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Travis L. Fojtasek

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EXAMINING INEQUITIES IN PHYSICIAN WORKFORCE: AN APPLICATION OF SOCIOLOGICAL THEORY AND INSIGHT TO THE PROBLEM OF PHYSICIAN RECRUITMENT AND RETENTION IN RURAL MICHIGAN

By

Travis L. Fojtasek

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ABSTRACT

EXAMINING INEQUITIES IN PHYSICIAN WORKFORCE: AN APPLICATION OF SOCIOLOGICAL THEORY AND INSIGHT TO THE PROBLEM OF PHYSICIAN RECRUITMENT AND RETENTION IN RURAL MICHIGAN

By

Travis L. Fojtasek

It has long been recognized that access to adequate health care is not equal for all individuals in the United States. One measure of adequate access to health care is the ratio of population-to-primary care physicians in a given geographic area. An unequal distribution of physicians between metropolitan and many rural and inner-city areas has been generally acknowledged and extensively researched. However, scant attention has been given to explain the inequity of physicians observed among rural counties themselves.

This study investigates the physician workforce inequities observed in rural Michigan and seeks an explanation of the problem of physician recruitment and retention using sociological theory and insight. The problem is examined within the context of "push/pull" theory, which is frequently used to explain why people move from one area to another. The research approach was guided by social psychological concepts of decision-making to better understand the underlying cognitive processes in a physician's practice location decision.

The secondary data analyzed were collected in a statewide survey of 2,167 licensed rural physicians and in face-to-face interviews with 22 recruiters that represented 27 of Michigan's 59 rural hospitals. The survey was conducted

Health. Three major questions and one hypothesis were advanced in this secondary study: (1) Do rural Michigan communities come together and act to solve this problem? (2) Can county-level socio-demographic characteristics, which may influence a physician's decision to practice in one rural Michigan county over another, be identified? (3) Do physicians and recruiters place different levels of importance on the economic, psychological and sociological recruitment and retention variables measured in this study? And, (4) the hypothesis and *a priori* assumption in this research effort is that groupings of interrelated variables can used to identify five underlying values, posited by the literature and the research team, was tested.

The data was qualitatively and quantitatively analyzed to determine the answers to the research questions and to test the hypothesis. No evidence was found that the rural Michigan counties in this study acted to solve the problem. Multiple regression analysis identified six count-level variables that may influence a physician's practice location decision. A non-parametric test of significance indicated that the differences in the two group's ratings of the variables measured are significantly different. Exploratory factor analysis rejected the hypothesis.

The overarching objective of this study was to extend the literature and knowledge on the difficult task of recruiting physicians into underserved rural areas and keeping them there, with specific implications and practical applications for the state of Michigan.

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I am indebted to the many hospital CEOs, hospital physician recruiters, primary care physicians, and specialists in rural Michigan who participated in this research. They provided the information that made this study possible.

I express my thanks to the late Dr. Chris Vanderpool, former Chairperson of the Department of Sociology, for his encouragement and interest in my research. He never failed to stop me in the hallway, greet me with a big smile, and ask me how my work was going.

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The input of my committee members has improved the quality of my research and enhanced the learning experience for me. I appreciate the involvement on my committee of Drs. Marilyn Aronoff, Steve Gold, and Stan Kaplowitz. I have learned so much from them over the past several years. My

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I am also grateful to my son, Robert who served as a role model for me and encouraged me along each step of the way. Lastly, I express my love and appreciation to my wife, Georgia. I could not have completed this project without her encouragement, support and belief in me. I look forward to the next step in our journey through life together.

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INTRODUCTION

Discussions of geographic inequities in health care delivery in the United States usually emphasize two locales in which delivery tends to be relatively poor: inner cities and rural areas. Rural areas, the geographic focus of this study, are often described as being marginal to urban centers in terms of various characteristics, such as the level of economic activity and access to resources. Medical sociologists and other researchers concerned with geographic aspects of health care delivery have long emphasized rural areas.

In recent years, there has been much discussion about whether or not medical personnel – physicians in particular – have been moving into rural areas in sufficient numbers to provide adequate health care. In addition to satisfactory numbers of health care providers, there are many other problems facing rural health care delivery. These problems, however, may be interrelated with the short supply of medical personnel in most rural areas. Problems of patient accessibility to health care include overcoming relatively long distances to care and inadequate transportation. Many rural hospitals are not financially viable and are being forced to close. Potentially beneficial health care technology, such as Magnetic Resonance Imagery (MRI), tends to reach rural areas late, if at all. Rural areas tend to contain relatively high proportions of those who need health services the most: the poor and the elderly. And, the high costs of delivering medical care often impact rural areas more than urban places.

Access to health care services, and a host of interrelated problems, has been widely discussed in scholarly research and government reports. Much of

the work, explicitly or implicitly, has geographic characteristics. This is especially true of physician distribution in the United States. Physicians tend to cluster on the east and west coasts of our country with diminishing density as they move inward towards the middle and southern states. The more rural and remote the state, the lower the physician to population density tends to be. For many of us, rural health care problems, such as an unsatisfactory supply of physicians, are seen in very general terms and so they overwhelm us and are nearly impossible to comprehend. What is needed, I feel, is a clarification of this particular rural health care problem that provides some understanding of this complex and oftentimes perplexing issue. My investigation of physician inequities in rural areas of Michigan is an effort to shed light on this problem and to help better understand it.

In the remainder of this introduction, I will set the stage for my research by providing a brief overview of the important historical events that have shaped the present rural health climate care in the United States and I will discuss some major aspects of the current rural environment with specific emphasis on the state of Michigan.

1. Historical Overview

It is not difficult to call up a picture of the typical "country doctor" in the early settlement of our country. Most physicians were individual practitioners who provided the full range of services needed by their patients. As generalists, they delivered whatever services the available technology at that time allowed. Their services included everything from mending broken bones to delivering

babies. In some rural areas of Michigan, this scenario has not changed much. As an example, during one of my interviews with a rural physician recruiter, I was told by the recruiter, "We still have probably twenty family practice physicians that do OB [obstetrics]. In most places, none of them do OB."

In 1910, an important event occurred in the United States that shaped the future delivery of health care, especially in rural areas. By the turn of the century, leaders in the medical profession were fully aware of the over-production of physicians by a variety of poorly run and privately owned schools. In response to the concern by the American Medical Association (AMA) for the quality of medical education, the Carnegie Foundation commissioned Dr. Abraham Flexner to conduct a comprehensive, independent study of the nation's medical schools. In his report, *Medical Education in the United States and Canada* (often referred to as "The Flexner Report"), he pointed out the inconsistencies between schools' course descriptions and clinical opportunities and the realities of medical training throughout the nation. Flexner argued for placement of medical education within the structure of American universities. His desired ideal was academic training, with clinical settings in close geographical proximity with the university (Ludmere, 1985).

Among the many changes advanced by this report was differentiation into medical specialties. Due to the need to train specialists in clinical settings where there were large numbers of patients, increasing numbers of physicians began to be concentrated in populous urban areas. This trend has continued into the 21st century. Michigan's four medical schools are located in the heavily populated

metropolitan areas of Detroit, Ann Arbor and Lansing. With the exception of the inner cities, these areas tend to have an ample supply of practicing physicians (MDCH, 2002). However, a specialists' training program in collaboration with Michigan State University's allopathic school of medicine is located in rural Marquette in the Upper Peninsula of Michigan. Preliminary data from my research suggest that many of the physicians trained in Marquette tend to remain in rural Michigan after their training is completed.

In the 1930s, due to the financial distress caused by the Depression, the federal government became involved in financing general medical services for the first time. The federal Farm Security Administration (FSA) provided prepaid health service for low-income farm families. By 1942, the FSA was serving 600,00 people in 1,100 rural counties (Murrin, 1982, in Gesler & Ricketts, 1992). Although it was phased out after World War II, this program set an important precedent for the federal government's involvement in financing health services.

Another defining moment shaping rural health care delivery was passage of the Hospital Survey and Construction Act by the federal government in 1946. This act, usually referred to as the Hill-Burton program, provided federal funding for the construction and modernization of nonfederal health care facilities. Nearly 40 percent of the projects funded under Hill-Burton between 1947 and 1962 were in communities under 10,000 in population. A major outcome of the Hill-Burton program was a significant improvement in the quality of health care facilities in rural areas. Prior to Hill-Burton, most hospitals in rural communities were small, privately owned facilities that did not meet accepted standards of acute care.

