

THE RELATIONSHIP OF DURATION OF TIME WITHOUT HEALTH INSURANCE
TO ACCESS AND UTILIZATION OF HEALTH CARE IN THE STATE OF KANSAS

By

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Diane Whitaker Ebbert

B.S.N., Wichita State University, 1978

M.S. University of Kansas, 1989

Submitted to the School of Nursing and the
Faculty of the Graduate School of the
University of Kansas in partial fulfillment of the
Requirements for the degree of
Doctor of Philosophy

Barbara Langner
Chairperson

Marge Bott

Rita Clifford

Byron Gajewski

Michael Fox

Date defended: April 19, 2007

The Dissertation Committee for Diane Whitaker Ebbert certifies
that this is the approved version of the following dissertation:

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Abstract

Over 46 million people in the United States are currently without health insurance coverage, and 300,000 of those people reside in the state of Kansas. The lack of health insurance for all residents of the United States has long been debated in political, policy, and research circles. The prevailing thesis has been that people fall into one of two groups: a) those with health insurance coverage and, b) those without health insurance coverage. While this dichotomy is theoretically accurate, in reality there are very diverse subpopulations within each of these groups. Of interest in this study was the variation in population characteristics related to the length of time without health insurance coverage.

The uninsured have been viewed historically as a homogenous population. The diversity among the uninsured has not previously been explored to determine the relationship among the length of time without insurance to health care access and utilization. Despite the many federal studies conducted to identify and describe the uninsured population, there is very little information available about the subpopulations of the uninsured.

The purpose of this study was to explore the relationships among length of time without health insurance and access to health care, utilization of health care services, and demographic/socioeconomic variables in uninsured Kansans. A descriptive correlational design utilized a secondary data analysis of existing data collected from residents of Kansas who participated in the Kansas Health Insurance Study conducted in 2001. The total sample for analyses in this study included 19,082 subjects. Of those 19,082 subjects, 17,260 were insured and 1822 were uninsured. A series of six logistic

regression procedures were conducted to determine the relationship between duration of time without health insurance to access, utilization of care, and demographic/socioeconomic variables. This study was able to determine differences in health care access, utilization and demographics of the uninsured population based on the length of time that they had been without health insurance coverage. The results of the study identified that variation exists among the subpopulations of the uninsured. As the length of time without health insurance increased the significant predictors also changed. Age was found to be significant for most of the logistic regressions. As age increased, the odds of being uninsured for a longer period of time also increased. Race was also found to be a significant factor. Self employment was found to be a significant factor in those uninsured for six months and under. At least one of the access variables was also significant in all of the uninsured periods.

The results of this study have implications for nursing practice, nursing education, nursing research and most importantly for health policy. Diversity among the subpopulations of uninsured Kansans was identified. Future policy solutions that address the uninsured will need to target the diversity in order to be effective.

Acknowledgments

"We don't accomplish anything in this world alone ... and whatever happens is the result of the whole tapestry of one's life and all the weavings of individual threads from one to another that creates something."

--Sandra Day O'Connor

This quote is one of my favorites and so eloquently speaks of what I feel in my heart. My "tapestry" has changed during the past five years that I have been pursuing my PhD. Some of the changes have brought joy and some tears. But certainly my tapestry is brighter because of all the individual threads. My children have gained from this experience the knowledge that learning is a life long process. Kate and Megan who were in first grade when I took my first PhD class have grown into young ladies who are about to finish fifth grade. They have also learned that dads make great field trip sponsors. Grant has changed from the shy junior high student into a mature young man soon to complete his junior year in high school, and looking forward to college. He has witnessed first hand a mother who can multitask—as the only player on the baseball team who has a mother that consistently brought research articles to the game to study while keeping a sharp eye on his batting and fielding performance. My husband Joe has been supportive through the entire journey, never questioning, just always being there for whatever I needed. I could not have completed the journey without him. My mom joined my dad in heaven while I was in the process of completing this degree. I miss her dearly. I can still see her beautiful smile and the twinkle in her eyes, when she would tell me how proud she and my dad were of my accomplishments. She and my dad brought so much to my life but the greatest gifts they gave me were the courage to stretch beyond

my comfort zone and to never forget the things that were important in life. I dedicate this dissertation to my family—they are indeed the golden threads in my tapestry.

I also want to thank Dr. Barbara Langner, my dissertation committee chair. She is a wonderful role model and mentor. Her expertise in policy research is a valuable asset for this school and state. Her support and gentle guidance have been always present in helping me to complete this project.

To the members of my dissertation committee, Dr. Marge Bott, Dr. Rita Clifford, Dr. Michael Fox and Dr. Byron Gajewski—I am so grateful for your support, time, patience and constructive feedback in helping me to complete this dissertation. I would also like to thank Marcia Wrona for her expertise and help in managing my huge data set in the SAS program. A special thanks also to Colleen Porter from the University of Florida who was always available when I had a question about the data set.

I would also like to thank my good friend Moya Peterson who made this journey with me. Moya is a wonderful friend and colleague. We started this journey together and knowing that she was beside me all the way made all the difference in the world. From our atypical presentations at the end of each course, to our regular Sunday afternoon statistics homework routine, we vowed to conquer it all and to have fun in the process.

To all of you, who have contributed to my “tapestry”, thank you so very much.

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CHAPTER I

INTRODUCTION

This chapter will introduce the problem, purpose, significance and research questions for the proposed study. The conceptual framework that will be utilized for the study will be presented and key terms will be identified and defined. Detailed information on the problem topic and methodology will be presented in detail in Chapters II and III.

Statement of the Problem

The lack of health insurance for all citizens in the United States has been a topic often debated in political, policy and research circles for many years. Stakeholders in the debates generally agree that health care reform is desperately needed and that the overreaching goal should be to provide expanded health insurance coverage, improved quality, and controlled costs. Access to health care has been strongly tied to insurance coverage. Health insurance has been linked to better health outcomes, greater financial security, and greater life expectancy (Institute of Medicine, 2002). However, 46 million people in the United States are currently without health insurance coverage, and over 300,000 of those people reside in the state of Kansas (Kansas Health Insurance Study, 2001). This number may actually be misleading because it only accounts for a portion of the uninsured. The national count would be closer to 85 million if people who were uninsured for any portion of the year were included in this figure. These additional people are known as the “hidden uninsured”. They represent those who have had a recent episode of being uninsured, but who were insured at the time the data were collected (Olson, Tang, & Newacheck, 2005). There is limited information available

distinguishing the population that has been chronically uninsured from those who had a brief interruption in health insurance coverage. Likewise there is little known about the impact a longer period without insurance has on the ability to access and utilize healthcare services. (Lewis, Ellwood, & Czajka, 1998).

Many health care reform proposals have been discussed in the past six years. Some states have recently enacted legislation mandating insurance coverage for all of their citizens. The success of those plans is yet to be determined. Most of the proposals being discussed are based on increasing employer sponsored coverage, increasing affordability of private coverage, or expanding public coverage (Hoffman & Roland, 2007). It is unlikely that one, all encompassing health policy solution can alleviate the health care access issues for the uninsured in this country. The access issues may differ for the uninsured based on the length of time without coverage. The uninsured population is a diverse group with diverse health care needs. This comprehensive study describing the uninsured population by examining distinct subpopulations of the population provides valuable information to assist policymakers in determining policy solutions.

Purpose

The purpose of this study was to explore the relationships among length of time without health insurance and access to health care, utilization of health care services, and demographic/socioeconomic variables in uninsured Kansans. It was anticipated that the results of the research could guide the development of policy solutions that would improve insurance access for a population of Kansans who do not have insurance.

Research Question

The following research question will be addressed in this study:

What is the relationship of duration of time without health insurance with (a) *access to care variables* (usual source of care and health status), (b) *health care utilization variables* (use of emergency room, doctor visits, and delay in seeking care), (c) *demographic variables* (age, gender, marital status and race), and (d) *socioeconomic variables* (income, education, employment, and residence).

Significance

Federal and state health policy has been primarily guided by federal data sources. The Current Population Survey (CPS) is one of the most widely utilized sources of health insurance information for policymakers. The CPS insurance questions do not support calculation of the duration of uninsured status when chronic in nature. The longest period without insurance coverage that is reported on the CPS is 12 months (Kenny, Holahan & Nichols, 2006). The phenomena of chronic uninsurance has been infrequently reported because of the lack of information available on duration of periods of being uninsured. The lack of information on this phenomenon has led to policy solutions for the uninsured which have focused primarily on the population who experience temporary interruptions in health care coverage. The Health Insurance Portability and Accountability Act which was introduced by Senators Kennedy and Kassebaum and enacted into law in 1996 is an example of such policy. Title I of the act protects health insurance coverage for workers and their families when they change or lose their jobs. Workers must be offered the opportunity to continue their current

coverage (at their own expense) for up to 18 months after leaving employment, or until they secure new coverage (PL 104-191).

No previous studies conducted at the state level were identified in the literature that examined the relationship between length of time without health insurance coverage, health status, access, and utilization of healthcare services. This study was an initial step in conducting an analysis of state-level data to contribute new knowledge about the uninsured, non-elderly population in the state of Kansas. The study provided information about the relationships between length of time without health insurance coverage, and one's ability to access and utilize health care services. This study also provided a more detailed description of the uninsured population in Kansas and their unique health insurance coverage needs. The results of the study could aid policymakers in seeking appropriate solutions for reform which are tailored to the distinct needs of particular uninsured subpopulations. Furthermore, assessment of health care access and utilization among these groups provides more state level information for Kansas policymakers to utilize in long term health care planning strategies.

Organized nursing in the United States has long been involved in the effort to increase access to care. The American Nurses Association and other nursing specialty interest groups have supported efforts to enact legislation that would establish universal health care coverage. Nurses as health care providers have a responsibility to help achieve health care for all (World Health Organization, 1978). Nurses are in a unique position as clinicians, teachers, administrators, and researchers to recognize the multidimensional aspects of access to health care as well as the outcomes related to access (Gulzar, 1999). The findings of this study will help inform nurses of the

variations in characteristics of the subpopulations of the uninsured. Increased knowledge of the unique needs of these subpopulations will enable nurse to more effectively promote and influence health policy in their behalf.

Conceptual Framework

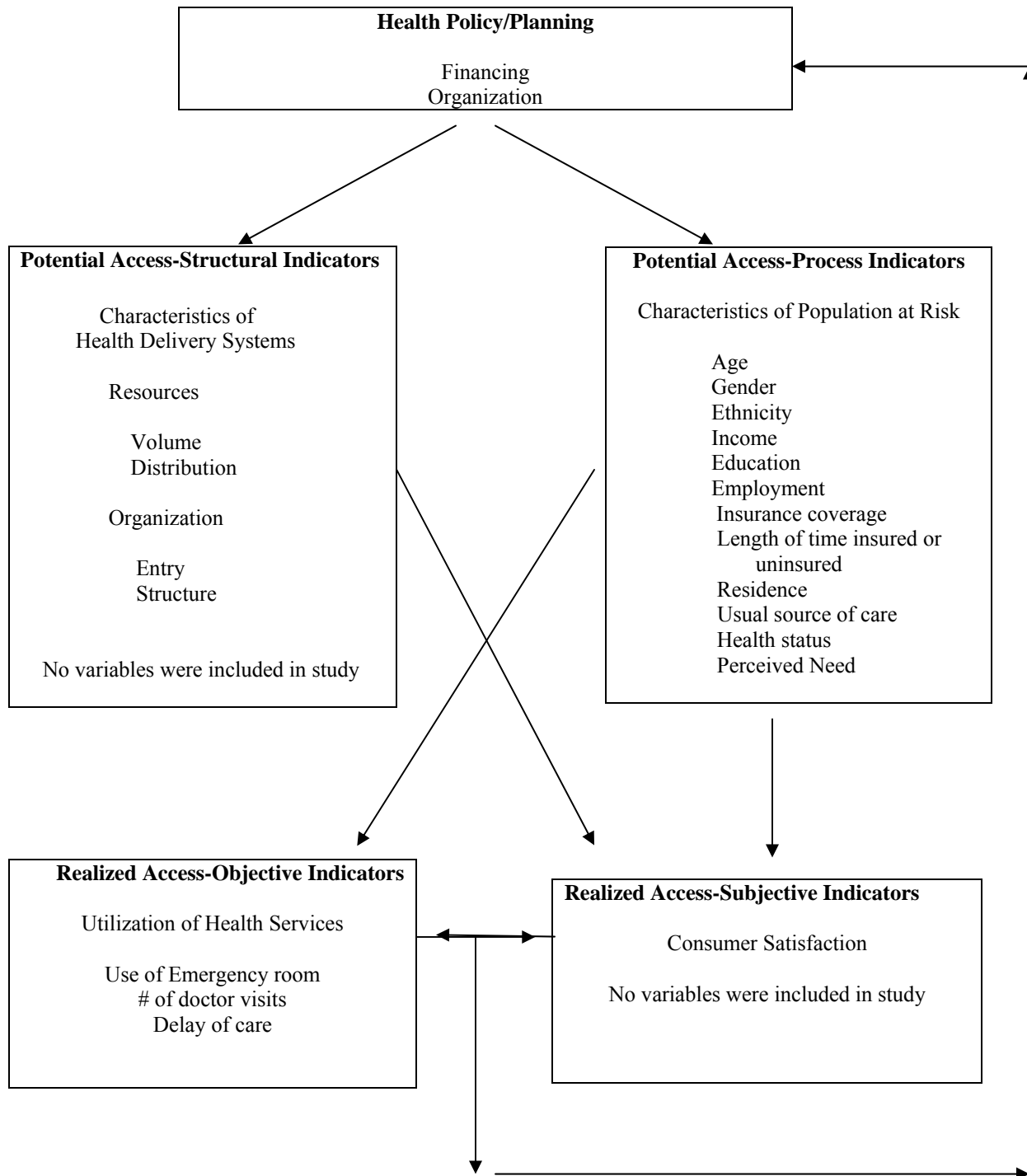
It has been estimated that over 46 million people in the United States are uninsured. But for millions more, insurance coverage is a fluctuating commodity (Olson et al., 2005; Schoen & DesRoches, 2000; Short, 2004). There is a need to better understand the population who has chronically been without health care insurance and the difficulties with access and utilization they experience. Access to care has been studied by many researchers and is conceptualized as a phenomenon with many dimensions (Aday & Anderson, 1974; Gulzar, 1999; Penchansky & Thomas, 1981). The concept involves a complex process of interaction between the health care system, potential users of the system, and the health policies affecting the system.

The conceptual framework that was used to guide this study and the selection of study variables was first introduced by Aday and Anderson in 1975. Their framework for the study of Access to Care operationalized the concept of access. Utilizing identified factors related to the concept, they developed a framework for the study of access. In addition they recommended approaches for evaluating access. The framework was strongly influenced by Donabedian's (1972) structure, process, and outcomes model for organizing the delivery of health services and criteria for evaluating the services. Aday and Anderson's framework has been used extensively by themselves and others to explore access to health care (Aday & Anderson, 1981; Aday, Anderson & Fleming, 1980; Anderson & Aday, 1978; Anderson & Anderson, 1999; Higgs, Bayne & Murphy,

2001; Kahn, 1992; Kahn & Bhardwaj, 1994). The Aday and Anderson framework contains five domains which are interrelated: health policy, characteristics of the health delivery system, characteristics of populations at risk, utilization of health services, and consumer satisfaction. Higgs et al., (2001) adapted the Aday and Anderson framework to incorporate consumer perceptions of health care needs and access. In an effort to recognize the importance of consumer utilization and satisfaction in policy making and planning, they incorporated a circular process whereby findings of consumer perceptions of utilization and satisfaction have a feedback loop to policy decisions. (See Figure 1).

Figure 1.1

Conceptual Framework



Adapted from Aday & Anderson (1981) ; Higgs et al. (2001)

Aday and Anderson's framework implies that characteristics of the delivery system (e.g. availability and organization) and characteristics of the population-at-risk (i.e age, gender, ethnicity, health status, income, education, insurance coverage, and perceived need) are indicative of the potential levels of access to care. Health care utilization (including sources of service, site, purpose, and time interval) and consumer satisfaction (in respect to convenience, availability, financing, and quality) are indicators of realized access to care.

Health Policy

Access has often been characterized as a goal of health policy and health policy is the starting point of Aday and Anderson's (1975) framework for access to care. When evaluating health programs, policy makers are most interested in the effect the programs have on access and utilization. Important components of the health policy/planning process included in the framework are financing and organization programs. The impact of fiscal integrity of healthcare delivery systems and the organization involved in utilizing resources impact the access issue (Aday et al., 1980).

Potential Access

Structural and process indicators are used to describe potential access to the health care delivery system. Structural indicators refer to characteristics of the health care delivery system which affect potential access. Process indicators are expressed in terms of the wants, needs, and resources of people seeking potential access to health care.

Characteristics of the health care delivery system are described by availability of resources and organization. Resources are comprised of the volume and distribution of personnel and capital involved in providing health care services. Organization as a

characteristic of the health care delivery system refers to the control and coordination of health care personnel and facilities in providing health care services. Entry and structure are components of the organization of the health care delivery system. Entry relates to the process one goes through to enter the system and can include things such as travel time, waiting time, or other such barriers that one encounters when seeking to become a patient in a health care system. Structure describes the characteristics of the system that affect the patient after they enter the system, such as the provider that they will see and the course of treatment.

Process indicators of potential access are used to describe the population-at-risk or those who seek care. The characteristics of a population- at- risk include predisposing, enabling, and needs components that individuals bring to the health care seeking process. Predisposing factors describe the variables which increase the likelihood of individuals utilizing health care services. These factors include age, sex, ethnicity, health care beliefs, education, and employment. Enabling factors describe the resources that one has available to them that allow them to utilize health care services. Income, insurance coverage, and attributes of community or region of residence are examples of enabling factors. Predisposing and enabling factors in the model could be classified as mutable or immutable. This distinction allows for consideration that certain variables potentially could be change while others by their nature were irreversible. Need factors refer to the health status and severity of illness which can be either perceived by the individual or assessed by the health care delivery system.

Realized access

The indicators of realized access can be divided into objective and subjective categories. Objective indicators of realized access are the characteristics that define the actual utilization of services: time, site, purpose, and time interval. Type of utilization indicates the category of care received (medical, dental, optical) and who provided the care (dentist, medical doctor, and pharmacist). The site of care refers to where the care was provided such as the emergency room, doctor's office, etc. Purpose of the visit indicates if the care was for preventive, illness, or custodial care. The time interval of health services utilization can be reported in terms of contact, volume, or continuity. Contact can be described as the time frame in which one enters the health care system. Volume describes the number of contacts for a specified time frame. Continuity refers to the degree of stability and coordination of medical care for a specified illness or episode of care. These determinants of health care utilization may vary depending on the type, site, purpose, and time interval of care.

The subjective indicator of realized access is consumer satisfaction. Consumer satisfaction is based on the attitudes of the care recipient regarding the quantity or quality of care. Issues of satisfaction can include convenience, availability and cost, provider characteristics including courtesy, patient education presented, and the patient's perception of quality. The subjective indicators in contrast to objective indicators are a unique representation of the consumer's point of view.

The Framework to Study Access as described by Aday, Anderson & Fleming (1980) depicts health policy as directly affecting the characteristics of the health care delivery system. Some mutable characteristics of the population-at-risk could potentially

be changed by health policy. Potential access in turn affects realized access. The health care delivery system may also affect utilization of services and satisfaction with services. The system may also affect some of the characteristics of the population which would then also affect the utilization and satisfaction with care. Characteristics of the population independent of the system may also affect use and satisfaction of services.

Application of the Framework for this Study

The study was guided by the Framework to Study Access. It was not the intent of the study to test the model and the study did not include all the factors needed to do so. The study utilized the model to identify variables that could be used to further describe the uninsured non elderly population in the state of Kansas and the relationship among duration of time without health insurance coverage and access and utilization. The potential access process indicators of age, sex, ethnicity, education, income, insurance status, usual source of care, residence, and health status were analyzed for all categories of the uninsured. The realized access objective indicators of site of visit and time interval including contact and volume were determined for all subjects. No potential access, structural indicators or subjective indicators of realized access were examined in this study. The health care system of interest in this study was the delivery system in Kansas and the population-at-risk in this study was the non elderly population of Kansas.

Definitions of Terms

For the purposes of this study the following definitions were used:

Access: The outcome of a process involving the interaction between the characteristics of the health care service system and potential users and moderated by health care policy and planning efforts (Khan & Bhardwaj, 1994).

Chronically uninsured: Being continuously without health insurance coverage for a period of longer than 12 months.

Continuously insured: Having no lapses in health care coverage for the preceding 24 months.

Health care: The services provided to individuals or communities by health care professionals in order to promote, maintain, monitor, or restore health.

Health Insurance: A health plan provided through a current or former employer, union, or purchased privately which provides some degree of financial coverage for covered illnesses and hospitalizations.

Interruption in health insurance coverage: Having a period of being without insurance which lasted less than 12 months.

Non elderly: Refers to individuals under the age of 65.

Potential Access: The presence of resources to allow probable entry into the health care system (Aday et al., 1980)

Realized Access: The actual use of health care services (Aday et al., 1980)

Summary

The number of uninsured continues to increase as policy makers continue to debate policy solutions that will assure access to health care for all. The uninsured population has been largely viewed as a homogenous group with little regard to the specific differences that one may experience in relationship to access, health status, and utilization of health care as a result of a varying length of time without insurance.

Effective health care reform requires accurate descriptions of the distinct subpopulations of the uninsured so targeted solutions can be developed.

This study was an initial step in analyzing state-level data to describe the subpopulations of the uninsured non elderly in the state of Kansas. The findings contribute to the knowledge about the characteristics of these groups and the relationships between access, health status, utilization, and length of time without health insurance. Aday and Anderson's (1981) Framework for Access was used as an organizing framework for this study.

CHAPTER II

LITERATURE REVIEW

This chapter provides the historical background on the health insurance status of the non-elderly uninsured population in the United States. A literature review of previous research addressing characteristics of the chronically uninsured, those with temporary interruptions in health insurance coverage, and the continuously insured populations is presented. Problems encountered in conducting research on the uninsured and findings related to characteristics, health care access and utilization among these populations are also discussed.

Health Insurance in the United States

Health insurance was designed to help pay the costs of health care in order to protect people from the financial hardship that can occur with large or unexpected medical bills. Depending on the type of insurance plan, it will pay bills from hospitals, physicians, and other health care providers (Faulkner, 1960).

Health insurance can be obtained through private organizations or governmental agencies. In the United States, health insurance is a relatively new phenomenon. Insurance to cover illness was first offered by Massachusetts Health Insurance of Boston in 1847. The modern era of group health insurance policies had its start in Texas in 1929 when teachers in Dallas contracted with Baylor Hospital for services in exchange for monthly fees.

Employer sponsored benefit plans incorporating health insurance began in the 1940's and 1950's. The wage freezes encountered as a result of World War II helped to increase the growth of employer sponsored health plans by allowing employers to offer

health care as part of their employment package in lieu of increasing wages. After the war, employers continued to expand the health coverage benefits. In 1951 the health benefit contributions by employers became tax deductible under the Internal Revenue Service regulations, providing added incentive to employers to offer health benefits to their employees (Patel & Rushefsky, 1995). This new tax policy was the basis of a fundamental change in the financing for health care. With enactment of this new policy a large portion of the fiscal burden for health insurance was shifted from the consumers and employers to the government. Within a few years, the majority of American workers had employer-provided health insurance that was heavily subsidized by the federal government. The beginning of expansion of health care technology that was occurring in the 1950's (new medication development, vaccines, first transplant) also was an impetus for expanded health insurance. Fewer than 10% of Americans were insured in 1940 but by the end of 1959 over 75% of Americans had health insurance coverage (Sultz & Young, 2006).

Government sponsored programs to cover the costs of health care also expanded in the 1950's and 1960's. These programs were designed to provide health care coverage for targeted groups of people with specific diseases, the elderly, or the poor. Medicaid was established in 1965, is dually funded by the federal and state governments and provides coverage for people with low incomes. Medicare was enacted in 1965 and is primarily a program to provide health insurance coverage for adults over the age of 65 (Kulesher, 2005).

The majority of health insurance coverage historically has come from employer-sponsored plans. Participation in employer-sponsored plans has decreased recently due

in part to increased cost, the decline in employment rates, and a greater cost sharing by employees. Despite these recent decreases employer-sponsored plans still account for coverage of about 68% of the U.S. population under the age of 65 (U.S. Census Bureau, 2006).

The Uninsured

The uninsured population has been studied by researchers utilizing household surveys conducted by governmental and private agencies for over fifty years in order to estimate the number of uninsured in the United States and their defining characteristics (Andersen & Anderson, 1999). While these surveys differ in their approaches and results in counting the uninsured, there is agreement that the number (and percentage) of uninsured continues to increase. From 2000-2004 the number of uninsured under the age of 65 increased by nearly 6 million (Holahan & Cook, 2005). In 2005 nearly 18% of the non-elderly population in the United States was uninsured (Kaiser, 2006). The most commonly used federal surveys in research and in estimating the volume of insured include: The National Health Interview Survey (NHIS); the Medical Expenditure Panel Survey (MEPS); the Current Population Survey (CPS); the Survey of Income and Program Participation (SIPP); the Community Tracking Study (CTS); the National Survey of America's Families (NSAF); and the Behavioral Risk Factor Survey (BRFSS). Although numerous surveys have been conducted, there is a lack of consensus among the surveys as to the exact number of uninsured.

Each federal survey is conducted with a specific intent and methodology designed to acquire the particular information they seek. While many of the surveys query using health insurance coverage related questions, those questions often are not the primary

focus of the surveys. There is considerable variation among the surveys in regards to the estimated number of uninsured. Published estimates of the uninsured range from 19-46 million (O'Grady, 2006). The most recent survey published by the U.S. Census Bureau (2006) estimated that 46.6 million or 15.9% of the population were without health insurance in 2005. With health insurance identified as the single most important factor in producing access to healthcare, it's imperative to have accurate descriptions not only of the number of uninsured but also the characteristics of the uninsured including length of time without coverage.

