective of health causation to which they adhere. I also find that the state public health officials with a social health frame more commonly report they are situated in organizations that are learning environments. Both organizational and ideational factors influence public health practice. The interview data expand this finding to paint a complex picture of organizational and ideational factors influencing one another as well as resulting practices. This research reveals that state public health officials often have strong health frames that are only able to shape the edges of their practice due to the political and organizational dynamics interacting with state public health departments.

## Dedication

I dedicate this dissertation to:

My family. They are my foundation, providing me with the courage to take on challenges and ingraining in me a commitment to social justice.

My parents. Their dream for their children is an ever-present inspiration, which gave me the courage to ask the questions I believe are important, the encouragement to seek their answers, and the gratitude for the opportunity to do so.

My grandfather. His kindness and patience are an exemplar of how to persevere against challenges with positivity and how to see those moments as an opportunity for learning and reflection.

My siblings. Their questions and insatiable curiosity have served as a force of challenge and inspiration to my understanding of myself, and as we have walked down this path together, hand in hand, our understanding of this complicated world.

My wonderful husband, Adam. His support underpinned this process - everything from the big and abstract to the small and practical of the day to day. His strength provided the daily motivation to keep moving forward; his intellect stimulated considering ideas from different perspectives; his love made anything seem possible; and his visionary nature helped me imagine the possibility of finishing.

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## Table of Contents

Chapter 1. Introduction .....	1
Chapter 2. Ideas of Health .....	7
Introduction .....	7
Models of health causation.....	8
Problem definition and target populations .....	12
Ideational influences on public health practice .....	15
Professionalization.....	15
Administrative discretion .....	22
Sticky ideas.....	25
Linking ideas to action .....	26
Chapter 3. State Health Department as an Organization and Site of Study.....	30
Development of public health organizations.....	30
Federalism .....	32
The public health system.....	36
State public health departments.....	39
Organizational influences on public health practice .....	42
Evidence use .....	45
Collaboration .....	47
Participation.....	49
Conclusion.....	51
Chapter 4. Research Methods and Data Analysis.....	53
Introduction .....	53
Research question and propositions .....	54
Research framework.....	55
Sampling frame .....	57
Research sample .....	60
Data collection and instruments .....	64
Contact.....	64
Survey instrument.....	65
Interview protocol.....	68
Response rate.....	70

Data analysis .....	72
Quantitative analysis.....	72
Qualitative analysis.....	76
Limitations .....	77
Chapter 5. Determinants of Health as Seen by State Public Health Officials .....	79
Introduction .....	79
Influences on the idea of health.....	80
Quantitative findings .....	81
Dependent variable: Determinants of health .....	81
Independent variables .....	94
Multivariate regression model .....	104
Public health officials compared to the general public.....	115
Qualitative findings.....	116
Vignette and narrative Analysis .....	117
Conclusion.....	122
Chapter 6. Organizational Environment of Public Health Administrators .....	124
Introduction .....	124
Organizational environment.....	125
Quantitative findings .....	126
Scores for the learning organization survey items.....	126
Descriptive statistics of the learning organization scores.....	127
Factor analysis of the learning organization items .....	131
Chi-square test .....	134
Public health departments compared to organizations generally .....	138
Qualitative findings .....	141
Organizational environment .....	142
Organization’s impact on public health practices.....	147
Conclusion.....	149
Chapter 7. Drivers of practice in state health departments .....	150
Introduction .....	150
Evidence use, collaboration, and public participation.....	151
Quantitative findings .....	153

Descriptive statistics of the importance of evidence, public participation, and collaboration .....	153
Dependent variable: Importance of evidence use.....	156
Independent variables .....	163
Multivariate regression model .....	164
Qualitative findings.....	171
Practices of public health administrators.....	171
Influences on public health practices.....	174
Conclusion.....	183
Chapter 8. Discussion and Conclusion .....	184
Findings.....	185
How state public health officials understand the determinants of health .....	185
Relationship between the organizational environment and health frame.....	188
Influences on public health practice .....	190
Implications.....	193
References.....	196
Appendix A. Virginia Tech Institutional Review Board Approval Letter.....	211
Appendix B. Public Health Practice Informed Consent Form.....	212
Appendix C. Public Health Practice Dissertation Survey Instrument .....	214
Appendix D. Public Health Practice Dissertation Interview Protocol.....	222

## List of Figures

Figure 1. Model of the determinants of health (Source: Dahlgren and Whitehead, 1991; Fair Use) .....	9
Figure 2. State health department decision-making authority (Source: Association of State and Territorial Health Officials, 2009; Used with permission).....	24
Figure 3. State health agency funding sources by percentage for FY11 (Source: Association of State and Territorial Health Officials, 2014; Not all states provided values for revenue sources or expenditure categories; Used with permission) .....	35
Figure 4. United States public health system (Source: Office of State, Tribal, Local, and Territorial Support, Centers for Disease Control and Prevention, 2014; Public domain).....	37
Figure 5. Generic organizational chart for state health departments .....	42
Figure 6. State and region of interviewees (Source: Intergovernmental/External Affairs, Health and Human Services, 2014; Public domain) .....	63
Figure 7. Survey panel members that received, opened, started, and completed the survey.....	75
Figure 8. Confirmatory factor analysis measurement model of the determinants of health.....	92
Figure 9. Political ideology scale.....	95
Figure 10. Sample political ideology .....	96
Figure 11. Respondent field of study .....	102
Figure 12. Number of years in current position.....	104
Figure 13. Kernel density plot of the economic determinants of health index .....	107
Figure 14. Quantile plot of the residuals of the economic determinants of health model .....	108
Figure 15. Confirmatory factor analysis: Measurement model of the importance of different evidence types.....	161



## List of Tables

Table 1. Difference between health promotion programs versus disease prevention programs (Source: VanLeeuwen et al., 1999, p. 210; Fair use) .....	10
Table 2. State-level public health associations and their founding date .....	20
Table 3. Relationship between organizational environment and health perspective .....	56
Table 4. Sampling frame: Association of State and Territorial Health Officials defined state health department services and associated health department offices (ASTHO, 2009).....	59
Table 5. Interview groups .....	62
Table 6. Demographic data .....	66
Table 7. Importance of determinants of health .....	84
Table 8. Health determinants factors: Chronbach's alpha, factor loadings, and eigenvalues .....	90
Table 9. Determinants of health: confirmatory factor analysis model fit indicators .....	94
Table 10. Educational level.....	97
Table 11. Professional association membership .....	99
Table 12. Descriptive statistics for independent and dependent variables in ideational models	106
Table 13. Determinants of health model results .....	113
Table 14. Determinants of health model fit indicators .....	114
Table 15. Wald test statistics on multivariate determinants of health model .....	115
Table 16. Learning organization score.....	128
Table 17. Learning organization Chronbach's alpha, factor loadings, and eigenvalue .....	133
Table 18. Chi-square relationship between learning environment and health frames.....	136
Table 19. Chi-square relationship between learning processes and health frames.....	137
Table 20. Median learning environment scores.....	140
Table 21. Importance of evidence for decision-making .....	155
Table 22. Accuracy of opportunities for partnerships .....	156
Table 23. Evidence use factors: Chronbach's alpha, factor loadings, and eigenvalue.....	159
Table 24. Evidence-use confirmatory factor analysis model fit indicators .....	162
Table 25. Descriptive statistics for independent and dependent variables in evidence use models .....	164

Table 26. Evidence models results.....	168
Table 27. Evidence use model fit indicators.....	169
Table 28. Wald test statistics on multivariate evidence use model.....	170

## Chapter 1. Introduction

Thinking about health is caught between two competing models of health causation - the individualistic orientation, which places the onus of an individual's health outcome upon that individual, and the socially-determined orientation, which places the onus upon society. The individualistic perspective has dominated the 20<sup>th</sup> century institutionalization of public health in the United States where the public health system has tended to focus largely, if not exclusively, on biomedical factors (Starr, 1982; Fielding, Teutsch, and Breslow, 2010, p. 175). This persistent orientation lies in stark contrast to another set of perspectives that have also persisted, focused on social causes, and currently dominant in contemporary public health academic literature and by major, international health organizations.

Recent public health scholarship finds that health outcomes are explained by the social and individual determinants, another word for correlated variables, of health rather than the individual-level determinants alone (Marmot and Wilkinson, 2005). For example, Hogan et al. (2012) find higher rates of infant mortality for African-Americans as compared to whites and Kim et al. (2008) find a positive association between income inequality and obesity prevalence. Marmot (2001) discusses innumerable other health differences that have their root causes in societal factors, not simply biology and/or individual health. Thus, the World Health Organization has urged the adoption of a social determinants of health approach to improving health and reducing health inequities worldwide as evidenced by the establishment of the Commission on Social Determinants of Health in 2005 (Kickbusch, 2003; Commission on social determinants of health, 2015).

The organizations of the U.S. public health system predominantly reflect the individual oriented perspective (Fielding, Teutsch, and Breslow, 2010, p. 175), but it is unknown whether this is due to a prevailing health frame<sup>1</sup> among public health officials, whether organizational<sup>2</sup> dynamics act to dampen the manifestation of new ideas about health causation in public programs, or both (Raphael, 2006; Fox, 2006; Labonte, 1992). The field of public health and the experts within it has played a central role in driving down morbidity and mortality in the 20<sup>th</sup> century (CDC, 1999, p. 1141). Despite this impressive outcome, significant gaps remain in our understanding of what the drivers of American public health practice are (CDC, 1999, p. 1141; Koppaka and CDC, 2011). Potvin, Gendron, Bilodeau and Chabot (2005, p. 591) have observed that theory lacks an explanation for the “social and relational dimensions of public health practice.” Yet, there is also a lack of empirical evidence on how health policy is affected by its ideational and organizational contexts as implemented by public health administrators.

Although it is known that ideas and organizations individually affect public health policy and practice (Béland, 2009, p. 701), this dissertation goes further to address the ways in which ideas and organizations *interact* to affect public health practice. Rosenkrantz (1972, p. 177) characterizes the development of public health authority as,

the formulation of state policy has also been contingent on two other factors: the ideas and practices which authorized government responsibility to regulate individual and corporate behavior; and beliefs about the origins and nature of threats to a harmonious life. The development of state responsibility for public health has, therefore, faced a dual task: of establishing objectives which meshed concepts of general welfare with specific definitions of health; and of elaborating methods to achieve goals consonant with acceptable social and scientific precepts. Within this context, the effectiveness of

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<sup>1</sup> Reference to frames in this dissertation relies on Schon and Rein’s (1994, p. 32) concept of the “policy action frame” which “is the frame an institutional actor uses to construct the problem of a

<sup>2</sup> In this work when I refer to organizations, I am relying on Selznick’s (1957, p. 17) concept of a “system of consciously co-ordinated activities...engineered to do a job.”

antidotes to disease and disorder has been largely measured by the expectation and satisfaction of reformers.

This dissertation expands on Rosenkrantz's characterization by carefully analyzing: 1) state public health officials' understanding of the determinants of health; 2) state health departments as the organizational sites of study responsible for public health; and 3) the socially and scientifically acceptable practices that public health officials undertake to improve population health. Public health professionals of the 19<sup>th</sup> century focused on the environmental determinants of health, and those of the 20<sup>th</sup> century focused on the individual determinants of health. This leads us to ask where public health professionals of the 21<sup>st</sup> century stand. Emerging scholarship on the social determinants of health has inspired reformers who are currently championing changes to the practice of public health in the United States, but are any of these reformers situated in public health departments?

This research investigates the ideas of health that public health administrators hold and the effect of those ideas on public health practice via their interaction with the characteristics and dynamics of public health organizations. Using Gostin, Burris, and Lazzarini's (1999, p. 64) definition of the mission of public health agencies, which states the purpose of public health agencies is to identify "what makes us healthy and what makes us sick" and to implement strategies towards achieving the former while avoiding the latter, this dissertation seeks to understand what public health officials are identifying as both the causes of health and sickness and what steps they are taking as a result. Specifically, I seek to answer three questions: 1) What models of health causation do public health administrators adhere to in state-level health departments in the United States? 2) What organizational dynamics exist in state public health departments where public health administrators work? 3) How does the interplay of the ideas of

health and the dynamics of public health organizations influence public health administrators' practice in state health departments, and the public programs that result?

This dissertation begins with a discussion of the influences of ideas on public health practice (Chapter 2). This includes a review of the health causation models in the field of public health and a discussion of the influence of problem definition, target populations, professionalization, and administrative discretion on the models dominant in the field. Chapter 3 describes the state health department as an organization and site of study. It provides a brief overview of the development of public health organizations in the United States and the importance of federalism in the public health system. This is followed up by an examination of the literature regarding evidence use, collaboration, and public participation and their relationship to public health practice. Chapter 4 lays out the research methods and data analysis employed in this dissertation, including a mixed-methods approach of survey research and follow-up in-depth interviews with state public health officials to quantitatively and qualitatively study the relationship of the health frame, organizational environment, and public practice. The three findings chapters parse the factors that influence health frames (Chapter 5), the relationship of health frames and organizational learning environments (Chapter 6), and the interaction of the organizational environment and health frame to influence practice (Chapter 7) respectively. Chapter 8 concludes the dissertation with a discussion of the findings and the limitations of the research.

State public health officials leading offices common to health departments were selected for the survey. Survey analysis was used to identify factors influencing health frames and public health practice as well as discern differences in health frames among different organizational

environment. The survey responses also helped identify the sample for the individual in-depth interviews. The interviews allowed nuanced study of health officials' health frames and organizational environment, and, importantly, gave interviewees space to explain which factors they consider to influence the practices they undertake. Individual in-depth interviews were analyzed using framing and narrative analysis.

Because ideas and organizations interact to shape public practice, research into the drivers of public health practice requires consideration of both the idea of health and the contexts of the organizations in which public health administrators function (Parsons, 2002; Lavis, 2002). I propose that state public health officials' professionalization, level of education, and political ideology will affect the model of health causation to which they adhere. I also propose that the ideas of state public health officials situated in "learning organizations"<sup>3</sup> will be reflected in public health practice to a greater degree than the ideas of officials who work in "conflict resolution-oriented organizations" (see Lavis, 1998).

By carefully and creatively analyzing health frames, organizational environment, and public health practices separately and collectively, this dissertation sheds light on the relationship of ideas and organizations to practice in state public health departments. This is accomplished by generating survey and semi-structured interview data to empirically examine the conceptions of health and health causation held by key state-level public health administrators, and the ways in which those conceptions combine and interact with the organizational dynamics of state health

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<sup>3</sup> In this dissertation what I mean by learning organization is Garvin, Edmondson, and Gino's (2008, p. 110) definition of "a place where employees excel at creating, acquiring, and transferring knowledge. There are three building blocks of such institutions: 1) a supportive learning environment, 2) concrete learning processes and practices, and 3) leadership behavior that reinforces learning."

departments and health policies to shape the nature, form, and content of public health programs. In addition to yielding new data on U.S. public health practice, this research advances our knowledge more generally about how ideas and organizations interact to affect public policies as they are implemented in the form of public programs.



## Chapter 2. Ideas of Health

### Introduction

In this research, conceptions of health act as “switchmen” in the organizations in which public health administrators work. Ideas are “claims about descriptions of the world, causal relationships, or the normative legitimacy of certain actions” (Parsons, 2002, p. 48). Parsons notes “wherever ideas have causal effects—in Max Weber's famous phrase, as ‘switchmen’ among various material possibilities—so does the objective context they interpret” (Parsons, 2002, p. 49). Conceptions of health, however, and their causal factors are undergoing a transformation in health sciences research as the evidence increasingly supports a broader understanding of health and its associated social determinants. Kickbusch (2003) calls this the third public health revolution. Whereas the first and second public health revolutions focused on saving lives through addressing sanitary conditions, fighting infectious diseases, and identifying the links between individual behaviors and diseases and premature death, it is the third public health revolution that finally recognizes health not just in the context of preserving life, but moreover, as a key component to the quality of life.

Whether this burgeoning new research has infiltrated the thinking of public health officials in the United States has yet to be determined. Raphael finds that “outside a few isolated instances, little is known about professionals’ construction of the social determinants of health” (2006, p. 663). Understanding public health administrators’ construction of the determinants of health is a necessary precursor to analyzing how such a construction affects the practices they undertake. Whether these constructions or ideas have the “cognitive adequacy” to affect practice remains unknown (Stinchcombe, 2001). Explicating this construction is important because the

factors believed to impact health may be influential in how officials use administrative discretion to achieve the ultimate goal of improving population health outcomes.

This section of the dissertation will discuss the various ideas or models of health dominant in the field of public health, the role of ideas in problem definition and identification of target populations, and the processes by which ideas are linked to action.

#### Models of health causation

The evolution of the field of public health has included the development of multiple models of health causation, each based upon a range of ideas about the factors that influence health, and each supported by scientific evidence (Minkler, 1999). These models essentially can be divided into variants of two basic perspectives: individualistic versus societal. The individualistic perspective is based on a relatively narrow set of biological and lifestyle factors and is focused on the “holy trinity of risk”: tobacco, diet, and physical activity (Raphael, 2006, p. 663; Nettleton, 1997). The societal perspective, by contrast, looks to a broader set of determinants of health beyond biology and lifestyle, including cultural, political, social, and environmental factors (Blas et al., 2007, p. 1684).

Dahlgren and Whitehead (1991) have produced a widely recognized depiction of the societal model (see Figure 1), which includes biological and lifestyle factors alongside social and community networks and general socio-economic, cultural, and environmental conditions as determinants of health. Nancy Krieger’s ecosocial model, another variant of the societal perspective, similarly integrates “social and biological reasoning and a dynamic, historical and ecological perspective” (2001, p. 674). Krieger argues that all of these determinants must be taken into account if we are to understand the distribution of disease and the inequalities present in its distribution.

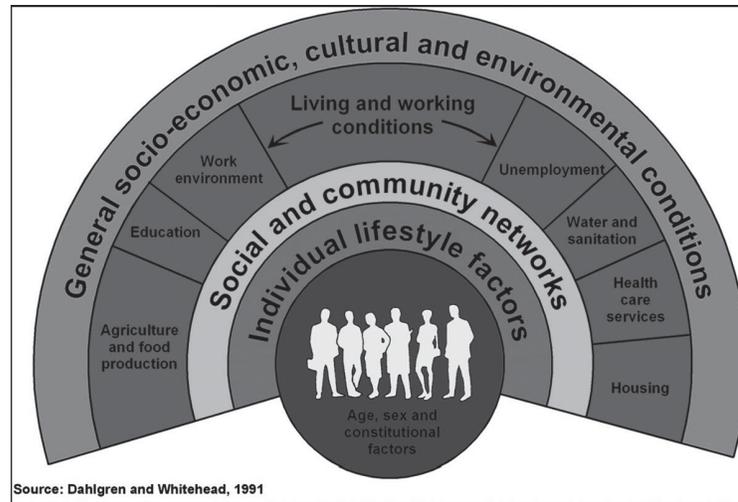


Figure 1. Model of the determinants of health (Source: Dahlgren and Whitehead, 1991; Fair Use)

Based upon an analysis of the differences between a variety of health causation models,<sup>4</sup> VanLeeuwen et al. (1999, p. 205) provide a parsimonious dichotomy that compares the societal and individualistic perspectives on health causation in terms of their root concepts: models of health; population focus; and program types, approaches, and participants (see Table 1). The societal or “health promotion” model considers health from a “positive and multidimensional” perspective in which social, economic, and biological environments are important causal factors, whereas the disease prevention model is framed negatively as the absence of disease and rooted in an individual’s choices (VanLeeuwen et al., 1999, p. 209). VanLeeuwen et al.’s dichotomy is suggestive with respect to how ideas about health causation might lead to different types of public programs with different target populations. The “diverse and complementary” nature of health promotion programs as compared to the “focused and unconnected” nature of disease prevention will be assessed in the findings of this chapter.

<sup>4</sup> The models reviewed include the “ecologic,” “socioecologic,” “wellness,” “holistic,” “health promotion,” “Mandala of Health,” “community health” and “health determinants” models.

Table 1. Difference between health promotion programs versus disease prevention programs (Source: VanLeeuwen et al., 1999, p. 210; Fair use)

	<i>Health promotion programs</i>	<i>Disease prevention programs</i>
Health concept	Positive and multidimensional	Negative and one-dimensional: absence of disease
Health models	Holistic	Deterministic
Population focus	Total population	High-risk groups
Program types	Diverse and complementary	Often focused and unconnected
Program approaches	Participatory facilitation and empowerment – rejects professional dominance	Improve individual and group choices
Program participants	Health and other organizations, civic groups, governments, public	Health professionals and recipients

Dressler et al. (2005) more recently have moved beyond VanLeeuwen et al.’s dichotomy to posit four different models of health causation: the racial-genetic, health-behavior, socioeconomic status, and social structural models. The first two of these focus on the distribution of genetic variants and individual behavior associated with the individualistic perspective, while the latter two emphasize the distribution of disease according to socioeconomic status and structural factors such as discrimination, construction of identity, race, and class associated with the societal perspective (Dressler, 2005). Thus, although more nuanced, Dressler’s models still generally reflect either the individualistic or societal perspective, suggesting that this dichotomy remains useful in categorizing and contrasting the two basic understandings of health causation.

The prominence of each of these two perspectives has varied over time. The individualistic, biologically oriented perspective has long been present; though of more recent

origin, the perspective embracing societal impacts on health is not a new concept in the field. Importantly, it is not known which perspective, if either, is dominant among public health officials in the United States today (Raphael, 2006; Labonte, 1992), or whether and how these perspectives contribute to actual public health practice. As Minkler (1999, p. 121) observed at the turn of the century, “ideological and political controversies continue to surround the fundamental question of whether the individual or the broader society should be held responsible for personal health behaviors.” Among those who have embraced the perspective of the social determinants of health, Graham (2009, p. 473) found that even policymakers focused on “reducing health gradients,” “narrowing health gaps,” or “improving health of poorest groups” were still divided into those who concentrated on either “broader determinants” of health or “individual risk factors.” The difficulty of linking such a complicated idea to an action requires qualitative research that explores the thinking of public health officials in relation to the practices they undertake.

Public health administrators’ conceptions of health favor one of these two nodes, yet an abundance of new empirical evidence increasingly supports a broader perspective of health and its associated determinants. Whether this abundance of new research has infiltrated the thinking of public health officials in the United States is an open question that will be explored in this dissertation. If one believes that ideas matter, then understanding public health administrators’ conceptions of health is a necessary precursor to analyzing whether and how such a conception affects the practices of public health officials. Explicating this conception is important because the factors public health administrators believe impact health may be influential in how they use administrative discretion to shape the practice they engage in as public officials working on behalf of citizens.

Each of these frames carries a different political history that is reflected in the way they have taken root in health departments. For the individualist behavior frame, controversy exists over the role of government in dictating healthy behaviors due to the potential for “unacceptable paternalism,” even though the impact of behavior on health is widely understood (Gostin, Burris, and Lazzarini, 1999, p. 64). This was recently demonstrated by New York City Mayor Bloomberg’s attempt to cap the size of sugar-sweetened beverages. The New York state court found “that the rule amounted to unconstitutional legislation as opposed to permissible interstitial administrative rulemaking” (Diller, 2013, p. 1894). In contrast, the social frame is an attack on current social and political systems because it recognizes the health impacts of “the way society organizes itself, produces and distributes wealth, and interacts with the natural environment” (Gostin, Burris, and Lazzarini, 1999, p. 64). The critiques of the status quo inherent to this frame make it particularly problematic for health departments to translate into practice. In order to adequately pursue the goal of public health from within the social framework would require that the “health department ought to be the biggest agency in state government,” while in reality many health departments struggle to even play a role in those issues identified within the social framework as impacting health (Gostin, Burris, and Lazzarini, 1999, p. 69).

#### Problem definition and target populations

State health departments are tasked with addressing problems in order to improve public health. The process of problem definition, in this case, is inextricably linked with the definition of health. Gostin, Burris, and Lazzarini (1999, p. 70) contend that different health “frameworks tend to depend upon different visions of what makes people healthy, to rely on different types of measurement, and to yield systematically different policy problems.” Reminiscent of Kingdon’s trio of problem, policy, and political streams (Kingdon, 1995), Béland argues that ideas affect policy change and practice by constructing the problem, shaping the assumptions underlying

practice, and working as “discursive weapons” for policy change (2009, p. 702). Public health administrators’ understandings of health causation frames which health problems they believe can be addressed, supports the method used to address those problems, and shapes the assumptions of public health practice and the practices’ associated causal stories.

Problem definition, however, is not necessarily a neutral process. Instead, as Deborah Stone has explained, it is “the active manipulation of images of conditions by competing political actors,” where “conditions come to be defined as problems through the strategic portrayal of causal stories” (1989, p. 299). Robert and Booske underscore the political nature of problem definition by finding that political views—classified as “conservative,” “moderate,” or “liberal”—are statistically significant predictors of one’s amenability to a health causation model as measured by a nationally representative survey of U.S. adults (2011, p. 1655). The political character of problem definition is evident even in the disciplinary differences among those that have adopted a broader conception of health (Raphael, 2006).<sup>5</sup> These differences indicate that the idea of health is a social construction and health models themselves are causal stories.

The causal story, in this case the health causation model, defines the determinants of health to be tackled. Based on which health model they accept, public health officials’ views of health introduce a “political character” to the process of program implementation with health causation models acting to prioritize health problems (Stone, 2002, p. 187). Beyond the determinants taken into account, these models also affect the characteristics of the public health programs with which they are associated. VanLeeuwen et al. find that the program goals, approaches, participants and overall types of programs in place vary according to health

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<sup>5</sup> As Raphael (2006, p. 668) has noted, scholarship associated with the social determinants of health in the fields of epidemiology, sociology, political economy and human rights pays distinctive attention to different pathways to health and illness.

perspective. Friedman and Starfield similarly find that which model of health is held affects the causes of health addressed due to differences in the “distinction between population health and individual health, and the relative influence of various factors on each” (Friedman and Starfield, year, p. 17).

How a public health official frames problems of public health affect the population of focus. Health outcomes are representative of the social, power, and partisan dynamics at play in organizations. A perspective on health that explicitly focuses on inequity and disparity is going to necessarily focus on those facing injustice. The egalitarian nature of the societal health model has a different target population than an individualistic health model. Those who adhere to a societal health perspective will study the outcomes of a different target population than those focused on an individualistic health model. “For example, health officials who direct a population to evacuate or shelter in place should foresee that the poor will not have private transportation or the means to stock up on food or supplies” (Gostin and Powers, 2006, p. 1058). Therefore, because the target population is so central to the problem solving process, it must inform research into the definition of health in state public health departments (Schneider and Ingram, 1990, 1993).

Given that research into the definition of health may focus on inequity, it is necessary to understand how public health administrators’ preconceptions of inequity under the societal and individualistic perspectives are likely to affect the target population. An understanding of inequity from the societal perspective is more likely to benefit the disadvantaged segment of the population because it includes the notion of social justice as a goal of public health (Gostin and Powers, 2006, p. 1058). However, the disadvantaged situation of the individuals likely to be targeted for benefits as a result of this perspective provides barriers to its adoption because such



individuals are often identified as undeserving. In addition, “in the governance process, groups are identified as deserving and undeserving” (Schneider and Ingram, 2005, p. 2). The governance process and society coproduce these socially constructed definitions such that they come to be understood as legitimate, and it is this legitimacy that allows the deservedness of groups to become “institutionalized into permanent lines of social, economic, and political cleavage” (Schneider and Ingram, 2005, p. 2).

Where the individualistic health model sees powerful advocates associated with particular diseases, the societal health model takes an inclusive approach to the health of the overall population. In this sense, the way health is conceptualized and then formalized in health departments can, itself, institutionalize social, economic, and political cleavage such that it results in permanent lines of health cleavage. The social nature of “how we literally incorporate, biologically, the world around us” creates differential health outcomes based on a variety of societal cleavages (Krieger, 2001, p. 668). Public health administrators’ adherence to an individualistic or societal model of health affects how societal cleavages shape public health practice. The population of focus is, therefore, a critical factor for exploring the link between the idea of health and how public health is practiced, which VanLeeuwen et al. (1999) already claim is dependent on the health model one uses.

Ideational influences on public health practice

Professionalization

Many factors may explain why an individual acts on a certain idea, but professionalization is an especially important one in an expertise-based field such as public health. Freidson claims that “ideology is inevitably an element in the curriculum” of professional training. The ideology embedded within a profession is incredibly important because the practices of professionals “require extensive exercise of discretionary judgment rather than the

choice and routine application of a limited number of mechanical techniques” (Freidson, 2001, p. 95). Later in this chapter, data are presented on the high degree of discretion state health department officials have in decision-making.

In *Profession of Medicine* (1970), Freidson argues public health to be a less professionalized specialty within the highly professionalized field of medicine. At the heart of this assertion is his belief that emergencies are important to the degree of professionalization in a specialty or field because it “suspends, if not destroys, the normal, the routine, the rational, and the legal” (Freidson, 1970, p. 120). The lack of emergencies in the field of public health as he saw them in 1970 meant that the “public health officer may be expected to conform to the usual routines, bureaucratic and otherwise. And his ‘image’ is similarly safe and bureaucratic” (1970, pp.119-120). The field has evolved since 1970 with public health increasingly focused on emergencies as evidenced by the proliferation of offices of emergency preparedness and response in state health departments since 2001 (Nelson, Lurie, and Wasserman, 2007). The push for professional certification has also advanced in public health. As an example, taskforces organized by the American Public Health Association and Association of Schools of Public Health and prompted by the Surgeon General led to the development of the Certified in Public Health credential in 2008 (Gebbie et al., 2007).

Professional associations and training significantly affect the ideas that public health officials hold. Since “shared professional norms and ways of thinking are the glue that hold together a policy community” and are important to understanding policy change, this dissertation explores individuals’ professional associations in light of the various models of health driving public health officials and links this understanding of associations to practice (Baumgartner, 2009, p. 3). Given the technical nature of the work of public health administrators in state health

departments, it might be expected that they are highly professionalized. On the state and local levels, however, this is not always the case. According to Turnock and Atchison, fewer than half of state and local public health workers fall in professional categories—identified by level of formal training and discipline—compared to more than two-thirds at the federal level (2002, p. 74).

Even with the comparatively low level of professionalization within the state public health workforce generally, professional training and associations can play an important role on professional identity and practice. Professionals make decisions that are reflective of the training and socialization they have taken part in. They take part in “tasks in which discretion or fresh judgment must often be exercised if they are to be performed successfully” (Freidson, 2001, p. 23). It is this “fresh judgment” that is of interest to this study because each decision has an implication for the practices underway in state public health departments.

Numerous professional organizations are organized around state health departments (see Table 2). Associations to specific offices in state health departments apply even to the leadership; the commissioner of each state health department participates in the Association of State and Territorial Health Officials (ASTHO). Each of the specialized public health areas of focus in this study has an associated professional association. For example, one of the oldest specialized state public health organizations is for directors of state public health laboratories belong to the Association of Public Health Laboratories founded in 1927 (Association of State Public Health Laboratories, 2015). This was followed by the development of the National Association for Public Health Statistics and Information Systems in 1933 representing state vital records offices and the National Environmental Health Association in 1937 for directors of offices of environmental health (National Association for Public Health Statistics and

Information Systems, 2014; National Environmental Health Association, 2014). In the 1940's and 1950's, proponents of offices of maternal and child health founded the Association of Maternal and Child Health Programs, state epidemiologists founded the Council of State and Territorial Epidemiologists, and nutrition programs directors in state health departments founded the Association of State and Territorial Public Health Nutrition Directors (Kotch, 2012; Council of State and Territorial Epidemiologists, 2015; Egan, 1994). This emergence of specialized professional associations continued into the 1990's. For example, Directors of the Women, Infant, and Child programs situated within state health departments belong to the National WIC Association founded in 1984 (National WIC Association, n.d.). The directors of the offices of Chronic Disease in every state health department take part in the National Association of Chronic Disease Directors founded in 1988 (National Association of Chronic Disease Directors, n.d.). State public health department public information officers belong to the National Public Health Information Coalition founded in 1990 (National Public Health Information Coalition, 2014). Directors of programs focused on injury prevention belong to the Safe States Alliance founded in 1993 (Safe States Alliance, n.d.).

These specialized professional associations developed in the 20<sup>th</sup> century United States context where there was a broader institutionalization of the professions, especially in the health sector (Freidson, 2001). The associations listed above developed in the 20<sup>th</sup> century, following the broader nationally focused association of the 19<sup>th</sup> century such as the American Public Health Association, which was founded in 1872 (Bryce, 1918). The American Public Health Association is a powerful public health organization with a large membership body. This list of specialized professional associations is yet another indicator of the increasing professionalization of public health. Table 2 shows the evolution of state level public health professional

associations, starting with ASTHO in 1884 continuing to the recent Safe States Alliance in 1993 (ASTHO, 2014a; Safe States Alliance, n.d.).

Table 2. State-level public health associations and their founding date

<i>Public Health Association</i>	<i>Date of Founding</i>	<i>Membership Body</i>
American Public Health Association (APHA)	1872 <sup>a</sup>	“Career workers in the health field and any persons interested in public health” (American Public Health Association, 2014).
State Public Health Association	1879	State level public health association with Massachusetts forming the first one (Massachusetts Public Health Association, 2011)
Association of State and Territorial Health Officials (ASTHO)	1884	Chief health officials of states, territories, and the District of Columbia (Association of State and Territorial Health Officials, 2014a).
Association of Public Health Laboratories (APHL)	1927 <sup>b</sup>	State and local governmental health laboratory officials in the United States, including public health, environmental, agricultural science and food safety laboratories (Association of Public Health Laboratories, 2015).
National Assoc. for Public Health Statistics and Information Systems (NAPHSIS)	1933	State vital records and public health statistics offices (National Association of Public Health Statistics and Information Systems, 2014).
National Environmental Health Association (NEHA)	1937	Environmental health professionals (National Environmental Health Association, 2014).
Association of Maternal and Child Health Programs (AMCHP)	1944 <sup>c</sup>	Representatives of state maternal and child health programs, academic, advocates, and others program consumers (Centers for Disease Control and Prevention, 2011b).

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Council of State and Territorial Epidemiologists (CSTE)	1951	State and territorial public health epidemiologists (Council of State and Territorial Health Officials, 2015).
Association of State and Territorial Public Health Nutrition Directors (ASTPHND)	1952	State and territorial public health nutritionists (Egan, 1994).
National Association of County and City Health Officials	1964	Local health department officials including city, county, metro, district, and Tribal agencies (Centers for Disease Control and Prevention, 2011a).
National WIC Association	1984	State WIC directors, local agency WIC directors, and state nutrition coordinators (National WIC Association, n.d.).
National Association of Chronic Disease Directors (NACDD)	1988	State, territorial, and community-based chronic disease practitioners (National Association of Chronic Disease Directors, n.d.).
National Public Health Information Coalition (NPHIC)	1990	State public health information officers (National Public Health Information Coalition, 2014).
National Alliance of State and Territorial AIDS Directors (NASTAD)	1992 <sup>d</sup>	State health agency staff administering HIV/AIDS and viral hepatitis prevention and supportive services (National Alliance of State and Territorial AIDS Directors, 2011).
Safe States Alliance	1993	Representatives of state and territory injury prevention programs (Safe States Alliance, n.d.).

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<sup>a</sup>(Bryce, 1918)

<sup>b</sup>(Barkey and Mangal, 2010)

<sup>c</sup>(Kotch, 2012)

<sup>d</sup>(Idealist, 2015)

This dissertation is focused on linking the health frame of state health department practitioners to the practices they undertake. In this case, the attitudes regarding health will be partly dependent on the underlying basic and applied science of public health, which in turn comprise the foundations of professional associations. Schein describes how the professional knowledge used in shaping public health administrators' "fresh judgment" is embedded within their exposure to professional associations:

- “1) an underlying discipline or basic science component upon which the practice rests or from which it is developed,
- 2) an applied science or ‘engineering’ component from which many of the day-to-day diagnostic procedures and problem–solutions are derived,
- 3) a skills and attitudinal component that concerns the actual performance of services to the client, using the underlying basic and applied knowledge” (as cited in Schoen, 1984, p. 24).

As a result, the extent of involvement with professional associations on the part of state public health administrators shows the importance of professionalization. It points to membership in a professional association as a significant attribute of professionalism. Where Freidson focused on occupations as a whole and their degree of professionalization, I am looking at individuals embedded in overlapping professional communities. What is the relationship of participation in such communities to their health frames and their public practice?

