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LOW-INCOME HEALTH CARE NETWORKS: INITIAL CONDITIONS, EXTENT, AND
INTENSITY RELEVANT TO COUNTY GOVERNMENT PARTICIPATION

By

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
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ABSTRACT

Contemporary health care systems in the United States are not equitable. Indeed, as the literature indicates, there are substantial differences in the variety and scope of service delivery based on age, income, and other socio-economic indicators. The recent passage of health care reform in the United States illustrates that Americans are seeking to bring balance and equity to health care. However, as learned in this study, county governments across the country have been working in their communities to ensure some balance and equity, by making a safety net available for those citizens who are unable to access health care. Perhaps this is because health care quickly becomes a local government problem. In this current economic climate, county governments are being pinched between declining revenues and rising demands for services (Eaton, 2009; Phaup, 2009). The Orange County Primary Care Access Network is one example studied here that provides clear evidence of how organizations can work together to develop and maintain a sustainable health care safety net for the underinsured and uninsured.

This study is the first of its kind to examine county government influences, environmental pressures, and community resources in the context of health care network performance. The methodological research question for this study is what determinants (exogenous constructs) contribute to a health care network and its performance (endogenous construct) within the framework of county government participation? Further, is the model supported by the data and can prediction, direction, and strength of relationships among the variables be identified? The simple answer is yes.

For this study, the responses from 123 counties were analyzed with a variety of statistical techniques, culminating in structural equation modeling. The outcome of these analyses

provided a reasonable explanation for the variation among the variables leading to network performance improvement in meeting the health care needs of uninsured and underinsured people. These quantitative data were also supported in their results with the inclusion of a case study analysis of a particular health care safety-net, the Orange County Primary Care Access Network in Orange County, Florida.

Ultimately, this study learned three valuable lessons that can be used by county government decision-makers and health care providers alike. First, county involvement in community based health care networks results in a benefit that reverberates during economic stress- the leveraging of resources. Second, public-private initiatives are fundamental to reducing disparities in health care access. Third, health care networks improve access to health care for uninsured and underinsured people. Ultimately, county government participation is the largest predictor of network performance in this study.

My doctoral education and this dissertation are dedicated to my husband and children, without whom none of this would have been possible. The sacrifices they've all made to get me through this are a testament to their love. The unconditional belief, support, and, at the end, the near constant cheering from my husband that yes, I can finish, kept me going through many a frustrating night with my statistics' books. The pride my children have shown in my pursuit of this achievement has made all of this worthwhile. I cannot believe how fortunate I am to have my husband, Dave Klobus and my children, Zoe and Devin Klobus. You three are my universe.

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LIST OF ACRONYMS AND DEFINITIONS

Acronyms

SEM- Structural Equation Modeling

Definitions

Low-income – Individuals with incomes that fall between 100%-200% of the federal poverty level.

Uninsured- Individuals under the age of 65 who are without health insurance.

Underinsured are defined as those individuals who have health insurance, but their insurance coverage limits health care access.

Health care network is defined in this study as the informal arrangement that exists across health care organizations within a given community to provide health services to the low income, uninsured, and underinsured populations.

SEM- Structural Equation Modeling, a multivariate statistical technique

Symbols - A few Greek letters are used in the equations identified in this paper. The table below identifies these symbols.

Greek Alphabet	Name
η	eta
β	beta
Γ	gamma
ξ	xi
ζ	zeta
Λ	lambda
δ	delta
ε	epsilon

Adapted from Wan (2002)

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CHAPTER ONE: INTRODUCTION

Background

Nearly 47,000,000 people are without health insurance in the United States (U.S. Census Bureau, 2006) and approximately another 25 million are underinsured (Rovner, 2009).

Estimates by the Kaiser Foundation indicate that approximately one-fifth of people who do have health insurance are underinsured, which results in limitations on health care access and serious financial burdens (Kaiser, 2002). Demographic data provide vivid pictures of the disparity among people with and without health insurance: about 59% of low income people ages 18-64 have health insurance, compared to 93% of people earning \$75,000 a year or more, 97% of people ages 65 and up have health insurance as do 78.5% of people under age 18 (U.S. Census Bureau, n.d). Clearly, in the United States, health care access is not uniformly available.

Aside from the morality issue of health care coverage for citizens, this disparity in availability has led to health care being provided in a loosely grouped network of service providers (Kaiser, 2007). As Selden and Sing (2008) note, this network is funded by a complex array of revenue streams. For county governments, this lack of access to health care has become a significant fiscal burden (NACO, 2009a). Further, the fiscal stress that counties and other local governments are currently experiencing is significant as tax revenues are in a steep decline and the economic recession continues to drain reserve funds (NACO, 2009b; Eaton, 2009; Phaup, 2009). Health care spending, county government collaborations, and networks will be introduced in the following pages in order to provide background information for this study. The study problem will then be further explained along with the purpose of the study and the research questions.

Health Care Spending

Health care spending in the U.S. is measured in the trillions of dollars, with the public sector burden accounting for more than half of these dollars in a complex network of federal, state, and local funding streams (Selden & Sing, 2008, TFAH, 2008). The private sector, both organizational and individual, accounts for the remaining fiscal burden for health care. This shared public/private funding responsibility has been a traditional response to critical public issues such as health care (Posner, 2003). Yet, federal and state budget shortfalls are paving the way for reductions and limitations on public health funding (Posner, 2003; Kaiser, 2002). What does this mean for local governments, traditionally the most accessible governmental unit available to citizens? Health care has become an increasing burden for the public sector, and local governments in particular are facing a dilemma of rising demand and dwindling available fiscal resources.

As counties push outward from cities and populations increase, there is a rise in citizen service demands and needs that were traditionally addressed by municipalities (Schneider & Park, 1989, Benton, 2003). Despite declining state Medicaid revenue and declining local revenues, counties are caught between maintaining some level of health care and fiscal solvency (NACO, 2002). One example is the Federal Medicare program for home health care which has seen significant declines since 1997 that have been offset by increases in state and local government spending (Spector, Cohen, Piesis-Katz, 2004). There is a fiscal imbalance due to the ability of the federal government to generate the greatest revenue capacity, while state and local governments share the largest burden of public service delivery, yet have stringent restrictions on their revenue generating capacity (Beam & Conlan, 2002; Milakovich & Gordon, 2001). This

mismatch becomes even more difficult to navigate during periods of declining federal revenues. During this economic recession, this fiscal stress has also resulted in greater stress on nonprofits while they stretch existing resources to meet increasing service demands, which could be exacerbated by the dwindling of American Recovery & Reinvestment Act funds (Salamon & Lessans-Geller, 2010).

County Health Care Collaborations

In order to manage the changing tide of service demands placed on counties, Agranoff & Pattakos (1989) indicate that public administrators need to look at new ways to deliver social services that consist of using technology innovatively for problem solving, contracting with nongovernmental organizations, and leveraging resources. These new ways include partnerships that illustrate health care today. Given that counties have been participating in one of these health care partnerships, the National Association of Counties wanted to explore just how much counties were participating. Therefore, to examine the impact of increasing health care demands placed on counties, the National Association of Counties (NACO) and the National Association of Community Health Centers (NACHC) partnered on a 2002 study that examined county funding for public health. Of the 700 counties that responded, 89% reported funding for public health departments, 39% contracted with other health care providers, and 26% funded community health centers (NACO, 2002). This NACO study provides evidence that one solution for public administrators is to promote multi-sectoral collaborations (Bardach, 1998). These collaborations are bringing together public and private sectors (for-profit and not-for-profit) to meet community health care needs. Just as Agranoff and Pattakos noted in 1989,

counties are active partners in health care service delivery. Ultimately, extensive public services are provided through these networks of community based partnerships across public and nonprofit organizations that alters public performance management and accountability (Mandell & Keast, 2007). It is this network, and its resultant performance, that is the foundation for this study.

County Governments & Health Care

The U.S. county form of government is modeled on the English shires that emerged more than a thousand years ago during the ninth century of a recently united England; the term county eventually emerged and the services that were captured under its net included the levying of taxes, law enforcement, and poor relief (Fairlie, 1920). This poor relief, of which health care safety-nets may certainly be considered a part, has significant historical perspective.

In the United States today, there are 3,034 county governments (A Brief Overview of County Government, 2003; Government Units in 2002, 2002). The total U.S. population is 307,006,550 (U.S. Census Bureau, n.d.) and more than 90%, about 252 million U.S. residents, live in counties (*Government Units in 2002*, 2002).

Berman and Lehman (1993) note that not only are counties delivering more municipal type services, they are doing so under more professional public managers. Indeed, counties have experienced increased revenues over the last 40 years, which has resulted in county governments dramatically expanding the scope of services they provide to communities (Benton, Byers, Cigler, Klase, Menzel, Salant, Streib, Svara, Waugh, 2008).

Health care has emerged as one of these expanded services. In fact, health care has become such a widespread county concern that it was among the key priorities of the National

Association of Counties (NACO), and as such NACO staff members met with congressional staff members to brief them on county health care issues (NACO, 2009).

Rising service demand combined with the current fiscal situation facing county governments has necessitated innovation in service delivery. Turning to a market-based approach like alternative service delivery may be the most appropriate way to not only provide cost efficient services, but also to integrate key service leaders to resolve complex problems. These market-based solutions may result in the formation of myriad networks. However, these networks represent a significant shift in the conduct of county government. One such example is that county governments are working to expand health care access and fortify existing community health care safety-nets (West, 2004).

Health care is a public value best provided in partnerships that exist across public and private sectors, and as such, public funding and public action are foundational pillars essential to assuring public health (Institutes of Medicine (IOM), 2002). Further, capacity building for local public health organizations is predicated in part upon the role of the public sector in collaboration with community-based resources (Campbell & Conway, 2005). The multiplexity, or extent and strength, of a health care system and its reliance upon multiple actors across public and private partnerships are necessary for assuring a community's health (IOM, 2002).

In considering that collaborations may be viewed as an opportunity to build upon a system's assets (Bardach, 1998), consideration must be given to shifting public sector decision-making to the creation of public service delivery mechanisms that focus on extant assets. Consequently, can counties build upon community assets by investing in them directly or indirectly? A 1997 survey of nearly 5,000 local governments (cities and counties) suggests that

may very well be the case, given that substantial health and human services are contracted to private providers (Martin, 1999). The more recent studies by Kraybill & Lobao, 2001 and NACO, 2002 support this premise. This study further supports these assertions that local governments are in fact involved in health care service delivery.

Networks and Collaborations

Research suggests health and human services have historically collaborated to meet societal needs in a relatively non-competitive environment (Provan & Milward, 2001). Indeed, the partnership model is the model of choice for social service functions in the United States (Kettner & Martin, 1990). However, in an effort to more fully describe the nature of these collaborative relationships, researchers recently have been applying the term network to describe these cross-organizational relationships (Powell, 1990; Provan & Milward, 1991; O'Toole, 1997; Agranoff & McGuire, 1999; Agranoff & McGuire, 2001; Meier & O'Toole, 2001; Provan & Milward, 2001; Kamarack, 2002; Keast, Mandell, Brown, & Woolcock, 2004; Meier & O'Toole, 2005; Huang & Provan, 2006).

Networks among health and human service organizations have been linked as historical collaborations (Provan & Milward, 2001); viewed as fundamental to meet burgeoning county service needs (Kraybill & Lobao, 2001); considered to be naturally occurring, given the complexity of service delivery, (Provan & Milward, 1991); the result of the level of public financial support that exists across health care organizations (Provan & Milward, 2001); and ultimately presented as a common method for meeting broad health and human service needs in a community (Agranoff, 1991, 2003; Baker & Porter, 2005; Jennings & Ewalt, 1998; O'Toole

1997; van Bueren, Klijn, & Koppenhjan, 2003; Huang & Provan, 2006). These studies all provide evidence that supports the model developed for this study, which examines health care networks and county government involvement across the country.

Policy choices that have the potential to serve 90% of the American population should be empirically validated. The question is asked here, can counties build community health system assets by investing in them directly or indirectly? To consider this question, this study examines county government participation in health care delivery systems for low income, uninsured, and underinsured populations. Health care networks are being examined with county governments as contributing network actors within a contextual environment that includes available resources of policies, providers, and financing.

Wan (1995) identifies the key elements of a health care system that demonstrate the complexity of a health care system, and this study focuses on three elements--environment, resource availability, and access. The role of county government as part of this environment and potential providers of necessary resources are indicated by Wan's health care system components and are subsequently highlighted in this study. Further, the properties of the network structure, and the role and position of each network actor are critical to the functioning of any network (Kapucu, 2006).

The study takes a confirmatory approach to test its model. Thus, structural equation modeling is used to identify preliminary relationships among the variables that determine county participation and health care network impact to identify a health care safety net model. Structural equation modeling is useful for testing theory-based, hypothesized relationships among correlational data by examining complex relationships among variables set within

structures (Maryuama, 1998). The following pages will explore the study problem in more depth, present a theoretical framework for the study questions, and define the variables and their relationship to the study questions. A literature review is provided that supports the study problem, the variables, and the conceptual model. Research questions and hypotheses are proposed and a methods section is provided that explores the mechanics of the study. The findings and implications of this research are discussed.

The Study Problem

County Problem

To date in the United States, nearly 47 million Americans under the age of 65 are uninsured (Kaiser, 2009; U.S. Census Bureau, 2001) and about a fifth of Americans are underinsured (Kaiser, 2002), leaving local governments struggling to fill these health care deficits (NACO, 2002). County governments are struggling to meet increasing demands for services as their populations rise. Schneider and Park (1989) suggest the movement of populations away from urban centers and into unincorporated areas has resulted in steeply rising demands for county provided services. Counties are feeling the pinch of rising health care costs on their budgets (Clark, 2003), particularly health care for low-income residents (Benton, et.al, 2008) and are seeking ways to accommodate this demand. A study conducted by the Kaiser Foundation warned against rising numbers of uninsured Americans being located disproportionately in southern states and among poor or near poor populations, and predicted the funding crisis affecting health care safety networks (Kaiser Foundation, 2002). The complexity of the issues facing the public and private sectors is unprecedented (Grell & Gappert, 1993).

The combination of shrinking fiscal resources and increasing need for service delivery across multiple organizations has created unique challenges for local governments.

In a 2001 study, Kraybill and Lobao noted that while more than 2/3 of all county governments identified fiscal stress as being a significant problem, 52% provided health services, 51% provided emergency medical services, and 53% provided mental health services. Even during periods of fiscal stress, county governments are still active participants in health care delivery systems.

Historically, county governments have primarily supported health care for low income residents through a safety-net that includes public health departments and hospitals (Benton, et.al. 2008). Health care networks are viewed as complex arrangements of community providers and public health care providers working together to meet citizen needs (Wholey, Gregg, Moscovice, 2009). These safety nets may be viewed as an innovative way to affect public policy, particularly as budgets are becoming more constrained and citizen dissatisfaction rises (Mandell, 1999). Indeed, increased pressure is being placed upon state and local governments due in part to federal devolution of fiscal responsibility for a variety of critical challenges (Kettl, 2000; Barrett, Greene, & Mariani, 2002; Austin, 2003; Posner, 2003).

Collaborating to Address the Problem

It is important to study county involvement in networks because of the increasing intergovernmental and interorganizational relationships that exist among counties, other levels of government, and third party entities as counties emerge as fundamental in the provision of services (Streib, Svara, Waugh, Jr., Klase, Menzel, Salant, Benton, Byers, Cigler, 2007). The

very complexity of health and human services and the historical context of cooperation and collaboration among service providers has led to the belief that networked services are a more effective method for managing these complex needs (Provan & Milward, 2001). Service delivery via collaborative networks has implications for government agencies, in that they must recognize this more complex, adaptive approach to problem solving and their role in these networks (Mandell & Keast, 2007).

Research Need

Providing health care services for the poor is a substantial challenge contemporary county governments are attempting to meet (Benton, et.al, 2008). In shifting the focus on public problem solving from bureaucratic agencies to political tools, public managers must shift from a vertical structure (i.e., hierarchy) to a more horizontal structure (i.e., network) (Knepper, Sitren, Smith, 2006). In order to do this, the public manager must clearly understand the environmental system that is currently in place.

The social environment within which public administrators are implementing policies must be considered along with external factors and general administration trends (Martin, 2007). Further, one of the most pressing challenges for counties today is their ability to satisfy all of the disparate service demands and expectations that are under the county's purview (Benton, et.al 2008). As evidenced by the literature, inter-sectoral partnerships are becoming necessary in order to meet the expanding challenges facing state and local governments as they address increasingly complex problems (Grell & Gappert, 1993).

In order to understand the impact of county government involvement in health care safety networks, it is important to examine the network itself and the level of support provided to the network by county governments. The purpose of this research is to understand the complexity and intensity of health care networks, particularly for low income, uninsured, and underinsured county residents. This will be accomplished by examining both the conditions, and environment, in which these networks are providing services and the relationships among the network participants. As counties are searching for satisfactory methods for meeting citizens' health care demands, understanding the current systems in place and the impact of county government involvement will better inform subsequent local government policy decisions.

Data Set Needs

This study offers a preliminary effort at gathering sufficient data to test a model of health care safety nets, using county governments as the determining factor for analysis. This study compiles data, provides analysis, and tests a model of five community constructs to identify those factors most critical to developing health care networks with perceived improvement in community access to care. While the unit of analysis is the county, the data provided are perceptual, based upon county manager responses.

Purpose of the Study and Research Questions

Study Purpose

At a time of great concern regarding the best way to meet rising health care demands in the United States, the opportunity to examine current efforts among counties to facilitate health care access for low income populations is appropriate. There is currently a need to define and operationalize the variables involved in health care networks. This research seeks to examine how county governments cope with rising health care demands through participation in low-income service networks. Network participation represents a shift in county governance, and examining county networks as a service delivery tool is needed. Ultimately, this model attempts to identify the influence of county government on health care networks based upon county government relationships with community health care providers. This study concept is based largely on the literature of Stone, 2002; Provan, Veazie, Staten, Teufel-Shone, 2005; Benton, 2005; and Streib, et. al, 2007. The survey tool developed for this study is adapted in part from a survey tool used by Provan et. al (2005) in their network study of community partnerships.

The purpose of this research is to examine the emergence of health care networks to develop a knowledge base; this in turn will provide management theory with new insights (Agranoff & McGuire, 1999) that will enable county researchers and practitioners to begin to address fundamental questions about how counties are supporting health care for low-income residents.

This researcher looks to make predictions about the types of low-income health care networks that will form, which organizations are likely to participate in the networks, the

community characteristics that suggest network participation is likely, and whether county levels of participation account for variation in network structures. If networks represent a significant avenue for county participation in health services, it is necessary to examine the factors that lead to their formation and to county participation in low income health care networks. Understanding which factors relate to network formation and the types of networks that form is a critical first step in evaluating networks as a service delivery option.

O'Toole (1997) suggests that given the expansion of networks in public administration, attention must be paid to examining them fundamentally- the kinds of networks extant, their scope, their characteristics. This study is a response to this suggestion regarding the importance of studying public administration networks. Indeed, this study examines low-income county health care networks within O'Toole's recommendation and also seeks to identify variation in network types that may be the result of varying levels of county government participation.

Therefore, the fundamental research agenda for this study is to identify those community conditions necessary for the creation of, and participation in, low income health care networks. This study is an exploratory effort to develop a dataset that will enable county researchers and practitioners to begin to address these fundamental low-income county health care network questions.

As noted in the literature, there is a void in network theory research as applied to county government (Streib et. al, 2007). Developing this baseline dataset of health care networks becomes increasingly important to inform theory and to guide public managers as network utilization expands and performance measures must be better designated across complex service

delivery networks and participants (Meier & O'Toole, 2003; Keast, Mandell, Brown, & Woolcock, 2004).

Research Questions

This research seeks to answer the research questions identified for this study in order to test a model of low-income health care network performance. There are three research questions for this study. First, what initial conditions lead to pervasive county influence in health care networks? Second, what initial conditions lead to improved network performance? Third, what impact does pervasiveness of county influence have on network performance?

This study proposes a cross-sectional macro level study that explores the existence, complexity, and intensity of health care networks for low income, uninsured, and underinsured county residents from around the country. The varying levels of county government participation may have specific impact on the types of relationships that may form within these networks. In turn, these relationships may lead to a network model, which contains a continuum of relationships ranging from diffuse to intense. To date, the use of networks to meet rising low income, underinsured and uninsured health care service demands in counties has not been analyzed.

Hypotheses

This paper seeks to test a conceptual model (see Figure 1) of the possible initial conditions necessary for low-income health care network formation, the influence of county

government participation in the networks and the performance of the networks, in terms of improving access to care, health care coordination, and health information exchange.

The hypotheses for this study were developed by the researcher using logical integration of several areas of literature and theory and also the first hand experiences of the researcher. First, hypotheses were developed in part based upon a previous small scale network analysis of a low-income health care network conducted by this researcher in Lake County, Florida. Second, the study hypotheses emerged in part out of a review of a survey used by Provan et. al in a 2005 community health promotion network study. Complexity and resource dependence literature supported the concept that county government functions among myriad inter-organizational relationships (Benton, 2003; Benton et.al, 2008) that have emerged as fundamental to meet expansive county service demands (Kraybill & Lobao, 2001), within a complex service delivery environment (Provan & Milward, 1991).

Hypotheses for this study were also developed in part as a direct result of literature obtained from the Kaiser Foundation on uninsured and low-income individuals, which determined that health care is provided within an informal network of health care providers (2007). Additionally, the level of public financial support that exists across health care organizations (Provan & Milward, 2001) suggested county involvement may predict network formation, which is in turn supported by the idea that networks are a common method for meeting broad health and human service needs in a community (Agranoff, 1991, 2003; Baker & Melton, 1994; Israel, Schulz, Parker, Becker, 1998; Jennings & Ewalt 1998; O'Toole 1997; van Bueren, Klijn, & Koppenhjan, 2003; Huang & Provan, 2006). A 1999 Kraybill & Lobao study

utilized questions relevant to this research and this study duplicated some of those questions as they relate to fiscal stress.

Ultimately, the researcher's experiences led to careful examination of the literature and found the environment to be a key measure of a health system (Marathe, Wan, Zhang, 2007; CQHCA, 2001; Lin & Wan, 1999; Wan, 1995). Environment is identified as the community resources and context within which the care is provided. These concepts led to the development of the variable constructs and the hypotheses for this study. The literature review provides detailed support for these choices.

The research questions and hypotheses for this study are:

1. What initial conditions (*environmental pressures, public intent, and community resourcefulness*) lead to pervasive county influence in health care networks?

H₁: Environmental pressures (*Population Growth, County Fiscal Stress, Geographic Region, Population Size*) has a direct effect on pervasiveness of county influence.

H₂: Community resourcefulness (*County Financial Support for Health Services, Number of Health Care Organizations, County General Revenues, Number of County Employees*) has a direct effect on pervasiveness of county influence.

H₃: Public intent (*Political Leadership, Indirect Public Health Services, Structure/Form of Government*) has a direct effect on pervasiveness of county influence.

2. What initial conditions (*environmental pressures, public intent, and community resourcefulness*) lead to improved network performance?

H₄: Environmental pressures (*Population Growth, County Fiscal Stress, Geographic Region, Population Size*) has a direct effect on network performance.

H₅: Community resourcefulness (*County Financial Support for Health Services, Number of Health Care Organizations, County General Revenues, Number of County Employees*) has a direct effect on network performance.

H₆: Public intent (*Political Leadership, Indirect Public Health Services, Structure/Form of Government*) has a direct effect on network performance.

3. What impact does pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) have on network performance (*access to care, health care coordination, and health information exchange*)?

H₇: Pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) has a direct effect on network performance (*access to care, health care coordination, and health information exchange*).

The research questions and hypotheses will be examined through survey and secondary level data for this study in order to effectively identify the existence, complexity, and performance of health care networks, and the influence of county government participation. U.S. Census data provide the secondary source used in this study. Case study analyses provide greater insight into health care safety net permutations. See Appendix A for a copy of the survey tool.

Conceptual Framework

Figure 1 provides an illustration of the conceptual model developed for this study after consideration of contemporary county government, health care, and network literature.

Generally, models serve to provide precision to assumptions about relationships (Carlsson, 2000). In this case, the model provides a visual understanding of the relationships among

environmental complexity, institutional factors, community resources and health care network performance. The model was developed first by identifying initial conditions within a community based upon network, resource dependence, complexity, and county government literature. Second, specific variables within a health care network were identified based upon the health care literature and a survey analysis (conducted by this researcher) of a low income health care network in Lake County, Florida. This survey tool was a prototype for the one used in this study.

Provan & Milward (1991, 2001); Clark (2003); Agranoff (1991, 2003, 2006); Agranoff & McGuire (1998, 1999, 2001); Benton (2003); Streib et.al. (2007); and Kraybill & Lobao (2001) provide the primary sources for linking the constructs of this model together. Complexity and resource dependency theories offer evidence of possible relational paths among the eleven (11) exogenous variables (population growth, county fiscal stress, geographic region, population size, county financial support for health services, number of health care organizations, county government employees, county general revenue funds, political leadership, indirect public health, and structure/form of government). These variables were identified in the literature and will be discussed in greater detail in the literature review. However, each exogenous variable seemed to suggest a logical path to the first endogenous variable, pervasiveness of county influence. In turn, this may eventually lead to the development of a continuum of health care networks that is based on the available resources and relationships that exist across organizations within a community. The second endogenous variable is a natural progression, network performance.

Model Construct

The model was further developed by grouping the exogenous and endogenous variables into constructs using logic based on the literature to understand the formation of health care networks and the impact of the degree of county government participation. A latent construct is defined as a “theoretical variable that may be measured by multiple indicators” (Wan, 2002 p.76). Further, this recursive model will be examined for the “impact of one latent construct on another” (Byrne, 2001, p.6.) In this model, the exogenous variables are proposed as three latent constructs:

- The environmental pressures construct is measured by the exogenous (or indicator) variables population growth, county fiscal stress, geographic region, and population size.
- The community resourcefulness construct is measured by the exogenous (or indicator) variables county financial support for health services, number of health care organizations, county general revenues, and county government employees.
- The public intent construct is described by the exogenous (or indicator) variables political leadership, indirect public health, and structure/form of government.

In this model, the endogenous variables are proposed as latent constructs:

- The pervasiveness of county influence construct is measured by three endogenous (or indicator) variables, which are types of relationships maintained by the county government, the intensity of relationships maintained by the county, and the number of community oriented health care organizations.

- The network performance construct is measured by three endogenous (or indicator) variables. These variables are health care access, care coordination, and health information exchange. These variables examine access to care, health care coordination and health care information exchange.

These constructs were developed in part based upon a pilot study conducted by the author of a low income county based health care network, using resource and complexity theories, and based largely upon the literature as identified in the literature review and briefly identified here.

The exogenous variable constructs are based in literature that suggests that networks of health and human service organizations have long been considered to be collaborative ventures (Provan & Milward, 2001). Further, the literature suggests that collaborative ventures arise out of resource availability (Provan & Milward, 2001, Barabasi, 2002; Kramer & Wells, 2005) and fiscal stress, which in this case is county government fiscal stress (Clark, 2003, NACO, 2002). Finally, it is important to study county involvement in networks because of the increasing inter-organizational relationships that exist among counties and other organizations (Benton, et. al, 2008). The literature helped to guide the researcher in developing a model that considers various health care resources and the impact of public funding for health care organizations (Provan & Milward, 2001) as governments attempt to meet citizen health care needs (Clark, 2003). This is supported with Kraybill & Lobao's (2001) study that indicates the importance of networks in addressing rapidly increasing county service needs.

Complexity theory, which ties the exogenous variable constructs to the endogenous variable construct, pervasiveness of county influence is long standing in both the network and the health and human services literature (Powell, 1990, Provan & Milward, 1991, Pfeffer &

Salancik, 2003, Brown & Potoski, 2004). The endogenous construct network performance is defined in part by Plsek (2001) as he connects performance improvement within the complex adaptive system that is health care in the United States. Further substantiating the networked services concept, one of the imperatives identified for improving health care is to assure patient care is coordinated across a spectrum of services, locations, and changing health care needs (CQHCA, 2001).

One final literature connection that stimulated the model development for this study is the link made by Dunlop & Holosko (2004) in which funding across organizations, leadership, and the relationships that exist across community health care providers determines collaborative activities. In conjunction with the theoretical framework of complexity and resource dependence theories identified in this study, the literature assisted greatly in the development of the model and its constructs.

Summarizing the Framework

As noted previously, Figure 1 provides a graphic representation of the theoretical model for this study. In this model, complexity theory and resource dependency theory utilize the environment and its resources in which county governments and community organizations are functioning to better understand performance dynamics.

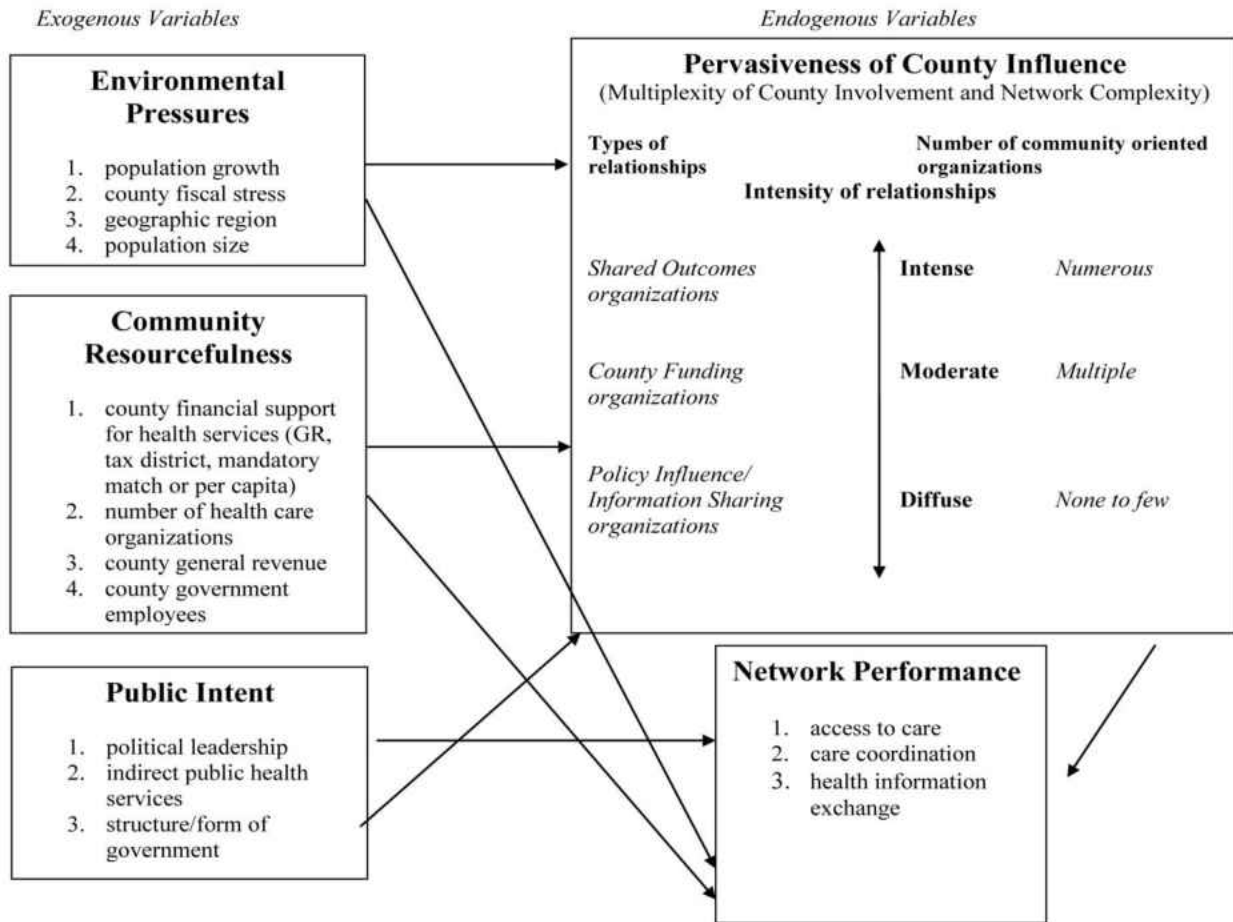


Figure 1: Conceptual Model of the Study Indicating Possible Conditions Necessary for County Government Influence on Health Care Networks and the Resulting Health Care Network Performance

Study Methodology

A non-experimental, cross-sectional study of county government was undertaken in 2009 which proposed a national survey, with a sample size of 500 county governments. A random sample of these 500 county governments (roughly 17% of the counties in the U.S.A. identified in the U.S. Census Bureau , 2002b) received surveys via U.S. Mail. The surveys also were made available electronically via Survey Monkey. The surveys were sent to professional county managers whenever possible and to commission chairs in those counties without a professional manager. A total of 127 respondents returned surveys for a survey return rate of 25%. However, due to timing and data inadequacies, only 123 of these surveys were analyzed.

