HEALTH CARE AMONG LOW-INCOME, WHITE, WORKING-AGE MALES IN A SAFETY NET HEALTH CARE NETWORK: ACCESS AND UTILIZATION PATTERNS

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This study seeks to provide information relevant to public policy that will lead to increased access and utilization among this vulnerable population and to reinforce the validity of the behavioral model for vulnerable populations.

This study is a secondary analysis of data collected in a study that examined adult, working-aged patients within the John Peter Smith Health Network, which is a large, urban, tax supported county health care system in Fort Worth, Texas. From a sampling frame of 10,000 patients, the study analyzed data for 243 low-income, white, working-age males, collected from computer assisted telephone interviews in 2000. Cross-tabulations and bivariate logistic regressions were used to analyze the effect of 8 independent variables (age, marital status, insurance, employment status, a usual source of care, competing needs, experiences with paperwork, and perceived health status upon 5 dependent variables pertaining to unmet health care, unmet prescription medicine needs, unmet dental needs, utilization of doctors in emergency departments, and overnight hospital stays.

The results show the safety net system is failing to meet the needs of this vulnerable population. The findings indicate white men who found it necessary to forgo health care due to other needs were almost five (4.973) times as likely as those who did not find it necessary to forgo care due to other needs, to report having a problem getting the health care that they need ($p \leq .001$). The odds of having a problem getting needed dental care are about 66% lower for white men who have private insurance through work compared to those who do not have private insurance through work ($p \leq .05$).
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CHAPTER 1
INTRODUCTION

Of the 46 million uninsured Americans, more than 20 million are working adults. Though we spend over $1.7 trillion, 16% of the American population remains uninsured (Henley, 2005). While many studies have addressed this broad population, this particular study is concerned with the factors that may limit the access and utilization of health care services by low-income, white, working-age males (Krisberg, 2004; Mongan & Lee, 2005; Rovner, 2005; Tunzi, 2004). This chapter provides an overview of the study’s objectives and research questions, a theoretical framework, model and hypotheses, and methodology. The specific objectives of this study are to: (a) examine access to health care services and utilization of these services among low income, white, working-age males using data collected from patients at a safety-net county hospital (S. B. Eve et al., 2000); (b) provide information relevant to public policy that will lead to increased access and utilization among low-income, white, working-age males; (c) reinforce the validity of the behavioral model for vulnerable populations; and (d) add to the body of literature pertaining to access and utilization issues among vulnerable populations.

Extent of the Problem

As compared to all other states, Texas has one of the highest percentages of uninsured residents (Cubanski & Kline, 2003; S. B. Eve et al., 2002; Fronstin, 2003; Seifert, 2000). At the beginning of 2003, 27.2% of all non-elderly (ages 19-64) Texans were uninsured. One million or 20% of the children in Texas were uninsured and 90% of these children live in families where at least one parent works full time ("The TexCare partnership: Quality health insurance for Texas children", 2004). Although the number of uninsured Americans in 2003 was nearly 44 million,
approximately 74.4 million Americans under 65 years of age were uninsured at some point during 2001-2002 (Stoll, 2003), which is about one out of three Americans under age 65. In 2005, there were over 45 million Americans with no health insurance and about 30 million who were underinsured. It is estimated that 14.5% of the entire United States (U.S.) population was uninsured for the entire year in 2001. The number of uninsured for at least a month, between 1993 to 1996, was more than 70 million Americans, which indicates that recent public policy has done little to improve the situation. In fact, the percentage of uninsured Americans had been increasing since at least 1987 until the first decrease was recorded in 1999 and 2000. The decrease can be attributed to a booming U.S. economy, rather than changes in public policy. The primary reason for the increase was shrinking family incomes and the reduction of employer-sponsored insurance (Fronstin, 1997; Hoffman & Wang, 2003). The increase occurred among adults, while the number of uninsured children remained steady due to increased coverage by the State Children’s Health Insurance Program (SCHIP). As low-income parents lost their health care insurance, SCHIP prevented their children from becoming uninsured. In most states, there are no program equivalents to SCHIP for adults.

The non-elderly adults who are most vulnerable are the uninsured, low-income adults who need insurance the most because they are in fair or poor health, have a work disability, or are pregnant (Long, 2003). These infirmities and conditions provide an understandable explanation as to why these low-income adults are uninsured. However, it is important to note that more than 80% of uninsured persons under 65 are members of working families. The uninsured work at jobs that do not provide insurance, and they do not earn enough money to purchase health insurance on their own. “Two-thirds of uninsured families earn less than 200 percent of the federal poverty level [FPL] (roughly $35,000 for a family of four). In contrast, 90
percent of families with incomes above 200 percent of FPL have all family members insured (A shared destiny: Community effects of uninsurance, 2003). Divorce, unemployment, widowhood, or changing jobs are all potential factors to render a family member uninsured. The Commonwealth Fund 1999 National Survey of Worker’s Health Insurance found that millions of working-age men and women lack health insurance or experience gaps in coverage resulting in unmet medical needs when sick and creating difficulties paying for medical bills (Budetti et al., 1999). This study indicated that the impact of being uninsured can have severe health and financial ramifications. When 1 of 3 American adults is likely to be uninsured during a 12-month period, the impact is felt throughout the society. Clearly, this is an issue to be addressed with immediacy and urgency by politicians, economists, public policymakers, and the health care industry.

Justification for the Research

The lack of adequate health insurance among portions of the population has been an issue for decades, as the United States is the only industrialized nation without universal coverage. The issue is gaining national attention, and it becomes a highly debated political topic each presidential election year. This issue’s importance has been highlighted by the creation of the Cover the Uninsured Week in 2003, which was organized by the Robert Wood Johnson Foundation and supported by such influential organizations as the U.S. Chamber of Commerce and the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO). The first week-long series of national and local activities took place from March 10 through March 16, 2003, in an effort to sensitize both the general public and opinion leaders to the plight of those who lack health insurance ("Cover the uninsured week", 2003). The widespread lack of adequate health insurance has far-reaching individual and structural implications. Individuals
face undetected or untreated cancers and poorly managed chronic conditions. They potentially experience a poorer quality of life and reduced productivity in relation to work. The Institute of Medicine estimates that lack of health insurance leads to 18,000 deaths a year. That makes it the sixth-leading cause of death among people ages 25 to 64—after cancer, heart disease, injuries, suicide, and cerebrovascular disease, but before HIV/AIDS or diabetes (Davis, 2003).

Structurally, businesses must grapple with employees who miss work or retire early for health reasons. Overall, the health care system and economy suffers due to economic burdens of the uninsured. Ultimately, the economy forgoes the benefits of a healthy, productive population. Events such as Cover the Uninsured Week are designed to educate the American public about the gravity of the situation for uninsured citizens and the consequences upon the society at large. Since the inception of the Cover the Uninsured Week, over 6000 local events have been held in the United States to highlight the ongoing efforts of covering the uninsured (Iglehart, 2005).

Although the issue of uninsured Americans has gained national attention, it has not garnered as much consideration in regard to national and state-level policies as other social problems, such as crime, poverty, and HIV/AIDS. Few national policies have been established to address the issues surrounding the uninsured. As a result, 74.7 million Americans under 65 years of age—almost one out of three—were uninsured at some point during 2001-2002 (Stoll, 2003). With the absence of national policies and the combination of rising health care costs and a faltering economy, the number of uninsured continues to grow (Barringer, 2003).

At the state level, governments continue to face budgetary constraints, which limit their ability to expand health care benefits to individuals who do not qualify for Medicaid. Many working Americans earn too much money to qualify for Medicaid, but cannot afford to purchase health insurance (Budetti et al., 1999; Collins et al., 2003a; Liska et al., 1998; Rocha, 1996). State policies regarding the uninsured are more flexible, and some states (i.e., Delaware, Hawaii,
Minnesota, Oregon, Tennessee, Vermont, and Washington) have implemented policies to expand coverage, but they are limited by the lack of resources. Many states have had to cut their budgets, and consequently, fewer children and adults receive state benefits for health care coverage.

Some state governments have shifted the health care burden to local governments (Wentworth, 2003). For example, in Texas, the cuts compound the problem of already high rates of uninsured Texans (up 23% from 1999 to 2001), leading the uninsured to depend largely on local health departments and hospital districts for health care (Cubanski & Kline, 2003; Wiener et al., 1997). Therefore, policies and programs established by state governments have had a negligible impact upon the number of uninsured Americans.

In this context of growing concern regarding access to health care and the utilization of these services, this study is timely and relevant, first, because it provides additional data to assist in the development of strategic initiatives to address the issue. The study is relevant because historically, low-income, white, working-age males have been overlooked in research pertaining to issues of access and utilization in favor of studying other vulnerable populations. Low-income, white, working-age males are categorized as members of the vulnerable population; therefore, they deserve attention in order to better understand their particular plight. The relevance of this study extends beyond the individual, however. The issues of access and utilization encompass structural issues, such as the economy and politics.

Second, this study is important because it identifies the unique characteristics of low-income, white, working-age males in regard to access and utilization issues. Much is known about Black and Hispanic population characteristics in regard to access to health care services (Andersen et al., 1981; Gray, 1982; McGadney-Douglass, 2001; Rohrer et al., 2004; Weinick et
al., 2000). Numerous studies have compared whites to minorities, but they have categorized whites as a single population or they only have included whites who have access to healthcare services. For example, Zuckerman, et al., (2004) compared non-Hispanic whites with American Indians/Alaska Natives in regard to measures of access and utilization. The study used insured whites as the comparison group, ignoring the uninsured white population.

In general, the white race has been neglected as a specific and sole topic of study. There seems to be only a relatively few scholars within select disciplines studying whiteness, thus rendering the topic of whiteness a niche academic pursuit or labeled as faddish. Dyer (1997) concluded that “white people remain a largely unexamined category in sharp contrast to the many studies of images of blacks and Asian peoples” (p. i). The study of whiteness has been deemed a departure from the standard race and ethnicity topics. Chennault stated,

> To be sure, whiteness studies in its present modes—in terms of the scopes of interrogation, disciplinary methodologies, paradigms of knowledge, theoretical tools of analysis, historical conjunctions, and material supports that make this an ideal intellectual climate for scrutinizing white identities—unquestionably marks a significant scholarly, perhaps even disciplinary, departure in cultural studies of race and ethnicity. (Dyson, 2004)

Feagin & O’Brien (2003) concluded that “whiteness as a racial identity maintains its privileged position in part by remaining mostly unexamined, yet at the same time being the standard by which racial “others” get measured” (p. 66). In regard to research involving access to health care services and utilization of services, whites are predominantly used as the standard to measure other races. Gregory & Sanjek (1994) stated, “. . . whiteness and Americanness both come to stand as normative and exclusive categories, in relation to which other cultures are identified and marginalized” (p.68). Within disciplines such as anthropology and sociology, a trend is developing from which ethnic and minority scholars are studying whiteness. “There are also a great number of African Americans, Native Americans, Latinos, and Asians—as well as other
subaltern, aboriginal, and colonized peoples—who are deeply invested in reversing the terror of ethnography: of being the disciplined subject of an often intellectually poisonous white anthropological scrutiny” (Dyson, 2004). This newfound interest in whiteness will potentially uncover the complex character of white racial identity and practice. Dyson, (2004) purported, “Whiteness, the most dominant and visible of American racial identities, has been rendered intellectually invisible” (p. 109). Chennault supported this idea by similarly stating, “For the most part, whiteness has been an invisible identity within American society” (Dyson, 2004). Historically, the study of whiteness has been a neglected topic of research but is gaining attention from ethnic and minority scholars.

The complexities of the topic of whiteness abound. Foremost, the question of how to define whiteness poses a dialectical exchange of definitions, ideas, and concepts. What does whiteness mean? As stated previously, whiteness has been an invisible identity. Gregory and Sanjek (1994) concluded that “for many, being white felt like being cultureless” (p. 65-66). There are few cultural characteristics associated with white Americans. Feagin & O’Brien (2003) reported that “previous research indicates that many, if not most, white Americans have never given much thought to the meaning of being white in America . . . and typically do not see being white as a central part of their social identity” (p. 66). The average American white male does not have a strong identification with his whiteness. He is much more likely to identify with his ethnic or religious heritage. In addition, he will likely identify as not possessing specific characteristics and qualities such as not being a person of color, rather than stating specific qualifiers of whiteness. Dyer (1997) indicated that whites are often assumed as being non-raced and “just people.” “This assumption that white people are just people, which is not far off saying
that whites are people whereas other colours are something else, is endemic to white culture” (p. 2).

The core issue surrounding the complexities of the topic of whiteness is the element of the social construction of race. The concept of race is an ideological and material construction of society in which race is viewed as a categorical social grouping (Feagin & O'Brien, 2003). For example, Gillman (Back & Solomos, 2000) posits the question, “Are Jews White?” (p. 229). The concepts of race, ethnicity and whiteness are all similarly socially constructed. Therefore, it is difficult to precisely define and categorize the white males within this study. The uniqueness of this study is that white males are the sole topic in contrast to comparing white males to Blacks and Hispanics. Solely focusing on whites is a departure from the norms within medical sociology research and the American narrative of whites. “Narratives and prevailing images of poor Whites are conveniently missing from the middle-class ideological portrait of itself because to acknowledge poverty and banality within its own ranks erodes the eminent, constructed image of Whiteness” (Moss, 2003). This study provides a unique narrative of low-income, white, working-age males.

The preponderance of existing research pertaining to issues of access to health care have focused on minorities and the homeless, and there is a void regarding the experiences of low-income, white, working-age males. The study contends there are significant differences between low-income, white, working-age males and minorities in relation to how the behavioral model for vulnerable populations (see below) is applied to each population. For example, ethnicity, education, employment, living conditions, country of birth, acculturation, immigration, and literacy are all examples of “social structural” population characteristics. These characteristics are important to explore when assessing access to health care services by vulnerable populations.
For minorities, ethnicity, country of birth, acculturation, immigration, and literacy are significant factors that may affect access to health care and utilization of services. In contrast, low-income, white, working-age males are less likely to encounter these structural issues in regard to access to health care and utilization of services. One purpose of this study is to begin a dialogue to encourage the investigation of these potential differences.

As compared to minorities, access to health care services by low-income, white, working-age males may be hindered by the same characteristics or they may experience an absence of specific characteristics within the model. Also, different combinations of characteristics may exist for white males and minorities, which may account for variations in explanations for the lack of access. For example, socio-economic status (SES), which is comprised of the characteristics of education and occupation, will likely have similar effects on low-income, white, working-age males and minorities.

Third, this study’s findings will be useful for developing policies and programming to target low-income, white, working-age males in regard to access and utilization issues. This is significant because federal, state, and local policies are more likely to have specific policies and programming for minorities and the homeless than for the average low-income, white, working-age male. Furthermore, the findings will be relevant and useful to the administrators of the John Peter Smith Health Network and other entities within Tarrant County, Texas who provide health care services to low-income, white, working-age males.

Fourth, this study is important because the category of white males is often aggregated and specific subpopulations within the population are not identified. As previously stated, specific characteristics are identified to explain the lack of access, but it is also important to note the white male population is not necessarily homogenous. It is often assumed white males are
homogenous and unique qualifiers are not present that allow for subdividing the population. This study underscores the importance of identifying specific cohorts among white males. For example, is the 18-39 year-old white male cohort significantly different than the 40-60 year-old white male cohort? Are unmarried individuals in fair health more likely to experience “competing needs” situations in reference to seeking and receiving health care services? This study will answer these types of questions in order to better understand patterns and predictors of access among low-income, white, working-age males.

Fifth, the findings may bring forth new information or underpin previous findings because females are excluded from the analysis. It is possible that the male access rates for whites, Blacks, and Hispanics may be significantly different when controlling for gender. For example, the ability to “negotiate the system” may differ significantly for males and females. White females may be able to negotiate the system significantly better than white males, which would affect the overall rate of whites’ access to health care services. Therefore, the findings of this study will be beneficial for comparative analyses with data from studies of females. Ultimately, future studies may indicate the importance of separate policies and programs for white males and females.

In summary, this study is timely and relevant. It identifies unique characteristics within the behavioral model for vulnerable populations that exist among low-income, white, working-age males in regard to access and utilization issues. It will be useful for developing policies and programming to target issues pertaining to access and utilization for this particular population. This study disaggregates the white male population and thus provides data and information that can be used for further research to differentiate the issues of access and utilization between low-income males and females.
Research Questions

The research questions for this study are grounded in issues of access to health care and the utilization of health care services. This study proposes the following research questions: (a) Which measures of access and utilization impact unmet health care needs among low-income, white, working-age males? (b) Which measures of access and utilization impact unmet needs regarding prescription medicine for low-income white working-age males? (c) Which measures of access and utilization impact unmet needs for dental care among low-income, white, working-age males? and (d) Which factors impact utilization rates of emergency departments and hospitals among low-income, white, working-age males? The first research question explores the overarching issue of unmet healthcare needs, while the second and third questions address the specific areas of unmet needs for prescription medicine and dental care. The final question addresses specific utilization of service issues.

Theoretical Framework

This study used behavioral models to help determine the predictors associated with utilizing health care services. The behavioral model for vulnerable populations expanded previous models to include vulnerable domains, which may include socioeconomic status, language and culture, immigration status, and mental or cognitive capacity and the degree to which coverage options are accessed and sustained. In addition, this study used a model adaptation by Owusu (2003; Owusu et al., 2005). Owusu adapted the models for her dissertation regarding the use of preventive screening for cervical cancer among low-income patients in a safety-net healthcare network; she also utilized the data set from the study Uninsured Adult Working-Age Population in Tarrant County: Access, Cost of Care, and Health (S. B. Eve et al., 2000). Only slight modifications were made to Owusu’s model for this study. This model is
further explained in chapter 2.

Variables, Hypotheses, and Statistical Procedures

The study analyzed the data for 243 low-income, white, working-age males. The dependent variables pertain to: (a) problems accessing needed health care, (b) problems accessing prescription medicines, (c) problems accessing dental care, and (d) utilization of emergency departments and hospitals. The independent variables for this study include: (a) age, (b) marital status, (c) private insurance through work (d) employment status, (e) a usual source of care, (f) forwent care, (g) experiences with paperwork and (h) perceived health status.

The hypotheses for this study are (a) low-income, white, working-age males between the ages of 18-39 are more likely to experience problems accessing needed health care; (b) unmarried low-income, white, working-age males are more likely to experience problems accessing needed health care; (c) low-income, white, working-age males without private insurance through work are more likely to experience problems accessing needed health care; (d) unemployed low-income, white, working-age males are more likely to experience problems accessing needed health care; and (e) low-income, white, working-age males who do not have a usual source of care are more likely to have problems accessing needed health care; (f) low-income, white, working-age males who forwent care for food, clothing, or transportation are more likely to have problems accessing needed health care; (g) low-income, white, working-age males who have experiences with paperwork are more likely to have problems accessing needed health care; (h) low-income, white, working-age males whose perceived health status is poor to fair are more likely to have problems accessing needed health care.
Research Design/Methods

The design of this study is a secondary analysis of data collected from Uninsured Adult Working-Age Population in Tarrant County: Access, Cost of Care, and Health (S. B. Eve et al., 2000). This study examined adult, working-aged patients within the John Peter Smith (JPS) Health Network, which is a large, urban, tax supported county healthcare system in Fort Worth, Texas. The major objectives of this research project were to assess the patient’s access to healthcare, factors affecting their access, and their health status (S. B. Eve et al., 2002). The original study was conducted by an interdisciplinary team of faculty from the University of North Texas (Denton, TX); School of Public Health, University of North Texas Health Science Center (Fort Worth, TX); and University of Texas Southwestern Medical Center (Dallas, TX). The research was funded by a grant from the Texas Higher Education Coordinating Board under the Advanced Research Program. The purpose of the study was to assess access to health care, economic cost of care and lack of care, and health status of prime working-age (18-60), low-income (up to 200% of Federal Poverty Income Level), adult residents of Tarrant County (S. B. Eve, Koelln, K., Baumer, J. Trevino, F. M. and Urrutia-Rojas, X., 1999). The stratified sampling frame consisted of 10,000 patients who were active in the system at John Peter Smith (JPS) Hospital during July and August 2000. The U.S. Census Bureau’s online State & County QuickFacts reported Tarrant county’s population in 2000 as 1,446,219 ("State & County QuickFacts", 2004). Nearly one-half (49.5%) of the population was male and 63.6% was working-age (18-64). The study utilized a questionnaire, which was administered via a telephone interview by trained personnel at the Survey Research Center of the University of
North Texas. The research center utilizes the computer assisted telephone interviewing (CATI) technology.

The measurements for this study include nominal and ordinal level data, which were analyzed using frequencies, percentages, cross-tabulations, and binary logistic regression. The Alpha level for chi-square was set at $p \leq 0.05$. Binary logistic regression was used to determine the percent increase in odds (odds ratio) of the five dependent variables explained by the independent variables. The independent variables were grouped according to whether each was indicative of the specific domains within the adapted behavioral model for vulnerable populations. The domains are labeled as Predisposing, Enabling, Need, and Use of Health Service. Five binary logistic regression models were developed to assess the interaction effects between the independent variables.

**Strengths and Limitations**

Within research designs, strengths and limitations are often associated with the sampling design. Notwithstanding, within this study, a limitation was encountered with the sample design due to the inherent weakness of telephone interviews. Individuals with low-incomes may be less likely than the general population to own a telephone or have immediate access to a telephone. All participants within the study had a telephone number listed, although the telephone number may have been a relatives’, neighbors’, or a work phone number. Therefore, selection bias may have been introduced due to an inability to contact potential respondents of the prospective sample.

An additional weakness was the imprecise fit of the behavioral model for vulnerable populations (Gelberg et al., 2000) with the low-income, white, working-age males. There were a limited number of variables within the original model which coincided with the characteristics of
low-income, white, working-age males. The original model is more conducive to examining vulnerable populations such as the homeless, substance abusers, and immigrants. There were also fewer variables within this study which coincided with the characteristics of the original model. Therefore, an adapted model was implemented which was not as extensive as the original model.

A major strength of the study also involves the sample design. The researchers had access to 10,000 patient records, which is a sizable sampling frame, which allowed for the use of probability sampling. An additional strength of the study was the benefit of working closely with the principal investigator of the original study in order to determine the nuances of the data and elaborations of the research design.

Plan of the Dissertation

As previously stated, the specific objectives of this study are to: (a) examine access to health care services and utilization of these services among low income, white, working-age males using data collected from patients at a safety-net county hospital (S. B. Eve et al., 2000); (b) provide information relevant to public policy that will lead to increased access and utilization among low-income, white, working-age males; (c) reinforce the validity of the behavioral model for vulnerable populations; and (d) add to the body of literature pertaining to access and utilization issues among vulnerable populations. Chapter 1 includes the extent of the problem; justification for the research; research questions; theoretical framework; variables, hypotheses, and statistical procedures; research design/methods; and strengths and limitations. Chapter 2 discusses the theoretical framework for this study, behavioral models, review of the existing research, and the specific theoretical model for this study.
Chapter 3 pertains to the methodology and includes the research design, population sample, statistical analysis, operational measures of variables, and a discussion of the uniqueness of the study. Chapter 4 presents the results and data analysis with a discussion of the research questions and the testing of the hypotheses. Chapter 5 includes a summary, conclusion, policy implications and recommendations for further study.