#### Administrative discretion

Administrative discretion is important to the implementation of public programs because practice public bureaucracies is influenced by the individual decisions made within its boundaries in addition to the external influences (Walker, 1974, p. 3 as cited in Bennett and Howlett, 1992, p. 275). There are multiple interpretations as to when and how discretion should impact practice in a public bureaucracy. Rohr takes a normative approach when he recognizes



that “administrators will not be without firm, perhaps passionate, convictions on matters of this sort,” but that “their judgment should be informed by the constitution needs of the time” (Rohr, 1990, p. 82). Carpenter instead looks to the policy domain as an indication of discretionary action because “discretion is much more likely when an agency governs a highly uncertain and complex policy domain (Carpenter, 2001, p. 17). If the broader constitutional system and policy domain affect the administrative discretion available to the public servant generally, what is the effect on state public health practitioners specifically?

A national survey conducted in 2009 by the state public health professional organization, the Association of State and Territorial Health Officials, analyzed decision-making authority on the part of state public health department officials and found there was often leeway in their decision-making authority. Figure 2 shows diversity in the degree of authority granted to the state health departments across the country. Many times they can “establish fees for services,” but less often they have the authority to “adopt public health laws and regulations” or “approve the state health agency budget” (ASTHO, 2009, p. 25). McCann confirmed this finding in a study of the impact of agency discretion on public health service delivery, wherein he divided discretion into: 1) condition discretion where the state public health official can choose the program’s conditions, 2) criteria discretion such that the state public health official can affect the criteria required for program participation, and 3) fiscal discretion where the state public health official can influence budgetary issues (McCann, 2009). He concluded that condition discretion positively impacts program outcomes (2009, p. 1901).

The types of constraints in place and the resulting nature of discretion, as described above, can be important to how ideas affect practice. As Lipsky (1980, p. xii) claims, the devices street level bureaucrats use to make decisions shape the day-to-day routines that “effectively

become the public policies they carry out.” State-level public health officials may technically not be street-level bureaucrats, but their decisions, routines, and devices similarly shape public policy.

Decisions, routines, and devices are shaped by understandings of health and organizational contexts. These form the purposive rational action “oriented towards efficient and effective realization of given ends” defined by Habermas (cited in Alvesson and Wilmott, 1997, p. 78). Purposive rational action, according to Habermas, is “embedded in, and depends upon, the normative framework” provided by communicative action “oriented towards understanding” (cited in Alvesson and Wilmott, 1997, p. 78). The communicative action that leads to an understanding of health then provides the normative framework for the purposive-rational action of public health program implementation. This dissertation’s analysis of organizational frameworks and ideas will, therefore, include an investigation of administrative discretion, which will affect discretion and the types of action underway. Administrative discretion provides the space for public health officials’ personal ideas to affect program implementation.

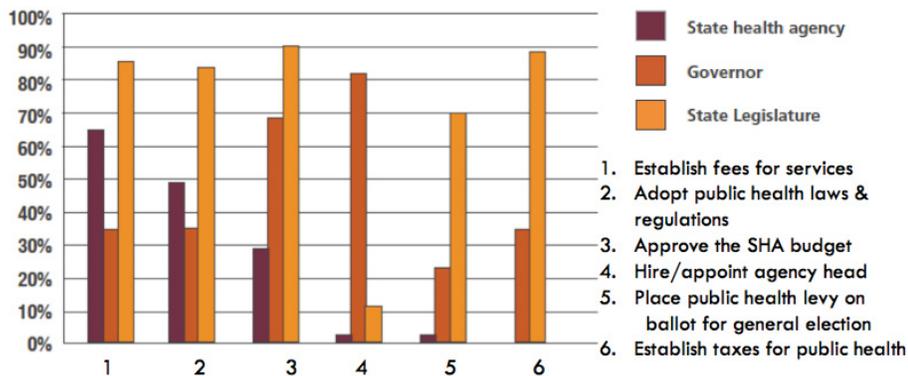


Figure 2. State health department decision-making authority (Source: Association of State and Territorial Health Officials, 2009; Used with permission)

## Sticky ideas

Despite the diversity in the degree of authority granted to state health departments, the organizations of the U.S. public health system often seem reflective of the biomedical perspective (Fielding et al., 2010, p. 175). The biomedical model “assumes disease to be fully accounted for by deviations from the norm of measurable biological (somatic) variables” with “molecular biology [as] its basic scientific discipline” (Engel, 1977, p.130). This perceived institutional slant may or may not be the paradigm that public health officials embrace. The broad biomedical influence upon national public health policy itself may not intimate public health officials’ understanding of health. Instead, it may be due to the institutional factors Fox (2006) blames for the failure to premise U.S. health policy upon a broader, societal health paradigm, which include:

priorities of voters; the diffusion of responsibility for improving health; the absence of evidence about matters of consequence to policy makers; the arraying of some evidence in ways that frustrate policy making; resistance to addressing determinants other than clinical services and traditional public health practices among many professionals in these fields, as well as by industries that supply the health sector; and the special political influence of persons who suffer serious chronic disease and of members of their families (Fox, 2006, p. 398).

The reticence of the public health system to alter its practices in response to new models of health causation may be due to the “sticky” nature of ideas that helps the status quo to remain powerful (Baumgartner et al., 2009). This analysis will parse the degree to which public health practice is being defined by the ideas of the public administrators implementing programs and the organizations with which they interact.

When attempting to parse out the role of ideas in organizations, Parsons suggests speaking to those with “identical objective constraints” (2002). The high degree of similarity among state health departments, therefore, affords the opportunity to look across health departments and analyze the role of individuals’ ideas. It allows for a uniformity of respondents

and enhances comparability. ASTHO's survey that analyzes the structure of state health departments, for example, finds the majority of offices in the organizations are common to 90 percent of state health departments. This is particularly important in the context of the state health department because ASTHO's survey also finds that state health department practitioners have a high degree of decision-making authority in program implementation while engaging in public health practice directly linked to the street level bureaucrat. This is discussed further in the next chapter.

#### Linking ideas to action

Linking ideas to practice is difficult due to the "Janus-faced nature" of ideas. As Parsons (2002, p.49) puts it, "sometimes actors' beliefs guide their actions; sometimes apparent beliefs only rationalize strategies chosen for other reasons." Yet even in the case of the strategic use of ideas, individual perspectives of health causation still imply a different set of policy recommendations and actions. For instance, in reference to its societal perspective, the World Health Organization Commission on the Social Determinants of Health calls for "renewed and sustained action" on societal, cultural and political determinants of import to the model (Blas et al., 2008, p. 1684). Likewise, the individualistic perspective advocates action in regard to issues of behavior and health care. Regardless of the intention, there are differences in the recommended practices between individualist and societal perspectives of health.

Whether these perspectives have "cognitive adequacy," however, is an underlying question of this dissertation. Stinchcombe explains that the "cognitive adequacy" of an idea includes,

(1) that it accurately portrays the world in a manner that (2) is cognitively economical (it does not have much noise and is not difficult to grasp) to work with to yield the correct diagnosis and the correct remedy, (3) that the description is full enough to include all the aspects of the situation relevant to the action to be taken, and finally (4) that the scope to

which the abstraction system applies is wide enough that most situations that have to be acted on are included (2001, p. 22).

According to Stinchcombe (2001), in order to formally take effective action, in this case by administering state-level public health programs, public health administrators' ideas require cognitive adequacy. The "cognitive adequacy" of each of the health frames is important to the ways in which public health administrators act and manage public programs. This is important because the formalities of public health programs must change over time in relation to the contexts in which they are situated. Whether the health frames accurately portray the world is dependent on the evidence available, the cognitive economy of each of the frames is affected by how embedded the concept already is within social knowledge, and whether the health frame has full enough of a definition for action is dependent on the changing nature of the definition. The conditional nature of effective formalizations is partly conditioned on the definition of the public health officials' health frame and the relationship of the definition to action. This definition will serve as part of the framework for the qualitative analysis of the public health administrators' ideas of health.

Where Schon and Rein point "out that action is always embedded in a broader context that limits the scope of action. Practitioners tend to assume that the factors essential to the goals they pursue lie at least partly within their control" (1994, p. xiv). In this dissertation, I am trying to discern how state public health officials' health frames shape their policy practices. Where the metacultural frame includes "broadly shared, beliefs, values and perspectives familiar to the members of a societal culture and likely to endure in that culture over long periods of time, on

which individuals and institutions<sup>6</sup> draw in order to give meaning, sense, and normative direction,” I am focused on the individual policy frame which influences “patterns of behavior that determine what policies actually mean in action” (1994, p. xiii and p. 32). A belief that practitioners have some agency over the implementation of policy begs the question of how those ideas interact with the other aspects of the policy system to impact practice. Schon and Rein recognize that it is difficult to tease out the impact of ideas on practice because

[1] it may be difficult to tell, in an actual policy situation, what frame really underlies an institutional actor’s policy position...

[2] the same course of action may be consistent with quite different policy frames...

[3] the meanings of policy made by a central governmental body in the early stages of policy formation may be transformed at local levels at the stage of policy implementation...

[4] it may be difficult to distinguish between conflicts within a frame and conflicts that cut across frames...

[5] it may be difficult to distinguish between real and potential shifts of frame (Schon and Rein, 1994, p. 35).

The difficulty of identifying the frames reflected in practice calls for multiple methods of research that allow triangulation of ideas and confirmation of evidence collected by each method.

Although broadly consonant with one of the two differing perspectives, each of these sets of policy recommendations may prompt a range of policy or administrative actions, which in turn are mediated by organizational dynamics. Numerous interpretations of each of these models may prompt a range of policy or administrative actions even when there is a dominant perspective shared by the health administrators directing public action. The challenge thus remains to explicate how ideas and organizational dynamics are linked to action in the form of

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<sup>6</sup> In this work, I take a neoinstitutionalist approach to institutions that “stress the centrality of cultural-cognitive elements of institutions: the shared conceptions that constitute the nature of social reality and the frames through which meaning is made” (Scott, 2007, p. 57).

program outputs. In order to assay how public health officials' views of health causation interact with the substantive and procedural dynamics of the organizations those officials work in, this dissertation relies upon a combination of qualitative and quantitative analysis. This is where the role of *ideas in organizations* is important. Ideas are considered to play a significant explanatory role in the practice of public health programs because organizations alone cannot explain practice. The next chapter therefore focuses on those organizations of interest in this study: state health departments.

## Chapter 3. State Health Department as an Organization and Site of Study

The state health department acts as the site of study for this dissertation. This chapter provides an overview of the health department as the context in which study respondents are situated. Organizational context is vitally important to the ways in which ideas influence action. This chapter provides an overview of public health organizations as well as a theoretical discussion of the approach to organizations in this dissertation. The overview of public health organization begins with a synopsis of the public health system, traces the development of the role of the state in public health, discusses the impact of federalism on the state public health department, and then discusses the state health department as the site of study. This is followed by a theoretical discussion of the approach to organizations taken in this study. Institutions “explain a lot,” which is why there remains a need for a better understanding of what shapes day-to-day organizational activity (Berk and Galvan, 2009, p. 543).

### Development of public health organizations

Prior to the discovery of the importance of bacteriology in the early nineteenth century, a focus on environmental control and sanitation aligned the field of public health “more closely with engineering than with medicine” (Starr, 1982, p. 181). Public health lore holds certain moments in time as representative of the field’s ideals of public health. John Snow’s recommendation for the removal of a pump handle used to draw water in London based on epidemiological analysis of the geographic distribution of cholera “serves as a dramatic *coup de théâtre*” which public health lore puts forth as a symbol representative of the ideals of public health in the early 19<sup>th</sup> century (Froggat, 2002, p.667). Successes such as the halt in cholera after Snow’s advice was followed led to the development of powerful governmental departments given broad powers aimed at improving public health (Gostin, Burris, and Lazzarini, 1999).



Local departments developed first, historically, due to the recognition of the importance of controlling infectious disease at the local level (Novak, 1996, p. 229). The Metropolitan Board of Health in New York City, established in 1866, was one of the first of these departments (Turnock, 2011, p. 4; Starr, 1982). State health departments developed soon after, however, “because infectious and environmental hazards are no respecters of local jurisdictional boundaries” (Turnock, 2011, pp.4-5; Novak, 1996, p. 229). Massachusetts had the first functioning state board of health, founded in 1869. Rosencrantz asserts that “by the end of the nineteenth century there was a recognized field of public health, designated by a body of law” (1972, p. 76).

With an emphasis on “urban planning, zoning, restriction of animals and industry in residential areas, and regulation of working conditions” public health carried with it a recognition of the social conditions associated with health (Tulchinsky and Yaravikova, 2014, p. 14). Attempts at “providing clean waters, adequate sewers, pure food, safe workplaces, and hygienic dwellings,” entailed focusing on the distribution of these resources to the urban poor (Gostin, Burris, and Lazzarini, 1999, p. 77). The science of public health continued to develop along side of these public health interventions and organizations supported by the state. For example, Lemuel Shattuck, in 1842, recognized the importance of health statistics for disease prevention and “initiated a statewide registration of vital statistics, which later became a model elsewhere in the USA” (Tulchinsky and Yaravikova, 2014, p. 12). Enlightenment philosophy inspired advances in the understanding of the bacterial underpinnings of disease, however, public health professionals began focusing on the pathways of disease which “shifted attention to the individual” human carriers (Starr, 1982, p. 181; Tulchinsky and Yaravikova, 2014, p. 9).

Efforts to improve the science of public health moved the field from a focus on social welfare and sanitation to one of disease control whereby “the pathogen, not social conditions, was thought to be the problem, and through modern methods like these, the pathogen could be defeated” (Gostin, Burris, and Lazzarini, 1999, p. 77). This shift in the focus of public health is an important foundational underpinning for the field, pitting it against doctors who did not want governmental health agencies infringing on or competing with their private practice (Starr, 1982). Recognition of the social determinants of health were apparent in the early moments of the field, but “the growth of professionalism saw a movement away from the broad advocacy of social reform toward more narrow judgments that could be defended as the exercise of neutral authority” (Starr, 1982, p. 191).

The powerful medical field influenced the way public health developed and was organized. In the nineteenth century, doctors encouraged the development of health departments when their work was complementary, but resistance arose when health departments’ work came to overlap with medical practice (Starr, 1982). Public health departments went from tracking diseases to developing and administering vaccines to the “complex task of promoting changes in child care, diet, and living patterns” (Starr, 1982, p. 192). Health exams became an increasingly important service provided by health departments, an illustration of “the movement of public health from the environment to the individual” (Starr, 1982, p. 192).

### Federalism

The first federal cabinet-level agency focused on public health was not created in the United States until 1953 (Rosen, 1993, p. 445). Because the initial locus of public health was at the local and state levels in the United States, the federal government did not establish centralized formal organizations to address public health concerns on an ongoing basis until the

1950's (Rosen, 1993). The limited role of the federal government in public health until the middle of the twentieth century aligns with the limited role of the federal government in the development of the modern American state in other policy areas (Elazar, 1987, p. 136). This is especially true of the well-documented fight for an increased role for the national government in providing health insurance; “despite being introduced in Congress fourteen times throughout the 1940s and 1950s...a payroll-tax-funded, compulsory, comprehensive national health-insurance program was never enacted” (Rose, 2013, p. 28). The tension between the role of the states and the federal government in health insurance provision is important even today. As recently as 2008, former Secretary of Health and Human Services Shalala asserted, in the first hearing on Health Reform held by the U.S. Senate Finance Committee in 2008, that “federalism is going to be a very important part of the plan that you eventually work out: what is the role of States and what is the role of the Federal Government?” (Seizing the New Opportunity for Health Reform, 2008, p. 39).

Federalism goes beyond the formal division of powers laid out in a constitutional framework to include the values of shared governance “emphasizing partnership among parties with equal claims to legitimacy seeking to cultivate their diverse integrities within a common social order” (Elazar, 1987, p. 116). Values associated with shared governance can be important to both the role of states in public health and the health frames of public health officials (Kincaid, 1995). Those with a social frame understand the interactions that take place in our federally organized governmental system differently than those with an individual frame. Because the social frame, as Gostin and Powers (2006, p. 1057) have observed, “emphasizes the multicausal, interactive character of health threats, a system of overlapping and shared responsibility among federal, state, and local governments will most often be required.” By situating this study at the

state level, the interactions with both the U.S. and local governments are contextual influences on practice that need to be considered. The interest group politics, individualistic political culture, and institutional fragmentation that Rose (2013) identifies as barriers to a national insurance plan could also be important at the state level. These factors may be related to the way health is framed and practiced in the state health department.

Congress created the Department of Health, Education and Welfare under President Eisenhower in 1953 (Rosen, 1993, p. 445). The Department served as the precursor to today's Department of Health and Human Services (HHS). The current mission statement for HHS explicitly acknowledges the social conditions that impact health, describing HHS as "the U.S. government's principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves" (Digital Communications Division, 2015). Where HHS serves as the overarching executive agency focused on human services alongside health, the Centers for Disease Control and Prevention is the premiere public health agency (CDC, 1996). The current mission statement of the CDC seems disease focused especially when compared to HHS: "Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate attack, CDC fights disease and supports communities and citizens to do the same" (CDC, 2014). This is especially interesting given a Morbidity and Mortality Weekly Report released by CDC in 1996 stating that "CDC's programs are often tied to economic, political, and social issues," which it recognized were controversial compared to its original focus on bacteriology where "hardly anyone objected to the pursuit of germs" (CDC, 1996).

The mission and practices of these federal agencies are important to the practices that public health administrators can undertake in state health departments. State health department

funding has been increasingly dependent on the U.S. Government. A survey conducted by the Association of State and Territorial Health Officials (ASTHO) on state health agency revenue found that federal funds constituted 53% of their revenue, whereas state general funds accounted for 24% (see Figure 3). The remaining revenue sources included fees and fines, other state funds, and other sources. The federal government has typically provided categorical funding to state governments, which can act as a barrier to integrating services that reflect the broader social determinants of health perspective. Since categorical funding “is limited to a single issue and is time restricted,” it makes it particularly difficult to use administrative discretion to address social determinants of health (Gostin and Powers, 2006, p. 1057). This is exacerbated by the fact that accountability measures in public health departments also are hindered by the presence of categorical funding; “categorical funding and accountability systems remain generally separate, which is a major obstacle to whole system integration” (Richmond-Crum et al., 2013, p. 114).

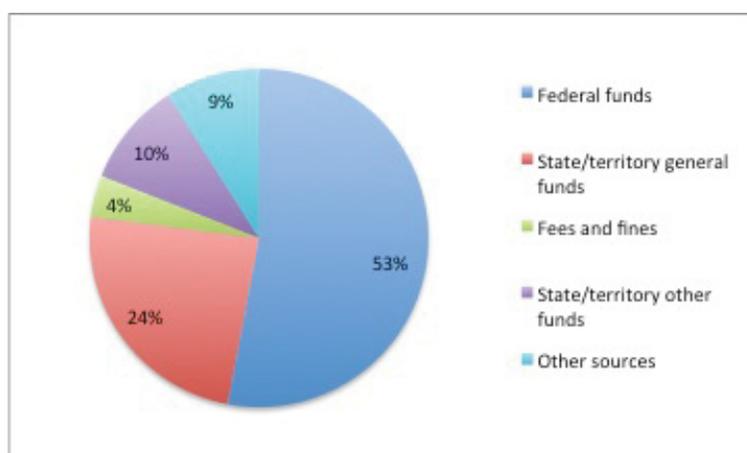


Figure 3. State health agency funding sources by percentage for FY11 (Source: Association of State and Territorial Health Officials, 2014; Not all states provided values for revenue sources or expenditure categories; Used with permission)

Where public health authority was consolidated in the national government over the course of the nineteenth and early twentieth centuries, authority was devolving back to the states in concert with the devolution of a plethora of social policy areas by the latter half of the

twentieth century (Katz, 2001, p. 27). Turnock and Atchison (2002, p. 69) believe that “the shift toward a more state-centered form of federalism, often termed ‘New Federalism,’ in the second half of the 20<sup>th</sup> century amplified weaknesses within the governmental public health enterprise.” The continued devolution of authority into smaller units of government is likely to hinder the implementation of public health policy rooted in the societal health perspective because governance of the multiple determinants of health is spread over a large number of governmental subunits (Fox, 2006, p. 399). This makes the role for collaboration in state health departments especially important because it is an opportunity to address the wide range of factors that affect health by the multiple units of government vested with the authority to act.

#### The public health system

While the “backbone” of the public health system of the United States depends on state-level public health departments (Mignone Jr. and Davidson, 2003, p. 219), the public health system includes powerful public organizations working alongside of a range of private organizations committed to improving the health of the public. In efforts to address public health problems, the U.S. political system employs a wide diversity of agencies, groups, and interventions. The organizations that take on public health issues within the broader system include non-profits, federal agencies, private companies, foundations, and other types of organizations (Gostin, Burris, and Lazzarini, 1999). Handler, Issel, and Turnock’s conceptual framework of the public health system includes macro context “mission, structural capacity, processes, and outcomes” which create “an open system with relationships that lead to interaction and mutual adjustments among the components” (2001, p. 1236). This vague description focused on “interaction” and “mutual adjustment” reflects the importance of relationships in efforts to impact health.

In terms of structure, Handler, Issel, and Turnock’s (2001) broadly stated description of the macro context is an attempt to be inclusive of the comprehensive mix of public and private organizations that make up the public health system. Figure 4 below contains the Centers for Disease Control’s depiction of the parties involved in the public health system, which they emphasize is “more than just the public health agency” (CDC, 2014). CDC lists schools, churches, business, health care providers, environmental health, mental health, community services, transportation, community coalitions, justice and law enforcement, and philanthropy alongside health departments as components of the public health system.

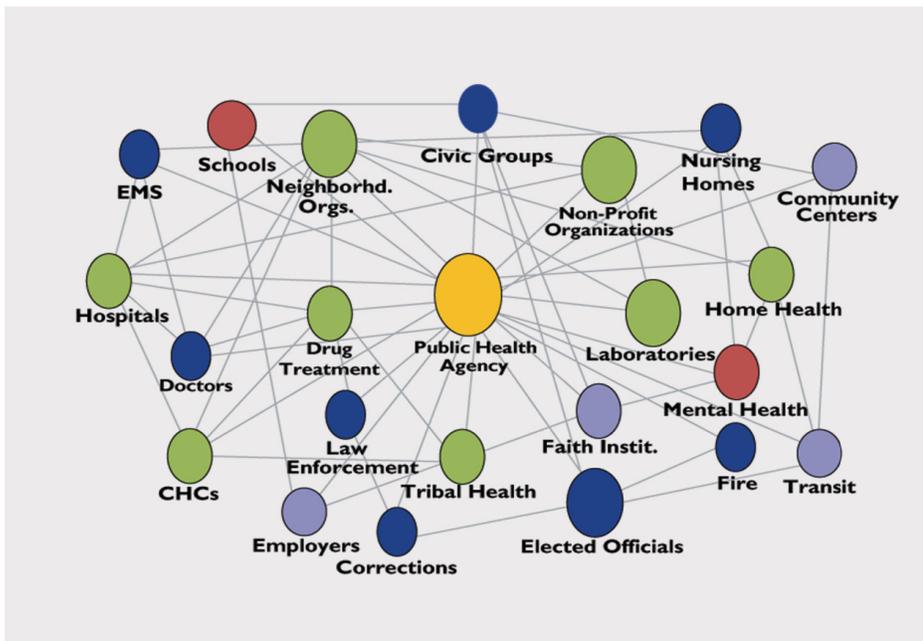


Figure 4. United States public health system (Source: Office of State, Tribal, Local, and Territorial Support, Centers for Disease Control and Prevention, 2014; Public domain)

The core functions of the state health department, as enumerated by the Institute of Medicine, include “health promotion and disease prevention; assessment, data collection, and data analysis; medical services; and leadership and policy development” (Gostin, Burris, and Lazzarini, 1999, p. 78). This is confirmed by a 1994 analysis of state health department mission

statements, which paints “a picture of the department as a research and evaluation unit, an organization that enforces public health laws, an administrator of contracts, and a health promotion and education organization” (Duncan, Ginter, and Kreidel, 1994, p.18). Health promotion can entail efforts at behavior change rooted within the individualistic frame, such as tobacco cessation initiatives or safe sex education. It can also involve initiatives associated within the social frame, such as working to reduce “social factors such as stigma, discrimination, and sexism” associated with HIV/AIDS (Gostin, Burris, and Lazzarini, 1999, p. 80). The potential for the health frames to differentially impact the stated missions of health departments is similarly true in regard to working with data, providing service, and developing policy. After the terrorist attacks of September 11, 2001, emergency preparedness and response emerged as an important mission area (Mignone Jr. and Davidson, 2003). This change in mission is an indication of the importance of studying the development of state public health departments and their interplay with the macro-context in understanding the current landscape of state health departments.

Local health departments make up another important part of the public health system. By overseeing public health at the local level and providing the direct services, the street-level bureaucrats in local health departments are increasingly important in a devolving health system. Lipsky finds that “public safety, public health, and public education *may* still be elusive social objectives, but in the past century they have been transformed into areas for which there is active governmental responsibility” (2010, p. 6). The relationship between state health departments and local health agencies varies based on a range of factors. The state health department oversees local health agencies in less than half (42%) of the states (Beitsch et al., 2006, p. 168).

Essential public health services serve as guideposts for actions for city and county health



departments. The ten essential public health service categories (Brooks et al., 2009, p. 302) that form part of the mission of local public health departments include:

- 1) Monitor health status,
- 2) Diagnose health problems,
- 3) Inform, educate, and empower,
- 4) Mobilize community partnerships,
- 5) Develop policies and plans,
- 6) Enforce laws and regulations,
- 7a) Link people to needed services,
- 7b) Assure the provision of care,
- 8) Assure a competent workforce,
- 9) Evaluate effectiveness of services,
- 10) Research for new insights.

Although these ten essential services apply specifically to local health departments, they also provide an overall sense of the goals of public health efforts in the government generally. State and federal level officials are well aware of the essential services that local health departments are expected to provide and committed to creating a supportive environment for localities meet these goals.

State public health departments

The United States federal system situates state public health departments at the center of both public health decision-making and policy and program implementation. “State public health agencies play a critical role in supporting public health service delivery” as the “primary health authorities within states, responsible for policy making, priority setting, data collection and analysis, financing, and oversight of local public health activities” (Hyde and Shortell, 2012, p. S32). Because the U.S. governance structure historically has given primary responsibility for protection of the public’s health to the states, “their laws and regulations concerning public

health matters are critical in determining the appropriateness and effectiveness of the governmental public health infrastructure” (IOM, 2002, p. 104). For example, state courts attempting to discern the boundaries of localities’ power in regulating health will look “primarily, if not exclusively, to state law” (Diller, 2013, p. 1868).

Because primary responsibility lies with the states, state and local health departments are responsible for more than two-thirds of public health expenditures in the United States (Turnock and Atchison, 2002, p. 73), with public health expenditures defined as those state-level expenditures categorized as meeting one of the ten essential public health service categories listed above in addition to the public health administration costs associated with health departments. A more recent study by the Association of State and Territorial Health Officials (ASTHO, 2014b, p. 86) finds that in state health departments, more than 50% of funds are expended on consumer health and the Women, Infant, and Child (WIC) program. The remaining expenditures, in order of magnitude, are on infectious disease, all-hazards preparedness, environmental health, chronic disease, quality of health services, administration, health laboratory, injury preventions, vital statistics, health data, and other (ASTHO, 2014b, p. 68).

The multitude of expenditure categories indicates the variety of activities that state health departments engage in and the diverse services that they provide. The governance structure of state health departments has shifted slightly away from free standing agencies toward being components of superagencies, with freestanding agencies accounting for 60% of state health departments in 1990 compared to 55% in 2001 and 58% in 2012 (Beitsch, Brooks, Grigg, and Menachemi, 2006, p. 168; ASTHO, 2014b, p. 17). Twenty-six states had a board or council of health, with large states more likely than small states, and decentralized states more likely than centralized states, to have a board (ASTHO, 2014b, p. 22). Beitsch et al. (2006, p. 168) found

that these boards of health were “most notably promulgating rules (65.4%), advising elected officials on health policy concerns (50.0%), and formulating state health policies (38.5%).” As these functions demonstrate, state boards of health can be a powerful influence on state health departments (Hyde and Shortell, 2012, p. S33).

Officials within state health departments are the focus of this dissertation due to the important role of the states in the U.S. public health system. In order to assess their roles and practices, there needs to be an understanding of the general organization and responsibilities of a state public health department. The Association of State and Territorial Health Officials (ASTHO) have found that most state public health departments provide the following functions directly: immunization services, primary prevention services, health screenings, laboratory services, electronic data exchanges, preparedness response, access to health care, registry maintenance, maternal and child health services, epidemiology and surveillance, regulation, inspection and licensing, environmental health, and disease treatments (HIV/AIDS) (ASTHO, 2009).

Given the critical role of state health departments, it is surprising how little scholarship is dedicated to them. Governmental public health often is characterized as “inadequate, eroding, and outdated” (Turnock and Atchison, 2002, p. 74) on the basis of anecdotal evidence critiquing state and local public health systems, yet “the lack of comprehensive assessments makes it difficult to either support or refute [those] characterizations.” Duncan, Ginter, and Kreidel (1994, p. 25) analyzed the mission statements of state health departments and found that “relative to organizational philosophy and desired public image, the state departments of public health that participated in this study were less explicit than their counterparts in business and the hospital environments.” Figure 5 shows a generic organizational chart of a state health department, and

the various tiers of the boxes indicate the level of individuals to be included in this analysis.

Following study of many state organization charts, Figure 5 is one hypothetical example of the way in which the offices of the health department can be structured. This organizational structure is important to this study, because for these public health officials “where you stand” on the idea of health may depend on “where you sit” (Miles, 1978, p. 399).

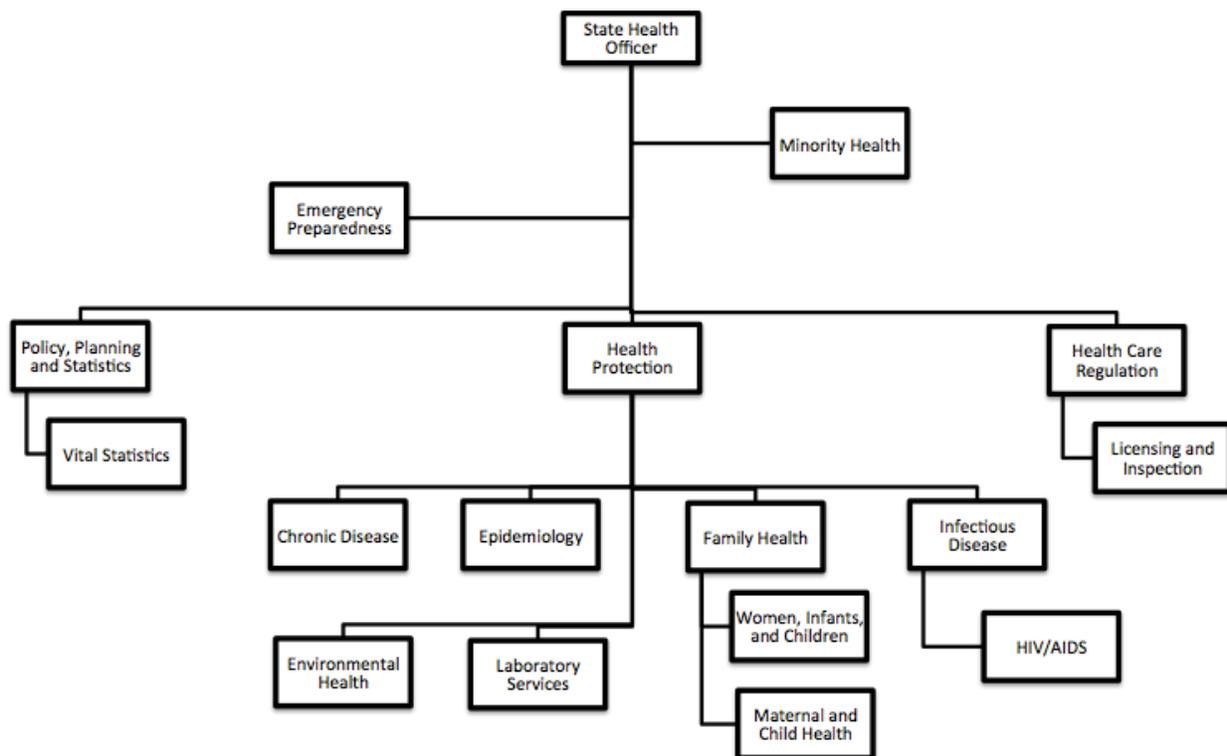


Figure 5. Generic organizational chart for state health departments

### Organizational influences on public health practice

Organizational dynamics affect whether and how the prescribed practices associated with an idea of health will be translated into action in the implementation process. An assessment of those dynamics requires exploration of the structural and agential characteristics of public health organizations (Berk and Galvan, 2009). I employ Scott’s (2007, p. 79) concept of the “carriers” that affect practice, such as “symbolic systems,” “relational systems,” “routines,” and “artifacts,”

that shape the role for collaboration, the type of evidence in use, administrative discretion, and public participation. Although institutions do “explain a lot,” they are not as effective in explaining “their own transformation” (Berk and Galvan, 2009, p. 543). This is where the role of ideas in organizations is important.

Rogers Smith rejects a strict dichotomy between ideas and institutions, insisting that they are intermeshed concepts that need to be understood in relation to each other because “ideas that are forces in political affairs should always be thought about in terms of their institutional locations, just as institutions always have to be thought about in terms of the ideas embedded in them and constitutive of them” (1995, p. 139). Orren similarly finds that ideational research necessarily needs to include institutions since the two are so closely linked (1995, pp. 97-98). This dissertation situates ideas and institutions in close proximity, but nevertheless will distinguish between the two because there are many ideas outside those that are dominant in institutions (Orren, 1995, p. 98). Moreover, the relationship of these two concepts with practice is the main point of interest. The context in which public health officials operate is important to whether and how ideas are linked to practice.

The organizational framework that forms the basis for studying health departments in this dissertation is a combination of the Lavis (1998) framework for understanding the role of ideas in policy change and Garvin, Edmondson, and Gino’s (2008) building blocks for a learning organization. The two frameworks for understanding learning organizations map onto each other well. Lavis’s organizational framework distinguishes whether an organization is “more about learning or about conflict-resolution” using the subjects and objects of learning as organizational “carriers” to categorize organizations (1998, p. 8; Scott, 2007). Lavis (1998) argues that in order to link ideas to actions, it is necessary first to identify who learned and what was learned so that

ideas are situated within specific decision-making frameworks. If the organizational environment is a strategy-based one revolving around conflict resolution, then actions largely are predetermined, and ideas are used primarily to further predetermined goals. By contrast, if it is state-centered and learning oriented, then public health officials possessing particular ideas of health will work through the bureaucracy toward some type of policy or program change, because learning relies upon ideas as the basis for action (Lavis, 1998).

Garvin, Edmondson, and Gino's (2008, p. 110) learning organization assessment tool operationalizes the concepts presented in the Lavis framework (who learned and what was learned) by studying "three building blocks" of organizations, whether there is a 1) "supportive learning environment," 2) "concrete learning processes and practices," and 3) "leadership behavior that reinforces learning." By surveying psychological safety, appreciation of differences, openness to new ideas, experimentation, information collection, and information transfer within the organization, I can measure both the subjects and objects of learning in the organization. This model of the organization will help explain how ideas are used to influence action in the public sphere.

Since who learns is a key part of understanding the organizational environment, the concepts of collaboration and public participation will be important to understanding the organizational environment. A greater diversity of collaborators indicates it is more likely that an organization is a learning organization (Lavis, 1998). Public administration with a social health frame may rely heavily on the role of collaboration because it is an interdisciplinary model that requires a wide variety of experts and local stakeholders to be engaged in addressing public health issues and problems. Varda, Shoup and Miller find effective partnerships and collaborations improve public health outcomes and are often "built on the principle that poor

health stems from many factors” (2012, p. 564). This differs from the individualistic health perspective, which relies on highly professionalized experts to address public health issues. Organizations that limit collaboration are likely to act as barriers to focusing on the social determinants of health. Collaboration and public participation are discussed in greater detail later in this chapter.

Evidence-based policymaking, discussed in more detail in the next section of this chapter, is part of the “learns what” component of Lavis’s organizational framework. The types of evidence taken into consideration affect the type of learning that takes place so it is a factor in determining the organizational type according to Lavis’s typology. The preferred health frame as well as organizational constraints act to validate certain sources of evidence over others. Since this study is examining public health officials within the political landscape of the state policy process, it is necessary to examine whether and how the idea of health affects action through preferential use of one form of evidence over another.

#### Evidence use

Evidence-based practice has undergirded the field of public health since its founding. From John Snow’s use of geospatial data to identify a water pump handle as the conduit for cholera in the nineteenth century to today’s use of health informatics in decision-making, evidence informs public health practitioners as to the condition of population health and guides their decision-making (Froggat, 2002, p.667; Yasnoff, O’Carroll, Koo, Linkins, and Kilbourne, 2000). Accurate evidence in health departments is “vital to monitoring progress toward stated health objectives and to deploying the most effective interventions” (Gostin, Burris, and Lazzarini, 1999, pp. 81-82). The varied nature of evidence, however, introduces questions regarding which evidence is considered legitimate and how public health officials use it.