While federal surveys differ as to the exact number of the uninsured, the characteristics of the uninsured are consistent (M. Davern, personal communication, January 5, 2006). Eighty percent of the uninsured are adults and about 60% are 18-44 years old. Over one-half of the uninsured are from low income families and approximately one-half are members of an ethnic or racial minority. Minorities are more likely to be uninsured than their white counterparts regardless of income level. Hispanics represent about one third of the uninsured population while comprising only 12% of the population (Kaiser, 2006; Rhoades & Chu, 2000; US Census, 2006).

The majority (~81%) of uninsured adults works outside the home but they lack the necessary education in order to secure employment in jobs that offer health insurance benefits. Two thirds of uninsured adults have no college education and one-fourth did not graduate from high school. Employers offering insurance decreased from 69% to 60% during the period of 2000-2005, leaving about two thirds of the uninsured employed, but without available insurance coverage (Kaiser, 2005; US Census, 2006).

The largest percentages of the uninsured reside in the western and southern regions of the country. The Midwest and the Northeast have the lowest uninsured rates. Texas has the highest percentage of the uninsured, while Minnesota has the least (U.S. Census, 2006). The rates of uninsurance vary up to three fold across states because of the differences in state economies, employer-based health insurance coverage, the percentage of low income families in the state, and the scope of the state's Medicaid program (Kaiser, 2006).

The uninsured are less likely than those with insurance to visit a doctor, have a usual source of medical care, obtain preventive services, get recommended tests, and have prescriptions filled. The uninsured are also more likely to delay needed healthcare, receive less treatment for chronic illnesses, suffer from poorer health, and experience a higher death rate than those with insurance (Broyles, Narine & Brandt, 2002; IOM, 2006; Kaiser, 2003; Sered & Femandopulle, 2005).

Issues in counting the uninsured

The federal surveys mentioned previously are each designed to address specific public policy questions. The surveys additionally have been used as a mechanism to acquire additional information that can be used to estimate the number of uninsured. Policymakers utilize this information to analyze access, coverage, and trends in the uninsured population and to develop policy approaches to these issues. Despite the number of surveys conducted on a regular basis, data are lacking for policy purposes and particularly for state policy purposes (Blewett & Daven, 2006). Policymakers are seeking more specific information about the characteristics of state populations to enable them to track access, coverage, and trends in health insurance coverage.

The estimates of health insurance coverage determined by surveys has been said to vary because of how questions regarding insurance are asked and how long participants are asked to recall their experiences with health insurance (Kaiser, 2006). Weaknesses of surveys that track health insurance coverage and access were identified by Kenney, Holahan, and Nichols (2006). Their review found that surveys lacked agreement on coverage estimates. There was a lack of consensus on the number of uninsured at a specific point in time, whether that time period was the entire year or for some time during the year. Many of the surveys do not have a direct question that identifies those who are uninsured. The uninsured in those surveys are determined to be those who do not give a positive answer when asked about different types of insurance coverage. The uninsured are identified as the “residual” group—those left after they have answered negatively to questions about enrollment in specifically named insurances. Forgetfulness of respondents when asked to recall events throughout the year and the tendency toward underreporting of health insurance also may result in an inflated estimate of the uninsured (Short, 2001).

Health insurance is treated as a simple dichotomy by most researchers and surveys—one either has insurance or does not (Short & Graefe, 2003). In reality, people fall into 3 categories in relation to health insurance: a) those that are always without health insurance, b) those that are sometimes without health insurance and c) those that always have health insurance. Surveys that neglect to recognize those with gaps in insurance coverage or who simply count whether respondents are insured at one point in time without asking about previous coverage are misleading in that they tend to underestimate and exclude the “hidden” uninsured (Olson, Tang & Newacheck, 2005).

The population who experiences gaps in insurance is the most difficult to identify. The result is a lack of research in this area (Chollet, 2000; Lewis, Ellwood & Czajka, 1998; Schoen & DesRoches, 2000). Lack of research on this subpopulation raises an important policy question given that the implications of lack of insurance for those chronically uninsured may be different than for those who experience interrupted health insurance coverage. Likewise the reasons they are without insurance and what their needs are in order to be covered effectively may differ substantially. Assuming that length of time without insurance is not a factor could lead to a “one size fits all” policy solution.

Many of the national surveys lack state and local-level estimates of the uninsured. The surveys lack the data to support accurate state-level estimates of coverage, related access issues, and utilization measures. State level data is important because individual states maintain a great deal of responsibility for many of the decisions that affect the uninsured. States are under increasing pressure to expand health insurance coverage and to demonstrate that their programs are effective; a task which is difficult, at best, without precise data. In order to understand the characteristics of their state populations in regard to insurance, many states must rely on multiple sources at the state and federal level that may not provide consistent or useful information (Blewett & Davern, 2006). Many of the federal surveys unfortunately have insufficient sample sizes to produce state estimates of the uninsured. Some of the federal surveys that do provide state level estimates have samples that range from 1000-5000 per state. In these cases the sample size precludes any useful state analysis of the data (Kenney, et al., 2006). Federal surveys which vary by 30 million people in estimating the national number of uninsured can not be relied upon to guide sound policy making at the state level.

Information on the specific type and use of health insurance varies across surveys. Some surveys do not collect information regarding benefit packages, total out-of-pocket costs, and covered services. Specifics on access and utilization of health care services often are lacking. These items represent factors that are germane to health policy designed to address issues of adequacy, access, and affordability of health insurance (Kenney, et al., 2006).

Data collected in national surveys often lack sufficient information to determine whether the survey participant would actually be eligible for available public health insurance programs. Details on income or income sources are not always solicited in the national surveys. If the information is collected, depending on how the question is posed, it may not be provided in a manner that allows the income information to be linked to a specific family member (Kenney et al., 2006). In addition, respondents are often reluctant to reveal such personal information. Without this income data, one can not ascertain whether specific members of the surveyed household would be eligible for one of the public insurance programs.

Health insurance coverage data are most useful to health policy researchers and policymakers when available in a timely manner. The information is often used differently by researchers and policymakers. Researchers are interested in analyzing the data in order to search for a better answer. Policymakers usually are operating on a short time frame and are interested in the best answer that is available now. While moving from data collection to distribution of results in an expedited manner is a desirable goal, it must be recognized that there is a tradeoff between complexity, completeness, and the resulting lag in the availability of data for policy purposes (Kenney, et al., 2006).

However, because of the nature of policymaking, in order for the estimates to be relevant, the results of surveys need to be released shortly after collection. These surveys are considered public use files and the timely release of the files is essential if they are to be used to provide estimates on the uninsured for policymakers. Prompt releases also provide a greater opportunity for the data to be utilized and analyzed by researchers.

Federal Surveys

The Current Population Survey (CPS) is a monthly survey conducted by the Census Bureau with the primary purpose of collecting employment and unemployment statistics. The survey also gathers information about the demographics of the population including insurance information that is gathered from respondents each March. The survey is a large cross-sectional survey with high response rates and representative samples from each state that allows for state specific estimates. This survey is one that frequently is cited as a source for estimates of the uninsured and heavily relied upon by policymakers for information on the numbers of uninsured. Detailed information on the household demographic and socioeconomic characteristics is collected. Income information is solicited for each individual from the previous year. The accuracy of the information is vulnerable to the respondents' ability to recall the information. The survey is also dependent on the willingness of respondents to release this personal information. The survey elicits responses to the question of whether the respondent or those in the household have at any time during the previous year been covered by any of the named types of insurance. A question which verifies uninsured status has been added to the survey in recent years. The addition of this question has reduced the estimate of the number of uninsured by nine percent (Nelson & Mills, 2001).

The accuracy of the CPS survey in estimating the number of uninsured has been debated (Denavas-Walt, Proctor, & Lee, 2005; Kenney et al., 2006; Short, 2001; Swartz, 1986). The questions asked in the survey do not elicit information on the insurance status of respondents at the time the survey is being conducted nor does it provide information on how long respondents have been without coverage. Omission of these questions may lead to an under or over estimation of those uninsured. Questions regarding health coverage offered by employers are not asked routinely and the information on health status is limited to one question. The CPS does not address health care utilization, access, or spending, all of which are related to coverage issues (Kenney et al., 2006).

The Survey of Income and Program Participation (SIPP) is a longitudinal survey conducted by the U.S. Census Bureau. The survey collects information on the sample panel of people over a two to four year time period. Participants are interviewed every four months regarding income, employment characteristics, participation in public programs, and demographics. The sample size does not allow for state level estimates of the uninsured to be generated (Blewett et al., 2004).

Income and insurance information is asked about each family member. Detailed information on coverage at the time of the interview, during the month of the interview and during the previous three months is collected. This information allows for estimates of coverage at a specific point in time, the entire year or any portion of the year (U.S. Census, 2003). In addition there are questions regarding coverage offered through employers. Unlike the CPS, SIPP does not ask a coverage verification question but does restate the status of coverage that the respondent provided (Kenney et al., 2006).

There is limited utilization and access information collected in the SIPP. Attrition due to the length of the study can affect the estimates of the number of uninsured. However, the SIPP may have less recall effect because of the shorter period of time that respondents must remember information. The multiyear design of the SIPP makes the timely release of results difficult, therefore creating a limitation to its usefulness for characterizing the uninsured (Short, 2004).

The National Health Interview Survey (NHIS) is an ongoing cross sectional survey conducted by the National Center for Health Statistics. The primary purpose of the study has been to monitor the health of the U. S. population through the collection of data on a variety of health topics. The NHIS is a nationally representative sample which includes each state but because of the sampling technique, estimates are not available for every state. The survey is conducted via interview, and questions cover the respondent's insurance coverage and type of insurance at the time of the interview. Information about access and utilization is gathered for the previous 12 months, making it impossible to correlate those two important variables. Employer-sponsored health insurance coverage is also addressed. The uninsured are asked about the length of time without insurance. This information makes it possible to estimate coverage at one point in time, all year, or if there was any interruption of coverage in the previous 12 months. A verification question is asked to ascertain if respondents with no insurance information actually are uninsured (Kaiser, 2006; Kenney et al., 2006; and Lewis, Ellwood & Czajka, 1998).

The income information gathered by the NHIS is for the previous year. Total family income is collected and is attributed to a list of sources that are provided for respondents. Because current income is not available from the survey, inferences can not

be made about income and current insurance coverage from this survey. Although the data collected through the survey has been released through preliminary reports within six-twelve months, public use files often are not available for up to two years after the data was collected (Kenney et al., 2006).

The Medical Expenditure Panel Survey (MEPS) is a longitudinal study conducted by the Agency for Healthcare Research and Quality (AHRQ). One component of the survey is the Household Component (HC). The purpose of the MEPS-HC is to collect detailed information on health care coverage, access and utilization by Americans. Data are gathered on the same respondents five times over a two year period and respondents are asked about their insurance coverage in each month. This design allows one to compare data over time and to analyze long term trends (Agency for Health Care Research and Quality, 2003). The sample size of the survey is modest and therefore only national and regional level data are made available (Blewett et al., 2004).

The survey collects detailed income and insurance coverage information about each member of the household. The questions allow for estimates of the uninsured at a specific point in time, whether there was a period of uninsurance in the past year, and if they were uninsured during the entire year (Short, 2001). Additionally information is gathered on insurance coverage offered by employers. The information gathered by the survey is released through public use files about a year after the data is collected (Kenney et al., 2006).

The Community Tracking Study (CTS), co-sponsored by the Robert Wood Johnson Foundation, consists of periodic national surveys and site visits conducted by the Center for Studying Health System Change. Households, physicians, and employers are

surveyed with the purpose of tracking changes in the health care system and how the changes affect consumers and providers. The study is a nationally representative survey conducted in 60 randomly selected communities. Questions address access, utilization, satisfaction, health status, coverage, and socioeconomic characteristics (Lewis et al., 1998; Short, 2004).

Information is collected about private and public health insurance coverage at the time of the survey. Those who report no coverage are asked a verifying question to establish that they do not have health insurance. This verification question may explain some of the difference in the estimates of the uninsured from survey to survey. Surveys that don't include a question to verify coverage often overestimate the number of uninsured (Porter, Garvan & Duncan, 2002; Reschovsky, Cunningham, & Pickreign, 1997).

The Behavioral Risk Factor Surveillance System (BRFSS) is conducted by the state and territory health departments and is cosponsored by the Centers for Disease Control and Prevention. The survey is conducted on a yearly basis and is limited to adults. The survey is designed to collect state specific information on preventive health care practices and risk behaviors associated with chronic illness, injuries, and infectious diseases among the population 18 years and older who live in households. One adult per randomly selected household is surveyed by telephone.

Annual income information on the adult interviewed is collected. The information elicited regarding health information is limited to one question asking if the respondent has any type of insurance coverage at the specific time the survey is conducted. Utilization and access information is solicited for the previous 12 months.

Questions on health status and chronic illness are included in the survey. The BRFSS is collected throughout the year and the public use files are available about six months after the survey is completed (Kenney et al., 2006; Short, 2004).

The majority of the studies of the uninsured use the data from one or more of these surveys. While each of these surveys provides valuable information, together they lack consistent reliable information on coverage, cost, and access issues. The difference in the estimates of the uninsured derived from these studies can be attributed to the variability in design, purpose, sample, questions, time-frame, response rates, and survey administration (Kenney et al., 2006; Lewis et al., 1998; State Health Access Data Assistance Center, 2006). Very few of the federal surveys by design have the ability to identify the chronically uninsured because they fail to provide information on episodes without health insurance coverage that persist beyond 12 months.

In order for federal surveys to be useful to states in analyzing coverage issues four key criteria were identified (Blewett et al., 2004): a) a sample that represents the state's population; b) a sample design that is large enough to allow for estimates of coverage for subpopulations; c) release of data and estimates within a year of data collection; and d) micro-data must be easily accessible to states. None of the most widely used federal surveys described earlier provide all of these key criteria, creating challenges for states in their efforts to identify the uninsured and policy remedies.

Since the early 1990's states have been more active in designing their own surveys to estimate and characterize the uninsured in their respect states. This initiative was stimulated by funding from Health Resources and Services Administration (HRSA) in the early 2000s as part of the FY 2000 Health and Human Services Appropriations bill.

This bill provided grants to states to assist in developing plans for providing access to health coverage for their citizens. The State Planning Grants provided support for states to develop, collect, and analyze information via household surveys. States who conducted these surveys found the state level information to be more relevant to state policy decision making regarding the uninsured than the previously used national estimates (Blewett & Davern, 2006).

Duration of periods without coverage

For those uninsured, the problem can be short-term or long-term. Because insurance is tied closely to employment status, uninsured episodes often occur when one changes jobs or becomes unemployed. Short gaps in insurance coverage also occur when one is waiting to become eligible for insurance coverage privately or through public programs. Long-term lack of insurance coverage (chronically uninsured) is common and is usually attributed to employment where insurance benefits are not available, are too costly, or the employee has pre-existing conditions. Long-term uninsured episodes also can occur as a result of the death of a spouse who provided the insurance coverage (Kaiser, 2004).

There was a dearth of reported studies which had been conducted specifically focusing on the duration of uninsured episodes at the national, state, or local level. Swartz and McBride (1990) found that for about 50% of the uninsured, the period without insurance would end in four months and that only 15% experienced lack of coverage for 24 months. In a later study, McBride (1994) using longitudinal data found that 75% of the uninsured were in episodes that would last longer than one year and only 3.5% would become insured in less than five months. Data from the census bureau

(2003) indicated that 29% of new uninsured episodes last over a year, that 59% of people who lack insurance at some point during the year will be without coverage for more than one year, and that 78% of those uninsured in a given month have been without coverage for at least one year. Findings were similar from the 2002 National Survey of American Families. Haley and Zuckerman (2003) reported that the long-term uninsured varied more across subgroups and states than the short-term uninsured.

Monthly income, education, age, and type of employment were factors consistently predictive of longer periods without coverage (Haley & Zuckerman, 2003). The poor were more likely to suffer uninsured periods lasting a year or longer (Haley and Zuckerman, 2003; McBride, 1997). The uninsured that were in fair or poor health were at increased risk of being without insurance coverage for a long period of time compared to those in better health. Young adults (19-34 years of age) also have been identified as significantly more likely to be at risk for being without coverage for at least 12 months. Race and ethnicity also contributed to the likelihood of experiencing longer periods without coverage. Hispanics were three times more likely to be uninsured for 12 months than non-Hispanics (Kaiser, 2004).

Length of duration without coverage was also a determinate of problems in accessing and utilizing healthcare services. Access to care was negatively affected by any length of time being uninsured. However, the longer the period without insurance continued, the greater the likelihood of encountering problems in obtaining needed healthcare. Those who were without coverage for 12 months or longer, were more likely to not have a usual source of healthcare and were much less likely to have received care

in the past 12 months (Haley & Zuckerman, 2003; Sudano & Baker, 2003; Survey of America's Families, 2002).

Data collected in national surveys indicated that the majority of the people who were uninsured had been uninsured during the past 12 months and probably longer although the surveys did not ask for that information. The previously discussed studies acknowledge that there are also a persistent number of people experiencing temporary gaps in insurance. These findings suggest that solutions to the problems of the uninsured must include approaches to address the issues of the temporarily uninsured as well as the chronically uninsured (Haley & Zuckerman, 2003). While the population of the uninsured as a whole has been studied in great detail through the years, there appears to be much less known about what differences might exist between the specific characteristics, access, and utilization issues faced by those who are uninsured for a short time frame and those who are chronically uninsured.

Access to care and the uninsured

Numerous studies have investigated the relationship between access to healthcare, healthcare service utilization, and insurance status (Aday & Anderson, 1981; Anderson & Aday, 1978; Berk & Schur, 1998; Freeman & Corey; Marquis & Long, 1996; Institute of Medicine, 2001 & 2002; Khan & Bhardwaj, 1994; Newachek, Stoddard, Hughes and Pearl, 1998; Schoen & Des Roches, 2000; Satchell & Pati, 2005; Zuvekas & Weinisk, 1999). The consensus of those studies was that being uninsured was a major obstacle in accessing and utilizing health care services. Access to health insurance was associated with better health outcomes. Those with health insurance were found to have greater financial security, endure less pain and suffering, have less disability, and a longer life

expectancy than those without insurance (IOM, 2002). The uninsured were less likely to: have a usual source for health care, utilize preventative health screening tests, receive healthcare services when needed, and receive adequate care for chronic illnesses. The delay in receiving needed services may contribute to the greater chance of dying that was found in the uninsured as compared to those with continuous health insurance coverage (IOM, 2002). The problems found with access to care were prevalent in those with a recent short-term gap in insurance coverage, those currently without insurance and those who currently were insured but had recently encountered a period of uninsurance.

The significance of these findings is somewhat inconclusive because of lack of detail concerning how the data used in the studies were collected. Much of the data used for analysis in the studies were collected in cross-sectional surveys and one cannot determine whether the time frame when the respondent was uninsured corresponds to the time when they deferred needed healthcare services. Despite being unable to correlate the time frames, the studies still indicate that those without insurance are at risk for access problems. The studies demonstrate how the inclusion of a question on cross-sectional surveys that addresses time frames for periods of being uninsured would allow researchers to assist policymakers in viewing a more complete dimension of the uninsured. (Schoen & DesRoches, 2000).

The uninsured population in Kansas

As discussed previously, some nationally conducted surveys have been able to provide general information about the uninsured population in Kansas. However the majority of those surveys lacked detailed information about the geographic, occupational, economic, and ethnic subgroups of the uninsured population within the state. Two recent surveys were conducted at the state level in order to acquire more specific information about the characteristics of the uninsured and to assist policymakers in making insurance coverage available to more Kansans (Davis, 1997; Kansas Health Insurance Study, 2001). Insurance coverage for the citizens of Kansas is important not only for the individual's well being, but for the health of the family, community and state as well.

The Kansas Health Insurance Study (KHIS) of 2001 found that not unlike the uninsured in other states, Kansans without insurance represented some of our most vulnerable citizens. At the time of the survey, 10.5% of Kansans under the age of 65 were not insured. The rate of uninsurance varied geographically from 16% to 5.4%. The rate of uninsured was greatest among those earning less than \$5,000 per year. Across the state 26% of the uninsured were Hispanic while only 8.3% was non-Hispanic. Almost 20% of the uninsured were young adults aged 19-24. The lowest percent of uninsured was among children, presumably because of the efforts to insure coverage for children through the Medicaid and Health Wave programs. Gender of the uninsured was split almost equally among males and females. Individuals who were single or unmarried living with a partner had the highest rates of uninsurance.

Insurance status for adult Kansans was highly correlated with employment status. Over 70% of Kansans received their insurance benefits through their employer. However

almost 50% of Kansans who were uninsured work for employers who do not offer insurance benefits. Large employers were more likely to offer insurance than smaller businesses. The lowest rate of uninsurance was for those employed full time (8.1%). The highest rate was for those who were unemployed (38.2%). Almost 16% of the uninsured were self-employed.

Over 66% of Kansans without insurance have been without coverage for more than one year or have never had insurance coverage. Slightly more than 18% of the uninsured had not had coverage for one to six months. Kansans who reported their own health status as fair or poor were more likely to be uninsured. Over 92.9% of Kansans with excellent health had some form of health insurance while only 77-78% of those reporting fair or poor health statuses had a form of insurance. Kansans with insurance were more likely to have a usual source of care (87%) compared to 67.4% of the uninsured who report having a usual source of care. Those without insurance were more likely to have been treated at an emergency department in the past six months than those with insurance. The insured were more likely to have visited their doctor or clinic in the past six months. The uninsured also reported a delay in obtaining needed medical care in the past 12 months due to financial barriers. Over 40% of the uninsured reported delays in seeking treatment compared to 8% of those with insurance. These findings suggest that although Kansas has a lower number of uninsured than the national average, the characteristics of the uninsured as a whole are similar to those identified in the national studies. The characteristics of the uninsured in relation to duration of uninsurance were not described in this study, although questions included in the survey would allow for that level of analysis.

Summary

This review of the literature suggests that the uninsured population is viewed as a homogenous group despite little empiric evidence to support this position. There was a need to study, at the state level, the subpopulations of the uninsured based on the length of time they have been without insurance coverage. A key consideration that was missing from many of the studies of the uninsured was detailed information about the characteristics of those who have been without insurance coverage for longer than one year. A better understanding of the relationship among the length of time without health insurance coverage and access, utilization, and socioeconomic variables is needed in order to facilitate state policy solutions that can most effectively address the needs of all who are uninsured. The problems of the uninsured are multifaceted as are the subpopulations of the uninsured. This study utilizing the methodology described in Chapter III describes the characteristics of non elderly Kansans who are chronically uninsured and how they differ from those who experience short-term interrupted health insurance coverage, and those continuously insured. The results of this study will assist in bridging the knowledge gaps that now exist and in providing empirical evidence to assist policymakers in better understanding the uninsured non elderly adult population in the State of Kansas.

CHAPTER III

METHODOLOGY

This chapter restates the purpose of the study and the research question. Detailed information regarding the research design, data source, and sample selection is provided. Operational definitions and specific variables that will be used in the study are identified. The instrument, reliability, and validity issues are discussed. Data management procedures are outlined and ethical issues are discussed.

Purpose and Research Question

The purpose of this study was to explore the relationships among length of time without health insurance and access to health care, utilization of health care services, and demographic/socioeconomic variables in uninsured Kansans. It was anticipated that the results of the research could guide the development of policy solutions that would improve insurance access for a population of Kansans who do not have insurance.

The following research question was addressed in this study:

What is the relationship of duration of time without health insurance with (a) *access to care variables* (usual source of care and health status), (b) *health care utilization variables* (use of emergency department, doctor visits, and delay in seeking care), (c) *demographic variables* (age, gender, marital status, and race), and (d) *socioeconomic variables* (income, education, employment, and residence).

Research Design

A descriptive correlational study design utilized a secondary data analysis of existing data collected from residents of Kansas who participated in the Kansas Health Insurance Study conducted in 2001. Descriptive studies seek to accurately depict

characteristics of individuals, groups or situations and the frequency of which certain phenomena occur in the natural setting. Correlational studies explore the relationships among variables being studied. There was no active intervention by the researcher in this study. The purpose of a descriptive correlational study is to describe relationships among variables as opposed to inferring that there is a cause and effect relationship between the variables (Polit & Beck, 2004). Although observational data can be used to argue causal inference (Rubin, 1974), that is not attempted in this study.

Secondary analysis is a type of research that utilizes data that have previously been collected in another study or for other purposes, such as clinical or administrative data bases. In secondary analysis the data may have been collected by another researcher. The previously collected data provided an opportunity to explore new research questions and new relationships among the variables (Polit & Beck, 2004).

Advantages of the research design

A major advantage of this design was that it allowed the researcher to use existing data to further delineate the characteristics of the subpopulations of the uninsured in Kansas. The data set was large, with data from 8004 households and 22,690 individuals. The costs associated with conducting an original study of this magnitude would be prohibitive for an individual. More data are usually collected in studies than what are actually analyzed. Secondary analysis allows the researcher to focus on particular subgroups instead of the entire original sample and allows a researcher to investigate variables and relationships that previously were not analyzed. The descriptive design allows one to study relationships among variables that are not amenable to manipulation.

These studies lead to the logical progression of expansion of knowledge (Polit & Beck, 2004).

Data Source

The source of data for this study was the Kansas Health Insurance Study Data Set (KHIS). The data set, collected in 2001, was a component of a descriptive study conducted by the Kansas Insurance Department and funded by a Health Resource and Services Administration (HRSA) State Planning Grant. The purpose of their study was to provide accurate and detailed data about the uninsured population in Kansas in order to assist policymakers in designing new initiatives to address the needs of the uninsured. Although the dataset was collected several years ago, it represents the most recent health insurance survey completed by the State of Kansas. A recent study comparing state survey findings to the Current Population Survey (CPS), revealed that the three year (2002-2004) average percentage of uninsured Kansans reported from CPS was 10.8%, a difference of only 0.3% from the findings of the KHIS (Call, Davern & Blewitt, 2007). This suggests that the findings of the KHIS are still an accurate representation of the uninsured population in the State of Kansas. Although the absolute numbers and percentages of uninsured in Kansas may have changed slightly since 2001, there should be little effect on the data distribution pattern analyzed in this study.