An overview of the remaining chapters is presented here. Chapter 2 provides an examination of the relevant literature on county governments and health care and identifies the theoretical framework used for this study. Chapter 3 discusses the study methodology in greater detail. Chapter 4 explores the findings from this study while Chapter 5 provides implications of the study. The full case study conducted of Orange County, Florida's health care network, the Orange County Primary Care Access Network or PCAN, is provided in Appendix D.

CHAPTER TWO: LITERATURE REVIEW

Through examination of environmental, community resource, health, and institutional literature, the construction and exploration of the health care network model (see Figure 1) tested in this study is supported. This literature review supports developed for this study. More specifically, this review supports the variables relevant to understanding the initial conditions or environment of these communities, the complexity of the network and its environment, and the pervasiveness of county government influence in these health care networks. The context for this study is first presented within the management implications discussion. The historical foundation for this research is presented, then county government research is explored and fiscal stress will be discussed. The literature review then considers the literature specific to the exogenous and endogenous variables of this study. The literature review is presented this way in order to clearly illustrate the development of the model that is tested in this study.

Management Implications

First, it must be considered that public policy has long been inclusive and integrated into societal service delivery systems. This has roots in the services integration literature and it creates challenges related to managing human service delivery systems that cross organizations and sectors (Agranoff, 1991). As the literature and this study suggest, service providers and counties are already collaborative partners, working in networks to delivery health care services. Subsequently, the need to understand these relationships among county governments and health care providers has management implications as health policy is further developed around the country. Indeed, billions of dollars are already being spent by both state and local governments

to either provide health care to the uninsured within networks of providers, to match federal Medicaid funding (another networked resource of providers), or to provide health care for state and local government employees (Office of the President, 2009b). In examining the following sections within this literature review, consideration must be given to the health care management implications facing county governments. This literature review begins by first examining the historical roots for this research and then moving to research specifically targeting the model construct that forms the basis of this study.

Historical Overview

Model Construction Relevance

The model developed for this study explores the impact of county government participation in health care safety nets, or networks. Therefore, it is necessary to first examine county governments. In Figure 1, the role of the county government is clearly illustrated within the pervasiveness of county influence construct. However, the other 3 constructs presented provide the environment within which the county is operating. Together, these variables facilitated the understanding of the conditions in which health networks form and the impact of those conditions and county participation on network performance.

County Governments

Although not specifically defined in the U.S. Constitution, counties do function as formalized units of government. As defined by the U.S. Census Bureau, county governments are authorized by state constitutions to deliver proscribed public services at the local level (U.S.

Census Bureau, 2002). While counties may have traditionally been responsible primarily for policies that are redistributive in nature, they have been moving into more direct service provision (Schneider & Park, 1989). Therefore, given the nature of county government as a go between among federal, state, and local governments it is little surprise that counties have ventured into service provision.

County government is pervasive throughout the United States with the exception of two states, which do not have county governments. Connecticut and Rhode Island, do not have a governmental unit that is either labeled as, or serves in some capacity as, a county (U.S. Census Bureau, 2002b). However, there are over 3,000 county governments across the United States and the variation in the number of counties within a state ranges from a low of 3 (Hawaii and Delaware) to a high of 254 (Texas). Public management and policy decisions affecting such a large number of governments should be investigated. This study has selected the impact of county government participation in health care delivery. County governments have long been providing services through an array of providers and health care is one example.

County Government as Collaborative Partner

Historically, county government has been considered collaborative. This historic collaboration theme results from county governments multiple leadership (constitutional officers to name a few), county commissions, administrators, accountability diffusion and more working together to manage the networks of services that bridge public, private and nonprofit sectors (Waugh, 1994). These networks have emerged as a necessity for meeting the changing demands placed on county governments. Given that counties often provide direct services and funding to solve community based problems, the county may be considered a pivotal player in

the human services delivery network (Agranoff, 1990). For the purposes of this research, this is a critical element worthy of further attention. The premise of this study contends that county governments are integrally linked with health care services in their communities. In considering Figure 1, it is important to note the prominence being placed on counties--first, the environment in which the county is located, second, the community resources available in the county, and finally, the political framework of the county. All of these relate to the pervasiveness of county influence and ultimately on the network performance in delivering health care services to uninsured and underinsured county residents. Indeed, as communities struggle to deliver services, collaborations emerge as opportunities to enhance service capacity, and to promote cooperation rather than competition (Bailey & Koney-McNally, 2000). It is this cooperation which is examined within this study.

Public Health as Collaborative Partner

Public health has a long history of public private partnership. The federal Medicaid program funding is provided to community based nonprofit providers and this has provided local governments with a sustained example as they look to meet increasing service demands with dwindling fiscal resources (LeRoux, 2007).

Health care and county governments are well suited for study in that both are collaborative in their structure and service delivery. This collaborative history has led counties to approach service delivery in a decentralized fashion, rather than centrally locating services all under the auspices of county government. The collaborative nature of county governments and health care is discussed within this context. Alter and Hage (1993) suggest that in situations

where public services are not suited for centralization, frequently for political purposes, then community networks of providers are logical alternatives for service delivery. It may be argued that health care is one such public service that warrants network approaches. In the United States, health care is provided both publicly and privately through an array of service providers that crosses nonprofit, for-profit, and public sectors (Kaiser, 2009; Bodenheimer, & Grumbach, 2002). This network has emerged over decades of development as public and private organizations have worked together to meet community health needs. Subsequently in this discussion, the exogenous variables that comprise the community resourcefulness construct of this study are examined in greater detail later. The evolution of these networks has roots in the privatization of public services.

Privatization Prompts Collaboration

Privatization has further facilitated the role of government as collaborator. The privatization of many public services has been contingent upon the availability of private sector service providers willing to take over the services. Over the past few decades a subtle shift has been occurring in how communities come together to resolve problems through networks (Grell & Gappert, 1993). As a result of privatization and in part due to how services evolve in communities over time, it may be stated that networks of service providers have naturally developed across communities. Community organizations have created collaborations that traded government control for shared responsibility for delivery of public goods (Mandell, 1999). This shared responsibility has resulted in the leveraging of resources--fiscal, personnel, and capital. As a public policy tool, this has been productive. Federal and state devolution has resulted in counties turning to nongovernmental organizations to deliver services, resulting in a

complex service delivery environment (Kettl, 2000). This environment has been able to build upon existing resources and led to fiscal partnerships that disperse responsibility, thus reducing the burden on any one source. Perhaps the reduction of this burden provides evidence of the strategic policy-making counties are undertaking to meet public needs.

Collaborations as Strategic Alliances

It may be argued that the collaborations, or relationships, that counties enter into are strategic. Counties are historically responsible for implementing legislation and policies for state and federal government agencies and this includes participation in public safety nets and the promotion of community collaborations (Staats, 2004). This puts counties into a pivotal, strategic role of facilitator and provider. Therefore, it is necessary to first identify the reasons that drive these community-based strategies.

Because networks may be considered a form of strategic alliance, recognition must be given to the development of the alliances and their concomitant preconditions, processes, and outcomes (Bailey & Koney-McNally, 2000). This study seeks to do just that--analyze the preconditions, processes, and outcomes of a health care network. In doing so, the strategic factors behind that drive county government participation in health care networks may be better understood. The role of county governments and the scope of services they provide has been experiencing significant change (Benton, et.al., 2008; Percival, Johnson, Neiman, 2009). Devolution has contributed in large part to the fiscal burdens places on counties. As federal funds were diminishing during the 1990s for state and local governments, state aid increased by about 47%, however, this remained a deficit increase for local governments as they experienced

an increase in spending above 63% (Krane, Ebden, Bartel, 2004). A strategic motivation for participation in health care networks may be that it is among those services for which public opinion has demanded support. Further evidence of the strategic motives behind county participation in health networks is the ability to lend credibility, or legitimacy, to a problem by putting the force of a government institution behind ameliorating the issue.

Validating a Problem by Enacting Policy

Collaborative partnerships of public and private organizations may be construed as an innovative approach to managing public services, with county governments legitimizing the partnerships through their leadership and resource commitment. Alternatively, county involvement acknowledges a problem, thus giving it legitimacy and validation. This can promote awareness, increase funding, and expand access to services. Concomitantly, Carter and LaPlant (1997) argue high levels of government spending on public health, population density, political influences, and the impact of region play some part in motivating governments' need for innovative health care problem solving. These motivations are behind county government participation in health care as a public policy issue. To test this, the conceptual model (see Figure 1) for this study incorporates each of these elements identified by Carter and LaPlant within the three exogenous constructs. Spending falls into the community resourcefulness construct, population density lies within the environmental pressures construct, and political influences is under the public intent construct. These constructs will be discussed later in the literature review.

In 2008-9, NACO (2009) members conducted three regional meetings to promote county health care issues, raise awareness about county involvement, and to engage with the Obama administration's health care reform initiative. Clearly, county governments are continuing to legitimize the health care issues facing their administrations by raising awareness at the federal level. This is evidence of county governments facilitating public policy across levels of government. However, the validation of a public problem necessitates public action. Public action depends upon access to sufficient revenue streams to finance the associated projects.

Fiscal Burdens

More than 90% (about 252 million) of Americans live within county boundaries (US Census Bureau, 2002b). This is a significant portion of the American public. In considering who will share the burden of providing services to these citizens, it becomes clear that in some form, county governments are linked to service delivery. In the context of this study, health care networks are among the services counties support. Health care networks are ostensibly for providing services to the underserved, low-income populations. The problems begin when funding becomes scarcer.

For those organizations depending upon public funding, the fiscal burden facing governments can become critical. In continuing economic downturns, long term methods for reducing budget expenditures are likely to include reductions in public services to low income individuals (Morgan, 1994, Rivlin, 2002). Currently, the cost for providing health care to uninsured or underinsured individuals who are unable to pay for their care, known as

uncompensated care, is heavily burdensome to the public sector-about 75% of the cost is paid for by federal, state, and local funding (Hadley, Holahan, Coughlin, & Miller, 2008).

Unfortunately, fiscal stress has necessitated budget shortfalls that have shifted more fiscal responsibility to local governments for public services. In a 2003 county survey, budget deficits faced nearly 72% of respondents and decreases in public health services were planned for 25% of respondents (Clark, 2003). Many states' responses to budget shortfalls in 2002 and 2003, were to cut social support services for low-income populations such as Medicaid, housing, child care, and job training (Rivlin, 2002). Today, federal, state, and local government budgets are heavily invested in health care, accounting for about 50% of the total spending on health (Executive Office of the President, 2009a). However, the fiscal stress placed on counties and other levels of government is devastating and budgets are being affected around the country (NACO, 2009b; Eaton, 2009; Phaup, 2009, Executive Office of the President, 2009a). Indeed, for FY 2010-2011 the Orange County Primary Care Network is facing a \$2 million dollar reduction in its budget (M. Brennan, personal communication, April 30, 2010). This is certainly expected to affect service delivery in some capacity for the underinsured and uninsured clients of this health care safety net. Next, the literature will be reviewed to explicate the study model construction and the selection of the variables.

Literature Specific to the Study Model Constructs

It may be argued that county governments are readily accessible to their citizenry and are therefore more approachable. In this respect, community need is more directly visible to the policy makers, who must live in their communities and among their constituents. This community linkage is important in considering communitarianism and the concept of shared responsibility. Etzioni (1996) posited the theory of communitarianism, which in part suggests that without some basic level of safety net, people will suffer, and subsequently, the very fabric of social order will be immediately weakened. This study reflects upon this concept of safety-nets by analyzing how county governments are participating in meeting the health care needs of low income people living in their communities. It is suggested by the literature that partnerships and collaborations among public and private organizations may be one solution to this complex social problem.

Successful strategic collaborations rely upon several factors that are relevant to this research. Among the factors to be considered fundamental to building collaborative networks are: environmental links, the reason for the collaborative activities, the structure of the network, the membership comprising the network, and the leadership involved (Bailey & Koney-McNally, 2000). Historically, public health programs, such as Medicare, have relied upon service provider networks and both public and private sector financing to meet program demands (Mandell, 1999). Medicare and Medicaid serve as long-term examples of public-private collaboration on a complex social issue- health care for vulnerable populations.

The following literature review discusses the relevant literature within the context of the model constructs developed for this study. The conceptual model for this study is found in

Figure 1. As is noted in the model, measureable variables are grouped into latent constructs in order to facilitate path analysis. As is seen in Figure 1, the five latent constructs are divided into two groups. The first group contains the exogenous constructs, which are environmental pressures, community resourcefulness, and public intent. The observable variables within these exogenous constructs serve as the study's independent variables. The endogenous constructs are pervasiveness of county influence and network performance. The endogenous observable variables within these constructs serve as the study's dependent variables. With particular emphasis on the exogenous constructs, this literature review is divided into the five model constructs and then accordingly by measureable variables.

Environmental Pressures Exogenous Construct

Introduction

As illustrated in the conceptual model, the first latent variable construct is environmental pressures, which is measured by four observable variables-population size, population growth, geographic region, and fiscal stress. Environmental pressures have long been associated with organizational change as organizations adapt to their surroundings. Further, the complex interactions of organizations within their environment provide evidence that links this study securely to one of its theoretical underpinnings- complex adaptive systems theory. Theory will be discussed later in this section. However, it is important to consider complex adaptive systems theory throughout this section of the literature review as it explores the exogenous model construct, environmental pressures.

Complex adaptive systems explores the relationships among organizations, both internal and external to the organization itself. These relationships are frequently found within collaborations and partnerships, both formal and informal. Indeed, health and human service organizations have traditionally formed alliances and collaborations in an effort to respond to increasing external and environmental factors (Bailey & Koney-McNally, 2000). Zinn, Mor, Castle, Intrator, and Brannon (1999) note the prevalence of research relating to inter-organizational relationships among physicians and hospitals, and press for further research into the other elements of the health care continuum. In this study, the researcher moves the county health care research along by examining the involvement of county governments in the health care network and its impact on network performance. The environmental pressures construct is measured by the variables population growth, geographic region, fiscal stress, and population size. The literature support for these variables is presented below.

Population Size and Population Growth

This study considers population growth and population size as environmental factors that may affect county government participation in health care networks. As illustrated in Figure 1, these two variables are exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance). In support of this concept, Benton (2005) suggests service delivery responsibilities are the result of two interconnected population related facts, rapid growth and population size. These are important factors for this study because rapid population growth can strain the resources of any

community. This population growth stress will determine in large part the services to which various resources will be directed.

Benton (2003) suggests county spending policies are determined by population. The size of the population directly affects revenue streams, based on spending, growth, and tax collection. As these populations grow, services must be increased to meet rising demands (Schneider & Park, 1989, Benton, 2003). Linked to these demands are expectations from citizens. As far back as the turn of the century counties were providing relief for the poor (Fairlie, 1920).

Mays and Smith (2009) further argue that population presents another factor that must be considered in determining public health care systems. Population needs vary and this variation must be considered in the development of health care systems. Health care systems differ from community to community. However, one similarity that seems to emerge regardless of population issues, is the pervasiveness of county involvement in health care. Among the services most provided for by county governments are health clinics and emergency medical services, which emerge at 52% and 51% of responding counties respectively (Kraybill & Lobao, 2001). This similarity is again demonstrated in the study and discussed in the findings section.

Population density has been further linked to weak ties that exist across networks (Granovetter, 1983). Weak ties have long demonstrated their utility. Perhaps dense populations, with their deeper pockets of resources, may have an innate ability to form more flexible networks, with relationships ebbing and flowing as needed. Conversely, in smaller communities, networks may be less flexible, more formalized and their dependence on consistency and reliability is a result of limited resources. Subsequently, population size, population growth, and geographic region must be considered in examining county government participation in health

care networks. These variables are linked firmly to the final measurable variable within the environmental pressures construct, fiscal stress.

Fiscal Stress

As illustrated in Figure 1, this variable is exogenous, and anticipated to ultimately have direct effects on both endogenous variables (pervasiveness of county influence and network performance). Population growth combined with decreasing tax revenues may be creating substantial stress for county governments.

Politics and economic stress of recent decades have created policy conflicts (Cooper, Brady, Higaldo-Hardeman, Hyde, Naff, Ott, White, 1998). In turn, this stress and these policy conflicts may result in public policy choices that do not fully address the expectations of county residents, but perhaps provide more of a compromise between fiscal responsibility and what is desired. How communities respond to these policy conflicts, such as health care for the poor, during times of fiscal stress, deserves further consideration.

Budget shortages occurred during a time when counties are facing increasing service demands and revenue reductions (Kraybill & Lobao, 2001). Increasingly, tax payer demands for efficient spending of tax revenues are among external factors that motivate public sector managers to solicit service delivery innovation (Kiel, 1994). Public policy is undoubtedly constrained by available resources and public budgets must be allocated accordingly.

Consequently, economic factors such as fiscal stress affect policy. Clearly, economic indicators have substantial power over public expenditures (Dilger, 1998). Beginning in 2000, states were faced with critical budget shortfalls that necessitated budget reductions, the raising of just over \$9 billion dollars in CY 2002 in new taxes, increasing \$2 billion in revenue enhancements, and

dipping into reserves with an anticipated drop to \$13.2 billion by FY 2003 from \$31.5 billion in FY 2001 (Kincaid, 2003). These reductions inevitably affected policy and subsequently service delivery.

Policy & Alternative Service Delivery

When local governments use nongovernmental organizations to meet public service demands, they create a government service delivery system that is considered to be either a government by third party, or guarantor government, but assumes the role of assuring, or guaranteeing, the services are delivered (Martin, 2001; Salamon, 2002). These choices result in a unique policy tool selection. County governments select different public policy tools to achieve specific public action. Consequently, it is important to consider that networks are affected by the policy tools selected by public managers, particularly in the composition and structure of the network (Agranoff & McGuire, 1999).

Finally, as noted previously, environmental pressures such as population size contribute to fiscal stress. This stress forces great disparity across local governments, in part because the impact of population density, intergovernmental relations, and community affect budgets and their subsequent impact on policy outputs (Salzstein, 2004).

Fiscal stress is increasing for state and local governments as they struggle to provide financing for health care issues during a period of increasing federal demands for state and local participation (Posner, 2003). Politics and economic stress of recent decades create policy conflicts that must be considered by leadership (Cooper, et.al, 1998). This stress may be leading state and local governments to reconsider service delivery systems. Accordingly, Kiel (1994) notes the need for public sector improvements in service delivery during times of fiscal stress,

especially amid the complexities of contemporary government organizations. This complexity lies in large part with the inter-organizational issues that emerge with partner organizations' contribution of resources (Bardach, 1998). However, this fiscal stress may be a motivator to improve public value through locally driven health care safety nets. In large part, these safety-nets help alleviate public sector fiscal burdens. Therefore, Kiel (1994) notes declining budgets force creative responses, requiring public managers to re-conceptualize and redesign a workload demands. These creative responses include public-private collaborations and networks to address complex social problems. The question is raised, what is the impact of county government participation in one such network, namely, the health care safety net? This study answers this question and it will be discussed in the findings section.

Economics, Networks, and Motivations

Networks are not immune to economic restrictions. It may be suggested that while cost efficiency remains as a motivator for the creation of networks, the fiscal stress related to restraining rising costs contributes substantially to the environment in which networks naturally evolve (Chisholm, 1998). A prime motivator for network participants then becomes one of fiscal stability. There are different avenues for achieving this stability among network participants. For one, the stability of multiple year contracts reduces somewhat the fiscal stress and instability traditionally faced by nonprofits each year (Austin, 2003). County governments may be seeking similar stabilizing factors to ameliorate their fiscal stress associated with increasing service demands. Service delivery methods that link nonprofits and government have led to more complex relationships (Austin, 2003). Networks may be one viable stabilizer.

A Decade of Stress and Health Care

Kraybill & Lobao (2001) conducted a county study that identified that more than 2/3 of counties cited fiscal stress as a significant problem during the previous two years and 30% of the responding counties indicated this would directly affect public health programs. Fiscal stress in this study was defined as declining federal, state and local revenues (Kraybill & Lobao, 2001):

- 38% of rural counties, 31% of adjacent counties, and 24% of metropolitan counties noted concerns with declining federal funding;
- 40% of rural counties, 31% of adjacent counties, and 12% of metropolitan counties noted a concern with a declining local tax base;
- over 80% of responding counties reported state revenue losses.

The Kraybill and Lobao (2001) study held particular inspiration for this study. The questions in the 2001 study were replicated in this study. Consequently, the fiscal stress questions as they relate to declining revenues were identical. The results were nearly identical in this 2009 study. The similarity in the results of the 2001 study and this 2009 study will be discussed in the findings section.

Current Economic Conditions & Policy Making

Today, counties are experiencing an economic crisis due in large part to declining tax revenues (Byers, 2009). Fiscal stress is taking on new meaning as the economic recession currently enveloping the United States is causing significant fiscal stress, which is certainly affecting public policy decision-making (Phaup, 2009). However, fiscal stress in the past has not

altered the fact that counties continue to participate in health care delivery in spite of economic hardship. This was identified in 2001 by Kraybill and Lobao and again in 2003 by Clark. This concept is again supported with this current study; the recession has failed to significantly alter county involvement in health care. This is why these factors were examined in this 2009 study.

County governments are active participants in health care networks. Their participation includes providing funding and coordinating activities among health care providers (Kraybill & Lobao 2001; Clark, 2003). Interestingly, as will be discussed in the results section of this paper, the results of this 2009 study indicate county governments are still intricately involved in health care service delivery, declining revenues or not. However, learning that counties are involved in health care, it is important to consider whether geographic region has an effect on county participation in health care networks.

Geographic Region

This study considers geographic region as an environmental factor that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance).

U.S. Settlement Patterns

Geographic region is the final measureable variable that is identified within the exogenous latent construct, environmental pressures. The environmental pressures construct may be seen in its entirety in Figure 1. Geographic region has historically played an important role in

defining the development of local government. County governments developed in large part due to the influences of their settlement patterns, with weaker governments emerging in the northeast and stronger governments emerging in the south (Martin,1993). It may be argued that these settlement patterns were dependent upon the types of people who moved through the country, taking with them their mores, values, and expectations. The importance of geographic region is further supported by Schneider and Park (1989), who note that New England counties tend to have weak governments while southern counties are more active.

The types of political activities that take place in different communities and the linkages that bind regions across communities help to shape the psyche of Americans in different patterns across the country (Elazar, 1972). During national elections it is particularly obvious as to the impact of region on prevailing political attitudes. Further, these political attitudes help to forge the relationships between citizen and government. Consequently, geography matters in terms of political development and subsequently, public policy choices. Indeed, geography and conservative political attitudes are leading to an increasing effort to limit government and an increased interest in market based approaches to public problems (Martin, 1999). Elazar (1972) suggests the political, regional, and frontier factors that continuously drive U.S. politics have led to a culture of unique patterns across the country based in some part due to how emigrants settled the American frontier.

Power

The impact of region on power distributions in counties has been studied to determine the differences, significant because counties are functions of their state governments. Percival, Johnson, and Neiman (2009) suggest the impact of region on political ideology is evidenced by the historical understanding that some counties are located within states that retain substantial control over local governments (Southern states) while other counties grant significant local control to the counties (western states). This power distribution certainly results in differences in public policy patterns. Public policy choices made statewide to serve the entire New York State, would vary considerably from public policy choices made by individual counties. This allows for significant differences in community need as would be evident, for example, between rural Hamilton County and urban New York. Two vastly different communities. Geographic region does seem to account for public policy variation (Tucker & Herzik, 1986). This may be in part as the direct result of geographic region's impact on county power and the degree of conservative or liberal policies. General policy liberalization is examined by Klingman and Lammers (1984), noting policy differentials due in part to differences across geographic regions. Therefore, it seems logical that considering geographic region for this health care network study would be an appropriate fit within the environmental pressures construct. Public policies will be affected by not only the political leadership, but the authority granted to county government by state governments.

Regional Collaboration

Geographic region is further suggested as an indicator of public policies based on growth patterns. The tendency for growth is that it takes place across regions, which necessitates collaborations, particularly during unstable economic periods (Grell & Gappert, 1993).

Municipal government is often unable to single-handedly resolve complex problems and county governments may serve to leverage funding and services, or even function as direct service providers and funders (Agranoff, 1990). This collaboration across level of government will vary according to the location and availability of municipal governments. Political ideology varies across states and this in turn affects the distribution of funding for local policy issues (Percival, Johnson, Neiman, 2009). The funding streams that support public health activities provide for great spending disparities based on location (Mays & Smith, 2009). As the Kaiser Foundation (2006) study noted, health care disparities are significant-with the American South presenting disproportionate growth in the number of its adult uninsured citizens. As indicated here, geographic region as an observable variable within the conceptual model for this study is supported. In 1997, O'Toole proposed the need to identify the existence of public service networks, the need to understand the historical context of these networks, and an exploration of network parameters to determine whether or not characteristic variations across the country identify significant elements of management policymaking.

The environmental pressures construct has been explored in terms of population size and growth, regional differences, and fiscal stress. Integrated with the environmental pressures construct is the next latent variable in the study, community resourcefulness, which examines the resources available to a community in resolving its social problems such as health care.

Community Resourcefulness Exogenous Construct

Introduction

In Figure 1, the model indicates community resourcefulness is the second exogenous latent variable and it is comprised of four observable variables-county financial support, size of county general revenue, number of county government employees, and number of health organizations. Community resources are associated with both public and nonprofit service delivery. As resources may or may not be available, both services and policies will emerge accordingly. The impact of resources on an organization, or in this case, a network, is firmly rooted in resource dependency theory. This links the study, via its exogenous construct community resourcefulness, securely to one of its theoretical underpinnings- resource dependency theory. Theory will be discussed later in this section. However, it is important to consider resource dependency theory throughout this section of the literature review as it explores the latent model construct, community resourcefulness.

In this study, the researcher moves the county health care research along by examining the impact of community resourcefulness on county government influence in the health care network. The community resourcefulness construct is measured by the observable variables county financial support for health services, county general revenue, number of county government employees and number of health organizations. The literature support for these variables is presented below.

County Financial Support, County General Revenue, County Government Employees, Number of Community Organizations

Tax Revenues & Financial Support

This study considers county financial support, county general revenue, county government employees, and number of community organizations as community resourcefulness factors that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance). County governments are definitively involved in service provision, and as this literature review has established, health care is one of those services. A significant portion of their involvement is financial. In fact, while the federal government raises the largest percentage of revenues and states contribute the most intergovernmental transfers to local governments, local government's share in direct service delivery funding is about 30% higher than the state's share (ACIR, 1995). County funding for health and human services is generally secured through one of several ways—property taxes, general revenue, sales tax, and special tax districts (U.S. Census Bureau, 2010). The combination of what revenues are generated, which ones are earmarked, and the degree of home rule exercised by the county all contribute to the how county governments develop their budget allocations. Interestingly, the property tax has declined in its central position of general revenue generation, constituting only about 27% by 1997 (ACIR, 1995).

County general revenues are substantial and allow for local government policy-making that clearly allows for direct service provision. In 2002, county general revenues totaled \$995,855,965,000 nationwide (U.S. Census Bureau, 2007). For many counties, general revenue

funds are the funding source from which many health care initiatives are funding such as Medicaid match or uncompensated care. However, there are alternative funding sources. For example, Miami-Dade County, Florida imposes a .5% sales tax to pay for health care (Executive Office of the President, 2009b). States may empower local governments new tax revenue generation capabilities through legislation that expressly grants such powers. In 2009, the State of Arizona revised its statutes to allow local governments to form special taxing districts for health care services.

Health Care Funding

As Figure 1 illustrates, county governments are embedded within a network of community resources and relationships. Considering the conceptual study model, it is necessary to consider whether or not counties financially support health care. Indeed, funding is pervasive around the country. In a 2002 survey, 89% of responding counties supported public health departments, 39% supported private vendors supplying health care, and 26% supported community health centers (NACO, 2002). These figures will be discussed later in the findings section as this study's findings support these figures. Therefore, even during a period of significant fiscal stress, county governments are still active participants in health care services within their communities. County governments are also financially supporting other aspects of public health. Over \$15 billion was spent by counties on behavioral and developmental health funding in 1999 and counties participate in a range of mental and behavioral health services that provide such care for a substantial portion of the population, about 70% (Staats, 2004). However, county governments are not providing these services directly, rather, they are coordinating services with extant service providers within their communities, in large part via

funding. The level and variety of public financial support extant in health care suggests these are public sector networks (Provan & Milward, 2001).

By providing funding, county government establishes contractual relationships with organizations. These relationships present an opportunity to extend beyond simple contractual relationships and move into more substantial partnerships. Cigler (1999) notes governments emerge as key participants in collaborative partnerships, thus paving the way for examining county government's role in community based health care networks. These key relationships must be considered through the lens of the county's funding position. This position results in validation of the organization being funded, in large part due to oversight and accountability the county may provide. Health and human service organizations may seek to strengthen their relationships with their funders and other stakeholders in order to improve their legitimacy (Bailey & Koney-McNally, 2000). This in turn may position county governments as significant partners in networks of health organizations within their communities as they seek to capture some level of fiscal stability for their local nongovernmental organizations (Austin, 2003). However, there is extensive variation in the multi-sectoral arrangement of public health care spending across the country (Gerzoff, R.B., Gordon, R.L., and Richards, T.B., 1996, TFAH, 2008). This diversity of funding relationships contributes to the variation across networks and the services they are able to provide to their communities. Ultimately, this may affect perceptions of network performance.