Dobrow and Upshur (2004) assert that understanding the definition, context, and process of evidence use is important to understanding public practice. “How individual sources of evidence are collectively weighted and prioritized” is important to the resulting action public health officials undertake (Dobrow and Upshur, 2004, p. 215).

Although evidence-based decision-making has been popular in medicine, some scholars in public administration and policy are critical of the “‘modernist’ faith in progress informed by reason” (Sanderson, 2002, p. 5; Barzelay and Thompson, 2009). Belief in objective evidence fails to account for the contested nature of policymaking and social knowledge. The definition of evidence, therefore, varies by discipline and, even by individual. From the perspective of public administration, Head proposes that evidence includes “systematic (‘scientific’) research, program management experience (‘practice’), and, political judgment” (Head, 2008, p. 1). Sanderson (2002, p. 3) instead divides evidence into “evidence to promote accountability” and “evidence to promote improvement,” where the first is information and the second is knowledge that “is explanatory and theoretical, providing an understanding of how policies work.”

Public health scholars are beginning to recognize that each type of evidence has its own implications for the resulting practices (Victora, Habicht, and Bryce, 2004). Proponents of the social frame call for the use of qualitative evidence so that “findings on the subjective experiences of people most directly affected by health inequities...let their voices be heard” (Blas et al., 2008, p. 1684). Likewise, the World Health Organization’s Commission on the Social Determinants of Health has come to recognize “the importance of engaging national policymakers and rejected the naïve assumption that simply putting forward scientifically sound public health evidence is sufficient to spur policymakers to action” (Irwin and Scali, 2007, p. 252).



A practitioners' health frame may differentially construct the definition of evidence and that construction can affect both the types of evidence considered legitimate and that which is actually used in decision-making. Marston and Watts (2003, p. 159) find that "many policy case studies attest to the fact that policy-making is rarely a case of rationally identifying a policy problem and using research evidence to develop and implement a policy solution." The preferred health frame, therefore, may act to validate certain sources of evidence over others so as to channel the utilization in the direction of a few types of evidence. For example, an individualistic frame may result in the use of limited surveillance data focused on the different types of disease. For the social frame, however, health departments may collect environmental and social data alongside disease and behavioral data (Gostin, Burris, and Lazzarini, 1999, p. 83). Because evidence use is an important type of practice, the particular lens used to examine evidence is especially salient to this dissertation since it assays how public health officials' health frames affect the practices they undertake. How public health officials attach weight to different types of evidence for decision-making serves as a proxy for evidence use in this dissertation. Examining public health officials within the political landscape of the state public health department will aid in understanding how practitioners' health frames affect action through preferential use of one form of evidence over another.

### Collaboration

Collaboration is pivotal to the work of public health departments because health departments face a "jurisdictional problem" (Gostin, Burris, and Lazzarini, 1999). Depending on the health frame at play, the determinants of health may be outside the jurisdictional authority of the health department (Varda et al., 2008, p. E1). Following the 2001 anthrax scare, IOM (2002, p. 9) found that communication among federal, state, and local levels was lacking and noted "success of the public health system depends in part on collaboration among all levels of

government.” In addition to governmental entities, “the modern health department must learn how to educate, motivate, and collaborate with agencies that have little or no institutional knowledge of or even interest in public health” (Gostin, Burris, and Lazzarini, 1999, p. 87).

Kettl recognizes that boundaries around “mission, resources, capacity, responsibility, and accountability” are important to the practice of administration, and further argues that “working effectively at these boundaries requires new strategies of collaboration and new skills for public managers” (2006, p. 10). Whether in public administration generally or public health more specifically, the importance of collaboration is widely recognized, but the sheer number of potential collaborators given the scope of public health makes it a difficult endeavor. Potential collaborators include both entities within the public health system and those outside of it. These include “other state departments and public agencies (e.g., environmental protection, agriculture, highway safety, housing, welfare, social services, and law enforcement agencies), community-based organizations...the private sector...and academic institutions (e.g., schools of public health, nursing, dentistry, and medicine)” (Gostin, Burris, Lazzarini, 1999, p. 87).

Including internal and external organizations in implementing programs that the health department is unable to administer alone is essential to addressing the determinants of health. What the authors called an “environmental scan” of program directors of maternal and child health and injury and violence prevention programs in 50 states and the District of Columbia, found collaboration “to be an important strategy used by health departments, both internally (i.e., across multiple programs and divisions within the health department) and externally (i.e., across organizations and sectors)” (Richmond-Crum, Joyner, Fogerty, Ellis and Saul, 2012, p. 108). Mobilizing partnerships is even listed as one of the ten essential public health services at the local level (Brooks et al., 2009, p. 302).

The practices that are particularly amenable to collaboration, as identified by state health department program directors, include “data collection; joint committees; joint trainings; local interventions; and cross-program funding of staff” (Richmond-Crum et al., 2012, p. 108). A systematic review of the public administration literature on collaboration found that the outcomes of collaboration improve if relationships are established early, align over the concept of the public good, exhibit policy congruence, share policy experts and financial resources, and build “joint governance structures” (Varda, Shoup, and Miller, 2012, p. 569). Given these considerations, it seems that effective public health collaborators need to share the health frame of their partners (Stover and Bassett, 2003). If there is alignment over the health frame, collaboration can work to legitimize the health department’s problem definition because those outside the organization recognize the health determinants. It should be cautioned that collaboration is not a panacea and can prove to be problematic if there is little goal overlap or lack of trust among partners (Varda, Shoup, and Miller, 2012, p. 569). Nonetheless, collaboration has been linked to “socio-ecological” approaches to health (Axelsson and Axelsson, 2006, p. 76). It is, therefore, of interest to see the degree to which public health departments engage in collaborative practices and how those align with the different health frames.

### Participation

Participatory mechanisms within organizations, especially public organizations, are intended to include a diversity of voices in decision-making processes (King, Feltey, and Susel, 1998; Rowe and Frewer, 2000). The argument for public participation calls for programs addressing complex social problems to include the participation of citizens who can speak to such complexity (Innes and Booher, 2004). Those focused on disciplinary expertise and efficiency may challenge the decision to include the public in the decision-making process (Germain, Floyd, and Stehman, 2001). The many advocates of public participation, however,

often take a normative stance that the public should be included as a means of pursuing the “democratic ideals of legitimacy, transparency and accountability” (Abelson, Forest, Eyles, Smith, Martin, and Gauvin, 2003, p. 239). Others recognize that by incorporating discussions that embody the democratic tensions at play in the public they may be able to build public support for decisions (Abelson, Forest, Eyles, Smith, Martin, and Gauvin, 2003). These motivations combined have the potential to improve the effectiveness of program outcomes (King, Feltey, and O’Neill, 1998, p. 319).

In the field of public health, including the public in decision-making increasingly is recognized as essential to improved health outcomes. Rosen concludes his book on the history of public health in the United States by claiming that the “ultimate success of any public health program depends on the degree to which it is brought close to the people whom it is intended to serve, and the understanding of it which they have acquired” (Rosen, 1993, p. 446). Public health programs in both public and private sectors have responded to this claim by recognizing the importance of incorporating the community or public into discussions around problem identification and program implementation (Schulz, Krieger, and Galea, 2002). Community-based participatory research is a commonly employed research method in public health research, especially for those committed to the social health frame (Israel, Schulz, Parker, and Becker, 1998; Baker and Brownson, 1998).

A common question in public participation efforts is the issue of who constitutes the public or the community. The answer to that question reflects the voices perceived important to discussions. Although public participation is a concept that may resonate with both those holding individualist health frames and social health frames, a commitment to a multiplicity of methods intended at reaching the most disadvantages may be more aligned with the social health frame.

Commitment to diverse forms of public participation, therefore, can be reflective of a broader frame that recognizes the need to include non-elite voices. This frame is hypothesized to align with the social health frame as compared to the individual health frame.

### Conclusion

The development of the U.S. public health system has often reflected the health frame dominant at a given time. At its inception, it was focused on social systems but has changed over time as powerful interests have worked to limit the domain of public health. The bureaucratic development of the health department parallels the development of the American state. The tensions inherent to the development of the American state, however, are more pronounced in public health. The role of public health in the state has an increased tension due to the immense power necessary to protect the public's health and reluctance of American individualism to give it such power. For this reason, federalism plays a powerful role in how public health functions in the state, putting the onus on the state-level health department.

The state health department's leadership includes a highly professionalized workforce, yet little is known about their organizational environment. The mandates they encounter are far reaching but their organizational mission is less explicit than their local or federal partners. Most state health departments have a similar array of functions they provide, but this dissertation seeks to study how those functions are implemented and the influences on those functions. The context in which public health officials operate is important to whether and how ideas are linked to practice. It is for this reason that this dissertation focuses on what Carpenter (2001) calls the "mezzo" level of the organization because this level is particularly important to understanding how health frames impact practices by way of organizations. As Carpenter argues, "the hierarchical structure of many bureaucracies...leaves middle level bureaucrats in the best

position to experiment, learn, and innovate” (Carpenter, 2001, 21). In addition to the role of the agents’ cognitive adequacy around the idea of health, described in the previous chapter, the interaction of ideas with the organizational environment is important to the types of practices they can undertake.

## Chapter 4. Research Methods and Data Analysis

### Introduction

In order to investigate how public health officials' understanding of the determinants of health affects their practice while they are situated in public organizations, I relied upon a combination of quantitative and qualitative methods. The quantitative methods included the administration and analysis of an original national online survey, and the qualitative methods included analysis of in-depth hour-long follow-up interviews. This methodological combination is based on research from political science and public administration, as well as research specific to public health that has explored conceptions of health and the relationship of those conceptions to public practice (Lavis, 1998; VanLeeuwen et al., 1999; Parsons, 2002; Robert and Booske, 2011). I used survey analysis to generally identify ideas of health, organizational dynamics, professionalization, and demographics of state health department officials (VanLeeuwen et al., 1999; Lavis, 1998; Robert, Booske, Rigby, Rohan, 2008; Robert and Booske, 2011). A subset of survey respondents were selected, based on their survey responses in regard to the idea of health and organization environment, as meeting the eligibility criteria for follow-up interviews.

The interviews explored in-depth the ideas of health and organizational dynamics, but specifically they focused on how these link to public practice. This included asking interviewees to explain how they see their understanding of the determinants of health and organizational dynamics affecting the practices they undertake (see Appendix A). Individual in-depth interviews were analyzed using qualitative analysis through a combination of inductive and deductive coding. Interview findings regarding ideas of health and public health practice were compared to survey results and analyzed separately to elucidate the impact of ideas and organizations on public health practices underway within participant organizations.

## Research question and propositions

This dissertation examines how public health practice is shaped by public health officials through the ideas they hold about health causation and the dynamics embedded in the organizations in which they work. Elucidation of this requires pursuit of the following research questions:

Q1. What models of health do United States public health administrators in state-level health departments adhere to?

Q2. What are the organizational dynamics of their respective state public health departments?

Q3. How do individuals' ideas of health interact with the dynamics of public health organizations to influence public health administrators' practice in state health departments?

These questions lead to the following propositions.

P1: State public health officials' involvement in professional associations, education, and self-reported political ideology will affect the model of health causation to which they adhere.

P1a: State public health officials' involvement in professional associations will affect the model of health causation to which they adhere.

P1b: State public health officials' level and field of education will affect the model of health causation to which they adhere.



P1c: State public health officials' self-reported political ideology will affect the model of health causation to which they adhere.

P2: The ideas of state public health officials situated in learning organizations will be reflected in public health practice to a greater degree than the ideas of officials in conflict resolution organizations.

P3: State public health officials with an individualistic health perspective and in a self-identified conflict resolution organization will rely on evidence less in decision-making than state public health officials with a societal health perspective and in a self-identified learning organization.

### Research framework

The research framework for this dissertation conceptualized that public health officials' understandings of the determinants of health interact with the dynamics of their organizations, resulting in different practices (see Table 3). The practices under study in this framework included commitment to various forms of collaboration, importance placed on diverse forms of evidence use in decision-making, and engagement with the public in decision-making. It was expected that those public health officials situated in learning organizations and also placing importance in the social determinants of health would be associated with widely collaborative practices, belief in the importance of a diversity of evidence types, and a broader engagement with the public (Garvin, Edmondson, and Gino, 2008). On the other hand, those with an individualistic perspective and situated in conflict resolution organizations were expected to have little association with collaborative practices, belief in the importance of a diversity of evidence types, or engagement with the community. Individuals with a social determinants of health perspective situated in a conflict resolution organization and those with an individualistic

determinants of health perspective situated in a learning organization were expected to fall in between, having more limited associations with different types of collaboration, the belief in evidence use, and the commitment to participatory practices.

Table 3. Relationship between organizational environment and health perspective

<u>Organizational type</u>	<u>Health Perspective</u>	
	<i>Individualistic</i>	<i>Societal</i>
<i>Learning organization</i>	Narrowly collaborative, Limited evidence use, Limited participation	Widely collaborative, Use multiple types of evidence, Broadly participatory
<i>Conflict resolution organization</i>	Little collaboration, Little evidence use, Non-participatory	Narrowly collaborative, Limited evidence use, Limited participation

This research design embraces the mixed-methods conceptual framework. Greene, Caracelli, and Graham’s (1989) review of the theory underlying mixed-methods identifies five purposes for this type of research design. These five purposes include:

- 1) Triangulation, which seeks “correspondence of results from the different methods,”
- 2) Complementarity, which seeks “clarification of the results from one method with the results from the other method,”
- 3) Development, which “seeks to use the results from one method to help develop or inform the other method,”
- 4) Initiation, which seeks “the recasting of questions or results from one method with questions or results from the other method,” and
- 5) Expansion, which “seeks to extend the breadth and range of inquiry by using different methods for different inquiry components” (Greene, Caracelli, and Graham, 1989, p. 259).

This research used triangulation by comparing the survey finding’s description of participants’ adherence to frameworks around the determinants to health to interview data from those respondents. The survey questions asking respondents to rank the importance of health

determinants from a provided list were triangulated with interview data on respondents' definition of health and their responses to a vignette describing a health situation. The survey also asked a series of questions about the respondents' organizational environment in both the survey and the interviews. These responses were compared against each other to triangulate the findings. The very different nature of the survey method as compared to the semi-structured interview allowed for more detailed questions to be asked in the interview.

The survey and follow-up interviews measure complementary but also different aspects of health officials' understandings of the determinants of health, providing an enriched perception of their thought processes (Greene et al., 1989, p. 258). These multiple methods allowed for expansion, where the interviews focused more on public practices resulting from ideas of the determinants of health and the organizations in which respondents are situated. These two methods overlapped in their focus on the phenomena of interest in this research. Both the survey and interview methods explored officials' understandings of the determinants of health and the organizational environment. In addition, the interviews focused on the phenomena of public practice.

#### Sampling frame

The sampling frame for the survey included the "meso level" of the public health organization, which in this instance includes the directors of the offices in state public health departments that are responsible for one of the functions and services listed in Table 3. These elites composed the sampling frame because they have "expertise in areas relevant to the research and for their perspectives on" state health departments as organizations (Marshall and Rossman, 2011, p. 255). More specifically, as Carpenter states, "bureau chiefs and division chiefs as crucial bureaucratic actors" have both "durability" and "authority" (2001, p. 19). Their

positions allowed these respondents to provide a unique perspective and valuable information that can be gained only from individuals serving as leaders in state public health organizations.

The list of functions and services in Table 3 (see below) was provided directly by more than 90% of state public health departments based on a 2007 online survey conducted by the Association of State and Territorial Health Officials (ASTHO, 2009). ASTHO conducted the survey to identify state health departments' activities and scope of work among other goals. By including the offices within health departments associated with the services most often provided by state health departments, there was a greater degree of commensurability of respondents across states.

ASTHO's original list of health department services served as a guide to identifying the offices to be contacted, listed in column 2 of Table 4 (ASTHO, 2009). These offices were linked to these services following a comprehensive review of state health department organizational charts. The review helped reveal the types of offices that most often provided the services identified by ASTHO. In some cases, multiple offices provided a type of service identified by ASTHO. For instance, offices of tobacco control and prevention, injury prevention, and obesity prevention were all offices included in the sample as part of the ASTHO-defined primary prevention services category. In addition to linking to the services identified by ASTHO, I included two additional offices in my survey: the office of the commissioner and the office of public health communications. These two offices were included due to their administrative importance in state health departments. The office of the commissioner sets the leadership agenda, which is important to the ideas, organizational dynamics, and public practices underway in the health department (Ritz, Giaque, Varone, and Anderfuhren-Biget, 2014).

Communications officers are “increasingly recognized as a necessary element of efforts to

improve personal and public health” and with a presence in every state health department, they were included in the sample (Wise, 2012).

Table 4. Sampling frame: Association of State and Territorial Health Officials defined state health department services and associated health department offices (ASTHO, 2009)

<i>ASTHO Defined Health Department Services</i>	<i>Associated Health Department Offices</i>
Immunization services	Immunization services
Primary prevention services	Tobacco control and prevention/Injury prevention/Obesity prevention
Health screenings	Newborn screening
Laboratory services	Laboratory services
Electronic data exchanges	Vital statistics
Preparedness response	Preparedness response
Access to health care	Access to health care
Registry maintenance	Cancer registry maintenance
Maternal and child health services	Maternal and child health services/Perinatal events
Epidemiology and surveillance	Epidemiology and surveillance/Behavioral Risk Factor Analysis Surveillance System
Regulation, inspection and licensing	Licensing and inspection
Environmental health	Environmental Health
Disease treatments (HIV/AIDS)	HIV/AIDS screening and prevention/Infectious disease/Chronic disease
	<i>Public health communication</i>
	<i>Commissioner</i>

ASTHO defines each of these services in accordance with the role played by the state health department. At the state level, immunization services include responsibility for “vaccine order management and inventory distribution” (ASTHO, 2009, p. 15). Population-based primary prevention services are often aimed at preventing “tobacco use, HIV, injury, obesity, and sexually transmitted diseases” (ASTHO, 2009, p. 15). Health screenings at the state level are

usually focused on “tuberculosis, HIV/AIDS, sexually transmitted diseases, breast and cervical cancer,” and newborn screenings (ASTHO, 2009, p. 16). Laboratory services include a wide range of tests for “bioterrorism threats, influenza types, food-borne illness, newborn screening, lead, and other environmental toxins” (ASTHO, 2009, p. 16). Electronic data exchanges enable information sharing among various levels of government and include information on, “reportable diseases, laboratory reports, vital records and data on the WIC program” (ASTHO, 2009, p. 16). Preparedness response has been an important part of state health department services since 2001 and include, “communication systems, epidemiology, preparedness planning, public health surveillance, access to lab services, legal support, and workforce training” (ASTHO, 2009, p. 16).

Access to health care may focus on minority and rural health, but may also include emergency medical services or health insurance regulation (ASTHO, 2009, p. 18). Registry maintenance most often includes maintaining a cancer registry and childhood immunization registry but can also include a birth defects registry (ASTHO, 2009, p. 18). Maternal and child health services include the administration of the Women, Infants and Children (WIC) supplemental nutrition program, family planning and prenatal services, and “early intervention services for children” (ASTHO, 2009, p. 19). Epidemiology and surveillance is primarily the responsibility of the state health agency in the areas of communicable/infectious disease, chronic disease, environment, and perinatal epidemiology (ASTHO, 2009, p. 19).

### Research sample

Officials within state health departments were chosen due to the important role of the states in the U.S. public health system (Turnock and Atchison, 2002). The sample included officials from across geographic regions as well as from multiple sub-disciplines in public health

so as to offer insights into the thinking of a wide swath of public health professionals. By including the directors of offices shared by more than 90% of health departments there was a uniformity of respondents that enhanced comparability in accordance with Parsons' (2002, p. 52) suggestion for sampling based on those who have "identical objective constraints." These respondents also were chosen because they were expected to possess a degree of decision-making authority that can affect program implementation while also being engaged in public health practice that is directly linked to the street level bureaucrat (McCann, 2009).

In addition to exploring ideas about health and health causation, the survey drew upon Lavis (1998) and Garvin, Edmondson, and Gino (2008) to measure the organizational context in which these state public health administrators operate. Organizations therefore may be divided into two types generally: learning organizations and conflict resolution organizations.

To identify and categorize potential interview participants, I first divided survey respondents according to the health perspective they held (individual or social health frame). I then divided the respondents adhering to each perspective according to the type of organization they worked in as determined by their responses to the learning environment set of questions in the survey (conflict resolution organization or learning organization). This generated four interview groups (see Table 1). I then requested interviews with 80 of the 134 survey respondents with the strongest societal health perspective or individual health perspective. My request asked them to participate in an in-depth, 60-minute interview. These individuals were chosen from among the larger group of survey respondents followed Parsons' model for parsing out the effect of ideas by dividing individuals according to organizational type as a means of controlling for organizational dynamics (Parsons, 2002, p. 52), and also took into account how the political environment may affect the transfer of ideas into practice.

Table 5. Interview groups

<u>Organizational type</u>	<u>Health Perspective</u>	
	<i>Individualistic</i>	<i>Societal</i>
<i>Learning organization</i>	Interview group A	Interview group B
<i>Conflict resolution organization</i>	Interview group C	Interview group D

A total of 28 individuals from 18 states were interviewed. Figure 6 presents the distribution of these interviewees overlaid on a map of the United States with the “X” indicating one or more interviews were conducted in the state. The U.S. Department of Health and Human Services map, shown below, identifies its 10 regional offices that exist to “directly serve state and local organizations” (Intergovernmental/External Affairs, 2014). At least one interview was conducted in each of these regions except for Region 7, which includes the states of Iowa, Kansas, Missouri, and Nebraska.<sup>7</sup> The region with the largest number of interviews was Region 5, with interviews in five out of the six states in the region. Region 5 has an especially large representation when compared to Region 4, where an interview was conducted in only one out of the 8 states in the region.

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<sup>7</sup> The perspectives from Region 7 are of interest to this dissertation but were unavailable through the interview portion. Nevertheless, their perspectives were included through the survey portion and are not totally absent from the findings.



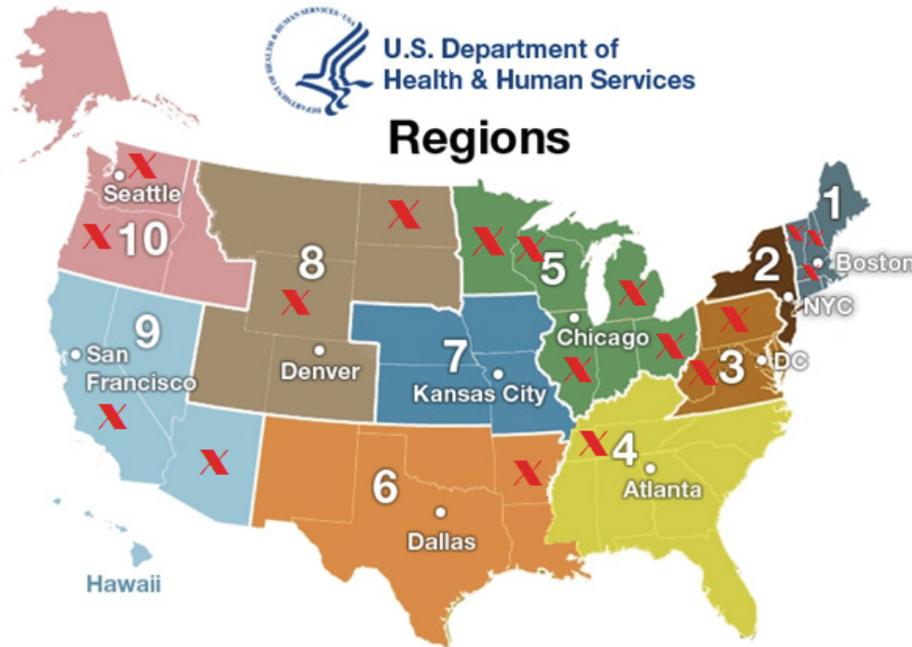


Figure 6. State and region of interviewees (Source: Intergovernmental/External Affairs, Health and Human Services, 2014; Public domain)

Interviews were conducted by telephone and recorded using the Google Voice software.<sup>8</sup> Prior to the interview, participants submitted an online electronic consent form or attached a signed electronic consent form by email as confirmation of their voluntary participation.<sup>9</sup> If interviewees were unable to submit a version of the consent form or email a copy of the consent form signed by hand, they provided verbal consent on the telephone prior to the start of the interview. Nine interviewees emailed a signed consent form, sixteen interviewees completed the online Qualtrics consent form, and two interviewees underwent a verbal consent process. The

<sup>8</sup> Google Voice, in order to be in accordance with state laws, only allows incoming calls to be recorded. Therefore, interviewees called a Google Voice number to participate in the interview.

<sup>9</sup> See Appendix B for the Informed Consent form used for this dissertation research project.

data collected during the interviews were stored in a confidential manner on a password-protected computer in accordance with Virginia Tech's Institutional Review Board.<sup>10</sup>

#### Data collection and instruments

This two-stage mixed methods research project began with a survey of state public health officials that quantitatively identified the determinants of health they consider important, the factors that shape this perspective, the dynamics of the organizations in which they work, and the practices they undertake. The two phases of data collection entailed the use of the online survey tool Qualtrics to disseminate the survey instrument and in-depth individual interviews that were audiotaped.

#### Contact

The online survey and the reminders were e-mailed to directors of eligible offices within state health departments and tracked using the Qualtrics tool. Using leverage-salience theory, “which posits that people vary in the importance they assign to different aspects of a survey request,” I linked the salience of the survey topic to the potential participant's organizational role, clearly indicated the short survey completion time, explicitly identified myself as a university student, and provided an incentive in the form of summary results to participants (Groves, Presser, and Dipko, 2004, p. 3). These features are considered important for not only providing the pertinent information for a participant to make an informed decision on consent, but also for reducing nonresponse (Groves, Presser, and Dipko, 2004; Goyder, 1987). I distributed two follow-up reminders for both the survey and interviews which is in line with Virginia Tech Institutional Review Board guidelines and because “follow-up reminder emails appear to spike participation” (Andrews, Nonnecke, and Preece, 2003, p. 192). Recognizing

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<sup>10</sup> See Appendix A for the Virginia Tech Institutional Review Board approval letter for this dissertation research project.

Couper, Traugott, and Lamias' (2001) finding that interval time between reminders has no impact on response rates, I waited a week and a half to send the first reminder and another two and a half weeks for the second reminder. The online survey was opened on June 26, 2013 and closed on July 26, 2013.

The multitude of benefits of web-based surveys made them the optimal method for this dissertation. Their benefits include the low cost of implementation, speed of data collection, ease of data storage, interactive data capture, and ease of updating (Wyatt, 2000, p. 427). Such surveys “are very cost effective, as the costs per response decrease as sample size increases” (Andrews, Nonnecke, and Preece, 2003). The problem of accessing only a computer literate population is not an issue with state public health officials, as they are expected to routinely use computers for work (Wyatt, 2000, p. 428). The question of the reliability of the survey to measure complex concepts was addressed through follow up interview data that took advantage of the mixed methods study design to confirm the findings. The survey responses were kept confidential.

#### Survey instrument

In addition to asking demographic questions, the online survey of state public health officials was divided into three parts, with each part focused on a different theoretical concept.<sup>11</sup> These three sections included questions on ideas of health, organizational dynamics, and public health practices. The instrument was developed by building off of a number of existing survey instruments that explore similar theoretical concepts. The first part of the survey captured demographic variables that are important to both the thinking of and the practices undertaken by

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<sup>11</sup> See Appendix C for the Public Health Practice survey instrument employed for this dissertation research project.

survey respondents. These demographic variables included variables such as gender, age, race/ethnicity, educational attainment, and length of time in position. The descriptive statistics for these demographic data are presented in Table 5.

Table 6. Demographic data

<u>Demographic variables</u>	<u>No. (%)</u>
<i>Gender (n=456)</i>	
Female	283 (62)
Male	173 (38)
<i>Age (n=457)</i>	
18 to 34 years	22 (5)
35 to 44 years	85 (19)
45 to 64 years	316 (69)
65 years and over	34 (7)
<i>Race (n=447)</i>	
White/Caucasian	364 (81)
African-American	39 (9)
Hispanic	19 (4)
Asian/Pacific Islander	22 (4)
Native American	5 (1)
Other	9 (2)

Race and ethnicity were combined into one question for this survey. Respondents were asked to check all that apply by identifying if they were Hispanic as well as White/Caucasian, African-American, Asian/Pacific Islander, Native American, or Other. Race and ethnicity were integrated based on the U.S. Census Bureau’s recent finding that asking about race and ethnicity separately results in a higher percentage of respondents selecting “Some other race” in regard to

race (Pew, 2014). In the 2010 Census, according to Pew (2014), “many Hispanics were unsure which box to check in the race question. Hispanics accounted for more than 18.5 million of the 19 million people who check 'some other race' to describe themselves.”

Age was divided into the response choices of “18 to 34 years,” “35 to 44 years,” “45 to 64 years,” and “65 years and over.” These categories were meant to capture ages of individuals in leadership positions in state health departments. The younger age category covers a larger number of years since it is expected that fewer individuals in their 20’s will have achieved such a rank. Likewise, given that retirement age is 65-67 years of age, there is a large category to include all individuals over the age of 65 (Social Security Agency, n.d.). It is in the years associated with middle age where there is a finer distinction in the categories to differentiate the expected age of the bulk of respondents. Sixty-nine percent (69%) of respondents were between 45 and 64 years of age.

A large majority of the respondents were female. The ratio between female survey respondents (62%) and male survey respondents (38%) was largely expected given the growing number of women in the field of public health, specifically, and allied health professions, generally (Starr, 1982, p. 391). Kennedy and Baker recognize that, “public health, like many disciplines including law and medicine, has changed from a predominantly male profession to a predominantly female one” (2005, p. 355). This is reflected in the survey data.

The questions exposing the health perspectives of individuals were built upon Robert et al.’s (2008) determinants of health survey asking respondents to rate the importance to health of 17 factors on an eleven-point scale and later were used to create a measure of their health perspective. The questions associated with organizational dynamics were similarly used to divide respondents. These questions built on Garvin, Edmondson, and Gino’s “Assess the Depth of

Learning in Your Organization” survey (2008, pp. 112-113) by measuring psychological safety, appreciation of differences, openness to new ideas, time for reflection, and experimentation that takes place in an organization to assess its role as a learning organization. The questions on practice asked participants the types of evidence they believe is important to decision-making, the types of collaborations their agency has the opportunity to participate in, and the ways in which they engaged with the public in decision-making.

Along with questions on the idea of health, I asked questions regarding self-reported political ideology, involvement in a professional association, and the evidence used in departmental decision-making. Each of these factors have previously been found to be important to how one defines health or are necessary to categorize the respondent regarding the inclusion criteria for the case study phase of the project (Raphael, 2006; Hodgins, Millar, and Barry, 2006; Macintyre, McKay, and Ellaway, 2006; Fielding et al., 2010; Robert and Booske, 2011). This dissertation used a tool similar to Robert et al.’s (2008) to discern administrators’ preferred model of health. Robert et al.’s (2008) research on the public’s view of the determinants of health used an index that asked respondents to rank 17 factors in terms of how they affected health.

#### Interview protocol

The semi-structured interview portion required telephonic meetings with state health department officials who were identified based upon survey results and that also consented to participate. The interviews were audio recorded and transcribed in the collection process. The interviews explored the role of the idea of health on practice by asking participants to identify the

determinants they believe to be important to health.<sup>12</sup> They also relied upon Hodgins et al.'s (2006) vignette response method to explore participants' understanding of health. The vignette method presented interviewees with a health scenario specific to their public health program and elicited their response to the scenario. This was important in regard to investigating the idea of health because it facilitated discussion "by providing a concrete example, rather than an abstract concept," yet not did limit the participants to predetermined responses (Hodgins et al., 2006, p. 1981).

This vignette discussion was followed by a number of additional interview questions. Drawing upon Lavis (1998), I asked participants how they believe their understanding of health and health causation affects their practices within the health department. This was followed by a specific discussion of their perception of the interaction of ideas of health and the dynamics of their organizations supported by concrete examples. In addition, I gathered a more refined view of how respondents are situated within organizational types by asking whether they collaborate with others on public health projects (and, if so, with whom); who participates in the decision-making process in their organization; who the target populations of their programs are; and what type of evidence they use when making decisions. I also asked if they believe they have the autonomy required to make decisions, and I explored the organizational resources available to them (such as personnel capacity, intellectual capacity, and budget capacity). These interview questions allowed greater understanding of the organizational setting in which public health officials operate. Participants' responses during the interviews were used to understand the nature of the public health practices underway.

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<sup>12</sup> See Appendix D for the Public Health Practice interview protocol employed in this dissertation research project.

## Response rate

Initial review of the data revealed that of the 1,103 public health officials that received the Elucidating the Drivers of Public Health Practice Survey, 581 participants started it and 467 completed it. Survey completion is defined by Qualtrics as “the number of surveys submitted by respondents, meaning that the respondent...reached the final page and clicked the submit button” (Qualtrics, n.d.). Response rates per question varied, with 498 (45.2%) participants completing the survey questions on educational level and field of practice but only 348 (31.6%) completing the political ideology question. The lower response rate for the political ideology survey question is expected given the position of respondents as public servants who might deem the question sensitive to the extent that they fear the “threat of disclosure” (Tourangeau and Yan, 2007, p. 860).

The American Association for Public Opinion Research’s (AAPOR) “*Standard Definitions*” for survey research were used to calculate the response rate in a transparent manner that followed the standard of practice in survey research (Johnson and Wislar, 2012, p. 1805). The AAPOR’s response rate (RR) formula divides the sum of the complete (I) and partial (P) responses by the sum of the complete, partial, and implicit refusals and break offs (R):

$$RR = \frac{(I + P)}{(I + P) + (R + NC + O) + (UH + UO)}$$

AAPOR has multiple definitions of what consists of a response, but for this analysis I used “less than 50% of all applicable questions answered (with other than refusal or no answer) equals break-off, 50%-80% equals partial, and more than 80% equals complete” (2014, p. 13). Given these definitions, this survey had 420 complete responses, 46 partial responses, and 637 implicit refusals or break offs that resulted in a response rate of 42.2%. This formula includes partial



completions because those completions included responses to questions crucial to this study. The AAPOR formula also includes non-contacts (NC), others (O), and unknowns at the household (UH) and other level (UO), but this survey did not have these types of responses.

A survey's response rate is often an indicator of survey quality. The importance of the representativeness of survey data means that "we remain concerned about our response rates if we are uncertain with regard to sample representativeness" (Book, Heath, and Thompson, 2000, p. 821). "High response rates can reduce the risks of [nonresponse] bias" in subsequent survey analysis (Groves and Peytcheva, 2008, p. 183). Response rates vary widely by discipline, and even within disciplines, there can be a wide range dependent on context and frame, making it difficult to set thresholds for acceptable response rates (Yun and Trumbo, 2006). Although there is no widely accepted norm for response rates, Baruch and Holtom (2008, p. 1148) find the average individual response rate for 152 studies published in organizational studies was 52.6%. Yun and Trumbo (2006) find that response rates are lower for e-mailed surveys, and the National Research Council of the National Academies finds that response rates have declined over time, with the lowest levels in the social sciences (Tourangeau and Plewes, 2013; Glaser, 2008). The variability in acceptable response rates means that there is not one threshold that a survey needs to exceed. The variability in response rates can be ascribed to the question type, survey population and sample, survey design, and administration of the survey instrument (Glaser, 2008, p. 762). Given the high response rate for the variables of interest and the very intentionally selected survey population of interest, the response rate of 42.2% for this survey is considered satisfactory.

## Data analysis

Data analysis for this dissertation relies upon both quantitative and qualitative methods. The combination of the interview findings and survey analysis are used as a means of addressing all three research questions. The mixed methods are especially helpful to addressing the third research question on the impact of the interaction of ideas and organizational dynamics on public health practice.

## Quantitative analysis

The data analysis for the survey instrument is statistical in nature and was performed using the quantitative analysis software Stata/IC 10.0 and survey data downloaded from Qualtrics. Following data cleaning and recoding, analysis entailed exploring missingness in the data. Three statistical models are presented in this dissertation. The first uses a combination of exploratory and confirmatory factor analysis and multivariate regression to explore whether demographic, professionalization, and political variables are associated with the types of determinants of health considered important. The second uses the chi-square test to compare the differences in ideas and practices in learning organizations as compared to conflict resolution organizational environments. The third statistical model again uses exploratory and confirmatory factor analysis and multivariate regression to explore if organizational, ideational, and demographic variables are associated with evidence use in state public health departments. Evidence use is used as an indicator for the practices in which public health officials engage.