Summary

This study is concerned with the factors that may affect the access and utilization of health care services among low-income, white, working-age males. This specific population is among the 46 million Americans who are uninsured, which highlights the importance of studying this vulnerable population. An adapted behavioral model for vulnerable populations was utilized to investigate the predisposing factors among this vulnerable population. The dependent variables pertain to access and utilization of health care services while the independent variables pertain to age, marital status, private insurance through work, employment status, a usual source of care, forwent care, experiences with paperwork, and perceived health status.
CHAPTER 2
THEORETICAL FRAMEWORK, LITERATURE REVIEW,
AND RESEARCH MODEL

This study identified the characteristics of low-income, white, working-age males that may predispose this population to conditions resulting in unmet healthcare needs and under and over utilization of healthcare services. In order to set a context for the study, this chapter first explains the theoretical framework that provides the basis for understanding the social problems associated with uninsured Americans. Next, it reviews the evolution of behavioral models, which presaged the development of the model used in the present study. This is followed by a review of pertinent research related to this study’s independent variables. Finally, the theoretical model used in this study is examined in more detail.

Theoretical Framework

Why are 46 million Americans uninsured? One explanation argues that the capitalistic structures and processes of the American health care system are responsible. Fruend, McGuire, and Podhurst (2003) stated, “In the United States, the power of competing interest groups, together with the ideology of free-market competition, has resulted in an amazingly complex, unwieldy, and expensive health care system that is now in crisis” (p. 257). In this view, the American health care system was/is structurally designed to generate profits with the by-product of large numbers of uninsured citizens.

Budrys (2001) explained that the American health care system replicates an unequal social structure depicted by the terms “haves” and “have nots.” Furthermore, she stated,
connecting health insurance to employment justifies giving poorer care to the “have nots” by suggesting that they do not need or deserve care that is as good as the level of care available to the “haves.” In essence, the current structure of the health care system reinforces the notion that not all Americans deserve access to health care.

The most recent structural solution was presented in the form of the Clinton Health Security Act in 1993-94. Notwithstanding President Clinton’s endorsement, it was roundly criticized by many and could not gain enough support in Congress for passage (Carlstrom, 1994). The basic components of the Clinton plan were universal coverage, mandatory participation in regional health alliances, and community-rated insurance premiums. Mandatory employer-provided health insurance was the means to provide universal coverage, but both small and large employers balked at being required to provide the bulk of the coverage. It seems that structural impediments, such as the powers of capitalism and institutional determinism, triumphed over the Clinton plan. Thus, questions remain as to whether the structure of insuring Americans can be altered and the opposing “powers” can be “overcome” in order to provide remedies to the problem.

Anthony Giddens’s structuration theory, which is based on the concept of the duality of structure, suggests that the current structure can be altered. Giddens (1984) viewed agency and structure as mutually dependent: Agency creates and impacts structure and vice versa. As Yates (1997) explained, “For Giddens, humans are ‘knowledgeable agents’ operating in specific contexts, not just pawns of forces—whether economic or social—larger than they are” (p. 160). Giddens (1984, 1977) argued that structure has usually been conceived of in a fundamental way as a constraint upon action, suggesting that American citizens could not serve as change agents providing remedies for the uninsured. He countered the above view by stating, the predictability
of social life does not merely happen, but is “made to happen by social actors” as an outcome of
the consciously applied skills of social actors (Giddens, 1977). Therefore, it is arguable that
through “agency,” structural changes can occur due to individuals’ actions. As Yates (1997)
stated,

Nevertheless, if other individuals follow the lead of the individual acting outside of
existing structural norms, whether in direct and explicit defiance of existing norms (e.g.,
as in collective action) or in tacit ways (e.g., as in worker "soldiering") they may together
bring about change by reinforcing not the traditional mode of structuring work, but a new
one. (p. 159)

Giddens (1984) defined the ability to act as “being able to intervene in the world, or to refrain
from such intervention, with the effect of influencing a specific process or state of affairs” (14).
Therefore, this theoretical approach supports the view that it is possible for “social actors” to
apply their skills to cause movement within the structures of politics, public policy, and the
 corporate landscape.

Recent events, such as the Cover the Uninsured Week, proposals for tax credits, and
consumer choice models (Palmisano et al., 2004), and news of attitudinal shifts by employers
(Appleby, 2004) in support of policies to expand employer coverage, indicate possible shifts in
the structure and mindsets governing the health care system. These attitudinal shifts are
examples of Gidden’s “agency” in motion. For example, the national Cover the Uninsured Week
resulted from “consciously applied skills of social actors” in order to make something happen
within the current structures that seemingly constrain the uninsured. In this example, individuals
have acted within the institutional norms and structures to bring about change. In the case of the
uninsured, changes may result through individual legal action, demonstrations, or grassroots
campaigns that defy the current structural system for insuring Americans.
Behavioral Models

Since the 1960s, various behavioral models have been developed and applied to study health care utilization. The original models “organized and integrated an array of correlates of health and health care behavior” to predict utilization by individual and families of physician, hospital, and dental services (Aday & Awe, 1997). Over the decades, these models were expanded and adapted to survey utilization of health services on a nationwide basis. Eventually, the models were adapted and applied to vulnerable populations to measure utilization and access of health care services.

The standard model of health care utilization was developed by Andersen (1968) in the late 1960s, and it has since been revised by Andersen and others. Andersen’s original model focused on the social contexts of individuals and families in regard to their health care decision making and behavior (see Figure 2.1). According to Aday and Awe (1997),

This perspective is manifest in his delineation of the role that family composition (e.g., family size, gender of family head) and social structure (employment, social class, and occupation of main wage earner) play in predisposing families’ use of services, as well as the importance of the availability of both family resources (income, savings, insurance) and community resources (physicians and hospital beds) in enabling them to do so. (p. 153)
Aday and Awe (1997) defined Predisposing variables as those that describe the propensity of family members to use services. The Enabling indicator describes the means individuals have available to them for use of services. Need refers to health status or illness, which is the most immediate cause of health service use.

Three major hypotheses were derived in regarding the relationships among Predisposing, Enabling, and Need indicators as they relate to health services utilization:

1. The amount of health services used by a family will be a function of the predisposing and enabling characteristics of the family and its need for medical care.

2. The explanatory components of the model will vary in their contribution to the explanation of total use.

3. The contribution of each component will vary according to the type of health service: (a) The contribution of need will be greatest for hospital services; (b) the contribution of the predisposing and enabling components will be greatest for dental services; and (c) all of the components will contribute to understanding physician services. (Aday & Awe, 1997).
These hypotheses help explain the variance in the model based upon the Predisposing and Enabling characteristics in relation to the type of health service. Subsequent models were designed to decrease the variance and provide more detailed analysis of health care utilization.

In the early 1970s, Andersen and Newman updated Andersen’s model (see Figure 2.2). This model differed in two key ways from the earlier one: it emphasized only individuals rather than individuals and families and added component headings titled, Societal Determinants, Health Services System, and Health Services Utilization. Due to these additions, the causal pathways changed, reflecting the possibility that social determinants could affect individual determinants directly and also be indirectly affected by health services systems. These components better reflected changes in the U.S. health care system.
Aday and Anderson (1997) developed a third model, which emphasized health policy as the initial means for understanding the predictors of the utilization of and satisfaction with medical care (Aday & Awe, 1997). Another addition was the inclusion of mutable and immutable characteristics within the “Potential Access – Process Indicators” component. This

*Figure 2.2. Andersen and Newman’s (1973) utilization framework. (In Aday, L. A., & Awe, W., C. (1997) Used with permission).*
model’s emphasis on access included a consumer satisfaction indicator, and, as Figure 2.3 indicates, the causal patterns are more extensive and complicated.
Figure 2.3. Aday and Andersen’s (1981) access framework. (In Aday, L. A., & Awe, W., C. (1997). Used with permission).
The behavioral model for vulnerable populations (see Figure 2.4) expanded upon the previous models to include vulnerable domains. Vulnerable domains influence the availability of health care coverage. In general, types of vulnerability include socioeconomic status, language and culture, immigration status, and mental or cognitive capacity, which impact the degree to which coverage options are accessed and sustained. Carey et al., (1995) defined vulnerable populations as including but not limited to, “the poor population, rural and frontier residents, persons with disabilities, frail elderly people, at-risk pregnant women and their infants and children, the homeless population, persons with human immunodeficiency virus (HIV) disease, migrant and seasonal farm workers, and undocumented persons” (p.69). More specifically, Pollack and Kronebusch (McLaughlin, 2004) delineated four key components of vulnerability as: “barriers to accessing health insurance, poverty or economic disadvantage, discrimination, and impaired ability to make decisions” (p. 8). There are six populations that have one or more of these components: “people with low incomes, children, racial or ethnic minorities and immigrants, people with chronic disease, the near-elderly, and individuals with psychiatric or substance abuse disorders” (p. 8). This model was designed to include domains to assist in the understanding of health and health-seeking behaviors of vulnerable populations (Gelberg et al., 2000). For example, social structural characteristics within the Traditional domains of Predisposing population characteristics include ethnicity, education, employment, social networks, occupation, family size, and religion. The revised model includes country of birth and acculturation/immigration/literacy within the Vulnerable domains of Predisposing population characteristics. Other examples within the Vulnerable domains include residential history/homelessness, living conditions, mobility, criminal behavior/prison history, victimization, mental illness, psychological resources, and substance abuse. Each population
characteristic is useful in assessing an individual’s likelihood of accessing health care services. This model is particularly functional when assessing such vulnerable populations as the homeless (Desai, 2003; Gelberg et al., 2000; Swanson et al., 2003; Wenzel et al., 2001). These behavioral models have been used in numerous other studies as well, such as those addressing vulnerable characteristics and health insurance in the United States (Shi, 2001) and the determinants of health behaviors in adults with diabetes (Pei-Shu, 2003).
Population Characteristics

Predisposing → Enabling → Need → Health Behavior → Outcomes

Traditional Domains

Demographics
- Age
- Gender
- Marital Status
- Veteran Status
- Health Beliefs
- Values concerning health and illness
- Attitudes toward health services
- Knowledge about disease

Social Structure
- Ethnicity
- Education
- Employment
- Social Networks
- Occupation
- Family size
- Religion

Vulnerable Domains
- Social Structure
- Country of birth
- Acculturation/Immigration literacy
- Sexual Orientation
- Childhood characteristics
- Residential history
- Homelessness
- Living Conditions
- Mobility
- Length of time in the community
- Criminal behavior/prison history
- Victimization
- Mental Illness
- Psychological resources
- Substance abuse

Traditional Domains
- Personal/Family Resources
- Perceived Health
- Personal Health Practices

Vulnerable Domains
- Personal/Family Resources
- Perceived Health
- Personal Health Practices

This study relied heavily on the above behavioral models and a model adaptation made by Owusu (2003; Owusu et al., 2005) for her dissertation regarding the use of preventive screening for cervical cancer among low-income patients in a safety-net healthcare network, which utilizes the data set from the study Uninsured Adult Working-age Population in Tarrant County: Access, Cost of Care, and Health (S. B. Eve et al., 2000) (see Figure 2.5). For this study

Figure 2.4. The behavioral model for vulnerable populations (In Gelberg, Andersen, & Leake, 2000). Used with permission.)
regarding low-income, white, working-age males, Owusu’s model was modified by eliminating the population characteristics pertaining to race/ethnicity, immigration status, prenatal care, and pap smears. Therefore, the model for this study included components of both the Behavioral and Vulnerable Population models. In addition, the Enabling population characteristics of competing needs and ability to negotiate the system from Gelberg’s et al., (2000) model were included because it is plausible that white males are affected by these Enabling population characteristics. This model is discussed in more detail later in the chapter.
Population Characteristics

Predisposing ————> Enabling ————> Need ————> Health Behavior

**Traditional Domains**

<table>
<thead>
<tr>
<th>Social Structure</th>
<th>Personal/family resources</th>
<th>Perceived health</th>
<th>Use of health services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race/ethnicity</td>
<td>Insurance coverage</td>
<td>Health status</td>
<td>Pap smear test:</td>
</tr>
<tr>
<td>Age</td>
<td>Any private or public ins.</td>
<td></td>
<td>ever</td>
</tr>
<tr>
<td>Marital Status</td>
<td>JPS Connections</td>
<td></td>
<td>within last 3 years</td>
</tr>
<tr>
<td>Immigration Status</td>
<td>No insurance</td>
<td></td>
<td>within past year</td>
</tr>
<tr>
<td></td>
<td>Employment status</td>
<td></td>
<td>none/never</td>
</tr>
<tr>
<td></td>
<td>Usual source of care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Vulnerable Domains**

**Prenatal Care**

Check-up for current pregnancy

**Social Structure**

<table>
<thead>
<tr>
<th>Immigration status</th>
<th>Competing Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td></td>
</tr>
</tbody>
</table>

**Health System Experience**

Problem with paperwork

*Figure 2.5.* Adapted by Owusu (2003) from (Gelberg et al., 2000) (Used with permission).
Review of the Existing Research

This study focuses on specific population characteristics within the Behavioral Model of Vulnerable Populations. Age and marital status are within the Traditional Predisposing domain, while insurance coverage, employment status, and usual source of care reside within the Traditional Enabling domain. Within the Vulnerable Enabling domain, forwent care for food, clothing, or housing represents competing needs. The variable pertaining to experiences with paperwork represents the Health System Experience and one’s ability to negotiate the system. The individual’s perceived health status is within the Traditional Needs domain and represents how the respondent rated his/her overall health. Each of these population characteristics may affect whether one has unmet healthcare needs. For example, a recent study found that insurance status varies significantly by region, age, race, gender, marital status, income, education, employment status, and health status (Jovanovic et al., 2003). The following is a brief overview of previous research related to the independent variables utilized within this study.

Age

Age is a strong predictor of whether an individual is likely to have access to health care services. Young adults are less likely than any other age group to have health insurance (Blumberg & Liska, 1996; Mills, 2001). Nearly a third of young adults (ages 19 to 29) are uninsured. According to Quinn, Schoen, and Buatti (2000):

 Individuals in this age group are nearly as twice as likely as all children and older adults to be without health insurance. Thirty percent of adults ages 19 to 29 (12 million people in 1999) were uninsured, up from 22 percent a decade earlier. (p. 3)

The young-adult cohort is likely to be entering the job market, which offers low-wage, entry-level positions (or even temporary or part-time positions) and often does not provide employer-sponsored health plans. The most vulnerable population is the 19-to-29 age group. Up to 75%
of this age group does not have access to an employer-sponsored health plan through their jobs (Quinn et al., 2000). In most cases, young adults who are offered employer-sponsored health insurance purchase it. “Only 4 percent of all workers ages 18-44 (roughly 3 million people in 2001) are uninsured because they decline available workplace health insurance” (Coverage matters: Insurance and health care, 2001). Young adults who graduate from college and are dropped from their parents’ health insurance coverage are particularly vulnerable. Collins’ et al., (2003b) study found that “nearly two of five college graduates and one-half of high school graduates who do not go onto college will endure a time without health insurance in the first year after graduation” (p. 1). It is predicted that two-thirds of all young adults ages 19-23 today are likely to lack insurance at some point over the next four years. As a person grows older and is more embedded in the labor market, the less likely he or she is to be uninsured. At age 65, most Americans qualify for Medicare, and therefore, the elderly cohort is not vulnerable to being uninsured (only underinsured).

In summary, the 19-23 year-old cohort is most likely to be uninsured and nearly 33% of 19-29 year-olds are uninsured. Studies indicate that as individuals age, the likelihood of being uninsured decreases because they typically gain access to better-paying jobs and employer-sponsored health insurance. Therefore, it is relatively simple to isolate “age” as a predictor and utilize an individual’s age as a measure to determine his or her vulnerability of being uninsured.

Marital Status

Being married provides more opportunities to access health care. For example, a married couple may have dual careers and thus have two opportunities for health care coverage through their employment. Unmarried individuals who lose their insurance coverage due to unemployment are unable to gain coverage via a spouse’s employment and must rely on
expensive options, such as COBRA and private insurance. In addition, parents of young children are less likely to be uninsured (Coverage matters: Insurance and health care, 2001; Liska et al., 1998). Providing for their offspring seems to motivate parents of young children to gain employment, remain employed, and provide insurance for the sake of their children’s health. A married couple with children, who are both employed and in their late-40s, will more likely be insured than a single person in his or her late-twenties.

No Insurance

Having no insurance is a significant barrier to health care access. Individuals who are uninsured have a lower utilization of health care services than the insured (Comer et al., 2000). McLaughlin (2004) cited three main reasons individuals do not have insurance coverage:

1) people are healthy and choose not to have insurance because they are unwilling to pay the price for insurance; 2) people want insurance but cannot get it because of insurance underwriting practices or labor market rigidities; and 3) people want an insurance product that is available but cannot afford the coverage. (p. 4)

The near poor (those between 100 and 200% of the poverty line) are often vulnerable to becoming uninsured because they are ineligible for public programs and have limited access to private coverage due to low wage employment (Blumberg & Liska, 1996). There is also concern that along with the increasing number of uninsured Americans, an even larger number of middle- and higher income individuals and families feel vulnerable to the potential loss of coverage. A 2002 U.S. Census report showed that households with incomes of more than $75,000 accounted for more than half of the increase in the uninsured. This figure was somewhat misleading, however, because it reflected increases in the number of people living in households with more than $75,000 of income (Holahan, Hoffman, & Wang 2003). Some of the increase in the "high-income" uninsured reflected people with low incomes moving into households with other people
whose earnings lifted the household's income above $75,000. Nonetheless, the report fueled the belief that the large number of uninsured in the United States was no longer just a low-income problem, but that it was spreading to the middle-class (Blumberg & Holahan, 2004).

Employment Status

Utilization varies by socioeconomic status and socioeconomic factors remain important influences on gaining entry into the health care system (Field & Briggs, 2001; Gornick, 1999, 2002; Merzel & Moon-Howard, 2002). Employment is an aspect of socioeconomic status and this Enabling population characteristic is an important determinant as to whether an individual has insurance and unmet healthcare needs. According to McLaughlin (2004):

For most Americans, health insurance is a benefit provided by their employer, a practice that introduces additional players and complexity to the traditional model of supply and demand. Employers decide when, to whom, and at what out-of-pocket price to offer health insurance as a benefit. Employees, in turn, decide on job offers based not only on their skill set and wages, but also on the offer of health insurance for themselves and their families. (p. 4)

Most U.S. citizens rely upon employer-sponsored insurance (ESI), although there is currently a decline in ESI coverage for both low- and lower-middle-income workers. Long and Shen (2004) posited, “In the absence of ESI, only 50 percent of low-income workers would likely have (had) any insurance options in 2002, with public coverage (19 percent) and nongroup coverage (23 percent) the two most likely sources of coverage” (p. 4). Families with two full-time workers have the highest rate of private insurance coverage (Blumberg & Liska, 1996). Individuals who lose or change jobs are twice as likely to experience periods of time without health coverage as those who remain in the same job all year (Lambrew et al., 1996). In addition,

Full-time, full-year employment offers families the best chances of having health insurance, as does an annual income of at least a moderate level (greater than 200 percent of the federal poverty level (FPL), which is $34,100 for a family of four in 2000. Two-
thirds of all uninsured persons are members of families which earn less than 200 percent of FPL, and nearly one-third of all members of families earning less than a moderate level are uninsured. (Coverage matters: Insurance and health care, 2001, p. 35)

Families with incomes above the poverty line have experienced the largest declines in ESI (Blumberg & Liska, 1996).

Although socioeconomic status is a strong predictor of access and whether one is insured, it is also important to note that many of the uninsured work full-time. Working in a retail operation puts an individual at risk of being uninsured. Specifically, workers in small firms, and those who work in retail, construction, and service firms, are disproportionately likely to be uninsured (Garrett et al., 2001). Therefore, occupational type affects access to health care. Educational attainment also influences access to health care; especially preventive care (Dancy & Ralston, 2002; Waibel, 2001; Yu et al., 2001). Higher educational attainment reflects more utilization of preventive care. Socioeconomic status is a broad category that researchers often use to determine an individual’s likelihood of accessing health care services.

Usual Source of Care

Regular source of care involves the ability to identify a physician’s office as a regular source of care. With the availability of outpatient clinics (i.e., urgent care and walk-in clinics) more individuals are receiving medical care via these sources, and as a result, fewer individuals have a primary care physician. Research involving a usual source of care and unmet healthcare needs among adults indicates that the two variables are related. For example, relative to Medicaid-covered parents, uninsured parents are about twice as likely to have no usual source of care or to rely on the emergency room for their usual source of care. In addition, uninsured parents lack confidence in their family's ability to receive needed care (Dubay & Kenney, 2004). White, working-age males are less likely to experience barriers to care and are more likely to
have a usual source of care than minorities, especially Hispanics and Asian Americans (Phillips et al., 2000). There are an increasing number of white working-age males who do not have a regular source of care, (Moy et al., 1998; Sommers et al., 2000). In Texas, 51% of the low-income, uninsured have a usual source of care, compared to 75% of the low-income insured (Holahan & Spillman, 2002).

**Ability to Negotiate the System/Competing Needs**

Much research regarding access and utilization focuses on financial barriers, but non-financial barriers are significant to vulnerable populations as well. Carey et al., (1995) defined non-financial barriers as “education, language, personal experiences, attitudes and beliefs, unhealthy lifestyles, poor nutrition, provider attitudes and beliefs, transportation, social support, and supply and distribution of health professionals. In addition, race, ethnicity, gender, economic status, and environment are important factors.” (p. 70). Williams (1993) determined that “hurdles of distance, inappropriate hours, fragmented and impersonal services, the absence of outreach and follow-up, and cultural differences deprive children of needed services” (p. 355). Diamant et al., (2004) found delays and unmet needs for health care among primary care patients in a restructured, urban public health system to be partially related to non-financial barriers. The study indicated that 33% of the patients reported that

they had delayed seeking medical care at least once during the proceeding 12 months, for the following reasons (multiple reasons allowed): 13% could not take time off from work, 12% had to care for someone else, 12% did not have transportation to get to their appointment, 9% were too sick, 6% had other or more important things to do, and 3% were afraid for their personal safety. (p. 785)

The employed, as compared to the unemployed, were more likely to delay care due to not being able to take time off from work. The unemployed were more likely than the employed to delay care due to a lack of transportation. “Twenty-five percent of patients indicated that they had
gone without needed medical care because they had to spend their money for food, shelter, or clothing” (p. 785). Uninsured patients were more likely to have competing needs and priorities than the insured. A study of non-elderly, poor adults found the most frequent barriers to health care were lack of information about free or reduced-cost health care, anticipated cost, and difficulty accessing child care (Ahmed et al., 2001). Reported barriers were similar for the working and non-working poor, except for transportation problems, which were more frequently reported by non-working respondents (Ahmed et al., 2001).