Permission was obtained by this investigator from the principal investigator to utilize data from the KHIS for the proposed study. Data was provided on a CD-ROM. The data set is also publicly available and therefore, did not require special handling. For security purposes until the study was complete the data set and all study information was kept in a locked cabinet unless being actively used by the investigator. Subjects in the

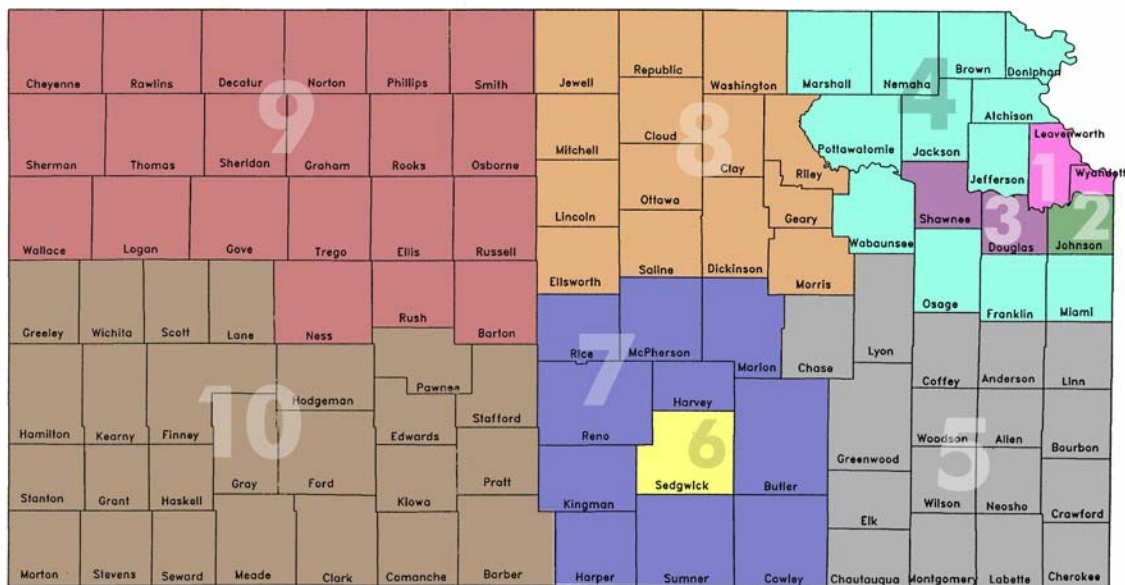
data set were identified only by a code number. This investigator did not have access to the codes linking numbers to specific subjects.

Setting and Sample

The setting for the KHIS and this study was the state of Kansas which was subdivided into 10 regional areas. (See Figure 3.1). The subdivision was based on: a) ensuring a large enough population from each region to allow completion of at least 800 surveys; b) choosing regions that would be similar in employment, demographics and rural-urban characteristics; and c) avoiding any splits within counties. The sample for the KHIS was a stratified random sample. The sampling design (See Appendix A) was based on telephone exchanges and geographic areas. Information about the demographics of the population served by telephone exchanges was used to classify the telephone exchanges within the 10 regions of Kansas into eight mutually exclusive and exhaustive strata. The strata were based on whether the exchange was above or below the state median for the proportion of Black, the proportion of Hispanic, and the proportion of low-income individuals (KHIS, 2001). Disproportionate sampling within each stratum was used to enhance precision in estimating insurance coverage in key populations and to produce meaningful statewide estimates. However by sampling disproportionately among groups known to lack insurance, the sample did not represent the overall population of Kansas. In order to make the disproportionate sample resemble the overall Kansas population the sample was weighted during the analysis. Analytical weights were developed for the sample to accommodate for the over representation of certain groups (African Americans, Hispanics and low income) and the under representation of Kansas residents who did not fall into these groups. This was

Figure 3.1

Counties designated by Regions (1-10) for the Kansas Health Insurance Study, 2001.



accomplished by decreasing the relative weight on African Americans, Hispanics, and poor respondents to compensate for their over-representation in the sample. The relative weights were increased for subjects that fell outside these groups to compensate for their under-representation in the sample. The weighting procedure allowed researchers to make reliable inferences regarding the uninsured and ensured that the overall sample was representative of Kansas (KHIS, 2001).about the uninsured population in Kansas and ensured that the sample was representative of the overall population. See Appendix B for the weighting procedure. The final sample for the KHIS yielded 8004 households and 22,690 individuals across the state. These households and individuals comprised the sample for this study.

Instrumentation

The telephone survey instrument used in the KHIS was a modification of a questionnaire designed for use in the Florida Health Insurance Study and the Indiana Health Insurance Study (See Appendix C). The questionnaire included information about each member of the household that was surveyed; it was designed so that the interview was conducted with the adult member of the household who was the “most knowledgeable about the family’s healthcare and health insurance” (KHIS, 2001 pg. 6). Questions were selected for inclusion from the Current Population Study (CPS), Survey of Income and Program Participation (SIPP), Medical Expenditure Panel Survey (MEPS), National Health Interview Survey (NHIS), Behavioral Risk Factor Survey (BRFSS) and the 1993 Rand household survey and Assessment of Health Plans surveys. The questions were determined by the KHIS research team to have the capability of eliciting the insurance information necessary for the purposes of the study. The majority of the

questions came from the CPS (C. Porter, personal communication, January 4, 2007). The questions have been widely used and reviewed by experts, which addresses face validity, but there are no published data on the reliability and other validity of the questions. A preliminary instrument was piloted in February 2001 and changes based on that testing were incorporated into the final questionnaire (KHIS, 2001).

Data Collection

The data were collected by the Bureau of Economic and Business Research at the University of Florida in Gainesville, under the direction of Dr. Chris McCarty (See Appendix B for Methodology). All data were obtained by self report from participants during a telephone interview. A computer-assisted telephone interviewing system (CATI) was used by the interviewers. Data collection and quality assurance was aided by the CATI system. Using the computer-assisted program, interviewers were able to enter data directly into the computer as it was received, virtually eliminating transcription errors. The system also specified the range of answers to each question and would not allow interviewers to enter inappropriate responses. Interviewers were automatically provided the next question by the system based on a previous response. This prevented the interviewers from following an incorrect pathway based on responses. The CATI system was able to provide wording that was tailored to each situation eliminating the need for interviewers to recall previous answers.

The interviewers represented a wide range of ethnicity, gender, and race categories. The telephone interviews were conducted in both English and Spanish. Participants in the KHIS provided informed consent. Because of the personal nature of

some questions, interviewees were reminded that they could refuse to answer any survey item. The confidentiality of all participants was assured.

Interviewers spent several hours receiving training and observation to prepare them for the survey process. Special training was provided to the interviewers for handling reluctant respondents and for minimizing refusals. All interviewers were monitored on a regular basis for performance. Periodically calls were monitored, and the CATI was checked to insure consistency and accuracy of the recorded responses. Interviews were conducted between the hours of 9 a.m. and 9 p.m. Multiple callbacks were made to numbers where there was no answer or the line was busy. Each number was dialed at least eight times at varying times throughout the day to enhance response rates. Callback appointments were also scheduled at the convenience of the respondents.

Variables and Definitions

The independent variables from the KHIS study used in this study were: demographic (age, gender, marital status, and race); socioeconomic (income, education, employment, and residence); potential access variables of the population at risk (usual source of care and health status); and realized access objective variables indicated by utilization of health services (use of emergency department, doctor visits, and delay in seeking care). The dependent variable was the length of time without health insurance coverage which consisted of 6 levels. The variable names, levels (coding) and descriptions are presented in Tables 3.1 through 3.5. It should be noted that the data for this study were collected in 2001 before the new standards for race and ethnicity population tracking were implemented. The questions in the survey do not support the

current standards of two categories of ethnicity and five classifications of race (NIH, 2007).

Table 3.1

Demographic Variables

Variable Name	Levels	Description
AGE	0-65 years	The age of the subject at the time of the interview, measured in whole years and recorded as a continuous variable
SEX	1=male 2=female	The gender of the subject
MARRIED	1=married 2=widowed 3=divorced 4=separated 5=never married 6=living with partner	The subject's marital status at the time of the interview
RACE_CAT	1=White 2=Black 3=Hispanic 4=Other	Mutually exclusive categories that combine race and ethnicity.

Table 3.2

Socioeconomic Variables

Variable Name	Levels	Description
HOUSEHOLD INCOME	1=<\$4,999 2=\$5000-9,999 3=\$10,000-14,999 4=\$15,000-19,999 5=\$20,000-24,999 6=\$25,000-34,999 7=\$35,000-44,999 8=\$45,000-54,999 9=\$55,000-64,999 10=\$65,000-74,999 11=\$75,000-84,999 12=\$85,000-94,999 13=\$95,000 or more	The gross yearly income from all sources that comes into the subject's household, recorded in categories using ranges
EDUCATION	0=not applicable 1=<high school 2=completed high school 3=some college or associates degree 4=completed 4 years of college 5=some graduate education 6=graduate degree	The educational level category of the subject recorded as the highest level of school completed by the subject
EMPLOYMENT STATUS	0=not applicable 1=work for employer, full-time 2=work for employer, part-time 3=exclusively self-employed 4=unemployed 5=not in the workforce	Collapsing 3 variables (WORK, WRK2 and WRK3) , categories of mutually exclusive work status
REGION	1=LV, WY 2=JO 3=DG, SN 4=AT,BR,DP,JA,JF,MS,MI, NM,OS,PT, WA (NE Kansas) 5=AL,AN,BB,CT,CH,CK, CO,CR,EK,GW,LB,LN,LY, MG,NE,WI,WD (SE Kansas) 6=SG 7=BT,CW,HP,HV,KG,MI, MP,RN,RI,SU (Southcentral Ks) 8=CY,CL,DK,EW,GE,JL,LI MT,OT,MS,RP,RL,SA,WS (Northcentral KS) 9=Bt,CY,DT,EL,GV,GH,LO NS,NT,OS,PH,RW,RK,RH, RS,SH,SM,TH,TR,WA (NW Kansas) 10=BA,CL,CD,CM,ED,FI, FO,GR,GY,GL,HM, HA, HD,KY,KI,LN,ME,PW,PR, SC,SW,ST,SV,WI (SW Kansas)	The region of the state in which subject resides designated by counties (See Figure 2)

Table 3.3

Access to Care Variables

Variable Name	Levels	Description
USUAL SOURCE OF CARE	1=no 2=yes	The subject having a particular clinic, hospital, health center or doctor's office that they use when sick or needing health advice
HEALTH STATUS	1=poor 2=fair 3=good 4=very good 5=excellent	The general status of the subject's health as reported by the subject

Table 3.4

Health care utilization variables

Variable Name	Levels	Description
EMERGENCY DEPT VISITS	0-999	The number of times in the last six months that the subject has gone to the emergency room to receive health care for themselves
DOCTOR VISITS	0-999	The number of times in the last six months that the subject went to a doctor's office or clinic to receive health care for themselves (does not include emergency room visits)
DELAY IN SEEKING CARE	1=no 2=yes	Any time in the last 12 months where the subject needed medical care but delayed or did not get the care because they could not afford it

Table 3.5

Dependent Variable

Variable Name	Levels	Description
LENGTH OF TIME WITHOUT INSURANCE	1=<1 month 2=1-6 months 3=7-12 months 4=1-2 years 5=>2 years 6=never had health insurance	Length of time subject has been without health insurance

Data Analysis

The main class of models considered in this study was the logistic regression model. Logistic regression involves a binary dependent variable conditional on a set of independent variables or predictors. As in any regression model, the results can be sensitive to data quality as well as usual regression issues such as multicollinearity. Before discussing the details of the logistic regression, the strategies used for cleaning and detecting outliers are described.

Data Cleaning

Accuracy of the data was assessed by the use of descriptive statistics. The investigator evaluated the results examining the range of values, the plausibility of results and looking for values that appeared out of range (Tabachnick & Fidell, 2001, p 57). Missing data was identified as well as the pattern of the missing data.

Outliers

Outliers were identified through examination of the ranges and frequencies of responses. Potential outliers were identified in two of the independent variables. These outliers were described and a strategy was utilized to reduce their impact on the study.

Multicollinearity

Variables were also evaluated for multicollinearity. Multicollinearity occurs when independent variables are highly correlated. Multicollinearity was assessed by examining the variance inflation factors (VIF) for each of the variables. The variance inflation factor is the reciprocal of tolerance. A low variance inflation factor indicates that the variable shares little variance with other variables. Multicollinearity is not considered a problem if the variance inflation factor is less than ten (Menard, 1995).

Statistical Analysis

Statistical analysis was performed using the Statistical Analyst System (SAS). The analysis included descriptive, correlation, and logistic regression techniques. Descriptive statistics were used to summarize the characteristics of the study population. Frequencies and percentages were reported for categorical data. Summary statistics such as mean, median, and standard deviation were determined for continuous variables.

Logistic regression was utilized to answer the research question, although other procedures were considered. Because the purpose was to examine relationships between the independent variables and the duration of time without insurance it was determined that logistic regression would be the best procedure to accomplish that goal. The logistic regression results are easily understood and communicated which was a consideration in this study because of the policy implications. Recent enhancements for SAS 9.1 that provide specific procedures for performing logistic regression on data arising from complex sampling techniques were used. SAS version 9.1.3 PROC SURVEYLOGISTIC incorporates complex sample survey designs, including designs with stratification, clustering, and unequal weighting in its estimation process. See Appendix D for the specific programming statements used in the study to accommodate

Logistic regression is a form of regression used when the dependent variable is binary and the independent variables are of any type (e.g. interval, ordinal, nominal). In logistic regression the purpose of the analysis is to predict the dependent variable from a set of independent variables that may be continuous, discrete, dichotomous, or a mix. The dependent variable in a logistic regression is an indicator of some characteristic and is binary (0 or 1). Logistic regression is used to determine whether other variables are

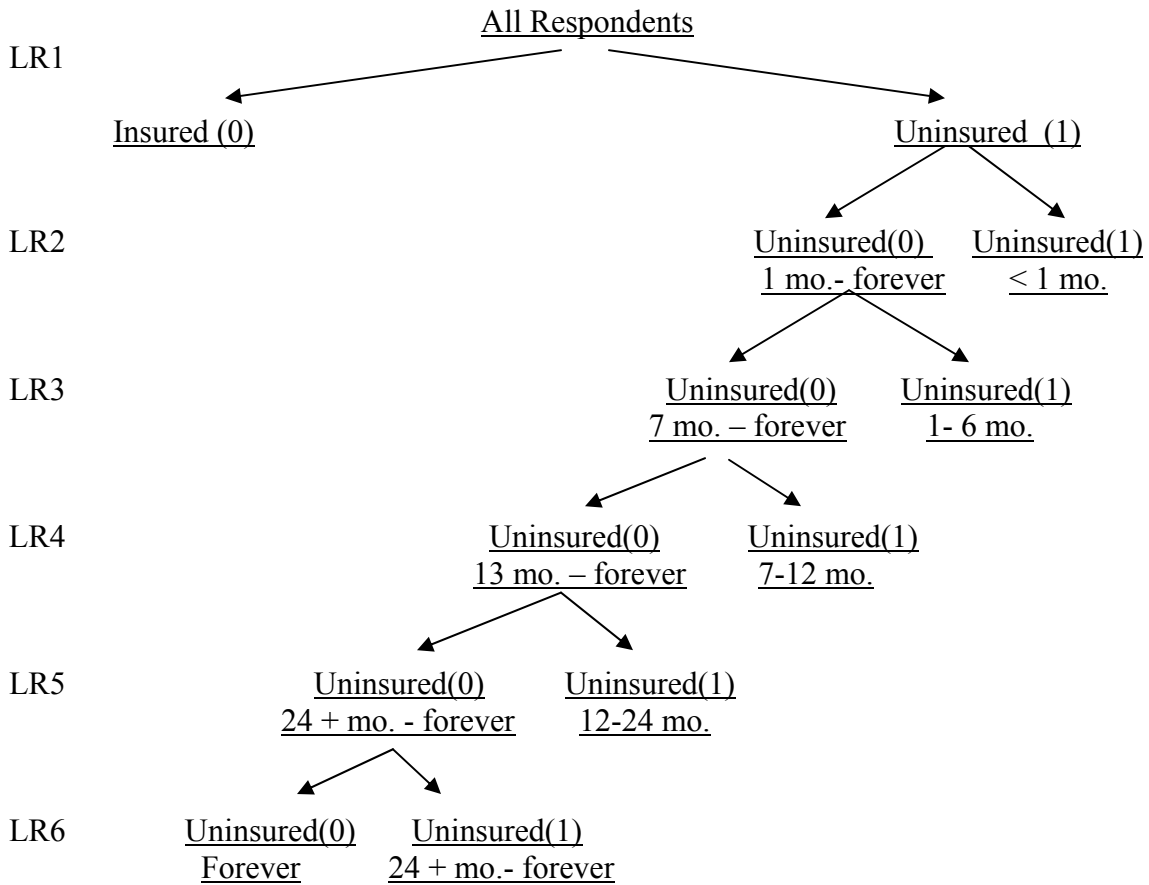
related to the presence of some characteristic, in this case the length of time without health insurance coverage. Although the response variable in a logistic regression is a binary variable, the logistic regression equation does not predict the binary variable. Instead the logistic regression predicts the probability that an independent (indicator) variable is equal to one. Maximum likelihood estimation, after transforming the dependent variable probability parameter into a logit variable (the natural log of the odds of the dependent variable occurring or not) provides estimated regression parameters (on logit scale). The regression parameter facilitates a log odds interpretation. Changes in the log odds of the dependent variable are calculated, rather than changes in the dependent variable itself.

Logistic regression was used in this study to predict the dependent variable (duration without insurance) on the basis of the independent variables. One of the goals of logistic regression is to correctly predict the category of outcome for individual cases using the most parsimonious model. For this study a model was created that included all predictor variables that were useful in predicting the response variable (time without insurance). The dependent variable, time without insurance, had seven categories. Therefore to accommodate this structure, six logistic regressions were fit in the following manner. Six logistic regressions were performed to determine the relationship among the duration of time uninsured to access of care, utilization of care, and demographic/socioeconomic variables. (See Figure 3.2). The first logistic regression (LR 1) was performed to determine those individuals with health insurance (coded 0) and those without insurance regardless of the length of time without insurance (coded 1). The descending option was used in the procedure so that the lower value, in this case zero,

was defined as the nonevent. The higher value in this case was the level of greatest interest and was coded as one, sorting last for ease in filtering. The first logistic regression filtered the insured (coded 0) from the uninsured (coded 1). Each successive logistic regression was performed by filtering from the uninsured based on length of time without insurance. (See Figure 3). The second LR procedure filtered those uninsured for < one month (coded 1) versus those uninsured for one month or longer (coded 0). The third LR procedure filtered those uninsured for one to six months (coded 1) versus those uninsured for longer than six months (coded 0). Logistic regression four filtered those uninsured for seven to twelve months (coded 1) versus those uninsured for longer than 12 months (coded 0). The fifth logistic regression procedure filtered those uninsured for one to two years (coded 1) versus those uninsured for longer than two years. The final logistic regression procedure filtered those uninsured for over two years (coded 1) versus those who had never had insurance (coded 0). All independent variables discussed previously were included in each logistic regression.

In summary, the final model consisted of six logistic regressions, each addressing different aspects of the data. The first logistic regression investigated independent variables that were associated with being insured versus uninsured. The uninsured were then divided into specific categories of time uninsured to estimate the relationship with the independent variables changes.

Figure 3.2

Data filtering plan for Logistic Regressions

LR= Logistic Regression

The likelihood ratio test was used to test the overall model and individual model parameters. The Wald statistic was used to test the significance of individual logistic regression coefficients for each independent variable. The likelihood-ratio test, the Score test, and the Wald test were used to test the global null hypothesis (Lohr, 1999; Pallant, 2006; Tabachnick & Fidell, 2001).

Odds ratios were used to evaluate the coefficients of regression. The odds ratio is a measure of association. An odds ratio > 1.0 indicates an increased probability of the event occurring while an odds ratio < 1.0 indicates less likelihood that the event will occur. Logit coefficients (corresponding to b coefficients in the ordinal logistic regression) were calculated using maximum likelihood estimation. The maximum likelihood estimation seeks to maximize the log likelihood that reflects the odds that the observed values of the dependent variable may be predicted from the observed values of the independent variables. The likelihood (probability) varies from 0-1 and log likelihood varies from minus infinity to 0. The likelihood ratio is a function of log likelihood (LL) (Tabachnick & Fidell, 2001).

Limitations of the Research Design

There are several limitations worthy of discussion. Some of these limitations involve the modeling of the data (logistic regression). Others involve data integrity (i.e. reliability and validity). Both of these classes of limitations are discussed below.

Sample size can be a limitation of any statistical model. In the case of logistic regression, a sample which is too small or has too many variables may produce extremely large parameter estimates and standard errors (Tabachnick & Fidell, 2001). This was not found to be an issue because of the size of the data set being used in this study.

Potential reliability and validity issues associated with the use of administrative datasets have been well documented (Cook & Campbell, 1978; Polit & Becker, 2004). One limitation to this study was inherent in non-experimental studies. Because non-experimental studies do not manipulate variables or utilize randomization; it is difficult to establish causality (LoBiondo-Wood & Haber, 1998; Polit & Beck, 2004). Rubin (1974) described the use of pairing in observational studies in order to reduce bias and heterogeneity of the sample, thereby allowing one to establish causality. However, this procedure was not utilized in this study design, so the researcher is unable to establish causality. Another potential limitation to this study was that the data used in the study were self-reported. People by nature, may be reluctant to discuss personal issues such as employment, income, and insurance status. Data may also be influenced by other events occurring in the lives of respondents at the time of the data collection. Telephone surveys may also limit the sample selection because very poor people may not have phone service. This limitation has become less prevalent as phone service has become more affordable. However, this data set represented the most accurate available at the time the study was conducted. Potential sources of bias and threats to internal validity were controlled through research design, sample size, and the use of a database that utilized consistent data collection procedures. Threats to external validity were addressed through the use of clear theoretical and operational definitions (Cook & Campbell, 1978).

Assumptions

Logistic regression requires that observations are independent and that the dependent variables be linearly related to the logit of the probability of an event. It also does not make assumptions about the distribution of independent variables. However,

logistic regression is sensitive to high correlations between the independent variables and can be influenced by outliers (Pallant, 2005).

Ethical Issues

The University of Kansas Human Subjects Committee approved the KHIS study that is the source of data for the proposed study. This study qualified as an exempt study according to the University of Kansas Guideline for Human Subjects (See Appendix C). The proposed study was submitted and approved in that category. The investigator completed the training requirements for conducting research with human subjects.

Summary

Despite numerous surveys that have been conducted to describe the uninsured population, there is still little known about the subpopulations of this group—those who are chronically uninsured versus those who have interruptions in health insurance coverage. Therefore, the purpose of this study using data collected in the KHIS was to explore the relationship of the length of time without health insurance with access to health care, utilization of health care services, and demographic/socioeconomic variables.

The sample for the study included the 22,690 non elderly Kansans who participated in the 2001 KHIS survey. The design for the study was a descriptive correlational design. Variables selected for study included those identified in the literature and from Aday & Anderson's (1981) framework for access. These variables were commonly associated with lack of insurance, health care access, and health care utilization. Statistical analysis included descriptive, correlational, and regression techniques. It was anticipated that the results of this study will provide a greater understanding of the uninsured non elderly population in the state of Kansas.

CHAPTER IV

FINDINGS

In this chapter the purpose of the study and the research question are restated. An overview of the study design is provided, followed by a detailed description of the findings from the study. Descriptive statistics from the sample are discussed as well as the logistic regression models used to evaluate the relationship of duration of time without health insurance coverage with elements of access and utilization of health care by Kansans.

Purpose and Research Question

The purpose of this study was to explore the relationships among length of time without health insurance and access to health care, utilization of health care services, and demographic/socioeconomic variables among uninsured Kansans. The uninsured have been viewed historically as a homogenous population. The study design allowed the researcher to examine the uninsured subpopulations according to time uninsured. It was anticipated that the results of the research could guide the development of policy solutions that recognize and address the unique needs of those subpopulations of the uninsured.

The following research question was addressed in this study:

What is the relationship of duration of time without insurance with (a) *access to care variables* (usual source of care and health status), (b) *health care utilization variables* (use of emergency room, doctor visits, and delay in seeking care), (c) *demographic variables* (age, gender, marital status, and race), and (d) *socioeconomic variables* (income, education, employment, and residence)?

Overview of the Study Design

A descriptive correlational study design was used with secondary data analysis of existing data provided by residents of Kansas who participated in the Kansas Health Insurance Study (KHIS, 2001). The KHIS data were collected by telephone survey and represented 8,004 households and 22,690 individuals. Secondary analyses for this study included descriptive, correlation, and multiple logistic regression procedures using the SAS Proc SurveyLogistic program. Detailed descriptions of the sample, study design, and methodology are found in Chapter III.

Sample

The sample was comprised of non elderly individuals across the State of Kansas who participated in the KHIS. Individuals from the KHIS who had complete data for the variables examined in this study were included in the final sample. The total sample for analyses in this study included 19,082 subjects. Of those 19,082 subjects, 17,260 reported having health insurance at the time they participated in the KHIS and 1822 individuals (10.5%) reported not having health insurance at the time they were surveyed. Table 4.1 contains the complete socioeconomic demographic characteristics of the total insured and uninsured sample in this study. The results were based on the weighted data. The insured population was slightly older than the uninsured but gender was equally represented in both groups. More of the insured subjects were married than the uninsured, but both groups were comprised of a large percentage of adults who had never been married. The race of the subjects in both groups was predominately white. The insured subjects had higher household incomes and more education than the uninsured subjects. The percentage of subjects in each group varied throughout the 10 regions of

the state. The insured were more likely than the uninsured to have a usual source of health care, have better health, and have more visits to the emergency room and the doctor in the past six months. The insured also were less likely to have delayed seeking needed health care in the past year.