Many of these outdated facilities were replaced with modern, well-equipped community hospitals (Murrin, 1982, in Gesler & Ricketts, 1992).

A secondary objective of Hill-Burton was to attract physicians to rural areas by increasing their access to high-quality acute care facilities. It was hoped that the technology and modern conveniences made possible by Hill-Burton funding would make rural communities more attractive to physicians. Unfortunately, the hoped for "Field of Dreams" did not occur. Hospitals were built but physicians did not come. In fact, during this time the distribution of physicians in rural areas worsened, dropping from about 75 physicians per 100,000 people in 1940 to around 50 in 1970 (COGME, 1998).

Another major attempt to alleviate the effects of physician maldistribution came in the form of several pieces of health personnel legislation passed by the federal government in the 1970s. The National Health Service Corps (NHSC) agency was founded in 1970 under the Emergency Health Personnel Act. Through the NHSC, medical students received loan forgiveness for practicing in areas designated to have physician shortages. Subsequent legislation encouraged medical schools to enroll more students electing primary care specialties. Primary care physicians have a greater tendency to practice in rural areas than those in other more highly specialized medicine. By 1987, 65 percent of all NHSC placements were in rural areas. Although many rural areas benefited by having NHSC placements, some researchers argued that these physicians were temporary "band aids" and discouraged communities from recruiting their own physicians (Cullen, et al., 1997).

Despite the federal government's determined resolve to promote better physician distribution, most health care experts agree that the results of these programs have been disappointing. The poorest results were achieved in areas most desperate for physicians: sparsely populated and remote rural counties. During 1970 and 1980, the peak period of these federal efforts, the physician to population ratio in nonmetropolitan areas less than 10,000 in population (see Chapter 1, page 25, for definitions of nonmetropolitan and metropolitan counties as used in this research project) grew from about 50 to 55 per 100,000 persons (a 10 percent increase), whereas in large metropolitan areas this ratio grew from about 175 to 225 per 100,000 persons (a 29 percent increase) (COGME, 1998).

2. The Current Rural Environment

In order to better understand the challenges faced by rural communities in the task of attracting and keeping physicians and other health care providers, it is important to more closely examine the broader rural environment. Prevailing demographic, economic, and social conditions in rural America have had a substantial impact on how health care services are delivered. In this section I will provide an overview of some aspects of the rural environment including work-related and income information and health status indicators.

Occupational Profile. The occupational profile of America's urban and rural areas has changed considerably in the past 50 years or so. One of the most noteworthy changes has been the percentage of persons engaged in farming. In 1920, across the United States, 30 percent of the population lived on farms; by 1950, this number had declined to 15 percent; by 1984, the figure was

2.4 percent (Wimberly, 1986 in Gesler & Ricketts, 1992). Between 1980 and 1990, the number of persons living on farms in Michigan declined 32 percent from 177,591 to 120,496; the following decade witnessed another 22 percent decrease; at the beginning of this century, less than 1 percent of Michiganders (94,192) were living on farms (U.S. Census Bureau, 2000). Even more descriptive of the overall trend away from farming is the changing distribution of place of residence within the rural population itself. In 1920, 61 percent of all U.S. rural residents lived on farms; but, by 1984, this figure had declined to only 9 percent (Wimberly, 1986 in Gesler & Ricketts, 1992). In the state of Michigan, about 12 percent of rural residents were farm dwellers in 1980; by the year 2000, this number had declined to 5 percent although the overall rural population had increased almost 15 percent (U.S. Census Bureau, 2000). While these figures do not necessarily reflect the number of individuals actually engaged in farming as an occupation, they provide a reasonably accurate approximation. Altogether, the traditional occupations associated with rural areas – agriculture, forestry, fishing and hunting, and mining – account for only 1.1 percent of total employment in Michigan (U.S. Census Bureau, 2000). Between 1985 and 1993, rural areas increased their share of the nation's manufacturing jobs from 20 percent to 23 percent. In fact, since 1960 manufacturing has supplied more rural jobs than farming. It now accounts for about one-sixth of rural employment in the United States (Johnson & Beale, 1998). By 1990, the manufacturing sector was the leading job supplier in 29.3 percent of Michigan's rural counties (Cook & Mizer, 1994). According to Johnson & Beale (1998), this trend is attributable in

large part because delivery companies such as Federal Express regularly service formerly inaccessible and remote areas such as Michigan's Upper Peninsula. Therefore, with the assurance that vital parts and supplies can be delivered overnight, small manufacturers set up shop almost anywhere in a rural area. This allows businesses to freely move to rural locales for their perceived advantages: lower labor and land costs, the absence of unions, what many see as the better work ethic of rural folks, and economic incentive programs offered by state and local governments.

Economically Disadvantaged. Relative to their urban counterparts, rural areas in the U.S. have long been disadvantaged from an economic standpoint. According to the U.S. Census Bureau (2000), the average household income in rural Michigan counties is $35,051, which is only 75 percent of the $46,478 urban average. Similar disparities have been identified for the over-65 population, which tends to be more heavily concentrated in rural areas. The population of rural Michigan over the age of 65 is 16.5 percent, which is significantly higher than the 11.7 percent found in urban counties (U.S. Census, 2000).

It should also be noted that there is a wide range in the average personal income among rural counties themselves. Average personal income among the 58 rural counties in Michigan ranges from $26, 622 to $47,062. Rural counties that depend on farming, mining, timbering, and manufacturing tend to lag behind most metropolitan counties. On the other hand, nonmetropolitan counties typified by retirement destinations and government installations such as prisons appear to keep pace with and in some instances exceed metropolitan county

income growth (Cordes, 1987 in Gesler & Ricketts, 1992). The U.S. Census Bureau Rural defines retirement counties as those with a 15 percent or greater increase in population age 60 and older from inmovement of population between 1980 and 1990 (an analysis of retirement destination counties using the 2000 census has not been completed as of this writing). In 1990, fifteen counties in the northern lower peninsula of Michigan were identified as nonmetropolitan retirement destination counties (Cook & Mizer, 1994). According to Rogers (2000), these counties benefit significantly from retirees, indicated by their population growth, increased family incomes, greater economic diversification, and reduced unemployment rates. The different types rural Michigan counties and distinctive economic and socio-demographic profiles add to the difficulty of developing meaningful cross-comparisons of rural health care problems such as physician shortages.

Another useful indicator of a population's financial status is the rate of poverty. The U.S. Census Bureau (2000) defines poverty level income as a family income of $17,463 or less for a family of four with two children under the age of 18. Historically, overall poverty rates in rural areas have been higher than those in urban areas. In Michigan, the average rate of poverty in rural counties is 11.3 percent, whereas the average rate in urban counties is 9.1 percent. It should be noted that the range of the poverty rate among the 58 Michigan rural counties is considerable, ranging from 5.4 percent to 20.4 percent (U.S. Census, 2000). Underemployment may be explanation for the observed income differences between metropolitan and nonmetropolitan counties.

According to Glyde (1977), an underemployment condition may include any or all of the following types: (1) the discouraged worker, or a worker who has unsuccessfully looked for work for a long enough period of time to give up and leave the labor force; (2) the person working part time who would rather be working full time; (3) the person working full time, but at a wage that is not adequate to maintain a minimal standard of living; and, (4) the person who is working in a job that does not adequately utilize his/her skills. Lack of labor mobility is a major cause of underemployment. This is particularly important to rural Michigan. Persons who endeavor to stay in a particular area may accept jobs below their skills, part time jobs or jobs that pay less than similar jobs in other areas. Strong ethnic, family and community ties in rural areas may also contribute to underemployment. The unemployment rate, closely related to underemployment, is another indicator of an area's economic standing. At the peak of the late 1990's economic boom in Michigan, the average unemployment rate in urban counties was only 3.3 percent, whereas in rural counties it was nearly double at 5.9 percent. My research found that the range of the unemployment rate in rural Michigan was extensive, ranging from 2.9 percent to 10.5 percent (U.S. Census, 2000).