Long’s (2003) study found that over 40% of the sample reported hardship in at least one of the following areas: food, housing, or health care. Thirty-four percent of the respondents reported a health-care hardship, compared to more than 20% reporting food or housing hardship. Health-care hardship was defined to include “both a lack of insurance (22 percent) and unmet need for health care (19 percent)” (p. 4). Individuals with food and housing hardships were 20% more likely to be uninsured compared to those without these hardships. The researcher’s conclusion was simple but poignant: “For many uninsured adults, particularly low-income uninsured adults, the resources needed to purchase health insurance are competing with meeting basic food and housing needs” (p. 5).

In addition, experiences with paperwork have been found to be a hindrance to delivery of health care services in regard to the ability to negotiate the system (Olson, 1995; Perez-Pena, 2005). It is estimated that up to one-half of Medicaid patients lose their insurance due to failing to complete the necessary paperwork. Some fail to understand the paperwork requirements, which provide opportunities for mistakes. Many complete the paperwork incorrectly or too late. As a result, this may cause delayed treatment, duplicate paperwork, or failure to receive services. For example, individuals may not understand the requirement to complete annual renewal forms.
which results in delays of coverage for months. For some Americans, the U.S. health care system is likened to running through a paper gauntlet. A misstep within the gauntlet and the penalty is denial of services.

*Perceived Health Status*

Perceived health status is a self-reported description of the respondent’s assessment of his or her own personal health. Individuals who perceive themselves as having a lower health status are more likely to be uninsured and to have unmet health care needs than individuals who rate themselves as having a high health status (Diamant et al., 2004). For example, Patrick et al., (1991) found that “families without health insurance, in comparison to those with it, rated their health lower, reported a greater number of chronic conditions, and perceived one or more family members to be in need of health services” (p. 941). In contrast to Patrick’s findings, Shi (2001) reported that “while race and income significantly influence insurance coverage, respectively, there was relatively little disparity in insurance due to (self-perceived) health status” (p. 519). Ross and Mirowsky (2000) reported a somewhat different view, indicating “that persons with private insurance do not differ significantly from the uninsured in their self-reported health, physical functioning, or number of chronic conditions, whereas persons with public insurance report significantly worse health and more chronic conditions than the uninsured” (p. 307). Another study determined respondents who felt they needed medical care but did not seek it had a lower perceived health status than those who did (Macias & Morales, 2000). Overall, individuals who report a lower perceived health status are more likely to be uninsured and have unmet health care needs.

*Unmet Healthcare Needs*

Unmet health care needs are more prevalent among individuals and families who do not
have health insurance. In addition, they are more likely to delay care and be in poorer health than people who are insured (Davidoff et al., 2001; Patrick et al., 1991). Even with the safety net of publicly funded services accessible in the United States, barriers to access and utilization result in unmet health care needs. The Institute of Medicine defined the safety net as:

Those providers that organize and deliver a significant level of health care and other health-related services to uninsured, Medicaid, and other vulnerable patients. These providers have two distinguishing characteristics: (1) by legal mandate or explicitly adopted mission they maintain an "open door," offering access to services to patients regardless of their ability to pay; and (2) a substantial share of their patient mix is uninsured, Medicaid, and other vulnerable patients (Lewin & S., 2000, p. 3).

The safety net is designed to serve populations who lack health insurance coverage, are covered by Medicaid, or are low-income individuals with limited private insurance coverage (the underinsured). The following is an overview of the literature in regard to unmet health care needs and the utilization of physicians, emergency departments and hospitals.

**Utilization of Physicians, Emergency Departments, and Hospitals**

Access to physicians is greater for the insured and those who have a usual source of care (Andersen et al., 2002; Franks & Gold, 1993; Freeman & Corey, 1993; Hafner-Eaton, 1993; Holahan & Spillman, 2002; Kubrin, 1995; Soref, 1990). Although the safety net is designed to ensure members of vulnerable populations adequate health care services, utilization of the available services varies by populations and circumstances. For example, the predicted probability of having a physician visit in Texas is 39% for low-income uninsured and 60% for low-income insured (Holahan & Spillman, 2002). The uninsured visit the doctor less, use more emergency room care, and are more likely to be hospitalized for chronic conditions that could be better controlled with reliable access to physician services (Franks & Gold, 1993; Freeman & Corey, 1993; Hafner-Eaton, 1993). A 1986 study of Wisconsin households found that uninsured adults who were interviewed were less likely to have had any physician visits in the year prior to
the interview and/or to have had a general physical examination in the 2 years prior to the interview. For insured versus uninsured adults, differences in measures of emergency room use and hospitalization were found not to be significant (Soref, 1990). Kubrin (1995) also found insurance status to predict physician use but not of hospital use. In contrast to these two studies, Davis and Rowland (1983) reported “tremendous differences in use of hospital care affected not only by insurance status, but residence and race” (p. 149). Overall, the uninsured are less likely to visit a physician and those who do visit have fewer visits than the insured (Broyles et al., 1999).

Utilization of physician services is also related to both attitudinal and situational factors. For example, trust in physicians is associated with physician utilization. Crandall and Duncan (1981) found the impact of the financial variables to be weaker than that of the attitudinal variables in regard to physician utilization. Belief in the effectiveness of medical care is strongly related to a positive utilization of physicians. Situational factors affect physician utilization, as indicated by Dutton’s (1986) study of households in Washington, DC. The study concluded “that a low-income practice clientele and high charges were the most significant deterrents to use, followed by absence of Medicaid, distance, limited hours and patient-sharing by MDs” (p. 721). In addition, travel time appears to be related to differential utilizations of ambulatory care (Sparer, 1976). Individuals with a shorter travel time and a usual source of care are more likely to utilize physician services.

Emergency room utilization is greater for the uninsured and for individuals who do not have a usual source of care. Hadley (2003) reported that of 2 million emergency room visits a year, 33% were for health conditions that did not require immediate care or could have been treated during a physician visit. Billing’s (2000) study of New York City’s hospital emergency
department utilization by uninsured and low-income residents found that “residents who regularly get their health care at an emergency department do not have regular doctors or continuity in their care, use costlier services, and often receive treatment that could have been avoided” (p. 1). A study conducted in Maryland indicated that for every 100 uninsured patients there were 81 visits to the emergency department per year. In contrast, there were only 22 visits per year among insured patients (C. Schur et al., 2003).

**Unmet Need for Prescription Medicine and Dental Care**

From 1999 to 2002, there was an increase in unmet need for prescription medicine (Blumberg & Holahan, 2004), primarily related to a patient’s inability to afford the costs of medications prescribed by physicians (Anglin & White, 1999). This increase in unmet needs coincided with the increase in the use of prescriptions among Americans. The average number of prescriptions per person more than doubled over the past two decades, and spending on prescription drugs rose 15.3% in 2002 alone (C. L. Schur et al., 2004). If patients can access and utilize physician services, but cannot follow through with the physicians’ recommendations, then the positive effects of their visits are reduced. For example, if a patient is provided a prescription, but cannot overcome financial or non-financial barriers to fill it, then the visit’s outcome is deemed poor. Members of vulnerable populations may experience inadequate funds or lack transportation to obtain prescriptions. Even insured patients may experience difficulties obtaining prescriptions. Schur’s (2004) study reported that nine percent of insured Americans do not have prescription benefits, creating a vulnerable situation that may result in under- or nonuse of prescriptions. Delaying and rationing prescription medicines were found to be alternative methods to nonuse among vulnerable populations (Strickland & Hanson, 1996).
In regard to unmet dental care, Zabos’ et al., (2002, p. 45) study among Harlem, NY adults found “those more likely to report oral health problems than other participants had annual household incomes of less than $9000 (36%), were unemployed (34%), and lacked health insurance (34%).” In addition the study reported the privately insured were almost twice as likely to have seen a dentist for oral health problems than were the uninsured. Beazoglou, et al., (2005) found that many poor, medically disabled and geographically isolated populations in Connecticut have difficulty accessing private-sector dental care and are considered underserved. A study of 32,374 adults from the 2000 National Health Interview Survey reported individuals who were white, low income, uninsured, and had no regular source of care were more likely to miss or delay needed health care services such as dental care due to cost (Shi & Stevens, 2005). Guay’s (2004) findings indicate the poor, some minorities, institutionalized elderly people and other groups do not have adequate access to dental care. Low-income, white, working-age males are likely to be unemployed, lack health insurance, and have no usual source of care. As a result, this cohort is likely to experience difficulties accessing dental care.

Summary of Literature Review

The extant research literature has indicated that age is a strong predictor of access and utilization of health care services, with one-third of young adults uninsured. Married persons are more likely to be insured than those who are single. Employer-sponsored insurance is the means by which most Americans receive health insurance, thus employment is a strong predictor of access to health care in the United States. The near poor (those between 100 and 200% of the poverty line) are the most vulnerable because their income is too high to qualify for public assistance and too low to afford private insurance. Having no insurance is a significant barrier to health care access and often results in unmet health care needs. Uninsured persons without a
usual source of care are more likely to have unmet needs than insured persons with a usual source of care. Non-financial barriers also affect health care access and utilization. For example, the lack of transportation may cause delays in care or unmet health care needs. Competing needs, such as food, clothing, and shelter, also impact uninsured individuals’ decisions to seek health care services. For some individuals, experiences with paperwork can be a barrier to accessing health care services. Individuals who perceive themselves as having a lower health status are more likely to be uninsured and have unmet health care needs than individuals who rate themselves with a high health status. Even with the safety net of public services, unmet health care needs are more prevalent among individuals and families who do not have health insurance. Uninsured individuals visit physicians less often than the insured. Inappropriate and over-utilization of the emergency department by the uninsured is attributed to not having a usual source of care. Unmet needs for prescription medicine often result from financial barriers and causes patients to be unable to follow-up on their physicians’ recommendations. In general, the uninsured are hindered by financial and non-financial barriers, which result in unmet health care needs.

Theoretical Model for This Study

The theoretical design of this study is based upon a revised and expanded behavioral model for vulnerable populations (See Figure 2.4) (Gelberg, Andersen, & Leake, 2000). For more than three decades, derivatives of this model have been discussed, adapted, and utilized in a multitude of studies examining vulnerable populations (Aday, 2001; Aday & Andersen, 1981; Albizu-Garcia et al., 2001; Andersen, 1968, 1995; Andersen & Newman, 1973; Broyles et al., 1999; Desai, 2003; Owusu et al., 2005; Pei-Shu, 2003; Swanson et al., 2003; Wenzel et al., 2001). Most recently, Owusu (2005) adapted the behavioral model for vulnerable populations
(see Figure 2.5) for a study on the utilization of pap smear tests among low-income women, utilizing the data set from the study *Uninsured Adult Working-Age Population in Tarrant County: Access, Cost of Care, and Health* study (S. B. Eve et al., 2000). In order to examine health-care-related issues of the specific vulnerable population of white, working-age males, the behavioral model for vulnerable populations was adapted in similar fashion to Owusu’s model. As Figure 2.6 depicts, the adaptation excluded the following Predisposing characteristics within the Traditional and Vulnerable domains: race/ethnicity and immigration status (both domains). Within the Enabling characteristics, the prenatal care category was eliminated, which includes check-up for current pregnancy. Within health behaviors, the use of health services and pap smear tests were excluded from Owusu’s model.
Within the behavioral model for vulnerable populations (Gelberg et al., 2000) are three categories labeled as Predisposing, Enabling, and Need variables (See Figure 2.4). Each of the three categories includes a Traditional domain and Vulnerable domain. The data set for the study of low-income, white, working-age males provided variables within the Traditional
domains for each of the Predisposing, Enabling, and Need categories. Data for the Vulnerable
domain variables were available only for the Enabling domain. Next, each of the domains is
briefly discussed.

The Traditional Predisposing domain includes demographic characteristics, such as age,
gender, and marital status; health beliefs; and social structure (Gelberg et al., 2000). This study
included age, gender, and marital status within the category of Demographics and ethnicity and
employment within the category of Social Structure. Males were selected and the age variable
was re-categorized as 18-39 and 40-60. Marital status was determined from the question that
asked whether the respondent was currently married and living with a spouse. Within the
adapted behavioral model for vulnerable populations, there are numerous variables that are not
applicable to this study. For example, variables pertaining to health beliefs are not present
within the Traditional Predisposing domain. The variables “values concerning health and
illness,” “attitudes toward health services,” and “knowledge about disease” were not included in
this study because data were not collected for these variables. Within Social Structure, ethnicity
and employment were included. Surprisingly, information regarding education was not collected
in the original study, nor was information regarding social networks, occupation, family size, and
religion.

In the Vulnerable Predisposing domain, the original study collected data pertaining to
acculturation/immigration, but this particular variable was not included in this study due to
focusing on white males. The remaining variables within the behavioral model included sexual
orientation, childhood characteristics, residential history, living conditions, mobility, criminal
behavior/prison history, victimization, mental illness, psychological resources, and substance
abuse history. None of these variables was included in the original research model. The lack of
these variables and the variables within the Traditional domain limited the ability to seamlessly overlay the behavioral model onto this study. The absence of all of the variables within the Vulnerable Predisposing domain brings into question the degree to which this study accurately depicts the vulnerable population.

The Traditional Enabling domain includes personal/family resources, which are represented within the behavioral model as regular source of care, insurance, income, social support, and perceived barriers to care. Community resources include residence, region, and health services resources. The Vulnerable Enabling domain includes personal/family resources, competing needs, and availability and use of information sources. Receipt of public benefits such as Medicaid is an example of personal/family resources. The community resources construct includes crime rates and the availability of social services (Gelberg et al., 2000). In the Traditional domain, this study provided information regarding a regular source of care and insurance status. Income was indirectly addressed via the number of hours worked per week. This indicator merely identified whether the respondent had income from work, it did not indicate whether the respondent had income from other sources. Therefore, it is a poor indicator and excluded from this domain. Health services resources, within community resources, were also indirectly addressed within the original study, but the data were insufficient for inclusion in this study.

In the Vulnerable Enabling domain, competing needs was represented within the original study. Specifically, respondents were asked, “Have you forewent care or medicine for food, clothing, or housing in past 12 months?” A question referencing the ability to negotiate the system was included in this study. The question pertains to experiences with paperwork. Variables within personal/family resources regarding hunger, public benefits, self-help skills,
case manager, telephone, and information sources were not identified in the original study. Also, crime rates and social services resources were not identified within community resources.

The Traditional Need domain focuses on perceived and evaluated health. This domain includes self-perceptions (perceived need) and objective evaluations (evaluated need) of general population health conditions (Gelberg et al., 2000). The original study asked respondents about their overall health condition and the effects on their health when unable to access health care. These questions represent the perceived need in regard to self-evaluations of their health. Gelberg et al., stated, “The Need Vulnerable domain includes perceptions and evaluated need regarding conditions of special relevance to vulnerable populations, such as tuberculosis, sexually transmitted diseases, premature and low-birthweight infants, and acquired immunodeficiency syndrome (AIDS)” (p. 1277). The original study included questions regarding pap smears, which were relevant to females within the sample. This study did not have any indicators regarding special conditions for males.

The fourth domain within the Behavioral Model is the Personal Health Practices Traditional domain which included, “diet, exercise, self-care, tobacco use, and adherence to care” and the use of health services (Gelberg et al., 2000). Within the Vulnerable domain it “includes food sources and hygiene and unsafe sexual behaviors.” This study included only data pertaining to the Traditional domain. Respondents provided information regarding their use of physicians, specialists, emergency departments, hospitals, prescription medicines, and dental care. The original study did not collect data pertaining to the Vulnerable domain.

The last domain within the Behavioral Model is titled Outcomes. Gelberg (2000) stated that this domain transcends the Traditional and Vulnerable domains and includes perceived and evaluated health status and satisfaction with care. The satisfaction with care has 11 indicators,
the most salient of which is “access/availability/convenience.” The behavioral model identifies the Predisposing, Enabling, and Need population characteristics, which predict personal health practices and utilization of health care services. In addition, this model examines “the effect of realized access (i.e., utilization) on health outcomes” (p. 1276).

Summary

The theoretical framework for understanding the social problems associated with the uninsured Americans is situated within the capitalistic structures and processes of the American health care system. By applying Gidden’s structuration theory, it is suggested the current structures and processes can be altered to expand health care coverage to more Americans. Various behavioral and vulnerable population models of health care utilization were explored within this chapter. A review of the existing research identified specific population characteristics with the behavioral model of vulnerable populations such as age, marital status, insurance coverage, employment status, a usual source of care, competing needs and perceived health status. In addition, a discussion was provided regarding unmet health care needs such as prescription medicines and dental care, as well as the utilization of physicians, emergency departments, and hospitals. Finally, the theoretical design of this study was discussed, which is based upon a revised and expanded behavioral model for vulnerable populations.
CHAPTER 3

METHODOLOGY

This chapter provides a detailed explanation of the methodology for this study. It includes the research design, statistical analysis, population and sample, and operational measures of the variables. Finally, this chapter discusses why this particular study is unique in its approach and findings.

Research Design

The design for the present research was based upon secondary analysis of data collected in the study, *Uninsured Adult Working-Age Population in Tarrant County: Access, Cost of Care, and Health* (S. B. Eve et al., 2000). This study examined adult, working-aged patients within the John Peter Smith (JPS) Health Network, which is a large, urban, tax supported county healthcare system in Fort Worth, Texas. The major objectives of this research project were to assess the patient’s access to healthcare, factors affecting their access, and their health status. (S. B. Eve et al., 2002). The original study was conducted by an interdisciplinary team of faculty from the University of North Texas (Denton, TX); School of Public Health, University of North Texas Health Science Center (Fort Worth, TX); and University of Texas Southwestern Medical Center (Dallas, TX). It was funded by a grant from the Texas Higher Education Coordinating Board under the Advanced Research Program. The purpose of the study was to assess access to health care, economic cost of care and lack of care, and health status of prime working-age (18-60), low-income (up to 200% of Federal Poverty Income Level), adult residents of Tarrant County (S. B. Eve, Koelln, K., Baumer, J. Trevino, F. M. and Urrutia-Rojas, X., 1999).
The sampling frame consisted of 10,000 patients who were active in the system at John Peter Smith (JPS) Hospital during July and August 2000. The U.S. Census Bureau’s Online State & County QuickFacts (2004) reported Tarrant’s population in 2000 as 1,446,219. Nearly one-half (49.5%) of the population was male and 63.6% of the entire population was working-age (18-64). In 2000, the percent of white persons, not of Hispanic/Latino origin, was 61.9%, as compared to 52.4% for Texas. Persons of Hispanic or Latino origin comprised 19.7%, while Black or African American persons constituted 12.8% of the population in Tarrant County. Asian persons comprised 3.6% of the population. The median household income (1999) was $46,179, and the percent of persons below the poverty line was 10.6 (1999). In 2000, Tarrant County’s land area was 863 square miles. The county reported 81.3% as high school graduates (age 25+), and 26.6% (age 25+) as having achieved a Bachelor's degree or higher. Tarrant is the third largest county in Texas and is ranked the 26th largest in the United States. Fort Worth is the county seat.

John Peter Smith Hospital is the county hospital for Tarrant County and it is licensed for 429 (As of 2005, JPS Hospital is licensed for 459 beds.) beds along with a freestanding outpatient care center and a dedicated facility for psychiatric services. In addition, what started as just a hospital has now grown into a countywide network of health care services operated as the JPS Health Network. ("About JPS: Low cost medical care (JPS Connection)", 2004).

One such health care service is the JPS Connection. This program is a tax-supported medical program offered to eligible Tarrant County residents by JPS Health Network. Eligibility is based on household size and gross monthly income according to the current Federal Poverty Income Levels and proof of current residence in Tarrant County. The program is available for clients that do not have Medicaid, Medicare with prescription benefits or any medical coverage that covers all or part of medical services and prescription pharmaceutical costs. ("About JPS: Low cost medical care (JPS Connection)", 2004)

The program provides low cost medical care for individuals and families with incomes up to 200% of the federal poverty income level. The Statement of Revenue and Expense Report
indicates the Ad Valorem Tax Revenue was $128,259 (in thousands) and the Disproportionate Share was $14,174. The ad valorem tax revenue is generated from property taxes and the Disproportionate Share revenue are additional payments in the Medicaid and Medicare programs that, along with local tax appropriations, help hospitals finance care to low-income and uninsured patients. DSH payments are a critical component of financing care for the uninsured and underinsured. (NAPH, 2001, p. 1)

In the fiscal year ending September 30, 2004, there were 725,710 patient encounters, 19,453 inpatient admissions, and 76,739 emergency room visits ("JPS annual report 2004", 2005). JPS has the largest family practice residency in the United States.

This study used data based on a questionnaire that was administered via a telephone interview by trained personnel at the Survey Research Center of the University of North Texas. The research center utilizes computer assisted telephone interviewing (CATI) technology, a tool often employed for health-care-related research (Duncan et al., 2002; Factor-Litvak et al., 2001; Lauder et al., 2004; Plotnikoff et al., 2004; Zimmerman et al., 2003; Zimmerman et al., 2000). CATI allows the interviewer, who is equipped with a telephone headset, to read the survey questions from the computer screen and enter the respondent’s answers. The software program automatically brings up the next question based upon the respondent’s response, which is often referred to as “conditional branching.” According to Neuman (2003), “Computer-assisted telephone interviewing speeds interviewing and reduces interviewer errors. It also eliminates the separate step of entering information into a computer and speeds data processing” (p. 300). Drawbacks to CATI are that interviewers cannot always type quickly enough to capture verbatim responses to open-ended questions; there is also the obvious loss of visual cues because of the absence of face-to-face contact (Berg, 2004). Positive elements of CATI are that it reduces interviewer error and speeds interviewing.
CATI allows for random-digit dialing from among telephone numbers entered into the database and can systematically re-dial persons who are not at home. In this survey, selected respondents from the sample were telephoned five times on different days of the week and at different times of the day. After five unsuccessful attempts, the names of the respondents were dropped from the sample (S. B. Eve et al., 2002). Respondents were contacted in early fall 2000; they were told that they had been selected for the telephone interview and the purpose of the study was explained. At the onset of the telephone interview, the patients were told the nature of the study, the policies regarding confidentiality, and that they had the right to refuse to participate. Each telephone interview took approximately 20 minutes to complete. The survey addressed the following topics: demographic, social, and economic characteristics; health status; insurance coverage; usual source of care; use of physicians, emergency departments, and hospitals; unmet health care needs; unmet need for prescription medicines; use of dentists; difficulties with interpreters, medical equipment, special therapy, and bureaucracy; barriers to getting needed health care; effect of employment on use of health care, and women’s health.

Validity and Reliability of the Questionnaire

According to Babbie (2001, p. 143), “Validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration,” while reliability refers to “whether a particular technique, applied repeatedly to the same object yields the same results each time. In order to maintain the integrity of the survey’s validity and reliability, the researchers used a combination of items taken from national surveys of access to healthcare services (S. B. Eve et al., 2002). Specifically, the bulk of the questionnaire was based on standard questions in the National Health Interview Survey (NHIS) since the validity and reliability of these questions had already been established (Owusu, 2003). For example, the
questions regarding health insurance, access, and utilization within the NHIS have been utilized for more than a decade, and a redesigned survey was implemented in 1997. Many of the questions within the NHIS survey regarding access to health care were derived from the 1993-1995 NHIS Access to Care supplements, thus preserving the survey’s validity and reliability. However, the revised 1997 NHIS did make changes to the previous survey. For example, in the previous survey, respondents were asked to indicate a variety of reasons for changing their usual source(s) of care. In contrast, the revised survey asked the respondents to provide information on the reasons for changing that related to health insurance only ("National center for health statistics", 2004).