Power, Equity, and Efficiency

As has been demonstrated, counties are integrally linked in a complex web of community resources. This web is a network. Networks evolve according to leadership and power distributions. Consequently, it is relevant to consider that county financial support positions the county government along with the medical providers into power positions within the health care network. This trend was identified in a study conducted by Banaszak-Holl, Allen, Mor, and Schott (1998), who noted that key medical providers and public agencies assume positions of centrality within the health network. This centrality affects power distributions, which may influence service delivery. According to Klitgaard and Treverton (2003), public and private partnerships retain advantages that include improved equity, enhanced efficiency, and increased effectiveness. Public organizations fund networks to provide public services and to improve social capital within communities for problem resolution (Milward & Provan, 2006). This social capital is dependent upon the available resources, of which the county funding is one significant resource.

Accountability & Management Capacity

In considering management of, and accountability for, health services delivered via networks, county government involvement generally involves oversight and contract management capacities. This participation is due to the two main avenues by which counties generally participate in networks. In general, counties tend to participate in networks via 1) funding- health related taxing districts, direct contracting with providers, Medicaid contracting, public health department allocations; and 2) through non-financial resource allocation- facilities,

staff, equipment (Benton, 2005). Each of these options requires a unique management method for assuring accountability. This accountability is essential given the responsibility county government must consider in the distribution of public funds.

However, as the county develops relationships dispersed across networks, the allocation of resources and the oversight for them becomes more complex as the network grows. Consequently, managing within these networks or coordinating activities across the networks becomes a complex management responsibility as each new actor forms a new network linkage (Provan, et. al., 2005). What does this really mean for county governments? It means that county governments must have the staff resources with the training, knowledge, and time to facilitate the accomplishments of these management responsibilities.

If service delivery networks are to be managed effectively, capacity becomes an issue when considering just how many agencies are to be coordinated by the county administrative staff. This can be a substantial burden for county governments with their proscribed, and limited, revenue generating options. In fact, management and oversight carry transaction costs that may preclude county involvement beyond a rudimentary stage. Considine (2003) details that the large transaction costs of a public bureaucracy, necessary for monitoring over 300 contractors, was prohibitive and this greatly reduced accountability. This has not escaped the consideration of other researchers as they attempt to study the changing dynamics of county government. As networks become more relevant for public administrators, attention must be paid to the need for different administrative activities to manage these networks (O'Toole 1997; Keast, Mandell et al. 2004). County government managers must be sure they have the capacity, the skills, and the knowledge to manage the myriad relationships of networked services. This is

why the number of county government employees was included as an exogenous variable in this study.

Additional County Resources

Another important resource that is analyzed in this study is the number of health care organizations available in the community. While the number of health care organizations is part of the community resourcefulness construct, it is discussed in depth because the literature serve to support two constructs- community resourcefulness (exogenous variable construct) and pervasiveness of county influence (endogenous variable construct). The literature review that supports the utilization of the variable, number of health care organizations, is presented under the pervasiveness of county influence/network performance construct discussion. The final exogenous construct to be discussed in this literature review is public intent. This is the final latent construct that serves as an independent variable in this study.

Public Intent Exogenous Construct

Introduction

In Figure 1, the model indicates public intent is the third, and final, exogenous latent variable and it is comprised of three observable variables- indirect public health, structure/form of government, and political leadership. Public intent is most assuredly a contributing factor to public sector policy and decision-making. As interests ebb and flow and new needs arise, services delivered by county governments will evolve. The variables in this construct are most firmly rooted in complex adaptive systems theory, based upon the intergovernmental web in

which county government is operating. Further, the impact of available resources, in this case, the number of health organizations, is firmly rooted in resource dependency theory. This links the study, via its exogenous construct public intent, securely to both of its theoretical underpinnings- complex adaptive systems theory and resource dependency theory. Theory will be discussed later in this section. However, it is important to consider both theoretical threads, resource dependency theory and complex adaptive systems theory, throughout this section of the literature review as it explores the latent model construct, public intent.

In this study, the researcher moves the county health care research along by examining the impact of public intent on county government influence and network performance in the health care network. The public intent construct is measured by the variables indirect public health, structure/form of government, and political leadership. The literature support for these variables is presented below.

Indirect Public Health

Alternative Service Delivery

This study considers indirect public health as a public intent factor that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance).

The International City/County Management Association identified health and social welfare services among those public services frequently delivered via alternative service methods, such as indirect public health (Martin, 1999). This finding supports the import of

resource availability on a community and its impact on policy-making. In a situation in which there is a community need and the resources necessary to provide it, county government does not need to assume total control. Rather, county governments may elect to work closely with existing service providers to enhance performance or to fill gaps in service. Successful alternative service delivery methods, such as public services delivered indirectly, depend upon high quality and public oversight (Gansler, 2003). Clearly, there is a linkage between indirect service provision and the accountability that county funding may provide. However, it must be considered that indirect public service delivery is not without inherent weaknesses. One such weakness may be that devolving or privatizing public services is a way to abdicate formal policy responsibility (Austin, 2003). However, perhaps a more appropriate perspective is that shared responsibility leads to resource leveraging, which in turn drives more effective, better integrated public policy. One example of this is supplied here. The Kaiser Foundation (2007) notes that care for uninsured individuals is provided through a safety-net comprised of multiple medical care providers working together and leveraging a web of federal, state, and local public funding and private sector funding. There is clear evidence of the public sector's indirect approach to health care.

One of the most widely recognized indirect public services is Medicaid. Medicaid is one such example of a long-term, low-income health care network, with its levels of authority, service provision, and accountability crossing both public and private sectors (Kettl, 2000). Clearly, indirect public health is entrenched in American government. Intersectoral collaborations that cross private, public and nonprofit boundaries are emerging as a service delivery mechanism (Grell & Gappert, 1993). These multi-sector mechanisms provide evidence

of public intent- public involvement in services matters and so does the method in which the services are provided. However, these collaborations demand information exchanges among the different network participants, which in turn helps to focus efforts on processes that affect policy (Teisman & Klijn, 2002). Managing policies across multiple organizations requires the right leadership on all levels- service delivery, service management, public oversight, and political leadership.

System Improvements

Austin (2003) notes public sector agencies have devolved their services into new community partnerships. Perhaps devolved is not quite the right process. Rather than devolve, perhaps a more appropriate term is engage, as in public sector agencies are engaging services via community partnerships. Devolving connotes a sense of relinquishing responsibility. However, indirect public health services are often crucial services that public sectors maintain authority over, yet work with community providers for service delivery. Consider that health related services are often provided across a continuum of providers that bridges public and private sectors- this ultimately will affect client satisfaction (Banaszak-Holl, et.al. 1998). Repeated dissatisfaction will lead to improvements, perhaps far more quickly at the local government level given the accessibility of local government officials. Klitgaard and Treverton (2003) posit that health care access will be improved and more efficient as the private and public sectors come together in partnership. Certainly efficiency is a significant consideration in delivering services indirectly and relying upon extant organizations already providing similar services.

Limitations of privatization coupled with a need to improve health care services facilitated the notion that existing systems were fragmented and inefficient and in need of innovation (Rathgeb-Smith, 2001). Cooperative activities can produce communal public goods. In turn, the context of examining public management occurs in this cooperative environment. Indeed, these cooperative activities and efficiency demands mean a refocus in how the public sector delivers its policies. Movement away from bureaucracy and stagnant hierarchy has been occurring for quite some time in the public sector and this trend toward governance within networks that crosses public and private sectors contribute substantially to the need to examine new management practices (Agranoff & McGuire, 1999). This further evidences the need for the model to consider indirect public health having an effect on pervasiveness of county influence.

Management Shifts

It becomes an imperative to shift not only management practices, but also that recognize these practices must include new ways to enhance service delivery mechanisms. As Austin (2003) suggests, local governments must develop new methods for supporting the services they provide via nonprofit organizations. Ostensibly, local governments are being asked to innovate beyond simple financial resources in terms of support. This is further supported by Grell and Gappert (1993) who promote the importance of enhancing collaborations that cross public and private sectors to facilitate innovative community based problem.

There are several methods for indirect service delivery. These alternatives to direct service include using volunteers, grants, franchises, and full scale privatization (Knepper, 2008). Historically, the most widely used method of alternative service delivery among local

governments has been contracting out (Martin, 2001). Its popularity suggests this public management tool may be effective and worthy of additional study within a different context. For the purposes of this research, health care safety-nets are one example of how local governments are invested in contracting out. How local governments arrive at their public policy choices also depends in part upon the structure or form of local government, which is the next observable variable identified for this study.

Structure/Form of Government

This study considers structure/form of government as a public intent factor that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance).

County governments come in three basic forms- council-executive, commission, and commission-administrator. In a nutshell, commission forms disperse authority across elected officials whereas council-executive and commission-administrator use some form of a hired public administrator (NACO, 2003). Interestingly, the form of government seems to contribute to how county governments expand services to meet rising demands from citizens (Benton, 2003). Indeed, Schneider and Park (1989) suggest that government structure is a definitive factor connected to county service delivery levels. This is further supported again, only with a geographic twist. Variation in government spending may be attributed in part to government structure in the American Southern counties (Campbell & Turnbull, 2003). Benton (2005) notes there is a durable relationship between county government structure and the services delivered to county residents.

Management, Networks & Spending

In relating structure to network participation, there is evidence that certain structural forms of county government may be more inclined to participate in a collaborative network. The traditional ambiguity of the administrative roles county officials undertake (power dispersal among fragmented leadership) naturally lends itself to the development of mutually beneficial relationships and an atmosphere of cooperation (Waugh, 1994). It is critical to recognize that the relationships that exist among these diverse administrative roles affect public policies (Svara, 2001). This concept is an essential one to consider in this study. Does structure affect network relationships among the providers and the county and does this ultimately affect health network performance?

Connected to structure is that perhaps there is an association between structure and willingness to spend. Counties across the South provide support for this- there is a relationship between spending and government structure (Campbell & Turnbull, 2003). This is further supported by Benton (2003), who suggests that modern forms of county government that have shifted toward commission executive structures will be able to increase their revenue opportunities as they experience greater autonomy than more traditional forms of county government that serve more as political arms of state government. Counties are increasingly providing more services and using more professional public managers (Berman & Lehman, 1993). To date, more than 40% of counties in the United States are commission-administrator or council-executive types of structure (NACO, 2003). Thus, this professionalization of county government structure may indeed impact county willingness to participate in collaborative health care networks. Deeply linked to the issue of government structure is that of political leadership,

which is presented next in this literature review. It is the final observable variable in the public intent exogenous construct.

Political Leadership

This study considers political leadership as a public intent factor that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is exogenous, and anticipated to have direct effects on both endogenous variables (pervasiveness of county influence and network performance).

Motivation

Political leadership in this study considers how pressure by elected county officials leads to participation in health care services. This is grounded in the idea that political leaders are influenced by their constituents, and therefore they subsequently influence public policy accordingly. Political leadership emerges as fundamental to promoting community collaborations but it is often dependent upon substantial constituent support (Cigler, 1999). Public policies may be considered to be a manifestation of the priorities and values of a society and as such, the primary work of the elected officials will represent the will of the people (Dye, 1966). However, this is never as simple as it sounds. Communities are frequently not homogeneous. As counties grow, their populations change. This change leads to increasing diversity, which may create more polarizes voters (Provan & Milward, 2001). However, it is important to remember that costs drive policies, and public choice demands that politicians and administrators must balance the needs of stakeholders with what the marketplace can deliver

(Cooper, et. al. 1998). This represents a significant public management problem, particularly during times of fiscal stress. Indeed, while revenue is shrinking, citizen demands for service are rising (Clark, 2003; Benton, 2003; Eaton, 2009; Phaup, 2009). Essentially, difficult economic times encourage citizens to become more involved in the distribution and performance of public monies (Pynes, 2004).

Health care specifically is linked to political leadership. Percival, Johnson, and Neiman (2009) identified the significance of political ideology on public health care policies in a recent study that examined liberal-conservative political ideology as it affects county service activities. This recent study echoes a 40 year old supposition by Sharkansky, who noted that Elazar's political cultures provide evidence of the preconditions or dispositions of the area that may affect the types of services and programs offered by local governments (Sharkansky, 1969). Put differently, the way in which local governments developed is intrinsically linked to the people who first established those communities. Consequently, political leaders are a product of their communities.

Context & Complexity

The environment in which organizations, both public and private, operate must consider political leadership conditions (Robbins, 1990). Public managers should recognize they are serving their residents during a dynamic period of rising complexity (Kiel, 1994). This complexity clearly supports the link between this variable, political leadership, and the theoretical foundation of this study. Networks must consider political ramifications. Agranoff and McGuire (2001) note the study of public networks must carefully consider political environment in which the networks are operating. Political context also applies directly to how

public health care spending affects policymaking (Mays & Smith, 2009). Of course, budgets are political and must be weighed against citizen needs. Costs drive policies and public choice demands that politicians and administrators must consider stakeholder needs and marketplace accommodations (Cooper, et.al., 1998). These factors contribute to power distributions around a community. Indeed, Samson (1994) acknowledges that policy solutions are predicated upon the utilization of political and cultural power. Ultimately, any public policy decision is the result of political leadership, based in part upon constituent demands and resource availability. Clearly, public sector decisions are made as a result of self-interest and policy making is achieved when an adequate level of public interest is accrued (Dye, 2002). For purposes of this study, it is speculated that political leadership will drive participation in health care service delivery. Political leadership is identified in the model within the public intent exogenous construct illustrated in Figure 1.

This concludes the literature supporting the exogenous, or independent, variables of this study. Subsequent discussion in this literature review focuses on the endogenous, or dependent, variables of this study.

Pervasiveness of County Influence and Network Performance Endogenous Constructs

Introduction

In Figure 1, the model illustrates two endogenous latent constructs (or dependent variables). These two constructs are pervasiveness of county influence and network performance. The first construct, pervasiveness of county influence, is comprised of three observable variables- types of relationships maintained by the county, intensity of county relationships, and

number of community oriented health care organizations. Pervasiveness of county influence is most assuredly a contributing factor to public sector policy and decision-making. The involvement of county government in service delivery changes with the demands of the community, the available resources, and financial capacity. The variables in this construct are firmly rooted in complex adaptive systems theory, based upon the degree and intensity of the relationships and the number of relationships maintained among county government and nongovernmental organizations. Further, the impact of available resources, in this case, the number of community oriented health organizations, is firmly rooted in resource dependency theory.

The endogenous construct network performance is comprised of the observable variables access to care, health information exchange, and health care coordination. These variables are rooted in complexity theory given multiple actors are needed to deliver complex public health services. This links the study to one of its endogenous construct, network performance. Further, each of these variables is an examination of how networks, linkages among organizations, work together.

Theory will be discussed later in this section. However, it is important to consider complex adaptive systems theory throughout this section of the literature review as it explores the latent model construct, network performance.

In this study, the researcher moves the county health care research along by examining the impact of the three exogenous variables and one endogenous variable, county government influence, on network performance. The pervasiveness of county influence construct is measured by the observable variables types of relationships, intensity of relationships, and number of

community oriented organizations. The network performance construct is measured by the observable variables access to care, health information exchange and health care coordination. The literature support for these variables is presented below.

Relationship types, intensity, and network performance

This study considers relationships types and intensity as pervasiveness of county influence factors that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is endogenous, and it is also anticipated to have direct effects on network performance. However, it is also the variable that is acted upon by the other study variables.

Relationships and Access to Care

Two variables relate to the types of relationships the county maintains with the organizations and the strength of those relationships as well as network performance based upon access, care coordination, and information exchange. Wan (1995) comments directly about the necessity of health care services evaluation and considers access to care, continuity of care, and quality as key indicators that must be understood and effectively measured. This study supports this assertion by including access, coordination, and information exchange among its indicator variables. Further, Bodenheimer and Grumbach (2002) identify the key elements of a quality health care system that depends in part upon access to care, the competency of health care providers, the way the providers are organized, and how financial decisions are removed from

clinical decision. Effective public private partnerships must involve the successful adaptation of several characteristics as defined by Lawther (2002),

- Legitimate cost sharing
- Authentic coordination
- A commitment to improving service quality
- Innovation, creativity and flexibility in delivering services

These characteristics are particularly relevant to this study in that they are factors affecting health care coordination, types of relationships maintained, strength of these relationships, and the number of community oriented organizations. These factors contribute to whether or not the network partnerships may be construed as effective, as evidenced by the endogenous construct, network performance.

Network Relations

Network theory applies the term multiplex to identify the connections between organizations that are greater than a single tie, for example, shared facilities and shared referrals would constitute multiplex ties (Provan & Milward, 2001). This evidences the need to examine the level of relationships enjoyed across collaborative networks. The services provided and level of county support vary widely from county to county, as evidenced by examining the disparity of per capita spending on health (NACO, 2002). Granovetter (1973) suggests information sharing, coordination, and flexibility in networks are linked directly to the ties that exist among the participating network participants. General network interactions and levels of involvement

include how information is exchanged, how services are coordinated, and the depth of the relationships (Provan & Milward, 1991).

Power and Leadership

County fiscal involvement in health care networks is supported given that about 64% of county government expenditures are for public health purposes (Benton, 2005). It may also be surmised that in many networks, the public sector actor may exercise a leadership role or play the role of a champion that can significantly affect the quality of innovation in the network (Nambisan, 2008). However, the depth of managements' activities involved in managing within networks, or contracted services, remain within the domain of the governmental unit, and therefore, conducting evaluations, site observations, and data analysis all contribute to measuring quality (Martin, 1999). Subsequently, performance may be directly affected by whether or not the county government has a professional staff capable of fulfilling these evaluative responsibilities. All of these factors contribute to network performance one of the endogenous variables in this study and ultimately the one probably of most import to public managers.

Relationships and Information Sharing

A 1991 study by Provan and Milward examined relationships among networks that included information sharing among the types of relationships of network involvement and found the relationships linked to service provision. Consequently, information sharing may be linked to health care network performance indicators. A positive link between network performance

and external interactions between members of a network has been identified (Meier & O'Toole, 2003). Therefore, the authors suggest interactions among network members should be examined in detail in order to better understand this link. This provides support for this study's questions regarding frequency and types of contacts among network participants. Indeed, Lawther (2002) asserts that the capacity for assuring effectiveness in these alternative delivery methods is linked directly to the agency's response to the provider. Further, can network communication be a stepping stone for public managers to be able to see the growth of unanticipated public value (Bardach, 1998)? In other words, will these relationships lead to improved work productivity, improved relationships, improved attitudes among workers that will result in improved service delivery? Fairfax County, Virginia addressed health care access for low income children by building a network of providers and insurers (Bardach, 1998). This exemplifies the pervasiveness of county influence on health care safety-nets. This endogenous construct (pervasiveness of county influence) is seeking to understand this impact more clearly. However, Johnson and Stein (1975) warn against too much political control, stating it may be problematic when it comes to county commissioners and health care, yet they acknowledge the importance of understanding the relationships among politicians, communities, and health care providers.

Values

Networks may naturally provide added value in addressing community-wide, or far reaching issues, such as health related concerns, with particularly good opportunities for developing and sharing new knowledge (Chisholm, 1998 p. 224) that may directly affect public policy decision-making. Applying network study to low-income county health care networks is grounded in the traditional concern that local human service systems are often fragmented,

highly specialized, and difficult to access, manage, or coordinate (Page, 2004). However, this provides direct guidance for this study and its conceptual model. Subsequently, the number of county employees available to manage these relationships may constrain county influence. Put differently, larger numbers of county government employees may present more effective opportunities for county participation because the manpower is available.

Significantly, across the country there is great disparity in public health's scope of services due in large part to the differences across state and local powers that are defined statutorily (Mays & Smith, 2009) . Inter-organizational relationships may be founded on shared values and goals that may necessitate varying degrees of autonomy among the organizations (Evan, 1965). In turn, the diversity among the relationships may provide insight into the degrees of relationships shared across health care organizations. Figure 1 illustrates both diversity and intensity of the relationships within a community based on county involvement.

Number of community oriented health care organizations

This study considers the number of community oriented health care organizations as a pervasiveness of county influence factor that may affect county government participation in health care networks. As illustrated in Figure 1, this variable is endogenous, and anticipated to have direct effects on network performance. However, it is also a variable that is acted upon by the other study variables.

Network Structure

Van Waarden (1992) identifies two network dimensions relevant to this study- actors and structure. Actors relate to the participants in a network, either an organization or an individual, and their number determines the size of the network. Complexity is the term used to explain the number of actors in a network or the size of the network, and these two factors have an exponential effect on the relationships within the network (Kapucu, 2005). Further, the individuality or characteristics of the network organizations serve as important explanatory variables in studying networks (Van Waarden, 1992). Fundamentally, the number of providers that are working together in a health care network should provide important insight into the structure, intensity, and performance. Clearly, the number of community oriented health care organizations affects the complexity of the network and ultimately, the performance of the network.

Sehested (2003) argues that it is not possible for one organization to resolve complex public problems in part due to resource and knowledge limitations. Therefore, networks of organizations naturally bring together more diversified knowledge and resources. This is a fundamental point of this study. How do these resources and complex relationships drive network performance? The number of participating organizations within a network contributes to the complexity across their relationships (Kapucu, 2005). Yet, this complexity is exactly what is needed to deliver effective public services. As Bardach (1998) notes, the opportunity for the public sector to leverage resources brought together through collaboration- human, fiscal, structural cannot be minimized. Variation in health care spending across the country may be attributed in part to the unique structural and relational characteristics of health care systems

within communities (Mays & Smith, 2009). It has been argued in the literature that this variation may be attributed to a number of factors, including county government structure, number of health care organizations, and political leadership. Figure 1 presents a clear illustration of this theory. Interagency collaborative capacity emerges to address social problems with greater innovative capacity precisely because of the scope of participants and viewpoints (Bardach, 1998).

One must consider whether the structure of the network defines or is defined by the level of involvement of its participants, or nodes. The involvement of its actors and the resulting network structure generally orient around coordinative activities, linkages, and targeted social (Keast et.al. 2004). The components comprising a network may come from a variety of organizations and across sectors to create a variety of compositions (Provan, et.al, 2005). One must consider whether the structure of the network defines or is defined by the level of involvement of its participants, or nodes. The effect of differentiation, or the variety of services in the network, is related to the relationships that form among the network participants (Bazzoli, Shortell, Dubbs, Chan, Kralovec, 1999). Therefore, it is important to identify the actors and their level of involvement in a network structure in order to clearly understand the network picture and to subsequently define evaluation parameters.

Motivation

Perhaps put most succinctly, Kettl (2000) suggests that public action is implemented within organizational and programmatic webs that are embedded within each other. These webs are often referred to as networks. These networks rely upon the interactions and resources of partner organizations. Consequently, this network of policies and programs reflects

contemporary public management and offers that perhaps service delivery through networks is more appropriate than bureaucratic hierarchies (Kettl, 2000). In examining the formation of alliances, Bailey and McNally (2000) raise an important issue regarding the motivation of the creation of these alliances and the resulting outcomes of such an alliance. Those organizations that opt for collaboration tend to do so out of a desire to meet a social need. The public sector most notably shares in this not only out of a desire, but in part out of legal mandates. This distinction is important for examining networks among county service providers that may affect service delivery performance, sustainability, and the depth of the network partners' commitments. The study model reflects the relationships and Figure 1 illustrates the variables necessary for examining these factors. Indeed, the research questions for this study encompass this concept.

Therefore, the availability of health care and community access to these health resources contribute to the environmental context in which health care is operating (Wan, 1995). Van Waarden (1992) suggests the number and type of participants in a network are among the top three characteristics to identify network types. Relationships matter in service delivery; and health organizations that exist within communities provide opportunities to build and nurture different patterns of relationships (Levine & White, 1961). Health care organizations tend to be interdependent upon each other as they coordinate services in a complex network that hinges upon relationships and structural functions (Luke & Wholey, 1999). The complex system that is public health aligns with the recognition of a conceptual framework, which links the structure, process, inputs, and outputs with outcome measures (Donabedian, 1966, Handler, Issel, Turnock,

2001). As illustrated in Figure 1, the conceptual model developed for this study does exactly that- examines structure, processes, and outcome measures.

Linking Observable & Latent Variables in the Conceptual Study Model

As frequently occurs in social science research, the topics under examination are often theoretical and do not necessarily have measurable variables. These theoretical variables are considered to be latent variables. However, the use of latent variables can be measured if observable variables are used to define, and measure, the unobserved (or latent) variables (Byrne, 2001). Therefore, it is imperative that the observable variables be logically connected to the theory upon which the formation of the latent variables is made. Wan (2002) notes the relevance of structural equation modeling in studying health care systems through the utilization of theoretically informed latent constructs. This study uses structural equation modeling for its analysis. The latent constructs are theoretically informed, as has been provided in the preceding literature review section. The theoretical framework for this study follows Table 1.

Table 1 provides a brief summary of the major research studies that informed the development of this study and provide support for the conceptual model.

Table 1: Relevant Studies at a Glance

Author/Year	Focus/Findings	Empirical Base/ Sample Size
Agranoff, R. (1990)	Using networks to solve human service crises/Networks ideal for complexity of social problems.	City of Dayton and Montgomery County/ Case study
Agranoff, R., McGuire M. (1998)	Networks, economic development/ Networks viable in economic development given the intergovernmental approach used by local governments.	American city governments/257 Midwestern cities
Agranoff, R., McGuire M. (1999)	Network management/skills change is needed for public managers to manage in network settings	American city governments/257 Midwestern cities
Agranoff, R. (2006)	Examination of public interorganizational networks leads to lessons learned for public administrators	14 public networks
Banaszak-Holl, J., Allen, S., Mor, V., Schott, T. (1998)	Examines the affects of organizational characteristics and agency participation in a community service network.	69 community based nonprofit providers.
Bazzoli, G.J., Shortell, S.M., Dubbs, N., Chan, C., Kralovec, P. (1999)	Determination of taxonomy of network structures	295 health systems & 274 health networks in the U.S.
Benton, J. (2002)	Impact of county government structure on county service delivery.	146 commission form, 193 non-charter w/elected official, 74 charter counties with elected executive or appointed official (all counties had populations in excess of 100,000).
Chisholm, R.F. (1998)	Examines community network formation for revitalization purposes	Case study of New Baldwin Corridor in Steelton, PA
Clark, R.L. (2003)	Examines budget problems facing county governments- pervasive budget crisis	Counties/715 respondents

Author/Year	Focus/Findings	Empirical Base/ Sample Size
Dilger, R.J. (1998)	Partisanship impact on spending/Generally, little impact attributed to partisanship.	50 States over 10 years/ Population used
Dunlop, J. Holosko, M. (2004)	Interorganizational collaboration of health and human service agencies	22 Healthy Babies, Healthy Children Program service providers
Elazar, D. (1972)	Political culture	50 States
Granovetter, M. (1973)	Social networks	54 individuals
Jennings, Jr. E., Ewalt, J. (1998)	Coordination patterns and administrative arrangements impact on goal achievement in JTPA programs	458 JTPA service delivery areas in 41 states.
Kamarack, E. (2002)	Examination of 21 st century homeland security coordination and bureaucracy	Case study of U.S. homeland security office.
Kapucu, N. (2005)	Networks in emergency responses	Case study, September 11 th , 2001 response in New York City to terrorist attacks 41 agencies
Kapucu, N. (2006)	Public private partnerships for collective action in emergency situations	Network analysis of 1607 agencies responding to the September 11 th , 2001 terrorist attacks
Keast, R., Mandell, M.P., Brown, K., Woolcock, G. (2004)	Complexity of social problems and networks demands changing processes and outcomes/ evaluation methods must evolve to accommodate changing practice	Case study- Goodna Service Integration Project in Australia
Kraybill, D., Lobao, L. (2001)	Fiscal stress and service delivery problems in counties/2/3 of counties say fiscal stress is important problem	1,678 counties across 46 states
Marathe, S., Wan, T.T.H., Zhang, J., Sherin, K. (2007)	Examined efficiency to identify inputs that will most affect outputs (performance).	493 community health centers over 5 years

Author/Year	Focus/Findings	Empirical Base/ Sample Size
Martin, L.L. (2004)	Examines performance based contracting in human services/develops model for contracting based on financial risk and performance and cost factors	State human service Agencies in Florida, Maine, Illinois, and Kansas/purposeful sample of these 4 states
Meier /O'Toole (2001)	Test theory of managing government services within network setting.	507 responding organizations
Meier /O'Toole (2003)	Impact of networking on public management and educational performance	500 U.S. school districts over 5 years
Milward, H., Provan, K. (1998)	Measures network structure by examining network ties based upon the types of relationships that exist.	4 mental health networks and 1 local prevention partnership.
National Association of Counties (2003)	Overview of county government , history, county statistics	U.S. Counties/3,034
O'Toole, L. J., Meier, K. J. (2004)	Impact of bias among individual networks nodes and its impact on organization clients.	507 responding organizations
Page, Stephen (2004)	Examines accountability in human service collaborative.	Selected 10 state sponsored human service collaborative (one from each of 10 states)
Provan, K.G., Veazie, M.A., Staten, L.K., Tuefel-Shone, N.I. (2005)	Lessons learned from network analysis of community health promotion activities	2 networks
Schneider, Park (1989)	Examines service delivery role of metropolitan counties	162 counties across the United States surveyed and compared with data from 1,400 suburban municipalities
Teisman, G.R., Klijn, E.H, (2002)	Interorganizational governance and questions value of cooperative governance.	Case study of Rotterdam Harbor Authority's efforts to expand Rotterdam Harbor.
Thurmaier, K., Wood, C. (2002)	Exploration of overlapping social networks in Kansas City. Explores impact and use of interlocal agreements.	2 counties and 4 cities

Support for the Conceptual Model

This literature review has examined the role of county governments in the delivery of health care services. The literature has focused in large part on environmental factors, community resources, health care network structures, county fiscal stress, and leadership. As these relate to the study model, Figure 1 divides these variables into exogenous and endogenous constructs according to the linkages made within the literature. Given the broad range of public health issues facing counties, networks may provide one avenue for more comprehensive problem solving in which stakeholders explore integrated partnerships for a more coordinated approach (Keast et.al, 2004). These partnerships may be unique within a specific community, but this study seeks to examine their similarities based upon county influences. This is based on Hobday's (1994) assertion that structural and motivational factors affect network success or failure.

Interwoven relationships form networks across services, across management, across planning and fiscal streams. This moves public administrators toward a new governance. Public manager operating under this new governance must of necessity be cognizant of the situation in which some of their public services are now being delivered. As Meier & O'Toole (2001) note, this situation is one in which organizations are for the most independent of each other, yet dependent upon other network participants, forcing public managers to meet performance measures when they have very little formal control over these service providers.

This study addresses a gap in the research. As noted by leading county government researchers, county participation in networks needs to be explored (Benton, et.al, 2008). Further,

while networks have been studied in a variety of settings, county supported health care network research is notably missing. This is interesting, given the extent of county government involvement in health care.