The first statistical model explores the factors that influence the determinants of health considered to be important. The dependent variable in this model is developed using a combination of exploratory and confirmatory factor analysis. This variable was then included in the multivariate regression model, which estimated the relationship of demographic, professional, and ideological characteristics to the health perspective held by study participants

(Robert and Booske, 2011). The complex understanding of health means that multiple latent variables were used to define the health perspectives held by public health officials. This model was used to address the first research question and proposition regarding the factors that influence the ideas of health that individuals hold. I tested for possible bias due to interaction, non-normality, and other data issues and developed a valid analytic response to address such limitations.

The second analysis evaluated how ideas of health differ based on organizational dynamics and addressed the second research question. As described earlier, organizational dynamics were assessed using Garvin, Edmondson, and Gino's assessment of learning organizations (2008, pp. 112-113). The survey respondents themselves assessed their organizational dynamics. Respondents are compared in accordance to their learning organization environment. Those respondents rating their organizational environment higher than the threshold criteria were considered to be in a learning organization. Those rating it below the threshold criteria were not considered to be in a learning organization environment. The threshold criteria were formulated to be the median learning organization score calculated from this survey's respondents. Using simple statistical techniques comparing the ideational variables across organization types and the practice variables across organizational types gave a sense of the differences that can exist that are dependent on the type of organization to which a respondent belongs.

The third model linked ideas and organization to practice. Evidence use acted as the proxy for practice in the model and was included as the dependent variable. Again, a combination of exploratory and confirmatory factor analysis was used to identify different conceptualizations of evidence and develop latent variables representing different types of

evidence. This dependent variable was inputted into a multivariate regression model to estimate its association with different organizational dynamics and ideas. Independent variables included ideas of health, measure of organizational dynamics, professionalization, and demographic variables. Each of these models is expanded upon in the subsequent findings chapters.

#### *Missingness and nonresponse*

Missing data are a common feature of survey data that must be addressed in order to assure the validity of statistical models to be used. They are especially likely in survey data because respondents refuse to answer questions, overlook questions, skip confusing questions, and otherwise do not complete the entire survey for a myriad of other reasons (Humphries, 2013, p. 4). It is therefore important to explore the nature of the missing data to get a sense of the reasons why they might be missing.

Figure 7 presents the number of respondents that received, opened, started, and completed the survey. While 1,103 respondents received the survey, 750 (67%) opened it, 587 started it, and, based on Qualtrics' calculation, 466 completed it. Respondents do not differ statistically in terms of gender or the public health office in which they work when compared to non-respondents. Of the 21 public health office categories contacted, four were underrepresented when compared to respondents in other categories. These include: cancer registry, immunization services,<sup>13</sup> newborn screening, and public health communication. These are particularly sensitive public health contexts, as evidenced by the active role the Association of Immunization Managers takes in their membership's participation in research. These differences do not,

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<sup>13</sup> The Association of Immunization Managers makes recommendations to their membership regarding study participation. Following my application for such consideration, they took "no position" on my survey research. This may explain the low participation on the part of immunization services managers.

however, indicate the respondent data is problematic. The 17 public health areas that received similar participation indicates that one subfield of public health does not dominate this survey data.

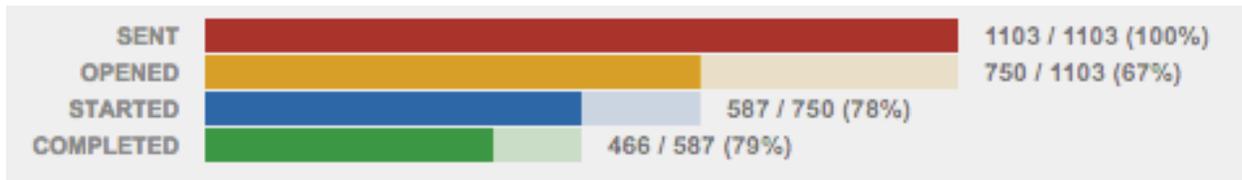


Figure 7. Survey panel members that received, opened, started, and completed the survey

I looked at missingness from the perspective of both individual variables and individual observations. As discussed in regard to response rate, political ideology proved to be a particularly problematic question in this survey with 119 respondents who completed the remainder of the survey choosing not to answer this question. As explained earlier, this is to be expected given the sensitive nature of the question for public servants. The remainder of the variables did not have missing data that differed substantially from the average across all questions. From the perspective of individual observations, individuals either answered the questions in their entirety or chose to skip the questions in the latter half of the survey. There were no other noticeable skip patterns. This might be attributed to the length of the survey or the intentional placement of more sensitive questions about race and organizational environment towards the end of the survey.

Allison explains that missing data are ignorable if the data are missing at random (MAR), meaning that “the parameters that govern the missing data process are unrelated to the parameters to be estimated” (Allison, 2002, p. 5). Therefore, in Stata, I tested whether the probability of having a missing value on one of the independent variables was correlated with the

dependent variable. This was because “missing values only influence the results if the probability of missingness is associated with the dependent variable” (Buis, 2009). These tests found that of all the questions in the survey, the missing data in the questions were associated with the use of simulation evidence in decision-making, the use of professional guidance in decision-making, and the openness of one’s organization to different opinions. These specific items had a great number of missing observations, but I deemed them ignorable since they each represented only one item making up a larger latent variable, and respondents answered three out of the 51 overall questions.

The common methods for handling missing data include 1) listwise deletion, which requires “deleting from the sample any observations that have missing data on any variables in the model of interest and then applying conventional methods of analysis for complete data sets;” 2) pairwise deletion; 3) dummy variable; and 4) imputation (Allison, 2002, p. 1). After exploring patterns of missingness within my data to understand which method would be best for dealing with the issue, I decided on listwise deletion.

### Qualitative analysis

The interview data are qualitative in nature, and I relied upon a combination of content, narrative, and framing analysis to identify the definition of health, organizational dynamics, and their relationship to public health practice. Content analysis was conducted on transcribed interview data using emergent coding to generate themes. In this research, content analysis was approached as a “flexible method for analyzing text data” by relying on “impressionistic, intuitive, interpretive analyses” in addition to “systematic, strict textual analyses” (Hsieh and Shannon, 2005, p. 1277). The systematic, strict textual analyses, for example, included coding the degree to which a statement is oriented towards prevention, treatment, individualistic

determinants, or social determinants using a scale of 1-10 every time the idea of health was described. Alongside this quantitative rating of the qualitative data, I developed codes that were interpretive and grounded in the text. A similar method was used for the organizational and practice based codes. For practice, for example, Hall's three levels of policy change were used to code the types of practices discussed: routines, policy instruments and policy goals (cited in Baumgartner, 2011, p. 6). These practices were then compared across the four groups of respondents in order to understand the linkage of practice to the idea of health and organizational dynamics.

In the framing analysis, Chong and Druckman's (2007, pp. 106-108) six-step process for analysis that depends on emergent coding was used. The six steps are: 1) identify an issue or event; 2) focus on underlying attitude towards issue; 3) inductively identify a coding scheme; 4) select sample for content analysis; 5) specify how a particular frame is identified; and 6) code appearance of frames in samples. Goffman, one of the initial scholars to use framing analysis, explained that the "schemata of interpretation," which are termed "frames," enable individuals "to locate, perceive, identify, and label" (Goffman, 1974, p. 21 in Pan and Kosicki, 1993, p. 56). The differential health frames in these discussions may govern the types of health determinants taken into consideration, the administrative agencies included in implementation, the types of evidence considered credible, and the role of public participation.

### Limitations

Several limitations of this research project are worth noting. First, in an effort to form a manageable sample, this project focused on the group of public health officials considered pivotal to the U.S. public health system, those working at the state level (IOM, 2002). This sample did not include local or federal public health officials or numerous others involved in

public health organizations. The thinking of those in state-level public health organizations may be different than others, so this research is not generalizable to all public health officials.

This research also has the limitations associated with survey and interview methods. Self-reported data may be inaccurate or biased and will not be confirmed independently for accuracy. By working to increase the survey response rate and carefully selecting a diverse sample for the interviews, I work to limit such response bias. The survey instrument also may limit the choices available to respondents so as to not fully capture their health beliefs and organizational dynamics. The cross-sectional survey does not take into account time variations and the possible historical changes that have taken place in the understanding of health.

Factor analysis can be problematic if little theory accompanies the statistical method; however, an iterative and carefully considered factor analysis of the dependent variables in these models informs the dependent variables in this dissertation (Fabrigar et al., 1999). Likewise, multiple regression is limited to outcomes on the strength and direction of a relationship but does not account for the underlying causal mechanisms (Hair et al., 1998). This analysis, however, does not make claims of causality. Although I used statistical controls to address bias, the quantitative analysis may have additional sources of bias, which were not taken into account.



## Chapter 5. Determinants of Health as Seen by State Public Health Officials

### Introduction

Paul Starr explains that “much of the history of public health is a record of struggles over the limits of its mandate” (1982, p. 180). This chapter attempts to ascertain the broad outlines of the limits as seen by contemporary public health officials at the nexus of public health policy and practice – state public health officials. This entails exploring not only how these officials define public health but the factors integral to their understanding. The contentious nature of the boundaries of public health is necessarily political because, as Starr explains, “public health cannot make all these activities its own without, sooner or later, violating private beliefs or private property or the prerogatives of other institutions” (Starr, 1982, p. 180).

In order to ascertain the boundaries of determinants of health recognized by the study participants, my survey begins by asking state public health administrators to rank the importance of a variety of determinants of health. The determinants of health they consider important will shed light on their conceptions of health and the practices associated with such conceptions. As described in Chapter 2, the variety of determinants of health can broadly be divided into “individual determinants” and “social determinants” of health. Public health officials’ focus on the individual as opposed to the social determinants of health has varied over time, with the ‘dividing line’ between these two ideologies, as Barbara Rosenkrantz notes, constructed and reconstructed in the twentieth century (Starr, 1982, p. 196). As the pendulum swings with the weight of evidence to support a broader set of ideologies, the role of social determinants of health is once again under consideration. The question endures as to the nature of the ideologies that public health administrators on the ground hold today. Where do public

health professionals stand – especially those in the trenches of public health practice? A combination of survey and interview data serves as the basis for exploring the determinants of health state public health officials consider important and the factors that influence this viewpoint.

### Influences on the idea of health

In exploring how ideas within bureaucracies impact policy making and implementation, the question of the origin of those ideas emerges as important. What affects the determinants of health public health officials consider important? The factors shaping the ideas may themselves be important to the practices public health officials undertake, so exploration into these influences is important. For example, professional organizations may be influential to public health professionals' understanding of the determinants of health as well as policy implementation. Knowing their role in influencing both ideas and practice directly, and practice indirectly through their influence on ideas, is necessary for understanding the relationship of ideas and practice explored in this dissertation. Therefore, I am studying not only the health frames that public health officials hold, but also the factors influencing those frames.

I propose that demographic variables, state public health officials' professionalization (operationalized as participation in a professional association), level of education, and political ideology will affect the model of health causation to which they adhere. I also propose that the ideas of state public health officials situated in learning organizations will be reflected in public health practice to a greater degree than the ideas of officials who work in conflict resolution-oriented organizations (see Lavis, 1998). Because ideas and organizations interact to shape public practice, research into the drivers of public health practice requires consideration of both

the idea of health and the contexts of the organizations in which public health administrators function (Parsons, 2002; Lavis, 2002).

In order to explore the factors that might affect these beliefs, I employed statistical models analyzing the relationship between the importance of the determinants of health as ranked by state health officials and a number of independent variables. These independent variables encompassed demographic, ideological, professionalization, and organization variables. In order to manageably model these relationships to provide meaningful information, I condensed the 17 determinants of health importance rankings using factor analysis. The determinants of health importance ranking serves as the dependent variables so factor analysis helped to reduce the potential number of models from 17 to 4.

In-depth interviews also explored both the definition of health public health officials hold and the determinants they consider to be important. In the interviews, I asked participants to respond to a health vignette in order to get a sense of their interpretation of the role of health in people's lives. Following their explanation of their perspective on the characters in the vignette, I posed broad questions on the definition of health and their understanding of the determinants of health. This chapter presents the findings from both the survey and interview data in regard to the determinants of health.

## Quantitative findings

### Dependent variable: Determinants of health

The dependent variables included in the survey instrument built off of Robert et al.'s (2008) survey on the causal drivers of health considered important by the general public in the state of Wisconsin. Robert et al.'s survey served as the basis for the questions on the importance of a variety of determinants of health. The list of the determinants of health reflects Dahlgren and

Whitehead's (1991) model of the determinants of health that depicts concentric circles representing biological and genetic factors, lifestyle factors, social and community networks, and general socio-economic, cultural and environmental conditions. Survey respondents had to rank the following items on a scale of 0-10 in terms of their importance to health: personal health practices, access to affordable health care, physical environment, a person's level of stress, having health insurance, employment, level of income, level of education, knowledge of health, degree of social support, community safety, genetic makeup, housing quality, childhood experiences, where a person lives, neighborhood support, and whether a person is religious or spiritual. Each of the listed determinants of health has extensive public health scholarship that supports their impact on health.

In order to conduct the statistical analysis with the importance of the determinants of health as the dependent variable, I transformed the 17 variables ranking importance of health from ordinal variables into dichotomous variables. This transformation allows me to compare my analysis to Robert et al.'s (2008) scholarly work using the same 17 survey items. Robert and Booske did the same in their 2011 work when they employed a similar model attempting to explain "U.S. opinions on health determinants" where "each row represents a separate weighted logistic regression analysis in which a response that a given factor (e.g. whether a person smokes) has a very strong effect on health or not is regressed on all the demographic dummy variables (age, gender, education, income, race/ethnicity, self-rated health, and political views" (2011, p. 1657).<sup>14</sup>

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<sup>14</sup> Those responses that ranked a determinant of health important at a level of 8, 9, or 10 were transformed to a value of 1 whereas those below 8 were transformed to a value of 0.

*Descriptive statistics of the importance of determinants of health*

Table 6 presents the percentage of respondents that ranked a given indicator 8-10 as well as the mean score associated with the indicator. It should be noted that responses to these questions were negatively skewed, indicating that the distribution of responses were concentrated on the side of more important as opposed to less important. This distribution is to be expected since public health professionals are likely to rank a variety of determinants of health as important.

Table 7. Importance of determinants of health

	<u>State Health Officials<sup>a</sup></u>	<u>General Public</u> (Robert et al., 2008)
<i>Determinant of health variables (Scale 0-10)</i>	<i>% (Mean)</i>	<i>%</i>
A person's personal health practices	99 (10.1)	86
A person's access to affordable health care	92 (9.5)	73
The physical environment	92 (9.3)	70
How much stress a person has	91 (9.3)	73
Whether a person has health insurance	90 (9.2)	68
Whether a person has a job	89 (9.1)	58
A person's level of income	87 (8.9)	47
A person's level of education	86 (8.9)	41
A person's knowledge about health	86 (8.9)	72
The amount of social support a person has	85 (8.9)	53
How safe a person's community is	85 (8.9)	46
A person's genetic makeup that is inherited from their Parents	85 (9.0)	52
The quality of a person's housing	83 (8.8)	42
A person's childhood experiences	75 (8.3)	-
Where a person lives, like in the city or in the country	69 (7.9)	31
How supportive a person's neighborhood is	68 (7.9)	-
Whether a person is religious or spiritual	55 (6.7)	28

Note: n = 476

Three of the five determinants of health believed to be very important (ranked 8, 9 or 10) by over 90% of health officials were biomedical determinants of health. These included personal health practices, access to affordable health care, and whether a person has health insurance. “A

person's personal health practices" had the highest percentage of respondents rank it 8, 9, or 10. "Whether a person is religious or spiritual" had the lowest percentage. This finding indicates that public health officials overwhelmingly consider individual biomedical determinants of health to be important to health.

This ranking, however, does not indicate that public health officials are solely dedicated to a biomedical perspective. A large percentage of state public health officials recognized a myriad of social determinants of health to be important at a level of 8, 9, or 10 on a scale of 0 to 10. Two out of the five determinants of health believed to be very important by over 90% of health officials were the broader determinants of health of the physical environment and a person's level of stress. In addition, 85-90% of respondents ranked the following determinants of health as very important: whether a person has a job, a person's level of income, a person's level of education, a person's knowledge about health, the amount of social support a person has, and the safety of a person's community. The large percentage of public health professionals that recognize the importance of these social determinants of health alongside the biomedical determinants of health indicates the complicated nature of the definition of health and its associated determinants of health.

The percentage of state public health officials that ranked various determinants of health as important largely parallels the general public's ranking of the determinants of health as presented by Robert et al. (2008). State public health officials identified all of the determinants of health as significantly more important than the general public. Nonetheless, in both circumstances, the greatest percentage of respondents found personal health practices to be very important and the smallest percentage of respondents found religiosity to be important. Even though the order of the percentage of respondents was parallel for both surveys, a much smaller

percentage of the general public recognized the social determinants of health to be very important. For example, where 87% of state public health officials ranked level of income as very important to health, only 47% of the general public did so. This indicates that although the percentage of state public health officials that consider the determinants of health to be important tracks the general public, a much higher percentage of state public health officials rank social determinants of health as important. State public health officials' likelihood to simultaneously consider a variety of determinants of health as important indicates they have a nuanced understanding of health that is aligned with Dahlgren and Whitehead's ecological framework of health.

#### *Factor analysis of the importance of the determinants of health*

Prior research informed the survey design and as a result the survey responses are framed by existing theory about the determinants of health. I used factor analysis through an iterative process because the tool enabled me to understand the latent constructs underlying the 17 health determinant items. Fabrigar et al. (1999, p. 275) are one of several scholars that have criticized the use of factor analysis for purposes other than its intention to "identify a set of latent constructs underlying a battery of measures" and common issues with variable to factor ratios, reliability of variables, sample size, type of analysis, number of factors determination, and rotation method. Although this method has limitations, my a priori theory and careful consideration of the common issues with factor analysis guide me forward in developing the dependent variables as opposed to statistical outcomes alone defining the dependent variable.

The reduction of the 17 models using factor analysis relies on the idea that there is underlying structure that links the ranking of importance for the determinants of health. Factor analysis can be used for numerous reasons, to include "to inform evaluation of score validity,"



“to develop theory regarding the nature of constructs,” and “to summarize relationships in the form of a more parsimonious set of factor scores that can then be used in subsequent analyses” (Bruce, 2004, p. 4-5). For this dissertation, the factor analysis helped to analyze data based on existing theories about the nature of the constructs underlying the determinants of health. In this research, I used eigenvalues, factor loadings, Cronbach’s alpha as an estimate of reliability, and a priori theory for determining the number of latent variables underlying these 17 items.

In testing for structure in the survey data, I find broad latent constructs that capture the way that state public health officials rank the importance of the various determinants of health. For example, public health officials who rank physical environment as very important to health also rank housing quality as very important to health as well. “When we conduct a factor analysis, we are exploring the relationships among measured variables and trying to determine whether these relationships can be summarized in a smaller number of latent constructs” (Bruce, 2004, p. 10). Factor analysis entails both exploratory and confirmatory factor analysis, where the former helps to identify the underlying structure without an a priori hypothesis of the structure and the latter is used to verify a pre-existing hypothesized factor structure (Suhr, 2006, p. 1).

I use exploratory factor analysis on the importance of the 17 determinants of health items to identify the underlying factor structure. Factor analysis assumes the measurement scale is interval or ratio level,<sup>15</sup> a linear relationship between observed variables, and a normal distribution for each observed variable (Suhr, 2005, p. 3; Floyd and Widaman, 1995). Since each of the items measuring the importance of every determinant of health has been transformed to a dichotomous variable, they violate factor analysis’s assumption of a continuous measurement

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<sup>15</sup> Factor analysis requires at least 5 observations per observed variable (although 10-20 observations is preferred).

scale and normally distributed variables. Since “the model includes variables that are dichotomous or ordinal a factor analysis can be performed using a polychoric correlation matrix.” I use the “polychoric” command for this analysis followed by an orthogonal rotation.

Rotation increases “interpretability by identifying clusters of variables that can be characterized predominantly in terms of a single latent variable (i.e., items that are similar in that they all have a strong association with, and thus are largely determined by, only one and the same factor)” (DeVellis, 2011, p. 133). Factor rotation provides clarity on the latent variables by only changing the way we look at the data as opposed to changing the data itself. Orthogonal rotation assumes the underlying latent variables to be independent of one another (Tinsley and Tinsley, 1987, p. 421).

Table 8 reports results from factor analysis, which includes four latent variables identified by examining the each latent variable’s eigenvalues and the associated scree plot. The scree plot is a visual tool that helps distinguish the number of latent variables of import by identifying the percentage of variance for each latent variable. It requires subjectively identifying the point at which the additional variance explained by a latent variable is no longer useful to the analysis (Zhu and Ghodsi, 2005, p. 918). I initially identified the threshold for both of these assessments to be an eigenvalue greater than one because “an eigenvalue of 1.0 contains the same proportion of total information as does the typical single item. Consequently, if a goal of factor analysis is to arrive at a smaller number of variables that substantially capture the information contained in the original set of variables, the factors should be more information-laden than the original items” (DeVellis, 2011, .p 128; Kaiser, 1960). One latent variable with an eigenvalue of 0.95 was retained because its factor loading scores aligned with the theoretical relationships posited in the research.

The threshold for determining which items were associated with which latent variables was a factor loading of 0.30, but most factor loadings were above 0.40 (see Table 8). The factor loading is an indication of the relationship of the item to the latent variable where, “the square of the factor loading tells the proportion of the estimated common variance in an item or test that is explained by the factor” (Tinsley and Tinsley, 1984, p. 421). Merenda (1997) and Hair, Anderson, Tatham and Black (1998, p. 111) find 0.30 to be an acceptable cutoff, with Hair et al. explaining, “factor loadings greater than  $\pm 0.30$  are considered to meet the minimal level; loadings of  $\pm 0.40$  are considered more important; and if the loadings are  $\pm 0.50$  or greater, they are considered practically significant.” I also conducted oblique rotations and reviewed normalized and non-normalized factor loadings. Oblique rotation allows factors to be correlated following rotation (Tinsley and Tinsley, 1987, p. 421). All of the rotation variations yielded the same four latent variables and associated items. I used Cronbach’s alpha to assess the internal consistency of the four latent variables (see Table 8).

As a comparison, even though the data violated some assumptions, I also conducted principal factor analysis and rotated the factors both orthogonally and obliquely. These analyses resulted in the same set of four latent variables. These quantitative latent variables align with the latent variables expected based on theory. Using theory to guide decisions in determining the number of factors in factor analysis is an important part of informed decision-making. As Kaiser originally explained, the four means of identifying the number of factors are statistical significance criteria, necessity, reliability, and meaningfulness (1960, p. 144).

Table 8. Health determinants factors: Chronbach's alpha, factor loadings, and eigenvalues

<u>Determinants of health variables</u>	<u>Factor loadings</u>			
	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Factor 4</i>
<i>Eigenvalue</i>	1.29	1.24	1.07	0.95
<i>Chronbach's alpha</i>	0.65	0.61	0.70	0.59
<i>Community</i>				
Social support	0.53			
Safety	0.33			
Childhood experiences	0.34			
Spirituality/Religion	0.48			
Neighborhood	0.50			
<i>Economic</i>				
Employment		0.43		
Level of income		0.55		
Educational level		0.57		
<i>Access</i>				
Affordable health care			0.64	
Insurance status			0.64	
<i>Environment</i>				
Stress levels				0.43
Physical environment				0.50
Housing quality				0.47

In order to assess the latent structure observed in the exploratory factor analysis, I conducted confirmatory factor analysis on the four observed variables representing the importance of determinants of health.<sup>16</sup> Where exploratory factor analysis is used to “determine the underlying structure” of an unknown set of data, confirmatory factor analysis allows evaluation of “a particular pattern of relationships predicted on the basis of theory or previous analytic results” (DeVellis, 2011, p. 151).

Based on the exploratory analysis, I postulate that there are four latent variables associated with the determinant of health variables, broadly represented as community health,

<sup>16</sup> I used the Amos software graphic interface to “specify, estimate, assess and present models to show hypothesized relationships among variables” (SPSS Amos, n.d.).

economic health, access to health, and environmental health. The observed variables associated with each of these latent variables are presented in Table 8. The latent variables are expected to predict the observed variables so there is a straight arrow indicating the relationship in Figure 8. The latent variables, however, only partly predict the observed variables so each observed variable has an associated error or residual, as depicted by an “*e*” in Figure 8.

Since this is a confirmatory factor analysis and not structural equation modeling, the measurement model does not estimate directional relationships among the latent variables. Instead, the relationship between each of the latent variables is one of covariance,<sup>17</sup> as depicted by curved two-headed arrows seen in Figure 8.

In order to estimate parameters the measurement model is either just or over-identified, meaning that there are enough data points for the number of parameters to be estimated or “whether information exists to identify a solution to a set of structural equations” (Hair, Black, Babin, and Anderson, 2010, p. 676). To establish model identification, I compared the number of unique variances and covariances to the number of parameters using the formula  $1/2[p(p + 1)]$  (Hair, Black, Babin, and Anderson, 2010, p. 676). Because the 91 degrees of freedom are greater than the 32 parameters in the measurement model, the model is over-identified for the purposes of this confirmatory factor analysis, satisfying the necessary precondition for estimation.<sup>18</sup>

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<sup>17</sup> Covariance describes the linear relationship between two variables (Estabrook, 2009, p. 5).

<sup>18</sup> There are 91 unique variances and covariances and 32 parameters. The 32 parameters include 13 factor loadings between the measurement items and latent variables, 13 error terms associated with each measurement item, and 6 covariances among the four latent constructs.

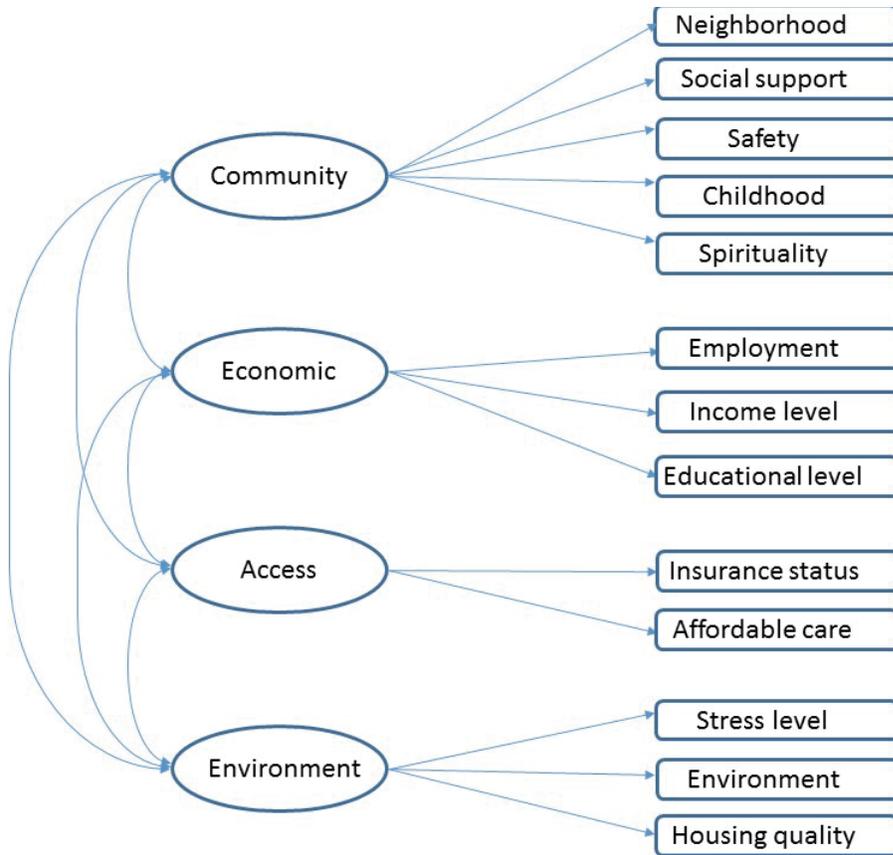


Figure 8. Confirmatory factor analysis measurement model of the determinants of health

The model fit indicators confirmed the validity of this measurement model because the empirical results of the model aligned with the proposed theoretical model (Hair et al., 2010, p. 684). Hair et al. suggest cut-offs for goodness-of-fit based on the number of observations and number of observed variables, listed in Table 9. Table 9 presents this measurement model's goodness-of-fit indicators in comparison to the necessary cutoff values for datasets with sample sizes over 250 and between 12 and 30 measurement items.

The incremental fit indicators that assess fit based on comparison to other models indicate that this health measurement model fits well. The models to which the model is compared are the independence model, which assumes there are no relationships between the

constructs and variables, and the saturated model, which assumes there are relationships among all the constructs and variables. The Goodness of Fit Index,<sup>19</sup> Adjusted Goodness of Fit Index,<sup>20</sup> Normed Fit Index,<sup>21</sup> and the Parsimony Ratio<sup>22</sup> all indicated that the measurement model provided a comparatively good fit.

The absolute fit indices measure the relationship between the observed data and the theoretical model. The chi-square statistic for this model, which in AMOS is presented as the CMIN, indicates there is a discrepancy between the observed data and theoretical model. The significant p-value associated with the chi-square statistic, however, is to be expected given the larger sample size (Hair et al., 2010, p. 654). The Root Mean Square Residual (RMR) is an average of the model's residuals so a lower value indicates a better fit. Although Hair et al. recommend a threshold of 0.08 for the measure, this model has a value of 0.15. Since the relative indices indicate goodness of fit and "no statistical threshold level can be established" for the measure, the model is considered a good fit. These statistical findings confirm that the determinant of health items do map onto the latent variables as found in the exploratory factor analysis. The determinants of health coherently fall into four health frames through which state public health officials understand health.

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<sup>19</sup> The Goodness of Fit Index (GFI) indicates a better fit the closer the statistic is to 1. For this model, GFI indicates a nearly perfect fit at a value of 0.991.

<sup>20</sup> The Adjusted Goodness of Fit Index (AGFI) adjusts for the number of degrees of freedom in the model and also indicates a good fit with a value of 0.985 (UCDHSC, 2006, p. 11).

<sup>21</sup> The Normed Fit Index (NFI) "shows how far between the (the terribly fitting) independence model and the (perfectly fitting) saturated model the default model is" with our model much closer to the saturated model with a value of 0.975 (UCDHSC, 2006, p. 11).

<sup>22</sup> The Parsimony Ratio (PRATIO) is an indicator that takes into account the complexity of the model by considering degrees of freedom. For this model, PRATIO indicates it is 27.3% more parsimonious than the independence model (UCDHSC, 2006, p. 11).

Table 9. Determinants of health: confirmatory factor analysis model fit indicators

<i>Model fit indicators</i>	<i>Health CFA Model</i>
$\chi^2$ (CMIN)	817.51
GFI	0.99
AGFI	0.99
NFI	0.98
PRATIO	0.73
RMR	0.15

With the confirmation of the four latent variables, I had to choose how these constructs were going to be included in subsequent statistical models making use of the concepts.

According to DiStefano, Zhu, and Mindrila, the options include choosing “sum scores by factor,” “weighted sum scores,” “regression scores,” “Bartlett scores,” or “Anderson-Rubin scores” (2009, pp. 2-5). Hair et al. also recommend a “single surrogate variable” which has a high factor loading on a given latent variable (2010, p. 123). The single surrogate variable has many disadvantages since it is not inclusive of all items associated with a factor (Hair et al., 2010, p. 123). I decided on an index of the items associated with each of the latent variables because it is representative of the multiple items associated with a factor and easily interpretable.

#### Independent variables

##### *Political ideology*

Political ideology is operationalized as self-placement on a liberalism-conservatism scale. I used Gross and Manrique-Vallier’s (2012, p. 2) definition of “patterns of political and policy-oriented belief, values, and attitudes.” The survey question was designed as a scale with a digital dial that can be moved to the right to indicate conservatism and to the left to indicate liberalism



(see Figure 9). The scale attempts to bypass Gross and Manrique-Vallier’s (2012, p. 3) criticism of a simple typology of political ideology that forces us to partition individuals into predetermined categories of people who “share the exact same configuration of attitudes, beliefs and values.” The scale poses a problem in that it attempts to capture a complicated concept that Marcus (1974) argues needs a multidimensional scale to measure with one simple scale. Despite these problems, the American National Election Studies project and Gallup polls both include the question in their interviews, indicating it is a useful question and it is included in the survey in this form (“Liberal Self-Identification”, 2014; ANES, n.d.).

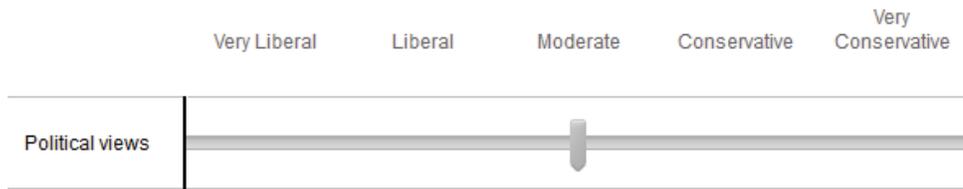


Figure 9. Political ideology scale

As displayed in Figure 10, survey respondents were positively skewed in terms of political ideology. Over 70% of respondents placed themselves to the left of moderate on the political ideology spectrum with 10.6% identifying as very liberal as compared to 2.0% identifying as very conservative.

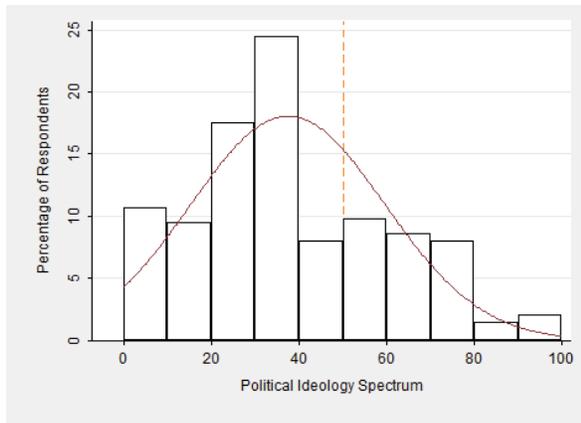


Figure 10. Sample political ideology

This sample is more liberal than the general U.S. population. During the same period that this dissertation survey was completed, Gallup found that 38% of Americans identified as conservative and 23% as liberals (“Liberal Self-Identification”, 2014). This stands in contrast to this survey’s sample.

*Education*

The question on educational attainment asked respondents to choose the highest degree they have attained from a list that includes: “Associate’s,” “Bachelor’s,” “Master’s,” “Doctorate (PhD, DrPH, etc.),” “Professional Degree (JD, MD, etc.),” or “Other.” The “Other” response items were reviewed and recoded if the associated written response indicated it should be listed under another category. The response categories were treated as an ordinal scale in this study’s models, with a response of “Associate’s” having a value of 1 and a response of “Professional Degree” having a value of 6. Recognizing that the measure for level of education “probably lies somewhere between” (Labovitz, 1967, p. 152) the interval and ordinal scale, I followed Somers’ (1962, p. 800) recommendation that educational level be considered an ordinal variable. Putting education on an ordinal scale is meant “to characterize the respondent in terms of an underlying continuum which might be described as ‘the amount of knowledge, understanding, and general

educational skill acquired,' which is in reality a complexity of microsociological stimuli that would be virtually impossible to measure directly" (Somers, 1962, p. 800).

The question differentiated between professional degrees, such as in the fields of law and medicine, and doctorates, such as a Doctor of Public Health or Doctor of Philosophy degrees. These were differentiated based on the proposition that those with professional degrees have background and training that may influence their thinking from the perspective of a specific profession as compared to those with non-professional degree doctorates. The educational experiences provided by the two categories may differ enough that their effect on the ideas of health that state public health officials hold may vary. The "degrees have entirely different purposes and ends," where one is focused on scholarship within the field and the other on practice (Edwardson, 2010, p. 137). For example, the training received by a medical doctor might be associated with a different approach to health than the training received by a doctor of philosophy earning a degree in epidemiology. Table 10 presents respondents' educational level. Over 77% of respondents had a Master's degree or higher, with only 3 respondents noting they had less than a Bachelor's degree.