The questions in the JPS Health Network survey were adapted when necessary in order to reflect the population within Tarrant County. For example, the 1997 Redesigned National Health Interview Survey (NHIS) asked “about who in the family is covered and the kind of coverage (private, Medicare, Medicaid, Military/Champus/Tricare, Indian Health Service, State-sponsored or government plan) he/she receives” ("National center for health statistics", 2004). Within Tarrant County, there are few Native Americans, and therefore, the “Indian Health Service” was not provided as an option during the segment of the interview requesting information pertaining to health insurance.

Although using NHIS survey questions and adapting some questions to reflect the Tarrant county population strengthened the survey, there is an unavoidable built-in weakness when using a survey. Babbie (2001) elaborated on the weakness of surveys by stating that standardized questions “often represent the least common denominator in assessing people’s attitudes, orientations, circumstances, and experiences.” (p 268). It is difficult to design questions which apply to all respondents without missing what is most appropriate for many of the respondents.
This inherent weakness of surveys is most apparent when investigating complex topics with only a limited number of survey questions. This problem cannot be overcome even with sophisticated analyses.

The researchers addressed this issue in the original research design by utilizing the method of triangulation. In addition to the survey, personal interviews and focus groups were conducted with physicians within the JPS Health Network and focus groups were held with patients to gain a better understanding of “what is most appropriate” to the patients. The present study did not incorporate physician interviews or focus groups, but these are listed as suggestions for further research in chapter 5. This study utilized binary logistic regression, which is subject to debate as to whether it is a “sophisticated” enough analysis to offset the inherent problem of surveys, as described by Babbie above.

There are four primary types of validity: face, content, construct, and criterion-related. Face validity “addresses the question: On the face of it, do people believe that the definition and the measurement fit?” (Neuman, 2003, p. 183). For example, do the survey questions regarding “access” to health care services really measure “access?” First, the concept of “access” must be defined. A broad definition of “access to care” is “the timely use of personal health services to achieve the best possible health outcomes” (Carey et al., 1995, p. 69). The NHIS more narrowly defines “access to health care” as pertaining to having a usual source of care. Questions on access in the NHIS survey were designed to determine if a person has a usual source of care. In addition, respondents were asked if their usual source of care was the same source for preventive care ("National center for health statistics", 2004). Therefore, by using similar questions to the NHIS survey, the JPS Health Network survey ensured face validity by using standardized questions and definitions. In addition, prior to deploying the survey, the researchers verified the
face validity of the questions, since some of the questions were modified to fit the locale of the sample.

The second type of validity is termed content validity. It refers to “how much a measure covers the range of meanings included with a concept” (Babbie, 2001, p. 144). Using “access” as the example, content validity indicates whether the survey questions measure the wide range of meanings of “access.” The JPS Health Network survey adequately covered the range of services to access, which includes a usual source of care; use of physicians, emergency departments, and hospitals; unmet needs for prescription medicines; use of dentists; and barriers to getting needed health care.

One weakness, in regard to content validity, is that some of the variables lack clarity. For example, only two questions addressed hospital visits. The first question asked, “Have you been a patient in the hospital overnight or longer in the past 6 months?” The second question asked, “Have you had a problem paying doctor and hospital bills during the past 6 months?” This is a double-barreled question because the wording combines “doctor” and “hospital” bills. It is unclear whether the answer is for the combination of both or for one or the other question (Neuman, 2003). Therefore, due to the limited number of questions regarding hospital visits, as well as the ambiguous second question, the content validity relating to hospital visits is poor. Due to the limitations of the research design, the survey can capture only a broad understanding of issues pertaining to health insurance, access, and utilization; it does not cover all dimensions of each concept. The research design utilized a 20-minute phone interview to capture data for 12 related areas, which decreased the content validity for each area, but increased the survey’s construct validity.
Construct validity is based on the logical relationships among variables (Babbie, 2001). Neuman (2003) defined this concept as “a type of measurement validity that uses multiple indicators” (p. 184). For a measure to be valid, the various indicators will most likely operate in a consistent manner. Moreover, Glicken (2003) stated, “this type of validity is interested in answering questions about whether an instrument helps us prove theories” (p. 100). Since construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure, a theoretical concept must be examined in order to measure the concept. For example, in theory, and indicated by previous studies, individuals with low income, no insurance, and no usual source of care will have unmet health care needs. Therefore, if the JPS Health Network survey accurately measures each of the indicators, then the results will coincide with the theoretical underpinnings of the study.

Another example of construct validity involves the two types of barriers to “access”: financial and non-financial. Theoretically, respondents with financial barriers will likely experience non-financial barriers as well. In order to test the construct validity of the survey instrument, the relationships of these two barriers are compared. If no relationship exists, there is a possibility that the variables that comprise the concept of non-financial barriers (e.g., the lack of transportation, language and cultural barriers, and the inability to negotiate the health care system) are not accurately measuring the concept.

As stated earlier, the questions for this study were derived from the NHIS survey and other national surveys, which allow for incorporating standardized questions that have been pre-tested. Therefore, the JPS Health Network survey is comprised of questions that have been examined in light of theoretical constructs pertaining to access to health care. In addition, the
survey does not introduce new concepts or constructs, which makes it possible to compare the results with national data.

The last type of validity, criterion, compares the questions asked on the instrument to some normative measure (Glicken, 2003). The NHIS survey would be the most likely “normative measure” against which the JPS Health Network survey would be compared in order to determine its criterion-related validity. For instance, the 2000 and early 2001 National Health Interview Surveys provide a normative measure by which to compare the results of this study. For example, in 2001, 4.8 percent of the population was unable to obtain needed medical care and 85 percent of adults reported a usual source of care from 1997 thru early 2001 ("National center for health statistics", 2004).

There are limitations in comparing this national data with data from the sample population. First, the sample population is comprised primarily of low-income residents who do not represent the whole population in Tarrant County. Therefore, the data from the JPS Health Network survey regarding obtaining needed care and having a regular source of care are not comparable with those from the NHIS survey. Second, the uninsured rate of Texans is among the highest in the United States; therefore, comparisons may not be valid between the two surveys. Once again, the need to establish criterion-related validity is minimized because standard questions from such surveys as the NHIS were used.

A final concept of import is reliability. Reliability refers to whether the instrument is dependable or stable and whether the instrument will provide similar results when used repeatedly (Glicken, 2003). The NHIS survey is administered yearly, which lends credibility to its reliability since the results are monitored on a yearly basis.
Other Strengths and Weaknesses of the Data Collection Design

Studies that use secondary analysis have both strengths and weaknesses. Secondary analysis is the reanalysis of previously collected data that were originally gathered by other investigators (Neuman, 2003). According to Neuman, a secondary analysis “is relatively inexpensive; it permits comparisons across groups, nations, or time; it facilitates replication; and it permits asking about issues not thought of by the original researchers” (p. 322). Babbie (2001) concluded that “depending on who did the original survey, you may benefit from the work of topflight professionals” (p. 270).

A major weakness of secondary analysis is that the researcher can neither control nor assess whether there were problems with the data collection process. Another weakness is related to validity. Babbie (2001) stated even if a question “comes close” to measuring the topic, the researcher will often question the wording or wish a related question had been asked (p. 270).

In this study, the major strengths related to data collection were its speed and cost and the original researchers’ experience. The data were readily available at relatively low cost and the original researchers were experienced health services researchers. In addition, the researchers utilized questions from the NHIS survey, which had been designed by the National Center for Health Statistics. This study was conducted in coordination with the principal investigator and the focus and research questions were the same in this study as they were in the original research, which decreased the above stated weaknesses.

The cross-sectional design has inherent limitations because it can capture only a snapshot of the population. The design does not adequately address social changes or specific current events, such as economic booms or downturns. For example, in 2000, were there massive layoffs within one or more factories or corporations in Tarrant County? If so, would this
economic occurrence significantly affect the issues of access, utilization, and health status of low-income, white, working-age adults? In longitudinal studies, this type of economic factor can be controlled for and monitored over a period of years or decades.

Another related issue to cross-sectional designs is external validity, which refers to the extent one can generalize the findings of the study to settings and populations beyond the study conditions (Rubin & Babbie, 2001). In regard to the external validity of the original study, the results of the study were not intended to be extrapolated to the entire U.S. population. Instead, it is a targeted sample of individuals within a safety net setting comprised of low-income, white, working-age adults within the county of Tarrant in Texas. Therefore, the results should only be cautiously applied to similar safety net populations throughout the U.S. population due to the varying demographics and programmatic issues within each state. For example, the circumstances of low-income, working-age adults who reside in Texas are potentially different than those of individuals with the same characteristics in safety net settings in other states. Some states utilize matching funds from federal waivers to provide health-care coverage for adults who earn up to 185 percent of the poverty level. Funds from the State Children’s Health Insurance Program (SCHIP) are being used to expand coverage to parents in some states, but not in Texas. Since Tarrant is the third largest county in Texas and the 26th largest in the United States, the results may not reflect the experiences of those living in small counties in rural areas within and outside of Texas.

A second issue regarding this study’s external validity concerns procedures and types of health care systems. Low-income, Tarrant county residents are offered health care access via the county-supported JPS Hospital and JPS Connections, which is based on a managed-care model. Other states do not have the exact same systems for addressing the access and utilization issues
of low-income, working-age adults. Therefore, it is difficult to infer that other urban counties of similar size would have results similar to those of this study, due to the wide range of procedures and types of health care systems throughout the United States.

This study examined white males. The interviewer provided the following options to the respondents in regard to ethnicity: White, African American, Asian, Pacific Islander, Native American, Mexican American, and Mexican. Race and ethnic identification was identified as Anglo, African American, Hispanic American, Hispanic Immigrant, Asian, Pacific Islander, Native American, Other Hispanic American, and Other Hispanic Immigrant. The categories for race and ethnicity did not match those of the Census 2000.

The difficulty of defining race and ethnicity is fully apparent in the controversy regarding the changes in the procedures for selecting race and ethnicity in the 2000 U.S. Census. The new standards reflect a change in data collection policy, making it possible for federal agencies to collect information that reflects our nation's increasing diverse population, which stems from growth in interracial marriages and immigration. Under the new policy, agencies now must offer respondents the option of selecting one or more of the following five racial categories included in the updated standards: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Pacific Islander, and White. In addition, the category Some Other Race, was added to capture such responses as Mulatto, Creole, and Mestizo. The category also has a write-in area. The original study included the five racial categories and allowed respondents to select one or more of the categories. Respondents were not offered a Some Other Race option nor provided the opportunity to verbally respond with a “write-in” option. With respect to ethnicity, the standards provide for the collection of data on whether a person is of "Hispanic or Latino" culture or origin ("Draft provisional guidance on the implementation of the 1997 standards for
the collection of federal data on race and ethnicity", 1999). In keeping with the new standards pertaining to ethnicity, the original study asked whether the respondent was Hispanic or Latino or not Hispanic or Latino. In regard to Hispanics or Latinos, Hispanics are asked to indicate their origin in the question on Hispanic origin, not in the question on race, because in the federal statistical system ethnic origin is considered to be a separate concept from race (Yax, 2000).

Tarrant County has a large Hispanic population and the researchers determined the need to distinguish the country of origin. The original study provided “Mexican American” and “Mexican” as choices for describing ethnicity. The Hispanic researchers suggested these options due to the cultural differences represented by Hispanic and Latino ethnicities. As with any study that asks respondents to identify their race and ethnicity, the results can be considered arbitrary based upon the self-reporting mechanism utilized in the phone interviews. In light of the above explanation of the difficulties associated with the identification of race, the validity of the collected data involving race and ethnicity within the original study is sound.

Population and Sample

Utilizing secondary data collected from the study, Uninsured Adult Working-Age Population in Tarrant County: Access, Cost of Care, and Health (S. B. Eve et al., 2000), the present study examined white, low-income males ages 18-60 years old. The sampling frame consisted of 10,000 low-income patients within the JPS Health Network during the months of July and August 2000. The sampling frame was provided by the payment office of the JPS Health Network. Using the CATI system, a random sample was selected from the sampling frame, which provided 2,034 cases.

During fall 2000, a letter was mailed to the potential respondents informing them they had been selected randomly from the patient population within the JPS Health Network. They
were informed of the purpose of the study and the sponsors. They were assured that their responses to the questionnaire were voluntary and confidential, and that their right to health care services would not be affected by their participation, one way or the other. The study protocol for the use of human subjects was approved by the Institutional Review Board at the University of North Texas at Denton and the UNT Health Science Center (UNTHSC) in Fort Worth as well as the Human Subjects Committee at JPS Health Network. In the letter, the potential subjects were given the names and phone numbers of three co-principal investigators at UNT, UNTHSC, and JPS Health Network, as well as the names of contacts in the Institutional Review Board Human Subjects Office to contact if they had any questions or did not want to be interviewed. When potential respondent were contacted, they were given the required human subjects assurances over the phone and respondents could choose to terminate the interview or give permission to go forward.

The respondents were contacted by phone by trained personnel at the Survey Research Center of the University of North Texas. Each selected respondent was phoned, and if a contact was not made the CATI system selected a different time and/or day to contact him or her during the same week. Upon the fifth unsuccessful contact, the respondent was dropped from the sample. The researchers set a minimum of 2000 completed surveys, and 2,034 were actually completed by the Survey Research Center. The white male sample consisted of 253 cases.

When selecting the sample, individuals were eliminated if they were covered by Medicare. The rational for eliminating these individuals was that most likely they were permanently disabled. This assumption is based upon knowledge that in 2003, there were 5 million people under 65 who received benefits because they had a disability. “They qualify because they receive disability benefits through the Social Security system. For the most part,
these individuals have a mental or physical condition that has left them unable to earn income for at least a year” ("Covering health issues 2003: A sourcebook for journalists", 2003). These cases were excluded due to the possibility they had been unable to earn an income for at least a year.

The study investigated employment, and these individuals, who are possibly permanently disabled, would have skewed the results involving employment as an indicator. The same effect would have surfaced in regards to health status. Therefore, a decision was made to exclude these cases, and, as a result, 243 cases remained in the study.

**Strengths and Limitations of the Sample Design**

An issue associated with the data sample design was the inherent weakness of telephone interviews, especially since the low-income population is less likely to have a telephone within their home than the general population. Within the sample, all of the 10,000 patients had a phone listing, although the phone number may have been a work, neighbors’, friends’, or relatives’ phone. Therefore, it may have been more difficult to reach individuals if a home phone was not provided.

Second, selection bias may have been introduced due to the inability to contact potential respondents of the prospective sample. Each patient was contacted five times over various days and times in order to increase the probability of reaching the subject. The sampling frame consisted of low-income persons who may work 10-15 hours per day and thus would have been unavailable during the times the Survey Research Center was making calls. In addition, low-income workers are more likely to work the night shift, and therefore they may turn off their phone ringer during the day while sleeping. Therefore, there is built-in selection bias partially due to the sample’s demographics.
Although the sample design had weaknesses, its overall strength was its use of probability sampling. A random sample of the 10,000 cases was selected using the CATI system. Using a random sample does not mean the sample will perfectly represent the population, but it will be close to the population most of the time. Therefore, the 2,034 cases most likely represent the population of low-income patients within this public hospital system.

A second strength is the size of the sampling frame; the researchers had access to 10,000 patient records. It is important to have a large number of cases for both descriptive and explanatory analysis, especially where several variables are to be analyzed simultaneously. Neuman (2003) recommended, “for moderately large populations (10,000), a smaller sampling ratio (about 10 percent) is needed to be equally accurate, or a sample size of around 1,000” (p. 156). The sampling size of this study exceeded the recommended percentage.

Statistical Analysis

Levels of Measurement

The dependent variables investigated in this study were (a) unmet health care needs; (b) unmet need for prescription medicine; (c) unmet needs for dental care; and (e) use of emergency departments and hospitals. Within the original survey, these variables were measured primarily at the nominal level. For example, “unmet health care needs” was measured at the nominal level using the question, “Have you had a problem getting needed health care in the past 12 months?” In reference to “unmet need for prescription medicine,” the question was asked, “Have you wanted a prescription medicine but you couldn’t get it?” The original question pertaining to emergency room visits allowed respondents to reply with a specific number of times seen by a doctor in an emergency room. The question asked, “How many times have you been seen a
doctor in an emergency room in the past 12 months?” The question was recoded to indicate “no visits” and “one or more visits.”

The independent variables for this study include: (a) age, (b) marital status, (c) coverage through private insurance through work employment, (d) employment status, (e) usual source of care, (f) competing needs (g) experiences with paperwork, and (h) perceived health status. Respondents provided a specific age (nominal level) but “age” was recoded as dichotomous variables: “18-39, No = 0” and “40-60, Yes = 1.” Marital status was recoded as “unmarried = 0” and “married =1”. Coverage through private insurance through work employment was recoded as “No = 0” and “Yes = 1”. Employment status was recoded as “no” hours at work per week and “1 or more” hours at work per week: “No hours = 0” and “1 or more = 1.” Having a usual source of care was recoded as “No = 0” and “Yes = 1”. Forwent care for food, clothing, or housing was recoded as “No = 0” and “Yes = 1”. Experience with paperwork was recoded as “No = 0” and “Yes = 1”. The respondents’ perceived health status was measured at the ordinal level, with response choices “excellent,” “very good,” “good,” “fair,” and “poor.” This question was recoded as “poor to fair,” and “good to excellent,” health (poor to fair = 0, good to excellent = 1). For labeling purposes, “poor to fair” is referred to as “poor” and “good to excellent” as “good.

Dependent Variables and Legitimation of Statistical Choice

Both the dependent and independent variables were measured at the nominal level. Since the variables were not numeric, the variables were coded as dichotomous dummy variables. Therefore, the analysis called for using frequencies, percentages, binary logistic regression, and significance levels based on chi-square. For the nominal data, frequencies and percentages were reported instead of means and standard deviations. Frequencies and percentages were calculated to provide an overview of the data, as well for use in the binary logistic regression calculations.
Binary logistic regression is a common statistical analysis used within health care research (Chakraborty et al., 2002; Nickel et al., 1998; Snowden, 2000; Yu et al., 2001).

During the last decade, in many fields, the logistic regression model has become the standard method of analysis to describe the relationship between a dependent variable and one or more independent variables (Hosmer, 2000). Kleinbaum (1994) stated, “the logistic model is popular because the logistic function, on which the model is based, provides estimates that must lie in the range between zero and one” (p. 7). Thus, the model provides simple estimates, which is not true for other possible models. Hosmer & Lemeshow (2000) described the equation by which the estimates range between zero and one.

We may express the value of the outcome variable given $x$ as $y = \pi(x) + \varepsilon$. Here the quantity $\varepsilon$ may assume one or two possible values. If $y = 1$ then $\varepsilon = 1 - \pi(x)$ with probability $x(\pi)$, and if $y = 0$ then $\varepsilon = -\pi(x)$ with probability $1 - \pi(x)$. Thus, $\varepsilon$ has a mean with distribution of mean 0 and variance equal to $\pi(x)[1 - \pi(x)]$. (p. 7)

In regard to the significance level, the chi-square test was considered significant at alpha level $p \leq 0.05$.

Description of Logistic Regression

Logistic regression requires binary dependent variables or categorical variables with two categories. “Like dummy variables, these are coded 0/1 and indicate if a condition is or is not present, or if an event did no did not occur” (Sweet & Grace-Martin, 2003). In contrast, in a linear regression model, the dependent variable is measured on an interval or ratio scale. Menard (2002) posited that there are three key aspects to the evaluation of both the logistic and linear regression models.

First, how well does the overall model work? Can we be confident that there is relationship between all of the independent variables, taken together, and the dependent variable, above and beyond what we might expect as a coincidence, attributable to random variation in the sample we analyze? If there is a relationship, how strong is it? Second, if the overall model works well, how important is each of the independent variables? Is the relationship between any of the variables attributable to random sample
variation? If not, how much does each independent variable contribute to our ability to predict the dependent variable? Which variables are stronger or weaker, better or worse predictors of the dependent variable? Third, and finally, does the form of the model appear to be correct? Do the assumptions of the model appear to be satisfied? (p. 17)

The logistic regression model is highly effective at estimating the probability that an event will occur. For example, this study examined the probability that a patient within the JPS Health Network will have unmet health care needs. Therefore, independent variables are introduced into the analysis to determine the effect on the probability of occurrence.

This model is used when the dependent variable is dichotomous, binary, or categorical. Within the field of social sciences, binary data is ubiquitous. Pampel (2000) described how the logistic regression model can be applied to a plethora of social phenomena.

Many social phenomena are discrete or qualitative rather than continuous or quantitative in nature—an event occurs or it does not occur, a person makes one choice but not the other, an individual or group passes from one state to another. A person can have a child, die, move (either within or across national borders), marry, divorce, enter or exit the labor force, receive welfare benefits, have their income fall below the poverty level, vote for one candidate, favor or oppose an issue, commit a crime, be arrested, quit school, enter college, join an organization, get sick, belong to a religion, or act in myriad ways that either involve a characteristic, event, or choice. Likewise, large social units—groups, organization, and nations—can emerge, break up, go bankrupt, face rebellion, join larger groups, or pass from one type of discrete state to another. (p. 1)

The data from the original survey is largely binary and categorical which fits the binary logistic regression model. Binary data were coded 0/1, as a dummy variable, and indicated whether a condition was or was not present, or if an event did or did not occur. For example, “unmet need for prescription medicine” was coded as “0” to denote an “unmet” need is present and “1” for a “met” need for prescription medicine is present.

Logistic regressions predict likelihoods, measured by probabilities, odds, or log-odds (Sweet & Grace-Martin, 2003). The log-odds is another term for logistic regression coefficients, and these perform the same functions as regression coefficients in linear regressions. The log-odds is the numeric value denoted by \( B \) within a logistic regression output box. The numeric
value represents the influence of a one-unit change in the independent variable on the log-odds of the dependent variable (Sweet & Grace-Martin, 2003). According to Whitehead (2004):

The estimated coefficients must be interpreted with care. Instead of the slope coefficients \( B \) being the rate of change in \( Y \) (the dependent variables) as \( X \) changes (as in the LP model or OLS regression), now the slope coefficient is interpreted as the rate of change in the "log odds" as \( X \) changes. (Sect.4: An introduction to logistic regression: Interpreting coefficients)

It is difficult to interpret the strength of the relationship from the log-odds, and therefore the odds ratio was used instead.

The odds ratio is a ratio of the odds at two values of the independent variable that are one unit apart. It indicates how many times higher the odds of occurrence are for each one-unit increase (Sweet & Grace-Martin, 2003). The Simple Interactive Statistical Analysis web site provided a simplistic explanation of odds ratio.