For public administration, major studies examine networks in mental health services (Provan & Milward, 1991), education (Meier & O'Toole, 2001, 2003; O'Toole & Meier, 2004), with interlocal agreements (Thurmaier & Wood, 2002), in economic development (Agranoff & McGuire, 1998), in homeland security (Kapucu, 2005, 2006), and within state level human services interagency collaboratives (Page, 2004). Finally, Mandell and Keast (2007) suggest collaborative networks have the opportunity to encourage relationships among network actors who recognize the importance of agreeing on broad goals, rather than organizational goals, agreeing to adapt organizational structures and processes as needed, the acceptance of the interdependence among network actors, and the need to establish trust and build upon social capital. Contemporary public action, particularly with regard to human services, embraces the partnership model, which necessitates stability and support for human services systems (Martin, 2001).

The model developed for this study goes back to a 1992 agenda set by county government researchers. These researchers declared counties were “neither fish nor fowl” as they set out to develop a research agenda to examine the rapid changes that county governments were experiencing, transforming as urbanization, regional externality problems, and fiscal stress focused greater attention on county governments (Menzel, Marando, Parks, Waugh, Cigler, Svara, Mann-Reeves, Benton, Thomas, Streib, Schneider, 1992 p. 173). The context referenced by Menzel, et al in 1992, remains current for county governments today. Consideration of

environmental pressures such as urbanization/population growth, fiscal stress, and resource issues are noted and validated for this study. The exogenous constructs developed clearly identify these observable variables in the study model.

Research into county governments must now consider an examination of service delivery within collaborations, or networked services. As county governments increasingly embrace alternative service delivery opportunities, there is a challenge to assure appropriate infrastructures necessary to manage these arrangements (Austin, 2003). Expanding the network research agenda is paramount if the dynamics of contemporary county government are to be understood (Benton, 2005).

County government has engaged this type of service delivery option and research should follow suit. Currently, there is a need to explore the networks that exist between counties and other levels of government, between counties and private/nonprofit service providers and to consider changes that have occurred among these relationships as a result of contracting choices (Streib, et al. 2007).

Contribution of Study to the Literature

Provan and Milward (2001) warn it is too early to determine that networks are effective methods for managing complex policy problems. Further, a bridge between the two concepts of county government and health care networks remains absent from the literature. The goal of the study is to inform the health network and county service delivery issues and provide guidance for public managers. The fundamental purpose behind the study of public sector involvement in

networks is to understand the current systems of care in order to strengthen the relationships, and ultimately the services, delivered (Provan, et.al. 2005).

Consequently, for county government administrators, researchers, and political decision makers, understanding the dynamics of currently operational networks is important. Networks may resolve certain public administration problems (principal-agent, bureaucratic inefficiency), yet they may give rise to concerns about the hollow state (inadequate management, poor accountability) and efficiency research is divided (Brown & Potoski, 2004). Comparative research will enable better understanding of those characteristics leading to effective, although not necessarily efficient, networks (Agranoff & McGuire, 2001). The authors suggest effective here relates to meeting the policy directives of the program, while efficiency relates to the consensus building time lags inherent to networks. Further, of more direct interest to counties, administrative capacity emerges as potentially problematic for governments whose primary responsibilities have shifted from service provider to service manager (Lawther, 2002). This is closely echoed by Wholey (1999), in stating the importance of accountability for agreed upon performance specifics and building the necessary oversight capacity to facilitate decision-making at both programmatic and policy levels. One issue that emerges with county networks is that competition may arise among health care providers as they seek dedicated public funding sources. In turn, this competition may unintentionally give rise to the development of an unreceptive attitude toward data collection among contracted service providers which may negatively affect research opportunities (Considine, 2003).

While most network studies examine the micro level of networks (individual networks), this study first seeks to examine networks at a comparative macro level in order to identify the

environmental conditions of their formation, the complexity, and the intensity of low-income health care networks. This study looks at health care network performance and eventually, this study would like to contribute to the development of network wide outcomes measures. The influence of county governments will be identified, and ultimately the model will be supported. Each of these issues is currently lacking in the literature. This researcher has developed a model construct that tests environmental pressures, community resourcefulness, pervasiveness of county influence, and network performance to better understand the relationships across these variables. Health care is a complicated social problem. As the literature revealed, county governments deliver their services in a complex environment of shifting resources and increasing demands. Health care is clearly one of these services county governments deliver, in some form or another. The model developed for this study has incorporated this dynamic environment of a complex service delivery network in order to better understand contemporary county governance as it relates to health care safety-nets.

Theoretical framework

Theoretical frameworks serve as “broad conceptualizations of problems under focus” (Carlsson, 2000). Two theories form the theoretical framework for this study and they are closely related. Complexity theory, in particular, complex adaptive systems theory, and resource dependency theory are used to understand the environmental context in which health care networks function. Both complexity theory and resource dependency theory link environmental constraints and resources to the functioning of organizations (Anderson, 1999, Pfeffer &

Salancik, 2003). Public organizations exist within a dynamic environment, with unstable systems leading to opportunities for adapting structures and services in response to rapidly occurring changes (Kiel, 1994). Dynamic environments are appropriate for this study given the complexity of services and resources county governments and health care systems in general operate. Bringing together these two different, diverse factors linked not only two theoretical assumptions, but two sectors meeting public good- health care and county government. This model appropriates complexity theory and resource dependency theory that coalesces into a dynamic model of a contemporary health care safety-net.

Complexity theory and resource dependency theory are applied to an open system identified in this study as a health care network. This application is supported in order to better identify and understand those environmental (community) conditions necessary for the creation of, and degree of participation in, health care networks based upon a continuum of possible network relationships.

Complexity Theory

Introduction

Complexity theory is used by this study to examine the broad array of health care provider relationships that exist on a continuum of structural designs to deliver health care services to underinsured, uninsured, and low income county residents. This is a public policy implementation tool. Indeed, implementation of public policy via networks is well-founded (Meier & O'Toole, 2003). Complexity theory is largely associated with how organizations adapt to their environment and the manner in which inputs become outputs (Anderson, 1999). These environments consist of independent, yet connected organizations (Davis, Eisenhardt, Bingham,

2007). Further, this complexity and the global nature of society may dictate the need for partnerships and collaboration across traditional avenues, by seeking out new knowledge and adapting practices across disciplines (Lewandowski & GlenMaye, 2002). For county governments experiencing fiscal stress and trying to provide more municipal type services for their residents, this collaboration building may become critical to ensuring service delivery.

Historical Adaptation

Complexity theory arose out of the systems theory discussions that began in the 1960s (Anderson, 1999) when Katz and Kahn (1966) posited exploration of the environmental context in which organizations functioned. Systems theory largely explores the connections between organization's inputs, processes, and outputs. Similarly, complexity theory may be used to explore the changing dynamics of the complex relationships that are developing between government and nongovernmental organizations and citizens; this is changing the face of public service delivery (Boyle & Whitaker, 2001; Austin, 2003).

Complexity theory has emerged to better describe the myriad, nonlinear complexity of organizational system studies and has reawakened interest in the study of open systems (Lewin, 1999). Along with a large number of interacting parts, complexity theory suggests patterns may emerge in the outputs, or even in the characteristics of the organizational structure being examined (Morel & Ramanujam, 2007). This theory justifies the examination of the characteristics of the health care safety net in society. Health care networks are complex systems that are comprised of multiple organizations and leadership. As such, the interactions of these disparate parts are firmly rooted in complex adaptive systems theory.

Networks and Complex Social Problems

It may be argued that network theory is a sub-theory of complexity theory and innovative collaborations that emerge out of networks provide opportunities for solving public problems through utilization of network resources (Nambisan, 2008). Network theory is grounded in the common consideration that the world is really a very small place in which everyone is connected to each other. That said, networks are ubiquitous in society (Barabasi, 2002). This ubiquity has led to increased awareness and study about the utility of studying social science within the framework of networks. Networks represent opportunities for flexibility in dynamic environments (Kapucu, 2006, Davis et.al, 2007, Kilduff & Tsai, 2003). As evidenced by the current debates over health care in the United States, health care is certainly a dynamic arena as indicated by the application of the term wicked to social problems. Wicked is used here as a metaphor for complex and often entrenched social problems that exist in contemporary society (Agranoff & McGuire, 2001; VanBueren, Klijn, and Koppenjan, 2003; Keast et al., 2004, Mandell & Keast, 2007).

The arrangements among health care providers across institutions provide evidence of the complexity associated with the provision of community health and the variation among the relationships among the organizations in terms of the types and frequency of the interactions (Levine & White, 1961). Teisman and Klijn (2002) suggest that the increasing complexity of public policy is due in part to the number of decision-makers involved and their differing perspectives on problem solving.

The diverse arrangement of local government organizations evidences complexity theory within the structural framework through which services are delivered (Parks & Oakerson, 2000).

The complexity involved in managing public policy within multi-agency networks is the result of several factors, including differing perspectives about problem resolution and utilization of resources (Herranz, 2007). However, perhaps by their very nature, networks are better able to adapt services to accommodate this complexity. Powell (1990) suggests networks are “patterns of exchange, interdependent flows of resources, and reciprocal lines of communication” (p. 296). Generally speaking, network theory explains relationships, and the effects of those relationships, that exist across organizations as a result of sharing experiences, resources, and workloads (Kramer & Wells, 2005). Specifically, the public health care system may be studied through its status as part of an inter-organizational network of community health providers (Wholey, Gregg, Moscovice, 2009).

Networks are important for the sharing of resources, understanding the environment, and the generation of knowledge (Agranoff, 2006, Garner, 2006), which could lead to resolving entrenched social problems, like health care. As fiscal stress constrains county budgets, existing resources must be used for improving service delivery, rather than on the creation of new services (Chapman, 2003). Bardach (1998) suggests that network theory is inherently about the way communications flow with the idea of improved communications with a purpose- service delivery being one. This study examines the impact of county government participation as it relates to the complexity of a health care safety net, or network. The sharing of information as a foundation of network activity is identified in this study.

Complexity in Contemporary Public Management

It is important to recognize the impact of the complexity that results in today’s public management as the result in part of the relationships maintained across organizations (Kiel,

1994). Public intent must be considered, is a network an outgrowth of outsourcing public policies? Plsek (2001) suggests that complex adaptive systems such as health care systems by their nature are able to adapt creatively to unique system demands and this adaptation is based in part upon trust established within the health care system. In considering transformation management, instability leads public organizations to affect positive adaptations across the dynamic environment and multiple network actors in which the services are occurring (Kiel, 1994). Perhaps the complexity of the health care situation has enabled county governments to establish adaptive systems, unique to their community but similar in a shared response to increase public value. Table 2 adapts specific complexity theory indicators to the health care network concept. This identifies the potential complexity framework within which health care networks may be operating. First, as has been noted in the literature, flexibility is key for networks of organizations. Given that health care is dynamic, flexibility is essential. Second, networks generally have multiple levels of leadership given that the different organizations that come together do so willingly and often informally. Consequently, there are only the most basic of guidelines. Further noted in the literature is that networks allow for failure and learning from the failures. Networks also cross boundaries as they share knowledge and resources. Finally, networks are focused externally on services provided and improving relations across networks, as opposed to internal focus of the individual organizations. Each of these items is more clearly explicated in Plsek (2001) and Nambisan (2008). This table takes their assertions and applies them to the health care complex adaptive system model. In turn, this assisted with the theoretical development of the study's conceptual model, which is illustrated in Figure 1.

Table 2: Health Care as a Complex Adaptive System

- Engage flexible networks that have the freedom to adapt as necessary
- Develop few concrete rules, rather, provide basic guidelines
- Share vision and goals but limit proscribed processes
- Prepare for innovation failures
- Avoid boundary limitations
- Focus externally
- Provide for knowledge generation and sharing

Adapted in part from Plsek (2001) and Nambisan (2008)

Complexity and the Health Care Environment

Figure 2 presents a brief illustration of the complexity of the study model. The arrows are presented in color to facilitate ease with following the postulated linkages among the variables. This study embraces complexity not only within the observed variables, identified by number in Figure 2, but also in the linkages designated by the arrows.

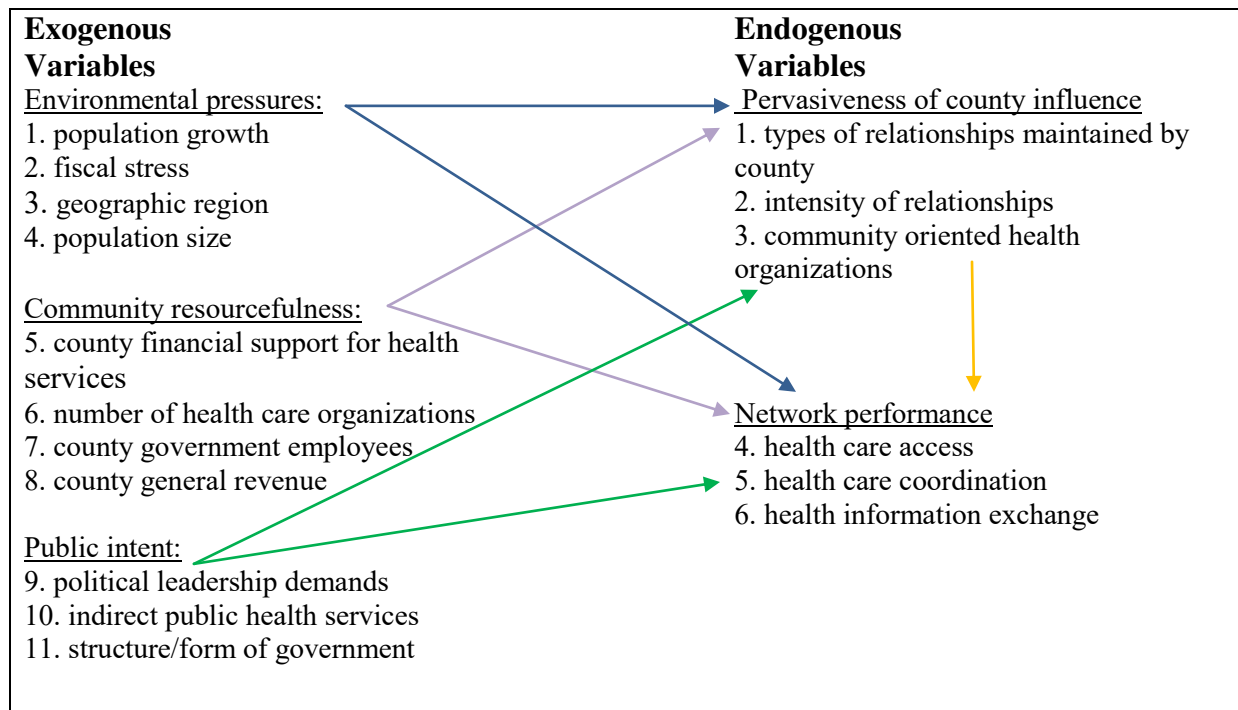


Figure 2: Complexity of Relationships Using Study Postulated Conceptual Linkages

As identified earlier, this study examines the complex environments in which health care networks operate to better understand the relationship among the study’s exogenous variables and endogenous variables. The complexity of the health care environment is represented by the grouping of the exogenous variables into three constructs. The first construct is environmental pressures; the second construct is community resourcefulness, and the third construct is public intent (see Figure 3 for the proposed covariance model). These constructs represent the flexible, complex environment in which various inputs occur along a nonlinear path among a variety of organizations working toward a similar mission. Each of these constructs was supported in the literature reviewed for this study and presented in this section. Now, the constructs are being linked directly to the theoretical framework of complex adaptive systems theory.

The endogenous variables illustrate in part, the outputs, which are a result in part of the continuum of network intensity. This continuum is defined by the intensity or degree of relationships maintained by the county, the number of community oriented health care providers participating in the network, and finally by the types of relationships that are maintained within the network. Ultimately, this continuum may evolve into understanding shared outcome measures within this complex health care environment of multiple health care providers and multiple network relationships.

Systems are created by organizations with joint purposes and are viewed through their inputs and outputs (Evan, 1965). Consequently, the resource sharing that may be occurring among health care providers to meet county health care needs is closely supported not only by complexity theory, but also by resource dependency theory, which is the second theory in the framework supporting this study.

Resource Dependency Theory

Resource dependence is also affiliated with the open systems perspective posited by Katz and Kahn (1966) in that an organization's environment is closely tied to its intake and utilization of resources. As noted in the definitions offered previously, exchange of resources and interdependent relationships are fundamental complexity theory elements, but they are also closely aligned with resource dependency theory. Resource dependency theory links organizations through the control, acquisition, and maintenance of resources (Evan, 1965, Pfeffer & Salancik, 2003). Recognition of the necessity and benefit of sharing resources has led in part to collaborations among organizations (Cigler, 1999) which in turn have seen resource disparities

result in power differentials among organizations participating in the network (Herranz, 2007). Complexity in public sector organizations suggests that resource distribution is constrained by environmental factors that force continual resource redistributions (Kiel, 1994).

Garner (2006) further suggests that resource dependence is based in part upon the perceptions of organizational actors regarding the power and control over resources. In other words, the power wielded by one organization may or may not be legitimate, however, the determining factor is whether or not the dependent organizations believe that organization has more control. This is an important theory relevant to this research because one of the tenets of public sector support for addressing a social issue is that the problem is legitimized by government recognition of the value inherent in focusing attention on the social problem. Stone (2002) cites the role of government as a legitimator and upholder of legal protection necessary to stabilize these voluntary exchanges of resources as they are applied to a social problem.

Agranoff (2006) asserts that networks build resource capacity (funding, staffing, information, etc) because the different organizational participants each contribute some resource in some manner. The pooling of resources can strengthen public managers' abilities to deliver services (Brown & Potoski, 2004) and this control of resources may better support an organization's power acquisition (Robbins, 1990).

Cooperation is linked to the ability to wield power and subsequently the formation of alliances and coalitions (Stone, 2002), which will enable the exchanges of resources and knowledge necessary to accomplish the identified outcomes (Teisman & Klijn, 2002). In particular, these theories support the impact of resource availability, and control of these resources, in a given environment (Banaszak-Holl, Allen, Mor, Schott, 1998, Proenca, Rosko,

Zinn, 2000, Garner, 2006). Inter-organizational relations, that is, relationships that exist among different organizations for a shared purpose, may be linked to complexity theory in part because of the nature of how the organizations share information, services, and staff (Evan, 1965).

The resource dependence of health care networks is supported for the community resourcefulness construct, which examines four specific variables. These variables are county health services funding, the number of health care organizations, the county general revenues and number of county employees that exist (see Figure 1 for the Model Construct). These variables represent the resources that may be used by the health care network to provide services. Understanding how these resources relate to the other study variables may provide an understanding of the initial conditions necessary for the formation of health networks as well as their influence on network performance.

The alliances and agreements that emerge among various actors in a network are for the purpose of exchanging resources (Thurmaier & Wood, 2002). Resource dependence theory is supported for networked or collaborative arrangements, because by working together these organizations are able to increase their resource capacity (Bailey & Koney-McNally, 2000). The dependence upon an agency's resources illustrates how power is levied across organizations (Bardach, 1998, Pfeffer & Salancik, 2003) and can be applied distinctly to organization's dependence upon public financial or legitimizing support. Consequently, resource dependence theory is appropriate for this study given the variables number of health care organizations, number of community oriented health care organizations, county financial support, county general revenue, county government employees, and indirect public health are all indicative of resources available to the community.

Concluding the Theoretical Framework

Grounding the Conceptual Model

The theoretical framework of complexity and resource dependency theories discussed in this section provides the foundation upon which the health care model was developed for this study. The concept for this study model was developed first by recognizing the complexity of the environment in which county governments and health care organizations are operating and the interdependence and availability of necessary resources. Second, the conceptual model was further developed by an integration of the literature to determine contributing factors leading to governance decisions and service delivery mechanisms. Consequently, the conceptual model is firmly grounded in both the literature and the theory.

Dynamic Social Problem, Dynamic Solutions

Cigler (1999) notes the increasing complex mobilization of resources that cross public, private, and non-profit sectors as communities address social problems. This complexity and resource dependency will increase as collaborations become more formalized (Bailey & Koney-McNally, 2000). Resource dependency theory may be used to better understand relationships among organizations and how those relationships are reinforced through continued interactions (Garner, 2006).

Ultimately, organizations are inextricably linked to the context or environment in which they are embedded and this contributes substantially to the resource constraints and availabilities which affect an organization's ability to acquire and use resources (Pfeffer & Salancik, 2003).

While some networks may evolve simply to exchange resources or information, collaborative networks are attempting to forge strong relationships in an effort to discover new avenues for service delivery (Mandell & Keast, 2007).

The complexity of a community's problem and services available to address the problem vary across the country. Further, this complexity extends directly to the types of relationships that exist across these diverse networks. For example, it is important to note that collaborative networks do not necessarily have to be formalized arrangements consisting of strong relationships. In fact, research suggests that weak ties play pivotal roles in network structures (Granovetter, 1983, Banaszak-Holl, et. al, 1998). Subsequently, the relatively loose ties connecting county governments to health care networks is upheld in the theoretical literature of complexity and network activity. Loose ties are important in fostering relations, which is why it is important to study the formations of health networks currently extant.

In summary, networks emerge out of relationships that exist within a contextual environment that consists of organizations that relate to each other in a variety of ways (Agranoff, 1990). Complexity and resource dependency theories integrate the environmental field in which organizations are operating and the resources available to the organizations to identify the link between the inputs and outputs of the organizations (Pfeffer & Salancik, 2003). These relationships and resources will be able to address those research questions related to the complexity and intensity of low income health care networks. Ultimately, county governments have the ability to strengthen and encourage health care networks to better share resources across a complex system of care (Benton, et. al., 2008). The interdependence of network participants and their relationships result in a complex endeavor for shared purposes (Teisman & Klijn,

2002). For this study, this complex endeavor is a health care safety-net for low income individuals.

Linking the Hypotheses to the Theoretical Framework

This study examines the community resources and environmental pressures facing health care networks to better understand the relationship among the study's exogenous and endogenous variables. These variables may identify county government influence based upon the environmental context in which the network exists and community resources available to the network. Complexity theory and resource dependency theory provide the theoretical framework for the seven hypotheses developed for this study:

- H₁: Environmental pressures (*population growth, geographic region, population size, fiscal stress*) has a direct effect on pervasiveness of county influence.
- H₂: Community resourcefulness (*county financial support for health services, number of health care organizations, county general revenue &, number of county employees,*) has a direct effect on pervasiveness of county influence.
- H₃: Public intent (*political leadership, indirect public health services, structure/form of government*) has a direct effect on pervasiveness of county influence.
- H₄: Environmental pressures (*population growth, fiscal stress, geographic region, population size*) has a direct effect on network performance.
- H₅: Community resourcefulness (*county financial support for health services, number of health care organizations, county general revenue &, number of county employees,*) has a direct effect on network performance.
- H₆: Public intent (*political leadership, indirect public health services, structure/form of government*) has a direct effect on network performance.
- H₇: Pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) has a direct effect on network performance (*access to care, health care coordination, and health information exchange*).

CHAPTER THREE: RESEARCH METHODS

This chapter presents the research design used in this study. To that end, the design, statistical analyses, data analysis, sampling, data collection, model design, and the variables will be discussed. The literature and the theoretical framework provided substantial support for the three latent exogenous constructs and two endogenous constructs of this study.

Research Methodology

This cross-sectional study uses qualitative and quantitative analyses to examine the data accumulated for this study. Structural equation modeling (SEM) is used in this study to examine the relations among the study variables to determine associations and predictions. One of the benefits of SEM is the visual representation the analysis provides. Visual aids such as graphs and pictures can be informative in a different way that connects with public managers and this has gained in popularity among public managers (Kiel, 1994). Because this study is testing a model of county government participation in health care networks, it is appropriate that SEM will capture the visual aspect of the model.

In this study, a full latent variable model is tested. A full model means that it contains measurement models and a structural model, which in turn allows for not only exploring the connections among the latent variables and the observed measures, but also for exploring the connections among the latent variables (Byrne, 2001). The unit of analysis is the county.

SEM has emerged as a less restrictive avenue for analyzing complex systems (Wan, 2002). Structural equation modeling uses regression to test the relationships among the variables and to develop a pictorial conceptualization of the structural relations represented (Byrne, 2001).

The use of SEM in this study will identify the complex relationships among the theoretical construct variables, the measurement model, and the fit of the structural model itself as indicated in Figure 3. Specifically, the model will identify: 1) the predictive value of environmental, public intent, and community resource constraints on a health care network and 2) the complexity and performance of network activity in low-income health care networks, through the testing of a structural model with latent variables. It is anticipated the model analysis will support causation and direction and that the strength of the relationships among the latent variables will be determined.

Case study analysis was conducted on one representative health care network to provide qualitative data to expand upon the quantitative analysis. As indicated previously, the connections between the variables in this study, health networks, complexity, county government participation, and public funding, are supported in the literature. For this study, complexity is defined here as the number and types of health care organizations that participate in low income health care networks.

Four aspects of low-income health care networks are studied. First, the initial conditions under which low income health care networks may form are examined. Second, the study identifies the impact of county involvement based upon county participation levels. Third, the numbers and types of health care providers that participate in the network are considered. Finally, a model that explains the relationship between county conditions and the intensity of the network functions is tested. Using complexity theory and resource dependence theory, health care networks emerge as a possible adaptation for meeting community health care needs through multi-sectoral partnerships.

Consequently, this study explores the existence, complexity, and intensity of health care networks for county residents. To answer the questions identified in this study, a non-experimental, cross-sectional national study was conducted through the use of a survey of county governments, exploration of secondary data sources, and case study analysis. This study provides insight into a model of a health care network. In part, the network intensity is based upon the relationships that exist across four types of network relationships. These four relationships are county funding, information sharing, policy influence, and network-wide outcome measures. Network intensity will be described ultimately in a range from diffuse to intense. Intensity will be determined by a combination of the degree of relationships maintained (limited, significant, and substantial) within each of these four relationships and the number of actors in the network.

Data used for this research were gathered from the International City/County Management Association, from the U.S. Census Bureau, from a national survey conducted among a random sample of county governments, and from a case study conducted with the Orange County, Florida Primary Care Access Network, a health care network representative of the models' health care network continuum.

Ultimately, the methodological research question for this study is whether or not determinants may be used to identify those initial conditions (exogenous constructs) that lead to a health care network and its performance (endogenous construct) within a framework of county government participation. Further, is the model supported by the data and can causation, direction, and strength of relationships among the variables be identified? The proposed covariance structure model is presented as Figure 3.

Proposed Covariance Structure Model

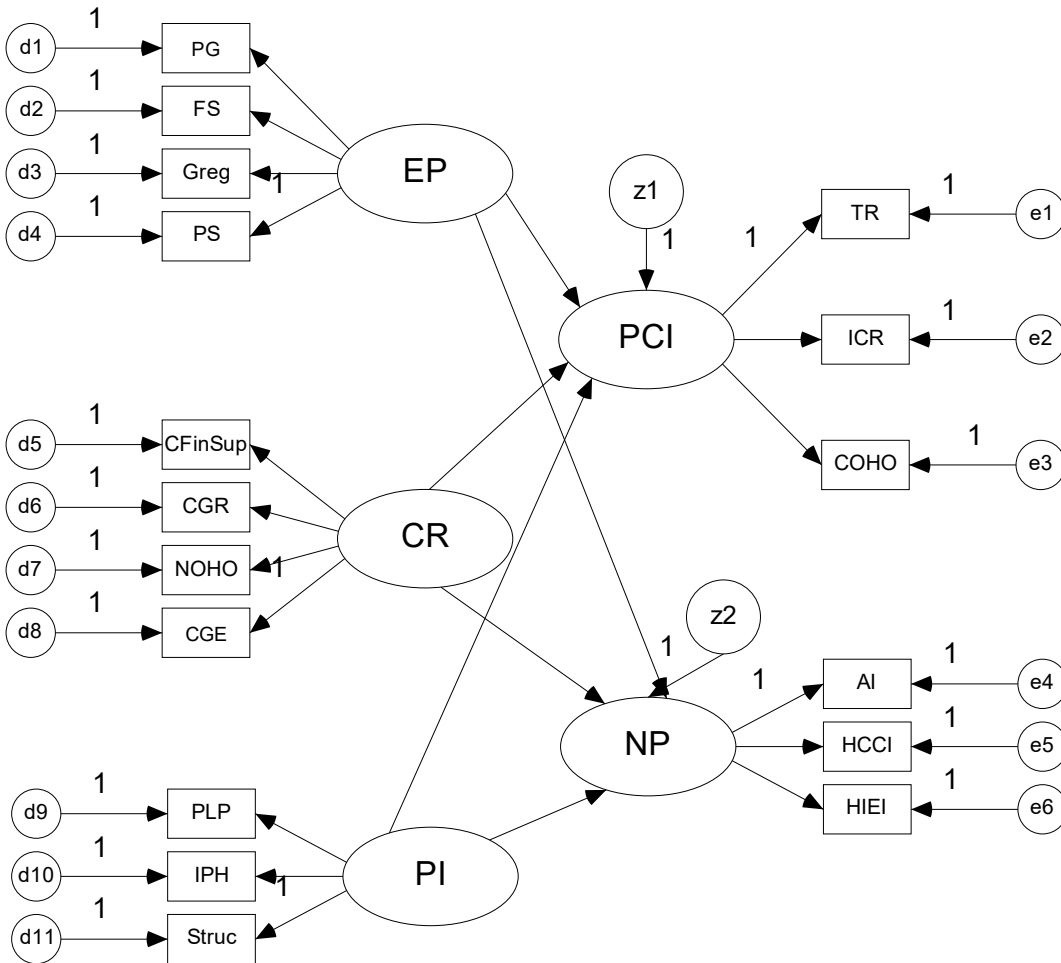


Figure 3: Proposed Covariance Structure Model

Structural Equation Model

Contemporary health care researchers are attempting to apply more scientifically rigorous analyses to better inform management decision-making (Wan, 2002). Structural equation modeling (SEM) has emerged as a rigorous technique for evaluating complex relationships among variables. Indeed, this multivariate method examines linear structural relationships (LISREL) in two sections- the measurement model and the structural equation model (Maruyama, 1998; Wan, 2002). SEM is not one statistical method, rather, it is a group of related techniques including path analysis and confirmatory factor analysis (Kline, 2005). Social science researchers are interested in studying these complex linear relationships and multivariate analysis allows for simultaneous examination of variables and their relationships and interactions (Mertler & Vannatta, 2002). Structural equation modeling examines latent constructs, measured by observable variables. Further, the relationships among these constructs is confirmed through structural equation modeling.