Table 10. Educational level

<i>Highest Degree Attained<sup>a</sup></i>	<i>No. (%)</i>
Associate's	3 (1)
Bachelor's	95 (19)
Master's	225 (45)
Doctorate (PhD, DrPH, etc.)	86 (17)
Professional Degree	76 (15)
Other	13 (3)

*Note. n = 498*

### *Professionalization*

The hypothesis that professionalization plays a role in public health administrators' ideas and practices builds off of Freidson's study of professions. The CDC itself has an "Office for State, Tribal, Local and Territorial Support" with the sole mission of working "with national nonprofit organizations to build the capacity and infrastructure of public health agencies and systems" (Office of State, Tribal, Local, and Territorial Support, CDC, 2015). This important concept is measured using three items that include level of education, field of study, and participation in professional associations. Freidson's claim that "a bureaucratic organization would base its own requirements for the positions it wishes to fill largely on what it can expect from external educational program," requires measuring field of study and level of education in order to assess professionalization alongside participation in professional associations (Freidson, 2001, p. 87).

In order to assess participation in public health associations, respondents were provided with a list of public health professional associations and asked to check all of the associations of which they are members. The list of associations provided in the survey was created from a CDC list of "State, Tribal, Local, and Territorial Public Health Professionals Gateways" and included: American Public Health Association; American Society of Tropical Medicine and Hygiene; Association for Professionals in Infection Control and Epidemiology, Inc.; Association of Public Health Laboratories; Association of State and Territorial Health Officials; Association of Schools of Public Health; Council of State and Territorial Epidemiologists; The Medicine/Public Health Initiative; National Association of County and City Health Officials; National Association of Local Boards of Health; National Environmental Health Association; Pan

American Health Organization; Public Health Foundation; and World Health Organization (Office of State, Tribal, Local, and Territorial Support, CDC, 2015). This list of professional associations proved to be too nationally focused for state health department respondents, which prompted 204 respondents to list additional associations under the “Other” category that were more specifically developed for state level public health officials. The provided associations as well as the additional associations reported by respondents are listed in Table 11 that, taken together, show the top 15 professional associations of which respondents were members. Some respondents were members of more than one professional association, indicated as a higher number of memberships (611) than respondents to the question (478). A few respondents (99) did not have membership in any professional association.

In the statistical model, professionalization is included as a dichotomous variable. Membership in any professional organization is coded with a value of one and a lack of participation is coded as zero.

Table 11. Professional association membership

<i>Name of Association (n = 478)</i>	<i>No. (%)</i>
American Public Health Association (APHA)	115 (24)
Council of State and Territorial Epidemiologists (CSTE)	99 (21)
Association of State and Territorial Health Officials (ASTHO)	72 (15)
Association of Public Health Laboratories (APHL)	38 (8)
National Association of County and City Health Officials	23 (5)
State Public Health Association	22 (5)
National Alliance of State and Territorial AIDS Directors (NASTAD)	18 (4)
National Public Health Information Coalition (NPHIC)	15 (3)
National Environmental Health Association (NEHA)	13 (3)

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National WIC Association	12 (3)
National Assoc. for Public Health Statistics and Information Systems (NAPHSIS)	12 (3)
National Association of Chronic Disease Directors (NACDD)	10 (2)
Safe States Alliance	10 (2)
Association of State and Territorial Public Health Nutrition Directors (ASTPHND)	10 (2)
Association of Maternal and Child Health Programs (AMCHP)	10 (2)
Other	132 (27)
Total memberships	611 (100)
All respondents in memberships	379 (79)
No membership indicated	99 (21)

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*Field of study*

Field of study was included in the survey due to the potential impact of the educational specialization of public health administrators on the ideas they hold and practices they undertake. Professionalism “asserts that its knowledge and skill are too complex and esoteric to be managed by those who have only general knowledge and skills” (Freidson, 2001, p. 121). General knowledge as supported in liberal education, however, is considered a prerequisite to becoming a competent professional, because “unlike a purely technical education, ideal typical professional training provides or requires prior exposure to high culture in the form of advanced general education” (Freidson, 2001, p. 121). It is precisely because of this exposure to both general and specialized education that professionals “can claim independence of judgment and freedom of action rather than mere faithful service” (Freidson, 2001, p. 121). It is therefore essential to understand the field of study from which participants emerge in order to assess how it shapes their ideologies and practices.

Figure 11 shows that the most common field of study for respondents of this survey was the field of medicine, with 69 respondents identifying it as the discipline of their highest degree. This is not surprising given the historically powerful role of medical doctors in the establishment and development of the field of public health (Rosen, 1958). Nonetheless, the powerful professional norms of the field may have a powerful impact on the practice of public health (Freidson, 1970).

What is notable, however, is the diversity of disciplines that the respondents listed. The second most common category for field of study was “Other.” This was the case even with the delineation of 22 separate subfields in the results, which were defined if 5 separate respondents listed the subfield. Many respondents wrote in their specific field of study after checking “Other.” The diversity of fields speaks to the importance embodied by a sense of the public health profession consummated outside of any single disciplinary specialization. Freidson, speaking of the managerial and political elite, explains that “none of those specialized degree-granting programs, including those in business or management schools, has succeeded in obtaining a monopoly over executive positions in the labor market for their graduates” (2001, p. 120). Although this is not entirely the case for public health administrators, because the diversity of subfields still largely falls within the field of public health, it does speak to the need for the public health administrator “to rise above the specialization” in order to “see things in a big way, to simplify, to coordinate, to generalize” (Freidson, 2001, pp. 120-121).

For the purposes of quantitative analysis, the fields are ordered from those representing the “hard” sciences to those that are oriented towards the “soft” sciences and humanities (Smith, Best, Stubbs, Johnston, and Archibald, 2000, p. 78). Medicine, nursing, and microbiology are considered to be part of the sciences. The public health subfields are placed between medicine

and the social sciences.

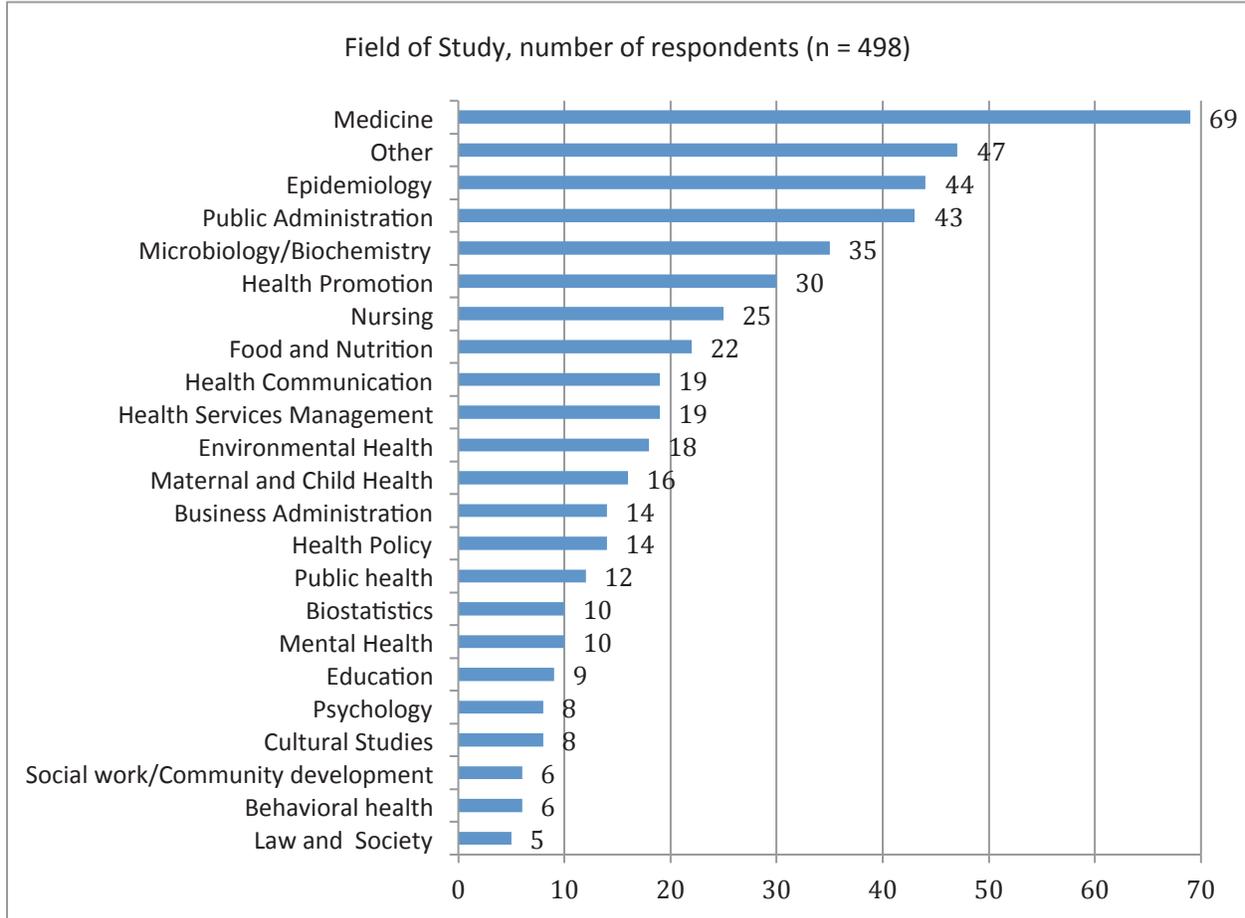


Figure 11. Respondent field of study

### *Tenure*

The length of time public health professionals spend in a given position is important to their perspectives on both ideas and practice. The “organizational socialization” they undergo, according to Schein, usually involves learning, 1) “the basic goals of the organization,” 2) “the preferred means by which these goals should be attained,” 3) “the basic responsibilities of the member in the role which is being granted to him by the organization,” 4) “the behavior patterns which are required for effective performance in the role,” and 5) “a set of rules or principles which pertain to the maintenance of the identity and integrity of the organization” (Schein, 1988,



pp. 54-55). Although the coercive persuasion Schein recognized in the 1960's is no longer a lauded part of the scholarship on organizations, an individual entering an organization still interacts with his/her surroundings and learns from the organization's culture.<sup>23</sup> Social scientists "have always considered job longevity and organizational longevity to be important situational factors that help shape individual reactions and attitudes" (Katz, 1978, p. 205). In addition to the impact of the organization on the individual over time, "employees tend to be absorbed by different issues and concerns at different stages of their early careers." Therefore, the number of years in a given position is an important measure.

The 487 public health administrator respondents had been in their position for an average of 9.0 years, ranging from zero to 35 years. As Figure 12 shows, a large majority (66.7%) of respondents have been in their positions for less than 10 years. It should be noted, however, that a large number (62) of respondents have been in their positions for over 20 years.

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<sup>23</sup> In this dissertation, what I mean by organizational culture is Schein's (2010, p. 18) definition of "a pattern of shared basic assumptions learned by a group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

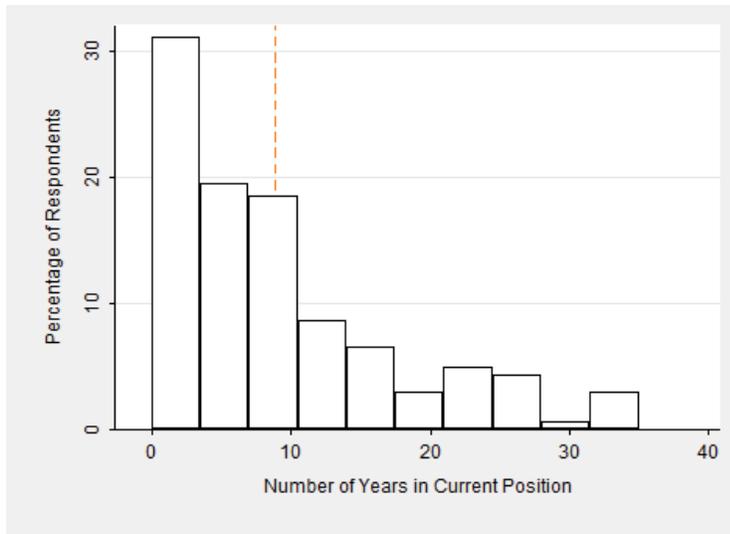


Figure 12. Number of years in current position

#### Multivariate regression model

The exploratory and confirmatory factor analysis indicated that the determinants of health considered important by public health officials were not monolithic, but instead formed four distinct categories: economic determinants of health, community determinants of health, environmental determinants of health, and access to health care determinants of health. In addition, behavioral determinants of health were considered so important to health that 99% of respondents listed it as very important. Given the lack of variance in the behavioral determinants of health perspective, however, this category could not be included in the statistical analysis. The four other distinct categories of determinants of health, however, required a statistical method that allowed for more than one dependent variables, such as the multivariate multiple regression model.

Where a multiple regression model has multiple independent variables and a single dependent variable and a multivariate regression model has multiple dependent variables and a single independent variable, a multivariate multiple regression model has both multiple

dependent and independent variables as depicted in Formula 3 (Hidalgo and Goodman, 2013, p. 39). In this formula,  $X$  represents predictor variables,  $\beta$  the y-intercepts,  $Y$  the dependent variables and  $\epsilon$  the error term. The multiple dependent variables in the formula means that “The  $m$  measurements on the  $j$ th sample unit have covariance matrix  $\Sigma$  but the  $n$  sample units are assumed to respond independently” (Maitra, n.d., p. 536).

$$Y_{n \times p} = X_{n \times (r+1)} \beta_{(r+1) \times p} + \epsilon_{n \times p}$$

The model for this chapter is as follows,

$$\begin{bmatrix} \text{Economic det (Econ)} & \cdots & \text{Community det(Comm)} \\ \vdots & \ddots & \vdots \\ \text{Environmental det(Env)} & \cdots & \text{Access to care det(Acc)} \end{bmatrix} = \begin{bmatrix} X_{Econ1} \beta_{Econ1} & \cdots & X_{Econ2} \beta_{Econ2} \\ \vdots & \ddots & \vdots \\ X_{Env1} \beta_{Env1} & \cdots & X_{n \times (r+1)} \beta_{(r+1) \times p} \end{bmatrix} + \begin{bmatrix} \epsilon_{Econ} & \cdots & \epsilon_{Comm} \\ \vdots & \ddots & \vdots \\ \epsilon_{Env} & \cdots & \epsilon_{Acc} \end{bmatrix}$$

This quantitative regression model, with survey data as its basis, is in an attempt to discern the predictor variables that influence public health administrators’ understanding of the importance of different types of determinants of health. Table 12 presents the four dependent variables and eight independent variables included in the multivariate regression model along with their descriptive statistics. The dependent variables’ descriptive statistics have large values because the original data were transformed (square or cubed) in order for the model’s residuals to meet assumptions of normality. The descriptive statistic values for this model’s sample do not have a statistically significant difference from the overall descriptive statistics collected in the survey.

Table 12. Descriptive statistics for independent and dependent variables in ideational models

<i>Variable</i>	<i>Mean</i>	<i>St. Err.</i>	<i>Min.</i>	<i>Max.</i>
<i>Independent Variables</i>				
Educational level	3.28	0.99	1	6
Gender	1.61	0.49	1	2
Age	2.80	0.63	1	4
Race/ethnicity	0.16	0.36	0	1
Political ideology	37.16	22.02	0	100
Membership in professional organizations	0.77	0.42	0	1
Length of tenure	8.80	7.77	0	35
Field of study	9.01	7.39	1	23
<i>Dependent Variables</i>				
Economic determinants of health index	792.93	330.15	27	1728
Community determinants of health index	75.48	25.53	4	144
Environmental determinants of health index	803.67	334.25	12.70	1728
Access to health care determinants of health index	910.91	375.67	8	1728

*Normality*

After cleaning the data and renaming the variables, I conducted an initial review of the data by looking at summary statistics and pairwise correlations to see the relationships between individual variables within the model. Following this initial review of the data, I studied histograms and kernel density plots for each of the variables. Both of these visualizations indicated that the observations associated with each variable were not normally distributed. The kernel density plot “approximates the probability density of the variable” and has the “advantage of being smooth and of being independent of the choice of origin, unlike histograms” (UCLA:

Statistical Consulting Group, n.d.b). Figure 13 is a kernel density plot of the index developed from the determinants of health linked to economics (income level, employment, and education level) and is included to provide an example of how graphs of the data confirmed that the data in both the independent and dependent variables were not normally distributed. The non-normal distribution is not surprising since public health officials ranked many of the indicators very highly. Their perspective that a variety of determinants of health are important lent itself to a skewed distribution.

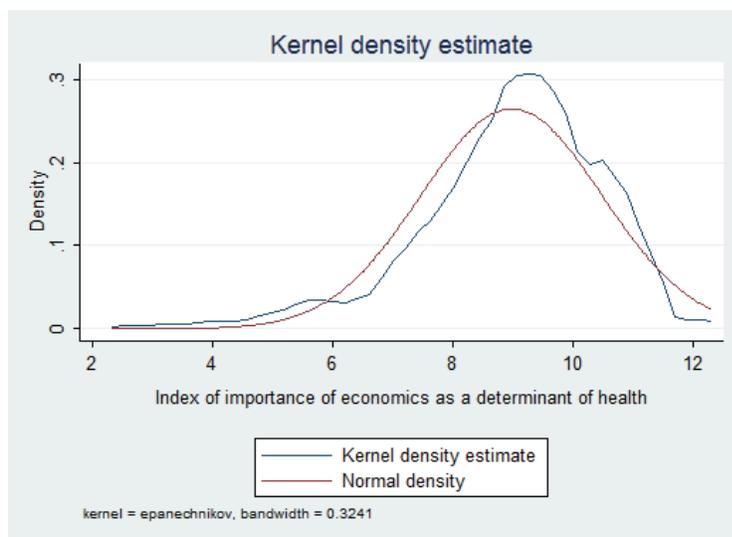


Figure 13. Kernel density plot of the economic determinants of health index

The Shapiro-Wilks test and Skewness-Kurtosis test of normality of all four dependent variables (the health indices for environmental determinants of health, economic determinants of health, access determinants of health, and community determinants of health) generated statistically significant p-values indicating that the dependent variables are not normally distributed. Since “it is the residuals that need to be normally distributed” in a model to fit the assumptions of regression, I looked at the predicted residuals for a linear regression model with each of the dependent variables (UCLA: Statistical Consulting Group, n.d.b). The following

normal quantile plot (Figure 14) of the health economics determinants of health model demonstrates that the residuals are not normally distributed based on plotting the quantiles of the residuals of the economic determinants of health model against the quantiles of a normal distribution as represented by a straight line (UCLA: Statistical Consulting Group, n.d.b).

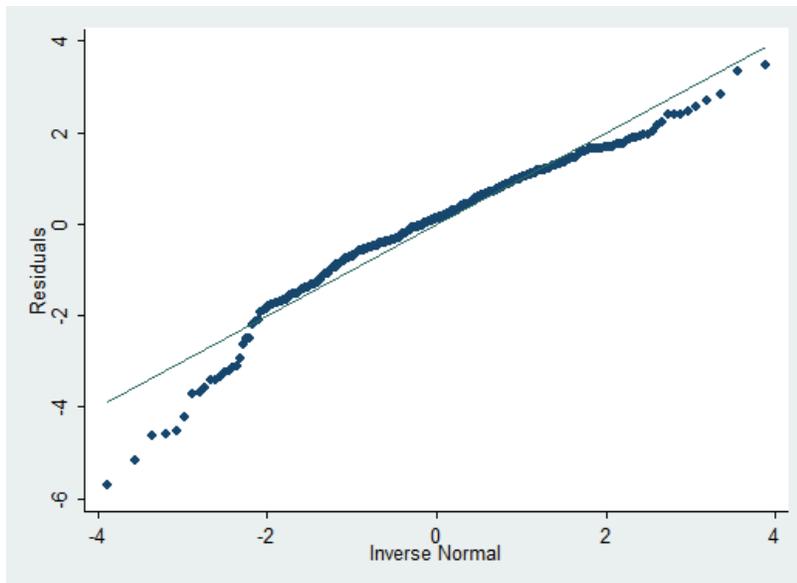


Figure 14. Quantile plot of the residuals of the economic determinants of health model

The failure to meet assumptions of normality necessitated transformation of the dependent variables. Transformation is used when the characteristics of the data are problematic for the statistical model of interest and, as such, a “transformation, such as taking the logarithm or square root of the variable, creates a transformed variable that is more suited to portraying the relationship” (Hair et al., 2010, p. 34). The ladder command in Stata provides a statistical option for identifying the transformation a variable needs to undergo in order to have a normal distribution (Stata, n.d.). The command performs multiple transformations on a given variable and statistically details which transformation is not statistically significant in its difference from

a normal distribution. Based on the results of the ladder command, the economic, access to health, and environmental determinants of health models need to be cubed, and the community determinants of health model needs to be squared.

#### *Homoscedasticity and linearity*

Tests of the equality of variance of the residuals indicated the models were not heteroskedastic. The residual-versus-fitted plots, which help to visually analyze the linearity, heteroskedasticity, and outliers by comparing the residuals to the fitted values in a model of the residuals did not indicate there were issues of non-linearity or heteroskedasticity. This visual analysis was confirmed by the statistical Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, which had a chi-square statistic of 0.04 with a p-value of 0.85 for the economic determinants of health model and similarly failed to reject the null hypothesis for all five of the models. “The Breusch–Pagan/Cook–Weisberg is one of the most widely used tests for heteroscedasticity. It assumes a linear model for the log variance and utilizes the score statistics to test for the significance of coefficients” (Daye, Chen, and Li, 2012, p. 321).

#### *Outliers*

Another potential issue for statistical models are outliers that strongly influence the model and “lie outside of the general patterns of the data set” (Hair et al., 2010, p. 194). Examination of the stem and leaf plot of the studentized residuals—standardized residuals helpful in identifying outliers—indicated that they were not a problem for these models (UCLA: Statistical Consulting Group, n.d.c). Statistical tests of this visual assessment check to see if extreme residual values cross the threshold values for leverage and overall influence. “An observation with an extreme value on a predictor variable is called a point with high leverage” with a suggested numerical cutoff leverage point of  $(2k+2)/n$ , where “k is the number of

predictors and  $n$  is the number of observations” (UCLA: Statistical Consulting Group, n.d.c). The leverage of the 10 highest and lowest studentized residuals failed to exceed the threshold value set for each of the models. Cook’s Distance, “a measure that combines the information of leverage and residual of the observation,” did find that a number of observations crossed the conventional cutoff value of  $4/n$  (UCLA: Statistical Consulting Group, n.d.d). However, these were not dropped due to the findings of the other measures of influence.

### *Collinearity*

One of the assumptions of linear regression is independence. When independent variables are highly collinear the assumption is violated because the standard errors for the coefficients increase and the coefficients lose stability (UCLA: Statistical Consulting Group, n.d.c). The variance inflation factor (vif), therefore, estimates the increase in “the variance of a slope estimate” due to collinearity (Stine, 1995, p. 53). VIF values over ten are normally considered problematic. The VIF value for each of these models was under the value of two, so multicollinearity was not considered a problem.

Tests of the potential for interaction between variables, where the “difference between groups on one treatment variable varies depending on the level of the second treatment variable,” found significant interaction between the variables *length of tenure* and *minority status* (Hair et al., 2010, p. 347). Tests were conducted for every pair of variables in all four models. Although several pairs were statistically significant in each individual model, only the interaction between *tenure* and *minority status* was significant for the multivariate model. This interaction between these variables indicates length of tenure is not the same across minority groups (Fitzmaurice, 2000, p. 313).



### *Model results*

Educational level, gender, professionalization, and length of tenure had a statically significant positive relationship with the determinant of health variables as a whole, where higher levels of education, being a female, participating in a professional organization, and longer tenure in the health department is associated with having a social health frame. The multivariate regression model includes results for each of the four dependent variables as well as the overall model (see Table 13). Different independent variables are statistically significant for each of the four models. For the economic determinants of health model, *field of study* ( $\beta = 5.73$ ,  $p = 0.03$ ) and the second age dummy variable ( $\beta = -200.98$ ,  $p = 0.04$ ) were statistically significant. A field of study in a “softer” discipline was associated with a higher value for the importance of economic determinants of health.<sup>24</sup> Also, those aged 35 to 44 years had a statistically significant negative relationship with the determinants of health, which is an indication that being in that age group is associated with a lower value for the importance of the economic determinants.

For the environmental determinants of health model, *gender* ( $\beta = 135.84$ ,  $p = 0.00$ ) and *length of tenure* ( $\beta = -7.97$ ,  $p = 0.00$ ) were statistically significant. Being a female was positively associated with rating environmental determinants of health as important, but length of tenure was negatively associated. The longer an individual was in their public health position, the lower their association with rating environmental determinants of health as important to health.

For the access to health care determinants of health model, *gender* ( $\beta = 74.75$ ,  $p = 0.10$ ), *professionalization* ( $\beta = 91.38$ ,  $p = 0.08$ ), and *educational level* ( $\beta = -59.54$ ,  $p = 0.01$ ) were statistically significant. Educational level had a negative association; the higher the educational level, the lower the association with rating access to health care as an important determinant of

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<sup>24</sup> In the survey analysis, fields were ordered from “hard” to “soft” sciences following (Smith et al.’s (2000, p. 78) study of the hierarchy of sciences.

health. Membership in a professional organization and being a female, however, were positively associated with rating access to health care as an important determinant of health.

For the community determinants of health model, *gender* ( $\beta = 7.34$ ,  $p = 0.02$ ) and *professionalization* ( $\beta = 8.10$ ,  $p = 0.02$ ) were statistically significant. Being a female and a member of a professional organization was associated with a higher value for the importance of community determinants of health. Membership in a professional organization has a statistically significant relationship with two of the four determinants of health variables. Gender has a statistically significant relationship with three of the four determinants of health variables.

Table 13. Determinants of health model results

<u>Determinants of health models</u>				
	<i>Economic</i>	<i>Environment</i>	<i>Access</i>	<i>Community</i>
Professionalization	68.29 (45.06)	58.27 (44.58)	91.38* (51.45)	8.19** (3.49)
Tenure	-0.88 (2.64)	-7.97** (2.61)	-3.02 (3.01)	-0.06 (0.20)
Field	5.73** (2.61)	3.82 (2.58)	3.69 (2.98)	0.23 (0.20)
Minority status	40.88 (73.93)	23.23 (73.13)	-97.06 (84.40)	7.85 (5.73)
Political ideology	-1.04 (0.86)	-0.97 (0.85)	-1.41 (0.98)	-0.11 (0.07)
Gender	60.07 (39.33)	135.84** (38.90)	74.75* (44.90)	7.34** (3.05)
Education	31.53 (20.17)	-4.61 (19.95)	-59.54** (23.03)	1.41 (1.56)
Age_2	-200.98** (95.72)	-27.93 (94.69)	76.94 (109.28)	-4.76 (7.41)
Age_3	-129.77 (88.84)	31.63 (87.89)	65.88 (101.43)	-6.86 (6.88)
Age_4	-111.15 (113.52)	-31.85 (112.30)	46.46 (129.60)	-2.47 (8.79)
Interaction term	9.49 (7.65)	9.36 (7.57)	17.50* (8.74)	-0.77 (0.59)
Constant	713.43 (133.90)	733.88 (132.46)	969.37 (152.88)	67.81 (10.37)

Note. Cell entries are regression coefficients. Standard errors are reported in parenthesis.  
\*\*p<0.05; \*p<0.10

The pseudo R square statistic indicates that each of these models has weak explanatory value, explaining 12% or less of the variability accounted for by the independent variables. Nonetheless, the significant p-values, all 0.02 or under, indicate these data fit the models well (see Table 14).

Table 14. Determinants of health model fit indicators

<i>Equation</i>	<i>"R-sq"</i>	<i>F</i>	<i>P</i>
Economic determinants of health model	0.08	2.32	0.01**
Environmental determinants of health model	0.12	3.76	0.00**
Access to health care determinants of health model	0.07	2.12	0.02**
Community determinants of health model	0.07	2.24	0.01**

\*\*p<0.05; \*p<0.10

The overall multivariate model's test statistics found that those variables that have a statistically significant relationship to the dependent variables in each of the individual models are also important to the dependent variables as a whole. The Wald test<sup>25</sup> finds that *educational level* (F = 2.78, p = 0.03), *gender* (F = 3.61, p = 0.01), *professionalization* (F = 1.94, p = 0.10), and *length of tenure* (F = 2.58, p = 0.04) have positive statistically significant relationships with the social determinants of health variables as a whole (Kyngas and Rissanen, 2001, p. 774). Higher levels of education, being a female, membership in a professional organization, and longer lengths of tenure in a public health position are positively associated with ranking social determinants of health variables as important.

<sup>25</sup> The Wald statistic tests the distance of the estimated parameter from the null hypothesis value in standard errors (Fox, 1997, p. 569).

Table 15. Wald test statistics on multivariate determinants of health model

<i>Independent variables</i>	<i>F statistic</i>	<i>P-value</i>
Educational level	2.78	0.03**
Gender	3.61	0.01**
Age	0.95	0.50
Professionalization	1.94	0.10*
Minority	0.96	0.43
Political	1.08	0.36
Length of tenure	2.58	0.04**
Field of study	1.55	0.19

\*\*p<0.05; \*p<0.10

#### Public health officials compared to the general public

Robert and Booske (2011, p. 1655) conducted a study of the general public in the United States “to examine what factors the public thinks are important determinants of health.” As mentioned in earlier chapters, the determinants of health questions in my survey rely on the survey Robert and Booske conducted between 2008 and 2009. Although this dissertation did not use their exact data analytic methods and the data collected for this dissertation was collected in 2013, the findings in this chapter generally can be compared to Robert and Booske’s findings to gain an understanding of how public health officials compare to the general public. Table 7, earlier in the chapter, provides a comparison of how state public health officials ranked the importance of the determinants of health as compared to the general public.

State public health officials ranked the importance of the social determinants of health highly at a much higher percentage than the general public as a whole. Robert and Booske’s 2011 (p. 1661) study found that “less than half of the general population said that income,

community safety, quality of housing, education, one's job, where one lives, religiosity/spirituality, and race/ethnicity have very strong effects on health." In contrast, more than half of the state public health officials in my study ranked every determinant of health as having a very strong effect on health. A comparison of my study to Robert and Booske's (2011) work finds that a much higher percentage of state public health officials' agreed with the importance of social determinants of health as compared to the general public. Given the finding of a statistically significant relationship between professionalization and state public health officials' idea of health in my research, this difference between the general public and public administrators was expected. In a democratic republic, this discrepancy between the general public and the public administrator can be a problem for representing the views of the public as well as a barrier for public administrators who want to take part in practices not supported by the community.

### Qualitative findings

In this section, I present the findings from the semi-structured interviews I conducted with 28 public health administrators from state public health departments. I explain how these individuals were selected based on their survey responses and then present the coding scheme used to analyze the interview data. Finally, I expound on the themes and frames developed through the qualitative data analysis.

The complicated theoretical and philosophical questions at the heart of the idea of health necessitated complementary data to confirm the survey findings. The limitations of survey research meant that the survey instrument could not provide an adequate space for respondents to develop and communicate their ideas of health fully (Finch, 1987, p. 105). The interviews, therefore, were conducted to serve as an open forum for such discussion. The semi-structured

interview method is particularly apt for exploratory research into the idea of health because the flexible interview schedule allows for the varied experiences and responses provided by public health officials across the agency (Barribal and While, 1994).

#### Vignette and narrative Analysis

Even when conducting interviews, however, “the empirical study of beliefs, values and norms has always posed some of the most difficult methodological questions” (Finch, 1987, p. 105). Given the difficulty of deconstructing the idea of health, I asked interviewees to engage with a narrative as an entry point into the discussion of the idea of health. By prompting narrative thinking in the interviewees, I was asking for their “interpretation of events by putting together a causal pattern which names possible the blending of what is known about a situation (facts) with relevant conjectures (imagination)” (Sarbin, 1986, p. 111). Their responses, therefore, included their understanding of the causal patterns around health, reference to the facts they consider important to understanding the story, and, often, awareness of the social context or the setting in which the narrative is embedded.

Hodgins, Millar, and Barry’s (2006, p. 1982) vignette was adapted for this study population. Adaptation included changing the original name and ethnic community in the vignette from Brigid to Gabby as well as from Traveller to Hispanic. Hodgins et al. (2006) used a name common in the Traveller community in Ireland but I used a name common in the Hispanic community. The reference to the ethnic community of the main character in the story allows the interviewee to discuss the role of ethnicity in health (Hodgins, Millar, and Barry, 2006). Participants were asked to respond to the following short vignette about a woman named Gabby:

Let me tell you about Gabby. She is in her early 40s and is a member of the Hispanic community. Gabby generally finds life a struggle. She has experienced depression on and

off over the last few number of years. She has been feeling particularly unwell over the last few months, experiencing tiredness, loss of energy, headaches. More recently, she has had fairly severe pain and tightness in the chest on a few occasions. Gabby went to her doctor who told her that she was suffering from angina. The doctor explained that while the pain can be relieved by drugs, it is a sign of heart disease, and a warning that a heart attack could occur (adapted from Hodgins, Millar, & Barry, 2006, p. 1982).

Study of the response to the vignette uses narrative analysis in addition to the content and framing analysis used for the remainder of the qualitative data.

The analytic traction from narratives comes from the idea that “people distill and reflect a particular understanding of social and political relations” in the stories they tell (Feldman, Sköldbberg, Brown, and Horner, 2004, p. 148). A systematic analysis of interviewees’ stories about Gabby is therefore illuminating to their reflection on the idea of health and its causal story. The narrative analysis in this chapter will draw on Roe’s (1994) narrative policy analytic methods whereby he looks to the “scenarios or arguments that dominate the issue in question” to identify the dominant narrative and lesser discussed narratives in order to define the counternarrative. Within these narratives, I will focus on the following story elements, as described by Pentland (1999, pp. 712-713): 1) sequence in time, with a “clear beginning, middle, and end”; 2) focal actors; 3) narrative voice, which “reflects a specific point of view”; 4) evaluative frame, which is a “sense of moral context”; and 5) indicators of content and context.

The interpretation of these narrative components together inform the findings presented in this section. These narratives are themselves part of the narrative analysis undertaken by the interviewees trying to make sense of the Gabby story. Interviewees especially relied on the concept of enthymeme to analyze the story. Enthymeme “takes the form of an argument or, more formally, a syllogism, one of whose parts is missing...and most typically, the missing part is the major premise” (Feldman, Sköldbberg, Brown, and Horner, 2004, p. 152).



*Dominant narrative: Social determinants of health is missing from Gabby's story*

The majority of interviewees responded with a coherent story that questioned the medically and individualistically focused depiction of improving health presented in the Gabby story. Repeatedly, interviewees pointed out that the Gabby story was missing the major premise of the larger social determinants of health (F428). In pointing out what was missing, they developed their own causal story of the determinants of health they considered important. A Californian public health administrator explicitly said, "I'm more interested in a lot of stuff that wasn't revealed in the story" (F8), and a New Hampshire health official said, "I didn't hear too much about her life situation" (F240).

The evaluative frame of the story includes clear contrast of the "clinical perspective" against the "public health perspective," (F8, F211) where the former is "focused on signs and symptoms and diagnosis with the doctor and issues" and the latter is focused on "her social situation, her income, employment, you know all the kinds of factors, the external factors on a population level that would be affecting her health" (F8, F240). Causal drivers of health were both listed and referenced symbolically (i.e. "life situation") but they were rarely stated without placement in a larger evaluative frame. For example, after an Ohio public health administrator lists race, access to health care, health literacy, language proficiency, healthy community, adequate resources, support groups, healthy environment, nutritious foods, and walking paths as important to Gabby's health, the administrator plainly states, "my ideal of health is one of health equity" (F83). After explaining that Gabby needs to be supported by the community, a California public health official evaluates his/her frame as "more related to the whole well-being of the person which is what I think public health is striving for" (F211). Participants also referenced their profession in reacting to Gabby's story, such as the Wisconsin public health official explaining, "I come from an environmental health background. I tend to think about what kinds

of environmental exposures might be triggering her” (F402). These individuals do not only respond to the Gabby narrative with factors that may affect her health; they clearly know the health frame into which those factors fit. They also recognized that the health frame had broader implications because “they’re not easily fixed by a health, by a public health, or a public system but they need to be addressed through health equity and social justice issues” (F646). A DC health official extends this:

it’s what I can do and also what the department of human services can do or the department of housing can do or the department of employment services and [education] can do, so there are many items, what we’re trying to do in a case like this is see less so the diagnosis of the cardiopulmonary disease, and more of the patient that has one manifestation, one clinical manifestation that calls her attention which is the cardiopulmonary disease, but there is much more to Gabby so there has to be much more to our approach to Gabby as a patient (F664).

The metaphor used in the dominant narrative around the vignette was that of a “full picture” where “understanding is seeing” (Lakoff and Johnson, 1980, p. 126). The picture is a representation of everyday life which stands in contrast to the “picture frame metaphor with its emphasis on ‘selection, emphasis, and exclusion’” (Tankard, 2001, p. 98). A California health official explained that Gabby’s story is “part of a bigger picture than an individual” (F211), and a Massachusetts health official wanted to “step back and try to get a more fuller understanding of her life situation and how that affects her clinical presentation” (F54).