The odds-ratio is the chance of doing, having, intending, relative to chance of not doing, not having or not intending. Thus, if in place A 80% are purple and 20% pink then the odds of purple over pink equals four, there are four (4.0) times as many purples than pinks. If in place B there are 60% purples against 40% pinks then in place B the odds equals 1.5, one-and-a-half more purples against pinks. The odds-ratio of A over B equals 2.67 (4.0/1.5), there is a 2.67 higher number of purples over pinks in A compared with B. (Sect.: Explanation)

The odds ratio value is the numeric value denoted as \( \exp(B) \) within a logistic regression output box. The numeric value indicates that for each one-unit increase of the independent variable, it changes the odds of the dependent variable, increasing or decreasing by the amount indicated by the numeric value.

\( \exp B \) is the effect of the independent variable on the "odds ratio" [the odds ratio is the probability of the event divided by the probability of the nonevent]. For example, if \( \exp B_3 = 2 \), then a one unit change in \( X_3 \) would make the event twice as likely (.67/.33) to occur. Odds ratios equal to 1 mean that there is a 50/50 chance that the event will occur with a small change in the independent variable. Negative coefficients lead to odds ratios less than one: if \( \exp B_2 = .67 \), then a one unit change in \( X_2 \) leads to the event being less likely (.40/.60) to occur. (Whitehead)
Linear regression provides information on goodness of fit and the degree to which the model can account for the variance in the dependent variable as indicated by R-Square (Sweet & Grace-Martin, 2003). Logistic regression does not have an equivalent to R-Square. “If the predicted values with the variable in the model are better, or more accurate in some sense, than when the variable is not in the model, then we feel that the variable in question is ‘significant’” (Hosmer, 2000, p. 11). The likelihood ratio test is one method of evaluating the statistical significance of the contribution of an independent variable to the explanation of a dependent variable (Menard, 2002). Output from statistical analysis software provides a -2 Log Likelihood value. This value can be interpreted in a similar fashion to the $\chi^2$ statistic (McCullagh & Nelder, 1989). “The log likelihood value reflects the likelihood that the data would be observed given the parameter estimates. The larger the value (i.e., the closer the negative value to zero), the better the parameters do in producing the observed data” (Pampel, 2000, p. 45).

**Strengths and Weaknesses of the Statistical Design**

The statistical design has numerous strengths because a variety of statistics was used. Frequencies and percentages are basic to the design and offer descriptive analyses. Frequency distribution tables organize and summarize the data in a systematic fashion. Proportions and percentages are two means of standardizing the raw frequencies. Utilizing proportions and percentages makes it possible to display and describe data in a clear and concise format. Percentage distributions show the percentage of observations that fall into each category of the variable; these are important because they provide visual comparisons between groups.

Typically, chi-square is used to determine whether the results from the sample can be generalized to the population. “The chi-square test is an inferential statistics technique designed to test for significant relationships between two variables organized in a bivariate table”
(Frankfort-Nachmias, 1997). This test of statistical significance indicates the level of confidence with which one can generalize to the larger population from the sample population. The chi-square statistic is important because it is used to determine whether the null hypothesis is accepted or rejected. When the observed relationship is determined not to be caused by sampling error, then the null hypothesis is rejected and it is concluded that there is a statistically significant relationship between the variables.

Menard (2002) indicated the ease of use, flexibility, broad applicability, and current popularity as benefits of logistic regression. He emphasized logistic regression as being “especially appropriate for the analysis of dichotomous variables and unordered nominal polytomous dependent variables” (p. 101). This study incorporated dichotomous variables at the nominal level and benefited from the plethora of other studies within the health care field that have utilized logistic regression. Sweet & Grace-Martin (2003) stated, logistic regressions offer the same advantages as linear regression, including the ability to construct multivariate models and include control variables. Logistic regression opens the possibility for multivariate analysis for data that are incompatible with linear regression. In addition, logistic regressions offer a new way of interpreting relationships by examining the relationships between a set of conditions and the probability of an event occurring. (p. 158)

As with all statistical designs, chi-square and logistic regression have their own unique weaknesses. In regard to chi-square, the test of significance only provides evidence of whether a given association is not due to sampling error. The test does not test for substantive significance, meaning that it does not indicate how much the variables are related. Therefore, a large sample might test significant, while a smaller sample from the same population might indicate that the variables are not significant. Therefore, one must caution that results can be “statistically significant but theoretically meaningless or trivial. For example, two variables can have
statistically significant association due to coincidence, with not logical connection between them” (Neuman, 2003).

Multicollinearity, multiple testing, and influential observations are statistical issues involved with logistic regression (Kleinbaum, 1994). First, when multicollinearity occurs, the “estimated regression coefficients of the fitted model can be highly unreliable” (p. 168). Multicollinearity is easy to detect using the tolerance statistic, but difficult to remedy. Second, multiple testing can occur due to the “many tests of significance typically carried out when selecting or eliminating variables in one’s model” (p. 168). The problem with doing several tests on the same data set is that the more tests one does, the more likely one can obtain statistically significant results even if there are not any real associations in the data. Kleinbaum stated that there are no foolproof methods for avoiding the problem of multiple testing. A Hosmer-Lemeshow test for multicollinearity was conducted in each statistical analysis within this study. Last, influential observations refer to possible outliers in one or more of the independent variables that may affect the results. Dropping outliers from the data set is one means of adjusting the model in order to avoid skewed data. Due to the categorical nature of the data, it was unnecessary to drop outliers from the data set.

Operational Measures of Variables

The survey questions were used as the operational measures of the variables within this study. Each of the variables will be discussed in regard to operationalization and frequencies. The primary statistical analysis was binary logistic regression. Therefore, two of the five dependent variables were re-categorized and re-coded in order to create dichotomous variables. The variables that were re-coded are discussed in this section. The Statistical Package for Social Sciences (SPSS) version 14.0 was used for recoding and statistical analyses.
Original Coding of Dependent Variables

The five dependent variables in this study were unmet health care needs; unmet need for prescription medicine; unmet need for dental care; and utilization of emergency departments and hospitals. The dependent variable, unmet health care needs, was operationalized using the following questions: “In the past 12 months, have you had a serious problem getting health care that you needed for yourself?” Responses were recoded as “No = 0,” and “Yes = 1”. The second dependent variable, unmet need for prescription medicine, was operationalized by the following question: During the past 12 months, was there a time when you wanted a prescription medicine but you could not get it at that time?” Responses were recoded as “No = 0,” and “Yes = 1”. The third dependent variable, unmet need for dental care, was operationalized by the following question; “During the last 12 months, was there a time when you wanted dental care but you could not get care?” Responses were recoded as “No = 0,” and “Yes = 1”. The fourth dependent variable referred to the utilization of emergency departments. It was operationalized by the following question, “In the past 12 months, about how many times have you been seen by doctor in emergency room?” This was an open-ended question, allowing for a range of responses. This dependent variable was chosen to determine the utilization of the emergency department by low-income, white, working-age males. The question was recoded as a dichotomous variable indicating “no visits = 0” and “one or more visits = 1.” The fifth dependent variable referred to the utilization of hospitals. It was operationalized by the following question, “In the past 6 months, have you been a patient in hospital overnight or longer?” Responses were recoded as “No = 0,” and “Yes = 1”. All of the dependent variables were analyzed using frequencies, cross tabulations, and binary logistic regression.

Frequencies of the Dependent Variables
As noted earlier, there were 243 cases reflecting low-income, white working-age males. Table 3.1 summarizes the frequencies for each dependent variable. The dependent variable, unmet health care needs, was operationalized using the following question: “problem getting needed health care past 12 months.” In regard to a problem getting needed health care, approximately three-quarters (77.8%) of the respondents replied “no” and 22.2% replied “yes.”

The second dependent variable, unmet need for prescription medicine, was operationalized by the following question: “During the past 12 months, was there a time when you wanted a prescription medicine but could not get it at that time?” Of the 243 cases, 23.9% of the respondents reported wanting a prescription but could not obtain it. Three-fourths (76.1%) indicated a response of “no.” The third dependent variable was measured using the question, “During the last 12 months, was there a time when you wanted dental care but you could not get care?” Of the 243 respondents, 36.2% responded with “Yes,” while 63.8% indicated “no.”

The fourth and fifth dependent variables pertain to access of care to emergency departments and hospitals. The fourth dependent variable refers to the utilization of emergency departments. This was operationalized by the following open-ended question, “In the past 12 months, about how many times have you been seen by doctor in an emergency room.” This variable was recoded as two separate binary variables. The first variable was represented by “Not seen by a doctor in emergency room in past 12 months,” and “Seen by a doctor one or more times in emergency room in the past 12 months.” There were 40.3% of the respondents who reported not seen by a doctor in the emergency room, while 59.7% reported one or more visits.

The fifth dependent variable related to hospital utilization, which was operationalized by the following question: “In the last 6 months, have you been a patient in the hospital overnight or
longer? Only 22.6% of the 243 cases responded “yes” to this question, while 77.4% indicated they had not been in a hospital overnight.
Table 3.1

Frequencies of Dependent Variables (N=243)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response</th>
<th>%</th>
<th>Frequency</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem getting needed health care in past 12 months</td>
<td>No</td>
<td>77.8</td>
<td>189</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>22.2</td>
<td>195</td>
<td></td>
</tr>
<tr>
<td>Wanted prescription medicine but could not get it</td>
<td>No</td>
<td>76.1</td>
<td>185</td>
<td>243</td>
</tr>
<tr>
<td>past 12 months</td>
<td>Yes</td>
<td>23.9</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Wanted dental care but could not get it past 12 months</td>
<td>No</td>
<td>63.8</td>
<td>155</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>36.2</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Seen a doctor in the emergency room in past 12 months</td>
<td>No visits</td>
<td>40.3</td>
<td>98</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>One or more visits</td>
<td>59.7</td>
<td>145</td>
<td></td>
</tr>
<tr>
<td>Been a patient in hospital in past six months</td>
<td>No</td>
<td>77.4</td>
<td>188</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>22.6</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>

No = 0, Yes = 1
Strengths and Limitations of the Dependent Variables

Although this study uses a limited adaptation of the behavioral model for vulnerable populations, a strength concerning the operational measures of the dependent variables relates to the scope of the variables. In particular, the issues of unmet health care needs, access to and utilization of health care services were operationalized by more than one dependent variable. The first dependent variable addresses the issue of unmet health care needs in a general scope while the second and third dependent variables (prescription medicine and dental care) focus on specific issues. The issues of access and utilization are addressed within the fourth and fifth dependent variables (seen by a doctor in an emergency room and been a patient in hospital).

One apparent weakness of the dependent variables was the question regarding the number of visits to a doctor in an emergency room. The original question was an open-ended question and the respondents provided a specific number of visits. Therefore, the variable was recoded as “no visits” and “one or more visits.” “One or more visits” was arbitrarily chosen as an indicator of utilization of the emergency room. However, it cannot be assumed that one or more visits indicate the misuse of an emergency room. It is common for uninsured persons to utilize the emergency room for health care services that would normally be treated by primary care physicians. In addition, there are specific cohorts who may also legitimately utilize the emergency room more often than most. For example, illicit drug users were almost twice as likely [odds ratio (OR) = 1.85] compared with nonusers, to report ER utilization (Cherpitel, 2003). In addition, respiratory patients often utilize the emergency room for legitimate reasons, which may explain why nearly 20% of the respondents reported four or more visits. For example, respiratory tract infections and asthma are some of the most common illnesses that lead to emergency room visits. Nearly two million asthma patients visit emergency rooms per year.
(Jarahzadeh & Sutjita, 2003; Krisberg, 2004). Therefore, it is possible that some of the 243 white males were illicit drug users or suffered from chronic respiratory problems and utilized the emergency room for legitimate reasons.

Potentially, an additional weakness pertains to the lack of consistency in the use of “in the past 12 months” among all of the dependent variables. All of the dependent variables except, “been in a hospital overnight or longer in the past 6 months” utilized “in the past 12 months” to specify the length of time. One could argue that for consistency purposes, using “12 months” for all of the questions would have been more valid for comparisons. A rationale for using “in the past 6 months” was provided by the principal investigator as being consistent with the NHIS survey question pertaining to hospital stays. In light of this study, the use of “in the past 6 months” was not a weakness as it did not affect the comparisons of the dependent variables.

*Operational Measures of the Independent Variables*

The independent variables for this study include: (a) age, (b) marital status, (c) private insurance through work, (d) employment status (e) a usual source of care, (f) forwent care, (g) experiences with paperwork, and (h) perceived health status. All questions with a “Yes” or “No” response were recoded as “No = 0” and “Yes = 1.” Respondents provided a specific age and “age” was recoded as variables; “18-39 = 0” and “40-60 = 1.” Marital status was operationalized with the question, “Are you currently married and living with a spouse.” Responses were recoded as “Unmarried = 0” and “Married = 1.” The number of hours of work per week was operationalized as an open-ended question: “How many hours a week do you work at all paying jobs?” This question was recoded as follows: “0 hours/week = 0” and “1 or more hours/week = 1.”
In regard to health care coverage, a question concerning insurance was included that asked, “Are you currently covered through private insurance through your work?” Responses were “No = 0” and “Yes = 1.” The variable “usual source of care” was operationalized using the question: “Is there a person or place, like a health clinic or doctor’s office that you usually go to when you are sick or need advice about your health care?” Responses were coded as “No = 0” and “Yes = 1.” “Competing needs” was operationalized using the following questions, “During the last 12 months, did you not receive doctor’s care or prescription medicines because you needed the money to buy food, clothing or pay for housing?” Responses were coded as “No = 0” and “Yes = 1.” The next independent variable concerned Health System Experience and the ability to negotiate the system. This variable was operationalized using the following question: “Paperwork means things like getting your ID card, having your records changed, processing forms, or other paperwork related to getting care. In the past 12 months did you have any experiences with paperwork related to getting care? In the last 12 months, did you have any experiences with paperwork for your health care?” Responses were coded as “No = 0” and “Yes = 1.” The last independent variable pertained to perceived health status. This variable was operationalized using the question, “In general, how would you rate your overall health now”? Responses included: “excellent,” “very good,” “good,” “fair,” and “poor.” The question was recoded as a dichotomous variable with “poor to fair” as one variable and “good to excellent” as the other. The variables were recoded as “poor to fair = 0” and “good to excellent = 1.” For descriptive purposes the recoded variables are referred to as “poor” and “good” overall health.

Frequencies of the Independent Variables

The independent variables utilized within this study included age, marital status, private insurance through work, employment status, a usual source of care, forwent care, experiences
with paperwork, and perceived health status. The frequencies of the independent variables are reported in Table 3.2. Age was recoded as “18-39” and “40-60” years old. There were 243 cases. The percentages associated with age were as follows: 18-39 years old (46.5%) and 40-60 years old (53.5%). Of the 243 reported cases, less than half (38.7%) reported being married and currently living with their spouse, compared to 61.3% who responded with “no.” A small percentage (18.2%) reported having private insurance through work. Therefore, 44 of the 243 respondents were insured through work while 199 (81.9%) did not have private insurance through work. The number of hours of work per week at all paying jobs was recoded as “no hours per week” and “one or more hours per week.” Of the 243 cases, over one-quarter of the respondents indicated “no hours per week” (27.6%) while 72.4% reported “one or more hours per week. Nearly three-fourths (74.1%) indicated a usual source of care while 25.9% indicated no usual source of care.

In regard to competing needs, nearly one-fourth (22.6%) of the respondents forewent care or medicine for food, clothing, or housing in the past 12 months, while 77.4% indicated not forgoing care. The next independent variable concerned the “ability to negotiate the system” Of the 243 cases, only 35.4% indicated experiences with paperwork during the past 12 months, while 64.6% indicated no experience with paperwork. The last independent variable involved the respondents perceived health status. Of the 243 cases, 30.9% indicated “poor to fair” health while 69.1% reported “good to excellent” health.
Table 3.2

*Frequencies of Independent Variables (N=243)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response</th>
<th>%</th>
<th>Frequency</th>
<th>N</th>
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<tbody>
<tr>
<td>Age categories</td>
<td>18-39</td>
<td>46.5</td>
<td>113</td>
<td>243</td>
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<tr>
<td></td>
<td>40-60</td>
<td>53.5</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Currently married and living with spouse</td>
<td>No</td>
<td>61.3</td>
<td>149</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>38.7</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Private insurance through work</td>
<td>No</td>
<td>81.9</td>
<td>199</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>18.1</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Hours a week at work at all paying jobs</td>
<td>No hours</td>
<td>27.6</td>
<td>67</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>1 or more</td>
<td>72.4</td>
<td>176</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>No</td>
<td>25.9</td>
<td>63</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>74.1</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Forwent care for food, clothing or housing</td>
<td>No</td>
<td>77.4</td>
<td>188</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>22.6</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Experience handling paperwork</td>
<td>No</td>
<td>64.6</td>
<td>157</td>
<td>243</td>
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<tr>
<td></td>
<td>Yes</td>
<td>35.4</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Perceived health status</td>
<td>poor to fair</td>
<td>30.9</td>
<td>75</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>good to excellent</td>
<td>69.1</td>
<td>168</td>
<td></td>
</tr>
</tbody>
</table>
Strengths and Limitations of Independent Variables

A strength of the independent variables pertains to having one or more variables within each domain of the behavioral model for vulnerable populations. For example, there are two independent variables within the traditional Predisposing and vulnerable Enabling domains. The traditional Enabling domain has three variables. In addition, all of the questions pertaining to competing needs and the ability to negotiate the system had a consistent time delimiter (“in the past 12 months”) included within the question.

A weakness of the operationalization of the independent variables is the use of double-barrel questions. The question pertaining to competing needs, “forewent care or medicine for food, clothing, or housing in past 12 months” is an example of a double-barrel question. The question asks about care or medicine and food, clothing, or housing. Previous questions separated care and medicine. Combining food, clothing, and housing identifies basic needs, but it does provide a means to differentiate between clothing and housing. Foregoing housing is much more serious than foregoing new clothes for work.

Uniqueness of the Study

The study provides a unique perspective because it focused specifically on low-income, white, working-age males in regard to issues of access and utilization of health care services. In general, there is a lack of research in the area of health care focusing specifically on low-income, white males. The majority of literature on vulnerable populations has focused upon minorities (Andersen et al., 1981; Kiefe et al., 2000; Lewin-Epstein, 1991; Phillips et al., 2000). Studies tend to be concentrated on women, children, and minorities. In fact, in searching databases for this study, there was a void of studies on the topic of low-income, white males. Many studies
have used this population as a baseline against which to compare minorities, but not as the primary focus.

A second unique characteristic is the sample population. It is unusual to gain access to the records of 10,000 patients within a county hospital that serves as a safety net for the large metropolitan county. Often data are gathered from large data sets, such as the General Social Survey (GSS) or those of the National Health Institute (NHI), which do not allow for such a targeted sample population. In addition to the 2,035 phone surveys, the researchers followed-up with in-depth personal interviews of patients and conducted a focus group. This is mentioned to emphasize that the data from this study could be triangulated with the results of the interviews and focus groups to strengthen its findings.

A third unique factor is that the original research design involved university researchers, physicians, administrators, and patients. The project was a multidisciplinary collaborative effort. The principal investigators included researchers from within sociology, economics, and public health, as well as a physician from the Department of Family and Community Medicine at the John Peter Smith Hospital. The composition of the research team provided a multidisciplinary approach and the unique benefit of having one investigator who worked within the system. In addition, the principal investigator is a longtime resident of Tarrant County, who is knowledgeable about the health care system within the area. All of these factors contributed to a greater validity and reliability of the study.
CHAPTER 4
RESULTS AND DATA ANALYSIS

This chapter provides a detailed explanation of the results and data analysis for this study. The specific objectives of this study are to: (a) examine access to health care services and utilization of these services among low income, white, working-age males using data collected from patients at a safety-net county hospital; (b) provide information relevant to public policy that will lead to increased access and utilization among low-income, white, working-age males; (c) reinforce the validity of the behavioral model for vulnerable populations; and (d) add to the body of literature pertaining to access and utilization issues among vulnerable populations. In context of these specific objectives, the results of cross-tabulations and binary logistic regression are presented for the study.

First, the results of cross-tabulations of the dependent and independent variables are discussed. The dependent variables are related to: (a) access to needed health care, (b) access to needed prescription medicine, (c) access to needed dental care, (d) utilization of doctors in an emergency room, and (e) utilization of hospitals overnight. The independent variables for this study include: (a) age, (b) marital status, (c) private insurance through work, (d) employment status, (e) a usual source of care, (f) forwent care, (g) experiences with paperwork, and (h) perceived health status. Second, a discussion follows regarding the results of the odds ratios of binary logistic regression analyses. Third, the results are discussed in context of the adaptation of the behavioral model for vulnerable populations (See Figure 2.6). Fourth, the hypotheses are tested in relation to the results of the statistical analyses. A summary follows highlighting the significant findings of the study in relation to the hypotheses.
Results from Cross-tabulations

Each of the dependent variables is cross-tabulated with independent variables to determine whether an association exists between the variables. Based on the adaptation of the behavioral model for vulnerable populations (See Figure 2.6), eight independent variables are analyzed for each of the five dependent variables. A Chi-square significance test is utilized to determine if the relationship is statistically significant at the 0.05 alpha level. The null hypothesis is rejected if the relationship is statistically significant. Within the adaptation of the behavioral model for vulnerable populations, the characteristics “JPS Connections” and “Transportation” are included. The results of the cross-tabulations indicated that neither of these Enabling domain variables were significant and therefore are not included within the below discussions.

The results of the cross-tabulations of the dependent variable, problem getting needed health care, indicate three of the eight independent variables are statistically significant. Within the Enabling domain, usual source of care ($X^2 = 4.463$, $p \leq .05$), forwent care ($X^2 = 29.693$, $p \leq .001$), and experiences handling paperwork ($X^2 = 8.227$, $p \leq .001$), were significant. The data indicates that 31.7% of those who did not have a usual source of care had difficulty getting health care compared to only 18.9% who had a usual source of care. In regard to forgoing care, 14.4% of those who had trouble getting needed health care did not forgo care while 49.1% reported forgoing care for food, transportation, or housing had trouble accessing health care. Nearly 33% (32.6) who reported handling paperwork had a problem getting needed health care while only 16.6% of those who did not experience handling paperwork had a problem.

Age, marital status, private insurance through work, employment status, and perceived health status were not statistically significant. The data indicate that the younger men, aged 18-
44 years, are more likely than the older men, aged 18-44 years, to have a problem getting needed health care. Approximately one-fourth (25.7%) of the younger men had a problem getting needed health care compared to 19.2% of the older men. There was only a negligible difference between married and unmarried respondents (22.1% and 22.3%). Private insurance through work was nearly significant \( (X^2 = 3.665, \ p = .056) \). Only 11.4% of the respondents who had private insurance through work had a problem getting needed health care compared to 24.6% of those who did not have private insurance through work. The results pertaining to employment status were similar as 21.0% of those employed had a problem getting needed health care as compared to 25.4% of those who were unemployed. In regard to perceived health status, the data indicate that those who reported their health status as good to excellent, are less likely than men reporting poor to fair, to have a problem getting needed health care. Nearly one-third (29.3%) of those who rated themselves as poor to fair had a problem getting needed health care. Only 19% of the respondents who rated themselves as good to excellent had a problem getting needed health care.