Wan (2002) provides the mathematical equation for the covariance structure model as:

$$\eta = \beta \eta + \Gamma \xi + \zeta$$

where:

- η is the theoretical construct, or (latent) endogenous variable
- β is the relationships (causal effects) among each of the endogenous variables to the others
- Γ is the relationships (causal effects) of the exogenous variables to the endogenous variables
- ξ is the theoretical construct, or (latent) exogenous variable
- ζ is the error term (residual error), given the structural equations do not completely predict the endogenous variables

Confirmatory factor analysis identifies how well the observable indicators generate the latent constructs (Byrne, 2001; Wan, 2002). The measurement models may be written according to the equations below as provided by Wan (2002).

$$y = \Lambda_y \eta + \varepsilon$$

$$x = \Lambda_x \xi + \delta$$

where:

y is the observable endogenous variable

x is the observable exogenous variable

Λ_y is the correlations, or factor loadings, between the observed y variable and the theoretical construct

Λ_x is the correlations, or factor loadings, between the observed x variable and the theoretical construct

η is the theoretical construct, or (latent) endogenous variable

ξ is the theoretical construct, or (latent) exogenous variable

ε is the unique factor, or measurement error, of y

δ is the unique factor, or measurement error, of x

Once the measurement models and the covariance structure models had been identified, the overall model fit was assessed to identify how well the model fits the data. There are several

statistics useful for this process. This study determined goodness of fit through the following statistics compiled from (Byrne, 2001 and Kline, 2005):

Minimum discrepancy (CMIN or Chi-Square, written as X^2)	p > .05
Likelihood Ratio-Chi-Square/degrees of freedom (X^2/df)	Less than 4
Normed Fit Index (NFI)	Greater than .90
Comparative Fit Index (CFI)	Greater than .90
Root Mean Square Error (RMSEA)	Preferably, .05 or less is a good fit, however, less < .08 is acceptable
Goodness of Fit (GFI)	Greater than .90, preferably greater than .95
Adjusted Goodness of Fit (AGFI)	Close to 1, preferably greater than .95
Hoelter's Critical N	> 200

Statistical software, Analysis of Moment Structures (AMOS) 16.0 was used to develop and analyze the models for this study.

Specific Procedures

Pilot Test & Study Approval

A pilot test of an early version of the final survey tool was used to evaluate question validity and reliability. Lake County, Florida participated as the pilot site and therefore the

information obtained for that county was not included in the data analysis. Based upon feedback from the pilot survey, minor adjustments were made to the final survey. The survey was also made available on Survey Monkey for those managers or elected officials who preferred electronic completion. The final survey tool and study design was approved by the University of Central Florida IRB on November 10, 2008 under an expedited review (See appendix B).

Survey Design, Instrumentation, & Collection

In January, 2009, 300 surveys (See appendix A for the survey tool) were mailed directly to randomly selected county managers, or chief county elected officials, in the case of counties without an executive administrator, around the country. The counties were randomly selected from the U.S. Census County Tables. A cover letter (see appendix C) addressed several issues, including informed consent and instructions for participation as was included in the electronic version of the survey as well. Response choices were a summated or Likert type of scale (Wan, 2005; Babbie, 2009). Phone calls and e-mails were made directly to the survey recipients to encourage participation. Another 200 surveys were sent to randomly selected county managers or chief elected officials during the spring and summer of 2009. Again, follow-up phone calls resulted in increased participation among the survey participants. A total of 127 completed surveys were received for a survey return rate of 25%. Of the 127 surveys returned, 37 of them were completed via Survey Monkey, and the remaining 90 were returned either via fax or U.S. mail. However, only 123 surveys were used for data analysis. One was not included because it was returned after data analysis had been completed. Honolulu County, HI returned their incomplete survey with a note informing me that the State of Hawaii handles all health care

related services for the counties. Two other surveys were not usable due to too many missing question responses.

Data Analysis

Archival and survey data for the health care networks was entered into an AMOS (Analysis of Moment Structure) 16.0 database. Archival data came from the U.S. Census Bureau and the International City/County Manager Association. AMOS is the software that is used in this study to conduct the Structural Equation Modeling. Because SEM entails using normally distributed data, the observable variables were tested for normal distribution. Data in this study were skewed and variables of necessity were transformed via log 10 and binning (collapsing continuous variables into groups). Procedures then included examining the relationships among the observable and unobservable variables, the latent constructs. Structural Equation Modeling was used to examine relationships among the socio-economic-political variables in order to:

- identify the initial conditions necessary for low-income health care network creation
- identify the types of health care organizations likely to participate
- to understand the complexity of network activity
- to understand the influence of county government participation

This analysis provided for goodness of fit regarding the study model. First the measurement models were analyzed and then revised for a better fit. Finally, the structural model was analyzed and revised.

Analytical Steps

1. County data were obtained from the U.S. Census Bureau and the 500 counties selected to receive surveys were chosen randomly.
2. Contact information and addresses for county managers and elected officials was obtained from the National Association of Counties website and county government websites whenever available for verification purposes. (It is believed this contributed to an almost non-existent rate of returned surveys due to incorrect addresses or contact information.)
3. Follow-up phone calls and emails were made to all survey recipients who did not respond to the initial survey. Surveys were returned via mail, fax, and others via Survey Monkey.
4. Data were entered into SPSS 16.0 and then carefully cleaned. Missing values were corrected one of two ways. First, if the missing value was the result of incorrect data entry, the correct answer was obtained from the survey. If the missing value was the result of a respondent not answering the question or the response being too difficult to decipher, a follow-up phone call was made to obtain the answer.
5. Initial univariate (descriptive) analyses were run for normal distribution.
6. Data were transformed due to skewness.
7. Correlation analyses were run. Correlations were run to test for relationships among the variables both within the constructs and among the other variables external to their constructs.
8. Multivariate analyses were run – structural equation modeling and path analysis.
9. Measurement models were created in AMOS 16.0 and tested for goodness of fit.

10. Measurement models were revised and tested for goodness of fit.
11. The revised covariance structural equation model was tested for goodness of fit.
12. Case study analysis was conducted on one county health network: Orange County Primary Care Access Network (Florida).

Sampling and Power

A complete list of U.S. Counties was obtained from the U.S. Census Bureau. A random selection of ultimately 500 counties was identified and surveys were mailed via U.S. mail to each of these counties. The 500 counties represent about 16% of all counties in the United States. The required sampling frame necessary for the Structural Equation Modeling was predicated upon the proposed covariance structure having 24 parameters, which necessitated a sample size of 120. Although the sample size of 123 is relatively small, it is adequate for analytical purposes.

Operational Definition, Classification and Measurement of Study Variables

A representation of the study variables is presented in Table 3 and a complete explanation of the study data variables is presented in Table 4. The operationalization of the study variables is also provided in Table 4, which describes the variables, their source, and measurement scale. There are two latent constructs that comprise the endogenous variables associated with this study and as a reminder, “Endogenous variables are those variables that are explained by the model” (Wan, 2002 p.60). There are three latent constructs that comprise the exogenous variables associated with this study. Exogenous variables provide context or the environment within which

the networks are operating. These variables inform the variations in endogenous variables (Wan, 2002). The operationalization of the study variables is provided in Table 4. However, for a brief explanation, network performance is measured by the variables health care access, health care coordination, and health information exchange. Health care access identifies the degree to which health care for the underinsured and uninsured has improved as a result of network activities. Health care coordination identifies the degree to which health care coordination for the underinsured and uninsured has improved as a result of network activities. Health care information exchange identifies the degree to which health organizations are sharing information has improved as a result of network activities.

Table 3: Representation of Study Variables

Exogenous Variables	Endogenous Variables
<u>Environmental pressures:</u> 1. population growth 2. fiscal stress 3. geographic region 4. population size <u>Community resourcefulness:</u> 5. county financial support for health services (GR, tax district, mandatory match or per capita) 6. number of health care organizations 7. county government employees 8. county general revenue <u>Public intent:</u> 9. political leadership demands 10. indirect public health services 11. structure/form of government	<u>Pervasiveness of county influence</u> 1. types of relationships maintained by county 2. intensity of county relationships 3. number of community oriented health organizations <u>Network performance</u> 4. health care access 5. health care coordination 6. health information exchange

Table 4: Operational Definitions of Study Variables

Operational Variable	Definition/Conceptualization	Measurement and Initial Scale
Endogenous Variables:	<i>“Endogenous variables are those variables that are explained by the model” (Wan, 2002 p.60).</i>	
Pervasiveness of county influence:	Continuum of network intensity into diffuse, moderate, and intense categories based upon:	
1. Types of relationships maintained by the county	Identification of the type of relationships county maintains with health organizations in the community. Specifically, whether or not the county maintains no relationship, limited relationships, significant relationships, or substantial relationships with health organizations: federally qualified community health care centers, hospitals, indigent care clinics, medical societies, mental health providers, municipal health providers, and public health departments.	Interval /survey question
2. Intensity of relationships maintained by the county.	Intensity is measured by shared outcomes, county funds provided, policy influence, information sharing and the degree with which these relationships are maintained, substantial relationship or limited relationship.	Interval/survey question
3. Number of community oriented health organizations	The actual number of community oriented health organizations, or organizations serving low income populations in the county. The available resources may constrain network formation.	Ratio/survey question
Network performance:		
4. Access to care	Identifies the degree to which counties identify improved health care access.	Interval /survey question
5. Care coordination	Identifies the degree to which counties identify improved health care coordination.	Interval /survey question
6. Health information exchange	Identifies the degree to which counties identify improved health information exchange.	Interval /survey question
Exogenous Variables:	<i>Exogenous variables provide context or environment within which the networks are operating. These variables inform the variations in endogenous variables (Wan, 2002).</i>	
Environmental Pressures:		
1. Population growth	Population growth yields information about increasing demand and tax revenue capacity.	Ratio/U.S. Census Bureau
2. Fiscal Stress	Fiscal stress is measured by perception of county administrators regarding their determination of fiscal stress as a problem.	Interval/survey question (current year)

Table 3: Operational Definitions of Study Variables continued

<i>Exogenous Variables Continued</i>		
Operational Variable	Definition/Conceptualization	Measurement and Initial Scale
Environmental Pressures:	continued	
3. Geographic Region	Geographic region is divided into 9 geographic regions as defined by the international city/county association. For purposes of this research, the responding counties were collapsed into two categories of democratic leaning or republican leaning states.	ICMA/National Public Radio
4. Population size	This classifies counties based on population size as identified by the US Census. Population size may predict the formation of health care networks.	Interval/US Census (Over 1,000,000; 500,000-1,000,000; 250,000-499,999; 100,000-249,999; 50,000-99,999; 25,000-49,999; 10,000-24,999; 5,000-9,999; 2,500-4,999)
Community Resourcefulness:		
5. County financial support for health services (GR, Special health taxing district)	This measures county funding devoted to health care services and provides some indicator of whether financial commitment affects network participation.	Ratio/Survey questions
6. Number of health care organizations	The number of organizations in a network provides management complexity information regarding the number of participants. The available resources may constrain network formation.	Ratio/Survey questions
7. County general revenue	This is the size of the county general revenue fund. The availability of funding may constrain services supported by the county.	Ratio/U.S. Census
8. County government employees	This is the number of county government employees. The availability of staff may constrain services supported by the county.	Interval/Survey question
9. Political leadership pressure	This is a measurement of whether political leadership pressure led to county participation in health care services.	Interval/survey question
10. Indirect public health services	The extent to which county health services are not solely and directly provided by the county is measured by examining county use of alternative service delivery methods to deliver health services.	Interval/survey question
11. Structure/form of government	County governments take one of three structural forms: <i>Commission, Commission/Administrator, Council-Executive</i> . For this study, structure was collapsed into one of two categories, professional manager or no professional manager.	Categorical/Survey question

Research Validity

Validity threats for this study are controlled for through the following techniques. The face validity, construct validity, and content validity for this study are supported by the theoretical and literature framework discussed previously. Babbie (2009) provides three clear expectations of validity and they are identified as follows: First, face validity is the quality of reasonableness as a measurement. This has been strengthened by testing the model and survey tool with county government and health care professionals. Second, the construct validity of how well the variables relate to each other in the theoretical framework, is well supported in the literature as evidenced by an extensive literature review. Third, the content validity captures the range of possible meanings within each construct. The data collection instrument is comprehensive with clear measurement options and the population from which the sample will be taken is fairly uniform in that the respondents will all be practicing public administrators working in county government in similar capacities or elected officials who perform the functions of public administrators. Finally, because this survey consists of a national population from which the sample will be drawn, there is a high probability that similar studies would yield similar results, consequently these factors enhance the generalizeability of the research.

Summary of Methodology

The research methodology (and purpose) of this study was to examine relationships among the socio-economic-political variables in order to identify the initial conditions necessary for low-income health care network creation, the types of health care organizations likely to participate and how they are likely to participate, to understand the complexity of network

activity, and to understand the impact of county government participation. This was accomplished using AMOS 16.0 for data analysis and case study research.

Ultimately, these methods have been used to develop a continuum of network intensity and to test a model of network formation. The research design, which included a survey, archival data, and a case study, have provided answers to the research questions that are valid and reliable.

CHAPTER FOUR: FINDINGS

Introduction

Chapter four presents the findings, or results, of the data analyses that were conducted for this study. The analyses chosen for this study include descriptive and multivariate analysis.

Population Size

As indicated previously, a sample of 123 counties is included in the data analyses for this study. This sample is representative of the 3,034 extant county governments in the United States (*NACO*, 2003; *U.S. Census*, 2002a). Data adapted from the U.S. Census of Governments Report (2002a) show a fairly good representation of the variety and scope of county population size. However, for two of the population sizes, there is a fairly large discrepancy. First, the study data indicate that 51% of counties have population sizes smaller than 50,000 people. However, nationally, 71% of counties have populations less than 50,000 people. Second, counties with populations between 100,000 and 249,999 around the country represent 9%, while in this study it is 20%. The greater response rate from the larger counties (based on population size) may be attributed in part due to higher numbers of county employees and subsequently a heightened ability to respond to the survey. The remaining study variables more closely approximate the distribution of counties around the country. For those counties with populations between 50,000-99,000, the national figure is 13% and the percentage of respondents in this study is 17%. In counties with populations between 250,000-499,999 the national percentage is 4% and in this study it is 6%. Finally, for those counties with populations above 500,000 the national percentage of counties is 3%, but in this study it is 6%.

Geography

The study included a response from every region around the country, using International City/County Management Association (ICMA) geographic divisions. However, the response rates are not evenly divided across these regions. While the overall return rate of the surveys was 25%, only one region, the South Atlantic (23%) came close to achieving a similar rate of return. All of the other regions had much lower rates of response, with New England (<1%), Mid-Atlantic (4%), and Pacific Coast (8%) returning the smallest percentages. The remaining regions had fairly similar response rates, East North Central (16%), West North Central (15%), East South Central (10%), West South Central (11%) and Mountain (12%). Perhaps not coincidentally, 60% of the surveys returned were returned from counties with a professional manager (appointed county manager or similar designation), while 40% of the surveys came from counties without an appointed county manager.

Number of County Employees

Using the U.S. Census (2004), the number of county government employees was identified for each of the 123 responding counties. There is considerable variation among the number of county employees in this study, ranging from over 84,000 to under 500. However, 46% of the counties surveyed identified employment numbers between 1,001-5,000, 24% had between 501-1000, 15% had between 5,001-10,000, 10% between 10,100-40,000, 3% had more than 41,000 employees, and 2% had fewer than 500 employees. There are some considerations in viewing these numbers, namely, the aggregate figures do not differentiate which employees belong solely to county governments, rather than other public services funded by other means

(other than general revenue streams). Further, these aggregate numbers do not differentiate between part-time and full-time equivalent. Therefore, these figures are meant to provide merely some perspective on the number of public employees available to address public sector work flows.

Size of General Revenue

According to the U.S. Census (2004), the average general revenue fund in counties throughout the United States is \$111,362 (measured in 1,000). In this study, 37% of the counties had a general revenue fund (measured in the 1,000) between 101,00-500,000 . Two other categories were fairly closely represented in this study 17,000 - 50,000 (21%) and 51,000 - 100,000 (25%). Interestingly, the two remaining categories were also closely represented, with general revenues of 501,000 -800,000 at 7% and 1,000,000 + at 9%.

NACO Membership

Finally, out of the 3,034 entities functioning as counties extant in the United States in 2009, 2,357 of them were members of the National Association of Counties (NACO, 2009). Nationally, 78% of counties are members of NACO. In this study, NACO membership was slightly higher, with 81% of the participants holding NACO membership. Only 19% of the study respondents were not NACO members. It may be argued that membership has contributed to the higher rate of return given either the professionalization of the member counties or the practice they've had participating in survey research.

Table 5: Characteristics of Participating Counties

Characteristic	Frequency (N=123)	%
Structure of County Government		
Professional Manager	74	60.2
No Professional Manager	49	39.8
Population Size of County-		
< 50,000	63	51%
50,000-99,000	21	17%
100,000-249,999	25	20%
250,000-499,999	7	6%
500,000 +	7	6%
Geographic Region		
New England	1	< 1%
Mid-Atlantic	5	4%
East North Central	20	16%
West North Central	19	15%
South Atlantic	28	23%
East South Central	12	10%
West South Central	13	11%
Mountain	15	12%
Pacific Coast	10	8%

Characteristic	Frequency (N=123)	%
Size of County Workforce		
(number of county employees)		
< 500	2	2%
501-1000	29	24%
1001-5000	57	46%
5001-10,000	19	15%
10,100-40,000	12	10%
41,000 +	4	3%
Size of County General Revenues		
(\$1,000)		
17,000 - 50,000	26	21%
51,000 - 100,000	31	25%
101,000 - 500,000	46	37%
501,000 -800,000	9	7%
1,000,000 +	11	9%
Member of NACO		
(National Association of Counties)		
	100	81%
Yes	23	19%
No		

Percents may not equal 100 due to rounding

Descriptive Analyses

Table 5 presents descriptive statistics about the study variables. A total of eleven exogenous variables were examined for this study. These eleven variables were proposed as the measurement instruments for three latent exogenous constructs. The first construct identified here is environmental pressures (EP), which is measured by the indicator, or observable, variables population growth (PG), fiscal stress (FS), geographic region (GREG), and population size (PS). The second construct identified here is community resourcefulness, which is measured by the indicator, or observable, variables county financial support (CFINSUP), county government revenue (CGR), number of health organizations (NOHO), and county government employees (CGE). The third exogenous construct identified here is public intent, which is measured by the indicator, or observable, variables political leadership pressure (PLP), indirect public health (IPH), and structure (STRUC).

A total of six endogenous variables were examined for this study. These six variables were proposed as the measurement instruments for two latent endogenous constructs. The first construct identified here is pervasiveness of county influence (PCI), which is measured by the indicator, or observable, variables types of relationships (TR), intensity of county relationships (ICR), and community oriented health organizations (COHO). The second construct identified here is network performance, which is measured by the indicator, or observable, variables access to health care (AI), health care coordination (HCCI), and health information exchange (HIEI).

Table 6: Descriptive Statistics for Study Variables

Variable	Label	Minimum	Maximum	Mean	Standard Deviation
Environmental Pressures Construct:					
Population Growth	PG	-10.900	44.100	7.480488	10.8100261
Fiscal Stress	FS	.00	1.00	.8211	.27091
Geographic Region	GREG	.000	1.00	.5285	.50123
Population Size	PS	10,273	2,015,355	138,381.98	273,385.744
Community Resourcefulness Construct:					
County Financial Support	CFINSUP	.00	6.75	1.8252	1.25529
County General Revenue	CGR	1	4	2.49	1.119
Number of Health Organizations	NOHO	1	29	5.63	3.486
County Government Employees	CGE	1	4	2.49	1.119
Combined County Government Employees & General Revenue	CTYCOMB	4.26	6.90	5.1932	.55770
Public Intent Construct:					
Political Leadership Pressure	PLP	1	4	2.77	.974
Indirect Public Health	IPH	2.20	5.40	3.4862	.66780
Structure of County Government	STRUC	1.00	5.00	1.7805	.78444

Variable	Label	Minimum	Maximum	Mean	Standard Deviation
Pervasiveness of County Influence Construct:					
Type of Relationship	TR	.25	23.75	6.2846	4.60113
Intensity of County Relationship	ICR	.00	10.00	4.120	2.06686
Community Oriented Health Care Organizations	COHO	.00	15.25	3.8740	2.91044
Network Performance Construct:					
Access to Health Care	AI	1	5	3.16	1.244
Health Care Coordination	HCCI	1	5	3.04	1.264
Health Information Exchange	HIEI	1	5	2.95	1.247

Univariate Analysis

The use of structural equation modeling assumes normally distributed data (Bryne, 2001). However, many data are not necessarily distributed normally (Spatz, 2001; Byrne, 2001). It is generally accepted practice to transform data, using mathematical processes, into more appropriate distributions (Mertler & Vannatta, 2002). For this study, skewness, kurtosis, and the Shapiro-Wilk statistics were examined for normality. Table 6 identifies these statistics for the study variables. It is noted that 12 of the 17 variables, PS4, PG67, CFIN279, HO72, TR80, COHO283, ORIGSTRUC, FSREV2, IPH81, CTYGR, CTYGE, and INTENSITY are not normally distributed. The normally distributed variables are GREG, AI, HCCI, HIEI, PLP. Each of the non-normally distributed data were transformed using the method identified in Table 6.

The names of these transformed variables were altered slightly. Each of the transformed variable follows its original, non-normal variable. Normality statistics for both the transformed and non-transformed variables are provided in this table.

Table 7: Study Variable Skewness, Kurtosis, and Normality Tests

Variable	Statistic	Skewness		Kurtosis			Shapiro-Wilk		Transformation
		Std. Error	Ratio	Statistic	Std. Error	Ratio	Statistic	Sig.	Method
GREG	-.115	.218	-.527	-2.020	.433	-4.66	.635	.000	
PS4	4.340	.218	19.91	22.281	.433	51.45	.465	.000	
PS	.013	.218	.059	-1.358	.433	-3.13	.857	.000	Recode
PLP	-.394	.218	1.807	-.794	.433	-1.83	.863	.000	
PG67	1.086	.218	4.98	1.437	.433	3.31	.930	.000	
PG	.012	.218	.055	-1.309	.433	-3.02	.887	.000	Recode
CFIN279	1.541	.218	7.06	3.228	.433	7.45	.880	.000	

Variable	Statistic	Skewness		Kurtosis			Shapiro-Wilk		Transformation
		Std. Error	Ratio	Statistic	Std. Error	Ratio	Statistic	Sig.	Method
CINFSUP	.087	.218	.399	-1.448	.433	-3.34	.842	.000	Recode
HO72	2.976	.218	13.65	16.209	.433	37.43	.776	.000	
NOHO	-.206	.218	-.944	.979	.433	2.26	.968	.005	Log10
TR80	1.244	.218	5.706	2.013	.433	9.233	.910	.000	
TR	.023	.218	.1055	-1.306	.433	-3.016	.861	.000	Recode
COHO283	1.278	.218	5.862	2.282	.433	5.270	.909	.000	
COHO	.047	.218	.215	-1.389	.433	-3.207	.909	.000	Recode
ORIGSTRUC	1.135	.218	5.206	2.035	.433	4.699	.782	.000	
STRUC	-.420	.218	-1.926	-1.854	.433	-4.281	.621	.000	Collapse Categories

Variable	Skewness			Kurtosis			Shapiro-Wilk		Transformation
	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio	Statistic	Sig.	Method
FSREV2	-1.510	.218	-6.926	1.618	.433	3.736	.682	.000	Collapse Categories
FS	-.527	.218	-2.417	-1.751	.433	-4.043	.682	.000	Recode
IPH81	.535	.281	2.454	-.183	.433	-.4226	.964	.002	
IPH	.120	.218	.550	-4.97	.433	-11.478	.981	.078	Log10
AI	-.444	.218	-2.036	-.742	.433	-1.713	.882	.000	
HIEI	-.164	.218	-.752	-.982	.433	-2.267	.902	.000	

Variable	Skewness			Kurtosis			Shapiro-Wilk		Transformation
	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio	Statistic	Sig.	Method
HCCI	-.226	.218	-1.036	-.934	.433	-2.157	.900	.000	
CTYGR	5.139	.218	23.57	29.847	.433	68.93	.355	.000	
CGR	.013	.218	.0596	-1.358	.433	-3.136	.857	.000	Recode
CTYGE	4.690	.218	21.51	25.143	.433	58.06	.435	.000	
CGE	.013	.218	.0596	-1.358	.433	-3.136	.857	.000	Recode
CTYCGER*	5.133	.218	23.54	29.783	.433	68.78	.386	.000	

Variable	Skewness			Kurtosis			Shapiro-Wilk		Transformation
	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio	Statistic	Sig.	Method
CTYCOMB*	.817	.218	3.74	.344	.433	.794	.946	.000	Log 10
INTENSITY	.564	.218	2.587	29.847	.433	68.93	.951	.000	
ICR	.380	.218	1.743	-1.538.	.433	-3.55	.773	.000	Recode

* CTYCGER and CTYCOMB are the combined variables CGE and CGR (CTYCGER) and then the result of performing log 10 (CTYCOMB).

Correlation Analysis

Pearson's correlation or r is a bivariate technique that examines the association among variables that are quantitative in nature (Mertler & Vannatta, 2002). This examination identifies the strength of the relationship among these variables (Pallant, 2007). Cohen (1983) is credited in Spatz (2001) and Pallant (2007) with developing an index for the effect size of the correlation coefficient and describes small, medium, and large correlations as having an r of .10, .30, and .50 respectively. Multicollinearity becomes an issue of concern when the correlation becomes too large, generally, above .90 (Pallant, 2007). Multicollinearity is often associated with variables that are actually measuring very similar data (Kline, 2005) and this can create bias among the variables (Wan, 2002). Options for managing multicollinearity are to combine variables into one composite variable or to remove one from the model (Maruyama, 1998, Kline, 2005).

The variables that measure the latent construct, Community Resourcefulness, were all positively correlated with county financial support (CFINSUP) to number of health care organizations (NOHO) (.574) for a fairly large correlation, county financial support (CFINSUP) to county general revenue (CGR) (.472), county financial support (CFINSUP) to county government employees (CGE) (.364), number of health organizations (NOHO) to county general revenue (CGR) (.522), and number of health organizations (NOHO) to county government employees (CGE) (.476) also for medium to fairly large correlations. Each of these correlations are significant at the $p = .05$, which indicates significant confidence in the results that have been obtained (Pallant, 2007). However, number of county government employees (CGE) to county general revenue (CGR) (.941) indicates the potential for multicollinearity. For the purposes of this research, CTYGR and CTYGE (the original, untransformed variables of CGR and CGE)

were combined to form a composite variable, CTYCOMB. Consequently the latent construct, Community Resourcefulness, has much more appropriate correlation statistics. The adjustment for multicollinearity has resulted in CFINSUP to NOHO (.574), CFINSUP to CTYCOMB (.485), and NOHO to CTYCOMB (.556), all of which are fairly large and significant at the $p = .01$ level.

The variables that measure the latent construct, Environmental Pressures, were correlated with PG to GREG (.058) for a small positive correlation, PG to PS (.464) for a fairly large positive correlation, PG to FS (-.045) for a small, negative correlation and FS to GREG (.145), FS to PS (.007) for small positive correlations, and PS to GREG (.282) also for a fairly medium correlations. Only two of these correlations are significant at $p = .01$, which indicates significant confidence in the results that have been obtained (Pallant, 2007).

The variables that measure the latent construct, Public Intent, were all positively correlated with IPH to STRUC (.101) for a small correlation, IPH to PLP (.226) for a small correlation, and PLP to STRUC (.333) for a medium correlation. Of these correlations, one is significant at $p = .01$ (PLP to STRUC) and one is significant at the $p = .05$ (IPH to PLP).

Table 8: Pearson Correlation Matrix of Study Variables (P- value)

	Greg	Struc	AI	HCCI	HIEI	PLP	NOHO	IPH	PS	CFinSup	COHO	TR	FS	CGR	CGE	ICR	PG
Greg	1.000																
Struc	.163	1.000															
AI	.321**	.134	1.000														
HCCI	.354**	.119	.809**	1.000													
HIEI	.199*	.088	.676**	.839**	1.000												
PLP	.279**	.333**	.217*	.231*	.172	1.000											
NOHO	.329**	.236**	.385**	.453**	.369**	.490**	1.000										
IPH	.071	.101	.330**	.337**	.318**	.226*	.420**	1.000									
PS	.282**	.326**	.219*	.212*	.135	.920**	.443**	.194*	1.000								
CFinSup	.248**	.172	.352**	.420**	.343**	.435**	.574**	.607**	.383**	1.000							
COHO	.360**	.161	.425**	.497**	.387**	.472**	.603**	.414**	.422**	.617**	1.000						
TR	.402**	.227*	.421**	.502**	.418**	.534**	.670**	.372**	.489**	.631**	.895**	1.000					
FS	.145	.023	.061	.172	.132	-.003	.111	-.003	.007	.083	.172	.132	1.000				
CGR	.355**	.341**	.290**	.311**	.229*	.875**	.522**	.274**	.902**	.472**	.519**	.576**	.037	1.000			
CGE	.267**	.312**	.302**	.276**	.182*	.891**	.476**	.194*	.915**	.364**	.448**	.509**	.022	.941**	1.000		
ICR	.273**	.202*	.333**	.457**	.411**	.536**	.601**	.392**	.473**	.717**	.606**	.675**	.076	.503**	.462**	1.000	
PG	.058	.237**	.192*	.174	.162	.459**	.149	.174	.464**	.283**	.163	.184*	-.045	.320**	.299**	.219*	1.000

CFINSUP: County financial support; CGR: County government revenue; CGE: County government employees; NOHO: Number of health organizations; GREG: Geographic region; PG: Population growth; PLP: Political leadership pressure; STRUC: Structure of county government; AI: Access Improvement; HCCI: Health Care Coordination Improvement; HIEI: Health Information Exchange Improvement; IPH: Indirect Public Health; PS: Population Size; COHO: Community Oriented Health Organizations; TR: Type of County Relationships; FS: Fiscal Stress; ICR: Intensity of County Relationships. **Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).

To summarize, the exogenous variables are fairly well correlated, which indicates the strength of their relationships are supported for further use in this study. Some revision was appropriate to develop a more appropriate measurement for the Community Resourcefulness construct. Consequently, the variables CGR and CGE were combined to form a new variable, CTYCOMB. These two variables are resource variables, the number of county government employees and the number of county government revenues. The new variable, CTYCOMB, has been added to Tables 5 and 6 for descriptive and normality test results. Finally, the original study model proposed a total of 11 exogenous variables. However, with the combining of two of these variables, there are now ten exogenous variables: PG, FS, GREG, PS, CFINSUP, NOHO, CTYCOMB, PLP, IPH, and STRUC.

Covariance Structure Analysis

Confirmatory Factor Analysis

The next analytical step in this research is to conduct confirmatory factor analysis of the five measurement models that comprise the full structure model. Measurement models “define the relations between the observed and unobserved variables” (Byrne, 2001 p. 12). Therefore, it is particularly important that construct validity be confirmed as much as possible (Wan, 2002). Construct validity is the degree to which the relationships among the identified variables relate to each other based on the theoretical assumptions (Babbie, 2009). The construct validity of these five measurement models is indicated, as noted in the literature review of this paper.

As Bryne (2001) notes, confirmatory factor analysis (CFA) is appropriate where the research supports the relationships between the observed variables and the latent variable constructs; ultimately, CFA identifies the extent of these relationships. The extent of these relationships is determined by examining the “variation and covariation in a set of observed variables” within a theoretical construct of unobserved variables (Wan, 2002 p.90). Covariances provide detail about the relationship between two variables, based upon the strength of that association and the variability within the sample (Maruyama, 1998).

The five measurement models are illustrated in Figure 3, where three proposed measurement models are presented as exogenous constructs and two measurement models are presented as endogenous constructs. The three exogenous measurement models are Environmental Pressures (EP), Community Resourcefulness (CR), and Public Intent (PI). The two endogenous constructs are Pervasiveness of County Influence (PCI) and Network Performance (NP).