Rural Health Problems. There is evidence suggesting that rural populations tend to have more serious and severe health problems than their urban counterparts. These problems are often compounded by poverty, poor nutrition, substandard housing, occupational hazards, transportation difficulties, and limited medical resources (Braden & Beauregard, 1994). Many studies on

health status rely on patient self-evaluation rather than clinical indicators due, in large part, to the difficulties in collecting statistically accurate empirical data on health status. As shown in Table 0.2.1 below, metropolitan residents surveyed in the1998 National Health Interview Survey were somewhat more likely to report excellent or very good health, while nonmetropolitan residents more frequently reported that their health status was only good, fair or poor.

Table 0.2.1 Frequency Distribution of Respondent-Assessed Health Status

Self-Assessed	Nonmetropolitan (percent)	Metropolitan (percent)
Excellent	34.4	39.4
Very Good	30.3	30.8
Good	23.8	21.7
Fair	8.2	6.1
Poor	3.2	2.0

Source: National Center for Health Statistics (NCHS), 1998.

Another widely recognized indicator of health status for a given region is the infant mortality rate. Because it describes those infants who die before their first birthday, it provides an estimate of the availability of prenatal care and primary health care in the first year of life. However, other variables may also impact the infant mortality rate. For example, residents in some areas may have better access to neonatal intensive care units than persons located in another area. There is evidence that adequate access to neonatal intensive care may improve an infant's likelihood of survival (Braden & Beauregard, 1994). The infant mortality rate is the number of area infant (less than one year age) deaths per 1,000 live births (MDCH, 2002). Much has been made about the fact that the U.S. has long experienced an infant mortality rate that is considerably higher than many other industrialized countries. Among these nations, in 1998 the U.S.

was ranked 28th in the world with an infant mortality rate of 7.2 (NCHS, 2002). As of 2000 this number had improved to 6.9 (NCHS, 2000). Michigan's four-year average from 1995 – 1999 at 8.1 is one of the highest infant mortality rates in the nation. This may be attributable to unhealthy life style choices of the mother such as smoking, alcohol and drug abuse, and poor nutritional habits along with the failure to seek and, in some cases, the inability to locate adequate prenatal care (MHA, 1998). While there is significant variation in infant mortality rates among Michigan's rural counties, the average rate of 6.9 deaths per 1000 live births is considerably better than the overall state average. It could be that the overall average of the state is driven up by the high percentage of black mothers in populous urban areas. Traditionally across the U.S. black mothers tend to experience a higher rate of infant mortality than do whites. In 2000, the infant mortality rate for newborn infants of black mothers was 14.1 deaths per 1000 live births compare with 5.7 for white mothers (NCHS, 2002a). As an example in Michigan, urban Genesee County with a black population of 20.4 percent has an infant mortality rate of 12.1, the state's highest. It is not clear why the infant mortality rate in rural Michigan is lower than the state's overall average, but it may be race-related (Lu & Halfon, 2003), as the population of its 58 rural counties is overwhelmingly white at 93.4 percent (U.S. Census, 2000).

Rural Michigan also seems to fare well in other empirical indicators of health status. Included among these indicators are selected causes of death. For purposes of mortality statistics, every death is attributed to one underlying condition based on information reported on the death certificate. Age-adjusted

death rates are used when analyzing mortality trends or comparing different population groups or geographic areas. The age-adjusted death rate provides a single measure of mortality risk based on a standard population. Using a standard population to calculate the age-adjusted death rate holds the age composition among groups constant. This measurement adjusts for the fact that older populations have higher mortality rates than younger populations simply because the risk of death increases with age. The age-adjusted mortality rate cited in this study is the average number of deaths per 100,000 persons per year during the time period 1995 – 1999 (MDCH, 2002).

One major indicator of the health status for a region is the age-adjusted mortality rate due to heart disease. Rural Michigan counties have a somewhat higher rate of death from heart disease than do urban counties at an average rate of 299.3 deaths per 100,000 persons versus 285.7 deaths for their urban counterparts. There is a substantial range in heart disease mortality rates among rural Michigan's counties, ranging from a low of 222.9 to a high of 415.0 (MDCH, 2002). This wide range may be due in part to a large variance in EMS response rates in rural Michigan. A study of Michigan's rural EMS in 2000 indicated an average total emergency in-service time per run (time from initial dispatch to return to the service base station) from a low of 63.2 minutes to a high of 126.6 minutes. The regions having the longest run times were located in isolated, large geographic areas with long distances to the nearest hospital (MDCH & UP-EMS, 2002).

A second common indicator of the health status of an area is the age-adjusted death rate from cancer. On this indicator, rural counties in Michigan were only slightly worse than urban counties, having a cancer mortality rate of 206.1 per 100,000 persons versus 205.5 for their urban counterparts. Another widely used indicator of a region's health status is the mortality rate due to strokes. Rural Michigan counties fare somewhat better than urban counties on this indicator. The death rate from strokes in rural areas is 63.3 per 100,000 versus 65.0 in urban areas (MPHA, 2002). The higher mortality rate in urban areas may be related to the concentration of blacks in urban Michigan as hypertension, a leading cause of strokes is race-related. Hypertension tends to be more pervasive among black populations (Slater, et al., 2003), whereas the population of rural Michigan is predominantly white. Lastly, the mortality and morbidity rate due to accidents and unintentional injuries is one more indicator of an area's access to medical care.

According to the NCHS (2000), accidents and unintentional injuries are the fifth leading cause of death in the U.S. with motor vehicle accidents accounting for over 44 percent of those deaths. The Federal Highways Administration reports that motorists traveling on rural highways are severely or fatally injured at much higher rates than when traveling in urban areas. For example, in 1994, 58 percent of motor vehicle fatalities occurred on America's rural highways. Longer EMS response times and delayed medical intervention due to remote, rural locations may contribute to increased mortality and morbidity of rural crash victims. Additionally, farm work-related accidents and unintentional

injuries are a major contributing variable to high mortality and morbidity rates in rural areas. The U.S. Department of Labor reports that farming has one of the highest fatality rates of all occupations. A commonly held belief is that farmers and farm workers receive little formal safety training; they often work alone, and are often far from assistance should an accident or injury occur (Runyan, 1998). The U.S. trend for a higher accident and unintentional injury mortality rate in rural areas is seen in Michigan's statistics. According to the MPHA (2002), the 1995 – 1999 accident age-adjusted mortality rate in rural Michigan counties was 45.0 deaths per 100,000 persons, which is a considerably higher rate than their urban counterparts at 33.6 deaths per 100,000 persons.

The prevailing demographic, economic, and health conditions of the 58 rural Michigan counties – the units of analysis in this study – closely follow national trends in some aspects and run counter to these trends in others. The occupational profile of rural Michigan is much like the rest of rural America with a substantial decline in farming as a livelihood and a sizeable job increase in manufacturing and service industry sectors. Likewise, rural Michigan's economic profile follows the national rural pattern of being economically disadvantaged relative to their urban counterparts. Lower average income and higher levels of poverty and unemployment are prevalent in rural Michigan. On the other hand, rural Michigan appears to go against the national trend of poorer health status in rural areas as opposed to urban areas.

The Healthy Rural Michigan Paradox. Access to health care and its supposed subsequent benefit of improved health status is often measured in

terms of the ratio of population to primary care physicians. Medically Underserved Areas (MUA) and Health Professional Shortage Areas (HPSA), established under the U.S. Public Health Service Act (Sections 330 and 332), are federal designations of a geographic area (usually a county or a collection of townships or census tracts) that meets the federally established criteria as needing additional primary health care services.

Designation as an MUA is based upon a formula that is a composition of infant mortality, percent of population over age 65, poverty rate and the population to primary care physician (PCP) ratio. To obtain a primary medical care HPSA designation, the population to PCP ratio must be at least 3,500:1. According to the Michigan Department of Community Health, almost 71 percent of Michigan's rural counties are designated either a full or partial MUA, while about 91 percent are designated either a full or partial HPSA (MDCH, 2002).

These statistics suggest that access to primary health care in a vast majority of Michigan's 58 rural counties is inadequate and that the level of health of their populations may be poor. However, several widely used indicators of a region's health status suggest that rural Michigan counties have a healthier, or at least as healthy population as do urban areas. The infant mortality rate and age-adjusted death rate from stroke are lower in rural Michigan than in the urban counties, and the age-adjusted death rates from heart disease and cancer are only slightly higher. However, the age-adjusted death rate from accidents and unintentional injury in rural Michigan is considerably higher than in urban areas. A contributing explanation for the last health statistic might be the remoteness

and isolation of many rural Michiganders from nearby acute care facilities and subsequently longer than recommended Emergency Medical Services (EMS) response time and in-service time (MDCH, January 2002).