In summary, the effects of age, marital status, private insurance through work, employment status and perceived health status were minimal and do not show statistically significant results. The results indicate that respondents who did not have a usual source of care, forwent care, and had experiences handling paperwork were more likely to have had a problem getting needed health care. Overall, the variables within the vulnerable Enabling domain had more significant effects on problems getting needed health care.
Table 4.1

*Bivariate Analyses of Percentage Having a Problem Getting Needed Health Care by Selected Characteristics (N=243)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>% Having a Problem Getting Needed Health Care</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-44 years</td>
<td>25.7</td>
<td>113</td>
</tr>
<tr>
<td>45-60 years</td>
<td>19.2</td>
<td>130</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>22.1</td>
<td>149</td>
</tr>
<tr>
<td>Married</td>
<td>22.3</td>
<td>94</td>
</tr>
<tr>
<td><strong>Enabling Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance through work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>24.6</td>
<td>199</td>
</tr>
<tr>
<td>Yes</td>
<td>11.4</td>
<td>44</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>25.4</td>
<td>67</td>
</tr>
<tr>
<td>Employed</td>
<td>21.0</td>
<td>176</td>
</tr>
<tr>
<td>Usual source of care*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>31.7</td>
<td>63</td>
</tr>
<tr>
<td>Yes</td>
<td>18.9</td>
<td>180</td>
</tr>
<tr>
<td>Forwent care***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14.4</td>
<td>188</td>
</tr>
<tr>
<td>Yes</td>
<td>49.1</td>
<td>55</td>
</tr>
<tr>
<td>Experiences handling paperwork**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>16.6</td>
<td>157</td>
</tr>
<tr>
<td>Yes</td>
<td>32.6</td>
<td>86</td>
</tr>
<tr>
<td><strong>Need Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Health Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>29.3</td>
<td>75</td>
</tr>
<tr>
<td>Good</td>
<td>19.0</td>
<td>168</td>
</tr>
</tbody>
</table>

Note: $\chi^2$ tests (2-tailed) * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$
The results of the cross-tabulations of the dependent variable, wanted but could not get prescription medicine, indicate three of the eight independent variables are statistically significant. Table 4.2 provides the results of the three significant independent variables. Within the Enabling domain, private insurance through work ($\chi^2 = 4.623, \ p \leq .05$) and forwent care ($\chi^2 = 32.583, \ p \leq .001$) were significant. Within the Need domain, perceived health status was significant ($\chi^2 = 18.210, \ p \leq .001$). The data indicates that 11.4% of those had private insurance through work that wanted prescription medicine but could not get it compared to only 26.6% who did not have private insurance through work. In regard to forgoing care, 52.7% of those who forwent care wanted a prescription but could not get while 15.4% reported not forgoing care had a problem getting needed prescription medicine. Of those reporting having poor to fair health, 41.3% could not get a needed prescription compared to 16.1% who reported good to excellent health.

Age, marital status, employment status, usual source of care, and experiences handling paperwork were not statistically significant. The data indicate that the older men, aged 40-60 years, are more likely than the younger men, aged 18-39 years, to have wanted a prescription but could not get it. One-fourth (25.4%) of the older men wanted a prescription but could not get it compared to 22.1% of the younger men. Unmarried men were more likely (25.5%) than married men (21.3%) to want a prescription but could not get it. The unemployed were more likely (26.9%) to want a prescription than the employed (22.7%). In regard to a usual source of care, the data indicate that those who had a usual source of care (25%), were more likely than men without a usual source of care (20.6%) to want a prescription but could not get it. Respondents who had experiences with paperwork (29.1%) were more likely to want a prescription as compared to those who did not have experiences handling paperwork (21%).
In summary, the effects of age, marital status, employment status, usual source of care, and experiences handling paperwork were minimal and do not show statistically significant results. The results indicate that respondents who did not have a private insurance through work, forwent care, and rated themselves as being in poor to fair health are more likely to have wanted a prescription but could not get it. Overall, the Enabling, competing needs, and Need variables impacted the dependent variable.
Table 4.2

*Bivariate Analyses of Percentage Having a Problem Getting Needed Prescription Medicine by Selected Characteristics (N=243)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>% Wanting a Rx but could not get it</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
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<tr>
<td>18-39 years</td>
<td>22.1</td>
<td>113</td>
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<tr>
<td>45-60 years</td>
<td>25.4</td>
<td>130</td>
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<tr>
<td>Marital status</td>
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<tr>
<td>Not married</td>
<td>25.5</td>
<td>149</td>
</tr>
<tr>
<td>Married</td>
<td>21.3</td>
<td>94</td>
</tr>
<tr>
<td><strong>Enabling Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance through work*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>26.6</td>
<td>199</td>
</tr>
<tr>
<td>Yes</td>
<td>11.4</td>
<td>44</td>
</tr>
<tr>
<td>Employment status</td>
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</tr>
<tr>
<td>Unemployed</td>
<td>26.9</td>
<td>67</td>
</tr>
<tr>
<td>Employed</td>
<td>22.7</td>
<td>176</td>
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<tr>
<td>Usual source of care*</td>
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</tr>
<tr>
<td>No</td>
<td>20.6</td>
<td>63</td>
</tr>
<tr>
<td>Yes</td>
<td>25.0</td>
<td>180</td>
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<tr>
<td>Forwent care***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>15.4</td>
<td>188</td>
</tr>
<tr>
<td>Yes</td>
<td>52.7</td>
<td>55</td>
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<tr>
<td>Experiences handling paperwork**</td>
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<td></td>
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<tr>
<td>No</td>
<td>21.0</td>
<td>157</td>
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<tr>
<td>Yes</td>
<td>29.1</td>
<td>86</td>
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<tr>
<td><strong>Need Variable</strong></td>
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<tr>
<td>Perceived Health Status***</td>
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<tr>
<td>Poor</td>
<td>41.3</td>
<td>75</td>
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<tr>
<td>Good</td>
<td>16.1</td>
<td>168</td>
</tr>
</tbody>
</table>

Note: \(X^2\) tests (2-tailed) * \(p \leq .05\), ** \(p \leq .01\), *** \(p \leq .001\)
Table 4.3 provides the results of the cross-tabulations of the dependent variable, wanted but could not get dental care during the past 12 months. The results of the cross-tabulations of the dependent variable, wanted but could not get dental care, indicate two of the eight independent variables are statistically significant. Within the Enabling domain, private insurance through work ($X^2 = 5.777, p \leq .05$) and forwent care ($X^2 = 14.852, p \leq .001$) were significant.

The data indicates that 26.6% of those who had private insurance through work could not get needed dental care compared to only 39.7% who did not have private insurance through work. In regard to forwent care, 58.2% of those who forwent care had difficulty getting needed dental care while 29.8% reported not forgoing care for food, transportation, or housing.

Age, marital status, employment status, usual source of care, experiences handling paperwork, and perceived health status were not statistically significant. The data indicate that the older men, aged 40-60 years, are more likely than the younger men, aged 18-39 years, to have wanted dental care but could not get it. One-third (33.8%) of the older men wanted dental care but could not get it compared to 38.9% of the younger men. Unmarried men were less likely (34.9%) than married men (38.3%) to want dental care but could not get it. The unemployed were more likely (36.9%) to want a prescription they could not get than the employed (34.3%). In regard to a usual source of care, the data indicate that those who had a usual source of care (38.3%), were more likely than men without a usual source of care (30.2%) to want a prescription but could not get it. Respondents who had experiences with paperwork (43%) were more likely to want a prescription they could not get as compared to those who did not have experiences handling paperwork (32.5%). Of those reporting fair to poor health, 41.3% reported wanting a prescription but could not get it, compared to 16.1% who reported good to excellent health.
In summary, the effects of age, marital status, employment status, usual source of care, experiences handling paperwork, and perceived health status were minimal and do not show statistically significant results. The results indicate that respondents who did not have a private insurance through work and forwent care are more likely to have wanted prescription medicine but could not get it.
Table 4.3

_Bivariate Analyses of Percentage Wanting Dental Care But Could Not Get It by Selected Characteristics (N = 243)_

<table>
<thead>
<tr>
<th>Variables</th>
<th>% Wanting dental care but could not get it</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-39 years</td>
<td>38.9</td>
<td>113</td>
</tr>
<tr>
<td>45-60 years</td>
<td>25.4</td>
<td>130</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>34.9</td>
<td>149</td>
</tr>
<tr>
<td>Married</td>
<td>38.3</td>
<td>94</td>
</tr>
<tr>
<td><strong>Enabling Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance through work*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>26.6</td>
<td>199</td>
</tr>
<tr>
<td>Yes</td>
<td>11.4</td>
<td>44</td>
</tr>
<tr>
<td>Employment status</td>
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<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>34.3</td>
<td>67</td>
</tr>
<tr>
<td>Employed</td>
<td>36.9</td>
<td>167</td>
</tr>
<tr>
<td>Usual source of care</td>
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<td></td>
</tr>
<tr>
<td>No</td>
<td>30.2</td>
<td>63</td>
</tr>
<tr>
<td>Yes</td>
<td>38.3</td>
<td>180</td>
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<tr>
<td>Forwent care***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>29.8</td>
<td>188</td>
</tr>
<tr>
<td>Yes</td>
<td>58.2</td>
<td>55</td>
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<tr>
<td>Experiences handling paperwork</td>
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<td></td>
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<tr>
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<td>32.5</td>
<td>157</td>
</tr>
<tr>
<td>Yes</td>
<td>43.0</td>
<td>86</td>
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<td><strong>Need Variable</strong></td>
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<tr>
<td>Perceived Health Status</td>
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<td></td>
</tr>
<tr>
<td>Poor</td>
<td>42.7</td>
<td>75</td>
</tr>
<tr>
<td>Good</td>
<td>33.3</td>
<td>168</td>
</tr>
</tbody>
</table>

Note: $X^2$ tests (2-tailed) * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$
The dependent variable regarding emergency room utilization is measured by the question, “In the past 12 months, about how many times have you been seen by a doctor in an emergency room?” The question was recoded as “no visits = 0” and “one or more visits = 1.” Table 4.4 provides the results. The results of the cross-tabulations of the dependent variable, had been seen by a doctor in the emergency room, indicate two of the eight independent variables are statistically significant. Within the Enabling domain, age ($X^2 = 3.941, p \leq .05$) is significant. The data indicates that about 54% of those aged 40-60 years of age had been seen by a doctor in an emergency room compared to 66.4% who were 18-39 years of age. Forwent care is significant ($X^2 = 14.852, p \leq .05$). In regard to forwent care, 72.7% of those who forwent care had an emergency visit to the emergency department while 55.9% reported not forgoing care for food, transportation, or housing had a visit.

Marital status, private insurance through work, employment status, a usual source of care, experiences handling paperwork, and perceived health status were not statistically significant. The data indicate that unmarried men (61.7%) are more likely than the unmarried men (53.8%) to have had a visit to a doctor in an emergency room. Over half (56.8%) who had private insurance through work had a visit to a doctor in an emergency room compared to 60.3% who did not have private insurance through work. The unemployed were more likely (62.7%) to have had a visit to the emergency room than the employed (58.5%). In regard to a usual source of care, the data indicate that those who did not have a usual source of care (66.7%), were more likely than men with a usual source of care (52.7%) to visit an emergency room. Respondents who had experiences with paperwork (66.3%) were more likely to visit an emergency room doctor as compared to those who did not have experiences handling paperwork (56.1%). Of
those reporting visiting a doctor in an emergency room, 66.7% self-reported as having poor to fair health compared to 56.5% who reported good to excellent health.

In summary, the effects of marital status, private insurance through work, employment status, usual source of care, experiences handling paperwork, and perceived health status were minimal and do not show statistically significant results. The results indicate that respondents who were 18-39 and forwent care are more likely to have visited a doctor in an emergency room. Overall, one variable within the traditional Enabling domain and the vulnerable Enabling domain pertaining to competing needs was significant.
Table 4.4

_Bivariate Analyses of Percentage of Visit to a Doctor in Emergency Room by Selected Characteristics (N=243)_

<table>
<thead>
<tr>
<th>Variables</th>
<th>% Had a visit to a doctor in emergency room</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-39 years</td>
<td>66.4</td>
<td>113</td>
</tr>
<tr>
<td>40-60 years</td>
<td>53.8</td>
<td>130</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>61.7</td>
<td>149</td>
</tr>
<tr>
<td>Married</td>
<td>56.4</td>
<td>94</td>
</tr>
<tr>
<td><strong>Enabling Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance through work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>60.3</td>
<td>199</td>
</tr>
<tr>
<td>Yes</td>
<td>56.8</td>
<td>44</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>62.7</td>
<td>67</td>
</tr>
<tr>
<td>Employed</td>
<td>58.5</td>
<td>176</td>
</tr>
<tr>
<td>Usual source of care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>66.7</td>
<td>63</td>
</tr>
<tr>
<td>Yes</td>
<td>57.2</td>
<td>180</td>
</tr>
<tr>
<td>Forwent care*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>55.9</td>
<td>188</td>
</tr>
<tr>
<td>Yes</td>
<td>72.7</td>
<td>55</td>
</tr>
<tr>
<td>Experiences handling paperwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>56.1</td>
<td>157</td>
</tr>
<tr>
<td>Yes</td>
<td>66.3</td>
<td>86</td>
</tr>
<tr>
<td><strong>Need Variable</strong></td>
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<td></td>
</tr>
<tr>
<td>Perceived Health Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>66.7</td>
<td>75</td>
</tr>
<tr>
<td>Good</td>
<td>56.5</td>
<td>168</td>
</tr>
</tbody>
</table>

Note: \(X^2\) tests (2-tailed) * \(p \leq .05\), ** \(p \leq .01\), *** \(p \leq .001\)
The dependent variable regarding hospitalization utilization is measured by the question, “In the last 6 months, have you been a patient in a hospital overnight or longer during the past 6 months?” The variable was recoded as “No =0” and “Yes =1.” Table 4.5 provides the results. Age, marital status, employment, a usual source of care, and perceived health status were all significant variables. Within the Predisposing domain, age ($X^2 = 6.948, p \leq .01$) is significant. The data indicates that 15.0% of those aged 18-39 years of age who had been a patient in a hospital overnight compared to 29.2% who were 40-60 years of age. Marital status is significant ($X^2 = 3.902, p \leq .05$). The data indicates that 16.0% of those who were married had been a patient in a hospital overnight compared to 26.8% who were unmarried. Within the traditional Enabling domain, employment status is significant ($X^2 = 5.498, p \leq .05$). The results indicate that 18.8% who were employed had been a patient in a hospital during the past 6 months compared to 32.8% who were unemployed. Within the same domain, a usual source of care is significant ($X^2 = 6.449, p \leq .05$). The results indicate that 26.7% who had a usual source of care been a patient in a hospital compared to 11.1% who did not have a usual source of care. Within the Need domain, perceived health status is significant ($X^2 = 5.435, p \leq .05$). The results indicate that 18.5% who had rated their health as good to excellent had been a patient in a hospital as compared to 32% who rated their health as poor to fair.

Private insurance through work and forwent care are not significant. The results indicate 15.9% who had private insurance through work had been in a hospital overnight compared to 24.1% who did not have private insurance through work. In regard to forwent care, 21.8% of those who forwent care had been in a hospital overnight while 22.9% reported not forgoing care for food, transportation, or housing.

In summary, the effects of private insurance through work and forwent care were
minimal and do not show statistically significant results. The results indicate that respondents who were 40-60 years of age, unmarried, unemployed, had a usual source of care, and rated themselves as having poor to fair health are more likely to have been a patient in a hospital overnight during the past six months. Overall, variables were significant in each of the domains.
In summary, the results of the bivariate analyses indicate a consistent pattern in regard to which independent variables had a significant association with the five dependent variables.
There were six distinct significant independent variables. The two significant variables within the Predisposing domain were age and employment status. Within the Enabling domain forwent care for food, clothing, or housing; experiences with paperwork; a usual source of care; and private insurance through work were significant. The variable pertaining to perceived health status was significant within the Need domain. Forgoing care was significant for four of the five dependent variables. Age was significant for two dependent variables as was a usual source of care and private insurance through work. Experience with paperwork, employment status, and perceived health status were found to be significant. Employment status and perceived health status were significant for the same independent variable.

The dependent variable pertaining to a problem getting needed health care was significant with forgoing care, experiences with paperwork, and a usual source of care. The second dependent variable, a problem getting prescription medicine, was significant with forgoing care and private insurance through work. A problem getting needed dental care was significant for forgoing care and private insurance through work. The dependent variable assessing visits to a doctor in an emergency department was significant with age and forgoing care. The fifth dependent variable, hospital stays overnight, was significant with four independent variables: age, employment status, usual source of care, and perceived health status. Overall, these results indicate that the relationship between the predictor variables and the dependent variables is strong enough to proceed with the multivariate analyses.

Results from Logistic Regressions

This study proposes the following research questions: (a) which measures of Predisposing, Enabling, and Need variables impact unmet health care needs among low-income, white, working-age males? (b) which measures Predisposing, Enabling, and Need variables
impact unmet needs regarding prescription medicine for low-income white working-age males? (c) which measures of access and utilization impact unmet needs for dental care among low-income, white, working-age males? and (d) which factors impact utilization rates of emergency departments and hospitals among low-income, white, working-age males? The following are the results of the logistic regressions for each dependent variable in light of the above research questions.

This section provides the results of the binary logistic regression analysis of the five dependent variables—having a problem getting needed health care, wanted but could not get needed prescription medicine, wanted but could not get dental care, seen a doctor in an emergency room, and been in a hospital overnight—and the eight independent variables within Tables 4.6 to 4.10, respectively. The adapted behavioral model for vulnerable populations guided the analysis. Accordingly, each of the five tables presents the estimates of four models. Model 1 regresses the dependent variable on the independent variables within the Traditional Predisposing domain. Model 2 includes independent variables from both the Traditional Predisposing and Traditional Enabling domains. Model 3 introduces independent variables from the Vulnerable Enabling domain. And, finally, Model 4 estimates the effects of independent variables from all four of the domains (Traditional Predisposing, Traditional Enabling, Vulnerable Enabling, and Need) on the dependent variable. Therefore, the models examine if and how the effects of variables from more distal domains change as variables from other more proximate domains are subsequently introduced. Degrees of freedom (df) for the chi-square values are reported if greater than (1). The alpha level is reported as $p \leq .05$ and the number of cases ($N$) is 243.
Summary of the Results from Logistic Regression Analysis of Problem Getting Needed Health Care

The odds ratios from the binary logistic regressions of the likelihood of having a problem getting needed health care on eight independent variables from the four domains are presented in Table 4.6. Each subsequent model in the table introduces a different variable or set of variables from a more proximate domain, controlling for the effects of a previous or more distal domain or domains. While the model chi-squares for the first two models are not statistically significant (p > .05), the effects of the Traditional Predisposing and Traditional Enabling variables are, in general, in the expected directions. For example, as predicted, the Traditional Predisposing variable age has a negative effect on the likelihood of having a problem getting needed health care (Models 1 and 2). The odds of having such a problem are about 31 percent (-31.3% = 100 * [.687-1]) lower for low income, white, working-age men aged 45-60 years than for those aged 18-44 years, controlling for the effects of another Traditional Predisposing variable marital status (Model 1), and do not change much, controlling for the effects of variables in the other three domains (i.e., Models 1, 2, and 3).

A similar pattern of effects is observed for the Traditional Enabling variables (Table 4.6). Although the effects of these variables are for the most part statistically insignificant across all four models, as predicted, white men who have private insurance, are employed, and have a usual source of medical care ($\chi^2 = 9.906, 5 \text{ df}, p \geq .05$, Model 2) are consistently less likely to report having a problem getting health care when they need it.

In contrast to Models 1 and 2, Models 3 and 4 have statistically significant model chi-squares ($p \leq .05$), which indicate that at least one of the independent variables in each of the models has a statistically significant effect on the likelihood of having a problem getting needed
health care. The two independent variables that have statistically significant effects in both of
the models are from the Vulnerable Enabling domain. For example, as the results for Model 3
show, controlling for the effects of the Traditional Predisposing and Traditional Enabling
variables, white men who found it necessary to forgo health care due to other needs were almost
five (4.973) times as likely as those who did not find it necessary to forgo care due to other
needs, to report having a problem getting the health care that they need ($X^2 = 20.268, 7 df, p \leq .001$). Furthermore, white men with experiences with paperwork were over two (2.253) times as
likely as those with no experiences to report having a problem getting needed health care ($X^2 =
5.436, 7 df, p \leq .05$). Interestingly, the effects of the two Vulnerable Enabling variables stay
the same with the introduction of perceived health status in Model 4. Although the effect of
perceived health status on the likelihood of having a problem getting needed health care is not
statistically significant ($p > .05$), it appears that, as expected, the likelihood tends to be lower for
white men who perceive their health to be “good to excellent.”
Table 4.6

Logistic Regression Analyses of Which Measures of Access and Utilization Impact Unmet Health Care Needs (N=243)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Predisposing Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>0.687</td>
<td>0.681</td>
<td>0.602</td>
<td>0.55</td>
</tr>
<tr>
<td>Married</td>
<td>1.043</td>
<td>1.151</td>
<td>1.057</td>
<td>1.082</td>
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<tr>
<td>Traditional Enabling Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>0.400</td>
<td>0.478</td>
<td>0.535</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>0.752</td>
<td>0.726</td>
<td>0.802</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>0.529</td>
<td>0.571</td>
<td>0.546</td>
<td></td>
</tr>
<tr>
<td>Vulnerable Enabling Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwent care</td>
<td>4.973***</td>
<td>4.950***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with paperwork</td>
<td>2.253*</td>
<td>2.274**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traditional Need Domain Variable</td>
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<td></td>
</tr>
<tr>
<td>Good to excellent health</td>
<td>0.542</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-2 log likelihood                     | 255.975  | 247.531  | 218.504  | 215.840  |
Model chi-square                       | 1.462    | 9.906    | 38.933***| 41.597***|
Model degrees of freedom (df)          | 2        | 5        | 7        | 8        |

* p ≤ .05  ** p ≤ .01  *** p ≤ .001

Summary of the Results from Logistic Regression Analysis of Problem Getting Needed Prescription Medicine

The second dependent variable addresses the research question that asks which measures of Predisposing, Enabling, and Need variables impact unmet prescription medicine needs among low-income, white, working-age males. The dependent variable pertaining to unmet prescription medicine needs was operationalized using the following question: “wanted a prescription medicine but could not get it during the past 12 months.” The odds ratios from the binary logistic
regressions of the likelihood of having a problem getting needed prescription medicine on eight independent variables from the four domains are depicted in Table 4.7. The model chi-squares are not significant \((p \geq .05)\) for Models 1 and 2, but as predicted the Traditional Predisposing variable, married, has a negative effect on the likelihood of having a problem getting a needed prescription medicine (Models 1 and 2). The odds of having a problem getting needed prescription medicine are about 23\% \((-23.4\% = 100 \times [.766-1])\) lower for white men who are married than those who are unmarried. The odds are similar when controlling for the effects of variables within the other three domains (i.e., Models 1, 2, and 3).