The average age of the insured group was 30 years (*SD* 17.8) and the average age of the uninsured group was 29 (*SD* 14.9). Almost 49% of the insured and uninsured were males and 51% were females. Over 46% of the insured subjects were married and 45% had never been married. Just less than 35% of the uninsured subjects were married and 46% had never been married. Both groups were predominately white. The median income for the insured subjects was just under \$55,000 per year while the median income of those uninsured was just over \$20,000 per year. In the insured group, 47% reported having attained some college education hours beyond high school, compared to 30% of the uninsured. Both groups reported over 50% were employed in some capacity. The largest percentage of the insured resided in Johnson County, while the largest percentage of uninsured (18%) lived in Sedgwick County. Table 4.2 describes the occurrence of access and utilization variables in the total sample of the insured and uninsured in the study.

Eighty-nine percent of the insured reported having a usual place where they would go to receive health care (usual source of care). Of the uninsured, 73% reported having a usual source of care. Ninety-three percent of the insured subjects reported having good health or better, compared to 84% of the uninsured subjects. In the six months prior to the survey, 88% of the insured denied having gone to the emergency department for health care. In the uninsured group, 83% reported having not gone to the

emergency department of a hospital for health care in the previous six months. Nearly 29% of the uninsured reported that they had not visited a doctor for health care in the previous six months while almost 50% of the uninsured reported not having visited a doctor in the previous six months for health care. Nine percent of the insured reported having needed medical care in the previous 12 months but delayed seeking that care because they could not afford it. Thirty four percent of the insured had delayed seeking needed medical care in the previous 12 months because they were unable to afford the care. There were differences noted in the insured versus uninsured subjects in all variables except sex and age. However among those uninsured, age was found to be statistically different for subjects insured for longer than two years than for the other categories. Table 4.3 contains the mean ages for each category of duration without health insurance.

Table 4.1
*Demographic Characteristics of the Insured and Uninsured after adjustment
 using analytic weights*

Variables	Insured		Uninsured	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	8587	51	960	49
Female	8376	49	953	49
Marital Status				
Married	7917	47	658	34
Widowed	182	1	27	1
Divorced	983	6	231	12
Separated	99	0.5	37	2
Never married	7853	45	874	46
Living w/ partner	181	1	87	5
Race				
White	14058	83	1298	68
Black	946	5	168	9
Hispanic	1117	7	337	18
Other	840	5	110	6
Income				
<4999	190	1	86	4
5K-9999	310	2	115	6
10-14999	511	3	247	13
15-19999	657	4	240	13
20-24999	911	5	261	14
25-34999	2137	13	420	22
35-44999	2280	13	196	10
45-54999	2137	13	129	7
55-64999	1851	11	75	4
65-74999	1472	9	45	2
75-84999	1310	8	19	1
85-94999	704	4	18	1
95+	2491	15	64	3

Table 4.1
Demographic Characteristics of the Insured and Uninsured continued

Variables	Insured		Uninsured	
	<i>n</i>	%	<i>n</i>	%
Education				
Missing	5303	31	321	22
< High school	576	3	270	14
High school	3193	19	639	33
some/assoc degree	3841	23	424	22
Bachelors	2486	15	102	5
some grad hours	368	2	15	1
Grad degree	1196	7	40	2
Employment status				
Full time	7756	46	663	35
Part time	917	5	156	8
Self employed	881	5	176	9
Unemployed	436	2	258	13
Not in work force	1721	10	250	13
Missing	5251	31	412	22
Region				
1	1394	7	241	11
2	3179	15	194	8
3	1742	10	174	9
4	1189	7	83	5
5	1559	11	227	13
6	2901	16	354	18
7	1720	11	202	11
8	1306	9	143	9
9	826	6	86	5
10	1146	7	205	11

Table 4.2

Access & Utilization Variables for the Insured and Uninsured after adjustment using analytic weights

Variables	Insured		Uninsured	
	<i>n</i>	%	<i>n</i>	%
Usual Source of Care				
No	1822	11	525	27
Yes	15140	89	1389	73
Health status				
poor	258	1	64	3
fair	818	5	236	12
good	3544	21	603	32
very good	5141	30	463	24
excellent	7202	42	545	28
Emergency Dept. Visits				
0	15199	88	1520	83
1	1546	9	220	12
2	297	2	43	2
Dr visits				
0	5000	29	907	50
1	4875	28	387	21
2	3004	17	185	10
3	1490	9	124	7
Delay in seeking care				
no	15358	91	1265	68
yes	1605	9	648	32

Table 4.3
Mean ages by duration of uninsured period

Length of time without insurance	Mean (years)	SD
< 1 month	25.3	14.1
1-6 months	26.4	14.6
7-12 months	24.9	13.9
1-2 years	26.6	13.8
>2 years	33.3	14.7
Never insured	28.6	16.1

Data Analysis

The research question in this study was answered by conducting a series of six logistic regression procedures. The dependent variable for each of the regression procedures was dichotomous and based on the length of time the subject reported being uninsured. The dependent variable in the initial logistic regression indicated if the subject was insured (coded 0) or uninsured (coded 1). In each of the subsequent five logistic regressions the dependent variable was a specific duration of time without health insurance. Subjects were classified as having been uninsured for the specified time frame (coded 1) or for a longer time frame (coded 0). For example, in logistic regression two the dependent variable was: being without health insurance for less than one month (coded 1) or longer than one month (coded 0). In logistic regression three the dependent variable was: being without health insurance for one to six months (coded 1) or being without health insurance longer than six months (coded 0). The dependent variable in

logistic regression four was whether the subject had been uninsured seven to twelve months (coded 1) or longer than 12 months (coded 0). Logistic regression five examined the dependent variable of one to two years without insurance (coded 1) or longer than two years (coded 0). The final logistic regression examined the dependent variable of being uninsured two or more years (coded 1) versus having never been insured (coded 0).

Thirteen independent variables were selected based on previous research which supported the relationship between the variables, health status, access to care, and health care utilization. Three of the variables were continuous (age, emergency department use, and doctor visits). Ten variables were categorical: one with thirteen levels (income), one with ten levels (region), three with six levels (marital status, education, and employment status), one with five levels (health status), one with four levels (race), and three with two levels (sex, usual source of care, and delay in seeking care).

Data Preparation

Prior to beginning the statistical analysis, the independent variables and the dependent variables were examined. Accuracy of the data were assessed by the use of descriptive statistics. Range of values, plausibility of results, and inspection for values appearing to be out of range were evaluated. The data set was evaluated in respect to missing data and coding. Missing data were identified as well as the pattern of missing data. Questions that were not applicable to the study subject were coded as “missing”. Exploring the patterns of missing data supported this determination. For example, the survey question regarding employment status was not applicable for children, so if the subject was less than 18 years of age the answer was coded as missing. The survey question about education also was not applicable for those under 18 years of age. The

subjects actually had no opportunity to answer. In order to include these subjects in the analyses, they were categorized in a separate category called “not applicable” for the employment status and education variable levels. Children < 16 years of age which were originally coded as missing were recoded as “never married”. Cases with missing data that could not be explained were deleted ($n= 3,608$). Despite having to delete these cases the analysis resulted in an adequate sample size ($N= 19,082$) for the logistic regression analyses.

Outliers in the data were identified through examination of the ranges and frequencies of responses. The two independent variables that were most likely to be influenced by outliers were continuous variables that included the number of visits to the doctor in the past six months and the number of visits to the emergency department in the past six months. No outliers were identified in the visits to the emergency department data. Six insured subjects indicated a higher than expected number of doctor visits. The first logistic regression was performed with and without those cases included. The results were not affected by the cases, so the cases were retained. Those cases were not an issue in the subsequent logistic regression procedures because the subjects were insured and the samples for logistic regressions two through six only involved the uninsured subjects.

Multicollinearity can occur in logistic regression models if there are strong correlations between independent variables. If present, multicollinearity will inflate the variances of the parameter estimates resulting in a lack of statistical significance for independent variables despite a strongly significant overall model. Multicollinearity can also affect the direction and magnitude of regression coefficient estimates which may lead to incorrect conclusions. In this study multicollinearity was assessed by examining

the variance inflation factors for each of the variables. The variance inflation factor is the reciprocal of tolerance. If the tolerance is high the variance inflation factor is low. The lower the variance inflation factor the less variance a variable shares with other variables. Multicollinearity is not a problem if the variance inflation factor is less than ten (Menard, 1995). The variance inflation factors for the variables included in the study ranged from one to three, indicating that multicollinearity was not a problem in the analysis, thus all 13 independent variables could be retained in the model.

Direct logistic regression analyses were performed on the length of time without health insurance as the outcome variable and the previously identified 13 predictor variables to answer the research question for this study. In direct logistic regression all of the predictor variables are entered simultaneously. This method allowed the contribution of each variable to be evaluated over and above the others (Tabachnick & Fidell, 2001). The results of each logistic regression analysis are described in the following sections.

Logistic Regression Results

Data from 19,082 non elderly Kansans were available for analysis. From the total sample, the insured $n = 17,260$ and the uninsured $n = 1,822$. The convergence criterion was satisfied. The standard errors for parameters were not large, again indicating that no multicollinearity was evident.

The likelihood-ratio test statistic, the Score test and the Wald test were used to test the global null hypothesis. All three statistics produced a p -value of $<.0001$ so it was concluded that the model as a whole was statistically significant. In the analysis of effects all of the independent variables were statistically significant except for age.

The ability of the model to predict correct case classification versus classification based on chance alone was evaluated by examining the Somers' D, Gamma, Tau-a and c statistics as well as the percent of concordant cases reported. The percent of concordant predictions and observed responses was 83.6%. This indicated that while the model did not always assign higher probabilities to correct cases the model's prediction was better than chance alone (50%). These same diagnostic procedures were completed for each individual logistic regression procedure to ensure that none of the assumptions of logistic regression were violated.

Logistic Regression #1

Table 4.4 contains detailed results from the six logistic regressions performed. The independent variables that were found to be significant in predicting insurance status in the first logistic regression were age, marital status, race, income, education, employment status, region of residence, usual source of health care, health status, emergency room visits, doctor visits and delay in seeking care. Age was negatively associated with being uninsured, indicating that for every year increase in age the odds of being uninsured decreased .980 times. The odds of being uninsured were 2.030 times greater if you were divorced compared to someone who was widowed. Likewise the odds of being uninsured were 2.6 times greater if one was living with a partner compared to someone widowed. The odds of being uninsured were increased 1.234 times for those never married versus widowed. The odds of being uninsured were 1.827 times greater for Hispanics than Whites. Income was negatively related to being uninsured, indicating that as income increases the odds of being uninsured decreases .797 times. Having less than a high school education increased the odds 2.153 times of being uninsured, while having

graduated from high school increased the odds of being insured by 1.689 times. A bachelor's degree and any hours toward a graduate degree decreased the odds of being uninsured by .609 and .619 times respectively. Employment status was negatively related to being uninsured for those working full time, those whose employment status was not applicable, and those self employed. For workers employed full time the odds of being uninsured were .273 times less than for those unemployed. For individuals whose employment status was not applicable, the odds of being uninsured were .181 times less than for those unemployed. Employees who were self employed had odds .992 times less of being uninsured than those unemployed. The odds of being uninsured if one lived in Leavenworth or Wyandotte counties (Region 1) was 1.263 times greater than if you lived in region 10 (Southwest Kansas). For residents of region 4 (a 12 county area in northeast Kansas) the odds were .720 times less that they would be uninsured than residents in Southwest Kansas. In region 7 (a 10 county area surrounding but not including Sedgwick county) the odds were 1.173 times greater that one will be uninsured than those residing in southwest Kansas. The usual source of health care, health status, emergency department visits, and doctor visits were all negatively associated with being uninsured. If one had a usual source of health care the odds of being uninsured were .472 times less than someone who didn't have a usual source of care. The better one rated their health status the less likely they were to be uninsured. Use of the emergency department and doctor visits were negatively associated with being uninsured. As the number of emergency visits increased, the odds of being uninsured decreased .938 times. Likewise as the number of doctor visits increased, the odds of being uninsured decreased by .956

times. The odds of individuals being uninsured versus insured were 2.964 greater if they had delayed seeking needed medical care.

Table 4.4

Odds Ratios and Standard Errors for Logistic Regressions (LR) 1-6 after adjustment using analytic weights

code	LR 1		LR 2		LR 3		LR 4		LR 5		LR 6	
	0 / 1		1 / 0		1 / 0		1 / 0		1 / 0		1 / 0	
Variables	Insured/uninsured		<1 mo vs 1 mo +		1-6 mo vs 6 mo.+		7-12 mo vs 12 mo+		1-2 yrs vs 2 yrs +		2+ yrs vs never	
	OR (SE)		OR (SE)		OR (SE)		OR (SE)		OR (SE)		OR (SE)	
Age	.980 (.0033)**		.968 (.0148)*				.948 (.0130)**		.954 (.0098)**			
Marital status												
Divorced vs widow	2.030 (.1023)**											
Living w/partner vs widow	2.600 (.1673)**											
Married vs widow	1.035 (.0831)**											
Never married vs widow	1.234 (.1002)*											
Separated vs widow	1.709 (.2279)											
Race												
Black vs white	1.097 (.1088)						2.556 (.2775)*				1.168 (.3929)	
Hispanic vs white	1.827 (.0810)**						.588 (.2618)**				.287 (.2327)**	
Race other vs white	1.249 (.1255)						1.432 (.3614)				1.493 (.3909)	
Household income	.797 (.0128)**		1.154 (.0340)**				1.093 (.0399)*					
Education (all vs. some college or Assoc. degree)												
<High School	2.153 (.1245)**		.699 (.3525)**								.294 (.2677)	
Bachelors	.609 (.1323)**		1.062 (.3766)**								.582 (.4665)	
Some /Grad	.619 (.1786)**		<.001 (.4005)**								.573 (.4657)	

Table 4.4

Odds Ratios and Standard Errors for Logistic Regressions (LR) 1-6 after adjustment using analytic weights

code	LR 1	LR 2	LR 3	LR 4	LR 5	LR 6
	0 / 1	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0
Variables	Insured/uninsured OR (SE)	<1 mo vs 1 mo + OR (SE)	1-6 mo vs 6 mo.+ OR (SE)	7-12 mo vs 12 mo+ OR (SE)	1-2 yrs vs 2 yrs + OR (SE)	2+ yrs vs never OR (SE)
Education continued						
High School	1.689 (.1025)**	1.278 (.2099)**				.511 (.2425)
N/A	.750 (.4211)	.720 (.4606)**				.035 (.7629)**
Employment Status						
Full time vs unemployed	.273 (.1037)**	.337 (.2346)	.474 (.1497)		.948 (.1391)	
N/A vs unemployed	.181 (.4303)*	.315 (.5314)	.631 (.4756)		.415 (.2782)*	
Not in work force vs unemployed	.350 (.1159)	.410 (.3608)	.577 (.2164)		.807 (.2094)	
Part time vs unemployed	.401 (.1298)	.448 (.3830)	.393 (.2558)		1.070 (.2240)	
Self employed vs unemployed	.992 (.1291)**	.053 (.6758)*	.228 (.2694)*		.445 (.2703)	
Regions						
LV, WY vs SW	1.263 (.0893)**		.344 (.2312)*			
JO vs SW	.965 (.0998)		.957 (.1983)*			
DG, SN vs SW	.818 (.0920)		.801 (.2103)			
NE vs SW	.720 (.1151)*		.704 (.2902)			
SE vs SW	1.099 (.0796)		.484 (.1865)			
SG vs SW	1.006 (.0717)		.550 (.1681)			
SC vs SW	1.173 (.0869)*		.314 (.2221)*			

Table 4.4

Odds Ratios and Standard Errors for Logistic Regressions (LR) 1-6 after adjustment using analytic weights

code	LR1		LR 2		LR 3		LR 4		LR 5		LR 6	
	0 / 1		1 / 0		1 / 0		1 / 0		1 / 0		1 / 0	
Variables	Insured/uninsured		<1 mo vs 1 mo +		1-6 mo vs 6 mo.+		7-12 mo vs 12 mo+		1-2 yrs vs 2 yrs +		2+ yrs vs never	
	OR (SE)		OR (SE)		OR (SE)		OR (SE)		OR (SE)		OR (SE)	
Regions cont.												
	NC vs SW	.862 (.0942)			.864 (.1924)							
	NW vs SW	.786 (.1183)			.614 (.2604)							
Usual Source of Care												
		.472 (.0744)**										
Health status												
		.928 (.0318)*										
ER use ^a												
		.938 (.0275)*			.783 (.1003)*				1.206 (.0747)*			
Dr. use ^b												
		.956 (.0125)**					1.0150 (.0149)**					
Delay ^c												
		2.964 (.0725)**	.256 (.3530)**								1.930 (.2107)**	
% correct predicted												
		83.80%	77.80%		67.20%		70.70%		68.40%		75.20%	
Total N=												
		19,082	1,761		1,650		1,327		1176		892	
Code "0" n												
		17,260	1,650		1,327		1,176		892		237	
Code "1" n												
		1,882	111		323		151		284		655	

* significant at the <.05 level ** significant at the <.01 level

LV= Leavenworth County, region 1

SE = South east Kansas, region 5

WY= Wyandotte County, region 1

SG = Sedgwick County, region 6

JO= Johnson County, region 2

SC = South central Kansas, region 7

DG = Douglas County, region 3

NC = North central Kansas, region 8

SN= Shawnee County, region 3

NW = North west Kansas, region 9

NE = North east Kansas, region 4

SW= South west Kansas, region 10

^a = Emergency Dept visits

^b = Doctor visits

^c = Delay in seeking care

Logistic Regression #2

The second logistic regression was performed to determine the relationship between being uninsured for less than one month versus being uninsured for longer than one month and the thirteen independent variables. The independent variables were entered simultaneously. The sample included 1,761 subjects identified as uninsured in logistic regression one. Sixty one subjects who were identified as uninsured in logistic regression one did not have data for the variable *Length of Time without Insurance* which describes how long they had been without health insurance coverage. If data for the *Length of Time without Insurance* variable was missing, those cases were removed from the analysis. The sample size for the group coded 1 (uninsured for less than one month) was 111. The sample size for the group coded 0 (uninsured for greater than one month) was 1,650.

The independent variables that were statistically significant for predicting whether one was uninsured for less than one month or greater than one month were: age, household income, educational level, employment status and delay in obtaining health care. Age was found to be negatively associated with being uninsured for less than one month. As age increased, the odds of being uninsured for less than one month decreased .968 times. Income was positively associated with being uninsured for less than one month, indicating that as income increased the odds were 1.154 times greater that one would be uninsured for less than one month versus longer than one month. Having graduated from high school and college with a bachelor's degree were positively associated with being uninsured for less than one month. Lack of a high school diploma, some graduate level hours or a graduate degree and the not applicable category (those under age 18) were negatively associated with being uninsured for less than one month. With a high school degree and a bachelor's

degree the odds of being uninsured one month versus longer were increased 1.278 and 1.062 times respectively. No high school diploma decreased the odds of being insured for less than one month .699 times. A graduate degree or some hours toward a graduate degree decreased the odd of being uninsured one month by $<.001$ times. The odds of those in the not applicable category of employment (those under 18 years) of being uninsured for less than one month were decreased .720 times. Self employment was negatively associated with being uninsured for less than one month. The odds were .053 times less that someone unemployed would be uninsured for less than one month compared to someone who was unemployed. A delay in seeking health care was also negatively associated with being uninsured for less than one month. The odds of delaying health care were .256 times less for someone uninsured for less than one month versus more than one month.

Logistic Regression # 3

The sample size for the third logistic regression was 1,650 with 323 having been uninsured for one to six months and 1,327 who were uninsured for longer than six months. The independent variables that were found to be statistically significant in the model were: employment status, region of residence and emergency room visits. Self employment was negatively associated with being uninsured for one to six months. The odds of being uninsured for one to six months versus greater than six months were .228 less if you were self employed than if you were unemployed. Residing in regions 1 (Leavenworth and Wyandotte counties) 2 (Johnson county) and 7 (south central Kansas excluding Sedgwick county) were negatively associated with being uninsured for one to six months. The odds of being uninsured for one to six months versus being uninsured longer than six months was .344 times less if you lived in region 1 versus region 10, .957 times less if you lived in

region 2 versus region 10, and .314 times less if you lived in region 7 compared to region 10. Emergency department visits were negatively related to being uninsured for one to six months. As the number of emergency rooms visits increased the odds were .783 times less that one had been uninsured for one to six months as opposed to over six months.

Logistic Regression # 4

The dependent variables for the fourth logistic regression were uninsured for seven to twelve months ($N = 151$) and uninsured longer than 12 months ($N = 1,176$) for a total sample of 1,327. The independent variables that were statistically significant in the model were: age, race, income and number of doctor visits. Age had a negative relationship with being uninsured for seven to twelve months. This indicated that for every year increase in age the odds were .948 times less that one would be uninsured for seven to twelve months versus longer than 12 months. Race (black) was positively associated with being uninsured for seven to twelve months. If one was Black, the odds were 2.556 times greater that they would be uninsured for seven to twelve months versus longer as compared to Whites. Race (Hispanic) had a negative relationship to being uninsured for seven to twelve months. If one was Hispanic, the odds were .588 times less that they would be uninsured for seven to twelve months versus longer than 12 months when compared to Whites. Income was associated positively with being uninsured for seven to twelve months. As income increased the odds of being uninsured for seven to twelve months versus longer were 1.093 times greater. Visits to the doctor were positively associated with being uninsured for seven to twelve months. As the number of doctor visits increased, the odds of being uninsured for seven to twelve months were 1.015 times greater than being uninsured for longer than 12 months.

Logistic Regression # 5

The binary categories of the dependent variable in logistic regression five were (1) uninsured for one to two years and (0) uninsured for longer than two years. The sample was 1,176 comprised of 284 subjects uninsured for one to two years and 892 uninsured for longer than two years. There were three independent variables that were found to be statistically significant: age, employment status and emergency room use. Age was found to be negatively correlated with being uninsured for one to two years. As age increased yearly the odds of being uninsured for greater than two years versus longer than two years was .954 times less. The employment status which was coded “not applicable” and comprised of children less than 18 years of age had a negative relationship to being uninsured for one to two years. For that group the odds of being uninsured for one to two years versus longer than two years was .415 times less than for the unemployed. Use of the emergency department was positively related to being uninsured for one to two years. This indicated that as the number of emergency room visits increase the odds of being uninsured for one to two years were 1.206 times greater than being uninsured for longer than two years.

Logistic Regression # 6

The sixth logistic regression procedure was performed to determine the relationship between the independent variables used in the previous logistic regressions and the dependent variable, being uninsured for greater than two years versus never having had health insurance. The sample included 655 subjects who had been uninsured for greater than two years and 237 who had never had health insurance coverage, for a total sample of 892.

The independent variables that were statistically significant were: race, education, and a delay in seeking needed health care. Race (Hispanic) had a negative relationship to being uninsured for greater than two years. This indicated that the odds of being uninsured for greater than two years versus never having had health insurance decreased .292 times if you were Hispanic compared to White. Education had a negative relationship to being uninsured for greater than two years. For those in the not applicable category of education (those under 18 years of age) the odds of being uninsured for more than two years versus never having had insurance was .035 times less than someone who had attained some additional educational hours beyond high school or an associates degree. Delay in seeking needed health care had a positive relationship to being uninsured for greater than two years. The odds of being uninsured greater than two years versus never having had health insurance was increased 1.930 times if needed health care had been delayed.

Summary of Findings

The purpose of this study was to explore the relationships among length of time without health insurance and access to health care, utilization of health care services, and demographic/socioeconomic variables. This study was able to determine differences in health care access, utilization, and demographic variables in the uninsured population based on the length of time that they had been without health insurance coverage.

The independent variables which were found to be significant in predicting whether one was insured versus uninsured were age, marital status, race, household income, educational level, employment status, region of residence, having a usual source of health care, health status, use of the emergency department, doctor visits, and delay in seeking medical care.

Lacking health insurance coverage for less than one month versus longer than one month was significantly associated with age, household income, educational level, employment status, and delay in seeking health care. Being uninsured for one to six months versus longer than six months was significant with the predictor variables: self employment status, region of residence, and emergency department use. Seven to twelve months without health insurance coverage was significant with the independent variables of age, race, household income, and doctor visits. One to two years of being uninsured versus longer than two years was significantly related to the independent variables of: age, employment status, and emergency department visits. For those uninsured for longer than two years versus never having been insured the predictor variables found to be significant were: race, educational level, and delay in seeking care. As this study indicates, the uninsured are a very diverse group with multifaceted issues related to health care access and utilization. Effective policy solutions require targeting this diversity.

Descriptions of the sample, procedures for insuring data consistency, and statistical analyses performed to address the purpose of this study were presented in this chapter. Interpretations and discussion of the results are presented in Chapter V. The policy implications, nursing implications, and recommendations for further research are also presented in Chapter V.

CHAPTER V

DISCUSSION

In this chapter, the research findings are discussed and interpreted with regards to the conceptual framework, previous studies, implications for nursing and health policy, and study limitations. Recommendations for further research are also addressed. The uninsured population has been a topic of debate and research for over 50 years. The prevailing thesis has been that people fall into one of two groups: a) those with health insurance coverage and, b) those without health insurance coverage. While this dichotomy is theoretically accurate, in reality there are very diverse subpopulations within each of these groups. Of interest in this study was the variation in population characteristics, health care access, and utilization related to the length of time without health insurance coverage. The diversity among persons lacking health insurance for varying lengths of time has not been explored previously. Despite the many federal studies conducted to identify and describe the uninsured population, there exists a dearth of studies in the literature that distinguish the uninsured by the length of time that they have been without insurance coverage. In particular, there is very little information available about the chronically uninsured (uninsured for greater than 12 months). The lack of information is the result of methodologies utilized in most of the national surveys. In the majority of surveys, questions regarding health insurance solicit information from subjects about their insurance status for the current or previous year. So although absence of health insurance is identified for a person responding to the survey, the chronic nature of their uninsured status is never revealed. This study represented an initial step in using state level data to study

uninsured subpopulations in Kansas based on the length of time without health insurance coverage.