The apparent healthy well being of Michigan's rural population is puzzling if the population to PCP ratio is used as an indicator of access to primary health care, since an overwhelming majority of rural Michigan counties are designated as underserved. This finding begs the question of the meaning of the population to PCP ratio. Is it an accurate measure of the quality of health care a population can expect to receive due to a limited supply of physicians, or is it more accurately a measure of the available resources? In another light, it could also be seen as a guide for the placement of physicians, especially through state and federal education loan repayment programs. Areas with a low population to PCP ratio could indicate a low demand for physician placement, whereas areas with a high population to PCP ratio might suggest a high demand for physician placement. The healthy rural Michigan paradox suggests at least two areas for future research. First, research on what the population to PCP ratio is actually measuring is needed. Secondly, why are rural Michigan residents apparently healthier than their urban counterparts?

Summary. This brief historical overview of health care delivery in the U.S. from the early 1900s to the present time and look at the current rural environment including the general occupational profiles, economic conditions, and health problems related to the rural areas of the U.S. is intended to set the stage and

give the reader background information for the problem investigated in my study: rural Michigan's physician shortage problem.

CHAPTER 1: RURAL MICHIGAN PHYSICIAN SHORTAGE

1. Statement of the Problem

In his seminal work on structural functionalism, *The Social System,* the noted sociologist Talcott Parsons argued that access to basic health care is a "functional prerequisite of the social system" for the individual member in any given society. According to Parsons, "by almost any definition [good] health is included in the functional needs of the individual member of the society." In his view, "too low a general level of health" and "too high an incidence of illness" are causes of dysfunction in the social system (1951:430). In his discussion of the "sick role," it seems that Parsons makes the assumption that equal access to therapeutic health care is a given for all individuals in the society. His overriding concerns were whether or not an ill person would seek out health care and then properly assume the "sick role," thereby restoring his or her health, and in a larger sense restoring order to the society. Equal access to health care did not appear to be a concern for Parsons.

Today, there is a general understanding among health professionals and researchers that access to adequate health care is not equal for all individuals living in the United States. Large numbers of Americans have limited access to health care. The problem arises primarily from two defining and interrelated characteristics of our health care system: the large number of Americans without health insurance and the tendency of health care professionals to locate and practice in the relatively affluent urban and suburban areas. This latter issue – referred to in the literature as "geographic physician maldistribution" – creates

barriers to care for people living in some rural and inner-city areas and is the focus of this study.

One widely used measure of adequate access to health care is the ratio of a county's population to primary care physicians (PCP) in that area. Primary care physicians are generally defined as those in family/general practice, internal medicine, general surgery, obstetrics/gynecology, and general pediatrics. Across the nation, the average ratio of population to primary care physicians in metropolitan areas is about 932:1, whereas in rural counties it is about 1730:1 (COGME, 1998). While there is general agreement among health professionals regarding the problem of an uneven geographic distribution of physicians among metropolitan and most rural and inner-city areas, little if any research has been done to try and explain the geographic maldistribution of physicians among rural counties themselves. As an example, in rural Michigan the ratio of population to primary care physicians ranges from a low of 775:1 in Emmet County to a high of 6200:1 in Oscoda County (MHA, 1998). This considerable range of the ratio of population to primary health care providers across the rural counties of Michigan clearly illustrates that some rural counties in Michigan have been able to attract and retain an adequate number of health professionals while others struggle to do so. In the following section of this chapter, a discussion of the differences in the degree of "rurality" and various socioeconomic and health care variables found among the 58 Michigan rural counties sets the context in which this struggle occurs.

2. Context of the Problem

Measuring Rurality in Michigan. What is rural and how does one measure it? Health care researchers and others who discuss health professional shortages in rural America are likely referring to shortages in nonmetropolitan areas. The terms "rural" and "nonmetropolitan" are used interchangeably in the literature on health care research. Metropolitan and nonmetropolitan areas are defined at the county level. Counties typically are active geopolitical jurisdictions and usually have program and policy implications at both the federal and state levels. They are also frequently used as basic building blocks for areas of economic and social integration because they are established nationwide, have stable boundaries and are familiar geographic entities. As I argue elsewhere in this paper, counties may not be the ideal unit of analysis for measuring the adequacy or inadequacy of health care professionals for a given area, but they are nonetheless the standard unit of analysis used by researchers and policymakers in the health care industry.

The U.S. Office of Management and Budget (OMB) sets the parameters for the definitions of metropolitan and nonmetropolitan areas. A "metropolitan area" is a collective term, established by the OMB and used for the first time in 1990 to refer to metropolitan statistical areas (MSA), consolidated metropolitan statistical areas (CMSA), and primary metropolitan statistical areas (PMSA). An MSA (defined by the OMB for statistical purposes) is a geographic entity that contains a core area with a large population center and adjacent communities, which have a high degree of social and economic integration with the center, or

core area. Criteria of an MSA require the presence of a city with 50,000 or more inhabitants, or the presence of an urbanized area, and a total population of at least 100,000 (75,000 in New England). The U.S. Census Bureau defines an urbanized area as a statistical geographic area consisting of a central place and adjacent densely settled territory that together contain at least 50,000 people, and generally with an overall population density of at least 1,000 people per square mile. MSAs are composed of entire counties, except in New England where the components are cities and towns.

According to these OMB criteria, 58 of the 83 counties in Michigan are designated rural, or "nonmetropolitan." As such, none of these counties include a central city or urbanized area having a population of 50,000 nor has a total population of 100,000 or more. About 17 percent of the state's population resides in rural counties (U.S. Census Bureau, 2000). However, not all rural areas exhibit the same level of "rurality." In 1993, the U.S. Department of Agriculture (USDA) created the Beale rural-urban continuum classification scheme that distinguishes metropolitan counties by size, and nonmetropolitan (rural) counties by degree of urbanization and proximity to metro areas. The two standard OMB metropolitan and nonmetropolitan categories were subdivided into 4 metro and 6 nonmetro categories resulting in a 10-part county codification scheme. The Beale rural-urban continuum allows researchers to break county data into finer residential groups, beyond metro and nonmetro, and helps to clarify analysis of trends in rural areas that are related to population density and

metropolitan influence. An example of one such trend is a physician's choice of practice location, the trend being away from rural areas (COGME, 1998).

The Beale rural-urban continuum groups all U.S. counties and county equivalents according to the metro status announced by the OMB in 1993, when current population and commuting criteria were first applied to results of the 1990 census. This codification differentiates metropolitan counties by the population size of the MSA of which they are a part. Descriptions of the four types of metro counties identified in the Beale rural-urban continuum are given in Table 1.2.1 below.

Table 1.2.1 Beale Rural-Urban Continuum Codes*

Code	Description
Metropolitan Counties:	
0	Central counties of metro areas of 1 million population or more.
1	Fringe counties of metro areas of 1 million population or more.
2	Counties in metro areas of 250,000 to 1 million population.
3	Counties in metro areas of fewer than 250,000 population.
Nonmetropolitan Counties:	
4	Urban population of 20,000 or more, adjacent to a metro area.
5	Urban population of 20,000 or more, not adjacent to a metro area.
6	Urban population of 2,500 to 19,999, adjacent to a metro area
7	Urban population of 2,500 to 19,999, not adjacent to a metro area.
8	Completely rural or less than 2,500 urban population, adjacent to a metro area
9	Completely rural or less than 2,500 urban population, not adjacent to a metro area

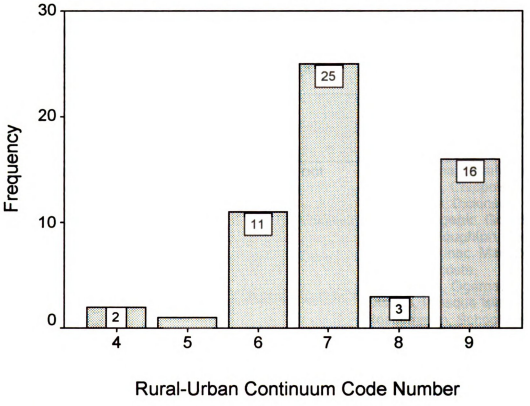
*Source: Economic Research Service U.S. Department of Agriculture, 1990.