Within Model 2, private insurance through work is statistically significant within the Traditional Enabling domain but insignificant across the subsequent models. Controlling for the effects of variables in the other proximate and distal domains, the percentage change in predicted odds for this variable decreases across the models from 64.4\% (Model 2) to 38\% (Model 4). Therefore, the introduction of these domains diminishes the beneficial effects of private insurance upon the problem of getting needed prescription medicine.

The model chi-squares for Models 3 and 4 are highly significant \((p \leq .001)\), which indicate that at least one of the independent variables in each of the models has a statistically significant effect on the likelihood of having a problem getting needed health care. Forwent care is significant within the Vulnerable Enabling domain. Perceived health status is highly significant in Model 4. The results of Model 3 indicate, controlling for the effects of the Traditional Predisposing and Traditional Enabling variables, white men who forwent health care due to other needs were six (6.068) times as likely as those who did not find it necessary to forgo care due to other needs, to report having a problem getting the health care that they need \((X^2 = 26.129, 7 \, df, \, p = \leq .001)\). Furthermore, the odds ratio increases to 6.695 with the introduction of
the Traditional Need domain variable pertaining to perceived health status. Interestingly, the
effects of perceived health status on experiences with paperwork, causes it to be significant as
well as increasing the odds ratio for both forwent care and experiences with paperwork (Table
4.6). The effect of perceived health status (good to excellent health) on the likelihood of having
a problem getting a needed prescription medicine is highly significant ($X^2 = 13.859$, 8 df, $p = \leq
.001$). The odds of having such a problem are about 75 percent ($-74.7 = 100 \times [.253 – 1]$, lower
for white men with “good to excellent” perceived health status than for those who perceived their
health status to be “poor to fair.” In addition, the variables within Model 3 suppressed the only
significant Traditional Enabling variable within Model 2 (private insurance through work).
Table 4.7

Logistic Regression Analyses of Which Measures of Access and Utilization Impact Unmet Prescription Medicine Needs (N=243)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Predisposing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>1.222</td>
<td>1.097</td>
<td>1.150</td>
<td>0.970</td>
</tr>
<tr>
<td>Married</td>
<td>0.766</td>
<td>0.789</td>
<td>0.704</td>
<td>0.738</td>
</tr>
<tr>
<td><strong>Traditional Enabling</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Variables</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>0.356*</td>
<td>0.452</td>
<td>0.620</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>1.001</td>
<td>0.935</td>
<td>1.184</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>1.316</td>
<td>1.589</td>
<td>1.490</td>
<td></td>
</tr>
<tr>
<td><strong>Vulnerable Enabling</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwent care</td>
<td>6.068***</td>
<td>6.695***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with paperwork</td>
<td>1.272</td>
<td>1.305</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traditional Need</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain Variable</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Good to excellent health</td>
<td></td>
<td>0.253***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-2 log likelihood    266.079  260.597  231.569  217.120
Model chi-square       1.006   6.488   35.516*** 49.965***
Model degrees of freedom (df) 2  5  7  8

* p ≤ .05  ** p ≤ .01  *** p ≤ .001

Summary of the Results from Logistic Regression Analysis of Problem Getting Needed Dental Care

The third dependent variable addresses the research question that asks which measures of Predisposing, Enabling, and Need variables impact unmet dental care needs among low-income, white, working-age males. The dependent variable pertaining to unmet dental care needs was operationalized using the following question: “wanted dental care but could not get it during the
past 12 months.” There are similar patterns between this dependent variable and the dependent variable pertaining to a problem getting needed health care (See Table 4.6 and 4.8). Both dependent variables have similar results for the Traditional Predisposing and Traditional Need domains. In addition, both Model chi-squares are highly significant ($p \leq .001$). Forwent care within the Vulnerable Enabling domain is also highly significant ($p \leq .001$). Interestingly, the odds ratio for private insurance through work is similar for both, but in contrast, the first is significant and the latter is insignificant. The odds ratio for perceived health status is negative for both dependent variables and does not change the effect upon the other variables within the model.

As predicted, the Traditional Predisposing variable age (40-60), has a negative effect on the likelihood of having a problem getting needed dental care across all of the models. For Model 3, controlling for the effects of Traditional Enabling and Vulnerable Enabling variables, the odds of having a problem getting needed dental care are about 32% (-31.6% = 100 * [.684 - 1]) lower for white men 40-60 years of age compared to those 18-40 years of age. Private insurance through work is significant for all models. For Model 2, the odds of having a problem getting needed dental care are about 66% (-66.4% = (-66.4 = 100 * [.336 – 1]) lower for white men who have private insurance through work compared to those who do not have private insurance through work, and do not change much, controlling for the effects of variables in the other three domains. The results of Model 4 indicate, controlling for all other variables within the three domains, those who forwent care for food, clothing, or housing were almost three (2.902) times as likely as those who did not forgo care, to report problems getting needed dental care. Although perceived health status is not statistically significant ($p \geq .05$) within the
Traditional Need domain, it appears that, as expected, the likelihood tends to be lower for those who perceive their health to be good to excellent.
### Table 4.8

**Logistic Regression Analysis of Which Measures of Access and Utilization Impact Unmet Dental Care Needs (N=243)**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Predisposing Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>.792</td>
<td>.696</td>
<td>.684</td>
<td>0.657</td>
</tr>
<tr>
<td>Married</td>
<td>1.181</td>
<td>1.183</td>
<td>1.137</td>
<td>1.154</td>
</tr>
<tr>
<td><strong>Traditional Enabling Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>0.336*</td>
<td>0.363*</td>
<td>0.387*</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>1.282</td>
<td>1.298</td>
<td>1.389</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>1.658</td>
<td>1.867</td>
<td>1.827</td>
<td></td>
</tr>
<tr>
<td><strong>Vulnerable Enabling Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwent care</td>
<td>2.928***</td>
<td>2.902***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience with paperwork</td>
<td>1.562</td>
<td>1.572</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traditional Need Domain Variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good to excellent health</td>
<td></td>
<td></td>
<td>0.704</td>
<td></td>
</tr>
<tr>
<td>Model chi-square</td>
<td>1.044</td>
<td>10.791</td>
<td>25.503***</td>
<td>26.728***</td>
</tr>
<tr>
<td>Model degrees of freedom (df)</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

* p ≤ .05  ** p ≤ .01  *** p ≤ .001

---

**Summary of the Results from Logistic Regression Analysis of Visits to a Doctor in an Emergency Room**

The fourth dependent variable addresses the research question that asks which variables impact emergency department access and utilization among low-income, white, working-age males. The dependent variable pertaining to visits to a doctor in the emergency room was operationalized using the following question: “number of visits to a doctor in an emergency room during the past 12 months.” The variable was recoded as “no visits” and “one or more
visits.” A logistic regression analysis was run to assess the relationship between the dependent variable and the predictor variables from the Predisposing, Enabling, and Need domains. Table 4.9 depicts the results of the binary logistic regression.

The Model chi-squares for Models 1, 2, and 3 are not significant. Results indicate that no independent variables are significant in Models 1, 2, and 3. Only age in Model 4 is significant ($X^2 = 4.220, 8 \text{ df}, p \leq .05$). Age within Model 1 is near the significant alpha level at ($p = .055$). Forwent care in Model 3 is near the significant alpha level at ($p = .056$). Age is the best predictor of whether a low-income, white, working-age male will visit a physician in an emergency room. As predicted, across all models the Traditional Predisposing variable age has a negative effect on the likelihood of visiting a doctor in an emergency room. Within Model 4, the odds of visiting a doctor in the emergency room are about 45 percent (-44.6% = 100 * [.554 -1]) lower for low income, white, working-age men aged 45-60 years than for those aged 18-44 years, controlling for the effects of variables within the other three domains. Therefore, only the Traditional Predisposing domain is significant.

There is a similar pattern of effects within the Traditional Enabling domains of the dependent variable pertaining to a problem getting need health care and visits to a doctor in the emergency room. The effects of these variables within this domain are not significant (except for a usual source of care within the first dependent variable) across all four models. As predicted, white men who have private insurance through work, are employed, and have a usual source of care ($X^2 = 6.344, p \geq .05$) are consistently less likely to report visiting a doctor in an emergency room.
Table 4.9

*Logistic Regression Analysis of Utilization of Physicians in an Emergency Room (N=243)*

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Predisposing Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>.599</td>
<td>.593</td>
<td>.589</td>
<td>0.554*</td>
</tr>
<tr>
<td>Married</td>
<td>.832</td>
<td>.870</td>
<td>.853</td>
<td>.861</td>
</tr>
<tr>
<td><strong>Traditional Enabling Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>.883</td>
<td>.956</td>
<td>1.039</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>.760</td>
<td>.761</td>
<td>.841</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>.742</td>
<td>.765</td>
<td>.742</td>
<td></td>
</tr>
<tr>
<td><strong>Vulnerable Enabling Domain Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwent care</td>
<td>1.944</td>
<td>1.914</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience handling paperwork</td>
<td>1.482</td>
<td>1.489</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traditional Need Domain Variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good to excellent health</td>
<td>0.599</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-2 log likelihood | 323.299 | 321.378 | 314.771 | 312.053 |
Model chi-square   | 4.422   | 6.344   | 12.950  | 15.668* |
Model degrees of freedom (df) | 2      | 5       | 7       | 8       |

* p ≤ .05  ** p ≤ .01  *** p ≤ .001

Summary of the Results from Logistic Regression Analysis of a Hospital Visit Overnight

The fifth dependent variable addresses the research question that asks which variables impact hospital utilization among low-income, white, working-age males. The dependent variable pertaining to being a patient in a hospital overnight was operationalized using the following question: “In the last 6 months, have you been a patient in a hospital overnight or longer?” Of the five dependent variables, this variable is the only one with all four model chi-squares significant. In addition, it has the most significant independent variables. No
independent variables are significant within the Vulnerable Enabling domain. The results of this analysis are depicted within Table 4.10.

All four Model chi-squares are significant indicating that at least one of the independent variables in each of the models has a statistically significant effect on the likelihood of being a patient in hospital overnight or longer. In contrast to the previous dependent variables, age (40-60) is positive rather than negative. As the results for Model 4.10 indicate, controlling for the effects of all domains, white men ages 40-60 were almost 2 (1.912) times as likely as those who were ages 18-39, to report being a patient in a hospital overnight. Marital status was significant for all four models. Controlling for the effects of all domains, the odds of being in a hospital overnight or longer are about 52% lower for those who are married than for those who are unmarried.

Across Models 1-3, those who had a usual source of care were approximately 2.6 times as likely as those who did not have a usual source of care, to report being in a hospital overnight or longer. The odds ratio for perceived health status is not statistically significant ($p > .05$), but it appears, as expected, the likelihood of being a patient in a hospital tends to be lower for white men who perceive their health to be good to excellent.
Table 4.10

Logistic Regression Analysis of Hospital Access and Utilization (N=243)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Predisposing</strong> Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>2.508**</td>
<td>2.017*</td>
<td>2.006*</td>
<td>1.912</td>
</tr>
<tr>
<td>Married</td>
<td>.471*</td>
<td>.467*</td>
<td>.468*</td>
<td>.476*</td>
</tr>
<tr>
<td><strong>Traditional Enabling</strong> Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>.726</td>
<td>.725</td>
<td>.805</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>.633</td>
<td>.637</td>
<td>.682</td>
<td></td>
</tr>
<tr>
<td>Usual source of care</td>
<td>2.673*</td>
<td>2.691*</td>
<td>2.632*</td>
<td></td>
</tr>
<tr>
<td><strong>Vulnerable Enabling</strong> Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forwent care</td>
<td></td>
<td>1.012</td>
<td>1.004</td>
<td></td>
</tr>
<tr>
<td>Experience handling paperwork</td>
<td>1.064</td>
<td>1.048</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traditional Need</strong> Domain Variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good to excellent health</td>
<td></td>
<td></td>
<td>0.651</td>
<td></td>
</tr>
<tr>
<td>-2 log likelihood</td>
<td>247.701</td>
<td>239.304</td>
<td>239.267</td>
<td>312.053</td>
</tr>
<tr>
<td>Model chi-square</td>
<td>12.218**</td>
<td>20.615***</td>
<td>20.652**</td>
<td>15.668*</td>
</tr>
<tr>
<td>Model degrees of freedom (df)</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

* p ≤ .05    ** p ≤ .01    *** p ≤ .001

Interpretation of Results

This section discusses the results of the logistic regression analyses in reference to the literature review, the adapted behavioral model for vulnerable populations (see Figure 2.6), the research questions posed within this study, and the stated hypotheses. The results are discussed in reference to which measures of Predisposing, Enabling, and Need variables impact unmet health care needs, prescription medicine needs, dental care needs, and utilization of emergency departments and hospitals among low-income, white working-age males. Table 4.11 provides a
summary of the results of the logistic regression analyses.

Table 4.11

Summary of Significant Independent Variables within Logistic Regression Analyses

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Unmet health care needs</th>
<th>Rx</th>
<th>Dental</th>
<th>ER visits</th>
<th>Hospital visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Predisposing Domain Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (40-60)</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

| Traditional Enabling Domain Variables | | | | | |
| Private insurance | * | * | | | |
| Employed | | | | | |
| Usual source of care | | | | * | |

| Vulnerable Enabling Domain Variables | | | | | |
| Forwent care | * | * | * | | |
| Experience with paperwork | * | | | | |

| Traditional Need Domain Variable | | | | | |
| Good to excellent health | * | | | | |

* $p \leq .05$

The literature review indicates that age is a strong predictor of access and utilization of health care services (Blumberg & Liska, 1996; Mills, 2001; Quinn et al., 2000). Young adults are less likely than any other age group to have health insurance and access and utilize health care services (Blumberg & Liska, 1996; Mills, 2001). The results of the cross-tabulations indicate a weak negative relationship between age and visits to a doctor in an emergency room and a strong positive relationship in reference to overnight or longer hospital visits. In regard to
the logistic regression results, age was significant for visits to a doctor in an emergency room. As predicted, across all models, age has a negative effect on the likelihood of visiting a doctor in an emergency room. Within Model 4, the odds of visiting a doctor in the emergency room are about 45 percent lower for low income, white, working-age men aged 40-60 years than for those aged 18-39 years, controlling for the effects of variables within the other three domains. Therefore, the results of the logistic regression relating to utilization of emergency departments, is consistent with the literature pertaining to age. Strunk, et al., (2006) indicates that hospital visits increases with age. The logistic regression analyses pertaining to hospital visits indicated that age was significant for Models 1-3. As the results for Model 4.10 indicate, controlling for the effects of all domains, white men ages 40-60 were almost 2 times as likely as those who were ages 18-39, to report being a patient in a hospital overnight. Only two of the five dependent variables indicated age as being a significant predictor. In light of this finding, it is concluded that age is not a strong predictor for unmet health care, prescription medicine, and dental care needs. This study does indicate that age is a significant predictor of access and utilization of emergency rooms and hospitals for low-income, white, working-age males.

In reference to marital status, the literature review indicates married persons are more likely to be insured than those who are single and being married provides more opportunities to access health care (Coverage matters: Insurance and health care, 2001; Liska et al., 1998). The only significant finding of this study, pertaining to marital status, involved hospital visits. Marital status was significant for all four models. Controlling for the effects of all domains, the odds of being in a hospital overnight or longer are about 52% lower for those who are married than for those who are unmarried. The findings of this study support the literature.
The literature review indicated the near poor (100 to 200 percent of poverty line) and individuals without insurance are at risk (Blumberg & Holahan, 2004; Comer et al., 2000; McLaughlin, 2004) to experience barriers to access and unmet health care needs. The logistic regression analysis indicated the odds of having unmet prescription medicine needs are lower those who had private insurance through work than for those who were not covered. Private insurance through work was also statistically significant for dental care. The data indicates that 11.4% of those who had private insurance wanted dental care but could not get compared to 26.6% who did not have private insurance through work. Private insurance through work was statistically significant for the logistic regression Models 2, 3, and 4. The odds of wanting dental care but unable to get it are about 63% lower for those with private insurance through work than those who do not have private insurance through work.

The literature indicates that employment is another strong predictor of access to health care in the United States (Field & Briggs, 2001; Gornick, 1999, 2002; Merzel & Moon-Howard, 2002). The results of the cross-tabulations indicate that employment (e.g., no hours of paid employment and 1 or more hours) is significant only in regard to having been a patient overnight in a hospital among low-income, white, working-age males. The results indicated that about 19% who were employed had been a patient in a hospital overnight compared to about 33% who were unemployed. The logistic regressions did not indicate that employment was a predictor within the models.

The literature review indicated that individuals without a usual source of care are more likely to utilize the emergency room (Dubay & Kenney, 2004) and experience problems related to access and utilization of health care services. The results of the crosstabs indicate a usual source of care was found to be significant for unmet needs for health care, a problem getting
needed prescription medicine, and hospital utilization. The logistic regression results only indicated that a lack of a usual source of care was a significant predictor of having been in a hospital overnight in the past 6 months. Across Models 1-3, those who had a usual source of care were approximately 2.6 times as likely as those who did not have a usual source of care, to report being in a hospital overnight or longer Phillips, Mayer, & Aday (2000) indicate that minorities are more likely to not have a usual source of care as compared to whites. This may partially explain why this independent variable was not a strong predictor for the other four dependent variables.

The literature review indicated that competing needs, such as food, clothing, and shelter, also impact individuals’ decisions to seek health care services. Long’s (2003) study found that over 40% of the sample reported hardship in at least one of the following areas: food, housing, or health care. He found that the resources needed to purchase health insurance are competing with meeting basic food and housing needs. The results of this study find that competing needs was significant and predictive. In all five dependent variables, competing needs was found to be significant within the cross-tabulations and a strong predictor within the bivariate logistic regressions. Only the dependent variables pertaining to emergency room and hospitalization utilization were found to be insignificant within the bivariate logistic regressions.

Experiences with paperwork have been found to be a hindrance to delivery of health care services in regard to the ability to negotiate the system (Olson, 1995; Perez-Pena, 2005). The results of the cross-tabulations indicate that those who had experiences with paperwork were more likely to have unmet health care and prescription medicine needs. The bivariate logistic regression results indicate that experience with paperwork was a predictor for unmet health care and prescription medicine needs. Within the unmet health care needs models, controlling for the
effects of all other domains, those who had experiences with paperwork were over 2 times as likely as those who did not have experiences with paperwork to report having problems getting the health care they needed. The results are consistent with the literature.

According to the literature, individuals who perceive themselves as having a lower health status are more likely to be uninsured and have unmet health needs than individuals who rate themselves with a high health status (Diamant et al., 2004; Patrick et al., 1991; Shi, 2001). The results of the cross-tabulations and logistic regressions indicate a significant relationship between unmet prescription medicine needs and perceived health status. The results of the logistic regressions indicated individuals who rated themselves as having poor to fair health were more likely to have unmet dental care needs.

In summary, the cross-tabulations indicated forgoing of care for food, clothing, or housing was significant for four of the five dependent variables. Age, private insurance through work, and a usual source of care were significant for two of the dependent variables. Marital status was not significant for any of the dependent variables. In regard to the results of the logistic regressions, employment was not predictive. Forgoing care for food, clothing, and housing was predictive for four of the five dependent variables. There were no other independent variables that were predictive for more than one dependent variable. The results of the cross-tabulations and logistic regressions indicate that forgoing care for food, clothing, or housing is consistently an issue among low-income, white, working-age males. In addition, the results suggest that each dependent variable has unique predictors as well.

Adapted Behavioral Model for Vulnerable Populations

The Behavioral Model identifies the Predisposing, Enabling, and Need population characteristics, which predict personal health practices and utilization of health care services. In
addition, this model examines the effect of realized access (i.e., utilization) on health outcomes (Gelberg et al., 2000). The three independent variables within the original behavioral model for vulnerable populations are Predisposing, Enabling, and Need. Each of the three variables includes a Traditional domain and Vulnerable domain. An adapted model (see Figure 2.6) was developed for this study. Variables were eliminated from the original model to accommodate the data for this study. The data for this particular study provided variables within each of the Traditional domains for each of the three behavioral model variables. Data for the Vulnerable domain variables were available only for the Enabling domain.

The results of the logistic regression analyses were applied to the adapted behavioral model for vulnerable populations. The first research question asks which measures of Predisposing, Enabling, and Need variables impact unmet health care needs among low-income, white, working-age males. There were no predictive independent variables within the Predisposing and Need domains. Two predictive independent variables were found within the Enabling domain and both were within the Vulnerable domain. The first independent variable (forwent care) pertained to the category of competing needs and the second (experience with paperwork) is within the Health System Experience category.

The second research question asks which measures of Predisposing, Enabling, and Need variables impact unmet needs regarding prescription medicine for low-income, white, working-age males. There were no predictive independent variables within the Predisposing domains. One predictive independent variable was found within the Traditional Enabling domain, two within the Vulnerable Enabling domain, and one within the Traditional Need domain. The first statistically independent variable is private insurance within the Traditional Enabling domain of Model 2.
The third research question asks which measures of Predisposing, Enabling, and Need variables impact unmet needs for dental care among low-income, white working-age males. There were no predictive independent variables within the Traditional Predisposing domain models. Within the Traditional Enabling domain models, private insurance through work was statistically significant. Two predictive independent variables were found within the Enabling domain. Forwent care was significant within the Vulnerable Enabling domain of Models 3 and 4.

The fourth question asks which measures impact use of emergency departments and hospitals among low-income, white, working-age males. In regard to having seen a doctor in an emergency department, there were two predictive independent variables within Models 3 and 4. Age was statistically significant within the Traditional Predisposing domain of Model 4. Forwent care was nearly significant within the category of competing needs within the Vulnerable Enabling domain of Model 3. In regard to having seen a doctor in an emergency department, there were no predictive independent variables within the Traditional Enabling or Traditional Need domains.

The results indicate three predictive independent variables pertaining to hospital utilization. Two predictive independent variables were found within the Traditional Predisposing domain and one within the Traditional Enabling domain. There are no significant variables within the Vulnerable Enabling domain. Age is significant within the Traditional Predisposing domain of Models 1-3. Marital status is significant for all four models of the same domain. The third independent variable, usual source of care, is significant within the Traditional Enabling domains of Models 2-4. There were no predictive independent variables within the Vulnerable Enabling and Traditional Need domains.
In summary, the results of the logistic regression analyses, as applied to the adapted behavioral model for vulnerable populations, indicate that age and marital status were predictive independent variables within the Traditional Predisposing domain models. Private insurance through work and a usual source of care were predictive independent variables within the Traditional Enabling domain models. Private insurance through work and a usual source of care are within the Personal/family Resources category of the Traditional Enabling domain. Forwent care within the competing needs category and experience with paperwork within the Health System Experience category are significant within the Vulnerable Enabling domain. The last predictive independent variable, perceived health status, is within the Traditional Need domain. Since low-income, white, working-age males are categorized as a vulnerable population, it is expected that variables within the Vulnerable Enabling domain would be predictive of access and utilization. The most predictive of the eight independent variables is forwent care for food, clothing, or housing.