Structure models must adhere to the principle of model identification. The essence of model identification is that “a unique set of parameters consistent with the data” exists for the model (Byrne, 2001). In order to evaluate the model identification, the degrees of freedom for the model must be calculated. First, the formula for determining whether or not a structural model is identified includes $v(v + 1)/2$, which provides the data points in the model (Kline, 2005). Then, these data points are divided by the parameters to be estimated, which then gives the degrees of freedom and how the model is identified, or not (Byrne, 2001). For the proposed covariance structure model, the model identification for this research uses the formula identified by Kline and then finds the degrees of

freedom as noted by Bryne: $17(17 + 1)/2 = 153$; $153 - 40 = 113$. The model is over-identified, meaning the estimable parameters are fewer than the number of data points, resulting in positive degrees of freedom, which is preferred in structural equation modeling (Kline, 2005). For the proposed measurement models, the identification varies.

After examining the correlation analysis, community resourcefulness (CR) lost one observable variable. However, subsequent model revision added two indicator variables, which resulted in the final community resourcefulness measurement model being over-identified. The remaining three measurement models, environmental pressures (EP), pervasiveness of county influence (PCI), and network performance (NP) are all just identified, given the observations equal the parameters of each model. In just-identified models, goodness of fit statistics cannot be generated. However, the remaining available statistics for these measurement models are presented here.

Measurement Model for Environmental Pressures

The graphic representation of the measurement model, environmental pressures, is presented in Figure 4. Based on the literature discussed previously, these variables were grouped into an environmental pressures construct that examines the relevant constraints placed on county governments. This graphic provides detail about the paths between the indicator variables population growth (PG), fiscal stress (FS), geographic region (GREG), population size (PS) and the latent construct, environmental pressures. However, fiscal stress (FS) was removed from the measurement model due to negative correlation of insignificant value and to improve the associative ability of the remaining

indicator variables. Further revisions to this measurement model were made in the final covariance structure model, as seen in Figure 8.

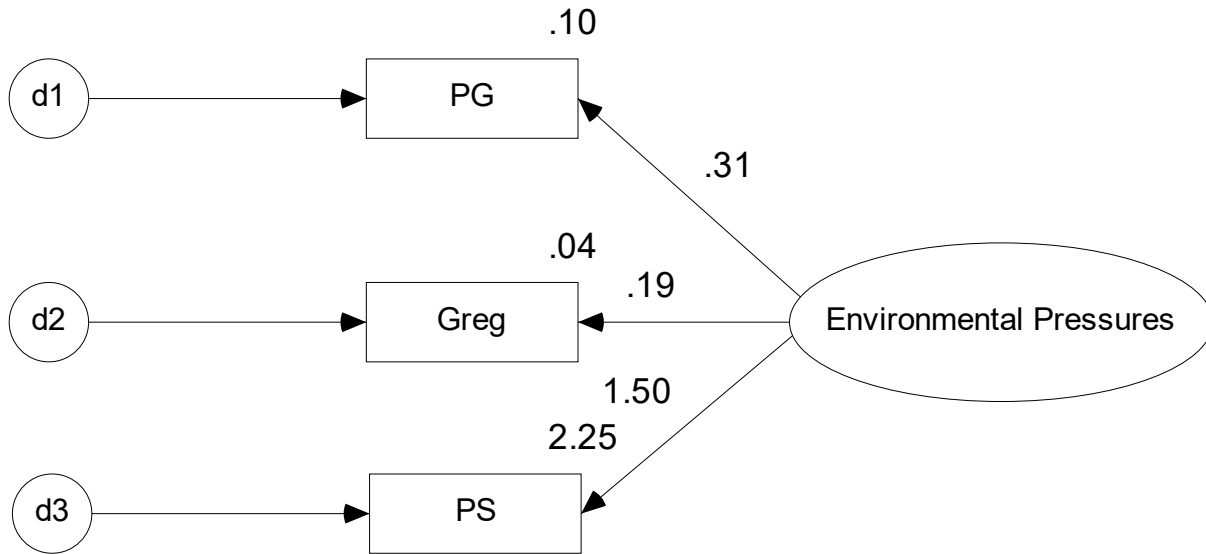


Figure 4: Environmental Pressures Measurement Model

The exogenous measurement model, environmental pressures, is comprised of three indicator variables, population size (PS), geographic region (GREG), and population growth (PG). Table 9 presents the Indicator Statistics. Critical ratio values greater than 1.96 indicate a statistical significance. In this measurement model, only GREG indicates this statistical significance with C.R. of 2.733. The squared multiple correlations in this measurement model suggest that PS (population size) holds the strongest association with environmental pressures.

Table 9: Indicator Statistics for Measurement Model for Environmental Pressures

Indicator		Critical Ratio	Std. Regression Weights	Squared Multiple Correlations
PS	<--- Environmental Pressures	.697	1.499	2.248
Greg	<--- Environmental Pressures	2.733	.188	.035
PG	<--- Environmental Pressures	*****	.310	.096

Measurement Model for Public Intent

The graphic representation of the measurement model, public intent, is not presented here. While the literature supported the construction of the variables indirect public health (IPH), political leadership pressure (PLP), structure of county government (STRUC), the measurement model did not represent a reasonable fit. None of the path parameters were statistically significant at the .05 level and this measurement model was found to be insignificant in the full structure model. However, given the literature and the relationships among the variables noted in the correlation analysis, two of its variables, structure of county government (STRUC) and indirect public health (IPH), were added to the community resourcefulness measurement model in the final analysis. Political leadership pressure (PLP) was removed from the model to improve the model fit.

Measurement Model for Community Resourcefulness

The graphic representation of the measurement model, community resourcefulness, is presented in Figure 5. Based on the literature discussed previously, these variables were grouped into a community resources construct that examines the relevant resources county governments may bring together within their communities. This graphic provides detail about the paths between the indicator variables county financial support (CFINSUP), county combined general revenue and county government employees (CTYCOMB), number of health organizations (NOHO) and the latent construct, community resourcefulness.

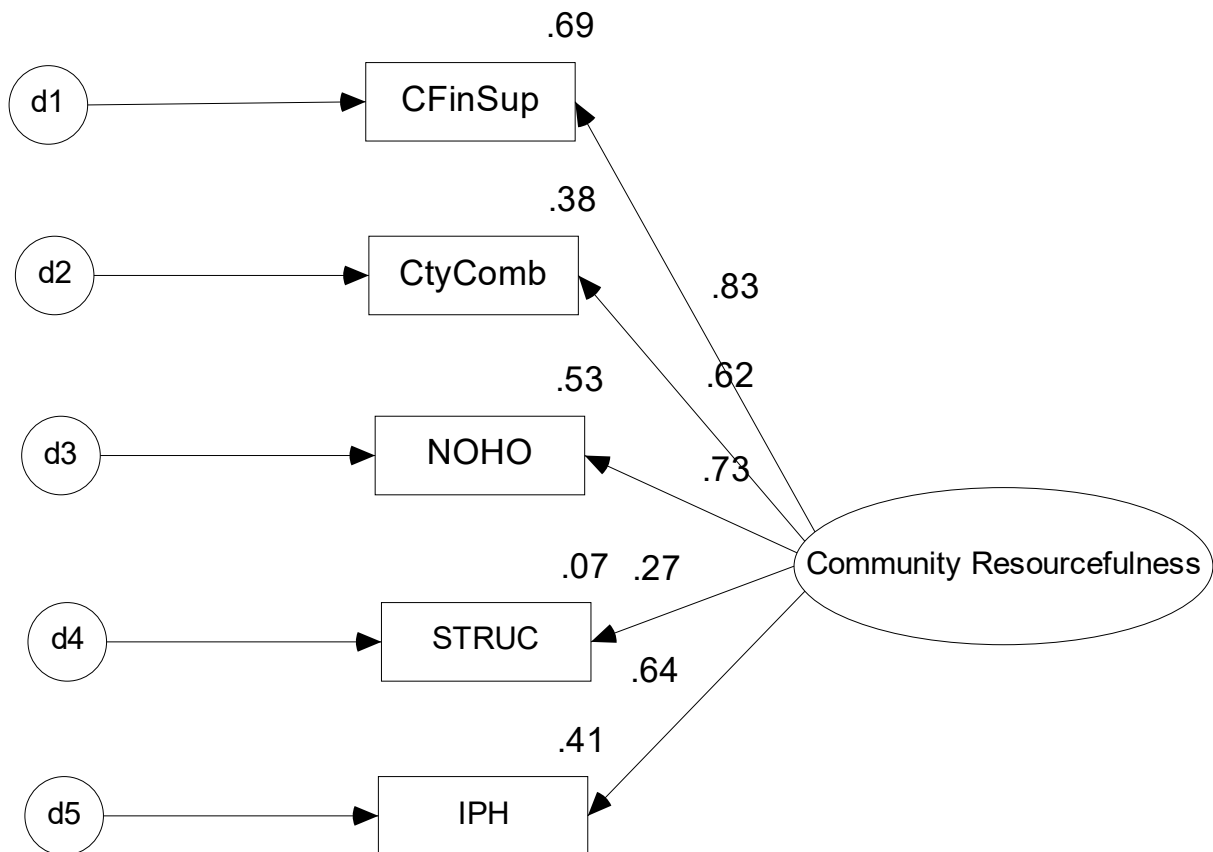


Figure 5: Community Resourcefulness Measurement Model

Table 10 presents the indicator statistics. Critical ratio values greater than 1.96 indicate a statistical significance. In this measurement model, all of the paths are statistically significant. In the latent construct, community resourcefulness, all of the indicators have an acceptable association. County financial support (CFINSUP) at .830 has the greatest association and the number of health organizations (NOHO) has the second greatest association at .725. This is followed closely by indirect public health (IPH) at .638 and county combined general revenue and employees (CTYCOMB) at .616. County government structure (STRUC) has the smallest association at .266. Three of the path parameters are statistically significant at the .05 level: number of health organizations (NOHO), county financial support (CFINSUP), and indirect public health (IPH).

Table 10: Indicator Statistics for Measurement Model for Community Resourcefulness

Indicator			Critical Ratio	Std. Regression Weights	Squared Multiple Correlations
NOHO	<---	Community Resourcefulness	6.024*	.725	.526
CTYCOMB	<---	Community Resourcefulness	*****	.616	.380
CFINSUP	<---	Community Resourcefulness	6.312*	.830	.689
STRUC	<---	Community Resourcefulness	2.592	.266	.071
IPH	<---	Community Resourcefulness	5.527*	.638	.407

* Path parameter is significant at the .05 level.

Community resourcefulness is an over-identified measurement model in this study. Therefore, the goodness of fit statistics are presented in Table 11. There is some

indication of a reasonable model fit. While the high X^2 statistic indicates somewhat of a lesser model fit, Byrne (2001) notes the trend toward using the Likelihood Ratio (X^2/df) statistic, particularly for small samples, and its growing acceptance as an alternative to a high X^2 . In the case of the likelihood ratio, the 4.036 is very close to 4 and is therefore considered further evidence of a reasonably good fit between the data and the model.

While the p value is statistically significant for this model (.001), the CFI value of .907 further indicates reasonable fit. While the GFI and AGFI statistics should be .9 or greater and as close to 1 as possible respectively, the GFI (.931) meets the test for goodness of fit while the AGFI (.794) for this model does not. Finally, the RMSEA (.158) and the Hoelter (92) statistical values do not suggest a reasonable fit between the model and the data. This will be discussed in the subsequent chapter.

Table 11: Goodness of Fit Statistics for Measurement Model Community Resourcefulness

Statistic	
Chi-Square (X^2)	20.182
Degrees of Freedom (df)	5
P value	.001
Likelihood Ratio (X^2/df)	4.036
Normed Fit Index (NFI)	.883
Goodness of Fit Index (GFI)	.931
Adjusted Goodness of Fit Index (AGFI)	.794
Comparative Fit Index (CFI)	.907
Root Mean Square Error (RMSEA)	.158
HOELTER (.01)	92

Measurement Model for Pervasiveness of County Influence

The graphic representation of the measurement model, pervasiveness of county influence, is presented in Figure 6. Based on the literature discussed previously, these variables were grouped into a county construct that examines the influence county governments wield as they relate to health care service delivery within their communities. This graphic provides detail about the paths between the indicator variables types of county relationships (TR), intensity of county relationships (ICR), the number of community oriented health care organizations in the county (COHO) and the latent construct, pervasiveness of county influence.

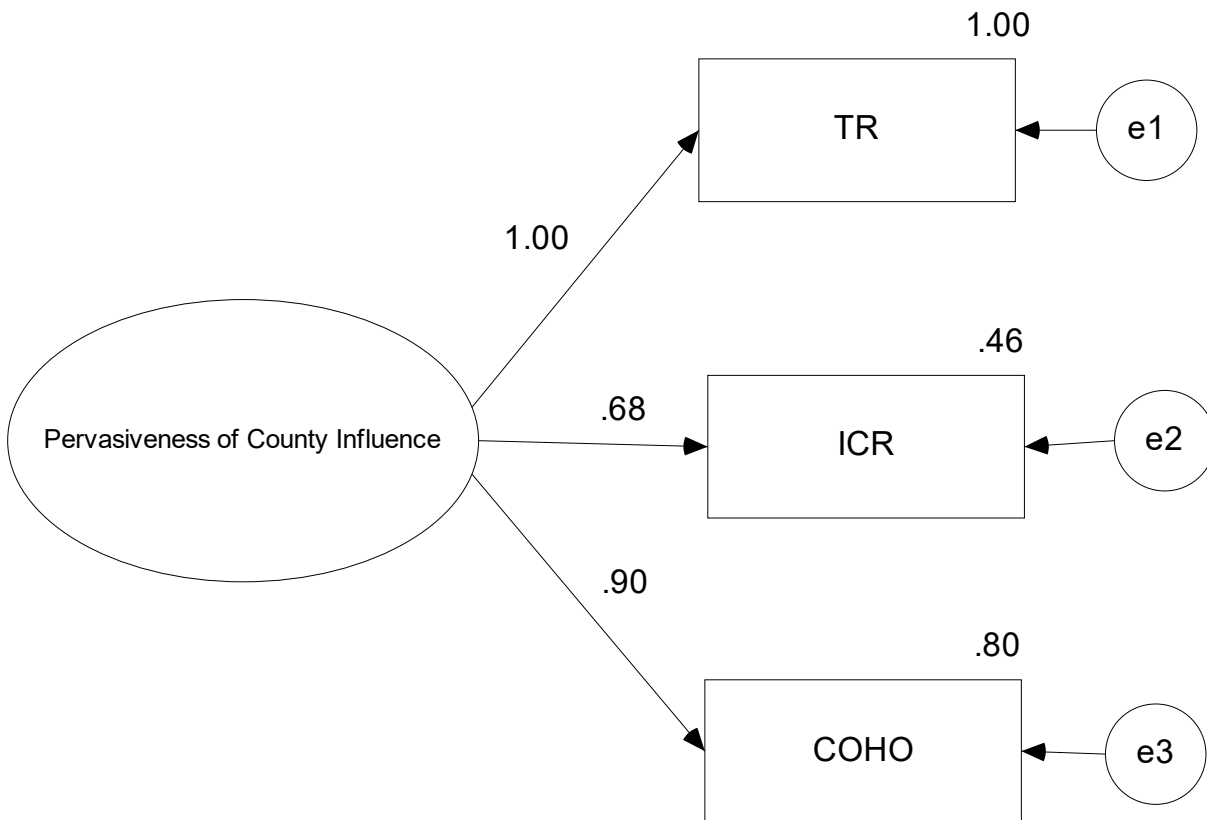


Figure 6: Pervasiveness of County Influence Measurement Model

The endogenous measurement model, pervasiveness of county influence, is comprised of three indicator variables, types of county relationships (TR), intensity of county relationships (ICR), and number of community oriented health organizations (COHO). Table 12 presents the indicator statistics. Critical ratio values greater than 1.96 indicate a statistical significance. In this measurement model, ICR and COHO indicate this significance. There are no goodness of fit statistics, because this is a just identified model.

Table 12: Indicator Statistics for Measurement Model for Public Intent

Indicator		Critical Ratio	Std. Regression Weights	Squared Multiple Correlations
TR	<--- Pervasiveness of County Influence	*****	.998	.996
ICR	<--- Pervasiveness of County Influence	9.072*	.676	.457
COHO	<--- Pervasiveness of County Influence	15.001*	.897	.804

* Path parameter is significant at the .05 level.

In the latent construct, pervasiveness of county influence, all of the indicators have a large association. Types of relationships (TR) has the greatest association at .998, followed by number of community oriented health organizations (COHO) at .897 and followed last by intensity of county relationships (ICR) at .676. Two of the path parameters are significant at the .05 level, intensity of county relationships (ICR) and number of community oriented health organizations (COHO).

Measurement Model for Network Performance

The graphic representation of the endogenous measurement model, network performance, is presented in Figure 7. Based on the literature discussed previously, these variables were grouped into a county construct that examines the improvement county government believes has occurred in the delivery of health care services within the health care network. This graphic provides detail about the paths between the indicator variables access to health care (AI), health care coordination (HCCI), health information exchange (HIEI) and the latent construct, network performance.

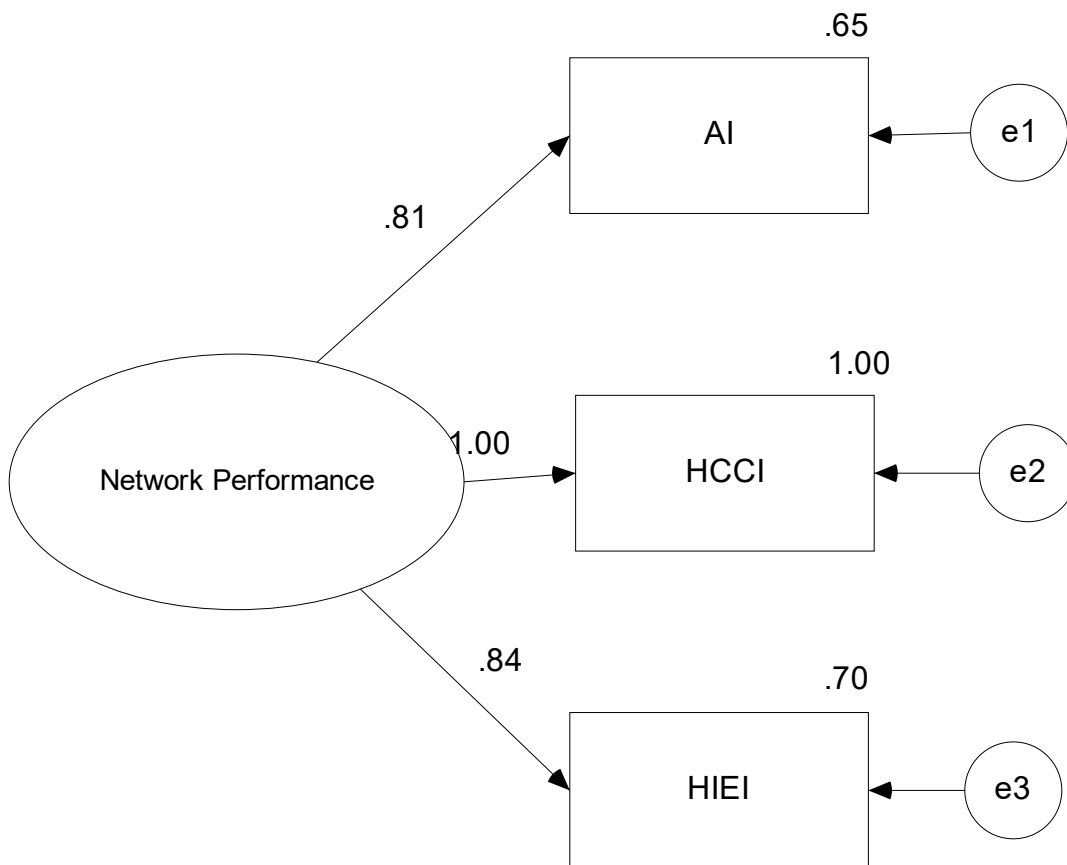


Figure 7: Network Performance Measurement Model

The endogenous measurement model, Network Performance, is comprised of three indicator variables, health care access (AI), health care coordination (HCCI), and health information exchange (HIEI). presents the Indicator Statistics. Critical ratio values greater than 1.96 indicate a statistical significance. In this measurement model, HCCI and HIEI indicate this significance. There aren't any goodness of fit statistics, because this is a just identified model.

Table 13: Indicator Statistics for Measurement Model for Network Performance

Indicator	Critical Ratio	Std. Regression Weights	Squared Multiple Correlations
AI <--- Network Performance	*****	.810	.653
HCCI <--- Network Performance	12.718*	1.000	1.004
HIEI <--- Network Performance	11.299*	.840	.701

* Path parameter is significant at the .05 level.

In the latent construct, network performance, all of the indicators have a large association. Health care coordination (HCCI) has the greatest association at 1.002, followed by health information exchange (HIEI) at .837 and followed last by access to health care (AI) at .808. Two of the path parameters are significant at the .05 level, health care coordination (HCCI) and health information exchange (HIEI).

Structural Equation Modeling

As health care services research is being used to inform decision-making, structural equation modeling (SEM) is being used to examine the relationships among exogenous, or independent, and endogenous, or dependent, variables (Wan, 2002). The power and utility of structural equation modeling lies in its performance. By estimating the strength of hypothesized relationships within a model, the impact of the variables upon each other is identified by SEM (Maruyama, 1998). SEM can determine associations and causality by providing numerical values that identify direction and share of prediction for the relationships among the variables.

For this study, structural equation modeling was conducted first on the measurement models and then upon the full proposed covariance structure model. Upon examination of the data, the measurement models were re-worked and a revised covariance structure model was developed and tested. Two variables that were removed from the final covariance model, fiscal stress (FS) and political leadership (PLP) due in part to multicollinearity issues and lack of predictive influence on the model. However, because these two variables were supported in the literature, both variables were put back into the covariance structure model as control variables. Goodness of fit statistics were compromised by the introduction of these two control variables, consequently, these two control variables were removed from the final revised covariance structure model. Figure 8 presents the final covariance structure model used in this study.

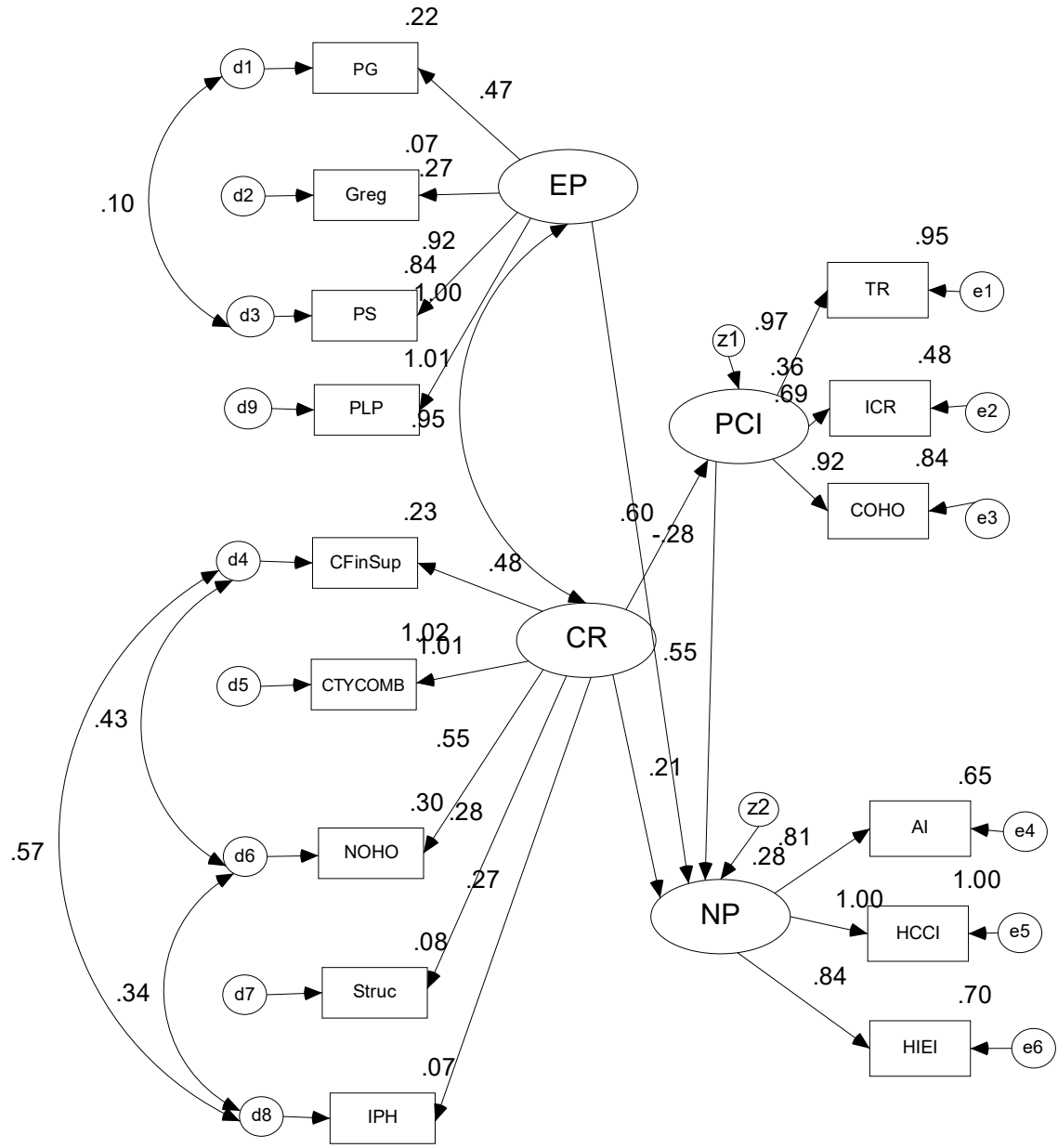


Figure 8: Revised Covariance Structure Model

Relationships Among the Variables

The relationships among the variables in this study are examined in the final model within the context of their latent constructs. The utility of SEM lies in its ability to provide evidence of an appropriate fit between model and theory (Mertler & Vannatta, 2002). First, path parameter statistics will be presented, then goodness of fit statistics will be discussed. Finally, the hypotheses will be tested and the results presented. As will be evident upon viewing Table 14, the path parameter statistics are varied in their significance. It should be noted this model is recursive, which means that any influences are one-way (Wan, 2002).

The goodness of fit statistics are similarly varied; some of the indicators suggest a reasonable fit with the model, and some of them do not. Byrne (2001) notes two items of importance in evaluating the fit of a model to its data; first, due to a small sample size, fit may not be accurately indicated by the RMSEA and second, the goodness of fit statistical indicators are only part of assessing the model's adequacy because theory and practicality must be considered along with statistics. Given this advice, the match between the literature and these constructs coupled with the statistical indicators suggest a reasonable fit between the data and the model.

Table 14: Final Covariance Structure Model- Parameter Estimates

Path Parameter		Regression Coefficient	Standard Error of the Estimate	Std. Regression Weights	Critical Ratio	P
Community Resourcefulness	→ Pervasiveness of County Influence	1.166	.239	.602	4.870*	***
Environmental Pressures	→ Network Performance**	-.417	.347	-.276	-1.202	.229
Pervasiveness of County Influence	→ Network Performance	.516	.103	.550	5.012*	***
Community Resourcefulness	→ Network Performance **	.388	.415	.213	.933	.351

* Significant at the p.05 level.

** The path parameter is not significant, however, these paths remain in the final model for the purpose of hypotheses testing.

Table 15: Goodness of Fit Statistics for Final Covariance Structure Model

Statistic	
Chi-Square (X^2)	210.406
Degrees of Freedom (df)	81
P value	.000
Likelihood Ratio (X^2/df)	2.598
Normed Fit Index (NFI)	.871
Goodness of Fit Index (GFI)	.840
Adjusted Goodness of Fit Index (AGFI)	.763
Comparative Fit Index (CFI)	.915
Root Mean Square Error (RMSEA)	.114
HOELTER (.01)	66

In examining the parameter estimates, the critical ratio should generally exceed 1.96. However, only two of the paths in this model meet that qualification for statistical significance- community resourcefulness (CR) and pervasiveness of county influence (PCI), with a critical ratio statistic of 4.870 and pervasiveness of county influence (PCI) and network performance (NP) with a critical ratio of 5.012. Both are statistically significant at the .05 level.

The goodness of fit statistics vary for this model. While the high X^2 statistic should indicate a poor model fit, Byrne (2001) notes the trend toward using the Likelihood Ratio (X^2/df) statistic, particularly for small samples and its growing acceptance as an acceptable alternative to a low X^2 . Given this study only analyzed 123 counties, it is a small sample and thus the likelihood ratio is considered here. In the case of the likelihood ratio, the 2.598 is lower than 4 and is therefore considered as evidence

of a reasonably good fit between the data and the model. While the p value is not statistically significant for this model (.000), the CFI value of .915 indicates reasonable fit. While the GFI and AGFI statistics should be .9 or greater, and as close to 1 as possible respectively, the GFI (.840) and AGFI (.763) for this model do not meet the test for goodness of fit. Although, these numbers do not indicate an enormous gap between a good fit and a poor fit. Finally, the RMSEA (.114) and the Hoelter (66) statistical values do not suggest a reasonable fit between the model and the data. This will be discussed in the subsequent chapter

Hypotheses Testing

The seven hypotheses in this study will be examined using path analysis. Using standard regression coefficients, path analysis analyzes the estimated change in the dependent (or endogenous) variables based upon one standard deviation change in the independent (or exogenous) variables (Mertler & Vannatta, 2002, Wan, 2002). Table 16 provides the path analyses for the hypothesis testing for this study.

Table 16: Hypotheses Path Analyses Results

Path	Standardized Regression Coefficient
H ₄ Environmental Pressures → Network Performance	-.276
H ₅ Community Resourcefulness → Network Performance	.213
H ₇ Pervasiveness of County Influence → Network Performance	.550
H ₂ Community Resourcefulness → Pervasiveness of County Influence	.602
H ₁ Environmental Pressures → Pervasiveness of County Influence	N/A
H ₆ Public Intent → Network Performance	N/A
H ₃ Public Intent → Pervasiveness of County Influence	N/A

H₁: Environmental pressures (*Population Growth, Geographic Region, Population Size*) has a direct effect on pervasiveness of county influence.

There were no direct effects between environmental pressures and pervasiveness of county influence, consequently, this path was removed from the final covariance structure model. As identified in Table 16, this hypothesis was not supported due to the lack of any direct relationship in earlier model analysis. However, there is evidence EP (environmental pressures) has indirect effects on PCI (pervasiveness of county influence) through the CR (community resourcefulness) construct; subsequently, these variables were linked by a double headed arrow (see Figure 8). This factor covariance connects EP (environmental pressures) to CR (community resourcefulness) and is used to signify a

relationship that is neither clearly understood, nor specified and as such is not considered to be highly important to the model (Maruyama, 1998). Because the literature, along with common sense and earlier statistical tests indicate the connection between these two factors (or latent variables), they remain linked through their covariance.