This dominant response narrative includes as actors the medical establishment, those with a public health perspective, and patients. The medical establishment, although considered necessary, is not the protagonist. Instead the protagonists are those with a “public health perspective” (F8). These individuals committed to the social frame comfortably and explicitly stepped out of the individualistic frame dominant in the Gabby story. For example, a Wyoming public health official explained he/she had “a hunch that the majority of the issues that are

contributing to her chest pain and her potential threat of a heart attack are outside of the clinical realm” (F329), and a Vermont health official called the vignette “too medical” (F554).

Public health administrators mirrored concepts dominant in the social determinants of health sphere of the field of public health. For instance, a Massachusetts public health administrator’s focus on “the impact of her full life on her physical health” (F54) reflected Krieger’s (2001, p. 668) theory building effort when she stated that what is “at issue is how we literally incorporate, biologically, the world around us.” Others specifically referenced the importance of the “social determinants of health” (F240, F520) using the exact phraseology used by the World Health Organization, the CDC, and prominent public health scholars (WHO; CDC; Marmot and Wilkinson, 2005; Blane, 1995). “Quality of life” (F519) is another widely recognized public health concept employed by those committed to the social health frame (WHOQOL Group, 1995).

*Counternarrative: Gabby’s behaviors are making her sick*

Some of the interviewees who stepped outside of the clinical setting of Gabby’s vignette focused on the individual determinants of behavioral health. These individuals found the missing part of the story to be about her behaviors, with an Illinois public health official noting, “I didn’t hear anything about any education, any lifestyles recommendations” (F613). These stories focused on Gabby making lifestyle changes, explaining “what Gaby can do to help prevent something so severe to occur such as...getting ample exercise, if she’s eating correctly, is she getting enough sleep” (F157). “She probably has some lifestyle issues she needs to address” and “she needs more attention from, more advice from clinical folks” (F498). In this frame the clinicians were important actors in influencing behavior change, but Gabby needed to “access to appropriate care” (F447, F613).

This counternarrative included public health officials referencing the concept of “whole health” whereby clinicians consider mental health along with physical health (F570).

*Counternarrative: I don't know enough to fill in the missing information*

As opposed to focusing on the social determinants of health, a second counternarrative did not focus on a causal mechanism to explain Gabby's situation. Interviewees recognized that information was missing from the vignette but, instead of completing it by referencing social determinants of health, they explicitly explained, “I don't have information to make a conclusion” (F132, F583). The counternarrative consisted of inquiry into Gabby's clinical experience but interviewees did not venture outside of the clinical health frame when making sense of Gabby's health situation (F103). An Illinois health official questioned the role of “chronic condition of depression” in Gabby's health but said, “I don't know what tests the doctor did” (F467). Even if oriented towards the individualist frame, there was no coherency to the actors involved, causal relationships, and other components in this counternarrative. As a Tennessee health official said, “our role in that health care type of process would be very limited” (F354).

## Conclusion

Public health officials recognize the social determinants of health to a high degree, seeing them through the four lenses of community health, environmental health, economic health, and access to health care. They embrace these social health frames to a much higher degree than the general public. Demographic variables play an important role in shaping the health frame public health professionals hold, as demonstrated by earlier scholarship as well as quantitative research presented in this chapter (Robert and Booske, 2011). Additionally, however, public health professionalization, in the form of membership in professional organization and tenure in their public health position, is an important determinant of the health frames they hold. Even though

they recognize the importance of social health frames, they are still overwhelmingly committed to the importance of the individual determinants of health, with over 99% of respondents listing it as very important to health. The qualitative analysis reveals that public health professionals overwhelmingly use the social health frame to make sense of a hypothetical health situation. However, there were a number who understood the story from only the perspective of lifestyle, and even a few that did not step out of the clinical frame when discussing Gabby's health. The combination of survey and interview data reveals that public health professionals are increasingly recognizing the role of the social determinants of health, but it is understood in a nuanced way with multiple lenses, and it is by no means unanimous.

## Chapter 6. Organizational Environment of Public Health Administrators

### Introduction

Officials in public health departments implement public health programs in the political and organizational contexts in which they are situated. Gagnon, Turgeon, and Dallaire (2006) recognize that it is not just public health officials' health determinants frame that is important to practice. The "means still needs to be found to facilitate and support the integration of a prospective evaluation process within the dynamics of government that takes these determinants into account in order to encourage the adoption of healthy public policies" (Gagnon, Turgeon, and Dallaire, 2006, p. 43) The organizational environment of the public health department, therefore, is an important mediator of practice, regardless of a public health practitioner's health frame. This chapter aims to provide an overview of how public health officials describe the organizational environment of their state health department. In addition, this chapter presents findings on the relationship between organizational environment and health frame as well as organizational environment and practices operationalized as evidence-use, collaboration, and public participation in the decision-making processes.

In order to lay out the organizational environment as described by the study participants, this dissertation asked state public health administrators to assess organizational learning using two sets of survey items measuring a supportive learning environment and concrete learning processes (Garvin, Edmondson, and Gino, 2008). As described in Chapter 3, the learning organization is operationalized in this dissertation using Garvin, Edmondson, and Gino's learning organization assessment tool. The components of the assessment tools align with the Lavis (1998) framework that suggests openness and willingness to experiment leads to learning.

Since “policy-making is a form of collective puzzlement on society’s behalf,” the public health official’s understanding of the space for learning in their organization may have important implications for the process of puzzlement (Hecllo, 1974, p. 305).

### Organizational environment

How public health practitioners perceive their organization will shed light on how open to experimentation they feel in their organization and whether this ability to experiment is linked to greater collaboration, evidence-use, and/or engagement with the public. It is likewise of interest to see if different health frames are associated with different organizational environments. The supportive learning environment and concrete learning processes are assessed using both a survey instrument and interviews. It should be noted that the discussion of the organizational environment in this part of the dissertation is based upon self-reported data from the public health professionals whose subjective perspectives on their health departments are not necessarily reflective of the objective state of those organizations. Each individual’s personality and cognitive understanding therefore are reflected in both the way they describe the idea of health and the organizational environment. This nuance does not negate their understanding of their organizational environment, but is taken into consideration when discussing the relationship between health frames and organizational environment.

In exploring the question of how ideas within bureaucracies impact policy making and implementation, the question of the bureaucratic environment emerges as important. What types of organizational environments are associated with a social health frame as compared to individual health frame? How is the organizational environment associated with practices that reflect a given health frame, such as evidence-use, collaboration, and public participation. Knowing the relationship between 1) ideas and organizations and 2) practices and organizations

separately is the first step to understanding how these three concepts interact together, which is assayed in the next chapter. In this chapter I present not only the organizational environment as reported by public health administrators, but also how this environment is related to ideas and practice separately.

I propose that learning organizations will be associated with a social frame to a greater degree than those organizational environments engaged in learning processes and supportive of a learning environment to a lesser degree. I also propose that a greater degree of evidence-use, collaboration, and public participation will be associated with learning organizations. In order to assess these relationships in the quantitative data, I employ simple chi-square tests. For the qualitative data, I use content analysis to tease out the ways in which public health administrators discuss how their organizational environment interacts with their health frame to impact practice. This chapter presents the survey and interview data analysis on organizational environments.

### Quantitative findings

Scores for the learning organization survey items

Learning environment is measured using Garvin, Edmondson, and Gino's (2008) learning assessment tool (see Table 16). *Learning environment* is a composite of four other index variables: Psychological safety (four survey items); Appreciation of differences (three survey items); Openness to new ideas (three survey items); Time for reflection (two survey items). The items are largely situated in the supportive learning environment building block of their assessment tool with three items from the concrete learning processes and practices building block (Garvin, Edmondson, and Gino, 2008, pp. 112-113). According to Garvin, Edmondson, and Gino (2008), supportive learning environments "allow time for a pause in the action and encourage thoughtful review of the organization's processes," whereas concrete learning



processes focus on the logistics associated with learning. They call the supportive learning environment the forest and the concrete processes the tree. These survey items reflect the learning organization concepts also proposed by Lavis (1998), which focused on openness and experimentation. Although it is problematic that I do not use Garvin, Edmondson, and Gino's (2008) learning assessment tool in its entirety for purposes of instrument validity, the items that were adopted coherently measured the concepts of supportive learning environments and concrete learning processes, as described later in the chapter. The survey items include four questions regarding psychological safety within the organization, three questions regarding the appreciation of differences, three questions regarding openness to new ideas, two questions regarding time for reflection, one question each on experimentation, analysis, and information transfer (Garvin, Edmondson, Gino, 2008, pp. 112-113).

#### Descriptive statistics of the learning organization scores

Garvin, Edmondson, and Gino (2008) developed their assessment tool to generate a single learning organization score. Therefore, Table 16 presents descriptive statistics for each of the individual items as well as composite scores that combine the items. Respondents were asked to answer the questions in regard to their immediate office as opposed to their larger organizational environment. Table 16 presents the mean and standard deviation for each of the items as well as the composite scaled scores.

The scores were scaled in accordance with Garvin, Edmondson, and Gino's (2008, p. 114) method of "multiplying each raw score on the seven-point scale by 100 and dividing it by seven." Therefore a score of 100 indicates a ranking of 7 on a 7-point scale. The lowest rank of 1 yields a score of 14. The composite mean was generated for each of the component scores by averaging the items within each component.

The responses to these questions were normally distributed, indicating that there is equal distribution of responses around the mean in regard to the learning environment and processes within state health departments.

Table 16. Learning organization score

<i>Learning organization characteristics</i>	<i>Mean 7-point scale</i>	<i>Scaled Score<sup>a</sup></i>	<i>SD</i>
<b>Supportive learning environment</b>			
Psychological safety		79.15	15.49
Easy to speak up	5.98		
Mistakes held against you	4.77		
Eager to share information	6.03		
Keep your cards close	5.35		
<b>Appreciation of differences</b>			
Consistent opinions valued	4.91	68.40	17.52
Differences of opinion handled privately	3.97		
Open to alternative processes	5.47		
<b>Openness to new ideas</b>			
Value new ideas	5.79	81.89	16.22
Value entrenched ideas	5.44		
Interest in improved processes	5.96		
<b>Time for reflection</b>			
Find time to review work	5.26	71.37	18.69
Too busy to invest time in improvement	4.74		
<i>Learning environment composite</i>		<i>75.72</i>	<i>14.07</i>
<b>Concrete learning processes and practices</b>			
Experimentation	4.25	60.76	21.99
Analysis	4.97	70.99	21.74
Information transfer	5.38	76.79	20.56
<i>Learning processes composite</i>		<i>69.56</i>	<i>17.23</i>

Note. N =464

<sup>a</sup>Scaled scores 0 - 100

The following measures make up *Learning Environment*, which is meant to capture the support for learning, reflection, and new ideas within the organization. Public health officials

gave the highest average score to the measure of openness to new ideas with a mean score of 81.89 out of a 100. Since learning is “about crafting novel approaches” to solving problems, this composite score included questions on whether “people value new ideas,” “unless an idea has been around for a long time, no one in this unit wants to hear it,” and “people are interested in better ways of doing things” (Garvin, Edmondson, and Gino, 2008, pp. 11-112). Psychological safety was also rated highly within health departments with a mean score of 79.15. Since administrators “must be comfortable expressing their thoughts about the work at hand” to learn, the items included in the psychological safety were whether “it is easy to speak up about what is on your mind, if mistakes are “often held against you,” eagerness to “share information about what does and doesn’t work,” and whether “keeping your cards close to your vest is the best way to get ahead in this unit” (Garvin, Edmondson, and Gino, 2008, p. 111-112).

Within the larger learning environment composite, appreciation of differences had a much lower mean score of 68.40. “Recognizing the value of competing functional outlooks and alternative worldviews,” the appreciation of differences composite score includes the following items, “unless an opinion is consistent with what most people in this unit believe, it won’t be valued,” “this unit tends to handle differences of opinion privately or off-line, rather than addressing them directly with the group,” and “in this unit, people are open to alternative ways of getting work done” (Garvin, Edmondson, and Gino, 2008, p. 112). The composite mean score for time for reflection is 71.37. The composite score, intended to capture if there is time allowed “for a pause in the action” to think review processes and action, consisted of the following two items, “despite the workload, people in this unit find time to review how the work is going” and “people are too busy to invest time in improvement” (Garvin, Edmondson, and Gino, 2008, p. 112).

The second set of composite indicators is within the concrete learning processes and practices building block because a learning organization “arises from a series of concrete steps and widely distributed activities” (Garvin, Edmondson, and Gino, 2008, p. 111). Of all of the composite scores, experimentation had the lowest mean with a value of 60.76. Experimentation is composed of only one item in my survey, asking whether the unit “experiments frequently with new product or service offerings” (Garvin, Edmondson, and Gino, 2008, p. 113). The remainder of the composite scores fell somewhere in between with a mean of 70.99 for analysis and 76.79 for information transfer. Analysis and information transfer each had one item. Analysis was based on the item, “this unit frequently identifies and discusses underlying assumptions that might affect key decisions” and information transfer asked whether the “unit quickly and accurately communicates new knowledge to key decision makers” (Garvin, Edmondson, and Gino, 2008, p. 113).

Comparatively, the overall learning environment composite score is higher than the overall composite score for concrete learning processes at a mean value of 75.72 and 69.56 respectively. A two-sample t-test comparing the means of these two composite scores found that the average state health department learning environment score is statistically significant in its difference from the average concrete learning processes score ( $t = 10.02$ ,  $p = 0.00$ ). The implication of this difference is that health departments provide space for thinking about the “forest” in terms of learning, but do not have the concrete practices in place to address the “trees” of learning. This distinction between the learning environment and learning processes may be particularly important to the ways in which the health frames of public health officials manifest themselves in practice.

### Factor analysis of the learning organization items

Relying on the factor analysis methods described in Chapter 4, I studied the relationship among the fifteen learning organization items. The underlying structure that links the organizational variables may reflect the building blocks proposed by Garvin, Edmondson, and Gino (2008) but it may differ as well. Such analysis of the items was necessary because I may have compromised the structure of the learning organization assessment by selecting only a subset of the items that comprised it. Therefore, I needed to see the relationship of the items in the data I collected. Again, I used the eigenvalues, factor loadings, and Cronbach's alpha to better understand the structure of the learning organization items. Since these data violate the normal distribution and continuous variables assumptions, I used the polychoric factor analysis technique followed by orthogonal rotation. Rotation increases the interpretability of the data.

By relying on a combination of a priori theory and threshold values in the form of eigenvalues over 0.3 and the scree plot, I identified three latent learning organization variables: the positive learning environment latent variable, the negative learning environment latent variable, and the learning processes latent variable (see Table 17). The positive learning environment latent organization variable includes the following items: 1) values new ideas, 2) a reverse-coded values old ideas, 3) interest in improved processes, 4) open to alternative processes, 5) ease of speaking up, and 6) eager to share what works. The negative learning environment latent organizational variable includes the following items: 1) reverse-coded keep your cards close to your vest, 2) reverse-coded consistent opinions valued, 3) reverse-coded mistakes held against you, and 4) reverse-coded differences of opinion handled privately.

Although the first two latent variables include items exclusively from the Garvin, Edmondson, and Gino's (2008) learning environment block, they also each include items from

the separate components within the block (e.g. items from psychological safety, appreciation of differences, and openness to ideas section). This indicates that the public health officials understand the learning environment in their organization in two ways that, although broadly consonant with Garvin, Edmondson, and Gino's (2008) framework, does not differentiate between openness to new ideas, appreciation of differences, psychological safety, and time for reflection. The second latent variable consists of only reverse-coded items, indicating that respondents might have responded differently to the questions when they were worded in the negative.

For the remainder of the analysis, I use the positive learning environment latent variable as a proxy for learning environment. This is because the negative learning environment latent variable likely captures the same concept as the positive learning environment variable. The two latent variables share several items with high factor loadings. This cross-loading is indicative of commonalities across the two concepts, because "how can the factors be distinct and potentially represent separate concepts when they 'share' variables?" (Hair, Black, Bain, and Anderson, 2010, p. 119). Due to the cross-loading, I do not use the negative learning environment latent variable, and instead rely on the positive learning environment latent variable.

Table 17. Learning organization Chronbach's alpha, factor loadings, and eigenvalue

<u>Organizational Learning Variables</u>	<u>Factor loading</u>		
	<i>Positive learning environment</i>	<i>Negative learning environment</i>	<i>Learning processes</i>
Eigenvalue	3.52	2.24	1.57
Chronbach's alpha	0.87	0.77	0.78
<i>Learning environment</i>			
Psychological safety			
Easy to speak up	0.48	-	-
Mistakes held against you	-	0.56	-
Eager to share information	0.45	-	-
Keep your cards close	-	0.72	-
Appreciation of differences			
Consistent opinions valued	0.76	-	-
Differences of opinion handled privately	-	0.47	-
Open to alternative processes	-	0.69	-
Openness to new ideas			
Value new ideas	0.83	-	-
Value entrenched ideas	0.50	-	-
Interest in improved processes	0.74	-	-
Time for reflection			
Find time to review work	-	-	0.48
Too busy to invest time in improvement	-	-	-
<i>Concrete learning processes and practices</i>			
Experimentation			0.43
Analysis	-	-	0.60
Information transfer	-	-	0.53

The learning processes latent variable included all of the concrete learning processes items included in my survey as well as the “find time to review work” item from the reflection

component of the learning environment block (see Table 17). Along with the 1) find time to review work item, the other three items in the third latent variable include, 2) discusses underlying assumptions item, 3) communicates new knowledge quickly item, and 4) experiments frequently with new ways of working. The third latent variable indicates that concrete learning processes are conceived of separately from the items associated with a supportive learning environment. The find time to review work item, which is listed under the learning environment block in Garvin, Edmondson, and Gino's (2008) framework, itself may have seemed like a process as opposed to an environmental condition to public health officials.

Cronbach's alpha provides a measure of the internal consistency of the three latent variables. All three of the latent variables have an alpha of over 0.75. These latent variables capture coherent concepts that operationalize the concept of a learning organization in this dissertation.

#### Chi-square test

I use the chi-square test to determine if the relationship between the learning organizational environment and health frame is statistically significant (see Tables 18 and 19). Are learning organizational environments going to be more amenable to a broader health frame as compared to organizations that are not learning organizations? The chi-square test "is used when you want to see if there is a relationship between two categorical variables" and if the variables are not normally distributed (UCLA: Statistical Consulting Group, n.d.e). I tested the relationship between each of the latent learning organization variables and the health index variables described in Chapter 5 (environmental health determinants frame, economic health determinants frame, community health determinants frame, and access to health determinants frame). I transformed each of the health index variables to be dichotomous. This means that if an



observation's value fell below the mean of the health index variables then it was coded as zero and if the value was above the mean then it was coded as a one. Similarly, I transformed the two latent organizational variables to be dichotomous. I recoded the observations for the learning environment latent variables so values above the mean were coded one and values below the mean zero. The chi-square tests indicate that both the learning environment variable and the learning processes displayed the same statistically significant relationships to the four health frames (see Tables 18 and 19).

Table 18 reports estimate for the chi-square relationship between the learning environment and the health frame public health practitioners (see Table 18). Having an economic determinants of health frame ( $\chi^2 = 4.70$ ;  $p = 0.03$ ) or community determinants of health frame ( $\chi^2 = 4.33$ ;  $p = 0.04$ ) has a statistically significant relationship to being in an organization considered to be a learning environment. Interestingly, neither the environmental determinants of health frame ( $\chi^2 = 0.98$ ;  $p = 0.32$ ) or the access to care determinants of health frame ( $\chi^2 = 1.86$ ;  $p = 0.17$ ) have a statistically significant relationship to a learning environment organization.

Table 18. Chi-square relationship between learning environment and health frames

		Learning Environment		$\chi^2$	p-value
		No	Yes		
Economic determinants of health frame	No	81	102	4.70	0.03**
	Yes	93	179		
Community determinants of health frame	No	87	112	4.33	0.04**
	Yes	86	166		
Environmental determinants of health frame	No	72	128	0.98	0.32
	Yes	103	151		
Access to care determinants of health frame	No	82	113	1.86	0.17
	Yes	93	167		

\*\*p<0.05; \*p<0.10

Like the learning environment, learning processes have a relationship to the health frames public health practitioners hold (see Table 19). The economic determinants of health frame ( $\chi^2 = 3.90$ ;  $p = 0.05$ ) and the community determinants of health frame ( $\chi^2 = 8.53$ ;  $p = 0.00$ ) have a statistically significant relationship to organizations they consider to have learning processes in place. Again, the environmental determinants of health frame ( $\chi^2 = 0.65$ ;  $p = 0.42$ ) and the access to care determinants of health frame ( $\chi^2 = 0.25$ ;  $p = 0.61$ ) do not have a statistically significant relationship to organizations they have rated highly for learning processes.

Table 19. Chi-square relationship between learning processes and health frames

		Learning Processes		$\chi^2$	p-value
		No	Yes		
Economic determinants of health frame	No	88	91	3.90	0.05*
	Yes	106	161		
Community determinants of health frame	No	100	95	8.53	0.00**
	Yes	92	154		
Environmental determinants of health frame	No	90	106	0.65	0.42
	Yes	104	143		
Access to care determinants of health frame	No	85	104	0.25	0.61
	Yes	109	147		

\*\*p<0.05; \*p<0.10

These findings are aligned with the expectation that broader perspectives on health will be more common in learning organizations than other types of organizations. The “curiosity, openness, and the ability to sense complex problems” associated with learning organizations lend themselves to interaction with scholarship and the broader public health community focused on the social determinants of health (Weick, 1996, p. 148). Public health practitioners who are exposed to the social determinants of health perspective may be situated in organizations that give them opportunities for such exposure and space to discuss the social frame for purposes of sense making. Accordingly, it may be that learning organizations allow tacit knowledge in the form of health frames to be “shared and externalized through dialogue” so that “new concepts are created, and the concepts are justified and evaluated according to their fit with organizational intention” (Choo, 2006, p. xvi). Whether the learning organization influences the health frame or the health frame shapes the organization is not the question. As the qualitative data presented

later in this chapter make clear, the health frame and organizational environment interact to shape each other.

Why is it, however, that two of the social health frames fail to be associated with the learning environment and processes of organizations? Dahlgren and Whitehead (1991) provide a model for the determinants of health that recognizes the impact of genetics and lifestyle as well as the general socioeconomic, cultural, and environmental conditions. The figure they use for the model is one of concentric circles that move from the individual determinants of health to the social determinants of health. The access to care determinants of health may fall closer to the individual end of such a spectrum as opposed to the social. As such, it may be a widely accepted idea that public health practitioners recognize as important regardless of the opportunities for learning that exist in their organizations. Robert et al. (2008), for example, find that after lifestyle and stress, the two determinants of health that the general public most commonly recognize are “a person’s access to affordable health care” and “physical environment.” Maibach et al. (2010) find that the general public understands and responds to the idea that the environment has an impact on health. On the other hand, as Robert et al.’s (2008) research also shows, the economic determinants of health and community determinants of health are two concepts that do not yet have popular recognition. Therefore, they may not yet be common in organizations in which the environment does not allow for a high degree of novel exchange.

Public health departments compared to organizations generally

Garvin, Edmondson, and Gino (2008) surveyed 225 executives of large organizations in 2006 to determine how their organizations would fare on the learning organization assessment tool. As mentioned previously, the learning environment and processes questions in my survey rely on their learning organization assessment tool, though I chose only a selection of the

questions they posed due to my survey's time constraints. This discrepancy between my survey and theirs means that the data cannot be compared exactly because they represent different sets of questions and were collected in different time periods. Since my survey is a subset of their questions, however, it may be worthwhile to get a sense of how state health department officials ranked learning in their organizations alongside the Garvin, Edmondson, and Gino's (2008) senior executives. Table 20 presents benchmark scores presented by Garvin, Edmondson, and Gino (2008) along side of the state health department scores from my survey.

Table 20. Median learning environment scores

	<b>Health Department Scores<sup>a</sup></b>	<b>Garvin et al. (2008) Scores<sup>a</sup></b>
<i>Supportive learning environment</i>		
Psychological safety	82.14	76
Easy to speak up		
Mistakes held against you		
Eager to share information		
Keep your cards close		
Appreciation of differences	71.43	64
Consistent opinions valued		
Differences of opinion handled privately		
Open to alternative processes		
Openness to new ideas	85.71	90
Value new ideas		
Value entrenched ideas		
Interest in improved processes		
Time for reflection	71.43	50
Find time to review work		
Too busy to invest time in improvement		
<i>Learning environment composite</i>	<i>78.57</i>	<i>71</i>
Concrete learning processes and practices		
Experimentation	57.14	71
Analysis	71.43	71
Information transfer	85.71	71
<i>Learning processes composite</i>		

Note. n=464; Cell entries are median values of the scaled scores.

<sup>a</sup>Scaled scores 0 – 100

Acknowledging the discrepancies between the two data sets in terms of the questions asked and the timing of data collection, it is of interest to see that public health officials ranked state health departments higher on average in terms of all but two of the composite areas, to include psychological safety, appreciation of differences, time for reflection, and information transfer. The two composite variables that Garvin, Edmondson, and Gino's (2008) sample ranked higher included openness to new ideas and room for experimentation. The two samples ranked the analysis composite at almost the same level. This comparison serves to illustrate that public health departments as organizations do well on a variety of indicators. The learning environment is especially robust in state public health departments but space for experimentation is lacking. This is not a surprising difference to see between the public and private sector but one that may, nonetheless, play a pivotal role for how ideas are translated into practice in this organizational environment.

### Qualitative findings

In this section, I present the findings from semi-structured interviews with 28 public health officials. Like the idea of health, the complicated nature of organizations necessitated discussion of the subject with public health officials in a format outside of the survey (Finch, 1987, p. 105). By relying on the semi-structured interview method, I was able to create a forum in which state health department officials both responded to specific questions about their organization as well as discussed them generally (Barribal and While, 1994). Public health professionals were able to thoughtfully engage with the interview questions focused on their organizational environment. The long tenures many of them had in the health department meant they were able to provide both a snapshot and longitudinal analysis of their organization and the reasons for those changes.

## Organizational environment

Public health officials described the changes they have seen in their organizations over time in which it became more inclusive and collaborative. Studying organizational change might be reflective of changing ideas of health in the organization so it is of particular interest. Several mentioned inclusivity was a new cultural goal of their health departments, with one health official noting that this has changed in the organization over “the last five years” (F146). One public health official notes, “when I first started working back in ’85 with the state health department we had four offices. Now we’ve got ten” (F525). Another provided a description of the changes they have seen in their organization over the last 30 or so years.

I would say, if I were to say it in one word, its evolving, I think in the 80’s it was the structure where it was more, very numbers oriented, very limited resources, numbers oriented. I would say it has evolved into a culture of more openness that’s one thing, less let me tell you, and more let me hear you, and lets work on this together, yes, and I would say also it’s a culture of service, of a conscience of service and mutual respect... I would say you also have change that’s more science oriented, past 7, 8 years have been a major strike I’ve seen in how our decisions are more science based and less emotional based or less, you know, let me guess based, so it has changed a lot very professional information, more young um professionals are coming to work with the department and understand um, and share with us new advances that what they have learned and technology advances we share with them what it is to have that long term commitment to the public health wellbeing (F672).

A cohesive understanding of the role of public health was recognized by most individuals in the organization. For example, one public health official said “In public health you get a lot of people with many letters after their name, whether they’re MDs, MPHs, or RNs, or FACEPs, or CHES people or you get all sorts of folks, but in the end, I mean we all know what we’re here for and what we’re responsible for and so we work pretty well together” (F600).

One of the commonly mentioned features of health department culture was inclusivity. Inclusivity as part of the culture of the organization is a concept related to, but also separate from, the practices of collaboration and public participation. Some were able to link this



organizational feature to their health frame, with one public health official explaining “that I work to be more inclusive because of my belief that it’s a whole health concept” (F573). One respondent explains that inclusivity “means our staff has the ability to weigh into decision-making” and are “encouraged to teach each other what their skills are while pushing them to their next skill level” (F96). Inclusivity was discussed as a feature of relationships with internal employees and external partners. Several state health officials mentioned that the smaller the size of their state made it easier to be inclusive. For instance, a public health official from a small state explained,

we work very closely together and I think in general the department is like that and not having county health departments we’re sort of like one big county and so I think that might be advantageous to us versus a large, large state with large local health departments (F459).

Inclusivity is a cultural feature that can manifest itself in the structure of the organization. A product of an inclusive culture is that it helps “to break through some of those siloes” by “having people working across” issue areas (F222). This requires “huge coordination between the division to make sure that we have effective turnaround time to meet the public health needs” and a realization that “if public health is affected that we’re all together in it” (F366). A Vermont public health official noted the importance of structure on practice by saying,

we’re a little different in terms of health departments in that all of the research operations, all of the data and policy type of work are centralized into one group...it allows me to connect people up across the department who may not know they’re working on similar things (F423).

A feature of an inclusive organizational culture that public health officials discussed is an openness to ideas and a supportive environment. Where some public health officials recognized the friction or “red tape” associated with being in a governmental organization, others took a stand against that idea. An Arizona public health official said, “I don’t want to be stigmatized as

being in a government agency. So I really look to how we can push barriers and make change happen through new and innovative efforts” (F177). Public health officials explained that a collaborative structure is accompanied by a culture that “allows people to bring forth ideas, propose projects, think a little bit different from traditional methods...so I think we’re a fairly positive environment for learning and proposing new ideas” (F436). Likewise, another described a work environment that is “very supportive, encouraging, we’re very much encouraged to educate ourselves, to go beyond what we do now and look for new opportunities and new approaches to take” (F483). This positive learning environment reflects Garvin, Edmondson, and Gino’s (2008) depiction of the learning environment. It is one with a “relaxed and inviting” culture “that allows people to express their opinions, it allow[s] them to not fear being knocked down, talk about what you think, don’t worry that you’re gonna be pigeon-holed or locked away in some bad, far area where you can’t talk anymore” (F591).

In contrast to the inclusive culture, several individuals indicated that their state health department had a siloed culture. After describing a situation where a colleague in another department notes, “data are supposed to be our area,” one public health official argued, “it’s all of our area. It’s all of ours, it’s relevant to everybody. It not just one. There can’t be, you’ve gotta get away from this territorial domain type of thinking. It’s a silo of mentality” (F524).

The siloed nature of state health departments was sometimes attributed to the role federal funding plays in state health department decision-making. The CDC was a powerful determinant of state health department structure due to mimetic isomorphism on the part of state health departments. The mimetic isomorphism that state health departments display in relation to the CDC is different than if states were merely mimicking each other because of the federal relationship between the two. One health official plainly stated that his health department mimics

the CDC when it comes to organizational structure, explaining “our department is set up into offices which is basically like you know, different, the different centers at CDC, the Centers for Disease Control so we have these different offices” (F525). Another public health official said, “I think that physical separation of programs as well as the way funding is very separately distributed and managed make it difficult to integrate program activities” and that is “largely led by kind of how the federal agencies structures are separated and compartmentalized and I think we kind of follow that model” (F411).

The requirements associated with the federal government’s categorical grant programs leaves little reason for them to interact with other divisions in their state health department when making decisions. A health official who believed his organizational culture was siloed explained, “we’re mostly funded by federal funds by the CDC...and with very little state investment in public health it’s kind of, we have not take care to or add a lot of unifying decisions or policies in the public health division” (F280). Padgett (2005, p. 254) recognized that categorical funding is a barrier to collaborative and nimble state health departments’ ability “to attend to complex issues of population health and infrastructure reform.”

Where those describing inclusive organizations noted the feature of openness, those discussing a siloed organization culture found the organizational structure to limit innovative thinking. For example a public health official said, “state government, I mean it’s not just public health but all of the agencies, they don’t think outside the box” (F516). Nonetheless, he noted that he is working to address this barrier by doing things like putting data “in a format that is useable for people in other fields” (F516). Where the inclusive organization listens to a variety of voices in the organization, the leaders of siloed organizations did not due to their commitment to hierarchy. For example, a public health official noted, “it’s the people in the trenches that I have

a common bond with but it's the higher ups that there's no, there's a disconnect there...over 6 years we did not have one single staff meeting. And it's like, how in the heck are they supposed to know what going on?" (F523).

Some described the values-based culture that defined their health department (F222). Individuals in this culture work hard and are committed to the mission of public health, but often, however, noted the lack of resources. Although both sides recognized the limitations due to a shortage of resources, others believed this contributed to an organizational culture of low morale due to a shortage of personnel (F392). The low morale was also linked to the lack of inclusivity, where "we may not feel that our voices are heard" (F392). Another explained the bureaucratic difficulty of getting approval to travel to a major city in the state in order to engage with the broader public health community. Even after taking several measures to minimize the cost of the trip, he explains, "I still have to go through all of these hoops to do this because somebody think that somebody is taking advantage of the system for some reason. I'm just trying to do my job" (F536). Although most mentioned that this is improving and was a result of the recession where "what we were doing and could do was much more limited" (F423).

A few state health department officials described their organizations as risk averse, which they attributed to the culture of government generally. Some believed government is becoming more risk averse over time. Risk aversion is problematic for practice because "anything that's controversial they'd prefer not to deal with but with environmental health everything is controversial" (F27). This risk aversion is particularly problematic for those with a social health frame. The social health frame recognizes the impacts of society on health. But if

there's certain financial interests that are supporting the economy for example and, they might be polluters and things like that, so when we're calling attention to health effects of this pollution and it would tend to, it tends to affect more the minorities and marginalized

populations in the state...bringing attention to that kind of environmental justice type issue is really difficult (F36).

This is an example of the interaction of organizational dynamics and a health frame to impact practice. The social frame can be a forthright contestation of the status quo so an organizational culture that is averse to risk might make it more difficult to undertake practices reflective of the social frame.

#### Organization's impact on public health practices

In addition to the relationship of the organization to the idea of health, the organization has important implications for the practices public health officials undertake. The organizational structure may impact the practices that take place within the organization. For example, the particular placement of the Medicaid program within the state agency landscape has powerful implications for how public health departments practice. A public health official explains that “public health is a new concept for this health department, frankly, before our current director reorganized the department and created the public health division, the health department was really all about Medicaid” (F323). She went on to explain that this has had a strong impact on the health frame, which she has been trying to move from one focused on health care to one focused on health by “changing the conversation from one that’s about health care, i.e. Medicaid, to health, and what do we do to protect and promote and improve the health of the residents” (F323). Another official discussed how the placement of the public health division as part of a larger agency meant that decisions are focused on health care as opposed to public health. She says,

even though we’re all part of the public health division...we are also part of an agency as I talk about before, that is very focused on health care. I mean you know the Medicaid agency is in our agency. I mean it’s very, and that’s where the attention and the bandwidth goes (F286).

The state health department's relationship to, and reliance upon, local health departments is important to what actions they can take. In epidemiology, "being able to get those samples from the tip of east Tennessee or the tip of west Tennessee into Nashville is quite significant" to treating an outbreak in the state (F366).

When discussing organizational structure, some public health officials used the interview to think through the tensions inherent to problems that simultaneously require cross-cutting solutions and technical expertise. A Massachusetts health official, for example, says, "it's a weakness that we're so focused. On the other hand you have to be focused to do your job effectively but you have to be open to sharing and cooperating with other parts of the department" (F458). A Midwest public health official explained that even if "there are times in any organizational structure that everybody gets stuck in their own little world and we're reminded of that frequently that you know we have to broaden our horizons and look outside our office" (F599). The organizational culture in this instance is not static but constantly negotiated to increase effectiveness.

Budgetary limitations mean that health departments are unable to hire people with the required skillsets for the position and classification of positions higher in the hierarchy, so

you have programs ending up without enough people with the skills to actually manage the program and run the program because the people who could have been recruited into those positions have found that they're blocked from getting an advancement to that level (F312).

Where the leaders of the health department are typically formally educated in the field of public health, the public health professionals that make up the programs in health departments are often not formally trained in the field of public health.

Like most other health departments the majority of my staff learned public health on the job and I have few trained, formally trained, public health professionals. So for the

existing staff...the way that public health was being practice before I came on board was not evidence based, it was really a lot about what program managers had decided would be good things to do in their little place of public health (F323).

## Conclusion

Organizations matter. They matter for the health frames that state public health officials hold and the practices they undertake. This chapter provides both quantitative and qualitative evidence of this. The public health officials who participated in this study, many of long tenure, were able to describe their organizations' evolution over time and recognize the changes they had undergone. The move towards inclusivity and openness, captured in both the quantitative and qualitative data, some said reflected the social health frame. Others, however, did not see such changes in their organizations, and noted that the hierarchy and "red-tape" associated with bureaucracy acted as a limiting factor in allowing new ideas to change the organizational environment and resulting practice.