It is noteworthy to mention that employment status was not significant for any of the models. Neither of the Predisposing domain variables (age and marital status) were significant for the dependent variables pertaining to getting needed care, prescription needs, and dental needs. There were seven unique predictive independent variables. Four of the seven unique independent variables were only significant for one dependent variable. The independent variable, experience with paperwork, was only significant for the dependent variable, problem getting needed health care. Perceived health status was only significant for wanting but could not get needed prescription medicine. Marital status and a usual source of care were only significant for been in a hospital overnight. Therefore, the results of this study indicate that the safety net is not adequately meeting the needs of low-income, white, working-age males. In
addition, a pattern is evident in that these males chose to forgo medical care related to prescription and dental needs but did not forgo visits to doctors in an emergency room and overnight stays in a hospital. This indicates that these males may have chosen to forgo elective medical procedures. The hypotheses for this study were set forth in Chapter 1. The hypotheses are (a) low-income, white, working-age males between the ages of 18-39 are more likely to experience problems accessing needed health care; (b) unmarried low-income, white, working-age males are more likely to experience problems accessing needed health care; (c) low-income, white, working-age males without private insurance through work are more likely to experience problems accessing needed health care; (d) unemployed low-income, white, working-age males are more likely to experience problems accessing needed health care; and (e) low-income, white, working-age males who do not have a usual source of care are more likely to have problems accessing needed health care; (f) low-income, white, working-age males who forwent care for food, clothing, or transportation are more likely to have problems accessing needed health care; (g) low-income, white, working-age males who have experiences with paperwork are more likely to have problems accessing needed health care; (h) low-income, white, working-age males whose perceived health status is poor to fair are more likely to have problems accessing needed health care.

In regard to the first hypothesis, the results of the logistic regression indicated low-income, white, working-age males between the ages of 18-39 years old did experience more problems accessing needed health care as compared to 40-60 year olds. The odds of 18-39 year olds of this age group visiting a doctor in an emergency room are higher than for 40-60 year olds. These results can possibly be interpreted that younger men are potentially forgoing discretionary or elective care such as regular doctor visits and relying on the emergency room for
regular and/or urgent care. Hadley (2003) reported that one-third of emergency room visits were for health conditions that did not require immediate care or could have been treated during a physician visit. Young adults are less likely than any other age group to have health insurance and Soref (1990) indicated that uninsured adults are less likely to have had any physician visits or physical examinations than insured adults. Therefore, the findings that 18-39 year olds access the emergency room more than 40-60 year olds, indicates an overall problem accessing needed health care as a result of overly relying on the emergency room for care that could have been provided in an office visit. A second finding regarding age indicates that men 40-60 years old were almost 2 times as likely as those who were ages 18-39 to report being a patient in a hospital overnight. This finding is difficult to interpret in light of whether it indicates a problem getting needed health care. Older men may be utilizing the hospital more than younger men due to need rather than younger men being unable to gain access to hospital services.

The second hypothesis states that unmarried low-income, white, working-age males are more likely to experience problems accessing needed health care. Marital status was not related to any specific aspects of use of health care for the dependent variables pertaining to problems getting needed health care, prescription medicines, dental care or visits to a doctor in an emergency room. Marital status was a predictor for hospitalization. The odds of being in a hospital overnight or longer are about 52% lower for those who are married than for those who are unmarried. Being married provides more opportunities to access health care and being able to access preventive care may be a factor in reducing hospitalizations. Therefore, unmarried low-income, white, working-age males may have more difficulties accessing care thus increasing the likelihood of hospitalizations.

The third hypothesis states that low-income, white, working-age males without private
insurance through work are more likely to experience problems accessing needed health care. The results of the logistic regression analyses indicate that those who had private insurance through work were less likely to have unmet prescription and dental needs.

The fourth hypothesis states unemployed low-income, white, working-age males are more likely to experience problems accessing needed health care. The results of the logistic regression analyses indicate there were no specific aspects of the use of health care related to employment status.

The fifth hypothesis states low-income, white, working-age males who do not have a usual source of care are more likely to have problems accessing needed health care. Only the dependent variable pertaining to overnight hospital visits was related to a usual source of care. Those who had a usual source of care were 2.6 times as likely as those who did not have a usual source of care to report being in a hospital overnight or longer. Therefore, those who did not have a usual source of care were more likely to have a problem accessing hospital services.

The sixth hypothesis states low-income, white, working-age males who forwent care for food, clothing, or transportation are more likely to have problems accessing needed health care. The results of the logistic regression analyses indicates that those who forwent care are more likely to have a problem getting needed health care, prescription medicines, and dental care.

The seventh hypothesis states low-income, white, working-age males who have experiences with paperwork are more likely to have problems accessing needed health care. The results indicated that those with experiences with paperwork were over two times as likely as those with no experiences to report having a problem getting needed health care.

The eighth hypothesis states low-income, white, working-age males whose perceived health status is poor to fair are more likely to have problems accessing needed health care. The
logistic regression results indicate that the odds of having a problem getting a needed prescription medicine are about 75% lower for white men with “good to excellent” perceived health status than for those who perceived their health status to be “poor to fair.”

Summary

In summary, all of the independent variables except employment status were related to problems getting needed health care. In regard to the findings related to the adapted behavioral model for vulnerable populations, age and marital status are predictive within the Predisposing domain. Within the Enabling domain, there are four predictive variables, which indicate the Enabling domain impacts the respondents more than any of the domains. Two of the four variables are within the Vulnerable domain which further supports that low-income, white, working-age males are indeed a vulnerable population. Perceived health status is predictive within the Traditional Need domain. In reference to the research questions, respondents who forwent care, had experience with paperwork, did not have private insurance through work, and whose perceived health was poor to fair, were more likely to have unmet health care needs, prescription medicine needs, and dental care needs. The young and unmarried respondents who did not have a usual source of care, and who forwent care, were more likely to utilize the emergency department and hospital.
CHAPTER 5

SUMMARY, CONCLUSION, POLICY IMPLICATIONS AND RECOMMENDATIONS

Introduction

This chapter provides a summary of the findings, conclusion, policy implications, and recommendations for further study. The specific objectives of this study are to: (a) examine access to health care services and utilization of these services among low income, white, working-age males using data collected from patients at a safety-net county hospital (S. B. Eve et al., 2000); (b) provide information relevant to public policy that will lead to increased access and utilization among low-income, white, working-age males; (c) reinforce the validity of the behavioral model for vulnerable populations; and (d) add to the body of literature pertaining to access and utilization issues among vulnerable populations.

Summary

The findings of this study shed light on how low-income, white, working-age males compare to the general vulnerable population in regard to access to health care services and utilization of these services. In general, the results of this study mirror the findings within the literature review. For example, the specific barriers, which are evident among the general vulnerable population, are also significant or predictive among the low-income, white, working-age males. The variables of age, marital status, insurance, employment, insurance, a usual source of care, competing needs, paperwork, and perceived health status are all potential predictors of problems related to access to health care services and utilization of emergency departments and hospital services among the general vulnerable population. Low-income, white, working-age males share the majority of the above characteristics. For example, the logistic
regression analyses indicated that only employment status was not significant for any of the dependent variables. Excluding employment status, Table 4.11 illustrates that each dependent variable has one or more significant independent variables. In addition, the table demonstrates visually that there are many holes within the safety net system. The visual representation is similar to a dam springing leaks from a multitude of locations. Only forwent care within the Vulnerable Enabling domain was significant for three of the five dependent variables. The remaining significant independent variables are scattered across the table.

Although there does not seem an apparent pattern at first glimpse of Table 4.11, a distinct and salient pattern exists. This pattern involves the access and utilization of discretionary or elective care. The logistic regression results indicate that low-income, white, working-age males are accessing needed care within the emergency room and hospital while forgoing needed care, prescription medicine, and dental care. Therefore, optional health care services such as doctor and dentist visits were neglected until urgent care was needed and then the health care services were obtained via a doctor in the emergency room or an overnight or longer admission to a hospital.

In light of the varied results, combining the findings for each research question produces a predictive model that provides a general understanding of the access and utilization issues associated with low-income, white, working-age males. It is noteworthy to state that only poor health among these males should be predictive. If the safety net is working properly, none of the below findings should be evident. These findings illustrate the many leaks within the system. The predictive model includes the following:
• It is predictive that low-income, white, working-age males who forgo care for food, clothing, or housing are more likely to experience problems getting needed health care, prescription medicine, and dental care.

• It is predictive that low-income, white, working-age males who have experience with paperwork are more likely to experience problems getting needed health care.

• It is predictive that low-income, white, working-age males who perceive themselves to have good to excellent health are less likely to experience problems getting needed prescription medicine.

• It is predictive that low-income, white, working-age males who have private insurance through work are less likely to experience problems getting needed dental care.

• It is predictive that low-income, white, working-age males who are between the ages of 40-60 are less likely to visit a doctor in an emergency department.

• It is predictive that low-income, white, working-age males who are ages 40-60 are more likely to be a patient in a hospital overnight.

• It is predictive that low-income, white, working-age males who are married are less likely to be a patient in a hospital overnight.

• It is predictive that low-income, white, working-age males who have a usual source of care are more likely to be a patient in a hospital overnight.

Based upon the above findings, the strongest predictor of unmet health care, prescription medicine, and dental care needs is forgoing care for food, clothing, or housing. This finding corresponds with the literature pertaining to competing needs. Individuals with competing needs are most likely the near poor. The near poor (those between 100 and 200 percent of poverty line)
are the most vulnerable because their income is too high to qualify for public assistance and too low to afford private insurance. JPS Connections provides low cost medical care based on household size and gross monthly income according to the current Federal Poverty Income Levels and proof of current residence in Tarrant County. Although JPS provides “low cost” medical care, apparently the costs associated with the program are cost prohibitive for many low-income, white, working-age males. As a result, these males experience unmet health care needs. This is a prime example of the safety net system not working for low-income, white, working-age males. Even though these males are poor or near poor, the safety net system should provide means for these individuals to access needed health care without forcing them to choose between needed health care services and food, clothing, or housing.

In contrast to the consistency of forgoing care being predictive for each of the three variables pertaining to access and unmet needs, the second predictive independent variable is different for each of the three dependent variables. For example, perceived health status is only predictive for unmet prescription needs. The literature indicates that those who perceive themselves as having a lower health status are more likely to be uninsured and have unmet health needs as compared to individuals who rate themselves with a high health status (Diamant et al., 2004; Patrick et al., 1991; Shi, 2001). Within this study, the respondents who rated themselves as having good to excellent health were less likely to have a problem getting needed prescription medicine. A lower perceived health status was not predictive of unmet health care or dental care needs as the literature indicated. It is interesting to note that experience with paperwork is predictive of unmet health care while perceived health status is not predictive. The inconsistent logistic regression results among the three dependent variables underscore that broad-based recommendations cannot be applied to the issues of access and unmet health care needs. In
contrast, specific and targeted recommendations are needed which will be addressed within the policy implications section.

In regard to the behavioral model for vulnerable populations, which predict personal health practices and utilization of health care services, the findings of this study indicate the Enabling domain has the most impact upon unmet health care needs and utilization of emergency department and hospitals among low-income, white, working-age males. Within this study, the Enabling domain includes five variables within the subcategories of personal/family resources, competing needs, and health system experiences. Of the five variables, only employment was found not to be significant with one of the dependent variables within the results of the logistic regression analyses. The results of this study indicate seven unique predictive independent variables and four reside in the Enabling domain. The dependent variable pertaining to doctor visits to an emergency room is the only variable which does not have a significant Enabling domain variable. Three of the seven variables reside within the Vulnerable domains.

In summary, each dependent variable has unique predictive independent variables as well as the consistent variable pertaining to forgoing care for food, clothing, or housing. Hospital utilization and visits to a doctor in the emergency department were the only dependent variables that forgoing care was not predictive (Visits to a doctor in the emergency department was nearly significant at .056). Therefore, this finding alone indicates the safety net is not as safe as it is touted or intended.

Conclusions

The foremost conclusion is the findings of this study support Diamant’s, et al., (2004), conclusion that barriers to needed health care continue to exist among patients receiving care through a large safety net system. The results consistently indicate that low-income, white,
working-age males who forwent care for food, clothing, or housing are more likely to experience problems getting needed health care, prescription medicine, and dental care. In addition, this vulnerable population is more likely to have seen a doctor in an emergency department. The JPS Health Network serves as the safety net for the uninsured, low-income and other vulnerable populations. The results of this study indicate that especially those with competing needs face barriers to receiving needed health care. In general, issues with insurance, paperwork, forgoing care for food, clothing, or housing, and perceived health status are predictive in reference to access and unmet health care needs. Age, marital status, and a usual source of care impact utilization rates of emergency departments and hospitals. These results clearly indicate that our current health care system as well as our safety net system is failing to adequately provide the needed health care services to low-income, white, working-age males.

The second conclusion drawn is that forwent care for food, clothing, or housing is a significant issue among low-income, white, working-age males. This variable was predictive for three of the five dependent variables and nearly significant for doctor visits in an emergency room (p = .056). An apparent weakness of the original survey is that the question asks about three competing needs: food, clothing, or housing. Therefore, this study is unable to determine if one of the competing needs was the predominant factor, or whether it was a combination of two or three of the variables. Potentially, the three factors were equivalent in regard to the degree of impact upon forwent care. In light of the double barrel effect of this question, it is difficult to ascertain the degree of the specific competing needs that impact access and utilization. Furthermore, it limits the ability to recommend specific recommendation to address each of the three competing needs since they are all grouped together.

The third conclusion is also related to the forwent care variable. The dependent variable
addressing hospital utilization is unique because it is the only dependent variable that forwent care was not near being significant. Forwent care was predictive of problems getting needed health care, prescription medicines, and dental care. In regard to utilization, those who forwent care were more likely to have had one or more visits to a doctor in an emergency department. Therefore, these results raise the question as to why forwent care was not predictive of hospital utilization.

The fourth conclusion indirectly involves the variable pertaining to forwent care. The independent variables pertaining to forwent care and private insurance through work were predictive of problems getting needed dental care. When private health insurance is offered through work, dental care is most often offered at an additional cost. Therefore, it is interesting to note, that those who had private insurance through work were possibly covered by dental insurance, which most likely was offered to the employee at an additional cost. Forwent care for food, clothing, or housing was predictive as well. It does not seem logical that the respondents were forgoing care and at the same time paying an additional cost for dental care. The contribution of the Predisposing and Enabling components will be greatest for dental services, but both of the predictive variables reside within the Enabling domain.

The fifth conclusion is that four of the five dependent variable had two or three predictive variables and they varied greatly. As noted earlier, the variable pertaining to forwent care was consistent within three of the five dependent variables. Therefore, the remaining predictive independent variables for each dependent variable were unique. Based upon the varied results of the logistic regressions, it is difficult to develop a predictive pattern or model in relation to access and utilization. Due to the varied results and a lack of a predictive pattern or model, recommendations are necessarily more targeted for each dependent variable.
The sixth conclusion is that the majority of predictive independent variables reside in the Enabling domain of the adapted behavioral model for vulnerable populations. The Enabling domain refers to the means individuals have available to them for use of services. The results of this study indicate that low-income, white, working-age males lack the means to procure health care services. There were no predictive variables within the Predisposing domain in regard to access and unmet health care needs. The Predisposing domain refers to the propensity of individuals to use available services. In regard to the utilization of emergency departments and hospitals, age and marital status were predictive from within the Predisposing domain. Furthermore, the Social Structure category within the Predisposing domain is less of a determinant of access and utilization of health care services than Personal/family Resources, competing needs and health system experience in the Enabling domain. When applying the adapted behavioral model for vulnerable populations to low-income, white, working-age males, the variables within the Enabling domain are more predictive. Therefore, when considering policy implications, focus on this domain is recommended.

Policy Implications

The findings indicate that the safety net within Tarrant County, Texas is failing to meet the health care needs of low-income, white, working-age males. This finding is not uncommon in light of the fact that 46 million Americans are uninsured. The safety net is incapable of addressing the needs of all low-income citizens. Although, the safety net should be assessed in order to determine if the system is optimized and whether resources can be shifted to address the shortcomings. The assessment of the safety net is beyond the scope of this study due to the broad and complicated nature of the safety net system. The following illustrates the broadness and complexities of the system.
Understanding the structure of the local safety net and the local health care delivery system is critical for assessing the status and performance of a safety net. Having resources available to provide services for uninsured, low-income, and other vulnerable populations is important in meeting the needs of these populations. However, the ability of vulnerable populations to obtain timely and effective care and the performance of providers offering care to Medicaid and uninsured patients can also be affected by a broad range of other factors related to the local health care delivery system. These aspects of health system context include hospital ownership mix, level of competition among hospitals, the extent of managed care penetration, the degree of concentration of uncompensated care, the presence of facilities with an explicit mission to serve vulnerable populations (such as public hospitals, some not-for-profit hospitals, and Community Health Centers), and the supply of physicians (Billings & Weinick, 2003).

JPS Health Network is a key component of the safety net but the system includes other hospitals, non-profit agencies, local state, and federal agencies, and the local community. Unfortunately, “the health care safety net is not comprehensive, nor is it well integrated. It is a patchwork of institutions, financing, and programs that vary dramatically across the country as a result of economic, political, and structural factors, such as:

- Strength of the local economy.
- Concentration of poor and uninsured individuals.
- State and local tax dollars devoted to health care.
- Medicaid policies.
- Underserved inner-city or rural areas.
- The historic commitment of community providers”

(Gabow, 2003). Therefore, it is difficult to simply suggest that JPS Health Network reevaluate their strategies and goals in regard to providing health services to low-income, white, working-age males. Restructuring or expanding the safety net is not the simple solution to the problem. Expanding insurance coverage would be more effective as a means of increasing use and access among low-income adults than expanding the safety net (Spillman et al., 2003). The inadequacies are largely due to the structure of the United States health care system. Employing only a myopic or micro approach to examining the health care safety net in Tarrant County is
shortsighted and will be ineffective in providing long-term solutions.

On the other hand, changing the overall structure of the health care system is a daunting task. Although, according to Gidden’s structuration theory, which is based on the concept of the duality of structure, the current structure can be altered. Giddens implies it is possible for “social actors” to apply their skills to cause movement within the structures of politics, public policy, and the corporate landscape. In light of duality of structure, it is recommended that the following actions be considered.

- Micro level – Within Tarrant County, develop a year round grassroots organization, which expands the objectives and goals of the Cover the Uninsured Week.
- Micro level – Within Tarrant County, develop an organization specifically to voice concerns regarding health care of low-income, white, working-age males. Continue the appeal to local government, corporations, and foundations for support of the Tarrant County health safety net.
- Micro level – Present the findings of this study to the administration of JPS Health Network.
- Micro level – In light of the issues pertaining to competing needs, create a county task force to explore the relationship between forgoing care and demands for food, clothing, or housing.
- Micro level – Via JPS’s Continuous Quality Improvement (CQI) program, assess the relationship between experience with paperwork and problems getting needed health care.
• Micro level – Via JPS’s Continuous Quality Improvement (CQI) program, assess the means by which patients acquire dental care to determine the relationship between private insurance through work and forgoing care for food, clothing, or housing.

• Micro level – To reduce the number of individuals who fall through the cracks of the safety net, suggest to health care providers who serve this vulnerable population to focus their outreach to specific target groups identified within this study such as 18-39 year olds, unmarried, and those without a usual source of care.

• Micro level – Create an educational program to educate providers and low-income residents of Tarrant County regarding prescription drug discount and assistance programs (i.e., LilyAnswersCard, NeedyMeds.com, RxAssist: Accessing Pharmaceutical Patient Assistance Programs, Rx Hope, and The Medicine Program).

At the meso level, the following actions are recommended:

• Continue lobbying of the Texas Legislature for the expansion of the Children’s Health Insurance Plan (CHIP) to cover low-income parents of children without health insurance.

• Continue lobbying of the Texas Legislature for universal health care coverage of Texas residents.

• Continue seeking existing and new funds for state supported programs which assist low-income residents of Tarrant County.

At the macro level, the following actions are recommended:
• Increase awareness and participation among Tarrant County residents in national organizations such as Cover the Uninsured Week, National Coalition on Health Care, American Health Care Reform, Economic Research Initiative on the Uninsured, Families USA, Health Care for All, and the Universal Health Care Action Network.

• Encourage Tarrant County residents to become politically involved. For example, encourage support of political action committees (PACs) such as the Vanguard PAC which advocates that every dollar saved or spent for health care is tax-exempt. In addition, encourage Tarrant County residents to contact U.S. Congressional members to voice concerns for uninsured Americans.

• Advocate that international and national corporations reverse the trend of decreasing employer-sponsored insurance. In addition, encourage corporations to promote High Deductible Health Plans with Health Savings Accounts.

By combining the micro, meso, and macro recommendations, it is plausible that the structure of the health care system in the United States can be altered. A key aspect to successfully altering the local health care safety net as well as the delivery system of health services in America is for individuals to act outside of the existing norms. Yates (1997) stated,

Nevertheless, if other individuals follow the lead of the individual acting outside of existing structural norms, whether in direct and explicit defiance of existing norms (e.g., as in collective action) or in tacit ways (e.g., as in worker "soldiering") they may together bring about change by reinforcing not the traditional mode of structuring work, but a new one. (p. 159)

For most Americans, the issues involving health care coverage are merely personal and private issues. Personal involvement or activism is not the norm. For social change to occur, individuals must become involved at the local, state and federal levels. The above
recommendations call for personal involvement and activism beginning at the local level, which leads to collective action. Norms are restructured as a result of direct and/or indirect defiance of existing norms. For example, a peaceful march upon the steps of the Texas State Capital to protest the cuts in the Children’s Health Insurance Plan (CHIP), is a method to inform and educate the general public and state legislators regarding the precarious predicament of low-income families.

Recommendations for Future Research

The uniqueness of this study is that it focuses on low-income, white, working-age males as a specific vulnerable population. It is recommended that additional research using the behavioral model for vulnerable populations be conducted in regard to this overlooked population. The data for this study is limited due to a lack of variables to apply within each domain of the model. Therefore, the adapted model is limited due to the elimination of many variables within each domain. A solution to this limitation is to develop an original research design, which incorporates the majority of the variables within the model so that it does not have to be adapted. The research project would specifically focus on low-income, white, working-age males within a safety net. With more variables within each domain to analyze, the results would likely be more encompassing and extensive.

A second recommendation is to compare low-income, white, working-age males and females to determine if there are significant gender differences within the model. In addition, this study would benefit from expanding the scope to include a cross cultural comparison of whites, Hispanics, and blacks. A large amount of research has been conducted in regard to other vulnerable populations, thus making comparative studies feasible.
A third recommendation is to analyze data of low-income, white, working-age males in various regions to determine if similar results are obtained. For example, are the health care issues of low-income, white, working-age males residing within the East similar to those living on the West coast. Furthermore, are their specific characteristics of each safety net that are significant in regard to providing more access? The results of this study may be influenced by the characteristics of the available safety net within Tarrant County, Texas. Therefore, it is advantageous to have the ability to compare the characteristics of various safety nets with the results pertaining to health care access and utilization of services among low-income, white, working-age males. A fourth recommendation is to conduct focus groups with this population to further assess the issues pertaining to forgoing care for food, clothing, or housing.
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