H₂: Community resourcefulness (*County Financial Support for Health Services, Number of Health Care Organizations, Combined General Revenue &, Number of County Employees, Structure of County Government, Indirect Public Health*) has a direct effect on pervasiveness of county influence.

Hypothesis 2 examines the effect of community resourcefulness (CR) on pervasiveness of county influence (PCI) in order to understand whether a community's resources affect the level of county involvement in a health network. As evidenced by the path analysis in Table 16, there is a direct association that indicates the positive effects of community resourcefulness on pervasiveness of county influence. As identified in Table 16, community resourcefulness (CR) has a rather large positive effect (.602) on pervasiveness of county influence (PCI). Hypothesis 2 is supported and confirmed by the path analyses, as indicated in Table 16.

H₃: Public intent (*Political Leadership, Indirect Public Health Services, Structure/Form of Government*) has a direct effect on pervasiveness of county influence.

There were no direct effects between public intent and pervasiveness of county influence. Consequently, this path was removed from the final covariance structure model. However, indirect public health and structure/form of government were added to the community resourcefulness construct because these variables are indicative of community resourcefulness and fully supported by the literature. Further, political leadership pressure was added to the environmental pressures construct as evidence of

additional pressures present in the community that influence policy. These additions had the added benefit of establishing community resourcefulness as an over-identified measurement model, allowing for goodness of fit statistical evaluation (see Table 11). Consequently, while Hypothesis 3 was not supported on its own merit, two of its three variables were added to the community resourcefulness construct. Subsequently, all of public intent's original three observable variables should be considered when examining Hypotheses 2 and 5.

H₄: Environmental pressures (*Population Growth, Geographic Region, Population Size*) has a direct effect on network performance.

Hypothesis 4 examines the effect of environmental pressures (EP) on network performance (NP) in order to understand whether a community's environmental pressures affect the performance of the health network. As evidenced by the path analysis in Table 16, there is a direct association that indicates the effects of environmental pressures on network performance. As identified in Table 16, environmental pressures (EP) has a small to medium, negative effect (-.276) on network performance (NP). In this case, as environmental pressures increase, network performance decreases. Hypothesis 4 is supported and confirmed by the path analyses, as indicated in Table 16.

H₅: Community resourcefulness (*County Financial Support for Health Services, Number of Health Care Organizations, Combined General Revenue &, Number of County Employees, Structure of County Government, Indirect Public Health*) has a direct effect on network performance.

Hypothesis 5 examines the effect of community resourcefulness (CR) on network performance (NP) in order to understand whether a community's resources affect the

performance of a health network. As evidenced by the path analysis in Table 16, there is a direct association that indicates the positive effects of community resourcefulness on network performance. As identified in Table 16, community resourcefulness (CR) has a small, positive effect (.213) on network performance (NP). Hypothesis 5 is supported and confirmed by the path analyses, as indicated in Table 16.

H₆: Public intent (*Political Leadership, Indirect Public Health Services, Structure/Form of Government*) has a direct effect on network performance.

There were no direct effects between public intent and network performance. Consequently, this path was removed from the final covariance structure model. However, indirect public health and structure/form of government were added to the community resourcefulness construct because these variables are indicative of community resourcefulness and fully supported by the literature. Further, political leadership pressure was added to the environmental pressures construct as evidence of a pressure or constraint affecting public policy. Consequently, while Hypothesis 6 was not supported on its own merit, all of the associated variables were added to the community resourcefulness construct. Subsequently, this should be considered when examining Hypotheses 4 and 5.

H₇: Pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) has a direct effect on network performance (*access to care, health care coordination, and health information exchange*).

Hypothesis 7 examines the effect of pervasiveness of county influence (PCI) on network performance (NP) in order to understand whether county government

involvement in a health network affects the performance of a health network. As evidenced by the path analysis in Table 16, there is a direct association that indicates the positive effects of pervasiveness of county influence on network performance. As identified in Table 16, pervasiveness of county influence (PCI) has a large positive effect (.550) on network performance (NP). Hypothesis 7 is supported and confirmed by the path analyses, as indicated in Table 16.

Summary

This chapter (chapter 4), has presented the results of this study using a variety of data analysis techniques. To summarize, this was the first study to examine a macro model of health care networks based upon county government participation. In large part, this study observed the conditions extant in a community and their impact on a health care system that serves low income and underinsured individuals. In order to investigate the relationships among the variables in this study, a multi-analytical approach was undertaken.

First, initial univariate (descriptive) analyses were run to test for normal distribution of the data. Those variables that were not normally distributed were transformed in an effort to reduce skewness. The next step involved correlation analysis. Correlation analysis tests for relationships among the variables both within the constructs and among the other variables external to their constructs. This led to the revision of one of the model constructs, which improved correlations and goodness of fit. In examining the correlation data, CGE to CGR (.941) indicated a high potential for multicollinearity. It is important to address multicollinearity issues because the highly correlated variables

can bias estimates of the model (Wan, 2002). In this study, CTYGR and CTYGE (the original, untransformed variables of CGR and CGE) were too highly correlated, yet they represented important information for the study. They were combined to form a composite variable, CTYCOMB, which remained in the measurement model, community resourcefulness (CR).

The third step in this analysis was multivariate analysis. First, structural equation modeling was undertaken to evaluate the quality of the five original measurement models in this study. In testing for goodness of fit it was determined that the measurement model, public intent (PI) was a poor fit with the model. However, the variables that measured this construct, political leadership pressure (PLP), structure (STRUC) and indirect public health (IPH), remained important to the study and were added to the environmental pressures construct (EP) or the community resourcefulness (CR) construct. Subsequently, the measurement model public intent (PI) was removed from the model and community resourcefulness (CR) and environmental pressures (EP) were revised. The environmental pressures (EP) measurement model was further revised with the removal of the fiscal stress (FS) variable. While pervasive to the counties responding to this study, this variable was a poor fit with the model itself. At this point, two exogenous constructs remained in the model, community resourcefulness (CR) and environmental pressures (EP). The two endogenous constructs remained the same. These alterations in the proposed covariance structural equation model led to the revised model, seen in Figure 8, which was tested for goodness of fit. Mixed goodness of fit statistics were obtained, some indicating reasonable fit between the data and the model and others

suggesting the fit wasn't quite right. This is not unusual with small sample sizes, like this study which only analyzed 123 county governments.

Next, path analysis was conducted to test the seven hypotheses of this study. Path analysis examines relationships that are both direct and indirect among the variables (Mertler & Vannatta, 2002). The associations indicate the covariance structure model reasonably accounts for the change in the endogenous variables. These associations were further supported by qualitative case study analysis that was conducted with one health care network: Orange County Primary Care Access Network (Florida). This case study will be discussed in the next chapter, but is presented in its entirety in Appendix D.

CHAPTER FIVE: DISCUSSION, CONTRIBUTIONS/IMPLICATIONS, LIMITATIONS, AND CONCLUSIONS

Introduction

Wan (2002) notes the importance of evidenced based health care management and this study has linked this observation to the pressing demands being placed on counties for the provision of health care services (Clark, 2003; Benton et.al, 2008). As the National Association of Counties (2009) has made health care a national priority and the Kaiser Foundation (2002) notes the economic crisis facing health care safety-nets, this study is timely in connecting community response to a particular health care service delivery system.

County government is the pivotal player in this study in large part because of the literature identifying its key role: the fact that local government is more accessible and therefore demands may be made directly to the elected officials; and because chief among the factors that constrain health systems are fiscal conditions, political stability, and problem complexity. As will be discussed, this model supports this assertion of county government playing a pivotal role in health care service delivery. This study has identified that county governments hold a relevant role, albeit in some cases small, in developing and maintaining health care systems. Further, this study provides evidence that county involvement has the potential to improve access and health care delivery for vulnerable populations. Health care networks that have county government involvement share a common benefit, the public sector ability to leverage financial and other resources. The major findings of this study are presented here along with a synopsis of the case study that was conducted of one large county supported health care network.

Major Findings Discussion

Conceptually, this study is grounded in two theories- resource dependency theory and complex adaptive systems theory. The focus of these two theories on resources and the complex relationships that occur across organizations helped to formulate the health care network model constructed for this study. This study examined the role county government and community resources play in the provision of health care safety-nets in terms of the environment and initial conditions of a community. This study supports what was theorized in the literature review- pervasiveness of county influence had the largest predictive value of network performance. In other words, county government involvement affected network performance in health care delivery. Well supported in the literature and well supported theoretically, this study does provide evidence that county government involvement and community resources directly affect health care services for vulnerable populations.

Resource dependency theory elaborates on how dynamic environments affect the continual distribution and redistribution of resources (Kiel, 1994) and this relationship is supported in this study. Resource dependency theory supports the findings of this path analysis, in that the resources available to the network have a direct effect on the resources that comprise the health network.

Further, complexity theory explicates the findings of this research question- organizations must adapt to their environments and complexity theory suggests that partnerships and collaborations are natural adaptations to complex social and public policy problems (Meier & O'Toole, 2003, Davis, Eisenhardt, Bingham, 2007). The formation of networks of organizations is securely linked to the complexity literature

(Kapucu, 2006; Davis et.al, 2007; Kilduff & Tsai, 2003; Nambisan, 2008). These secure theoretical linkages provide evidence to support the conceptual model developed for this study. Finally, the theory is upheld by this study given that pervasiveness of county influence includes complexity measurements of the number of organizations and the intensity of the relationships between the county and the community organizations. Again, this variable was responsible for the largest predictive value of network performance.

Findings Specific to the Research Questions

The revising of the final covariance structure model resulted in the inability to evaluate three hypotheses. Initial statistical values indicated a lack of a relationship among three of the variables- H₁, H₃, and H₆. However, two of the three observable variables used to evaluate H₃ and H₆ were subsequently moved to the community resourcefulness construct. One observable variable used to evaluate H₃ and H₆ was moved to the environmental pressures construct. Therefore, these observable variables strengthened the model fit for this study. There are three research questions in this study. Each research question is answered by the tested and confirmed hypotheses. These research questions are discussed in the following section.

1. What initial conditions (*environmental pressures and community resourcefulness*) lead to pervasive county influence in health care networks?
2. What initial conditions (*environmental pressures and community resourcefulness*) lead to improved network performance?
3. What impact does pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) have on network performance (*access to care, health care coordination, and health information exchange*)?

Research question #1 examined the initial conditions affecting the pervasiveness of county government influence on health care networks. Two hypotheses, H₁ and H₂, are presented here to address this question. Table 16 presents the findings for these hypotheses, but highlights from this table will be taken to explicate the confirmation of these hypotheses, and ultimately answer this research question. As noted previously in the hypotheses testing section, environmental pressures (EP) did not exert direct effects on pervasiveness of county influence (PCI). Subsequently, H₁ was not supported and cannot be used to answer this first research question. On the other hand, H₂ suggests another story. Community resourcefulness (CR) does have a direct effect on pervasiveness of county influence (PCI). The results of the path analysis specify that the community resourcefulness (CR) indicators of county financial support for health services (CFINSUP), the number of health care organizations in the county (NOHO), county government structure (STRUC), indirect public health (IPH), and the combined indicator of county general revenue and number of county employees (CTYCOMB) have a large predictive value ($\beta = .60$) on pervasiveness of county influence (PCI), which is indicated by the types of relationships the county maintains with the health care providers (TR), the intensity of the relationships the county maintains with the health care providers (ICR), and the number of community oriented health organizations in the community (COHO). Clearly, the large predictive value ($\beta = .60$) between community resourcefulness (CR) and pervasiveness of county influence (PCI) supports the theoretical grounding of this study.

So, what initial conditions (*environmental pressures and community resourcefulness*) lead to pervasive county influence in health care networks? The answer

to this first research question is that community resourcefulness leads substantially to pervasive county influence in health care networks, as indicated in the path analysis. In other words, the greater the community's resources, the more intensive county involvement will be in a health care network.

Research question #2 examined the initial conditions affecting network performance. Two hypotheses, H₄ and H₅, are presented here to address this question. Table 16 presents the findings for these hypotheses, but highlights from this table will be taken to explicate the confirmation of the hypotheses, and ultimately answer this research question. As noted previously in the hypotheses testing section, environmental pressures (EP) did exert direct effects on network performance (NP). The results of the path analysis specify that the environmental pressures (EP) indicators of population growth (PG), geographic region (GREG), political leadership pressure (PLP) and population size (PS) have a small to medium, negative predictive value ($\beta = -.28$) on network performance (NP), which is indicated by access to health care (AI), health care coordination (HCCI), and health information exchange (HIEI). The results of the path analysis also specify that the community resourcefulness (CR) indicators of county financial support for health services (CFINSUP), the number of health care organizations in the county (NOHO), county government structure (STRUC), indirect public health (IPH), and the combined indicator of county general revenue and number of county employees (CTYCOMB) have a small positive effect ($\beta = .213$) on network performance (NP), which is indicated by access to care (AI), health care coordination (HCCI), and health information exchange (HIEI).

So, what initial conditions (*environmental pressures and community resourcefulness*) lead to improved network performance? The answer to this second research question is two-fold. First, environmental pressures have a small to medium, negative predictive value of network performance ($\beta = -.28$). This suggests that when environmental pressures increase, network performance will experience some level of decreasing improvements. On the other hand, community resourcefulness has a small positive predictive value, ($\beta = .21$), which suggests that the greater a community's resources, the more improvements will be experienced in network performance.

Research question #3 examined the impact of county involvement on network performance. One hypothesis, H₇, is presented here to address this question. Table 16 presents the findings for this hypothesis, but highlights from this table will be taken to explicate the confirmation of this hypothesis and ultimately, answer this research question. As noted previously in the hypotheses testing section, pervasiveness of county influence (PCI) did exert direct effects on network performance (NP). The results of the path analysis specify that the pervasiveness of county influence (PCI), which is indicated by the types of relationships the county maintains with the health care providers (TR), the intensity of the relationships the county maintains with the health care providers (ICR), and the number of community oriented health organizations in the community (COHO) have a large predictive value ($\beta = .55$) on network performance (NP), which is indicated by access to care (AI), health care coordination (HCCI), and health information exchange (HIEI).

So, what impact does pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health*

organizations) have on network performance (*access to care, health care coordination, and health information exchange*)? The answer to this third research question is significant. Path analysis of pervasiveness of county influence and network performance indicates that as county influence increases, network performance will experience some level of increasing improvement.

Greatest Influence on Network Performance

In this study, the model identified three latent constructs, environmental pressures, community resourcefulness, and pervasiveness of county influence as predictor variables for network performance. This model construct is upheld by the statistical analysis conducted of these relationships. However, it is important to note that statistically speaking, pervasiveness of county influence (*types of relationships, intensity of county relationships, and number of community oriented health organizations*) has the greatest predictive value on network performance with a large predictive value ($\beta = .55$). Indeed, environmental pressures (EP) has a small, negative predictive value ($\beta = -.27$). Community resourcefulness has a small positive predictive value, ($\beta = .21$). Clearly, pervasiveness of county influence has more than twice the predictive value of network performance. The implications of this finding will be discussed in more detail in a later section.

Case Study Analysis Discussion

This study quantitatively examined 123 county governments and explored their impact on health care safety-nets. However, this researcher also wanted to examine a

network in more qualitative depth to compare it with the quantitative findings. As part of the study, respondents were asked if they would consider participating in a follow-up case study, should they be selected. Of the respondents that indicated a positive answer, Orange County, Florida was the closest in proximity to the researcher. Consequently, the Orange County Primary Care Access Network (PCAN) was selected for four reasons. First, it was a long-running health care network that maintained consistent leadership from county government. Second, it was a fairly large, dispersed network with both strong and weak ties. Third, it was conveniently located to the researcher and allowed for ease of visits. Finally, PCAN had indicated a willingness to participate.

The statistical analyses of this study indicate county government participation in the health care network model does affect health network performance. While the majority of the counties that responded to the study survey were small in population size- 51% of the responding counties had population sizes of < 50,000, 6% of the responding counties had populations in excess of 600,000. Important for comparison to the case study health care network, most of the responding counties had limited health care resources available within their communities- 10% of responding counties reported at least 10 or more health organizations in their community. However, 43% of responding counties reported had fewer than five health organizations in the community and 47% had between 5-9 health organizations in the community.

Notably, in resource-poor counties, neither a strong economy nor large numbers of health care providers seem to be necessary for improving health care access. The study asked respondents to rate the degree to which health care access for the underinsured and uninsured improved as a result of network activities. For 46% of the

respondents, there had been significant or substantial improvement. Next, 40% believed there had been significant or substantial improvement in the degree of health care coordination for the underinsured and uninsured as a result of network activities. Finally, 40% believed there had been significant or substantial improvement health information exchange.

What has proven to be an interesting variable that was ultimately removed from the final model because of its ubiquity across the country, was fiscal stress. It is important to note that these perceptions of network performance improvements were made during a period of significant fiscal stress (FY 2008-2009). Indeed, this study supports the fiscal stress evidence in a study first conducted by Kraybill and Lobao in 2001. That study suggested that 2/3 of all counties were experiencing fiscal stress. In 2009, fiscal stress was even more pronounced in this study. County respondents were asked about the impact of declining public revenues over the last three years. The responses from counties were overwhelmingly similar- 83% of counties reported the loss of federal revenue was important, 91% reported the loss of state revenue was important, and 72% reported a declining tax base was important in determining their budgets and informing their policy decision making. However, even in light of these fiscal stressors, county governments continued to assist with health care services within their communities. Although some support may be mandatory via state mandates, it was clear that other support continued even in the absence of mandates. First, 59% of counties indicated they provided significant or substantial funding to health departments. Second, 51% of counties indicated they provided significant or substantial funding for emergency medical services. Third, 11% of counties indicated they provided significant or

substantial funding for federally qualified community health centers and another 23% provided limited funding to these federally qualified community health centers. Across the board, varying types (*funding, information sharing, policy influence, and shared outcome measures*) and degrees (*limited, significant, substantial*) of county support were provided to non-governmental organizations.

A case study was undertaken of the Orange County Primary Care Access Network (PCAN), in which Orange County Government plays a substantial role in assuring health care access for vulnerable Orange County citizens. PCAN is heavily supported both financially and administratively by Orange County Government. As evidenced by the health care model, the strongest predictor of network performance was pervasiveness of county government involvement. The survey responses from Orange County provide further evidence for this study in supporting the confirmation of the study hypotheses. Indeed, PCAN appears to have resulted in substantial improvements in network performance (NP), as noted by the indicators health care coordination (HCCI) and access to care (AI). Further, network performance has seen significant improvements in health information exchanges (HIEI). As noted previously, fiscal stress was pervasive across the country. For the study, fiscal stress is defined as declining local tax bases, and declining federal and state revenues. Interestingly, in its survey response, Orange County indicated declining federal and state revenues were not directly important. Conversely, there is recent evidence to support these declining revenues may be having an indirect effect on PCAN's budget. For the upcoming budget year (FY 2010-2011), PCAN must carve out about \$2 million from its budget (M. Brennan, personal communication, April 30, 2010). Orange County did note that a declining tax base was very important. For

PCAN, this fiscal stress is even more pronounced because Orange County government has long played a pivotal leadership role not only in facilitating the network, but in providing a substantial share of the network's financial support. The study identified that across the country, counties have developed various mechanisms for funding health care from dedicated revenue streams, through sales tax revenue (Hillsborough, Florida) or special taxing districts (Clark, Ohio), or, like Orange County, general revenue funds.

PCAN is also noticeably different in the vast number of community oriented health care resources it brings together. For PCAN, the network is able to provide health care to over 100,000 uninsured and underinsured residents annually based in no small part to the size and scope of these network providers. Further, these network providers are successful in leveraging revenues in the amount of about \$2 million dollars each year. Table 17 provides a side by side comparison of the averages of the study and the Orange County Primary Care Network. See Appendix B for the complete case study.

Table 17: Select Variable Comparison Between Nationwide County Study and Orange County PCAN

Selected Variables	National County Statistic	Orange PCAN
Average County Population	138,382	1,072,801
Median County General Revenue	114,406	3,873,716
Median Number of County Employees	2,224	44,248
Average Number of Community Oriented Health Care Organizations in Network	4	20
County Public Health Department Funding	Significant/Substantial	Substantial
County Emergency Medical Services Funding	Significant/Substantial	Substantial
County Federally Qualified Health Centers Funding	Limited	Substantial
County indigent health care clinics funding	None	Substantial
County funding for community hospitals	None	Significant
Loss of federal revenue	83% Important	Not important
Loss of state revenue	91% Important	Not important
Declining tax base	91% Important	Very Important
Degree to which health care access for uninsured and underinsured has experienced improvement	46% Significant or Substantial	Substantial
Degree to which health care coordination for uninsured and underinsured has improved	40% Significant or Substantial	Substantial

Study Methodological Contributions

This national study developed and tested a model of health care network performance and the initial conditions that lead to pervasiveness of county influence and network performance, based on community resources and environmental pressures. The methodological contributions of this study include the development of the model and the application of structural equation modeling to county government health care service delivery activities. In developing this model, extensive research was conducted to identify the appropriate variables and linkages among the constructs of this study. This study attempted a snapshot of the current picture of county government involvement in health care delivery systems to guide policy and management decisions. For this reason, careful attention was given to the identification and selection of the variables to measure these real-world phenomena, which are integral to studying health care interventions and performance (Wan, 1995).

While the covariance structural model's goodness of fit statistics were mixed in assessing the fit among the data and the model, evidence of reasonable fit did emerge in this study. Further, this model represents a new model for examining health care--from a county government perspective and indeed from a macro level perspective. Accepting the advice from Byrne (2001) that statistics alone don't make the perfect indicator of model fit, the reasonable values of fit and the theoretical and literature supports for this study suggest this has made a methodological contribution that has initiated an alternative model worthy of further exploration. Further, the hypotheses developed for this study have not been tested previously and four of the seven hypotheses were supported. The lack of support for the remaining three hypotheses may be attributed not to a poor model,

but rather instead to a small sample size, which frequently yields a lack of statistical significance in structural equation modeling (Maruyama, 1998; Byrne, 2001; Kline, 2005).

Structural equation modeling provided a more sophisticated avenue for exploring the complex relationships among the variables of this study. This study employed latent variable constructs comprised of fifteen observable variables. The extent of participation around the country suggests the methodology of applying structural equation modeling to county government health networks and the testing of a model has yielded valuable information that will promote future research into these networks and into county involvement in health care service delivery systems.

Public Administration Management and Policy Implications

County Governments Are Active Health Care Safety Net Participants

As noted in Chapter One, county governments are fully enmeshed in health care concerns (NACO, 2009). This study further supports this concept. For county government policy-makers, it is important to recognize the changing world of county government service delivery. One example is how county governments are participating in health care safety-nets (West, 2004). This study fully supports the impact county government involvement has on health care network performance. County government involvement, identified as pervasiveness of county influence, has more than twice the predictive value of network performance than the other two variables that affect the health care network performance. For county administrators, this is important to understand. The pervasiveness of county influence is measured by the types and intensity

of county relationships maintained with health care organizations and the number of community oriented health care organizations available in the community. This evidence supports the importance of county government relationships with health care organizations that serve vulnerable populations. Further, not all of the support is financial. This study examined relationships that were diffuse (information sharing/policy advice) to intense (county funding and shared outcomes). This provides a great deal of variation in how county managers may affect health care policy within their own communities.

Managing Health Care Safety-Net Participation

As the real world of county government witnesses an expansion in county government participation in service networks, some public administration problems may be resolved (principal-agent, bureaucratic inefficiency, fiscal burdens). However, these resolutions may give rise to concerns about the hollow state (inadequate management, poor accountability). While it is beyond the scope of this study to examine these particular concerns, the foundation laid by this research provides some direction about where the next management research may be considered. As counties expand beyond their historical service provision, it is important to analyze these new service arenas of which health is rapidly becoming significant (Agranoff & Pattakos, 1989; NACO, 2002, 2009).

As this study substantiates, county governments are delving deeper into services such as health care. It may be argued that county government is subsequently at a crossroads. The changing nature of government work may reflect, in part, the changing

work requirements of government employees. County governments may face difficulties in the transition from service provider to service facilitator. As indicated in this study, nearly all counties participated at some level in health care services, from the least intensive information sharing involvement to the most intensive, shared outcomes, all counties responding to this survey indicated some level of involvement with some health care provider.

Clearly, contemporary public employees now require more advanced skills and knowledge, that they must be able to quickly apply to their contract management and expert oversight duties (Wallace-Ingraham, 1995). Wholey (1999) noted the importance of developing appropriate oversight among public managers in order to facilitate more effective performance measurement. Management capacity among both the public managers and the network of service provider's management team of necessity must evolve. Managers functioning in these networks must engage those skills necessary for effective collaboration. In essence these skills involve interpersonal and interagency communications, relationship building, interagency planning, and maximizing administrative resources (Austin, 2003).

Martin (2001) suggests that oversight of alternative service delivery requires management skills that can facilitate, coordinate, and evaluate the services and the organization providing them. These skills may be subsumed under enablement skills, which are those skills required to engage partners arranged horizontally in networks, thereby bringing multiple stakeholders together for a common good (Salamon, 2002). This study identifies clearly the county's involvement in health care networks, rather than

direct service delivery, thus substantiating these suppositions that county managers must apply different skill and knowledge sets.

County Government Collaborations: Addressing Market Failures, Strengthening Community

Further, when market failures and government failures are emerging, skepticism among citizens regarding benefits of social service programs may obfuscate real societal benefits (Thayer & Fine 2001; Considine 2003). This study has provided evidence that county governments can respond successfully to health care market failures. The Orange County Primary Care Access Network provides 100,000 patients with care annually, as a direct result not only of county government taking the lead in funding health care, but in its overall facilitation of meeting the health care needs of vulnerable populations.

Finally, this county government study supports public-private collaboration for resolving health care disparities. The study data provide evidence of the impact of public and private organizations working together to promote health services. For example, 47% of responding counties indicated the number of community oriented health care providers in their communities numbered between five and nine. Notably, a decade ago county government was emerging as a fundamental participant in a collaborative partnership that paved the way for its role in health care networks (Cigler, 1999). However, county roots in social welfare supports date to county government's inception (Fairle, 1904). This 2009 study identified that more than 50% of counties were providing substantial or significant financial support to public health departments, more than 30% were providing financial support to federally qualified community health centers, and more than 50% supported emergency medical services. This support has positioned governments as

significant partners in health organization networks, perhaps in part because they are attempting to bring stability to nongovernmental organizations during a period of instability (Austin, 2003).

County Governments as Central Players in Health Care Networks

As noted previously, this study further evidences findings from a study by Banaszak-Holl, Allen, Mor, and Schott (1998) that found central positions within the networks are held by government organizations and health care providers. Subsequently, this study has further elaborated upon the findings of government in a central position of networks. County governments emerged as integral to network performance. This may be understood somewhat in the theoretical underpinning of performance measurement for health systems, which include resource generation, financing and stewardship (Musgrove, Creese, Preker, Baeza, Anell, & Prentice, 2002). Wan (2002) notes the importance of financing, organization, and access in quality health services management. This study has taken the first step in considering how county governments and community resources affect health care safety-net performance. County government decision-makers and policy-makers may be able to learn from the research questions asked in this study and apply the knowledge to developing better safety-nets across a variety of service disciplines.

County Government Participation in Health Care Networks: A New Model

Finally, this study has contributed to the development of a new conceptual model, one that explicates a health care safety-net that is influenced by county government

participation. Figure 1 presented the original proposed conceptual model. Figure 9 below provides the revised conceptual model. As was noted in the findings section of this paper, the arrows represent the relevant paths or linkages that connect the variables and their constructs together. As had been predicted in the literature review and the theoretical framework, the final model is fairly reflective of the health care networks analyzed in this study. It is hoped this model will provide county managers and policy makers with a tool that will enable them to identify areas within a network that may need stabilizing or shoring up in order to improve network performance.

In comparing Figure 1 (the original conceptual model) and Figure 9, there are some differences in how the final conceptual model (Figure 9) illustrates the health care network based on resources and county influences. In Figure 1, the environmental pressures exogenous construct (*population growth, county fiscal stress, geographic region, and population size*) was linked to both the network performance and the pervasiveness of county influences endogenous constructs. However, because this was not a good fit for the model, this linkage between environmental pressures and pervasiveness of county influence was removed. This essentially removed environmental pressures from direct effects on the pervasiveness of county influence construct.

Statistically speaking, the environmental pressures construct is presenting some indirect influence on pervasiveness of county influence because environmental pressures is linked in the covariance structure model through a correlation. This intercorrelation among the two exogenous constructs will result in indirect effects on the connected endogenous construct. Second, the public intent exogenous construct (*political leadership, indirect public health services, and structure/form of government*) was completely removed from the equation to improve the model fit with the data. However, two of the indicator

variables of this construct, indirect public health and structure/form of government were added to the community resourcefulness construct. These two variables could logically be linked as community resourcefulness indicator variables. The third indicator variable, political leadership pressure was added to the environmental pressures construct as a logical addition of one more environmental pressure. Subsequently, the final revised conceptual model is presented in Figure 9.

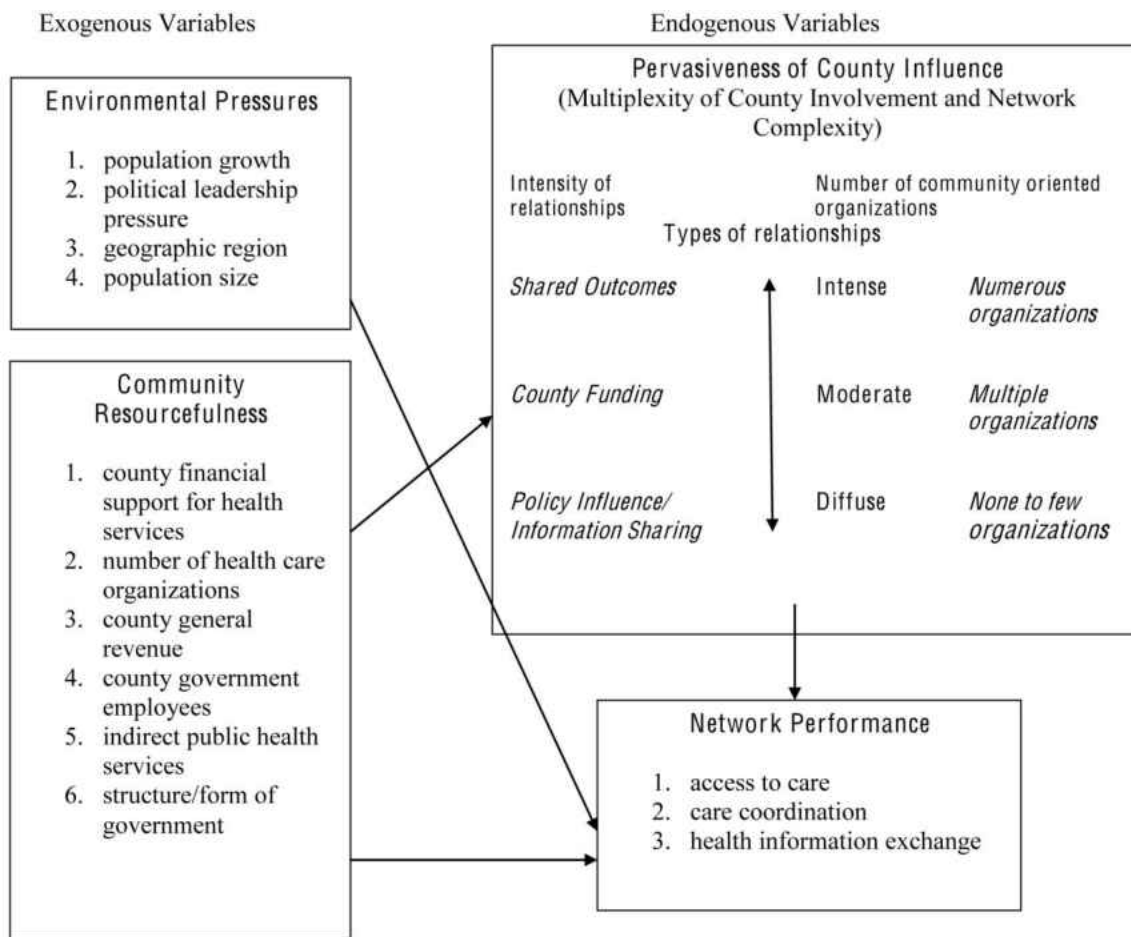


Figure 9: Revised Conceptual Model of County Influence on Health Care Networks

Theoretical Implications

The scholarly and theoretical implications of this study are firmly rooted in expansion of resource dependency and complex adaptive systems theories to a newly conceptualized model (see Figure 9). This model examined the literature to develop a series of constructs that were grounded first in the theoretical framework of the two theories and then subsequently in the county government literature. These constructs were also based on the absence of similar studies in examining county government's role in health care service delivery, even though the literature clearly identified county government participation in health care. As the National Association of Counties (2009) has made health care a legislative priority, this study will further the research available for beginning to measure impact and performance of county governments in their health care delivery roles.