Study Summary

The research question addressed in this study was:

What is the relationship of duration of time without health insurance among: (a) *access to care variables* (usual source of health care and health status), (b) *health care utilization variables* (use of emergency department, doctor visits, and delay in seeking care), (c) *demographic variables* (age, gender, marital status, and race), and (d) *socioeconomic variables* (income, education, employment, and residence)?

The research question was answered utilizing a descriptive correlational study design using a secondary data analysis of existing data from residents of Kansas who participated in the Kansas Health Insurance Study (KHIS, 2001). The total sample for the study included 19,082 non elderly individuals from across the state of Kansas. A series of logistic regression procedures were used, first to identify and evaluate variables that were significant in predicting membership in the insured or uninsured group and then to identify and evaluate variables that were significant in predicting specific lengths of time without health insurance.

The study was guided by Aday and Anderson's (1981), Framework to Study Access. The framework contains five interrelated domains: health policy, characteristics of the health delivery system, characteristics of populations at risk, utilization of health services, and consumer satisfaction. The basic tenet of the framework is that characteristics of the delivery system (availability and organization) and characteristics of the population-at-risk (age, gender, ethnicity, health status, income, education, insurance coverage, and

perceived need) are indicative of the potential levels of access to care. Health care utilization (including sources of service, site, purpose, and time interval) and consumer satisfaction (convenience, availability, financing, and quality) are indicators of realized access to care.

In this study, the Access to Care Framework (Aday & Anderson, 1981) was used to identify variables that described the uninsured non elderly population in the state of Kansas. Also it was used to determine the relationship between access and utilization among the chronically uninsured, those with interrupted insurance coverage, and those with continual insurance coverage. The potential access indicators, age, sex, ethnicity, education, employment status, income, insurance status, regular source of care, residence, and health status were used in the study. The realized access indicators used were site of visit (emergency department and doctor visits) and number of visits.

Conclusions

The following conclusions were based on the findings presented in Chapter IV and are discussed in this chapter.

1. Descriptive characteristics varied for the insured and uninsured subjects except for gender.
2. Statistically significant variables associated with being insured or uninsured were: age, marital status, race, income, education, employment status, region of residence, usual source of health care, health status, emergency department use, doctor visits, and delay in seeking health care.

3. Statistically significant variables associated with being uninsured for less than one month versus longer than one month were: age, income, self-employment, education and delay in seeking health care.
4. Statistically significant variables associated with being uninsured one to six months versus longer than six months were: self-employment, residence in region 1, 2, and 7, and emergency department use.
5. Statistically significant variables associated with being uninsured seven to twelve months versus longer than 12 months were: age, race, income, and doctor visits.
6. Statistically significant variables associated with being uninsured for one to two years versus longer than two years were: age, employment status, and emergency department use.
7. Statistically significant variables associated with being uninsured for greater than two years versus never having had insurance were: race, education, and delay in seeking medical care.

Interpretation of the Results

Characteristics of the Insured and Uninsured

The majority (79%) of the uninsured non elderly population in this study was comprised of adults between the ages of 18-64 years. Of those adults, 64% were in the age range of 18-44 years. Adults aged 18-64 made up 68% of the insured population, with 42% between the ages of 18-44 years. The Kaiser Foundation reported similar findings in a 2006 study. Private health insurance practices often stipulate that when young adults reach age 18 or 19 they are no longer eligible to remain covered by a parent's insurance,

unless they are enrolled in college. Young adults who do not pursue college, but instead elect to enter the workforce, may find themselves unable to obtain their own coverage independently because it is either not offered through an employer or they are unable to afford the premiums. Children ages 1-18 years made up the lowest percentage of the uninsured (21%) in the state. This result can presumably be related to the efforts of the state to enroll children in their Medicaid and HealthWave programs. In contrast, adults rarely qualify for Medicaid coverage because criteria are extremely restrictive. In order for an adult to be eligible for Kansas Medicaid services their income can not exceed 37% of the federal poverty level (fpl), an annual income of \$6,530 in 2001 when the KHIS survey data was collected.

Minorities accounted for 27% of the non elderly uninsured population in the study while representing only 14% of the insured population. Nationally, Kaiser (2006) reported that 50% of the uninsured are from a minority and that Hispanics represent 33% of the uninsured population. In Kansas, Hispanics represented 18% of the uninsured. The population of Kansas has traditionally had a higher percentage of whites compared to the nation (U.S. Census, 2006). It is possible that the uninsured Hispanic population could be increased if the study was repeated today, due to an overall increase in the Hispanic population at the national and state level. In 2005, the Hispanic population accounted for 8.3% of the total Kansas population, while the U.S. population was comprised of 14.4% reporting Hispanic ethnicity (U.S. Census, 2006).

Forty eight percent of the uninsured in the study had a household income of less than \$25,000 per year compared to 15% of the insured population who had the same household income. Those households with an income of over \$55,000 per year made up

12% of the uninsured. Other studies have reported that over 50% of the uninsured come from low income families and that income is a predictor of longer periods of uninsurance (Kaiser, 2006, Haley & Zuckerman, 2003). While lower income was found to be associated with being uninsured in this study, it was noted that over 10% of the uninsured population had a household income of greater than \$55,000. Three percent had a household income that exceeded \$95,000. It is possible that individuals with higher incomes believed their income was adequate to cover any health care needs that might arise. Alternatively, it may also be possible that since this is a household income, multiple people living in the same household might have contributed to the total income. In that case, the household income level may still be inadequate to afford employer sponsored insurance or individual health insurance premiums.

The uninsured in this study had higher educational levels than those found in other reported studies. Fourteen percent of the adult non elderly study subjects had not earned a high school diploma, compared to three percent of the insured population. Lower educational levels have been associated with longer periods of uninsurance and in national surveys 25% of the uninsured did not graduate from high school (Kaiser, 2005, Haley & Zuckerman, 2003). Haley and Zuckerman (2003) also reported that two thirds of the uninsured had no education beyond high school. In this study 63% of the uninsured had earned a high school diploma or higher. The uninsured population was comprised of 33% who had graduated from high school and 30% who had college hours, bachelors' degree, graduate study or a graduate degree. Although the uninsured in this study had attained higher educational levels than those reported in other studies, they still were less educated than the insured population in the study.

Fifty two percent of the uninsured in the study were employed full time, part time, or self employed. Of those, 34% were full time workers. Although insurance is heavily associated with employment, a large percentage of the uninsured worked for employers who did not provide insurance benefits (KHIS, 2001).

The percentage of uninsured in the study varied among regions. Previous studies indicated that rates of uninsurance can vary across and within states (Kaiser, 2006). These differences are thought to be related to state, regional or local economies, prevalence of employer-based health insurance coverage, and the percentage of low income families residing in the area. The regions associated with the highest percentages of uninsured were Leavenworth, Wyandotte, and Sedgwick counties, all heavily populated areas of the state. Larger minority populations also reside in these counties, a demographic variable previously discussed as being associated with lack of health insurance coverage.

The uninsured population in this study reported having a usual source of health care (73%); although, this was lower than that reported by the insured (89%). This finding suggests that although this population lacks health insurance coverage, the majority still have what they consider a medical home where they go to access health care. This medical home could be one of the safety net clinics that have been established across the state to provide care for those without insurance. Many communities and counties have also developed their own programs to increase access such as 'Project Access' in Sedgwick county and 'Health Care Partnership' in Johnson county. The uninsured also may have pre-existing relationships with health care providers who continue to provide care either charitably, at a reduced cost, or by allowing some type of repayment system.

Multiple studies have established a relationship between health status and insurance status (Broyles, Narin & Brandt, 2002; IOM, 2006; Kaiser, 2003; Sered & Femandopulle, 2005). In this study more than twice as many of the uninsured were in poor or fair health compared to the insured. Likewise, fewer uninsured (28%) reported excellent health status than the insured (42%). It seems probable that this disparity in health status will continue to increase when those who lack insurance develop chronic illnesses and delay preventive and ongoing care for those conditions.

Although the uninsured are often portrayed as being high utilizers of the emergency department for health care needs, that was not a finding in this study. Eighty three percent of the uninsured had not received health care in the emergency department in the previous six months, twelve percent had been there once, and two percent had received care twice in the previous six months. This low utilization of emergency departments may be because those without insurance do not want to incur the expense of an emergency department visit. Because many of the uninsured in this study reported a usual source of care, it may also be possible that they simply utilize that resource rather than the more expensive alternative. Alternatively, they may have been healthy in the past six months, which would also explain the lack of visits to the emergency department.

The uninsured in this study also had fewer doctor visits than the insured subjects. Fifty percent of the uninsured had not seen a doctor in the past six months compared to 29% of the insured who had not seen a doctor. This is consistent with the 68% of the uninsured respondents who reported that they had delayed needed health care in the past year. Other studies have documented findings indicating the uninsured are less likely to visit a doctor and delay seeking treatment for chronic illnesses as well as health promotion

and preventive services (Broyles, Narin & Brandt, 2002; IOM, 2006; Kaiser, 2003; Sered & Femandopulle, 2005).

Discussion of Findings from Logistic Regression #1

Twelve of the thirteen independent variables in the study were statistically significant in the first logistic regression procedure. The dichotomous dependent variable (uninsured, coded 1) represented all the uninsured regardless of length of time without insurance. Sex was the only independent variable that did not significantly increase the odds of being uninsured. Marital status was significant with the odds (highest to lowest) of being uninsured: those living with a partner, divorced, never married, and married. Hispanic ethnicity increased the odds of being uninsured by 1.2 times. Lower educational levels (less than high school or high school graduate) increased the odds of being uninsured. For those subjects residing in Leavenworth or Wyandotte counties (region 1), the odds were 1.3 times greater that they were uninsured and 1.2 times greater for those living in south central Kansas (region 7). A delay in seeking health care increased the odds of being uninsured by three times.

Age, household income, higher educational levels, employment status, residence in north east Kansas (region 4), usual source of health care, health care status, emergency department visits, and doctor visits were significant and negatively associated with being uninsured. As one's age increased, the odds of being uninsured decreased. The largest percentage of uninsured in the state was in the age group of 18-44 years. This finding may indicate that although young adults may lack access to health insurance or undervalue that coverage while they are young and presumably healthy, as they get older they do acquire coverage. It also is possible that with increased age, individuals are more vulnerable to

worsening chronic conditions which qualify for health insurance coverage through disability. The finding that as income increased the odds of being uninsured decreased may indicate that health insurance is more affordable to those with higher incomes or that higher income is the result of new employment with health insurance benefits. The odds are greater for those working full time to be offered health insurance than other employees. The odds for the self employed in this study to be uninsured were slightly less than the odds of those who were unemployed. Insurance options for the self employed like the unemployed are usually limited to private individual insurance products. Those products are often expensive and provide minimal coverage. The finding that as education level increased, the odds that one was uninsured decreased, is closely related to income and employment variables. In most cases a higher educational level increases the potential for employment providing higher levels of income and fringe benefits.

The odds of residents in the northeast corner of the state being uninsured were less than those in the southwestern region of the state. This may be related to employment opportunities in those regions as well as the numbers of low income residents which live there. The access to care and utilization variables were all negatively associated with being uninsured. Previous studies have clearly indicated that people without insurance were less likely to seek medical care and were more likely to have a poor health status (Kaiser, 2006; IOM,2004; Trotochaud, 2006).

The uninsured population in the study could be characterized as a group comprised of unmarried, minority populations with lower educational levels, living in eastern Kansas (Leavenworth and Wyandotte counties) or Southcentral Kansas, and having delayed

seeking needed health care in the past 12 months. These findings were reaffirming of previous studies of the uninsured across the country.

Innovative programs with mixed strategies are necessary to provide coverage for all of the uninsured in the absence of any current prospects of federally mandated universal coverage. Strategies that have been proposed by some state initiatives have included: expanding existing state programs such as Medicaid, to include coverage for low income adults as well as children; creating insurance pools for small businesses; employing tax credits or subsidies for premiums to make coverage affordable; and mandating coverage.

Massachusetts enacted a health care reform plan that promises nearly universal coverage to residents of the state by July 2007. The plan incorporated individual and employer mandates and established a mechanism for providing affordable insurance products, with specifically designed, low cost insurance products for young adults. Subsidies to low income individuals to assist in purchasing insurance would also be provided. The plan included expansion of the Medicaid program, reimbursement to providers for uncompensated care, safety net support, and tax benefits for health savings accounts and businesses that offer insurance coverage (Davis, 2007)..

A similar plan was implemented by Maine in 2003 except that the plan was voluntary. The Maine plan utilized insurance pools for small businesses and expanded Medicaid to cover low income adults. Vermont, Minnesota and Rhode Island have all enacted reforms that provided insurance to low income families and as a result have seen improved health outcomes (National Conference of State Legislatures, 2007).

California has also proposed a plan for universal coverage with the requirement that all residents obtain coverage. Universal coverage will be attained by the state providing

premium subsidies for low income individuals or families and requiring employers in the state to provide health insurance for employees or pay a fee (Davis, 2007).

To date Kansas has adopted a number of policy strategies to improve access to health insurance including: small business tax credits, small business purchasing pool, high risk insurance pool, small group insurance guaranteed issuance and rate bands, and a subsidized program for children of low wage state employees. Most of the policy solutions have focused upon the majority of the uninsured Kansans, employees working in small businesses.

Discussion of Findings from Logistic Regression # 2

The dichotomous dependent variable in the second logistic regression procedure was uninsured for less than one month (coded 1) versus being uninsured for longer than one month (coded 0). The independent variables were the same variables entered in the first logistic regression as well as subsequent procedures. The independent variables that were statistically significant in this model were: age, household income, educational level, self employment, and a delay in seeking health care. Age was negatively associated with being uninsured for less than one month, as was self employment, and a delay in seeking health care. The study results for this logistic regression procedure indicated that as age increased the odds increased that one would be without health insurance for longer than one month. This finding may be especially applicable to someone who has been dependent on employer sponsored insurance benefits. If those persons lose benefits due to a loss of employment, future insurance coverage may be tied to their ability to secure a new position. Older workers often have more difficulties finding new jobs as they move past the mid point of their working careers. As one gets older they also become a less desirable

insurance risk, particularly if they are trying to purchase an individual health insurance policy.

Income was positively associated with being uninsured for less than one month. The results revealed that the higher the household income the greater the odds the subject would be uninsured for a very short time frame. Higher incomes are associated with positions that offer insurance benefits, and persons with higher incomes are more likely to be able to afford the insurance premiums.

Those with higher educational levels had increased odds of being uninsured for less than one month. This finding indicates that although a person may be uninsured, if they had a high school degree or a bachelor's degree the odds increased that the person would be uninsured for a short time. It is feasible that having attained a higher educational level would position one for more employment opportunities and perhaps employment with businesses that offer health insurance for employees. Higher educational levels are also usually associated with employment that provides a greater income, perhaps making insurance more affordable for these persons.

Being self employed increased the odds ratio of being uninsured for longer than one month. Insurance through the individual market is expensive and often beyond the financial reach of many who are self employed. In fact, the odds ratio revealed that the self employed were more likely than the unemployed to be uninsured for longer than one month. This seems to indicate that it would be easier for someone unemployed to get a job and health insurance coverage than it would be for someone self employed to secure health insurance. Insurance for the self employed is usually limited to the more expensive

individual policy options. The self employed as sole proprietors are less likely to be able to afford those options due to the other overhead costs associated with owning a business.

A delay in seeking health care was also negatively associated with being uninsured for less than one month. This finding seems reasonable, particularly because 93% of subjects in the study who had been uninsured for less than one month reported their health status as good, very good, or excellent. Previous studies have found that a delay in seeking health care is associated with longer periods without health insurance (Broyles, Narine & Brandt, 2002; IOM, 2006; Kaiser 2003; Sered & Femandopulle, 2005). It is likely that most people would not need to delay health care in a 30 day period unless they had a sudden acute illness or suffered from an uncontrolled chronic illness. If the period without health insurance persisted, delays in health care could become more problematic.

The findings from the second logistic regression procedure indicate that having a short interruption in health care (uninsured less than one month) is associated with having a higher income and higher educational level. Being uninsured for longer than one month is associated with an increase in age, self employment, and having delayed needed health care.

Health policy solutions that provide portability of benefits could offer relief to those uninsured with short periods of uninsurance. The United States' dependence upon employer sponsored insurance has made it cumbersome for employees to change employers. In 1996 the Health Insurance Portability and Accountability Act was signed into law and this provided employees credit for prior group health insurance coverage toward any waiting period for health benefits at a new employer. This portability protection however is only available to those who have been in the group insurance market,

moving to a new employment situation. The Consolidated Omnibus Budget Reconciliation Act (COBRA) continuation coverage expansion also provides portability for a select group of individuals. Upon termination of employment, an employee who worked in a firm with 20 or more employees is eligible to continue health insurance coverage for up to 18 months at their own expense. COBRA coverage is expensive because the former employee is responsible for the entire cost of the policy. For those uninsured for less than one month with a higher income level, COBRA might be a viable option. In addition, a policy approach such as that found in the Massachusetts Connector, offers even greater potential, as it allows employees working for small firms, self employed, and individuals access to portable insurance.

Discussion of Finding from Logistic Regression # 3

The dependent variable in the third logistic regression procedure was one to six months without health insurance (coded 1) and longer than six months without health insurance (coded 0). The independent variables which were statistically significant in the model were: employment status, region of residence, and emergency department visits. All of these variables were negatively associated with being uninsured for the one to six month time frame. The odds of being uninsured for longer than six months were greater for the self employed than the unemployed. Again this may demonstrate the difficulty that the self employed face in obtaining affordable health insurance coverage. Alternatively it may be that the self employed are young and do not perceive health insurance as something that they need at this time in their life.

Three regions of the state were associated with being insured for longer than six months. Those regions associated with being uninsured for longer than six months

included Region 1 (Leavenworth and Wyandotte counties), Region 2 (Johnson county), and Region 7 (South Central Kansas). Residents in these regions were more likely to be uninsured for longer than six months than the residents of Southwest Kansas. Thirty percent of the subjects who had been uninsured longer than 6 months were members of a minority, with almost 20% being Hispanic. The median income for this group was in the range of \$20,000-\$ 24,999. This may indicate that subjects living in these regions are working at lower paying jobs and cannot afford health insurance or may not have access to insurance benefits through their employment. Region 2 (Johnson County) was also associated with being uninsured for longer than six months, although the odds ratio was .96 which is just a slight decrease in the odds that one would be uninsured for one to six months versus longer than six months.

Emergency department visits were associated with being uninsured for longer than six months. It is documented that the uninsured are less likely to receive routine preventive care, or monitoring, so it seems likely that the longer they are without insurance the greater the probability that they will need to utilize the emergency department for care. However, the actual percentage of subjects uninsured for longer than six months who had visits to the emergency room in the past six months was only slightly higher than those uninsured for one to six months. The larger number of subjects in the uninsured greater than six months category ($n=1,327$) versus the one to six month category ($n= 323$) may be influencing the statistical significance.

In this subpopulation of the uninsured, findings from the third logistic regression analysis indicate that region of residence is related to the duration of time without health insurance. Self employment is again identified as a variable associated with length of time

without health insurance coverage. Visits to the emergency department are slightly increased for those without health insurance coverage for longer than six months.

These findings indicated that based on the predictor variables in the study, if one was uninsured longer than one month (as established in logistic regression number two) then the reality was that they would be uninsured longer than six months. The predictor variables in the study did not increase the odds of one being included in the group of individuals uninsured for one to six months. Policy solutions pertaining to the findings of this logistic regression then need to focus on those uninsured for longer than six months.

For those uninsured for longer than six months in this logistic regression, policy changes need to address the specific regions of the state where subjects resided. Subsidies could be utilized with employers who did not offer health benefits to help offset the cost. Alternatively, individuals could be offered vouchers to purchase insurance. Also since this particular subpopulation is more likely to be self employed, policy strategies such as the Massachusetts Health Connector that merge the small group and individual insurance markets may have merit. Expansion of public programs to incorporate those uninsured for longer than six months could also provide resources to secure needed preventive and/or chronic care which ultimately could decrease the use of the emergency department associated with being uninsured for longer than six months.

Discussion of Findings from Logistic Regression # 4

The binary outcome variable of being uninsured for seven to twelve months (coded 1) versus being without insurance for longer than 12 months (coded 0) was examined in the fourth logistic regression procedure. The independent variables that were significant in this analysis were: age, race, household income, and doctor visits. Age and Hispanic ethnicity

were both negatively associated with the seven to twelve month duration of uninsurance. The race category of Black, household income and doctor visits were both positively associated with the seven to twelve month duration of uninsurance.

As age increased for these subjects the odds increased slightly for them to be uninsured for longer than 12 months. As discussed earlier, age may compromise the ability to secure health insurance due to increased vulnerability to chronic illnesses. It is also possible that those without insurance, but in good health, do not believe that they need health insurance. In the group of subjects in the study who were uninsured greater than 12 months, about 82% reported that their health status was good or better. Increased time without health insurance coverage or absence of health care needs that required coverage may also lead this group to accept lack of insurance as normal.

The odds were decreased that those of Hispanic ethnicity would be uninsured for seven to twelve months versus longer than twelve months. This finding parallels others who have found that minorities are more likely to be uninsured and for longer periods of time (IOM, 2006; Kaiser, 2006; Trotochaud, 2006). The Hispanic population specifically accounts for a large percentage of the uninsured. It may be that this population has more difficulty securing employment or employment that provides benefits. They may also be employed in lower paying positions that compromise their ability to afford coverage. Because of the high incidence of lack of coverage among the Hispanic population, there may exist basic distrust of the health insurance system.

The odds of being uninsured for seven to twelve months as opposed to longer than 12 months were greatly increased for Black subjects versus White. Factors that might be influencing this finding were not found in the data. However the demographics for the

subjects that were uninsured for seven to twelve months were reviewed. Eleven percent of the subjects uninsured for seven to twelve months were black compared to 73% who were white. The woman slightly outnumbered the men (54% vs. 46%) and most were either married or had never been married. The median household income was ~ \$30,000 per year. Over 65% of this group lived within regions 1, 5, 6, and 7 (Leavenworth, Wyandotte, and Sedgwick counties, Southeast Kansas, and South central Kansas, respectively).

Household income was found to be positively associated with being uninsured seven to twelve months. This finding indicates that despite a higher household income, subjects still had been uninsured for seven to twelve months. It is possible that although they were employed in better paying jobs, insurance coverage may still not have been affordable or available.

As the number of doctor visits increased the odds of being uninsured for seven to twelve months versus longer than 12 months increased. Most people would probably not need to see a doctor under usual circumstances more often than one to two times per year. This seven to twelve month time frame would begin to include people who were experiencing usual health care needs. This finding is also consistent with the earlier finding in this study that in Kansas the majority of the uninsured do not make numerous visits to the doctor. People initially may visit the doctor during a short period of uninsurance, but those visits decrease as they move from uninsured (seven to twelve months) to the category of chronically uninsured (greater than one year without insurance).

Health policy reform for those uninsured seven to twelve months will need to focus on options that provide coverage addressing the needs of the black population, those with higher incomes and those needing to visit the doctor. Because this subpopulation of the

uninsured has a higher income level they might be able to take advantage of buy-ins to the state public programs, such as Medicaid or the State Employee Health Program if such an option was available. This is also a group that could take better advantage of tax credit policy strategies.

Discussion of Findings for Logistic Regression # 5

The binary categories of the dependent variable in the fifth logistic regression procedure were uninsured for one to two years (coded 1) and uninsured for longer than two years (coded 0). The independent variables that were statistically significant in this analysis were: age, employment status, and emergency room visits. Age was negatively correlated with being uninsured for one to two years. This indicates that as age increases in yearly increments that the odds are less that the subject will be insured for only one to two years. As in three of the previous four logistic regression procedures, as age increases so do the odds that one will remain uninsured for a longer period of time.

The odds ratio for the 'not applicable' employment category was negatively associated with being uninsured for one to two years. For those subjects the odds of being uninsured for one to two years is less than it is for those who are unemployed. The not applicable category was comprised of children under the age of 18 so the decisions regarding insurance coverage are being made for these children by their parents or guardians, and they may not have dependent coverage available or it may not be affordable. These young persons also could be employed in low paying jobs, such as the fast food industry or other service industries that either do not offer insurance benefits or do not offer benefits to part time workers.

Visits to the emergency room were positively associated with being uninsured for one to two years versus longer than two years. As the number of emergency room visits increased the odds were increased that the subject would be without health insurance for one to two years rather than longer. This finding may have been influenced the age of this subpopulation of the sample. The median age of those uninsured one to two years was 24-25 years compared to 32 years for those uninsured longer than two years. Accidents are more common in younger age groups, and if they occurred in the evening or on weekends, this could account for some of the emergency room visits for care. Another contributing factor may be the range in the number of emergency visits for each group. Although 94% of both groups had zero or one visit, the range for the one to two years uninsured group was 0-20 and the range for the group without insurance for over two years was more restricted.

Policy solutions for this subpopulation of the uninsured require remedies aimed at providing those uninsured options for health care other than emergency departments. As duration of time without insurance increases, if a medical home is not identified or available, there are few alternatives for care other than the emergency department. And while emergency departments provide excellent acute care services, patients receiving care there do not receive preventive services, such as screening and immunizations. Policy solutions for the chronically uninsured (greater than 12 months without insurance) must address providing a place for one to receive acute or chronic care and expansion of the safety net clinic systems may help resolve this issue. In addition, more aggressive outreach and enrollment procedures for HealthWave may result in coverage for some of this population, as they may be eligible for these public programs and not enrolled. Policy

solutions which allow dependents to be covered for a longer time on their parents' health insurance policies may also assist some individuals in this particular subpopulation.