One example of a state of Michigan "central" metro county of 1 million inhabitants or more (Code 0) is Oakland County with a population of 1,083,557 and a density of 1,241 persons per square mile. Adjacent Lapeer County with a population of 74,790 and a density of 114 persons per square mile is a "fringe"

metropolitan county (Code 1) associated with Oakland County. On a stand-alone basis Lapeer County would be classified "rural" according to OMB standards, but in the Beale rural-urban continuum it is classified "metropolitan" because of its proximity to and its economic and social ties with Oakland County. Under the Beale rural-urban continuum classification scheme, an example of a Code 2 metropolitan county is Ingham County and an example of a Code 3 metro county is Jackson County.

Of the 58 rural, or nonmetropolitan counties in the state of Michigan, two are Code 4 (urban population of 20,000 or more, adjacent to a metro area); one is Code 5 (urban population of 20,000 or more, not adjacent to a metro area); 11 are Code 6 (urban population of 2,500 to 19,999, adjacent to a metro area); 25 are Code 7 (urban population of 2,500 to 19,999, not adjacent to a metro area); three are Code 8 (completely rural or less than 2,500 urban population, adjacent to a metro area); and 16 are Code 9 (completely rural or less than 2,500 urban population, not adjacent to a metro area). These counties are listed by name in Table 1.2.2 below. The distribution range of the Beale codification of non-metropolitan counties in Michigan is illustrated in Figure 1.2.1 on the following page.

Figure 1.2.1 Michigan USDA Rural Continuum Code



Altogether, 42 (72.4 percent) of the rural counties in Michigan are not adjacent to a metropolitan area, suggesting a high degree of economic and social isolation for much of rural Michigan from the rest of the state. A list of the 58 rural counties in Michigan and their respective Beale rural-urban continuum codification is given in Table 1.2.2 on the following page.

Table 1.2.2 Beale Rural-Urban Continuum Code: Rural Michigan Counties*

Code	Description	County
4	Urban population of 20,000 or more, adjacent to a metro area.	Isabella, Shiawassee
5	Urban population of 20,000 or more, not adjacent to a metro area.	Marquette
6	Urban population of 2,500 to 19,999, adjacent to a metro area	Barry, Branch, Cass, Gladwin, Gratiot, Hillsdale, Ionia, Montcalm, Newaygo, St. Joseph, Tuscola
7	Urban population of 2,500 to 19,999, not adjacent to a metro area.	Alger, Alpena, Charlevoix, Cheboygan, Chippewa, Clare, Delta, Dickinson, Emmet, Gogebic, Grand Traverse, Houghton, Huron, Iosco, Mackinac, Manistee, Mason, Mecosta, Menominee, Ogemaw, Otsego, Presque Isle, Roscommon, Schoolcraft, Wexford
8	Completely rural or less than 2,500 urban population, adjacent to a metro area	Arenac, Oceana, Sanilac,
9	Completely rural or less than 2,500 urban population, not adjacent to a metro area	Alcona, Antrim, Baraga, Benzie, Crawford, Iron, Kalkaska, Keweena, Lake, Leelanau, Luce, Missaukee, Montmorency, Ontonagon, Osceola, Oscoda

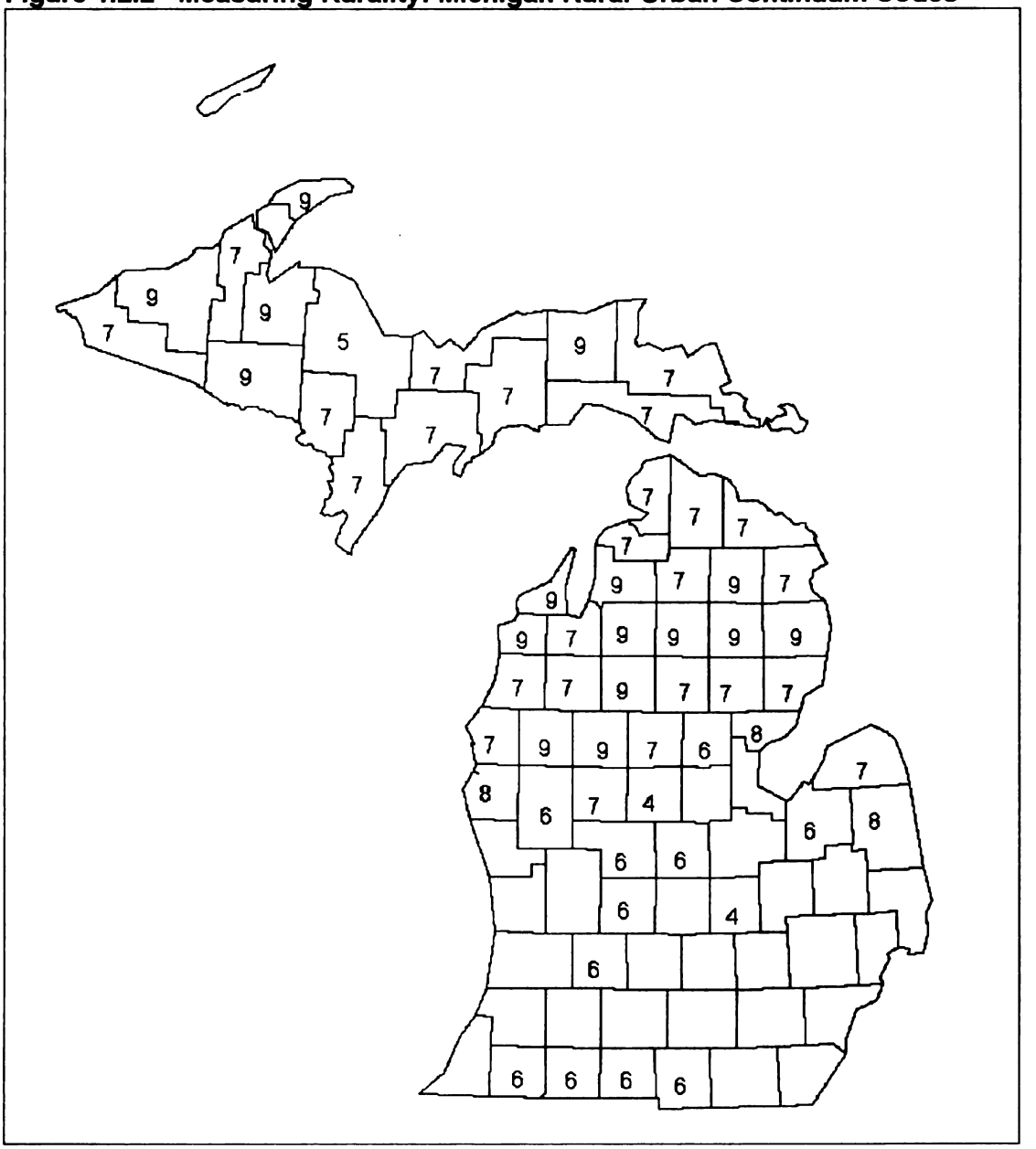
*Source: Economic Research Service U.S. Department of Agriculture, 1990.

The following brief examination of the natural and socially constructed geographic makeup of the state will help to explain some of the underlying causes for the rural county isolation clearly illustrated in Figure 1.2.2 below. The state of Michigan consists of two major geographic areas, the Lower Peninsula and the Upper Peninsula. Until 1953, with the construction of the Mackinac Bridge, these two peninsulas were separated by a large body of water known as the straits of Mackinac. Michiganders tend to view the Lower Peninsula as having three distinct regions from the south to the north: the lower, middle and

upper Lower Peninsula. The lower region of the Lower Peninsula is sometimes referred to as "southern Michigan" and the upper region of the Lower Peninsula is sometimes referred to as "up north" or "northern Michigan." The middle region of the Lower Peninsula is usually referred to as "mid-Michigan." Though there is no hard fast rule, these three regions usually consist of about four vertical tiers of counties across the state from east to west beginning at the Ohio state border and moving northward. The main north-south corridors in the Lower Peninsula are Michigan State Highway 127/27 and Interstate Highway 75. These corridors are often seen as the dividing line between the east and the west sides of the Lower Peninsula. The Upper Peninsula is often viewed as a stand-alone area known as "the U.P." However, for policy and research purposes, it is sometimes divided into east, central and west regions in about equal thirds from an easterly to a westerly direction.