## Chapter 7. Drivers of practice in state health departments

### Introduction

Public health practice entails the actions taken by public health administrators on a day-to-day basis to improve health. The director of the CDC recognizes that “interventions that address social determinants of health have the greatest potential public health benefit,” yet simultaneously acknowledges the controversy and difficulty in implementing such interventions (Freidson, 2010, p. 594). Little is known about the ideational and organizational drivers of interventions in health departments. This chapter works to address the research question of how public health administrators’ ideas of health interact with the organizational environment of state health departments to influence how they engage in the practices they undertake. The quantitative section of this chapter focuses on three forms of practice widely associated with the social health frame, to include collaboration, public participation, and evidence-use. Greater collaboration, public participation, and evidence use are expected to be associated with a social health frame. I hypothesize that the practices of public health administrators will take place in learning organizations as defined by Garvin, Edmondson, and Gino (2008). The qualitative portion of the survey asks public health administrators to describe the practices they typically undertake and the influences on those practices. Since public health administrators do not practice in a void, the organizational environment is an important mediator of action that is also analyzed in this chapter.

In order to understand the practices taking place in health departments, the survey portion of the dissertation asks state public health administrators to rank the importance of a variety of collaborators, evidence types, and public participation mechanisms. Given Head’s (2008)



differentiation of the lenses used to understand evidence, public participation is one of the lenses used in this dissertation through which evidence can be understood. Public participation data are not typically conceived of as evidence, but it can be constructed as such since it similarly informs decision-making. Wang argues that “participation in decision-making is seen as evidence of ‘genuine’ or ‘meaningful’ participation in the literature” (2001, p. 323). Therefore, it is operationalized under evidence in the quantitative analysis presented in this chapter. The qualitative section of this chapter follows up on the broad relationships outlined in the quantitative section to ask what action do public health practitioners take to improve health. What influences do they lay out as impacting their actions, especially as it pertains to their individual health frames and the organizational environment that they are in? Survey research and follow-up interviews work together to address the nuanced and complicated relationships between organizations and practice.

#### Evidence use, collaboration, and public participation

In exploring the question of how ideas within bureaucracies impact policy making and implementation, the question of the nature of those practices arises. What affects the evidence that is considered important? Which collaborations are public health officials willing to engage in? What do they see as the practices that reflect their ideas of health? Or, if a myriad of public health scholars are pushing for specific types of practices, by what are the factors that shape those practices? In order to answer these questions, it is important to study the drivers of public health practice in state health departments.

I propose that the ideas of state public health officials situated in learning organizations will be reflected in public health practice to a greater degree than the ideas of officials in conflict resolution organizations. State public health administrators’ health frame, organizational

environment score, demographic variables, professionalization, level of education, and political ideology are included in the statistical model. Research into this area is important to understanding the role of health departments within the public health system, given that relatively little is known about what affects the practices of people in those health departments.

A statistical model was used to explore the ideational and organizational factors that might affect practice in state health departments. I used statistical techniques similar to those presented in Chapter 6 to study the relationship between organizations and health frames and public health practice. In the statistical model, practice was operationalized as evidence-use. The demographic variables and political ideology were included in the model to act as control variables. Using the evidence respondents ranked in the survey, I condensed the 16 specific types into four categories using factor analysis. The dependent variable in this statistical model was the importance of various types of evidence to decision-making, and the independent variables were health frame, learning organization scores, and control variables in the form of demographics, political ideology, and professionalization.

The qualitative portion of this chapter pursues the types of practices public health practitioners pursue to meet their goal of improving public health and the influences on such practices. The in-depth, semi-structured interviews serve as the primary data for studying influences on practice in the health department. The very complicated nature of practice and the lack of information as to the types of practices public health practitioners associate with a given health frame make the semi-structured interview the optimal data collection method.

## Quantitative findings

### Descriptive statistics of the importance of evidence, public participation, and collaboration

Tables 21 and 22 present the mean importance and standard deviation of different types of evidence, public participation mechanisms, and collaborations as important to decision-making, where evidence types, including publication participation mechanisms, were ranked on a scale of 1-4, collaborative opportunities were ranked on a scale of 1-7. Responses to these questions were negatively skewed because respondents ranking these practices were concentrated on the high end. The propensity to rank these practices as important is not surprising due to increasingly common calls for evidence-based decision-making and collaborative practices.

Table 21 presents the mean and standard deviation for various types of evidence in terms of their importance to decision-making in the office. Office is defined as the immediate work unit in which the respondent is located. Surveillance data<sup>26</sup> has the highest average importance with an average score of 3.7, and simulation data<sup>27</sup> has the lowest average importance with an average score of 2.2. The highest mean for surveillance data is to be expected because it is often collected to improve public health outcomes specifically and has a long-established history within the field. Teutsch and Churchill note that public health professionals have been collecting surveillance data since the bubonic plague (p. 1).

The next most important types of evidence to decision-making in the office reflected the commitment to quantitative measures on the part of public health officials. Quantitative methods

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<sup>26</sup> The CDC defines public health surveillance as “the ongoing systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation, and evaluation of public health practice” (Thacker and Berkelman, 1988, p. 165).

<sup>27</sup> Simulation data “mimic the real data characteristics of interest in any given setting” (Demirtas, Hedeker, and Mermelstein, 2012, p. 3337).

have traditionally been the method of choice in public health (Baum, 1995). This perspective, however, introduces deeper epistemological questions over the way health is conceived. Baum argues that “the biomedical model is firmly within a positivist paradigm” whereas constructivists emphasize “holistic understanding and the importance of context” (Baum, 1995, p. 461). Certain methodologies align more easily with these paradigms over others. “Methodology could, then, be important in shifting health policy and planning methods toward a greater focus on health” (Baum, 1995, p. 462). The survey results indicated that the importance of quantitative-measures evidence were systematic review data with a mean of 3.5, performance measurement goals with a mean of 3.4, survey data with a mean of 3.3, and cost and economic data with a mean of 3.3.

Outside of simulation data, the lowest means were in relation to public participation mechanisms. Neighborhood meetings had a mean of 2.3, social media a mean of 2.5, public hearings a mean of 2.7, and citizen advisory councils a mean of 2.8. “The push for more participation in matters related to health reflects a disenchantment with the notion of the expert who knows what is best for a given community and from a sense that health improvement will only result from initiatives that are embedded in local knowledge and have local support” (Baum, 1995, p. 462). The public health officials responding to this survey, however, did not find public participation evidence to be very important to the decisions they make.

In contrast to participatory methods, yet similarly ranked in importance, simulation data was rated as the least important type of evidence for making decisions. This may be due to the fact that simulation methods are relatively new, especially in applied spaces such as health departments (Rushton, 2003).

Table 21. Importance of evidence for decision-making

<i>Types of evidence</i>	<i>Mean<sup>a</sup></i>	<i>SD</i>
Surveillance data	3.7	0.6
Professional "best practice" guidelines	3.6	0.8
Systematic review data	3.5	0.8
Performance measurement goals	3.4	0.8
Program evaluations	3.4	0.9
Professional ethical guidelines	3.4	1.0
Survey data	3.3	1.0
Cost and economic data	3.3	1.0
Qualitative data (interviews, focus groups, etc.)	3.0	1.1
Citizen feedback/input	3.0	1.1
Case-based learning	2.9	1.2
Citizen advisory councils	2.8	1.2
Public hearings	2.7	1.3
Social media	2.5	1.3
Neighborhood meetings	2.3	1.3
Simulation data	2.2	1.3

Note. n=466

<sup>a</sup>Scale 1-4

Table 22 presents the mean and standard deviation for the accuracy of whether respondents have the opportunity to meet with and learn from various partners or collaborators on a scale of 1-7. The highest average score is for meeting with, and learning from, experts from other offices within the respondent's department, and the lowest average score is for members of the governor's office. Padgett (2004, pp. 254-255) found that state health departments were unlikely to build partnerships with the governor's office, although it provides "the opportunity for direct involvement with policy development and budgetary decision-making," because "this proximity to power" is subject to change and uncertainty at regular intervals." The same power

that could be beneficial to a health department can prove to be problematic with the introduction of another governor. A study that measured evidence-based decision-making in Mississippi and Kansas found that “communication with policymakers” was one of their competency gaps (Jacobs et al., 2012, p. 6).

Experts were listed as the most accurate opportunity for collaboration, which again falls into the long history of professionalism in public health. Whereas Grizzell recommends “community and neighborhood collaboration” as a means of addressing the social determinants of health, it seems that health departments recognize more opportunities to work with experts as opposed to members of the general public or members of advocacy groups (Frieden, 2010, p. 590).

Table 22. Accuracy of opportunities for partnerships

<i>Types of Partners</i>	<i>Mean<sup>a</sup></i>	<i>SD</i>
Experts from other offices in this department	5.7	1.4
Experts from other departments	5.4	1.4
Experts from outside the organization	5.7	1.3
Clients	5.0	1.5
Members of the general public	4.8	1.6
Legislators	4.2	1.9
Members of advocacy groups	5.2	1.6
Members of the governor's office	4.2	2.0

Note. n=457

<sup>a</sup>Scale 1-7

Dependent variable: Importance of evidence use

The statistical model relating ideas and organizations to practice operationalizes the dependent variable *practice* by using the importance of evidence use as a proxy. The list of the evidence types included in the survey was developed following a review of multiple studies

assessing evidence use (Jacobs et al., 2012; Head, 2008; Victora, Habicht, and Bryce, 2004). The resulting list of evidence types (see Table 21) includes surveillance data, professional “best practice” guidelines, systematic review data, performance measurement goals, program evaluations, professional ethical guidelines, survey data, cost and economic data, qualitative data, citizen feedback, case-based learning, citizen advisory councils, public hearings, social media, neighborhood meetings, and simulation data. Respondents ranked the importance of each of these types of evidence on a seven-point scale, which was used to develop the dependent variable using factor analysis as described in the next section.

*Factor analysis of the importance of evidence types*

I used factor analysis to determine the underlying structure for the importance attributed to the sixteen different types of evidence. This was necessary in order to reduce the number of variables to be explored. As described in Chapter 5, factor analysis is a useful quantitative method that helps develop parsimonious factors that reflect the nature of the relationship in the data (Bruce, 2004). The factor analysis reduced the sixteen evidence variables down to four latent variables, which served as the dependent variables in the multivariate regression model presented in this chapter. Eigenvalues, factor loadings, and Cronbach’s alpha values helped determine the number of latent variables to include in this model. The Chronbach’s alpha values, presented in Table 23, confirmed that there was internal consistency in each set of items associated with a factor.

I conducted exploratory factor analysis on the seventeen evidence use items using a polychoric correlation matrix followed by an orthogonal rotation (DeVellis, 2011, p. 133; Tinsley and Tinsley, 1987, p. 421). Four latent variables were found to underlie the 16 evidence types based on eigenvalues and the scree plot (Zhu and Ghodsi, 2005, p. 918). For this model,

the threshold eigenvalue was 1.0 with the exception of one latent variable (DeVellis, 2011, p. 128; Kaiser, 1960). Although this latent variable's eigenvalue was less than one, the items that constituted it aligned theoretically. Therefore, I decided to include it in the measurement model for the confirmatory factor analysis to test its appropriateness as a latent variable. The eigenvalue for this latent variable was 0.87. In addition, systematic review data as an evidence use item did not meet the 0.3 factor loading score threshold to be associated with the latent variables and, therefore, was not included (Tinsley and Tinsley, 1984, p. 421). Although 0.3 is the threshold factor loading score for items to be associated with a latent variable, factor loadings for most of the items exceeded 0.4 (Merenda, 1997; Hair, Anderson, Tatham and Black, 1998, p. 111; see Table 23).



Table 23. Evidence use factors: Chronbach's alpha, factor loadings, and eigenvalue

Evidence variables	Factor loading scores			
	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>	<i>Factor 4</i>
Eigenvalue	2.90	1.69	1.19	0.87
Chronbach's alpha	0.84	0.69	0.61	0.66
<i>Public Participation</i>				
Citizen feedback/input	0.81			
Citizen advisory councils	0.80			
Neighborhood meetings	0.60			
Public hearings	0.57			
Social media	0.46			
<i>Performance</i>				
Program evaluations		0.70		
Performance measurement goals		0.68		
Cost and economic data		0.36		
Simulation data		0.35		
<i>Data</i>				
Survey data			0.63	
Qualitative data			0.60	
Surveillance data			0.32	
<i>Professional</i>				
Professional "best practice" guidelines				0.50
Professional ethical guidelines				0.49
Case-based learning				0.45

Confirmatory factor analysis is a statistical method that allows for confirmation of the exploratory factors developed in the exploratory factor analysis.<sup>28</sup> I expected there to be four latent variables associated with the evidence variables, to include public participation evidence, performance evidence, data, and professional evidence. The evidence types that were included in

<sup>28</sup> I used the Amos software graphic interface to test the measurement model that I generated based on the findings of the exploratory factor analysis.

each of these latent variables are presented in Table 21. A visual of the confirmatory factor analysis measurement model is presented in Figure 15, with the arrows indicating the expected relationship between the items. The error variable associated with each item is not depicted in Figure 15. The evidence measurement model is over-identified, which means that there is sufficient data to run the analysis for the measurement model I am proposing (Hair, Black, Babin, and Anderson, 2010, p. 676). The comparison of the number of unique variances and covariances (84) to the 36 parameters in the model confirms that it is over-identified.

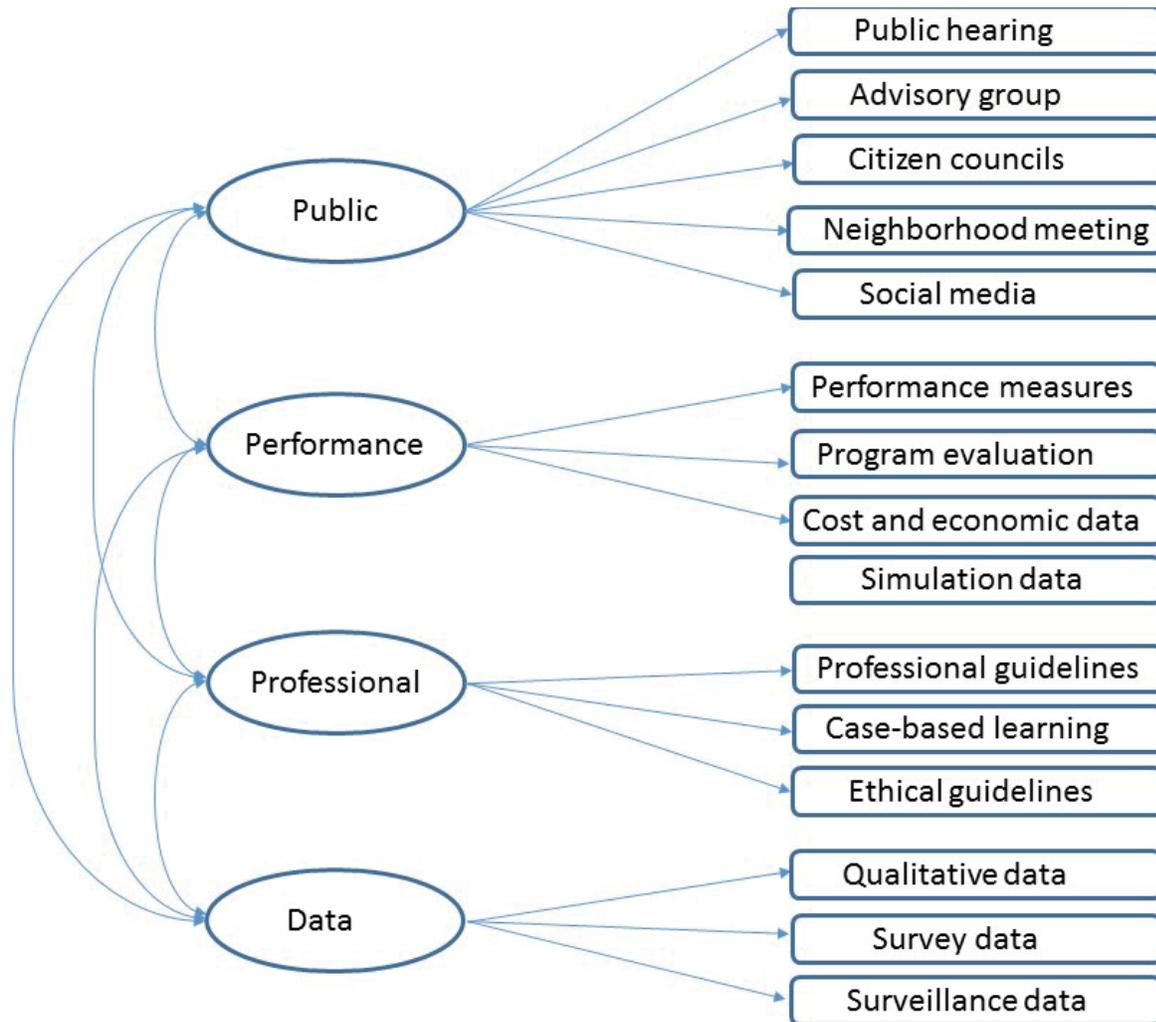


Figure 15. Confirmatory factor analysis: Measurement model of the importance of different evidence types

This measurement model's fit indicators confirm that the proposed four latent variables fit the empirical results of the confirmatory factor analysis using Hair et al.'s suggested cut-offs for goodness-of-fit (2010, p. 684; see Table 24). The incremental fit indicator Comparative Fit Index (CFI) compares the ratio of the difference between the chi-square values for the fitted model and null model (Hair et al., 2010, p. 650). The Incremental Fit Index (IFI) updates the Normed Fit Index by adjusting for "sample size and for the degrees of freedom of the maintained

model” (Bollen, 1989, p. 314). With a CFI value of 0.92 and an IFI value of 0.92, the model surpasses the 0.90 value that is “usually associated with a model that fits well” (Hair et al., 2010, 650). The PRATIO indicates that this model is 30% more parsimonious than the independence model (UCDHSC, 2006, p. 11).

As opposed to providing comparisons between the independent and saturated models, the absolute fit indicators compare the data to the proposed measurement model. The discrepancy between the data and the model indicated by the large chi-square statistic can be disregarded because it is due to the large sample size of the data (Hair et al., 2010, p. 654). The Root Mean Square Error of Approximation (RMSEA) is a better measure of the discrepancy because “it explicitly tries to correct for both model complexity and sample size by including each in its computation” (Hair et al., 2010, p. 655). With a recommended threshold of 0.08 for the measure, this model has a value of 0.07. The combination of comparative and absolute fit indices indicates that this model fits the data well. The four latent variables were included in follow-up statistical analysis as an index of the items that make up the latent variables (DiStefano, Zhu, and Mindrila, 2009, pp. 2-5; Hair et al., 2010, p. 123).

Table 24. Evidence-use confirmatory factor analysis model fit indicators

<i>Model fit indicators</i>	<i>Health CFA Model</i>
$\chi^2$ (CMIN)	260.31
CFI	0.92
IFI	0.92
NFI	0.89
PRATIO	0.70
RMSEA	0.07

### Independent variables

The independent variables included in this multivariate evidence-use regression model have been discussed in the previous two chapters. The control variables include education, gender, age, minority status, and political ideology (see Table 25). The predictor variables of interest include two variables measuring organizational environment and four variables measuring public health practitioners' health frames. Gender, minority status, political ideology, and age appear in this model as they did in Chapter 5. The descriptive statistics for the independent and dependent variables are presented in Table 25.

As mentioned in Chapter 5, the values for the determinants of health variables are large because they were transformed in order to meet assumptions of normality. The descriptive statistics for this model do not vary significantly from the overall descriptive statistics.

Table 25. Descriptive statistics for independent and dependent variables in evidence use models

	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>Independent variables</i>				
Economic health	787.31	330.65	27.00	1728.00
Environmental health	796.35	333.40	12.70	1728.00
Access to health	910.50	372.13	8.00	1728.00
Community health	75.32	25.21	4.00	144.00
Education	3.29	1.02	1.00	6.00
Gender	0.62	0.49	0.00	1.00
Age_1	0.18	0.38	0.00	1.00
Age_2	0.71	0.46	0.00	1.00
Age_3	0.07	0.25	0.00	1.00
Minority status	0.15	0.36	0.00	1.00
Political ideology	37.55	22.11	0.00	100.00
Learning environment	5.80	0.96	1.33	7.00
Learning processes	4.91	1.14	1.00	7.00
<i>Dependent variables</i>				
Performance evidence	29.88	0.65	27.75	31.00
Public participation evidence	29.29	0.95	27.00	31.00
Research evidence	30.26	0.70	27.33	31.00
Professional guidance evidence	30.16	0.72	27.00	31.00

#### Multivariate regression model

The goal of this multivariate regression model is to see how the health frame and organizational environment affect the practices public health officials undertake. In this model, practice is the dependent variable and is operationalized as evidence use. The statistical analysis so far in this chapter has helped to discern the four latent variables that underlie evidence use in the form of performance evidence, public participation evidence, research evidence, and

professional guidance evidence. Since there are four dependent variables, I used multivariate multiple regression, which allows for multiple dependent variables (Hidalgo and Goodman, 2013, p. 39). The following formula presents how the predictor variables ( $X$ ), y-intercepts ( $\beta$ ), dependent variables ( $Y$ ) and error terms ( $\epsilon$ ) interact.

The model for this chapter is as follows,

$$\begin{bmatrix} \textit{Performanc ev (Perf)} & \cdots & \textit{Research ev (Data)} \\ \vdots & \ddots & \vdots \\ \textit{Public participation ev (Public)} & \cdots & \textit{Professional ev (Prof)} \end{bmatrix} = \begin{bmatrix} X_{\textit{Perf}1}\beta_{\textit{Perf}1} & \cdots & X_{\textit{Data}2}\beta_{\textit{Data}2} \\ \vdots & \ddots & \vdots \\ X_{\textit{Public}1}\beta_{\textit{Public}1} & \cdots & X_{n \times (r+1)}\beta_{(r+1) \times p} \end{bmatrix} + \begin{bmatrix} \epsilon_{\textit{Perf}} & \cdots & \epsilon_{\textit{Data}} \\ \vdots & \ddots & \vdots \\ \epsilon_{\textit{Public}} & \cdots & \epsilon_{\textit{Prof}} \end{bmatrix}$$

*Normality, homoscedasticity, outliers, and collinearity*

An initial review of the data in this model was followed by model checking to ensure that the model did not violate the assumptions associated with regression analysis. Examination of the kernel density plots, histograms, and model’s residuals indicated that the initial model did not have a normal distribution. Given the importance attributed to evidence-use in today’s environment, it is not a surprise that the model’s results were negatively skewed. Since the model residuals were not normally distributed, the data needed to be transformed to help it meet the assumptions associated with normality. Testing indicated that changing the age variable to a dummy variable would improve the distribution of the data.

Visual analysis of the residual-versus-fitted plots indicated that the data were not heteroskedastic despite the presence of a number of outliers (Daye, Chen, and Li, 2012, p. 321). Both visual data plots and statistical tests are important to assessing a model’s data characteristics. Although some tests for heteroskedasticity indicated equality of variance might

be a problem for these models, my review of the data plots determined it to not be. Outliers, however, proved to be problematic for this model. Outliers strongly influence statistical models, as demonstrated by Cook's Distance measure of overall influence and a leverage measure. After analyzing data graphs and reviewing leverage and Cook's Distance, I dropped eight outlying observations based on their residual score, which helped the residuals meet the assumptions of normality. This was confirmed by the Shapiro-Wilks and Skewness-Kurtosis tests of normality as well as through a visualization of the data against a normal quantile plot.

One possible concern was that the statistically significant relationship between certain health frames and the organizational environment presented in Chapter 6 might be problematic in terms of collinearity. However, the model's variance inflation factor readily missed the cutoff value of ten for problematic VIFs with a value of 1.80 (Stine, 1995, p. 53). Therefore, multicollinearity was not considered to be a problem in this model.

#### *Model results*

Table 26 reports multivariate regression model estimates. Multivariate regression models show the relationships between each of the independent variables and each of the dependent variables as well as the relationships between the independent variables and all four of the dependent variables. The results for the relationship of the independent variables to each of the dependent variables and the relationship of the independent variables to all four dependent variables are presented in Table 26.

Whereas for certain independent variables there was a statistically significant relationship with each of the dependent variables, for others there was a statistically significant relationship with only some. This indicates that the same variables are not necessarily linked with each type of evidence use. For the performance evidence model (see Table 26), the environmental health



frame ( $\beta = 0.00$ ,  $p = 0.02$ ), community health frame ( $\beta = 0.00$ ,  $p = 0.06$ ), political ideology ( $\beta = 0.00$ ,  $p = 0.02$ ), educational level ( $\beta = -0.08$ ,  $p = 0.02$ ), gender ( $\beta = 0.31$ ,  $p = 0.00$ ), minority status ( $\beta = 0.22$ ,  $p = 0.02$ ), and two of the age dummy variables ( $\beta = 0.34$ ,  $p = 0.06$ ;  $\beta = 0.30$ ,  $p = 0.07$ ) were statistically significant. For the public participation evidence model (see Table 26), the community health frame ( $\beta = 0.01$ ,  $p = 0.01$ ), gender ( $\beta = 0.22$ ,  $p = 0.06$ ), minority status ( $\beta = 0.35$ ,  $p = 0.02$ ) and the middle age variable ( $\beta = 0.58$ ,  $p = 0.00$ ) were statistically significant.

For the research evidence model (see Table 26), the community health frame ( $\beta = 0.00$ ,  $p = 0.08$ ), learning environment ( $\beta = 0.15$ ,  $p = 0.01$ ), gender ( $\beta = 0.18$ ,  $p = 0.04$ ), and minority status ( $\beta = 0.23$ ,  $p = 0.04$ ) were statistically significant. For the professional guidelines model (see Table 26), the community health frame ( $\beta = 0.01$ ,  $p = 0.02$ ), learning processes variable ( $\beta = 0.12$ ,  $p = 0.01$ ), political ideology ( $\beta = 0.00$ ,  $p = 0.03$ ), gender ( $\beta = 0.26$ ,  $p = 0.00$ ), and two of the age dummy variables ( $\beta = 0.50$ ,  $p = 0.01$ ;  $\beta = 0.52$ ,  $p = 0.03$ ) were statistically significant.

Table 26. Evidence models results

<i>Evidence models</i>	<i>Performance</i>	<i>Public Participation</i>	<i>Research</i>	<i>Professional Guidelines</i>
Economic health	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Environmental health	0.00** (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Access to health	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Community health	0.00* (0.00)	0.01** (0.00)	0.00* (0.00)	0.01** (0.00)
Learning environment	0.07 (0.05)	0.02 (0.08)	0.15** (0.06)	-0.00 (0.06)
Learning processes	0.04 (0.04)	0.07 (0.06)	0.01 (0.05)	0.12** (0.05)
Political ideology	0.01** (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00** (0.00)
Education	-0.08** (0.03)	-0.04 (0.05)	0.03 (0.04)	-0.05 (0.04)
Gender	0.31** (0.07)	0.22* (0.12)	0.18** (0.09)	0.26** (0.09)
Minority status	0.22** (0.09)	0.35** (0.15)	0.23** (0.11)	0.15 (0.11)
Age_1	0.34* (0.18)	0.31 (0.28)	-0.08 (0.20)	0.34 (0.21)
Age_2	0.30* (0.16)	0.58** (0.26)	-0.07 (0.19)	0.50** (0.19)
Age_3	0.21 (0.20)	0.30 (0.32)	-0.06 (0.24)	0.52** (0.24)

Construct	28.27** (0.31)	27.44** (0.49)	28.97** (0.36)	28.50** (0.36)
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Note. Cell entries are regression coefficients. Standard errors are reported in parenthesis.

\*\*p<0.05; \*p<0.10

The pseudo R square statistic for this model, although weak, accounted for between 14% and 26% of the variation in these models. The data, however, fit these models well as indicated by the significant p-values, at a value of 0.00, for each of the models (see Table 27).

Table 27. Evidence use model fit indicators

<i>Equation</i>	<i>"R-sq"</i>	<i>F</i>	<i>P</i>
Performance evidence	0.26	7.59	0.00
Citizen evidence	0.14	3.57	0.00
Research evidence	0.14	3.51	0.00
Professional guidance evidence	0.17	4.37	0.00

The relationship of the independent variables to all four of the dependent variables as a whole gives a better sense of the relationship between organizations, ideas, and practices, than the relationship to each of the dependent evidence variables individually. The Wald test analyzes the relationship of a given independent variable to the entirety of the four dependent variables. The Wald test finds that all of the demographic control variables are statistically significant in their relationship to evidence use, including political ideology, educational level, gender, minority status, and age (Kyngas and Rissanen, 2001, p. 774).

There was a weak positive relationship between individuals self-reporting as more conservative and public participation evidence, professional guidance evidence, and performance evidence as important to decision-making. Female, minority, and middle aged public health

officials have a positive relationship with evidence being considered important. There was a positive association between the learning environment and ranking evidence as important. Of the four health frames, there was only a statistically significant relationship between the community health frame and the ranking of evidence as important.

There was a negative relationship between educational level and ranking evidence as important to decision-making, which means public health professionals with higher levels of education consider evidence less important to decision-making. Lizarondo, Grimmer-Somers, and Kumar (2011, p. 264) find that higher levels of education are associated with increased self-reported evidence use in several allied health professions but not mental health. Public health practitioners with higher levels of education may be skeptical of evidence based practice given the subjective nature of evidence. This is a surprising finding that requires further research.

Table 28. Wald test statistics on multivariate evidence use model

<i>Independent variables</i>	<i>F statistic</i>	<i>P-value</i>
Economic health	0.26	0.91
Environmental health	1.93	0.11
Access to health	1.46	0.21
Community health	3.58	0.01**
Learning environment	2.44	0.05*
Learning processes	1.66	0.16
Political ideology	6.48	0.00**
Education	2.40	0.05*
Gender	5.39	0.00**
Minority status	2.19	0.07*
Age	1.71	0.06*

## Qualitative findings

In this section, I present the findings from 28 semi-structured interviews exploring the drivers of public health practice. Interviewees discussed the practices they take part in on a day-to-day basis as well as the influences on those practices. I expound on the themes associated with practice using qualitative data analysis. The semi-structured nature of the interviews is particularly necessary for the public health practice because linking practice to its drivers requires open and nuanced discussion of the motivations underlying public health administrators' actions.

### Practices of public health administrators

I opened each interview by asking practitioners to provide me with an overview of the work that they perform in their role at the health department. This open ended question was a way to get a sense of the types of practices that the public health administrators take part in.

Several public health officials explained that the practices they undertake are “more administrative than anything” (F594, F290, F2). By explicitly claiming the title of “administrator,” they listed a myriad of activities they considered to be part of the administrative landscape (F261). Although much of the interview included discussion of the concept of public health, discussion of practices did not often include an explicitly stated link to public health improvement but instead was implied. For an Oregon health official, being an administrator meant, “I make strategic decisions, strategic priority decisions, planning, a lot of resource decisions with money, staff and partnerships.” (F261). A West Virginia public health official focused on structural decisions that explicitly linked to health. She/he explained that his/her decisions “include playing at the structural design of the office” and “administratively taking care of oversight for personnel selection as well as the program...what sort of programmatic

incentives we provide to the public for prevention of sexually transmitted disease for instance” (F101).

Budgetary decisions proved to be a prominent component of the work that these public health officials focused on, especially stemming from the economic recession of recent history. A Wisconsin health official said, the “majority of my decisions in recent years revolve around prioritizing what we can do with the funding that’s available...to have the greatest impact on preventing illness and disease related to environmental and occupational health” (F396). Some officials did, however, make the link between their practices and public health outcomes; as an Illinois official said, “the majority of the decisions that are made on a daily basis are administrative in nature, making sure the programs continue to operate as they’re supposed to, answering questions about grantees and others as well as answering questions from the public about efforts to do health promotion” (F594). Public health officials often discussed the need to address personnel issues as a prominent part of their job. Several complained that individuals entering the health department did not have public health training. For example, one public health official said the biostatisticians were well versed in computer software but “they don’t have a very broad education” (F311).

Given the importance of categorical federal funding to state health departments, as discussed in Chapter 6, it was not unexpected that several public health officials described administration in terms of grant administration. As the “principal investigator” of a grant, a West Virginia public health official said, “I’m making program decisions as well as structure and financial oversight. And that’s of course administrative and personnel” (F100). Another detailed grant administration as, “budgetary – so grants and contracts – both applications and monitoring and tracking of received grants and contracts...review of data reports...reviewing methodology

used by the staff” and collaborative meetings (F419). The role of grants in state health departments means that administrative discretion was as much a product of the federal government funding as the state health department in which a public health official is situated. A state health department official described how the federal government provides her guidelines for her program’s funding, “so I think they’ve defined the bigger picture and even put out some performance measures for each capability. And then it’s up to the state with its partners to come up with the strategy for how do you accomplish all of that work” (F209).

Research was another commonly described practice of public health officials (F524). Some public health officials provided overarching research guidance to their division to “make this data relevant for people so they use it” (F528). Others simply focused on data collection by “basically ensuring data, that data are collected, that they are quality, that they are available to people” (F605). Data collection alone proved to be a minimal piece of research. Several mentioned diving into the details of research, by checking the “appropriateness of test methodology, the logistics of how testing can be done from a public health standpoint, applicability from a public health standpoint, cost effectiveness, staffing requirements to meet the needs for the state” (F350). These methodological decisions made by administrators have an impact on “the work of others” in their office and beyond (F374). The “beyond” includes the oft-communicated need to communicate research outside the boundaries of the health department. After making “decisions about how to collect data,” a data manager noted the importance of communication by focusing on the question of “what and how we’re gonna communicate with hospitals, local health departments?” (F463).

Planning and collaboration seemed to be a focus of several public health officials, especially those situated in the subfields of environmental health and emergency preparedness. A

California health official explained, “so we write operational plans, we make decisions about how those plan are going to work. We make decisions about how funding is going to be spent” (F207). The end goal of planning is to affect practice. Those that mentioned planning then discussed how the plan plays a role in day-to-day decision-making. “And so what I do every day is try to make sure we have day to day capacity in different areas and that we’re all talking to each other so that we understand what the capacity is, we understand across the department what we need to do to respond” (F215).

The final broad practice area was communication. Although I spoke to public information officers leading the office of communications, communication was discussed by many outside of that office. The importance of communication to public health meant that it was part of the practice of many public health officials. Whether they were going to “meet with high level people to look at policies that we may want to implement and how to go about communicating” or translating a public health notification into 7 different languages to promote health throughout a community, communication was a practice that was dispersed throughout the organization (F563; F662).

#### Influences on public health practices

State public health officials discussed the factors that influenced their practice. They were asked to specify types of influences, such as the idea of health, as well as provided space to share their own viewpoint. Their discussion of the influences was intricate. They recognized the impact of their immediate day to day organizational environment and their personal preferences. They made mention of the organizational processes, resource limitations, partnerships, and other factors that influenced their day to day functioning. In addition, however, they often focused on the context of the organizations in which they were situated and the political environment in



which state public health organizations function. As noted in the discussion on organizations, the contextual factor that they most often pointed to influencing their practice was the relationship of the state health department to the federal government via federal funding.

#### *Impact of ideas*

When pointedly asked about the influence of their idea of health on practice, respondents were able to identify coherently the role it plays in their decision-making, discern the limitations precluding it from playing a larger role, and link it to other factors that influence their practice. The majority of interviewees believed that their idea of health played an important role in their decision-making but cautiously listed other factors that were either similarly important or more important. Most limited their discussion of the impact of the idea of health to one that is “the framework in the background that we’d be approaching those issues” with (F16). A state public health official straightforwardly said, “I make decisions almost every day that have to have the understanding of health as part of that decision-making process” (F667).

For others, however, the health frame was not in the background. Instead, the health frame was their primary means for thinking about public health practice, as the following quote demonstrates:

the spectrum of prevention and then also the socio-ecological model are theoretical models that I use regularly and so for me that’s an alignment with my perspective on health because I believe that we have to be firing kind of at all of those levels from, at the very high level, the state policy we have to have the right national and state policies in place and we have to align them in a way that then links to the other levels right down to the individuals (F691).

A few individuals with the social frame discussed how they or their larger organization had undergone a transition in the way they understood health in the last 5 to 10 years, one that is increasingly focused on the social determinants of health (F357; F430; F520).

Some who understood the health frame to be a “background framework” discussed their practices without acknowledging the built-in assumptions about the determinants of health. For example, an environmental health state public health official noted “that for the people to live in healthful environments, it takes a lot of work at the community level – your community being your neighborhood or church or pool or your county or city that is, that takes a lot of time and effort to effect change at that level” (F263). This broad conception of the role of environmental health takes into account the social determinants of health without explicit mention of the impact of his ideational frame on practice. Although many public health officials seemed to be reflective when analyzing the impact of their health frame on practice, several discussed their ideas of health and the practices they undertook as two separate concepts.