Multiple levels of statistical analyses were generated by this study in order to develop the most appropriate health care model as it relates to county government and community resources. Consequently, after multiple variations, the final covariance structure model was presented along with the final study results (see Figure 8). This model reflects a series of complex theoretical relationships that haven't been put together before in a covariance structure model. Further, resource dependency theory has been expanded to include the resources of a health care network from a macro perspective. The associations among the variables identified in this model provide information that should encourage further research and scholarship on the complexity of county government involvement in health care network performance.

Delimitations and Limitations of the Study

Limitations first begin with disproportionate regional response rates that may provide an inaccurate representation of variation among counties using network structures to deliver low income health care services. In other words, if response rates are not even, can overrepresentation from one region or under-representation from another obscure the data?

Delimitations include the potential bias linked to the use of technology in gathering the data for this study via the internet. However, because the survey was first sent via U.S. Mail, it is assumed this delimitation was constrained as those county managers who preferred the use the web-based survey were able to do so and those who preferred written responses had equal access.

This study involved the use of survey tools that collected and analyzed self-reported data, some of which is the perception of the public manager interpreting the question. While every attempt was been made to make the variables clearly understood in the data collection instrument, validity of self-reported data may be a concern due to collection methods and interpretation.

Timing of the surveys could be considered to be a delimitation. A total of nearly six months separates the mail-out of the first survey and the receipt of the final completed survey. This time lapse may contribute to the study findings, which may differ from county to county based upon the time in which they responded to the survey. However, this concern may be unfounded given the high degree of skewness that was apparent among the variables. Even given the time lapse, many counties were experiencing similar constraints.

Sample size is another limitation. The sample size of 123 counties is considered to be fairly small, especially in terms of structural equation modeling. This means that in some cases, statistically significant relationships may appear to be falsely insignificant, resulting in inaccurately rejecting hypotheses. Finally, the goodness of fit statistics suggest there is room for adjustment among the variables. Perhaps some of the variables should be reconsidered, even though the literature and theory support their inclusion. Exchanging some of the variables with less predictive influence may improve model fit.

Recommendations for Future Research

Health care networks fall within the paradigm of contemporary governance and as this study has identified in particular, county governance. This governance approach for county governments is one that embraces partnerships determined by service needs and economies of scale. It involves integrating stakeholders and communities to resolve problems. As such, this governance embraces new tools, necessary for achieving success in addressing complex social problems. Therefore, this becomes a field open for new research. This author has several suggestions for future research.

First, the high X^2 statistic suggests this study model would benefit from additional revisions in order to improve the goodness of fit and a larger study sample. Research on variations of the exogenous variables might contribute to strengthening the model fit. Further along these lines, Hoelter's critical N was below the recommended number of 200, attesting to the need for a larger sample. This study could also be replicated on a larger scale, given that only 500 surveys were sent out and 127 were returned. Perhaps a larger sample size would return a number sufficient to strengthen Hoelter's critical N.

Second, the findings from this study indicate that available resources contribute substantially to the development and maintenance of an effective health care safety net. However, the PCAN case study suggests that a fundamental difference in health care safety nets may also include the right blend of dedicated political and community leadership. While political leadership was adjusted within the original model for model fit purposes, it would behoove further research to consider a method for further analyzing the impact of this variable.

Third, this study could benefit from network analysis of the section one data obtained in this study. Section one of this survey tool was designed based in part on a community network study conducted by Provan, et.al. in 2005. It would be beneficial to analyze the data found in this community health network study. This network analysis could be useful in testing the centrality of county government within the network. Because this study was conducted among county government officials, it would be interesting to compare these findings to a network analysis study of the network participants themselves to gauge their perceptions of the influence of county government on health care provision.

Finally, there are scholarly questions that have emerged that this study does not address. First, how can the complexity inherent in resolving public problems be used as an advantage? In order to understand this, comparative studies could be undertaken to examine first the size and scope of networks and then ultimately, policy advantages and disadvantages could be further considered. Further, more case studies would perhaps best inform this research and allow for evidenced based decision-making among policy makers. This suggests the following research question that is a logical outgrowth of this

study, how best can we measure successful policy implementation within these network arrangements? Researchers struggle to develop appropriate mechanisms for examining policy success. Should we measure efficiency? Should we measure effective service deliverables? What constitutes success for a health care network serving underinsured and uninsured residents? Is it comprehensive access for anyone needing care? Is it a reduction in emergency room visits? Could it be somewhere in the middle? As the United States wrestles with an unwieldy, expensive, inequitable health care system these are some of the research questions that will have to be explored. This first study about county government influence on health care safety nets is one step in that direction.

Conclusion

This study explored the relationships between county governments and health care safety-nets using exogenous constructs with indicator variables that examined multiple community factors. The qualitative side of this research provided data that informed the findings from the quantitative study. For example, this study has evidenced that environmental influences such as the population of the county, the size of its general revenue stream, and the number of community oriented health care organizations are associated with variation among the pervasiveness of county involvement and ultimately, network performance. As this research has identified, health care networks can improve health care access for vulnerable populations.

As the theoretical framework of complex adaptive systems and resource dependency suggested, networks rely upon the successful raising of resources- capital, financial, and personnel- within a complex web of stakeholders. Within this web, county

governments may prove to be the key leadership to make it happen by validating the problem and leveraging resources.

This study provided reasonable explanations regarding the relationships among the environmental pressures, community resourcefulness, pervasiveness of county influence, and network performance variables to support this assertion. The pervasiveness of county influence emerged as having more than twice the predictive value as it relates to health care network performance. This is a critical lesson learned in this study. County involvement has a direct impact on health care networks. The case study provided further evidence of these relationships. However, there is much more to learn on this topic.

APPENDIX A: SURVEY INSTRUMENT

Appendix A



Section 1

Health Care Service Delivery Network Survey				
<p>This survey seeks to understand the conditions under which health networks may form and in what capacity counties may participate to deliver health care services to their low-income, uninsured, and underinsured residents. Listed below are organizations that frequently participate in the provision of health services. We would like to know the extent to which your County is involved with, or linked to, the others on the list for health care services. We also request that you identify other organizations you work with that are not listed below.</p> <p>Please indicate the agencies your County connects with for the provision of health care. Circle whether or not the connection exists. Only identify those types of links that occur <i>with some regularity</i> (not just an occasional referral, for instance). Please indicate your involvement for each of the four types of relationships listed by circling the appropriate number.</p>				
Types of Relationships				
<i>(Please circle the level of intensity that best describes the relationship.)</i>				
Organizations/Agencies	County Funds Provided (Contractually, Grant, Special Taxing District)	Policy Influence (You seek them out for policy advice)	Shared Outcome Measures (County measures health outcomes jointly)	Information Sharing (May include referrals made either to or from these organizations)
<p><i>If you had no regular involvement with an agency regarding these types of affiliations, circle the "0". Please circle the level of intensity that best describes the relationship. 0=no relationship; 1=limited; 2=significant; 3=substantial.</i></p>				
Federally funded Community Health Center	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Hospital- faith based	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Hospital-for-profit	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Hospital- nonprofit	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Indigent Care Clinic-secular	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Indigent Care Clinic-faith based	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Medical Society	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Mental Health Services	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Municipal Health Provider	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
Public Health Department	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

Please print clearly

Your County and State: _____
County *State*

Name & Title of Person Completing Survey: _____
Name *Title*

Phone Number of Person Completing Survey: _____
(Area code + seven digit phone number)

Email of Person Completing Survey: _____

In this table, please add those organizations with which your county is involved that have not been identified in the previous section, but that you believe are helping address primary care and low income health care issues in your community.				
Types of Connections (Please circle the level of intensity that best describes the relationship.)				
If you had no regular involvement with an agency regarding these types of affiliations, circle the "0". Please circle the level of intensity that best describes the relationship. 0=no relationship; 1=limited; 2=significant; 3=substantial.				
Organizations/Agencies	County Funds Provided (Contractually or Grant)	Policy Influence (You seek them out for policy advice)	Shared Outcome Measures (County measures health outcomes jointly)	Information Sharing (May include referrals made either to or from these organizations)
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3

Section 2

The following seven (7) questions address the characteristics of counties involved in the delivery of health care services for the medically uninsured or underinsured.													
Question	Please Check Appropriate Box												
1. Identify the county millage rate allocated for health care services <i>(If none, please select none)</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><u>General Revenue</u></td> <td style="width: 50%; border: none;"><u>Special Taxing District</u></td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> none</td> <td style="border: none;"><input type="checkbox"/> none</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> > 0 < .25</td> <td style="border: none;"><input type="checkbox"/> > 0 < .25</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> > .25 < .50</td> <td style="border: none;"><input type="checkbox"/> > .25 < .50</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> > .50 < 1</td> <td style="border: none;"><input type="checkbox"/> > .50 < 1</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> > 1</td> <td style="border: none;"><input type="checkbox"/> > 1</td> </tr> </table>	<u>General Revenue</u>	<u>Special Taxing District</u>	<input type="checkbox"/> none	<input type="checkbox"/> none	<input type="checkbox"/> > 0 < .25	<input type="checkbox"/> > 0 < .25	<input type="checkbox"/> > .25 < .50	<input type="checkbox"/> > .25 < .50	<input type="checkbox"/> > .50 < 1	<input type="checkbox"/> > .50 < 1	<input type="checkbox"/> > 1	<input type="checkbox"/> > 1
<u>General Revenue</u>	<u>Special Taxing District</u>												
<input type="checkbox"/> none	<input type="checkbox"/> none												
<input type="checkbox"/> > 0 < .25	<input type="checkbox"/> > 0 < .25												
<input type="checkbox"/> > .25 < .50	<input type="checkbox"/> > .25 < .50												
<input type="checkbox"/> > .50 < 1	<input type="checkbox"/> > .50 < 1												
<input type="checkbox"/> > 1	<input type="checkbox"/> > 1												
2. How important has political leadership pressure been to county participation in health care services?	<input type="checkbox"/> Very Important <input type="checkbox"/> Somewhat Important <input type="checkbox"/> Not Important <input type="checkbox"/> Don't know (No frame of reference available)												
3. In the past three years, how important has the loss of federal revenue been for your county government's finances?	<input type="checkbox"/> Very Important <input type="checkbox"/> Somewhat Important <input type="checkbox"/> Not Important <input type="checkbox"/> Don't know (No frame of reference available)												
4. In the past three years, how important has the loss of state revenue been for your county government's finances?	<input type="checkbox"/> Very Important <input type="checkbox"/> Somewhat Important <input type="checkbox"/> Not Important <input type="checkbox"/> Don't know (No frame of reference available)												
5. In the past three years, how important has a declining tax base been for your county government's finances?	<input type="checkbox"/> Very Important <input type="checkbox"/> Somewhat Important <input type="checkbox"/> Not Important <input type="checkbox"/> Don't know (No frame of reference available)												
6. What is the structure/form of your County government?	<input type="checkbox"/> Commission <input type="checkbox"/> Commission/Administrator <input type="checkbox"/> Council-Executive <input type="checkbox"/> Consolidated City-County												

Questions	Please Check The Appropriate Box
7. Extent to which county funds (general revenue, special taxing district) support the following services:	
<ul style="list-style-type: none"> ▪ Public Health Department 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)
<ul style="list-style-type: none"> ▪ Emergency Medical Services <i>(ambulance, emergency medical technicians, paramedics)</i> 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)
<ul style="list-style-type: none"> ▪ Federally funded Community Health Centers 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)
<ul style="list-style-type: none"> ▪ Indigent Health Care Clinics <i>(may be secular or faith based or cooperative program)</i> 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)
<ul style="list-style-type: none"> ▪ Hospitals 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)
<ul style="list-style-type: none"> ▪ Other _____ 	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)

Section 3

The following three (3) questions examine county perceptions of the performance of the health care network in delivering health care services for the medically uninsured or underinsured.	
Questions	Please Check The Appropriate Box
1. To what degree do you believe health care access for the uninsured and underinsured has improved as a result of network activities?	<input type="checkbox"/> Substantially <input type="checkbox"/> Significantly <input type="checkbox"/> Limited <input type="checkbox"/> Not at all <input type="checkbox"/> Don't know (No frame of reference available)

APPENDIX B: IRB APPROVAL



University of Central Florida Institutional Review Board
 Office of Research & Commercialization
 12201 Research Parkway, Suite 501
 Orlando, Florida 32826-3246
 Telephone: 407-823-2901 or 407-882-2276
 www.research.ucf.edu/compliance/irb.html

Approval of Exempt Human Research

**From: UCF Institutional Review Board #1
 FWA00000351, IRB00001138**

To: Hillary Knepper and Mary Ann Feldheim

Date: October 22, 2009

Dear Researcher:

On 10/22/2009, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
 Project Title: Low-Income Health Care Networks: Initial Conditions, Extent,
 and Intensity Relevant to County Government Participation
 Investigator: Hillary J Knepper
 IRB Number: SBE-08-05892
 Funding Agency: None

At the time of this Continuing Review, it was determined that your study meets Exempt Category # 2. Therefore, the study no longer has an expiration date. In addition, you are not required to use an Informed Consent document, but as with all human research, you need to follow your consent process with research participants. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Joseph Bielitzki, DVM, UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 10/22/2009 02:12:50 PM EDT

IRB Coordinator

APPENDIX C: LETTER OF CONSENT



Informed Consent for an Adult in a Non-medical Research Study

Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in a research study. You are being invited to take part in a research study which will include about 300 county governments. You can ask questions about the research. You will be told if any new information is learned which may affect your willingness to continue taking part in this study. You have been asked to take part in this research study because you are a county government administrator. You must be 18 years of age or older to be included in the research study. By signing this form, you are indicating your agreement to participate in this survey.

Hillary Knepper, the person doing this research is a doctoral student in the College of Health & Public Affairs at the University of Central Florida. Because the researcher is a doctoral student she is being guided by Dr. MaryAnn Feldheim, Chair of the Department of Public Administration and a UCF faculty supervisor.

Study title: Low-Income Health Care Networks: Initial Conditions, Extent, and Intensity Relevant to County Government Participation

Purpose of the research study: This survey seeks to understand the conditions under which health networks may form and in what capacity counties may participate to deliver health care services to their low-income, uninsured, and underinsured residents.

What you will be asked to do in the study: This survey tool seeks to identify those organizations that frequently participate in the provision of health services for uninsured and underinsured county residents. The survey seeks to identify the extent to which your County is involved with, or linked to, the others on the list for health care services. There are a total of four sections in this survey that cover 14 questions all together. Most of the questions are multiple choice or check off boxes. Upon completion of all surveys submitted, the data analysis will identify a continuum of health care networks. A random sampling of representative counties from each of the three possible network levels identified will be solicited to participate in a telephone interview. The telephone interviews will involve 14 questions about county participation in the health care network.

Voluntary participation: You should take part in this study only because you want to. There is no penalty for not taking part, and you will not lose any benefits. You have the right to stop at any time. Simply discontinue the survey. You will be told if any new information is learned which may affect your willingness to continue taking part in this study.

Location: The survey is being conducted through Survey Monkey, a survey research on-line tool and via US mail.

Time required: The pilot test for this survey indicated the survey took about 10 minutes. If selected to participate at a later date in the case study, it is anticipated a maximum of 30 minutes of your time will be necessary for a telephone interview.

Audio or video taping: This study does not include any audio or video taping.

Risks: There is a minimal risk of breach of confidentiality for taking part in this study. You do not have to answer every question or complete every task. You will not lose any benefits if you skip questions or tasks.

-Over-

Benefits: As a research participant you will not benefit directly from this research, besides learning more about how research is conducted. On the other hand, you may learn from the lessons learned in this study that might be applicable for your county health care policy decisions.

Compensation or payment: There is no compensation or other payment to you for taking part in this study.

Confidentiality: Your identity will be kept confidential. The researcher will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. Your information will be assigned a code number. The list connecting your name to this number will be kept in a password protected computer. Your information will be combined with information from other people who took part in this study. When the researcher writes about this study to share what was learned with other researchers, she will write about this combined information. Your name will not be used in any report, so people will not know how you answered or what you did.

If you are selected for the telephone interview, you will have the option of participating at that time or declining. If you agree to participate, your county government name (for example, Lake County) will be included in the research findings.

There are times when the researcher may have to show your information to other people. For example, the researcher may have to show your identity to people who check to be sure the research was done right. These may be people from the University of Central Florida.

Study contact for questions about the study or to report a problem: Hillary Knepper, Doctoral Candidate, College of Health & Public Affairs, University of Central Florida, (352) 483-1766 or Dr. Mary Ann Feldheim, Faculty Supervisor, Department of Public Administration, University of Central Florida at (407) 823-3693 or by email at mfeldhei@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901.

Please indicate your willingness to participate in this survey by signing below:

Signature

Printed Name

Date

APPENDIX D: CASE STUDY

Putting it All Into Context: Orange County, Florida Primary Care Access Network

Case Example: Orange County, Florida

Public Service: Health Care for Uninsured Residents of Orange County

Policy Tool: Community Health Care Network

Current Annual County Financial Contribution: \$12,000,000.

Residents Served: 100,000 (annually), over 130,000 primary care visits each year.

The County:

Orange County, Florida is a rapidly growing county that includes the tourist destination of metropolitan Orlando. Orange County's population growth is 2.5 times the national average. Thirteen municipalities are located within the county. More than 1.1 million residents live in Orange County and more than 710,000 live in unincorporated Orange County (as opposed to living within a municipality).

The Primary Care Network Concept:

Primary care is viewed in the literature as comprehensive care that includes preventative care, and both chronic and acute care that may include multiple health care professionals with one lead physician coordinating care across the network (Rittenhouse & Shortell, 2009). The primary care network focuses on assuring access to primary care services for residents. It is hoped that by providing access to physicians and other health care professionals in a traditional office or clinic setting, residents will not have to wait until their symptoms necessitate a visit to an emergency room. Primary care supports the idea that everyone needs to have a medical home that provides continuous health care and linkages to other services as necessary.

Medical homes are also based on the idea that relationships between medical providers and patients should be developed and maintained in order to provide continuity of care (Fuchs, 2008). Conceptually, the idea of having a medical home is that it is not

only convenient and may prove to be cost effective, but it also is linked to improving access to quality care (Rittenhouse and Shortell, 2009). Indeed, the continuity of care provided by a primary care physician leads to substantial improvements in reducing long term mortality rates (Wolinsky, Bentler, Liu, Geweke, Cook, Obrizan, Chrischilles, Wright, Jones, Roesenthal, Ohsfeldt, Wallace, 2010).

Consequently, the concept of a primary care access health network combines the elements of primary care access with the concept of networked service organizations. Multiple organizations work together to deliver a continuum of services, as is the case in Orange County, Florida, to uninsured and underinsured county residents.

The Orange County Primary Care Network (PCAN) is really an umbrella collaborative of 20 community health safety net providers. The PCAN is not incorporated and does not have its own budget. Instead, the senior executives who comprise the decision-making body that provides oversight and accountability for PCAN have worked to enhance existing partnerships, leverage resources, and develop fundamental political and community support. PCAN relies upon a funding blend of county, state, federal, philanthropic, and the partners themselves for funding health care services.

History

During the late 1990s, Orange County had 175,000 uninsured residents, the largest percentage of uninsured residents among Florida's largest counties. In 1999, there was a confluence of other significant health care events that prompted awareness of the crisis facing Orange County's uninsured residents. First, one hospital completely shut

down, second, another hospital closed its emergency room, third, there was the shuttering of a public health clinic's primary care clinic. Each of these three programs had been providing care to the uninsured population. Orange County government took the lead to address uninsured and underinsured health care.

At this point in time, Orange County Government (OCG) was supporting indigent health care programs at an annual cost of \$10 million. This financial support was provided to one primary care clinic and 5,000 individuals were served each year. Orange County Government was in the business of directly providing health care services to Orange County residents.

The Public Service Shift:

In 2000, the Orange County Primary Access Care Network was established. The first act of the Network was to develop an agenda and secure funding for the collaborative effort which resulted in a collective application to the Federal Health Resources and Services Administration. PCAN was awarded a 3 year Healthy Communities Access Grant (HCAP) of \$2.6 million. This grant enabled the formalization of an infrastructure to develop a sustainable plan for increasing service capacity, strengthening linkages, and enhancing community health care delivery systems. The idea was designed to approach the problem of underinsured and uninsured health care access from a perspective that recognized collaboration over competition. The federal grant was to help get PCAN off on the right track and the funding enabled PCAN to accomplish several goals:

- coordinate and integrate medical and social service programs
- implement a shared case management system
- coordinate care for individuals with chronic conditions
- identify and enroll uninsured individuals

- reduce the cost of care
- improve access and equity issues
- develop a community Medical Language Bank
- execute a public education campaign
- implement a volunteer recruitment/retention program
- expand dental services

Since its inception in 2001, PCAN has experienced significant growth in services delivered, but with only a relatively modest increase in county spending. In eight years, the number of uninsured and underinsured citizens served went from 5,000 to 100,000. Orange County Government (OCG) funding went from \$10 million dollars to \$15 million. Donated care increased from \$120,000 to \$5.7 million dollars. The number of volunteers rose from 79 to 1,600. In 1999, OCG was providing health care for patients at a cost of \$2,000 per patient. By 2010 that same care was provided at a rate of \$150 per patient. PCAN is funded through county general revenue, intergovernmental transfers, federal Medicaid and Medicare, third party insurers, sliding scale self-pay, and grants.

Patient access is delivered through a network of community based providers. This network of providers has grown substantially from its inception. Originally only two primary care health clinics were available, now there are 10. From one volunteer clinic, the network now has 10. There is also for the first time a secondary care clinic. Secondary clinics provide access to specialists. The three major hospital systems, Florida Hospital, Orlando Regional Health Care, and Health Central, are committed members. Finally, mental and behavioral health providers, Lakeside Behavioral Health and Center for Drug Free Living are also PCAN members. A visual representation of the PCAN organizations is provided in Figure 2.

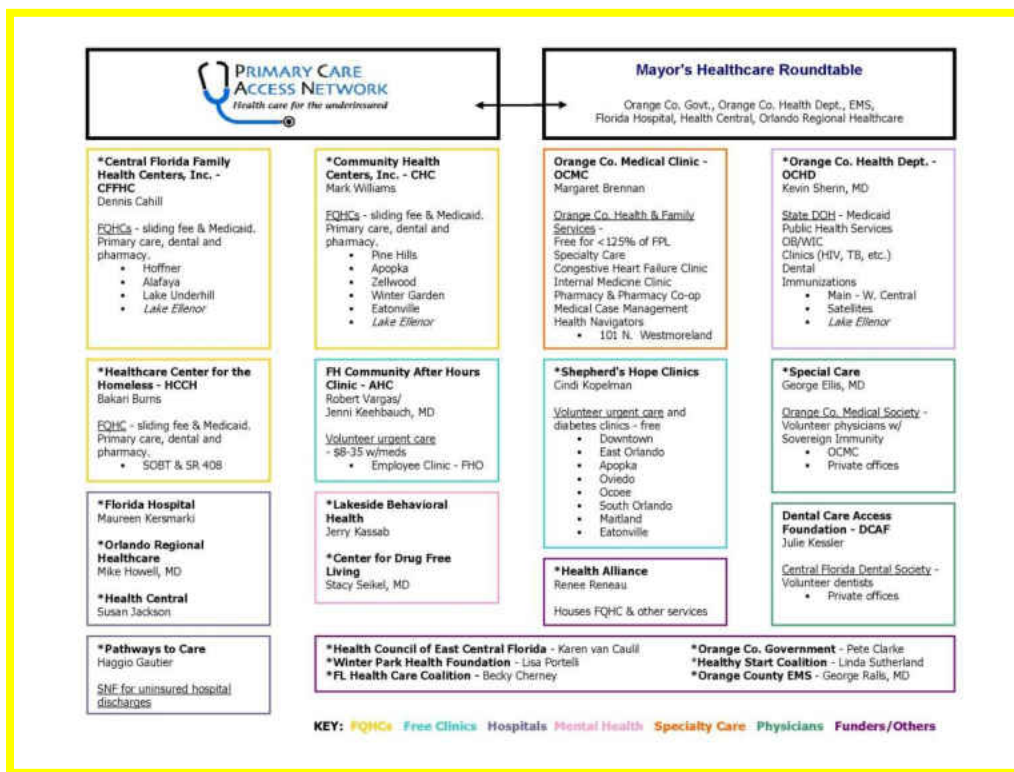


Figure 2: Visual Representation of the Network Actors

These PCAN organizations are independent of each other, but work collaboratively. The providers include medical home providers, specialty care, mental and behavioral health, as well as the medical hospitals.

Discussion

The Orange County PCAN presents interesting data as they relate to the county study discussed previously. Table 1 provides a summary of findings and Orange County's responses to the study's survey. The survey responses from Orange County government indicate that for uninsured and underinsured Orange County citizens, PCAN

has resulted in substantial improvement in health care coordination and access to care and has made significant improvement in health information exchanges. For most of the counties responding to this survey from around the country, fiscal stress was identified as an important factor driving budgets. Fiscal stress is defined in this study as declining federal and state revenues and declining local tax bases. Interestingly, while the loss of federal and state revenues were identified as important for most counties participating in the study, in Orange County it was not important. However, for Orange County a declining tax base was identified as very important. So even in Orange County there is some degree of fiscal stress affecting budget allocations. For Orange County, this area of fiscal stress is crucial for its safety net because the county government historically has played a strong role in leadership, facilitation, and ultimately in providing the lion's share of financial support. While some counties around the country have developed dedicated revenue streams for health care, through sales tax revenue (Hillsborough, Florida) or special taxing districts (Clark, Ohio), Orange County allocates PCAN funds through its general revenue fund.

It is important to note the large number of health care providers that participate to some degree in delivering services to Orange County low income residents. The size and scope of the providers are crucial to the network's ability to provide health care access to over 100,000 uninsured and underinsured residents each year. Further, these providers are also active participants in leveraging fiscal resources, so that an additional \$2 million dollars is available to serve the PCAN clients. In observing Table 1, the associations identified as positive correlations are reflected in the comparison provided between the national county study and the Orange County PCAN. For example, the county study

indicated an association between larger numbers of health organizations being positively correlated with higher county general revenues. Comparing Orange PCAN with the county average, the case study provides an example of this association.

Mental health emerged in the county health network study as a central organization in terms of county funding. Mental health providers received significant to substantial funding from just over 52% of the responding county governments.

Significantly, the Orange PCAN also includes mental health services.

Table 1: Select Variable Comparison Between Nationwide County Study and Orange County PCAN.

Selected Variables	National County Statistic	Orange PCAN
Average County Population	138,382	1,072,801
Median County General Revenue	114,406	3,873,716
Median Number of County Employees	2,224	44,248
Average Number of Community Oriented Health Care Organizations in Network	4	20
County Public Health Department Funding	Significant	Substantial
County Emergency Medical Services Funding	Limited	Substantial
County Federally Qualified Health Centers Funding	None	Substantial
County Indigent Health Care Clinics Funding	None	Substantial
County Hospital Funding	None	Significant
Loss of federal Revenue	83% important	Not important
Loss of state Revenue	91% important	Not important
Declining Tax Base	91% important	Very Important
Degree to which health care access for uninsured and underinsured has experienced improvement	46% significant or substantial	Substantial

Degree to which health care coordination for uninsured and underinsured has improved

40% significant or substantial

Substantial

Finally, as identified in Figure 3, the Orange County PCAN is strategically located around the county to facilitate client access. As health care safety nets are generally serving low to lower income individuals, transportation may become an impediment for those seeking preventive and chronic care. Subsequently, making services available and decentralized around the county seems to be an appropriate strategy, supported by the very large numbers of county residents (over 100,000) currently accessing care through PCAN.

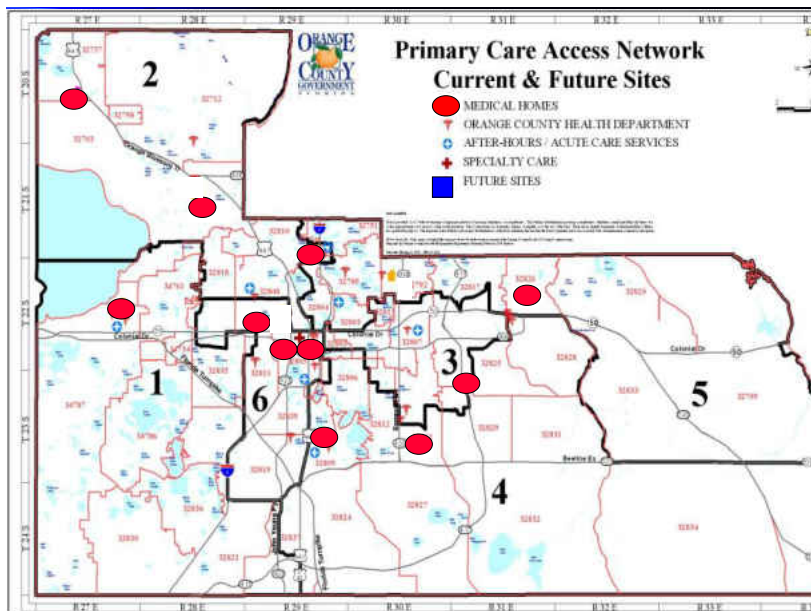


Figure 3: Primary Care Access Network Community Based Locations

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