Discussion of Finding from Logistic Regression # 6

The dichotomous independent variable for this logistic regression procedure was uninsured for greater than two years (coded 1) or never having had insurance coverage (coded 0). The independent variables that were significant in this logistic regression were: race, education level, and delay in seeking health care. Hispanic ethnicity was negatively associated with being uninsured for greater than two years. The odds of being uninsured for greater than two years versus never having had insurance were .287 times less for Hispanics than whites. Other studies have found that Hispanic ethnicity has been associated with being chronically uninsured (U.S. Census, 2006). This finding may indicate that there is something in the culture of the Hispanic population that influences their decision not to secure health insurance. Other possible explanations may be related to affordability and availability of coverage, for example this population may be employed in low paying jobs which lack insurance benefits for employees.

The not applicable category of educational level was negatively associated with being uninsured for greater than two years versus never having been insured. The subjects in this category were under age 18. The odds were decreased slightly (.035) that the subjects in this category would be uninsured for longer than two years versus never having had insurance. This finding may indicate that these subjects have not yet had the opportunity to complete a high school education. Because they are under the age of 18, their health insurance status is likely controlled by their parents or guardians.

Delaying needed medical care was positively associated with being uninsured for longer than two years versus never having had health insurance. The odds of delaying care were almost twice as great for those without insurance for greater than two years as those who have never had insurance. It may be that those who have been without insurance for greater than two years still anticipate resuming insurance coverage, and so may delay care waiting for that to occur. Subjects who have never had health insurance, might be more inclined to seek care when they need it, knowing that they will always be assuming the cost of care.

For the chronically uninsured and those never insured health policy reform will need to be comprehensive, addressing issues related to accessing and utilizing care. Short term remedies such as portability, will not be helpful for those who have been without health insurance for over two years or who have never had health insurance. The chronically uninsured tend to be older and more likely to have chronic illnesses. Improving the affordability of the High Risk Pool or instituting a reinsurance mechanism to remove certain diagnoses or high cost individuals from the pool could increase access to health insurance. Because this subpopulation is older, a Medicare buy-in might be of assistance to a portion of the population. Policies will also need to address the high incidence of uninsurance among the Hispanic population.

Discussion of Findings across all Logistic Regressions

The findings of the regression procedures demonstrated the diversity found within the confines of the broad category of uninsured in Kansas. For those who experienced what could be called a brief interruption in health insurance coverage (less than one month) age, income, educational level, employment status, and a delay in seeking care were the

most significant factors. As the length of duration of the uninsured spell increased (one to six months, which is still relatively temporary in nature) employment, region of residence, and emergency department visits were the significant factors. As subjects approached the point of moving from temporarily uninsured (less than 12 months) to chronically uninsured (greater than 12 months) the significant factors became age, race, income, and doctor visits. For those uninsured for one to two years the significant factors were age, employment status, and emergency department use. The significant factors identified for those uninsured for longer than two years were race, educational level, and delay in seeking health care. Self employment was significant for those uninsured longer than six months but not beyond. One or more of the health access/utilization variables was significant in all categories of the uninsured. These results indicate that in Kansas the uninsured population is not homogenous and that as duration of time without insurance increases, the variables that are significant change.

Limitations of the Study

Limitations encountered in this study were inherent to secondary data analyses where the researcher is limited to the available data. Potential problems related to information about collection and context of data collection were circumvented because of written documents describing these processes. Additionally the primary investigator from the KHIS was available to answer questions as were the Florida research team which conducted the KHIS. The data for this study were collected by telephone and were self reported. Self report is often viewed as a limitation in studies but can be controlled through the use of consistent data collection procedures. Data collection procedures used in the

KHIS were rigorous and well documented by the researchers who collected the data.

Despite the consistent data collection procedures it is still possible that subjects may have chosen not to share specific elements of personal information.

An important limitation of the study was related to the survey instrument. Survey questions were selected for inclusion on the instrument from various national surveys which solicit health insurance information. The majority of the questions in the survey came from the Current Population Survey (CPS). The questions had been reviewed by experts and widely used which provided face validity, but there was no published data on the reliability and validity of the questions or the survey instrument.

Missing data and coding problems are commonly encountered as limitations in secondary data analysis. Upon initial review of the data set it appeared that there was an unusually high percent of missing data in this data set. After reviewing the missing data for patterns, there were three categorical variables which accounted for a large portion of the missing data. Upon further investigation it was discovered that if a question was not applicable to a subject that the coded response was “missing”. Recoding those responses into a category to indicate they were “not applicable” reduced the percentage of missing data. The recoding adjustment left 16% of subjects with missing data. Removing these subjects from the data set still left a robust sample with more than adequate numbers to run the analyses.

Complex sampling designs are used in most large surveys conducted by the government. Although these designs provide nationally or regionally representative data they also present potential limitations for researchers using the data in a secondary analysis. Weights are calculated using complex sampling approaches in order to allow researchers to

obtain unbiased population estimates. Those weighting formulas are included in the data sets. Researchers must be alert to the sampling design and weighting issues because they can affect the accuracy of the statistical results and therefore the conclusions of the study. Not all statistical software packages will accommodate weighted variables. SPSS is commonly used in nursing doctoral programs and is an example of a statistical package that does not accommodate multiple weights. In order to produce *p* values and confidence intervals based on the weights the data had to be analyzed using specific software designed for survey data with unequal weights.

The generalizability of findings from this study is limited due to the single state sample and the sampling methodology. The stratified random sampling technique used was structured specifically to be representative of the population of Kansas. In addition the data was collected in 2001 and while still accurate for the purposes of this study, the age of the data will soon limit its usefulness.

Implications for Nursing

Registered Nurses are an integral part of the health care delivery system in this country. With numbers at approximately 2.9 million individuals, they represent the largest group of health care providers in this country. As an organized group nurses have been involved in the effort to increase access to care since 1989 (ANA, 2005). The findings of this study provide nurses with new information to increase their knowledge of the challenges faced by the uninsured non elderly population in the State of Kansas. Advanced Practice Nurses will be able to utilize these findings to assist them in caring for uninsured patients. Their care will be enhanced by being more cognizant of the potential health needs of their patients based on the length of time they have been uninsured. The findings may

encourage some nurses to use a more holistic approach to uninsured patients that goes beyond establishing if they are insured but actually assesses the amount of time patients have been without insurance. The resulting plan of care would then incorporate the patient in helping to determine individual needs and availability of resources to attain those needs. For example, a nurse practitioner providing care to someone who has been uninsured for three months and someone uninsured for two years or longer is concerned that both receive preventive screenings. However for the patient who has been uninsured for only three months, unless there is a specific problem to warrant the screening, tests such as mammograms, pap smears, colonoscopies, and blood tests could be negotiated with the patient for a future date. For a patient who has been uninsured for two years or longer it is possible that the patient has received no preventive services for at least two years. In this case the nurse practitioner could discuss possible options for having these screening tests performed. The patient may be qualified to receive the screening at reduced or no cost through some cancer screening programs or from a free or reduced cost clinic. The nurse practitioner as the care provider would be in the best position to counsel and advise the patient as to the risks and benefits of delaying these services further.

Nurse educators can use these findings to teach students that diversity exists in more venues than race or socioeconomic status. Educators can help students understand the unique and challenging needs of the uninsured and their role in helping to meet those needs. Based on these findings, dialogues with students can be initiated to teach them more about the profession of nursing and the profession's belief that health care is a right. Students can be encouraged early in their careers to take responsibility as a nurse in helping to achieve health care for all (World Health Organization, 1978). Learning activities could

be constructed through service learning projects which benefit the uninsured. Courses to develop a student's knowledge of the policy making process could be offered and specific learning activities could be incorporated to teach students how to evaluate health care reform policies that in turn would enable them to communicate policy concerns to their policymakers.

The findings from this study provide nurse researchers with many opportunities for future research. Because of their experience as nurses, nurse researchers are in a unique position to design studies that incorporate the many dimensions of access to care and the related outcomes. Nurses clearly understand the physical, mental, financial, and social "costs" to patients when they are uninsured. Using their nursing backgrounds they are uniquely qualified to design studies that evaluate the "costs" or outcomes for the patient that associated with being unable to access needed health care.

All nurses can use the findings of this study to educate themselves so they are equipped to effectively promote and influence health policy regarding the uninsured and their access to care. This study provides nurses with the facts and characteristics of the uninsured population as it relates to one's ability to access and utilize health care in Kansas, based on length of time without insurance. Using these findings, nurses can give "faces" to the statistics through anecdotes about the patients they care for on a daily basis, and the challenges they encounter as a result of being uninsured. Those "faces" are important and will be memorable to policymakers. Nurse equipped with accurate information about how lack of insurance impacts the patients they care for can have a profound affect on policy makers as they search for solutions to decrease the number of

uninsured Kansans. The impact of 24,000 nurses in Kansas demanding health care reform that focuses on the needs of the uninsured should not be underestimated.

Policy Implications

Federal and state health policy previously has been guided primarily by federal data sources. Most federal surveys lack information on length of uninsured periods particularly when chronic in nature (greater than 12 months). The Current Population Survey (CPS) that is widely used as a source of health insurance information by policymakers lacks the capacity to track insurance status beyond 12 months (Kenny, Holahan & Nichols, 2006). As a result, the chronically uninsured have been ignored as most policy solutions have focused on those who have been temporarily uninsured. The findings of this study provide policymakers needed information on the subpopulations of the uninsured in the State of Kansas.

Findings from this study clearly identify variations in the characteristics of the uninsured based on the length of time they have been uninsured. Understanding the differences in these subpopulations can help to facilitate effective health policy. In order for policy solutions to be effective, they must be efficient, affordable, designed to match the need, and sustainable. Factors that were significant for those uninsured for less than one month were different than those uninsured for greater than 12 months. Significant factors for those uninsured for longer than 12 months or those who have never had insurance, varied from all other groups. These differences support the premise that the uninsured population is not homogenous and for that reason policy solutions need to target the diversity of the uninsured.

Health policy reform has moved to the forefront of the national and state agendas as the number of uninsured continues to increase. Many states are considering significant policy changes while others such as Vermont, California, Massachusetts, Maine, and Pennsylvania have enacted new policies to decrease the number of uninsured (National Conference of State Legislatures, 2007). Solutions have focused on the areas of expanding public programs, tax credits, portability, subsidies, incremental expansion, mandates, and universal coverage. Expansion of public programs while taking advantage of the infrastructure that is already in place, is somewhat limiting in the specific populations which will benefit from the expansion. Traditionally these populations have been the elderly and the poor. This still leaves those who are not elderly, but aging, without health insurance, and without viable options to help them obtain coverage.

Tax credits have been proposed as a means to help offset the cost of health insurance but they also may have limited utility. It has been established that the poor are vulnerable to being without health insurance coverage. Tax credits will be of little benefit to those who lack enough income to have tax liabilities.

A portability bill that allows one to transfer an insurance policy as they change jobs is unlikely to provide relief to the person who is 50 years old, works everyday, and is in the 13% of the uninsured population who has never had health insurance. However portability could make a difference for the person who is in the 18% of the uninsured population who has been uninsured for one to six months because they changed jobs and are waiting for open enrollment with a new insurance company.

Subsidies to help strengthen employer sponsored insurance may have some impact on the uninsured that are connected to the work force. Unfortunately these proposals

would offer no relief to the uninsured who are not employed or the self employed. Currently the only option for the self employed is the individual insurance market that is prohibitive to many because of the cost. The policies are expensive because of current health insurance risk rating procedures. Policy that could positively impact these subpopulations could be focused on pooling that would allow these individuals to merge, forming small groups that then could distribute the risk.

Policies that address the lack of insurance coverage among the Hispanic population need to be targeted to meet the issues underlying the high rate of uninsurance which is present across all income levels. Questions still remain about why this population has such a large percentage of uninsured. Policymakers need to be attentive to future studies that examine this phenomenon.

Although sixty-six percent of the uninsured in this study have been without insurance for over one year, the majority still report having a usual source of care. This suggests that policy should address the needs of health care providers caring for these populations as well. More financial support needs to be funneled to the safety networks that provide care for these people. Safety net clinics need to be able to function as the medical home for those without coverage, but in order to do so they must be funded at adequate levels. Health care providers who continue to provide charitable care to uninsured patients need to be compensated for that care.

Many states are launching programs to provide coverage for all of their citizens (National Conference of State Legislatures, 2007). Despite the relatively low percent of uninsured Kansans, policymakers need to make that bold statement as well. To cover the diverse subpopulations of the uninsured will likely involve implementing policy that

incorporates elements of each of the plans previously described. Effective health care reform in Kansas will require policy that addresses the variations that exist among the subpopulations of the uninsured, reverses the growing trend of uninsured, removes the barriers that reduce access to coverage, and offers affordable options. Policymakers in the State of Kansas can use the findings of this study to help find those solutions.

Implications for Future Research

Despite 50 years of research on the uninsured, many questions remain unanswered and new ones are developing every day. In order to more effectively study the uninsured it would be helpful to have a survey instrument developed and tested psychometrically to ensure its reliability and validity. Establishing these psychometrics would assure accuracy of studies nationwide.

Because many of the national studies are cross sectional and do not track periods without insurance past one year it would be interesting to conduct a study that would pool the cross sectional data from a survey such as the CPS over several years. Results from the study could provide a more thorough differentiation between those who are temporarily uninsured and those chronically uninsured.

Young adults represent a large percentage of the uninsured. Studies to determine the decision making process utilized by these individuals in deciding whether or when to seek insurance coverage might provide insight into developing policy that could address those issues.

Minority populations also comprise a large percentage of the uninsured. Hispanics in particular account for a disproportionate percentage of the uninsured, based on their total

population. In order to enact effective policy to reduce the number of minority uninsured there needs to be further research into this phenomenon.

Summary

The uninsured population in the State of Kansas is comprised of diverse subpopulations. This study was an initial step in exploring the relationship among the duration of time without health insurance and health care access and utilization at the state level. The research question was answered using a descriptive correlational study design using secondary data analysis of individual level data collected from 19,082 Kansans in the Kansas Health Insurance Study (2001). The analyses of the data included descriptive statistics and six logistic regression procedures.

The results of the study identified variation that exists among the subpopulations of the uninsured. As the length of time without health insurance increased the predictor variables that were significant changed. Age was found to be significant for most of the uninsured periods. As age increased the odds of being uninsured for a longer period of time also increased. Self employment was found to be a significant factor in those uninsured for six months and under. Race was significant at two different levels of duration without insurance. At least one of the access variables was also significant in all of the uninsured periods.

Generalizability of this study is limited due to the single state sampling and the sampling methodology. Other limitations were related to the survey instrument. The survey was comprised of questions frequently used in national surveys that are widely relied upon to inform policymakers. However, reliability and validity beyond face validity has not been established.

The study contributed new knowledge about the uninsured population in the State of Kansas. The findings have implications for the practice of nursing, nursing education, nursing researchers and health care policymakers. Additionally, recommendations for further research were identified from the findings of the study.

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Appendix A

Kansas Health Insurance Study Sampling Plan

Study Objectives

The primary purposes of the telephone survey are

- (1) To estimate the number and percent of Kansans under age 65 who are without health insurance.
- (2) To provide comparable estimates of the proportion of uninsured residents in each of 10 geographic districts within the state.
- (3) To measure a variety of sociodemographic attributes in order to assess the direction and magnitude of their association with health insurance coverage or lack of coverage.

The telephone survey will be administered to a probability sample of the state's residents. Based on the sampling plan design, we anticipate that the statewide percent of nonelderly residents of Kansas without health insurance will be estimated within a one percent margin of error. Similarly, it is expected that the proportion of uninsured for each specified district will be estimated within a three percent margin of error.

In addition to providing a means for estimating the proportion of uninsured Kansans for the state as a whole and within each of the 10 specified districts, the sampling plan is intended to accomplish other goals. At the state level, for example, the sample will support cross-tabulations of the proportion of uninsured Kansans by race/ethnicity and poverty status. State-level estimates for these population subdivisions are expected to be within a five percent margin of error. The precise margins of error will depend in part upon the number of respondents in each category.

Beyond the state-level cross-tabulations, we can examine one-way tabulations of the proportion uninsured by race/ethnicity and by poverty status within each specified district. Specifically, within each of the districts, the proportion uninsured will be estimated for two race categories (Black, White) and for two poverty levels, above and below the Federal Poverty Level (FPL). Percentages for Hispanics will also be calculated, but only released for districts in which there is sufficient sample to generate reliable estimates.

Finally, the sample is intended to support multivariate analyses at the state level. That is, for the state of Kansas, the sample will allow estimation of the proportion uninsured among groups simultaneously representing several of the sociodemographic attributes of interest. At this level, for example, it might be of interest to estimate the proportion uninsured among employed Blacks with a specified income level. Similarly, it might be valuable to pursue analyses comparing the proportion of White children who are

uninsured with the proportion of Black children who are uninsured, controlling for income level.

Since the number of combinations that might be of interest is very large, it is not possible to describe a priori the statistical precision that will be obtained for each specific analysis. However, an example may be illustrative. Suppose, based on the literature to date, there is a decision to estimate the impact of four independent variables on health insurance status. The variables of interest are:

- (1) **Income**, measured as below poverty status, from poverty status to twice poverty status, and more than twice poverty status
- (2) **Race**, measured as Black, White
- (3) **Employment Status**, measured as currently employed full time, currently employed part time and currently not employed
- (4) **Age**, measured in years

In this example, one analytic approach might involve fitting a logistic regression equation where the dependent variable represents insurance status and the independent variables consist of the four constructs listed above. The effect of each independent variable would be estimated, and confidence in the statistical soundness of those estimates can be specified, in the form of a confidence interval.

Sample Design

The sample will include about 8,000 households. To ensure that the primary parameters of interest will be estimated with an anticipated one percent margin of error, the sampling design uses known demographics and previous estimates of the proportion of uninsured Kansans, as discussed below.

KHIS requires a sample design that meets two major challenges: (1) the nonrandom distribution across the state of the characteristics of major interest (insurance status, race/ethnicity, and poverty), and (2) the relative paucity of existing data on the precise distributions of these characteristics. While these challenges are addressed in part by a large sample size, other techniques are also employed.

The attribute of primary interest (uninsurance) is relatively rare, and several important covariates of uninsurance (e.g., race/ethnicity and income) are not randomly distributed across the state. Consequently, a simple random sample based on statewide random digit dialing might produce an insufficient sample size to achieve the desired precision for such groups. In addition, simple random sampling might result in too few cases for the specific districts of special interest. In other words, if we were to pursue a simple random sampling approach for our interviews, we would likely obtain imprecise estimates of the proportion uninsured for key disadvantaged groups in particular areas of the state. The only way to obtain sufficiently precise estimates for such groups using simple random sampling would be to increase the sample size beyond our budget constraints.

The second challenge in developing the sampling plan centers on the lack of current and reliable data on the geographic and socioeconomic distribution of the proportion uninsured in Kansas. Indeed, a major motivation for conducting the KHIS is to obtain just such information. But without prior information on which to base the initial allocation of interviews across telephone exchanges, there is a risk of obtaining overly precise estimates in some areas and among some groups at the cost of insufficient precision in other areas and among other groups.

To meet these challenges, a stratified random sample is employed. Stratification produces a gain in precision of the parameter estimates. By dividing a heterogeneous population into relatively homogeneous subpopulations, a precise estimate of any stratum proportion can be obtained from relatively small samples in that stratum. This approach simultaneously preserves the ability to (1) obtain probabilistic results for the sample as a whole, and (2) oversample key groups of interest (Blacks, low-income residents, and specific districts) to obtain more precise estimates for these groups.

The stratified random sample design is built on the relationship of telephone exchanges to geographic areas. For each telephone exchange, the number of telephone households within that exchange is known, as is the approximate number of individuals associated with each household. Also known are the percent of Black residents, the proportion of Hispanic residents and the percent of low-income residents. These data are available from the GENESYS Sampling Systems database.

This information about the demographics of the population served by various telephone exchanges is used to classify telephone exchanges into eight mutually exclusive and exhaustive strata. These strata are based on whether the exchange is above or below the state median for proportion Black, proportion Hispanic, and proportion low-income. For each district, the strata can be enumerated as follows:

Table 1			
Definition of District-Specific Sampling Strata for the KHIS			
Stratum	Median Percent Black In State	Median Percent Hispanic In State	Median Percent Low Income In State
Stratum 1	Above	Above	Above
Stratum 2	Above	Above	Below
Stratum 3	Above	Below	Above
Stratum 4	Above	Below	Below
Stratum 5	Below	Above	Above
Stratum 6	Below	Above	Below
Stratum 7	Below	Below	Above
Stratum 8	Below	Below	Below

With 8 strata for each of 10 geographical regions, a theoretical maximum of 80 strata exists. In some districts, the number of listed telephone households falling within particular strata was sufficiently small so as to warrant combining strata. A minimum of 5,000 individuals was required to form an individual stratum. A stratum with fewer than 5,000 individuals was combined with the most similar stratum. This process for forming strata produced 36 final strata in the sample design.

The next step is to allocate the available sample size across the strata. To optimize our allocation, we apply a procedure developed in 1934 by statistician Jerzy Neyman. Neyman's procedure dictates that a larger sample should be taken if the stratum is large and/or the stratum has more internal variability. For estimating the proportion of uninsured residents, higher uninsurance rates (approaching 50 percent) correspond to large variances; thus, strata with a high uninsurance rate (as estimated from the data sources described below) will receive a larger allocation of the available sample.

To make the allocation, we estimate the variance in health insurance coverage from existing data. Specifically, we use data on health insurance and socioeconomic characteristics in the nation from the March 1999 supplement to the Current Population Survey (CPS). While not ideal for our purposes, the CPS estimates constitute the best information available for initial sample allocation. Using these data, we will develop initial target sample allocations across sampling strata using Neyman's procedure as described above.

Sampling Implementation

The sampling implementation will follow a modified replicate approach where representative subsamples will be released and worked to final disposition by the telephone subcontractor. This approach is much superior to a commonly utilized alternative, in which interviewing stops when the stratum target is reached. Under the latter form of sample management, there is a danger of interviewing a disproportionate number of individuals who are easiest to reach by telephone. Since the characteristics of such individuals may differ from the overall population, bias may be introduced under such a sampling plan. By pursuing a replicate approach, such opportunities for bias will be reduced.

Early in the data collection period, larger replicates will be released. Subsequently, as strata begin to approach their target sample sizes, smaller subsamples will be released so as to minimize the cost of target sample overruns.

Appendix B

Weighting Procedure

The analytical weights are the product of *expansion weights*, *multiline adjustment weights*, *interrupted telephone service weights*, and a *postratification adjustment*. An adjustment is made to compensate for nonresponse within each strata. Relative weights are computed by dividing the nonresponse adjusted expansion weight by the mean expansion weight. Details of computation for each component of the analytic weight are given below.

The first stage in the weighting process is the construction of *expansion weights*. The expansion weight for a sample unit is constructed as the inverse of the sampling fraction. The sampling fraction is the probability of selection and depends on the occurrence of the following events:

- a phone number must be selected from a working bank,
- household status is determined,
- household eligibility status is determined,
- the eligible resident chooses to participate in the survey

Thus the probability of household and respondent inclusion in the survey is the probability that all four events above occur. To elucidate weight formula construction, let **SEL** denote the probability that a phone number is selected, **HH** denote the event that the selected phone number's residential status is determined, **ELG** denote the event that a household's eligibility status is determined, and **RSP** denote the event that the eligible resident chooses to participate in the survey. The probability of survey inclusion is then given by:

$P[\mathbf{SEL} \text{ and } \mathbf{HH} \text{ and } \mathbf{ELG} \text{ and } \mathbf{RSP}]$,

which is equivalent to

$P[\mathbf{SEL}] * P[\mathbf{HH} \mid \mathbf{SEL}] * P[\mathbf{ELG} \mid \mathbf{HH} \text{ and } \mathbf{SEL}] * P[\mathbf{RSP} \mid \mathbf{ELG} \text{ and } \mathbf{HH} \text{ and } \mathbf{SEL}]$.

An expansion weight (the sampling fraction inverse) was computed for each of the strata, then divided by the stratum response rate (to adjust for the differential nonresponse). Relative weights were then constructed by computing the mean of the response rate adjusted expansion weights and dividing each weight by this mean. A *multiline adjustment weight* was computed based on a survey question which asked if there were other phone lines in the house on which calls were received. An adjustment was also made for possible interruption in telephone service. The *interrupted service adjustment weight* was calculated to be 52 divided by the number of weeks of interrupted service.

The product of the relative weight, multiline adjustment weight, and interrupted service adjustment weight was computed. A 1% trimming procedure was used to limit extreme values. The final stage of analytic weight development was the poststratification adjustment. Population marginals in each of the eight groups were computed based on age, sex and race distributions obtained from 1999 Census estimates. Ratios were constructed by comparing the population marginal percentages with the sample marginal percentages.

The analytic weight for each case was then computed by multiplying the poststratification ratio and the trimmed weight.

Kansas Health Insurance Study, 2001 pg C-1-C-2.

Appendix C

KANSAS HEALTH INSURANCE STUDY

	Interview Number:
Survey Research	Date of Interview: / /
STUDY: Kansas Health Insurance Survey	Interviewer Name:
Start Time (use military time): _____	End Time (use military time): _____
Respondent County:	Respondent Phone Number:

(HELLO) Hello, this is _____, calling for the University of Kansas.

INTERVIEWER: PRESS 1 TO CONTINUE WITH SURVEY
PRESS CTRL/END TO TERMINATE CALL

Hello, this is _____ for the University of Kansas. We started an interview a few days ago about health care and health insurance and I'm calling back to complete that interview. May we begin?

(HOME) We are conducting research so that state leaders can better develop health care programs for people in Kansas and we need the input of your household. We would like to ask you some questions.

Have I reached you on your HOME phone?

(USE AS NECESSARY –

*This is not a sales call, we are only interested in your opinion

*YOU CAN TELL THEM YOU ARE WORKING FOR THE

UNIVERSITY OF

FLORIDA'S BUREAU OF ECONOMIC AND BUSINESS RESEARCH
WHICH WAS HIRED BY THE STATE OF KANSAS)

INTERVIEWER: IF YES, PRESS 1 TO CONTINUE (*go to ADLT*)
IF NO, PRESS 2

(LIVE) Does anyone LIVE there?