In general, as one moves "upstate" in Michigan, the counties become less populous. This phenomenon is probably a result of the east coast to west coast migration to and through Michigan during the 19th century when population movement westward from the eastern seaboard was facilitated by the opening of the Erie Canal in 1825 (Dunbar, 1965). After the Erie Canal opened, the major path of migration from the east coast was from Detroit to Chicago via the lower corridors of the state. The population pattern resulting from this migration path is can be seen in Figure 1.2.2 below. A vast majority of the rural counties in Michigan is located north of the middle Lower Peninsula. Only seven of the 58 rural counties are located in the lower four tiers of counties.

Figure 1.2.2 Measuring Rurality: Michigan Rural-Urban Continuum Codes



Legend:

4 = Urban population of 20,000 or more, adjacent to a metro area.
5 = Urban population of 20,000 or more, not adjacent to a metro area.
6 = Urban population of 2,500 to 19,999, adjacent to a metro area
7 = Urban population of 2,500 to 19,999, not adjacent to a metro area.
8 = Completely rural or less than 2,500 urban population, adjacent to metro area
9 = Completely rural or less than 2,500 urban population, not adjacent to metro area
Unnumbered = metropolitan areas located primarily in the Detroit to Chicago corridor.

As shown in Figure 1.2.2 above, the 25 Beale rural-urban continuum Code 7 rural counties are located north of mid-Michigan, along with the 16 Code 9 counties and the single Code 5 county. These are the 42 (72.4 percent) rural counties previously mentioned that are geographically isolated from metropolitan areas of the state. The classification and codification of the 58 rural Michigan counties using the Beale rural-urban continuum to measure rurality allows for a meaningful cross-comparison of findings across these counties.

Socioeconomic and Healthcare Demographics. Not only do the 58 rural Michigan counties of interest in this study differ in their measure of rurality by degree of urbanization and proximity to metro areas, but they also vary widely on major contextual socioeconomic and health care variables, which may have an impact on their ability to attract and retain health care professionals, especially physicians.

To illustrate, the population of a county in part determines the patient support base for physician workforce needs, especially consulting specialist physicians. As an example, a family practice physician needs a population base of about 2,970 whereas a cardiologist needs a population base of around 26,208 (Hicks & Glenn, 1991). County populations in rural Michigan range from 2,301 to 77,654 as shown in Table 1.2.3 below.

The total area in square miles of a county can have a bearing on the Graduate Medical Education National Advisory Committee (GMENAC) recommended time-to-service as well as Emergency Medical Services (EMS) response time and in-service time. For instance, GMENAC recommends

approximately 45 minutes patient travel time for obstetrical services (Jacoby, 1991). In some rural Michigan counties, people must be willing accept a longer than the GMENAC recommended time-to-service in order to support a physician practice. As seen in Table 1.2.3 below, the land areas of rural Michigan counties range from 321 to 1,821 square miles. The respective population densities of this range are from 103.8 to 4.3 persons per square mile, with the persons in the larger county experiencing much greater isolation from other persons.

Economic conditions in an area can affect a patient's ability to pay for health care services and may have an influence a physician's decision whether or not to locate in that area. The poverty level and median income of an area are two frequently used measures of a county's economic conditions. In the 58 rural Michigan counties examined in this study, the poverty level ranges from 5.4 to 20.4 percent, and the median income from $26,622 to $47,062. See Table 1.2.3 below.

Closely related to economic conditions is the percent of population age 65+ as Medicare, which reimburses physicians at a lower rate than most third-party payers, usually covers these patients (Igelhart, 1990). Additionally, this population tends to have more health care demands (Haas & Crandall, 1988). A large Medicare population could mean less pay and more work for some physicians and thus influence their choice of practice location. Table 1.2.3 below points out that Medicare-eligible persons in rural Michigan counties range from 9.0 to 25.2 percent of the total county population. Yet other studies have shown that the educational attainment level of the county's population and ethnic and

racial mix can have an effect on a physician's decision to practice in a particular area. Higher levels of education tend to attract physicians whereas higher rates of African Americans may detract them (Xu,et al., 1997).

Table 1.2.3. Michigan Rural County Socioeconomic Demographic Variables

Variable	Range	Mean	Median	Std. Deviation
Population[1]	2,301 – 77,654	30,500	26,269	18,676
Land Area (sq. mi.)[1]	321 – 1,821	704	567	299
Density (Persons/sq. mi.)[1]	4.3 – 167.0	49.6	45.8	34.7
Percent Poverty (1999)[1]	5.4 – 20.4	11.3	10.9	3.1
Median Household Income[1]	$26,622 – 47,062	$35,051	$34,584	$4,711
Percent Age 65+[1]	9.0 – 25.2	16.5	16.6	3.7
Percent High School Grads[1]	72.2 – 90.7	81.8	81.7	4.1
Percent College Grads[1]	7.8 – 31.4	14.2	12.8	5.1
Percent Minority[1]	2.1 – 24.8			

[1] Source: U.S. Census Bureau, Census 2000, Summary File 1

Previous research has shown that certain county demographic health care variables such as the existence of a hospital in the area, the size of the hospital, the presence colleagues for call coverage and consultation, and the general health of the population may have an effect on a physician's choice of practice location (Conte, et al., 1992; Jarratt, et al., 1989; Jensen, 1988; Anderson, et al., 1994, Riley, et al., 1991; Tilden, 1998; Tilden & Tilden, 1995 and Gordon, et al., 1992 in Gesler & Ricketts).

Nine of the 58 rural Michigan counties in this study had no hospital. The range of hospitals among all the counties was from 0 to 3. Set up and staffed hospital beds (the size of the hospital) ranged from 0 to 368. The total number of

full time equivalent physicians (colleagues for consultation and call coverage) in the 58 counties ranged from 0.12 to 226.1 as shown in Table 1.2.4 below.

Some health status indicators are the death rates from heart disease, cancer and cerebrovascular disease (stroke). Among the 58 rural Michigan counties, heart disease death rates ranged from 186.8 – 609.8 per 100,000 persons; cancer death rates ranged from 153.0 – 454.5; and, cerebrovascular (stroke) death rates ranged from 27.6 – 196.4. See Table 1.2.4 below.

Table 1.2.4 Rural Michigan County Health Care Demographic Variables

Variable	Range	Mean	Median	Std. Deviation
Number of Hospitals[2]	0 – 3	1.0	1.0	.66
Set Up and Staffed Beds[2]	0 – 368	84.2	72.5	75.7
Total FTE Physicians[2]	.12 – 226.1	33.2	25.8	38.7
PCP per 100K Population[2]	0 – 129	49.6	47.0	23.9
Heart Disease Death Rate[1, 2]	186.8 – 609.8	375.4	376.4	105.6
Cancer Death Rate[1, 2]	153.0 – 454.5	263.1	242.1	67.7
Cerebrovascular Deaths Rate[1, 2]	27.6 – 196.4	80.5	75.8	34.8

[1] Rate Per 100K Population
[2] Source: *Michigan's Rural Hospitals,* Spring 1998, Michigan Health & Hospital Association

The preceding discussion regarding the various levels of rurality found among the 58 rural Michigan counties and the broad ranges observed among selected socioeconomic and health care demographic variables, suggests that the context of the county socio-demographic characteristics within which the struggle to attract and keep physicians may have far-reaching implications.

3. Objectives of the Study

At least three major sociological questions are central to the complex and far-reaching problem of rural physician recruitment and retention. First, over the years many sociologists have argued that communities will often come together and act in unison to solve a particular problem, especially if it is deemed severe enough to threaten the community (see for example, Tilly, 1973; Olsen, 1988; and Luloff, 1990). According to these scholars, conditions such as such as a shortage of valuable resources or a natural disaster can cause a community to mobilize and to act collectively. Physicians, especially in rural areas, can be seen as a scarce and valuable resource or commodity. The research question becomes, "Do rural communities in Michigan mobilize and act collectively to solve a shortage of physicians in their own community?" The degree of community action in solving the problem of physician recruitment and retention in rural Michigan is unclear. One major objective of this study will be to determine if rural Michigan communities act collectively to solve a shortage of physicians and, if so to what degree?