Given the recognition of the impact of ideas on practices by most interviewees, what were the ways in which public health officials understood this impact? When developing “an intervention strategy,” one public health official noted: “I probably lean in that direction because that’s my background and philosophy and, I believe, the way public health is moving” (F106). Another noted that her health frame shapes the way she manages employees: “I do raise questions about, ok it’s great to know that X% of Vermonters have diabetes, but what’s the relationship to health? What’s the relationship to depression? What’s the relationship to employment status?” (F432). A director of a tobacco prevention and control program expounded on how such a “leaning” can impact practice because she was

very reluctant to use resources on things that might be more one-on-one focused, you know individually focused. It’s certainly important for people to smoke to have support in quitting tobacco and that might mean some one-on-one counseling. I focus our resources more on getting our resources to that community to make it supportive of helping that person quit tobacco rather than the individual...I’m very careful to make sure that they are being used to create conditions in communities that are supportive of health and not as focused on the individual. And that is political (F270).

This state public health official explicitly recognizes the relationship of her health frame to the practices she undertakes. The all-encompassing manner in which the health frame can impact practice was echoed by an Oregon health official, who said,

Well we try to incorporate it into everything that we do. So that when we are granting money out to communities, their work plans need to show how they are addressing health equity and health disparities at the look. So resources are constantly being channeled into those areas instead of others. Our data, we invest significant resources in race and ethnicity oversample for data collection. We fund regional equity coalitions to focus on disparities at the regional level and work with all the partners we talked about before to, for the roots of health disparities. We try to target our messages as best we can to groups that are experiencing disparities. We, when we analyze policy initiatives, we make sure that these are, again, these are initiatives that are not going to leave anyone out and they have the broadest reach that they possibly can and doesn't have unintended consequences.

These few public health officials were able to link their health frame to all facets of their practices. Even in those practice areas that were not amenable to such change they still push to do the “best we can.” Others, however, recognized only a few practices impacted by their social health frame such as collaboration and data collection.

Public health officials with a social health frame took part in collaborative practices as a means of linking their practices with other health departments, agencies, and entities addressing the broad determinants of health (F563). In this sense, public health officials recognized how their social health frame necessitated relationship building with entities outside of their own office and bemoaned that public servants generally “don’t think about collaborations” (F516). An Arizona health official with a social frame explained that her idea of health is based on her own “collaborative mindset,” and an Illinois public health official observed that if “you ignore all those different perspectives...people are gonna feel frustrated because of unresponsiveness and the program will ultimately fail” (F162; F621). A director responsible for newborn screening explained that “we are somewhat unusual in that we reach out to other programs that deal with families with young children within the department that try to collaborate together” (F470).

Another puts his collaborative practices squarely in the space of his social health frame by saying, “I’m not real supportive of programs that go after individual health challenges, healthy housing for example is a nice, more comprehensive concept to dealing with a broad array of health issues” (F406). These comments all acknowledge both the broad determinants of health and the limitations inherent to a state health department. By reaching out to those agencies or organizations with expertise in the determinants important to a given program’s focus area, those with a social health frame can better address such issues.

Data collection proved to be another practice area that state public health officials said was shaped by their health frame. As public manager of the Behavior Risk Factor Surveillance System (BRFSS) put it,

I’m trying to add questions on there...you know asking questions about social determinants of health...I just gave out some data yesterday...and it dealt with social context and like, how often you worried about having enough money to buy nutritious meals and another question is how often do you worry about being able to have enough money to pay your rent or mortgage type thing. Well these are necessarily health issues (F520).

Another Illinois health official recognized the important of using “data to look at different disparities of how people are affected according to certain demographic variables,” but also worried that the emphasis on evidence can lead health departments “to become stove-piped too because it’s hiding larger issues, like our, the way our society is organized and what resources are available to different social strata” (F618).

Some public health officials noted that the complex and interconnected nature of the social health frame meant that they were still trying to understand how to link it to action. The difficulty of translating the social health frame into practice has been often cited in scholarship, but many with the frame seemed to understand its implications for their program or department.

Others, however, noted that they were still trying to understand, such as the health official that said, “I do still think there’s a lot of progress that could be made, the health department, we don’t spent a lot of focus on the economic side, I think we’re still trying to figure out what is our role when it comes to that” (F430).

When discussing the impact of their health frame on their practice, most public health officials introduced other related factors important to their practice as well as their health frame. Be it the political environment in their state, the organizational barriers to effective practice, or the need for accreditation, public health officials did not see their health frame as separate from its broader context. Where many recognized the impact of politics on practice, a Wisconsin public health official recognized the impact of political ideology on the health frame with implications for action in a state agency, saying that

at the departmental level, I think, dependent on kind of your own political philosophy, there is also a difference between what people feel is health that is within the scope or responsibility of the agency to influence and what is really the responsibility of the individual and so that tends to be a factor that can affect the policies and direction of an agency (F404).

By noting the role of political ideology in the idea of health, this public health official is recognizing that politics is inherently related to the health frame one holds, so they both impact practice. Another health official posited that hierarchical position in the organizational chart of the health department is linked to a health official’s health frame,

so folks in our asthma program would rate asthma as a larger threat, excuse me, threat to health than any other possible issue and it’s likewise with our lead program. We have others who maybe look across a few more programs that will say its things like housing which can affect asthma and lead poisoning prevention and indoor air quality that is actually the precursor or challenge affecting health. So they’re the external factors that can be broader and then it’s socio-economics in general that tend to be an indicator of health at a high level. So depending on where you are in the organization, then as you go up, it tends to be more global (F404).

In this sense, practice shapes the health frame and the health frame shapes practice; both interact with the larger organizational environment. This health official does not believe the relationship to practice is one where independent ideas have a simple linear relationship to the actions individuals take in the organization. Many others recognized the ways their ideas interacted with resource limitations, organizational silos, and the broader context to shape the practices they undertook. Nonetheless, most believed that the ideas they held, at some level, impacted the practices they undertook. Often, however, this was in a limited manner that was shaped by the constraints they faced. There were some interviewees who did not believe that their health frame could impact the practices they undertook in a meaningful way (F18).

#### *Impact of politics*

The state's political landscape was not a focus of my interview questions, yet interviewees repeatedly discussed the importance of the political environment to both the ideas and practices dominant in the health department. From the invocation of the upcoming changes resulting from the Affordable Care Act at the federal level to the role of the governor's office at the state level, people made clear that "there's always, in the government, somewhat of a political flavor to everything" (F111). The political environment played its most prominent role in influencing the state health department's budget because "a lot of the decision-making process starts in the legislative system and with our allocated budget" (F272). Budgetary action and power held by political officials cut to the core of the actions state public officials are able to take. For example, "if the federal grants around family planning are cut then that makes it hard to do family planning at the state level, vice versa if the state doesn't support family planning program or has other political views then the agencies don't have the flexibility to work on those topic areas" (F415). Public health officials said that at the heart of why politics is important to public health is the question of "how involved people perceive the government should be [in] what

people might consider personal decisions” (F265). The only public health official who explicitly voiced support for such a prominent role for politics said, “politics and public health should be together. We should be able to partner with our elected officials and appointed cabinet officials to be able to establish the priorities” (F661).

The rule of law has tremendous power over public health officials. When an activity is required by law, there is a clear influence on why an individual is taking part in it (F621). Certain offices within health departments, such as newborn screening, have many statutory requirements. For example, a public health official explained that the law was an importance influence on his practice because “the things that we can’t change are those things that are mandated by statute” (F581). He continued on,

So I view things depending on what I’m required by law to do and it’s kind of the function of being in government. I don’t have the latitude of being in, you know, the private world where you can pick and choose what you want to do. I’m told that this is the law, you’re entrusted with that. You need to make sure that that’s carried out (F586).

Another individual went further than just the need to follow the law by pointing to the tensions inherent in legal limitations when trying to make changes to practice. He described a “trend towards more openness and transparency but [in] public health there’s also a lot of regulation around privacy of patient records so we have to be aware of both of those goals” (F606). One public health official went so far as to say that legal limitations on a needle exchange program to reduce HIV transmission mean that “we basically burn them, let them die” and that as soon as “we were able to spend on exchanging needles so those use needles, so that they would not get infected with HIV, the infection rate of HIV in intravenous drug users went from 26% to what it is today which is less than 4%” (F660). The powerful role of politics on public health practice is not lost on state public health officials.

A few interviewees mentioned that industry interests influenced their health department's political landscape, especially when their public health interventions had economic consequences. A chronic disease director says that, "there are some very powerful industry interests that are counter to what we are trying to do in public health in preventing tobacco's use or sugary drink consumption and so politics very much play into what we are able to do" (F265). This was echoed by an environmental health manager that described a political resistance to climate change interventions because "parts of the world...don't want to believe it exists" (F415).

In addition to the legislature, the public agencies that partly constitute the political landscape were repeatedly introduced as influences on practice. These comments linked the health department to other public agencies that together influenced the practices state health officials could undertake. For example a public health office said,

in state government you're part of a huge bureaucracy, everything you do is coordinated with every other aspect of government, through sets of rules and procedures, and clearances, signatures that have to be gotten, and then, the decisions which people at the political level make, for example this, this year, for several years I could count on a large amount of money being in the budget every year for the survey from state appropriations, from the state legislature. This year I learned that that money was gone (F306).

In addition to the recognition of the role of organizations on practice described in Chapter 6, this qualitative analysis describes how state public health officials are cognizant of a myriad of influences on their practice. From the individual level ideational frames to the societal level public health practices, they provide an account of their practice that situates them as policy actors interacting with others in a complex policy system as opposed to solitary public servants focused on just their siloes goals.



## Conclusion

Where the organizational environment is an important influence on the practice of evidence use, only one health frame has a statistically significant relationship to practice. Although the importance of evidence is only one way to operationalize practice, the follow-up qualitative data showed the nuanced ways in which public health professionals recognized the limitations that organizations imposed on the practices they undertook. One of the most insightful comments made by a public health official recognized how the health frame and organizational environment impact practice. This official saw the organizational limitations of any public organization attempting to make the kind of broad policy change implicated in holding a social frame. He says,

They give lip service to a lot of that framework with that office of health equity and they make a lot of general sounding statements but then you know, when it comes time to really influence a change in policy it's really difficult to do that. I mean we don't, we're not supposed to have access to legislators directly, you could put up some proposals for legislative action but they really kind of have to be things that have already been vetted and accepted by the department and the Governor's office so if you have something that is novel or politically controversial it's probably not going to go up very far (F28).

This public health official holds the social health frame but described a risk averse organization that placed limitations on the ways in which he could apply the social health frame as a health department employee. This was not the way all public health officials described their health departments, but there was a healthy understanding of the difficulty of translating the social health frame into practice. The combination of political context, federalism, and limited administrative discretion forced them to address the social determinants of health at the edges of the practices they undertook.

## Chapter 8. Discussion and Conclusion

This research studies the ways in which state public health officials' health frames, be they individual or social, interact with state-level organizational environments to influence the practices they undertake. The background on the ideas of health dominant in the field of public health (Chapter 2), the developmental history of public health organizations in the United States (Chapter 3), and the propositions presented in the research design (Chapter 4) argue that the organizational environment and health frames interact to shape public practice. This mixed-methods study examined ideas, organizations, and practices by employing an original national survey of, followed by in-depth interviews with, state public health officials directing programs common to over 90% of state health departments.

Given the important role of ideas, I first quantitatively and qualitatively analyzed the factors that influence the health frames that state public health officials hold (Chapter 5). I presented the ways in which public health officials conceptualized the determinants of health and studied the relationship of demographic variables, professionalization, and political ideology to such conceptualizations. I then looked at the relationship between the health frame and organizational environment (Chapter 6). I presented the ways public health officials described their organizational environment, statistically examined how health frames differed depending on organizational environment, and qualitatively examined how they described the influence of the organization on practice. Finally, I presented the ways in which public health officials conceptualized the importance of various evidence types for practice and the factors that influence such a conceptualization, using the importance of evidence as a proxy for public practice (Chapter 7). This chapter provides a discussion of the implications of the statistical and

qualitative findings from the ideas, organizations, and practices chapters separately as well as in combination to help us understand how state health departments function.

## Findings

### How state public health officials understand the determinants of health

In Chapter 5, I showed that state public health officials have a complex understanding of health that often simultaneously recognizes the importance of the individual and social determinants of health. Even though a larger percentage of state public health officials recognize the importance of individual determinants of health than any other determinant of health, the comparison to the general public reveals that state public health officials do recognize social determinants of health to a greater degree. The stories public health officials told about the idea of health were well formed and inclusive of a wide variety of determinants of health. They revealed that state public health officials are overwhelmingly committed to the social determinants of health frame, yet recognize an essential role for addressing the individual determinants of health in the U.S. public health systems.

The survey data showed that a large majority of state public health officials believed that the social determinants of health, such as employment and income level, were important to health, but an even larger percentage of respondents listed individual determinants of health, such as behavioral practices, as important. In comparing these findings to Robert and Booske's (2011) similar survey of the general public, I found that a much larger percentage of state public health officials believed the social determinants of health were important as compared to the general public. However, the order of the determinants considered to be important by percentage of respondents was similar. For example, even though 99% of state public health officials believed that a person's personal health practices were very important as compared to 86% of the

general public, that determinant of health had the highest percentage of people who thought it was very important, among both the general public and state public health officials.

State public health officials' ranking of the importance of the determinants of health had an underlying structure that was more complicated than the duality of the social and individual health frames, as demonstrated by exploratory and confirmatory factor analysis. Instead, public health officials' ranking of the importance of the determinants of health grouped into five health frames, to include: the access to health care frame, community health frame, the environmental health frame, the economic health frame, and the individual health frame. The idea of health, therefore, is nuanced and complicated. State public health officials' ability to recognize the determinants Dahlgren and Whitehead (1991) depicted in their model of the determinants of health usually ranged from one to a few determinants, but with some officials recognizing all of the determinants.

As for the factors that influence the idea of health, there was a significant association between professionalization and the determinants of health considered important by state public health officials. This finding—that professionalization in public health is related to the idea of health—supports Freidson's (2001, p. 95) claim that “ideology is inevitably an element” of professionalization. Specifically, the multivariate regression analysis found that the factors that significantly influence all the health frames include professionalization, length of tenure, educational level, and gender. There was a positive association between each of these variables and the social health frames. Given that professional associations are increasingly introducing research on the social determinants of health, it was expected that participation in professional associations would be associated with increased recognition of the importance of the social determinants of health. The relationship of length of tenure in an official's current position with

the increased recognition of the determinants of health similarly indicates that over time, as public health professions are socialized in the state health department, they increasingly recognize the importance of the social determinants of health. There may be a similar relationship with educational level, where higher levels of education provide greater interaction with scholarship that is increasingly recognizing the role of the social determinants of health.

The statistically significant relationship between the demographic variable, gender, and all of the social determinants of health is of interest because this correlation remains strong even after controlling for the other factors posited to be of importance to the idea of health (political ideology, minority status, age, field, and professionalization). Being a female is associated with placing higher importance in the area of the social determinants of health regardless of race, professionalization, and political ideology. The gendered nature of thought around this idea is grounds for further research on the topic.

Of particular note is the surprising finding that political ideology did not have a statistically significant relationship with the idea of health, especially given Robert and Booske's (2011) finding of a statistically significant relationship in their study of the general public. Given the political nature of the different conceptions of health and previous research on the general public, it was posited that political ideology would be a significant factor in explaining the importance placed on the determinants of health. This is another area that could be further explored. One hypothesis is that public health professionals' professionalization interacts with political ideology such that the profession of public health's "transcendent values add moral substance to the technical content" of the discipline (Freidson, 2001, p. 222).

The state public health officials interviewed did not balk at talking about the idea of health, but instead cogently responded to questions about it. To them, it seemed clear that the

idea of health formed a foundational framework for how they approached their work in the health department. The stories they told did not focus on one type of determinant of health. Similarly, they did not use the social determinants of health language in an empty sense. Instead, their language was rich with the lived experience of what a health frame means to state government. Their discussion of their often strongly defined health frame included mention of its relationship to the context of the organizations in which they were embedded, the political environment of their state, and the limitations upon discretion inherent in being a public servant.

#### Relationship between the organizational environment and health frame

In Chapter 6, I demonstrated that, overall, state public health officials believed that their respective state public health departments had supportive learning environments that made use of learning processes such as analysis and information transfer. When looking to Garvin, Edmondson, and Gino's (2008) study of executives of private organizations, officials' ranking of health departments compares favorably in terms of the supportive learning environment. In terms of learning processes, however, state public health officials gave learning processes in their health department a lower score than executives of private organizations. Especially of note is the low score given to experimentation in the health department and the high score given to openness to new ideas. This reflects on the findings described in Chapter 7, where state public health officials recognize the importance of the social determinants of health but have little flexibility to approach them as the core of their practices.

The health frames that state public health officials held differed based on organizational environment. Individuals with a social frame were more common in organizations with a high learning environment score than those with a low score. When comparing each of the health frames (economic, community, environmental, and access to care) across these organizational

types (high learning environment score and low learning environment score), a statistically significant difference existed between the number of individuals situated in organizations with a higher learning environment score versus those situated in organizations with a lower learning environment score if the individuals had either an economic health frame or community health frame. However, there was no statistically significant difference between organizational environment types if individuals held either the access to health care frame or environmental health frame. These findings were consistent when comparing across organizational environments using the supportive learning environment composite score as well as the learning processes composite score. Because of this relationship, I posit that the economic health frame and community health frame are more distant from the individual health frame than the access to health care frame and the environmental health frame. In this sense, the access to health care frame and environmental health frame may be part of the dominant understanding of health, and therefore appear in organizations regardless of openness to new ideas. As such, the economic health frame and community health frame may be further from the dominant understanding of health and thus require an organizational environment that allows a greater space for the transfer of ideas. This is an area of inquiry in this dissertation that calls for further research.

The qualitative data expanded on the mixed picture provided by the survey results on health department organizational environments. State public health officials described efforts to change their organizations to be more inclusive and collaborative over time and, simultaneously, detailed structural limitations that prevented such efforts from being fully actualized. Although the individuals that they interacted with were open to new ideas, they were in siloed organizational structures that were funded by categorical grants from the federal government that left little room for experimentation. The health frame had room to be discussed, but the practices

they could undertake in response was limited by the political and organizational constraints specific to their health department's policy landscape. This is not to say that all of the interviewees described their health departments as open to new ideas; there were several that described risk averse environments that limited innovative thinking and focused on the requirements of grant funding. The individuals I spoke to, however, described organizations that, despite the limitations due to structure and political context, were full of passionate practitioners committed to a public health mission. The mission itself was not fully clear and there was incongruence over the idea of health within organizations, but these individuals were mission driven in choosing to work in the health department.

#### Influences on public health practice

State public health officials described a plethora of factors influencing the practices they undertook, ranging from their own health frames to the broader political context of the state health department. They had more difficulty answering questions on the influences on the practices they undertook than the questions on their idea of health. They may not often have to consider the factors that shape their actions, and so were not as cogently able to discuss the influences. Nonetheless, they presented a variety of factors that together revealed that state health officials are not thinking just within their program or even the health department when considering what influences their practices. The increased focus on collaboration in health departments meant that state public health officials were able to discuss the influence of their interactions with the political entities in power in their state, private and community organizations essential to improving health outcomes, and professional associations that often set the guidelines they followed day to day. They also discussed the importance of their health frame, but the health frame was a background influence as opposed to the driving influence of their practices.



The three ways in which practice was operationalized (collaborative practices, public participation, and evidence use) showed that, overall, state public health officials valued collaboration with a wide range of actors along with evidence based practice focused on research data and professional guidelines. They did not rank public participation practices as important to their decision-making. When analyzing the factors influencing practice, I used the importance allotted to evidence use as a proxy for practice in the statistical model. I found that the 15 evidence types state public health officials ranked as important fell into four broad categories: public participation evidence, performance evidence, data, and professional guidelines based on exploratory and confirmatory factor analysis. The lenses through which state public health officials described evidence aligned with the ways evidence has been described in the literature (Head, 2008).

There was a statistically significant relationship between the demographic variables, organizational environment, and the community health frame and the importance assigned to all four of the different evidence types based on a multivariate multiple regression. The persistence of the statistical significance of the demographic variables across each of the models of evidence types is similar to the finding in Chapter 6 that gender is important to the conceptualization of the health by state public health officials. In this case, education, gender, minority status, and age proved to be statistically significant in their relationship to whether evidence was considered important. A higher level of education, being a minority, female, and older was associated with considering evidence important to decision-making. This is an interesting finding because the discussion around health frames and organizational environment is missing the impact of demographic characteristics of health department officials, which brings suggests the possible importance of exploring representative bureaucracy in the context of the health department.

There was a statistically significant positive relationship between the learning environment variable and the importance of evidence use, but not the learning process variable. This supports my finding that organizations with higher learning environment scores will be associated with higher levels of evidence use. It is surprising, however, that learning processes are not similarly associated with higher evidence use ranking. The organizations in which people reside matter to the actions they undertake. An environment that provides an openness to new ideas, psychological safety, appreciation of differences, and time for reflection is going to be associated with greater importance placed on evidence use.

Finally, the only health frame that was important to evidence use across all evidence types was the community health frame. It is surprising that the economic health frame did not prove to be statistically significant to the importance of evidence since it is a public health concept with increasing scholarly support. There was only a statistically significant relationship between the environmental health frame and the performance evidence type. Although evidence use is only one type of practice, this finding indicates that certain health frames are important to influencing practice whereas others may not be able to have such influence. As a concept, community health may emphasize evidence use to a greater degree than the other health frames. In this sense, certain health frames will be associated with specific practices. Again, this finding shows that the social determinants of health is not a homogenous concept; instead, it is divided into different types of determinants. These different types of determinants have different implications for practice, but only in those areas where the health frame has an underlying logic around practice.

This nuanced understanding of the relationship of health frames and organizational environment on practice was confirmed by the interview data. Although state public health

officials largely said that their idea of health impacted the practices they undertook, it was in certain discrete areas depending on the way that they understood the determinants of health and was conditioned by their broader context. Collaboration was an often-lauded result of a social health frame, but evidence use was presented in a nuanced way. It was not the importance placed on evidence that was affected by the idea of health but the reach of the evidence in terms of collecting data on race, socioeconomic status, and other variables pertinent to a given health frame. Public participation was often described as an important component of the social health frame by the interviewees, but they did not rank public participation data as highly important in the survey.

What stood out, however, was the discussion around the importance of politics on the public health practice. Given their role as “meso” level public health practitioners, the attention interviewees paid to the legislature, governor, and federal government when describing influences on their practice was surprising. At the end of the day, these individuals understood the mission of the health department, but saw themselves more as public servants working for the government. In this context, public participation was important for both reasons of democratic accountability and the potential to improve health outcomes. They collaborated with other state entities because of a broader definition of health but also due to the need to keep the governor informed of practices.

### Implications

This original data finds that state public health officials hold a broad health frame and are actively working to use that frame to influence practice. This is an important finding for public health practitioners because the idea of health and its problem definition are integral to policy and practice. Where public officials stand on this issue is pivotal to understanding the health

department landscape as the field of public health tries to address increasingly broad problems. The findings also show that the health frame alone cannot change the practices individuals undertake; the organizational environment is a powerful mediator. Therefore, improving organizational practices is as pivotal to improving public health as introducing public health officials to new research on the determinants of health. The organizations in which they reside are the conduits of practice, so working to improve health with a social health frame requires a learning environment.

Organizational environment and health frames both influence practice in state health departments. They also, however, influence each other. Organizational environments that are open to new ideas provide space for individuals to learn about the social determinants of health, specifically the economic determinants of health and the community determinants of health. State public health officials with certain health frames take part in practices based on that health frame regardless of the organizational environment in which they are located. The implications of this research are that organizational environment and health frames are important to the practices that state public health officials undertake.

The idea that the survey data partially introduce, and that the interview data make clear, is that the health frames and organizational environment of state public health officials are only two of the factors in a complex policy system that influence practice. The importance allotted to the political environment of a state and the demographics of state public health officials themselves reveal that a myriad of influences not only impact practice, but also are interwoven so as to influence each other factor as well.

The complexity displayed in this study of state public health organizations is one inherent in government and governance more broadly. Ideas and organizations interplay to shape

practices for public servants generally. This research reveals that the ideas of public officials are not lost in their influence on practice. Ideas do matter. Simultaneously, however, the bureaucratic organizations in state government, regardless of the policy subsystem, are also important. They work to limit administrative discretion and ensure that the agency reflects the goals of our democratic republic. Recognizing the importance of a diversity of actors and influences in the sphere of state public health departments—the demographics and the politics, the health frames and the organizational environment—re-emphasizes that public health is a policy area embodying the tensions between the individual and society that are inherent in the political enterprise. Carpenter (2012, p. 303) claims that “health and illness shape who we are politically.” State public health officials recognize this claim to a great degree. They are cognizant of the implications of their actions on the broader goals of the state, and carefully work under organizational constraints to implement policy in public organizations so as to improve health as they understand it.

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# Appendix A. Virginia Tech Institutional Review Board Approval Letter



**Office of Research Compliance**  
Institutional Review Board  
North End Center, Suite 4120, Virginia Tech  
300 Turner Street NW  
Blacksburg, Virginia 24061  
540/231-4606 Fax 540/231-0959  
email [irb@vt.edu](mailto:irb@vt.edu)  
website <http://www.irb.vt.edu>

## MEMORANDUM

**DATE:** January 12, 2015  
**TO:** Laura Smietanka Jensen, Fatima Sharif  
**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires April 25, 2018)  
**PROTOCOL TITLE:** Elucidating the Drivers of Public Health Practice: The Interplay of Ideas and Institutions  
**IRB NUMBER:** 13-029

Effective January 9, 2015, the Virginia Tech Institutional Review Board (IRB) Chair, David M Moore, approved the Continuing Review request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

## PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 6,7**  
Protocol Approval Date: **January 23, 2015**  
Protocol Expiration Date: **January 22, 2016**  
Continuing Review Due Date\*: **January 8, 2016**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

## FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

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# Appendix B. Public Health Practice Informed Consent Form

10/28/13

Survey | Qualtrics Survey Software

## Informed Consent Form Elucidating the Drivers of Public Health Practice

Fatima Sharif, Doctoral Candidate  
fsharif@vt.edu  
Center for Public Administration and Policy, School of Public and International Affairs  
Virginia Tech

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### Purpose of this Project

This project seeks to illuminate how ideas and institutions interact to drive public health practice. We seek to explain three questions: 1) What are the models of health to which public health administrators in statelevel health departments in the United States adhere? 2) What are the institutional dynamics of the state public health departments in which public health administrators work? 3) How do ideas of health and the dynamics of public health institutions influence public health administrators' practice in state health departments?

---

### Procedures

Participation in the project includes one audio-recorded 60-minute interview. Data collection will occur in the Fall of 2013.

### Risks

There are minimal risks to participants in this research project.

### Confidentiality

The project team will store all data collected during the interviews in a confidential manner. In addition, neither the identity of participants nor the name of participant's organization will be revealed in any reports, articles, or distributed in any other form.

### Compensation and Freedom to Withdraw

There is no compensation for participation in this study. Your participation is voluntary. You may choose not to participate at all, or you may refuse to answer certain questions or discontinue your participation at any time without any penalty.

### Your Responsibilities

There are no right or wrong answers to the questions posed by this study. By voluntarily agreeing to participate in this study, we ask you to answer these questions with responses that are true for you or for your organization.

---

### Your Permission

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

Please type your full name in below as an indication that you have read the statement, printed a copy for your files, and agree to participate in the study. Your name and the date will be electronically supplied to the researcher to document your participation.

---

[https://virginiatech.qualtrics.com/SE/?SID=SV\\_cZy7mjFVoQcXhW1&Preview=Survey&BrandID=virginiatech](https://virginiatech.qualtrics.com/SE/?SID=SV_cZy7mjFVoQcXhW1&Preview=Survey&BrandID=virginiatech)

1/2

Should I have any pertinent questions about this research, its conduct, or the rights of participants I may contact:

[Virginia Tech Institutional Review Board](#) / Dr. David Moore, IRB Chair  
Virginia Polytechnic Institute and State University, Research Compliance Office  
Telephone: 540-231-4991

Virginia Tech Institutional Review Board Project No. 13-029  
Approved September 13, 2013 to January 22, 2014

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## Appendix C. Public Health Practice Dissertation Survey Instrument

Thank you for taking the time to complete this survey regarding the drivers of public health practice. This survey is part of a dissertation research project at Virginia Tech with the purpose of exploring the effects of organizational dynamics and conceptions of health on public health practice. You were selected due to your role as a public health administrator. As a public health administrator, your feedback is vital to this research. This survey should take about 10 minutes of your time. Your responses are voluntary and will be kept confidential. You will not be identified personally in any products (dissertation, articles, etc.) resulting from this research. If at any point within the survey you do not wish to continue, you may choose to stop.

Survey participants will receive a summary of the survey findings. If you have any questions, please contact doctoral candidate Fatima Sharif at [fsharif@vt.edu](mailto:fsharif@vt.edu). This study is being conducted by Fatima Sharif under the supervision of Laura Jensen, Ph.D. of the Center for Public Administration and Policy at Virginia Tech. This study has been reviewed by, and received clearance, through the Institutional Review Board at Virginia Tech.

Thank you,

Fatima Sharif MPH  
Doctoral Candidate  
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What is the highest degree you have attained? (Choose one)

- Associate's
- Bachelor's (Bachelor of Arts, Bachelor of Science, etc.)
- Master's (Master of Public Health, Master of Public Policy, etc.)
- Doctorate (PhD, DrPH, etc.)
- Professional Degree (JD, MD, etc.)
- Other \_\_\_\_\_



Which of following best describes the field of study/disciplines of your highest academic degree? (Choose one)

- Environmental Health
- Maternal and Child Health
- Health Services Management
- Community Oriented Primary Care
- Occupational Health
- Health Communication
- Health Information
- Exercise Science
- Health Policy
- Health Promotion
- Mental Health
- Cultural Studies
- Medicine
- Public Administration
- Nursing
- Dentistry
- Other \_\_\_\_\_

How many years have you been in your current position?

\_\_\_\_\_ Years in Current Position

Please check if you have been a member of any of the following groups or organizations in the past three years. (Check all that apply)

- American Public Health Association (APHA)
- American Society of Tropical Medicine and Hygiene
- Association for Professionals in Infection Control and Epidemiology, Inc. (APIC)
- Association of Public Health Laboratories (APHL)
- Association of State and Territorial Health Officials (ASTHO)
- Association of Schools of Public Health (ASPH)
- Council of State and Territorial Epidemiologists (CSTE)
- The Medicine/Public Health Initiative
- National Association of County and City Health Officials (NACCHO)
- National Association of Local Boards of Health
- National Environmental Health Association (NEHA)
- Pan American Health Organization (PAHO)
- Public Health Foundation (PHF)
- World Health Organization (WHO)
- Other \_\_\_\_\_

Please rate how strongly you believe each of the following factors affects health. A zero means the factor has no effect on health and ten means it has a very strong effect.

Respondents rated the survey items using the following scale:

- No Effect 0
- 1
- 2
- 3
- 4
- Somewhat Strong Effect 5
- 6
- 7
- 8
- 9
- Very Strong Effect 10

Survey items:

- A person's personal health practices (eg, what they eat, whether they exercise, or whether they smoke)
- Whether a person has health insurance
- A person's access to affordable health care
- How much stress a person has
- The physical environment, such as the quality of the air and water
- A person's knowledge about health
- A person's genetic makeup that is inherited from their parents
- Whether a person has a job
- The amount of social support a person has, such as a close circle of friends or family
- A person's level of income
- How safe a person's community is
- The quality of a person's housing
- A person's childhood experiences
- A person's level of education
- Whether a person is religious or spiritual
- Where a person lives, like in the city or in the country
- How supportive a person's neighborhood is

Identify how important the following types of information are to making decisions in your immediate office or work unit.

Respondents rated the survey items using the following scale:

- Not at all important
- Somewhat unimportant
- Somewhat important
- Very important

Survey items:

- Systematic review data
- Surveillance data
- Cost and economic data
- Performance measurement goals
- Program evaluations
- Simulation data
- Qualitative data (interviews, focus groups, etc.)
- Survey data
- Public hearings
- Social media
- Citizen advisory councils
- Citizen feedback/input
- Neighborhood meetings
- Professional "best practice" guidelines
- Case-based learning
- Professional ethical guidelines
- Other

Please respond to each item in terms of how accurately it describes your office.

Respondents rated the survey items using the following scale:

- Highly inaccurate
- Moderately inaccurate
- Slightly inaccurate
- Neither accurate nor inaccurate
- Slightly accurate
- Moderately accurate
- Highly accurate

Survey items:

- In this office, it is easy to speak up about what is on your mind
- If you make a mistake in this office, it is often held against you
- People in this unit are eager to share information about what does and doesn't work
- Keeping your cards close to your vest is the best way to get ahead in this office
- Unless an opinion is consistent with what most people in this office believe, it won't be valued
- This office tends to handle differences of opinion privately or off-line, rather than addressing them directly with the group
- In this office, people are open to alternative ways of getting work done
- In this office, people value new ideas
- Unless an idea has been around for a long time, no one in this office wants to hear it
- In this office, people are interested in better ways of doing things
- Despite the workload, people in this unit find time to review how the work is going
- In this office, people are too busy to invest time in improvement
- This office experiments frequently with new service offerings
- This office frequently identifies and discusses underlying assumptions that might affect key decisions
- This unit quickly and accurately communicates new knowledge to key decision makers

Please respond to each item in terms of how accurately it describes your office. This office has opportunities for meeting with and learning from:

- Experts from other offices in this department
- Experts from other departments
- Experts from outside the organization
- Clients
- Members of the general public
- Legislators
- Members of advocacy groups
- Members of the governor's office

Respondents rated the survey items using the following scale:

- Highly inaccurate
- Moderately inaccurate
- Slightly inaccurate
- Neither accurate nor inaccurate
- Slightly accurate
- Moderately accurate
- Highly accurate

Gender

- Male
- Female

What is your age?

- 18 to 34 years
- 35 to 44 years
- 45 to 64 years
- 65 years and over

What is your race and ethnicity? (Check all that apply)

- White/Caucasian
- African American
- Hispanic
- Asian
- Native American
- Pacific Islander
- Other \_\_\_\_\_

In general, would you describe your political views as very conservative, conservative, moderate, liberal, or very liberal? Drag marker to appropriate position on the scale.

\_\_\_\_\_ Political views

In the box below, please share any comments, concerns and/or questions you may have about this research project.

We are hoping to follow up with some respondents. If you would be willing to speak with a member of the research team, please provide your name and email address.

Name

Email address

## Appendix D. Public Health Practice Dissertation Interview Protocol

### Semi-Structured Interview Schedule

Introduction: Hi, my name is Fatima Sharif and I'll be conducting the interview today. I appreciate your willingness to meet with me. I'll be here for approximately sixty minutes to talk with you about your ideas of health and the dynamics of your institution. Your insights and opinions on these subjects are important, so please say what you think.

I would like to tape record our conversation so that I will be able to review my notes and impressions for accuracy later. None of your comments will ever be attributed to you by name. If I wish to quote a remark of yours in any research reports, you will be identified only by a code. Do you agree to this interview being tape recorded?

If at any time you wish to take a break or stop participating in this interview, please let me know.

To start off, I am going to describe a vignette depicting a public health problem. I will then ask you to tell me how you understand the character's health situation.

Let me tell you about Gabby. She is in her early 40s and is a member of the Hispanic community. Gabby generally finds life a struggle. She has experienced depression on and off over the last few number of years. She has been feeling particularly unwell over the last few months, experiencing tiredness, loss of energy, headaches. More recently, she has had fairly severe pain and tightness in the chest on a few occasions. Gabby went to her doctor who told her that she was suffering from angina. The doctor explained that while the pain can be relieved by drugs, it is a sign of heart disease, and a warning that a heart attack could occur (Hodgins, Millar, and Barry, 2006, p. 1982 - names and community type have been changed).

How do you understand the character Gabby's health situation?

Thank you for your response. I will now ask you a few more questions.

- How do you think your understanding of health affects how and what you practice in the health department?
- What examples or justifications do you have for how your ideas affect practice?
- How does your idea of health fit in or contrast with the dynamics of your institution?
- Do you feel you have enough resources, such as personnel capacity, intellectual capacity, and budget capacity to meet your goals for your public health program? Why?
- Do you find that you have the decision-making autonomy you need to make decisions for your program?
- How does your involvement in professional associations affect what you practice in the



health department?

- Who participates in the decision-making process in your organization?
- What type of evidence do you use when making decisions?
- With whom do you collaborate on public health projects?
- Who is the target population of your programs?