INTERVIEWER:

IF YES, ASK TO SPEAK WITH THAT PERSON AND PRESS 1

IF NO, PRESS CTRL/END AND ASSIGN APPROPRIATE CODE

(ADLT) First, I need to know if you are (under 18 years old or) 18 years old or older.

- 1 YES, 18 YEARS OLD OR OLDER (*go to MOD3*)
- 2 NO, UNDER 18 YEARS OLD

(ADLTB) May I speak to someone 18 years old or older who lives there?

INTERVIEWER: PRESS 1 IF INFORMANT PASSES PHONE TO ELIGIBLE ADULT

IF NO ELIGIBLE ADULTS, PRESS CTRL/END AND CODE AS “NO ELIGIBLE RESPONDENT”

IF ELIGIBLE ADULT IS NOT HOME, PRESS CTRL/END AND CODE AS CALLBACK

(MOD3) Is anyone in the household under 65 years of age?

- PRESS 1 IF Yes (*go to KNOW*)
PRESS 0 IF No

(NoThank) Thank you for talking to me. Right now we are only talking to families who are

not eligible for Medicare, so I do not have any other questions.

PRESS ANY KEY TO CONTINUE

(KNOW) Are you the most knowledgeable person in your household about the family’s healthcare and health insurance?

- PRESS 1 IF Yes (*go to PROCEED*)
PRESS 0 IF No

(KNOW2) May I speak to the person who is most knowledgeable?

- PRESS 1 IF Yes (*continue*)
IF THEY REFUSE, THANK THEM FOR THEIR TIME, QUIT OR HIT CTRL/END AND CODE AS A REFUSAL.

(PROCEED) Before we begin, let me tell you that your phone number was selected at random by computer, and only your first name or initials will be used to ensure confidentiality. You do not have to answer any question you do not wish to answer. This interview should take approximately 15 minutes to complete.

USE IF NECESSARY:

“This study is sponsored by the State of Kansas who hired the University of Florida’s Bureau of Economic and Business Research to conduct the survey. The results will be used to help state leaders develop better health care programs for people in Kansas.”

(May we proceed?)

IF NO, QUIT OR HIT CTRL/END AND CODE AS REFUSAL

IF Yes PRESS 1 to continue

Section 1 Household Listing and Health Insurance

(HHL D) To begin, what are the first names (or initials) of the people who are living or staying there? Begin with yourself and then include all other people in the household. To ensure your confidentiality, only first names will be used.

INTERVIEWER: SOME FAMILIES MAY BE RELUCTANT TO PROVIDE NAMES. TELL RESPONDENT THAT WE WANT THE FIRST NAME BECAUSE YOU WILL BE ASKING ABOUT THE HEALTH CARE OF EACH PERSON IN THE HOUSEHOLD. TELL THEM THAT THEY CAN GIVE YOU INITIALS IF THAT WOULD MAKE THEM MORE COMFORTABLE. MAKE SURE THEY ARE *UNIQUE* INITIALS. IF NOT USE RELATIONSHIPS, LIKE "DAUGHTER1" OR "SON2."

- 1 MEMBER --RESPONDENT (CSR: We allow 12 characters for each name)
- 2 MEMBER
- 3 MEMBER
- 4 MEMBER
- 5 MEMBER
- 6 MEMBER
- 7 MEMBER
- 8 MEMBER

(NAMCHK) So the people in your household include...(READ NAMES BELOW)

DISPLAY NAME
 DISPLAY NAME
 DISPLAY NAME...

Is this correct?

MAKE SURE THIS IS CORRECT BECAUSE YOU WILL NOT BE ABLE TO CHANGE/ADD MEMBERS ONCE YOU BEGIN ASKING ABOUT AGES.

HIT 1 TO GO BACK AND ADD/FIX NAMES
 HIT 2 IF EVERYTHING IS GOOD

(MISSCHCK) Have I missed any babies or small children, or anyone who usually lives here but is traveling, in school, in a hospital, or any foster children, lodgers, boarders, and roommates?

INTERVIEWER: WE ARE INCLUDING STUDENTS WHO ARE UNDER 22 YEARS OLD AND AWAY AT SCHOOL, REGARDLESS OF WHETHER THEY LIVE IN A DORM OR AN OFF-CAMPUS APARTMENT.

!!!MAKE SURE YOU HAVE ALL THE NAMES BECAUSE YOU WILL NOT BE ABLE TO ADD OR CHANGE MEMBERS' NAMES ONCE YOU GO PAST THIS QUESTION!!!

PRESS 1 FOR YES TO RETURN AND ADD THOSE MISSING IF NO ONE MISSING AND EVERYTHING CORRECT, PRESS 2.

(AGE) Now I am going to ask you some questions about each household member, such as their age, whether they are male or female, and their relationship to you.

INTERVIEWER: BABIES NOT YET 1 YEAR OLD SHOULD BE CODED AS 0.

IF RESPONDENT IS RELUCTANT TO GIVE AGE INFO, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE IN DIFFERENT AGE GROUPS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

What is your age?

(0-110) (*go to SEX*)

-8 Don't know

-9 Not available

(AGERNG) Would you say:

INTERVIEWER: READ CHOICES...

1 Birth to five years?

2 5-17 years?

3 18-54 years?

4 55-64 years?

5 or over 65?

-8 Don't know

-9 Not available

(SEX) SEX OF HOUSEHOLD MEMBERS--
CODE W/O ASKING, IF KNOWN

INTERVIEWER: IF RESPONDENT IS RELUCTANT, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE IN DIFFERENT GROUPS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

INTERVIEWER: FILL IN RESPONDENT'S SEX

- 1 Male
- 2 Female
- 8 DON'T KNOW
- 9 NOT AVAILABLE

(MAR) (*For those 16 or older*) MARITAL STATUS

INTERVIEWER: IF RESPONDENT IS RELUCTANT, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE WITH DIFFERENT MARITAL STATUS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

What is your marital status?

INTERVIEWER: READ LIST. Say, "Is it...?"

- 1 Married
- 2 Widowed
- 3 Divorced
- 4 Separated
- 5 Never married
- 6 Living with a partner
- 8 DON'T KNOW
- 9 NOT AVAILABLE

(AGE) INTERVIEWER: BABIES NOT YET 1 YEAR OLD SHOULD BE CODED AS 0.

IF RESPONDENT IS RELUCTANT TO GIVE AGE INFO, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE IN DIFFERENT AGE GROUPS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

What is the age of (NAME HH MEMBER NUMBER 2)?

(0-110) (*go to SEX*)

-8 Don't know

-9 Not available

(AGERNG) Would you say....

1 Birth to five years?

2 5-17 years?

3 18-54 years?

4 55-64 years?

5 or over 65?

-8 Don't know

-9 Not available

(SEX) SEX OF HOUSEHOLD MEMBERS--
CODE W/O ASKING, IF KNOWN

INTERVIEWER: IF RESPONDENT IS RELUCTANT, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE IN DIFFERENT GROUPS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

(IF NOT KNOWN) What is the sex of (NAME HH MEMBER NUMBER 2)?

1 Male

2 Female

-8 DON'T KNOW

-9 NOT AVAILABLE

(MAR) (For those 16 or older) MARITAL STATUS

INTERVIEWER: IF RESPONDENT IS RELUCTANT, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE WITH DIFFERENT MARITAL STATUS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

What is (NAME HH MEMBER NUMBER 2)'s marital status? ~~(NAME HH MEMBER NUMBER 2)~~

INTERVIEWER: READ LIST. Say, "Is it ...?"

- 1 Married
- 2 Widowed
- 3 Divorced
- 4 Separated
- 5 Never married
- 6 Living with a partner
- 8 DON'T KNOW
- 9 NOT AVAILABLE

(REL) RELATIONSHIP TO RESPONDENT

INTERVIEWER: IF RESPONDENT IS RELUCTANT, TELL THEM THAT THIS INFORMATION IS USED TO UNDERSTAND DIFFERENCES IN HEALTH CARE FOR PEOPLE IN DIFFERENT AGE GROUPS AND TO UNDERSTAND THE HEALTH CARE NEEDS OF ALL PEOPLE IN THE HOUSEHOLD.

(IF NOT KNOWN) What is (NAME HH MEMBER NUMBER 2)'s relationship with you?

1. HUSBAND
2. WIFE
3. CHILD (OWN, ADOPTED , STEP)
4. FOSTER CHILD
5. GRANDCHILD
6. PARENT
7. BROTHER/SISTER
8. SON-IN-LAW/DAUGHTER-IN-LAW
9. MOTHER-IN-LAW/FATHER-IN-LAW
10. OTHER RELATIVE
11. NON-RELATIVE
12. UNMARRIED PARTNER
- 8 Don't know
- 9 Not Available

Surveyer: Repeat, age, gender, marital status and relationship to respondent for each person in the household.

(FAMCHECK) Please let me verify everyone that you have mentioned. The members of your household include:

NAME	AGE	SEX	RELATIONSHIP
_____	_____	_____	_____

INTERVIEWER: READ EACH MEMBER OF HH (NAME, AGE, SEX, RELATIONSHIP) ONE BY ONE AND VERIFY IF IT IS CORRECT. IF YOU NEED TO CHANGE AN AGE, RELATIONSHIP, OR SEX PRESS 1

IF CORRECT, PRESS 2.

TEST: *If age 16 or older and less than 22, go to STUDCHCK; else go to TEST before MARCHECK.*

(STUDCHCK) Is NAME a full-time student?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not available

Repeat for all who meet test.

TEST: *If any person is age 16 or older and MAR = married (1) and relationship is not husband (1) or wife (2), go to MARCHECK; else go to TEST after MARRIAGE.*

(MARCHECK) Is NAME married to anyone living there?

INTERVIEWER: CODE "NO" FOR COHABITEE

- 1 Yes
- 2 No (*go to next person or next test*)
- 8 Don't know
- 9 Not available

(MARRIAGE) To whom is NAME married?

- 1 NAME
DON'T KNOW/NO MORE

TEST: Verify that spouses are opposite sexes and at least 16 years of age. Also there should be only one husband or wife in the household, but this may not always be the case.

Repeat TEST, MARCHECK, MARRIAGE for each person age 16 and older.

TEST: If any person is 18 and younger and relationship to respondent is not equal to (3) and person is not married then go to GUARDCHK; else go to COVINT.

(GUARDCHK) Is anyone who lives there the parent or guardian of NAME?

- 1 Yes
- 2 No (*go to next child or next test*)
- 8 Don't Know
- 9 Not Available

(GUARDIAN) Who is NAME's parent or guardian?

INTERVIEWER: IF MORE THAN ONE GUARDIAN, CHOOSE MOTHER/FEMALE GUARDIAN.

- 1. DISPLAY NAME
- 2. DISPLAY NAME
- 3. DISPLAY NAME.....
- 8. Don't know
- 9. Not Available

Repeat for others meeting the test.

(COVINT) Now I will list several types of health insurance or health coverage obtained through jobs, purchased directly, or from government programs.

For each one, please tell me if anyone is currently covered by that type of plan.

PRESS 1 TO CONTINUE

(COV1) Are (you/is anyone) who lives there covered by a health insurance plan from a CURRENT employer or union, other than the military? (This includes insurance from family members' employment.)

INTERVIEWER: REMEMBER WE ARE NOT INCLUDING MILITARY COVERAGE HERE. DO NOT INCLUDE INSURANCE PLANS PURCHASED THROUGH A PROFESSIONAL ASSN. OR TRADE GROUP. DO NOT INCLUDE PLANS THAT PROVIDE EXTRA CASH WHILE IN THE HOSPITAL OR PLANS THAT PAY ONLY FOR ONE TYPE OF SERVICE, SUCH AS DENTAL CARE, VISION CARE, NURSING HOME CARE, OR ACCIDENTS.

- 1 Yes
- 2 No (*go to COVID*)
- 8 Don't know
- 9 Not available

(COV1C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV1D) Are (you/is anyone) covered by a health insurance plan from a PAST employer or union, other than the military?

INTERVIEWER: *INCLUDE COBRA AND RETIREMENT PLANS.

REMEMBER WE ARE NOT INCLUDING MILITARY COVERAGE HERE. DO NOT INCLUDE INSURANCE PLANS PURCHASED THROUGH A PROFESSIONAL ASSN. OR TRADE GROUP. DO NOT INCLUDE PLANS THAT PROVIDE EXTRA CASH WHILE IN THE HOSPITAL OR PLANS THAT PAY ONLY FOR ONE TYPE OF SERVICE, SUCH AS DENTAL CARE, VISION CARE, NURSING HOME CARE, OR ACCIDENTS.

- 1 Yes
- 2 No (*go to COV2A*)
- 8 Don't know
- 9 Not available

(COV1E) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV2A) Are (you/is anyone) covered by a health insurance plan bought on their own and not through an employer or union?

INTERVIEWER: * NO MILITARY COVERAGE HERE.
 * INCLUDE HEALTH INSURANCE PLANS PROVIDED BY COLLEGES AND UNIVERSITIES TO STUDENTS.
 * INCLUDE COVERAGE BOUGHT THROUGH A PROFESSIONAL ORGANIZATION

DO NOT INCLUDE PLANS THAT PROVIDE EXTRA CASH WHILE IN THE HOSPITAL OR PLANS THAT PAY ONLY FOR ONE TYPE OF SERVICE, SUCH AS DENTAL CARE, VISION CARE, NURSING HOME CARE, OR ACCIDENTS.

- 1 Yes
- 2 No (*go to COV3A*)
- 8 Don't know
- 9 Not available

(COV2C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV3A) Are (you/is anyone) covered by a health insurance plan held in the name of someone who does not live in the household?

INTERVIEWER: * NO MILITARY COVERAGE HERE

* INCLUDE MEDICAID IN SOMEONE ELSE'S NAME

DO NOT INCLUDE PLANS THAT PROVIDE EXTRA CASH WHILE IN THE HOSPITAL OR PLANS THAT PAY ONLY FOR ONE TYPE OF SERVICE, SUCH AS DENTAL CARE, VISION CARE, NURSING HOME CARE, OR ACCIDENTS.

- 1 Yes
- 2 No (*go to test before COV4A*)
- 8 Don't know
- 9 Not available

(COV3C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

Please ask COV4A only if someone is 65 years of age or older.

(COV4A) Are (you/is anyone) age 65 or older covered by Medicare, the health insurance plan for people 65 years old or older or persons with certain disabilities?
 INTERVIEWER: REMEMBER WE ARE NOT INCLUDING MILITARY COVERAGE HERE.

INCLUDE COVERAGE IF BY AN HMO AS WELL AS TRADITIONAL MEDICARE.
 INCLUDE PART A AND PART B.

- 1 Yes
- 2 No (*go to TEST C4*)
- 8 Don't know
- 9 Not available

(COV4C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

TEST C4: If person in household is 65 and not covered by Medicare, go to (COV5A); else go to (COV5SUP).

(COV5A) I noticed that NAME PERSON is older than 64, but is not covered by Medicare. Is that correct?

- 1 Yes (*go to COV6D*)
- 2 No, they should be added to Medicare (*go to COV4A*)
- 3 No, they are younger than 65
- 8 Don't Know
- 9 Not Available

(COV5B) What is the correct age?

- (0-64)
- 8 Don't Know
- 9 Not Available

Repeat for all household members age 65 and older and not covered by Medicare

(COV5SUP) Does NAME have any supplemental MediGap policies that assists with any medical care costs that are not covered by the main Medicare coverage?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not available

Repeat the question about supplemental MediGap coverage for all of those in household who have Medicare.

Ask COV6A if there are children under age 19 in the household; otherwise, go to COV9A.

(COV6A) Are any of the children covered by HealthWave or CHIP?

INT: IF THEY SAY THEY HAVE FAMILY HEALTH PARTNERS OR FIRST GUARD, CODE "YES"

- 1 Yes
- 2 No (*go to COV10A*)
- 8 Don't know
- 9 Not available

(COV6C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV6D) Are (you/is anyone) covered by Medicaid or an SRS medical card? These are government-sponsored health insurance programs.

(INT: IF THEY SAY THEY HAVE HEALTH CONNECT, PRIMECARE OR FIRST GUARD, CODE YES.)

- 1 Yes
- 2 No (*go to COV10A*)
- 8 Don't know
- 9 Not available

(COV6E) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV9A) Are (you/is) anyone covered by CHAMPUS, CHAMP-VA, TRICARE, VA or some other type of military health insurance?

- 1 Yes
- 2 No (*go to COV10A*)
- 8 Don't know
- 9 Not available

(COV9C) Who is covered?

Interviewer selects the names of those who are covered.

- 1 NAME
- 2 NAME
- 3 NAME
- 4 NAME
- 5 NAME
- 6 NAME
- 7 NAME
- 8 NAME

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

(COV10A) Are (you/is anyone) covered by a state-sponsored or public health insurance program that I have not mentioned?

INT: THIS MAY INCLUDE MEDICARE FOR THE DISABLED, INDIAN HEALTH SERVICE OR HIGH RISK POOL.

- 1 Yes
- 2 No (*go to TESTC1C2, before NOPLAN*)
- 8 Don't know
- 9 Not available

(COV10C): Who is covered by this program?

Interviewer selects the names of those who are covered.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

INTERVIEWER: AFTER THEY ANSWER, SAY "Are there any others?"

Interviewer selects the names of those who are covered, selects "NO MORE" to move to next question.

- 1 NAME
 - 2 NAME
 - 3 NAME
 - 4 NAME
 - 5 NAME
 - 6 NAME
 - 7 NAME
 - 8 NAME
- NO MORE

*TEST C1C2 If a household member is not covered under some plan, go to NOCHECK;
Else go to CONTCOV.*

(NOCHECK) According to the information I have, NAME, does not have health care coverage of any kind. Does NAME have health insurance or coverage through a plan that I might have missed?

INTERVIEWER: REPEAT IF NECESSARY

- 0 No, not covered by any plan
- 1 Health insurance from a current employer/union
- 2 Health insurance from a past employer/union
- 3 Health insurance bought on your own
- 4 A plan bought by someone who does not live in household
- 5 Medicare
- 6 HealthWave (also Family Health Partners, First Guard)
- 7 Medicaid or SRS medical card (also Health Connect, Primecare, First Guard)
- 8 CHAMPUS/CHAMP-VA, TRICARE, VA, Other Military
- 9 Other government plan (includes Medicare for disabled, Indian Health Services, High Risk Pool)
- 8 Don't Know
- 9 Not Available

Repeat test for each uninsured person

Once CATI has confirmed who is uninsured, ask the following questions for each household member who is uninsured:

(NINSREA): What is the main reason that (NAME) does not have health insurance?

READ LIST

- 1 Medical problems/pre-existing condition
- 2 Too expensive/can't afford it/premium too high
- 3 Don't believe in insurance
- 4 Don't need insurance/usually healthy
- 5 Free or inexpensive care is readily available
- 6 Employer doesn't offer it
- 7 Other (specify _____)
- 8 Don't Know
- 9 Not available

(NINSR2) Are there any other reasons that (NAME) does not have health insurance?
Anything else?

DO NOT READ LIST

(CHECK ALL THAT APPLY)

- 1 Medical problems/pre-existing condition
- 2 Too expensive/can't afford it/premium too high
- 3 Don't believe in insurance
- 4 Don't need insurance/usually healthy
- 5 Free or inexpensive care is readily available
- 6 Employer doesn't offer it
- 7 Other (specify _____)
- 8 No other reasons
- 8 Don't Know
- 9 Not available

(LONGU) About how long have you (has NAME) been without health coverage? Has it been...(READ CHOICES)

- 1 Less than one month
- 2 One to six months
- 3 Seven to twelve months
- 4 One to two years
- 5 More than two years
- 6 Never had health insurance
- 8 Don't Know
- 9 Not available

(EVER) Have you (has NAME) ever been covered by Medicaid or an SRS medical card?

- 1 Yes
- 2 No (*go to test before HEAR1*)
- 8 Don't Know (*go to test before HEAR1*)
- 9 Not available (*go to test before HEAR1*)

(LOST) In the past two years, have you (has NAME) lost Medicaid coverage due to losing cash assistance?

INT: THEY ALSO MIGHT REFER TO THIS AS CASH GRANT BENEFIT, AFDC, OR TANF. IF DUE TO LOSING ANY OF THOSE, IT IS "YES."

- 1 Yes
- 2 No
- 8 Don't Know
- 9 Not available

Go to HLTHCR

(CONTCOV) Since February of 2000, was NAME OF INSURED continuously covered by health insurance?

- 1 Yes (*Go to test before HEAR1*)
- 2 No
- 3 Continuously covered, but less than 1 Yr. (FOR INFANTS ONLY)
- 8 Don't Know
- 9 Not available

For each person coded 2 to CONTCOV, ask CONMNTH:

(CONMNTH) For how many months was NAME not covered by some type of health insurance plan?

- (1-12)
- 8 Don't know
- 9 Not available

Repeat CONTCOV and CONMONTH for all who are insured.

Section 2 Health Care

(HLTHCR) Now I am going to ask about the health care of people who live there.

PRESS 1 TO CONTINUE

For each person:

(HLTH) Would you say that NAME's health in general is excellent, very good, good, fair, or poor?

- 1 Excellent
- 2 Very good
- 3 Good
- 4 Fair
- 5 Poor
- 8 Don't know
- 9 Not available

*Surveyer: The next set of questions will be about the respondent. We **are not** asking about everyone in the household at this point.*

(USRCE) INTERVIEWER: THE NEXT FEW QUESTIONS ARE ONLY ABOUT THE PERSON ON THE PHONE

Is there a particular clinic, hospital, health center or doctor's office that NAME usually goes to if sick or needs advice about his/her health?

- 1 Yes (*ask KPLACE*)
- 2 No (*skip to ERUSE*)
- 8 Don't know (*skip to ERUSE*)
- 9 Not applicable (*skip to ERUSE*)

(KPLACE) What kind of place is it?—a clinic, a hospital, a hospital emergency room, a doctor's office, or some other place?

INTERVIEWER: DO NOT READ LIST. IF NOT SURE WHICH RESPONSE FITS, CODE #7 AND ENTER TEXT

- 1 CLINIC OR HEALTH CENTER
- 2 URGENT CARE/WALK-IN CLINIC
- 3 DOCTOR'S OFFICE OR HMO (HEALTH MAINTENANCE ORGANIZATION/PREPAID GROUP)
- 4 HOSPITAL EMERGENCY ROOM
- 5 HOSPITAL OUTPATIENT CLINIC
- 6 MILITARY OR VA HEALTHCARE FACILITY, or
- 7 ANOTHER TYPE OF PLACE (specify_____)
- 8 Don't know

-9 Not available

(ERUSE) In the last 6 months, how often did you go to the emergency room to get care for yourself?

(INTERVIEWER: RECORD HOW MANY TIMES)

(0-999) times

-8 Don't know

-9 Not available

(DRUSE) In the last 6 months, not counting emergency room visits, how many times did you go to the doctor's office or clinic to get care for yourself?

(0-999) times

-8 Don't know

-9 Not Applicable

(DELAY) In the past 12 months, was there any time when you needed medical care, but delayed or did not get it because you couldn't afford it?

INTERVIEWER: THIS DOES NOT INCLUDE DENTAL CARE. IF THEY SAY DENTAL CARE, PROBE BY ASKING, "OTHER THAN DENTAL CARE...?" AND REPEAT THE QUESTION IF NECESSARY.

1 Yes

2 No

-8 Don't know

-9 Not available

(COST) When you go to the doctor, how much do you pay on average at the time of the visit?

READ LIST IF NECESSARY

1 Nothing

2 Less than \$10

3 \$10 to \$15

4 \$16 to \$20

5 \$21 to \$40

6 More than \$40

-8 Don't know

-9 Not available

*If no child of respondent in household, go to test before WORK. The next set of questions will be about one child (age 18 or under) who is the respondent's child, foster child or for whom the respondent is child's guardian. We **are not** asking about everyone in the*

household at this point. If more than one child fits this test, randomly select one child to ask about based on a random digit number.

STORE THE NAME OF THE CHILD SO WE CAN CONNECT THE DATA LATER

(USRCEC) These next few questions will be about (NAME)

Is there a particular clinic, hospital, health center or doctor's office that NAME usually goes to if sick or in need of advice about (NAME)'s health?

- 1 Yes (*ask KPLACEC*)
- 2 No (*skip to ERC*)
- 8 Don't know (*skip to ERC*)
- 9 Not applicable (*skip to ERC*)

(KPLACEC) What kind of place is it?—a clinic, a hospital, a hospital emergency room, a doctor's office, or some other place?

INTERVIEWER: DO NOT READ LIST. IF NOT SURE WHICH RESPONSE FITS, CODE #7 AND ENTER TEXT

- 1 CLINIC OR HEALTH CENTER
- 2 URGENT CARE/WALK-IN CLINIC
- 3 DOCTOR'S OFFICE OR HMO (HEALTH MAINTENANCE ORGANIZATION/PREPAID GROUP)
- 4 HOSPITAL EMERGENCY ROOM
- 5 HOSPITAL OUTPATIENT CLINIC
- 6 MILITARY OR VA HEALTHCARE FACILITY, or
- 7 ANOTHER TYPE OF PLACE (specify _____)
- 8 Don't know
- 9 Not Applicable

(ERUSEC) In the last 6 months, how often did you go to the emergency room to get care for NAME?

(INTERVIEWER: RECORD HOW MANY TIMES)

- (0-999) times
- 8 Don't know
- 9 Not Applicable

(DRUSEC) In the last 6 months, not counting emergency room visits, how many times did you go to the doctor's office or clinic to get care for NAME?

- (0-999) times
- 8 Don't know
- 9 Not Applicable

(DELC) In the past 12 months, was there any time when NAME needed medical care, but delayed or did not get it because you couldn't afford it?

INTERVIEWER: THIS DOES NOT INCLUDE DENTAL CARE. IF THEY SAY DENTAL CARE, PROBE BY ASKING, "OTHER THAN DENTAL CARE...?" AND REPEAT THE QUESTION IF NECESSARY.

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not Applicable

(COSTC) When you take NAME to the doctor, how much do you pay on average at the time of the visit?