Next, previous studies (see literature review in Chapter 2) have identified many economic, psychological and sociological variables, which appear to affect a physician's decision to practice and remain in a particular area. These variables may be either internal or external to the physician. Given the finding that some rural communities in Michigan appear to be more successful than others in attracting and keeping physicians, a research question worthy of note is "What are the major variables that influence a physician's decision to practice in

one rural Michigan community over another?" A second objective of this study is to identify these variables and to determine the relative importance each may have on a physician's choice to practice and remain in a particular community.

Lastly, a third research question asks, "Do recruiters and physicians attach different levels of importance to these economic, psychological and sociological variables and, if so to what degree?" That is to say, depending on one's viewpoint, i.e., physician or recruiter, what is the relative importance of one variable versus another? To my knowledge, previous studies have not asked this question and the findings could have far-reaching implications regarding the utilization of scarce and valuable resources in the process of recruiting and retaining physicians in rural Michigan. Therefore, a third objective of this study is to determine whether or not these differences exist and, if so, are the observed differences statistically significant?

In sum, the overall objective of this study will be to apply sociological theory and insight to the problem of physician recruitment and retention in rural Michigan; to identify and clarify the processes at work in this issue; and, to analyze how these processes influence or exacerbate the problem.

4. Contributions of the Study

One major contribution of this study will be to add new information and insight to the multidisciplinary body of literature on the complex and perplexing issue of rural physician recruitment and retention, specific to the state of Michigan, but having implications for rural America. A second contribution of this study will be to test the hypothesis that in times of need or crisis communities will

act to solve the problem. In the context of this study, the need or crisis is the shortage of an adequate number of primary care physicians to deliver a suitable level of health care to the community. The level or significance of community involvement in the physician recruitment and retention process will be measured and tested. One of the more unique contributions of this study will be to measure and to test for significance any observed differences in the levels of importance placed on various economic, psychological and sociological recruitment and retention variables by the two groups of principal participants in these processes: recruiters and physicians. Lastly, the results of this study can be compared with previous studies on rural physician recruitment and retention to determine if rural Michigan's problem is appreciably different than other states.

5. Limitations of the Study

One limitation of this study is that research investigating the rural physician shortage problem was limited to one midwestern state. There is no reason to believe that rural Michigan is representative of all rural areas in the U.S. Therefore, the results of this study cannot be generalized and applied to rural counties in the other 49 states of our nation. The findings of this research are limited to and applicable to the state of Michigan only.

A second limitation of the study is the low response rate from the physician mail survey. Only about 23 percent of the rural Michigan physician population responded to the mail survey. This relatively low response rate introduces the possibility of sampling bias with the rural physician sample. Although the entire population of rural Michigan physicians was targeted for this research, only those

choosing to complete and return the survey are included in the study. The sample can be seen as a "self-selected" group of participants. Therefore, it would be difficult to conclude that the sample is representative of the opinions of the population. It is not clear that the findings from this research can be generalized to the population of rural Michigan physicians.

A third limitation of this study is that no comparison was made between either the rural recruiters or the rural physicians and their urban counterparts on their responses to questions regarding physician recruitment and retention. While there is no reason to believe there would not be some distinct differences in their opinions, it is unknown to what degree or even if their responses would have varied.

Another limitation may be the use of the county as the unit of analysis for the population-to-physician ratio as a measure of health care access. Hospital patient catchment areas, or those service areas from which hospitals draw their patients, might be a more appropriate unit of analysis for this ratio. This point was made by Morrisey, et al. (1991) in their study of the role of local hospitals in physician rural location decisions. Perlstadt (1978) in his study of 77 statewide hospital districts reached a similar conclusion. However, the county is the commonly accepted unit for presenting health care statistics in the U.S. and is the most reliable resource available. Therefore, while the population-to-physician ratio in a county may not be the best measure of health care access, it is nonetheless one indicator of access generally utilized by policymakers and health care researchers.

6. Theoretical Underpinnings

At least three major theoretical issues underlie this research project. The first concerns the effect that certain economic, psychological, and sociological variables might have on the distribution of physicians across the 58 rural counties in Michigan. The locale in which this study is conducted are those rural counties with communities having both a local hospital and a physician recruiter. The physician-to-population ratio or distribution of physicians varies considerably across these counties. This observation suggests that something about the area itself either attracts or repels physicians and either keeps them there or drives them away. Therefore the variables of interest selected for this research are examined within the context of "push-pull" theory, which is frequently used in migration studies for explaining the reasons people move from one area to another (Gordon et al., 1992). On the one hand, this theory suggests that some variables (detractors) may push prospective physician recruits away from urban areas while other variables (attractors) may pull them toward rural areas and increase the chances for rural location. On the other hand, "push-pull" theory also implies that certain detractors may push recruits away from rural areas while attractors may pull them toward urban areas increasing the probability of urban location. Within this theoretical framework, one can expect to find both urban and rural attractors and detractors.

The "push-pull" theory underpinning this study is presented in a simplified form to try and make sense of a complex problem and to differentiate between the micro-level, or individual characteristics, and macro-level variables that may

influence a physician's decision to locate in a rural area. One the one hand, individual, or micro level traits emphasize the idiosyncratic reasons a physician would or would not choose to practice rural medicine, such as family background, location of medical training, and family needs. On the other hand, macro-level characteristics may be either contextual or environmental variables found at the community, state and national levels that are passed on to the individual with little or no personal control over them. Medical school curriculum, governmental funding, and national immigration policies are a few examples of macro level variables. A medical school curriculum emphasizing primary care is more likely to produce a physician willing to work in a rural area (Rabinowitz, et al., 1999). General economic conditions can limit the funding available for certain government-sponsored programs such as the federal NHSC scholarship and loan repayment programs and the Michigan SLRP program. Lastly, national immigration policies can limit the number of IMG physicians allowed to remain in the U.S. after completion of their residency through the J-1 Visa Waiver program.

A second theoretical issue involves the concept of community, a complex and sometimes rather nebulous idea that needs to be clearly defined in order to understand its meaning. Researchers in community studies have long debated the meaning of "community" while lay persons seem to use the term freely, apparently not questioning its meaning. Participants in this research project frequently used the term "community" in their responses to questions in the mail survey and in face-to-face interviews. I encountered statements such as "a rural community," "the community that we serve," " a community committee," "for the

good of the community," and so forth. When making these statements, the respondents probably had in mind the traditional rural community.

The distinction between rural and urban communities has its origins in Tönnies' *Gemeinschaft* (community) – *Gesselschaft* (society) dichotomy. In this dichotomy, Tönnies' meaning of "community" was the traditional small town and rural community, which people tend to associate with idyllic images including small, warm, friendly, safe, rustic, quiet, unspoiled, intimate, caring, and slow-paced. However, not all images of rural communities are so positive or nostalgic. Following the Industrial Revolution, Comte and other scholars began to lament the decline of these communities referring to them as "lost community" (cf. Gusfield (1975:94). People also tended to associate rural areas with negative attributes including poor health care, high levels of poverty, parochialism, conservatism, oppressiveness and traditionalism.

During my travels into the small towns and villages of rural Michigan doing research for this study, I encountered people who held the idyllic images of living in a rural area. Participants in this study left no doubt in my mind that for them, community – in a true *Gemeinschaft* sense – is alive and well. They appeared to believe that life in rural areas is different from, and better than, the rest of the state, or "downstate" as they called it.

But cheaper, faster transportation, better road systems and instant global communication through the use of satellite TV, cell phones and the Internet has brought even the most isolated, self-sufficient groups of people into contact with the rest of the world. Information, resources and other influences from outside

flow in and out of these rural areas. Social support is provided for residents of these rural communities both from within and without the area. Solidarity feelings and sentiments and interpersonal relationships with other people can be found both inside and outside the community. As an example, many of the recruiters I spoke with during my interviews mentioned the importance of networking with other physician recruiters. They even have a formal organization – The Michigan Recruitment and Retention Network (MRRN) – to help facilitate the sharing of ideas and resources.

Given that the traditional rural community has changed over time, the concept of community that I have chosen to use in this study is based on three key principles from the literature on community theory. The first notion is that community is *territorially bounded*; that is to say, it is co terminus with an incorporated geographic unit of government such as a city, township, or village (Effrat, 1974). The second major principle is that its members have *interpersonal relationships* both inside and outside the bounds of the geographic unit, meaning they may have networks of personal communities beyond as well as within the bounded community (Wellman & Berkowitz, 1988). Third, members of the community are assumed to have a *consciousness of kind*; that is to say, members of communities share a common sense of belonging to and identifying with the community (Bell, 1992). The communities of interest in this study are assumed to have these traits. Furthermore, a premise of community runs throughout this research project. For example, one of the key research questions in this study is to try and determine if certain county level variables

might help to explain a physician's decision to practice in a rural Michigan community.