READ LIST IF NECESSARY

- 1 Nothing
- 2 Less than \$10
- 3 \$10 to \$15
- 4 \$16 to \$20
- 5 \$21 to 40
- 6 More than \$40
- 8 Don't know
- 9 Not Applicable

Go to demographic section

Section 3 Demographics

(WORKINT) The next series of questions is about jobs and earnings. Answers to these questions are very important because they help to explain whether or not people can afford the health care they need. I want to emphasize this information is confidential and will be used for statistical purposes only. We will be asking about family members 18 years and older in your household.

TEST: for each person in the household 18 years and older or married ask:

(WORK) Is NAME now employed at a job or business?

INTERVIEWER: IF RESPONDENT HAS A JOB BUT IS HOME BECAUSE OF AN ILLNESS, VACATION, OR STRIKE, TYPE 1 FOR YES

- 1 Yes (*go to TEST before WRK1*)
- 2 No (*go to WRK3*)
- 8 DON'T KNOW (*go to WRK3*)
- 9 Not available (*go to WRK3*)

TEST: if REL=0, 1, 2 or 12 go to WRK2, else go to WRK1.

(WRK1) Do NAME's earnings from this job contribute to the family income?

- 1 Yes (*go to WRK2*)
- 2 No (*go to EDUCAT*)
- 8 DON'T KNOW (*go to EDUCAT*)
- 9 Not available (*go to EDUCAT*)

(WRK2) Is NAME working for an employer, self-employed or both?

- 1 Working for employer (*go to PLWK*)
- 2 Self-employed only (*go to PLWK*)
- 3 Working for an employer and self-employed (*go to PLWK*)
- 8 DON'T KNOW (*go to WRK3*)
- 9 Not available (*go to WRK3*)

(WRK3) Is NAME unemployed but looking for work, not looking for work or is NAME retired?

- 1 Unemployed but looking for work (*go to EDUCAT*)
- 2 Not looking (*go to EDUCAT*)
- 3 Retired (*go to EDUCAT*)
- 8 Don't know (*go to EDUCAT*)
- 9 Not available (*go to EDUCAT*)

(PLWK) What kind of place does NAME work for?

INTERVIEWER- PROBE IF NEEDED: What kind of company/What is their primary job?

****HIT THE F1 KEY TO SEE DEFINITION OF THE JOB TYPES****

- 1 AGRICULTURAL, FORESTRY OR FISHING (e.g., farms, orchards, nurseries, timber, tree farms, fish hatcheries)
- 2 MINING (e.g., coal, rock quarry, oil/gas extraction)
- 3 UTILITIES OR COMMUNICATION (e.g., electric, gas, telephone, cable, water resources, wastewater, waste management)
- 4 CONSTRUCTION (e.g., general contractors, heavy construction, repair of structures including plumbing, heating)
- 5 MANUFACTURING (e.g., meat packing, food processing, pet foods, aircraft, avionics, chemicals, petroleum/gas refining, glass, metal, wood products)
- 6 TRANSPORTATION (e.g., railroads, trucking, airlines, storage, pipeline distribution, distribution centers, post office, courier services, highway maintenance)
- 7 WHOLESALE TRADE (items sold to manufacturers or retailers)
- 8 RETAIL TRADE (items for personal or household use, home furnishings, gas stations, clothing stores, food and beverage stores, restaurants and bars)
- 9 FINANCE, INSURANCE OR REAL ESTATE (e.g., Realtors, stockbrokers, property maintenance, credit services, banking, tax services)
- 10 BUSINESS AND REPAIR SERVICES (e.g., advertising, credit reports, commercial art, data processing, news syndicates, temp services)
- 11 PERSONAL SERVICES (e.g., laundry, beauty/barber, funeral, child care)
- 12 ENTERTAINMENT AND RECREATION SERVICES (e.g., museum, movie theater, hotel)
- 13 HEALTH SERVICES (e.g., hospital, doctor's office, HMOs, dental/health clinics, mental health)
- 14 EDUCATIONAL SERVICES
- 15 SOCIAL SERVICES (e.g., nonprofit agencies, churches, youth agencies)
- 16 OTHER PROFESSIONAL SERVICES (e.g., law offices, engineering firms, management consultants)
- 17 PUBLIC ADMINISTRATION
- 18 OTHER (please describe PLACE _____)
- 8 Don't know
- 9 Not Available

(SECTOR) Is that job for the government, private industry, or is NAME self-employed?

- 1 Government
- 2 Private Industry (*go to BEPNUMB*)
- 3 Self-employed (*go to BEPNUMB*)
- 8 Don't know (*go to BEPNUMB*)

-9 Not available (*go to BEPNUMB*)

(STATE) Is NAME employed by the State of Kansas?

- 1 Yes
- 2 No
- 8 Don't Know
- 9 Not available

(BEMPNUMB) Counting all locations where this business operates, what is the total number of persons who work for this business?

INTERVIEWER: THIS INCLUDES ALL THE EMPLOYEES WHO WORK FOR ~~MART~~ THIS BUSINESS, NOT JUST THOSE AT A PARTICULAR LOCATION.

PROBE IF NEEDED: Could you give me a specific number? Your best estimate is fine.

- 1 – 4 employees
- 5 – 9 employees
- 10-24 employees
- 25-49 employees
- 50-99 employees
- 100-249 employees
- 250-499 employees
- 500-999 employees
- Or are there 1,000 employees or more?
- Don't Know
- Not Available

(EST) Thinking about the particular location or facility where you work, how many people are employed there, full or part time?

- 1 – 4 employees
- 5 – 9 employees
- 10-24 employees
- 25-49 employees
- 50-99 employees
- 100-249 employees
- 250-499 employees
- 500-999 employees
- Or are there 1,000 employees or more?
- Don't Know
- Not Available

(WORKHRS) How many hours per week does NAME usually work at this job?

IF PERSON NORMALLY WORKS OVERTIME INCLUDE THOSE HOURS

(1-80) (*go to SEASON*)

-8 Don't know

-9 Not available

(HRSRNG) Would you say the job is full-time or part-time?

1 Full-time

2 Part-time

-8 Don't know

-9 Not available

(SEASON) Is this job a seasonal job? (Is this a job that only gets filled during certain parts of the year?)

1 Yes

2 No (*go to LENGT*)

-8 Don't know (*go to LENGT*)

-9 Not available (*go to LENGT*)

(WEEKS) How many weeks during the year does NAME usually work at this job? Include vacation and sick leave as work time.

(1-52)

-8 Don't know

-9 Not available

(LENGT) How many years has NAME been working for this employer?

(1-80) (*go to WORK2*)

-7 GIVE MONTHS IF ANSWER GIVEN IN MONTHS

-8 Don't know (*go to WORK2*)

-9 Not available (*go to WORK2*)

(LENGT2)

INTERVIEWER: ENTER MONTHS

(1-36) months

(WORK2) Is NAME paid by the hour on his/her main job?

- 1 Yes (*go to PAY1*)
- 2 No (*go to PAY2*)
- 8 Don't Know
- 9 Not Available

(PAY1) How much does NAME make per hour?
Include Overtime, Tips, Bonuses.

- (1.00 - 100.00)
- 8 Don't know
- 9 Not available

INTERVIEWER: REMIND PERSON IF HESITANT THAT THIS IS CONFIDENTIAL, STATISTICAL INFORMATION ONLY AND WILL HELP PROVIDE INFORMATION TO DEVELOP AFFORDABLE HEALTH CARE PLANS.

Go to UNION after this question.

(PAY2) How much does NAME usually earn at this job ANNUALLY before deductions?

Include overtime, tips, bonuses.

- (1-500000)
- 8 Don't know
- 9 Not available

INTERVIEWER: REMIND PERSON IF HESITANT THAT THIS IS CONFIDENTIAL, STATISTICAL INFORMATION ONLY AND WILL HELP PROVIDE INFORMATION TO DEVELOP AFFORDABLE HEALTH CARE PLANS. INCLUDE OVERTIME, TIPS, BONUSES.

(UNION) On this job, is NAME working under a union contract or collective agreement?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not available

(PAY4) Does NAME have any other jobs besides the primary one that we just talked about?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not available

(PAY4A) How much does NAME usually earn at this job ANNUALLY before deductions?

Include overtime, tips, bonuses.

(1-500000)

- 8 Don't know
- 9 Not available

INTERVIEWER: REMIND PERSON IF HESITANT THAT THIS IS CONFIDENTIAL, STATISTICAL INFORMATION ONLY AND WILL HELP PROVIDE INFORMATION TO DEVELOP AFFORDABLE HEALTH CARE PLANS. INCLUDE OVERTIME, TIPS, BONUSSES.

*TESTWRK: If WORK =1 then ask EMP2 through PREM4; else go to EDUCAT.
(If wrk1 = 2 (no), -8(DK), or- 9(RF), skip to EDUCAT)*

Surveyer please note that the question sequence beginning with EMP2 and ending with PREM4 will be asked of each household member who is WORK=1. Please ask this sequence of ALL WORK=1 before going on to next question sequence that begins with EDUCAT.

(EMP2) Does NAME'S current employer or union offer a health insurance plan to any of its employees?

- 1 Yes
- 2 No (*go to next person who is WORK=1*)
- 8 Don't know (*go to next person who is WORK=1*)
- 9 Not available (*go to next person who is WORK=1*)

(EMP3) Is NAME eligible to enroll in this health insurance plan?

- 1 Yes
- 2 No (*go to next person who is WORK=1*)
- 8 Don't know (*go to next person who is WORK=1*)
- 9 Not available (*go to next person who is WORK=1*)

(EMP3A) Is the insurance that NAME is eligible for...

INTERVIEWER: READ CHOICES

- 1 Employee coverage only
- 2 Family coverage
- 8 Don't know
- 9 Not available

(EMP4) Is NAME enrolled in this health insurance plan?

- 1 Yes
- 2 No (*go to W1*)
- 8 Don't know (*go to PLNCHIL*)
- 9 Not available(*go to PLNCHIL*)

(EMP5) Is NAME enrolled in employee coverage only or family coverage?

(If person was only eligible for employee coverage (emp3a=1), store "1" for response below and skip to PREM1)

- 1 Employee coverage only (*if EMP3A=1, go to PREM1; if EMP3A=2, and there are no children under 22 in the household, go to PREM1; if EMP3A=2 and there are children under 22 in the household, go to W2*)
(*Those 22 & younger who are married are not included*)

- 2 Family coverage (*go to PLNCHIL*)
- 8 Don't know (*go to PLNCHIL*)
- 9 Not available (*go to PLNCHIL*)

(W1) Why is NAME not covered through his or her employer?

INTERVIEWER: READ EACH ONE AND INDICATE ALL THAT APPLY

- 1. Covered through other family member
 - 2. Covered through a public program
 - 3. Too expensive
 - 4. Didn't like the benefit package
 - 5. Didn't like the doctors in the plan
 - 6. Don't believe in health insurance
 - 7. OTHER REASON: (Specify_____)
 - 8 Don't know
 - 9 Not Available
- NO MORE

Go to EDUCAT

Test: Only ask plnchil if there are children 22 years of age or younger and not married in the house.

(PLNCHIL) Let me confirm, are ALL the children 22 years of age or younger covered by this plan?

INTERVIEWER: IF NO, ASK "Are there ANY children covered by this plan?" IF NO, TYPE 3.

- 1 Yes all the children are covered (*go to PREM2*)
- 2 No, NOT ALL OF the children are covered (*go to W2*)
- 3 NO, NONE OF THE CHILDREN ARE COVERED (*go to W2*)
- 8 Don't know (*go to PREM2*)
- 9 Not available (*go to PREM2*)

(W2) Why are the children not covered through NAME's employer?

INTERVIEWER: READ EACH LIST ITEM AND CHOOSE ALL THAT APPLY

- 1. Covered through another family member
 - 2. Covered through a public program
 - 3. Too expensive
 - 4. Didn't like the benefit package
 - 5. Didn't like the doctors in the plan
 - 6. Don't believe in health insurance
 - 7. OTHER--ASK IF THERE ARE REASONS: Other:
Specify _____
 - 8 Don't know
 - 9 Not available
- NO MORE

(PREM1 for employee-only, PREM2 for family coverage) About how much does NAME have to pay out of each paycheck for his/her share to get insurance through his/her employer? Your best guess is fine.

INTERVIEWER: GET AMOUNT IN DOLLARS PER PAYCHECK.
CLARIFY THIS BY ASKING: "IS THIS FOR ONE PAY PERIOD?"

- \$ (0-5000) PER PAYCHECK
- 8 Don't know
- 9 Not available

(PREM3) How often is NAME paid? Once every month, every two weeks, every week or something else?

1. Every month
2. Every two weeks
3. Every week
4. Other—specify _____
- 8 Don't know
- 9 Not available

(PREM4) How confident are you that your estimate is within \$20.00 of the actual employee share of the premium?

INTERVIEWER: READ CHOICES

- 1 Very confident(You looked at the pay stub)
- 2 Confident
- 3 Somewhat confident
- 4 Not confident at all
- 8 Don't know
- 9 Not available

Repeat starting at TESTWK for all hh members 18 and older or married

(EDUCAT) What is the highest level of school NAME has ever completed?

- 1 Less than high school
- 2 Completed high school
- 3 Some college or associates degree
- 4 Completed four years of college
- 5 Some graduate education
- 6 Graduate degree
- 8 Don't know
- 9 Not available

Repeat for all hh members 18 and older or married

For each hh member who is 18 years of age or older or married

(HISP)

(IF NECESSARY: The next questions may be sensitive. We are asking so that we can better understand differences in health care problems and needs.)

Is NAME of Spanish or Hispanic origin?

- 1 Yes (*go to RACE*)
- 2 No (*go to RACE*)
- 8 Don't Know
- 9 Not Available

(RACE) What race does NAME consider him/herself to be?

- 1 White
- 2 Black
- 3 Native American Indian/Eskimo
- 4 Asian/Pacific Islander
- 5 Other Specify _____
- 8 Don't Know
- 9 Not Available

Repeat for all 18 years of age or older or married

(HHINCOME). For everyone who lives there that is related to you by blood, marriage or adoption...from all sources, what is the gross (before taxes) yearly FAMILY income. Your best guess is fine.

- 1. Less than \$4,999
- 2. \$5,000 to \$9,999
- 3. \$10,000 to \$14,999
- 4. \$15,000 to \$19,999
- 5. \$20,000 to \$24,999
- 6. \$25,000 to \$34,999
- 7. \$35,000 to \$44,999
- 8. \$45,000 to \$54,999
- 9. \$55,000 to \$64,999
- 10. \$65,000 to \$74,999
- 11. \$75,000 to \$84,999
- 12. \$85,000 to \$94,999
- 13. \$95,000 or more
- 8 Don't Know
- 9 Not Available

(PHONE1) In the last 12 months, was there any time that you did not have a working telephone for two weeks or more?

- 1 Yes (*go to PHONE2*)
- 2 No (*go to OTHPHN*)
- 8 Don't know (*go to OTHPHN*)
- 9 Not available (*go to OTHPHN*)

(PHONE2) For how many weeks in the last 12 months did you not have a working telephone for two weeks or more?

(2-52)

- 8 Don't know
- 9 Not available

(OTHPHN) Are there any other telephone numbers in this household besides (FILL IN PHONE NUMBER) that people receive calls on?

- 1 Yes
- 2 No (*go to ZIPCD*)
- 8 Don't know (*go to ZIPCD*)
- 9 Not available (*go to ZIPCD*)

(OTHPHN2) How many?

(1-99)

- 8 Don't Know
- 9 Not Applicable

(1) *go to OTHPHN3*

(2-99) *go to OTHPHN4*

(OTHPHN3) Is this line used for business purposes only?

- 1 Yes (*go to ZIPCD*)
- 2 No (*go to ZIPCD*)
- 8 Don't know (*go to ZIPCD*)
- 9 Not available (*go to ZIPCD*)

(OTHPHN4) How many of these lines are used for business purposes?

(1-99)

- 8 Don't know
- 9 Not applicable

(ZIPCD) What is your zip code?

(60000-75000)

- 8 Don't Know
- 9 Not Available

(COUNTY) In what county in Kansas do you live?

OFFER LIST OF COUNTIES WITH NUMERIC CODE

(HLTHIMP) Is there something that I haven't asked you about your family's health care that you think is important for us to know?

INTERVIEWER: RECORD ANSWER WORD FOR WORD AS CLOSELY AS POSSIBLE.

(CALLBACK) And finally, we might like to call you back in a year to ask additional questions about your family's health care. May I keep your first name and phone number so that we could call you back?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Not available

(THANKYOU) Thank you for your time. Your responses will help us to develop better health insurance plans for families in Kansas.

Appendix D SAS Programming Statements

* Using HasInsur (converted from HASHLTHI) as the dependent variable;

*===== ***** =====;

proc format;

value unin 0='0,Insured' 1='1,Uninsured'; *HasInsur & Uninsured;

value ny 1='No' 2='Yes'; *usrce delay;

value contcov 1='Insured' 2='Uninsured';

value longu 1='<1 mo' 2='1-6 mos' 3='7-12' 4='1-2 yrs' 5='>2 yrs' 6='Never insured';

value longx 0='Un 1mo+' 1='<1 mo';

value hlth 5='Excellent' 4='Very good' 3='Good' 2='Fair' 1='Poor';

value druse 1-2='1-2' 3-4='3-4' 5-6='5-6' 7-high='7 plus';

value race 1='White' 2='Black' 3='Hispanic' 4='Other';

value hisp 1='Hispanic' 2='NotHispanic';

value sex 1='Male' 2='Female';

value educ 0='Missing' 1='<HS' 2='HS' 3='some/assoc' 4='Bach' 5='some grad/Grad degree';

value empl 0='Missing' 1='Fulltime' 2='Parttime' 3='SelfEmpl' 4='Unemploy' 5='Not in force';

value mar 1='Married' 2='Widowed' 3='Divorced' 4='Separated' 5='Never married' 6='Living

w/partner';

run;

*=====;

data tmp; **set** save.ebbert_pers;

keep PERSON PERSWT ID_NO USRCE KPLACE ERUSE DRUSE DELAY HHINCOME

AGE SEX MAR NOCHECK LONGU EVER LOST CONTCOV CONMNTMTH race race_cat

racecat HLTH EDUCAT HISP REGION EMPLOY_STAT HASHLTHI

longu1-longu5 HasInsur Uninsured;

array ms PERSON LONGU CONTCOV conmmnth age sex mar race hisp hhincome educat

region usrce kplace hlth eruse druse delay nocheck;

do over ms; **if** ms in(-7,-8,-9) **then** ms=.; **end**;

if contcov=3 **then** contcov=1; *recoding infants to 1=Yes;

if race cat='WHITE' **then** racecat=1;

if race cat='BLACK' **then** racecat=2;

if race_cat='HISP' **then** racecat=3;

if race_cat='OTHER' **then** racecat=4;

if 0<age< 16 **then** mar=5; *5=never married';

Employ stat=.;

if emp_stat='1:work-emplyr-fullti' **then** Employ_stat=1;

if emp_stat='2:work-emplyr-partti' **then** Employ_stat=2;

if emp_stat='3:self-employed' **then** Employ_stat=3;

if emp_stat='4:unemployed' **then** Employ_stat=4;

if emp_stat='5:not-in-force' **then** Employ_stat=5;

if longu=1 **then** longu1=1; *Yes;

else **if** longu in(2,3,4,5,6) **then** longu1=0; *No;

if longu=2 **then** longu2=1; *Yes;

```

    else if longu in(3,4,5,6) then longu2=0; *No;
    if longu=3 then longu3=1; *Yes;
    else if longu in(4,5,6) then longu3=0; *No;
    if longu=4 then longu4=1; *Yes;
    else if longu in(5,6) then longu4=0; *No;
    if longu=5 then longu5=1; *Yes;
    else if longu=6 then longu5=0; *No;

** 3/6/07: request to reverse coding on hlth & delay; * added usrce also;
    Hlth=6-hlth;
    delay=3-delay;
    usrce=3-usrce;
** add missing value code to employ stat & educat;
    if employ stat=. then employ_stat=0;
    if educat = . then educat=0;
    if educat = 6 then educat=5; *4/23/07: combining some grad & grad degree;

/* creating new variable, UnInsured by collapsing 4 related variables;*/
    if nocheck>0 or hashlth='Y' or contcov=1 or longu in(1,2,3,4,5,6) then UnInsured=0;
    if nocheck=0 or hashlth='N' or contcov=2 or longu>0 then UnInsured=1;

/* creating numeric version of hashlth;*/
    if hashlth='Y' then HasInsur=0; *Yes;
    if hashlth='N' then HasInsur=1; *No;

run;
=====;
data one; set tmp;
    array mss hasinsur age sex mar racecat hhincome educat employ_stat region usrce hlth eruse
    druse
        delay;
    nomiss=0;
    do over mss; if mss =. then nomiss=nomiss+1; end;
    if nomiss=0; *keeping only those obs with no missing values for Y or Indep vars;

=====;
/*data save.ebbert_hashlth; set one;*/

proc sort data=one; by hasinsur;
options pageno=1 nodate;
proc freq data=one; by hasinsur;
    format hasinsur unin. delay usrce ny. hlth hlth. racecat race.
        sex sex. educat educ. employ_stat empl. mar mar. contcov contcov.;
    tables longu longu1-longu5
        age sex mar racecat hhincome educat employ_stat region usrce hlth eruse druse delay;
    title 'Frequencies for all variables going into LR when Y=HasInsur';
run;
/*Proc surveyfreq data=one; by hasinsur; */
/* format hasinsur unin. delay usrce ny. hlth hlth. racecat race.*/
/* sex sex. educat educ. employ_stat empl. mar mar. contcov contcov.;*/

```

```

/* * domain hasinsur;*/
/* weight PERSWT;*/
/* tables longu longu1-longu5 */
/* age sex mar racecat hhincome educat employ_stat region usrce hlth eruse druse delay;*/
/* title 'Weighted Frequencies for all variables going into LR when Y=HasInsur';*/
/*run;*/

```

```

options pageno=1 nodate; *nodate;
proc corr data=one; by hasinsur;
  format hasinsur unin.;
  var age sex mar racecat hhincome educat employ_stat region usrce hlth eruse druse delay;
  title 'Sum Stats & Correlations of Independent Vars';
run;

```

```

options pageno=1 nodate;
*for v9.1.3;
proc surveylogistic data=one;
  format hasinsur unin. delay usrce ny. hlth hlth. racecat race.
    sex sex. educat educ. employ_stat empl. mar mar.;
  class sex mar racecat employ_stat region educat;
  model hasinsur (event='1,Uninsured') = age sex mar racecat hhincome educat
    employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
  weight PERSWT;
  title 'Non-Stepwise Logistic R: Y=Hasinsur, 13 Independent Vars';
run;

```

```

*=====;
options pageno=1 nodate;
proc surveylogistic;
  format longu1 longx. delay usrce ny. hlth hlth. racecat race.
    sex sex. educat educ. employ_stat empl. mar mar.;
  class sex mar racecat employ_stat region educat;
  model longu1 (event='<1 mo') = age sex mar racecat hhincome educat
    employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
  weight PERSWT;
  title 'LR: Y=Longest Uninsured <1 mo vs. 1-6 month Uninsured, 13 Indep Vars';
run;

```

```

options pageno=1 nodate;
proc surveylogistic;
  format delay usrce ny. hlth hlth. racecat race.
    sex sex. educat educ. employ_stat empl. mar mar.;
  class sex mar racecat employ_stat region educat;
  model longu2 (event='1') = age sex mar racecat hhincome educat
    employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
  weight PERSWT;
  title 'LR: Y=LongU 1-6 mos vs. 7+ months, with 13 Indep Vars';
run;

```

```

options pageno=1 nodate;
proc surveylogistic;

```

```

format delay usrce ny. hlth hlth. racecat race.
      sex sex. educat educ. employ_stat empl. mar mar.;
class sex mar racecat employ_stat region educat;
model longu3 (event='1') = age sex mar racecat hhincome educat
      employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
weight PERSWT;
title 'LR: Y=LongU 7-12 mos vs. Over 12 months Uninsured, 13 Indep Vars';
run;

```

```
options pageno=1 nodate;
```

```
proc surveylogistic;
```

```

format delay usrce ny. hlth hlth. racecat race.
      sex sex. educat educ. employ_stat empl. mar mar.;
class sex mar racecat employ_stat region educat;
model longu4 (event='1') = age sex mar racecat hhincome educat
      employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
weight PERSWT;
title 'LR: Y=LongU 1-2 years vs. Over 2 yrs Uninsured, 13 Indep Vars';
run;

```

```
options pageno=1 nodate;
```

```
proc surveylogistic;
```

```

format delay usrce ny. hlth hlth. racecat race.
      sex sex. educat educ. employ_stat empl. mar mar.;
class sex mar racecat employ_stat region educat;
model longu5 (event='1') = age sex mar racecat hhincome educat
      employ_stat region usrce hlth eruse druse delay / clodds corrb rsquare;
weight PERSWT;
title 'LR: Y=LongU Over 2 years vs. Never Insured, 13 Indep Vars';
run;

```

```
*=====
```

```
=====;
```

Appendix E

The University of Kansas Medical Center

Human Research Protection Program

February 28, 2007

Project Number: 10800
Project Title: The Relationship Of Duration Of Time Without Health Insurance To Access And Utilization Of Health Care In The State Of Kansas
Sponsor: None
Protocol Number: N/A
Primary Investigator: Barbara Langner, R.N., Ph.D.
Meeting Date: 2/27/2007
Approval Date: 2/28/2007
Type of Approval: Exempt b(4)

Dear Investigator:

This is to certify that your research proposal involving human subject participants has been reviewed and approved by the KUMC Human Subjects Committee (HSC). This "exempt" approval is based upon the assurance that you will notify the HSC prior to implementing any revisions to the project. The HSC must determine whether or not the revisions impact the risks to human subjects, thus affecting the project's "exempt" status. Projects that do not meet the "exempt" criteria must comply with all federal regulations regarding research.

If you have any questions regarding the human subject protection process, please do not hesitate to contact our office.

Very truly yours,



Daniel J. Voss, M.S., J.D. IRB Administrator