A third theoretical concern is the social psychological concept of decision-making. That is to say, how can we better understand the underlying cognitive processes at work in a physician's decision to practice in a rural area? Four key theories of decision-making are: (1) Lewin's aspiration theory; (2) Rotter's social learning theory; (3) Atkinson's theory of achievement motivation; and, (4) Feather's theory of decision-making under uncertainty.

The basic premise of Lewin's aspiration theory is that individuals in a decision-making situation are faced with a conflict between whether or not to attempt a task that appears to be difficult to achieve, or to be satisfied with the accomplishment of an easier task. The value placed by an individual on a particular outcome, and the individual's subjective estimate of the likelihood that a given action will result in that outcome are the two major variables which determine the individual's behavior in a given situation (Maiman & Becker, 1974). Lewin hypothesizes that the level of difficulty of some future performance of a task, which an individual will attempt to attain a future goal, is predicated by the individual's past performance in that task.

Rotter's social learning theory, Atkinson's theory of achievement motivation, and Feather's theory of decision-making under uncertainty are known as "value-expectancy" theories. That is to say, the decision to act is weighed against the perceived value of the outcome of that action and the subjective expectancy of attaining the goal. Rotter's social learning theory is based on the

premise that an individual has learned from a previous experience in which there has been reinforcement (value) for a particular behavior and that such reinforcement occurs following that behavior. Learning in Rotter's approach is not conditioned reflex behavior, but rather the individual's selection of alternate, or choice behavior. The higher the individual's subjective expectancy that a particular reinforcement will occur for a particular behavior in a given situation, the higher the potential for that behavior (Maiman & Becker, 1974; cf. Cockerham, 1982:91).

The underlying assumption of Atkinson's theory of achievement motivation is that in a risk-taking situation, an individual will choose the level of difficulty of a task (goal) based on two diametrically opposed behavioral tendencies: the tendency to approach success and the tendency to avoid failure. In this model, when the subjective expectancy of success is strong, the subjective expectancy of failure is weak. Therefore, when an individual is confronted with an achievement-related task, there is an approach-avoidance conflict between the motive to achieve success and the motive to avoid failure. This conflict is mitigated by the relative attractiveness or reward value of a specific goal in a given situation. The greater the perceived attractiveness of the goal, the greater the motive to approach success and the greater the motive to avoid failure. Feather's theory of decision-making under uncertainty is based on the idea that the type of situation in which the choice occurs, and the extent to which the choice is structured to involve commitment (to self or others), conditions the individual's disposition to act. That is to say, "which of a given number of goal

objectives would he [sic] like to attain the most (wishful choice) in a situation free from commitment?" (Maiman & Becker, 1974). The individual's perception of the attractiveness of the goal (value) and the subjective probability of success influence his or her choice as well.

One of the values of Lewin's aspiration theory is that it brings up the idea of achieving goals in the future based on past performance. Rotter's model explains that external pressures can reinforce individual behavior. Atkinson's achievement motivation theory observes that motives are general and stable dispositions internalized by the individual, which are present from one behavioral situation to the next. That is to say, people are predisposed to behave in a certain way in various situations. Feather's theory of decision-making under uncertainty gives us the concept of "commitment." Feather explains that in a given situation, an individual has a predisposed level of commitment to behave in a certain way.

Within the theoretical framework of this research project, these four major tenets of decision-making will be taken into account when trying to explain a physician's decision of whether or not to choose to practice in a given community and to remain there.

CHAPTER 2: LITERATURE REVIEW

1. Research Approaches

There is a sizeable body of multidisciplinary research on the problem of physician recruitment and retention in rural America. Generally speaking, this research tends to ask two specific questions: (1) what is it that attracts physicians to practice in rural America, and (2) what is it that keeps them there? The extensive research response to these two questions is probably due in large part to the recognition by policymakers and other influential stakeholders that rural America does not now have, nor ever has had, an adequate number of health care providers, and that the situation continues to deteriorate. Research on physician recruitment and retention in rural American communities generally makes use of two different approaches to explore what variables may motivate a physician to practice and remain in a rural area.

One of these two approaches suggests that certain variables at the micro, or individual level are the motivating variables. The other approach examines certain aspects at the macro, or local community, state, and national levels. These macro level variables are sometimes labeled contextual or environmental. Both approaches recognize that some variables may impact either recruitment or retention only, whereas other variables may influence both aspects of the decision-making process. A study of rural America physician recruitment and retention may utilize one approach or the other, or a combination of both.

The following review of the literature examines the two major approaches that have been used to explain what variables may influence a physician's

decision to practice and to remain in a particular rural area; what mechanisms are at work in these approaches; how effective the approaches or models are in explaining the physician's decision; and, what the strengths and weaknesses of each approach are. In the following section, I first review studies, which have made use of the approach that examines individual, or micro level variables linked with physician recruitment. I then follow this review with a look at research that examines those contextual, or macro level variables, which appear to have a bearing on a physician's choice of practice location. Next I call attention to the discovery that some studies have shown that certain variables correlated with recruitment may likewise be correlated with retention. However, on the other hand some studies have shown that variables positively correlated with recruitment may become negative retention variables. In the last part of the literature review, I explore the research on micro and macro level variables that are primarily related to retention. Lastly, I make a comparison between the effectiveness of these two approaches, exploring the strengths and weaknesses of both.

Individual, or Micro Level Recruitment Variables. The individual, or micro level variables, which have been identified by previous research as being correlated with a physician's decision to choose to practice in a rural community (recruitment) can be categorized into three general types: (1) those of a professional and/or clinical nature; (2) those that are personal and/or family related; and, (3) those that have micro economic aspects.

In the professional and/or clinical category, previous studies have shown that a documented need for the physician's practice specialty in the community (Tilden & Tilden, 1995; Samaha, 1987), adequate call coverage or relief time (Conte, et al., 1992; Jarratt, et al., 1989; Anderson, et al., 1994; and Tilden, 1998), access to specialists for consultation, either locally or through a network agreement (Gordon, et al., 1992), the quality of local hospital facilities and medical technology (Conte, et al., 1992; Jarratt, et al., 1989; Conner, et al., 1995; and Tilden, 1998), the quality of the local medical staff (Conte, et al., 1992; Jarratt, et al., 1989; Jensen, 1988; Anderson, et al., 1994; Riley, et al., 1991 and Tilden, 1998), the quality of the local nursing staff and other non-physician support services (Gordon, et al.; and Tilden, 1998), and locum tenens [temporary or interim medical professionals] work (Larsen, et al., 1999) are significant predictors of a physician's decision whether or not to practice in a given area.

Individual level variables of a personal and/or family nature that have been positively linked with rural physician recruitment include a rural background; i.e., the physician and/or spouse was raised and/or lived in a rural area (Rabinowitz, et al., 1999), the length of time the physician has been practicing medicine (Hyde & Fottler, 1994), children's safety and the quality of schooling (Conte, et al., 1992; Rourke, 1993), and local opportunities for the spouse; e.g., employment and/or career advancement (Conte, et al., 1992; Jarratt, et al., 1989; Jensen, 1988; Anderson, et al., 1994; Riley, et al., 1991).

Earlier research has identified at least two major variables at the individual level in the micro economic category that have been shown to positively affect a

physician's decision to practice in a particular area. These variables are the overall potential for earnings and/or compensation (Conte, et al., 1992; Rourke, 1993; and Tilden & Tilden, 1995), and the opportunity for salaried employment (Tilden & Tilden, 1995). Greater earnings potential and/or a guaranteed income through salaried employment tend to attract physicians into a community.

Community Level Recruitment Variables. Other research has identified macro, or community level variables linked with a physician's decision to practice in a particular rural community that can be categorized into a typology of three general types: (1) those that are environmental in nature; (2) those of an macro economic character; and, (3) those dealing with the recruitment process itself.

Variables of an environmental nature at the community level found to be positively associated with rural physician recruitment include the presence of recreational opportunities such as camping, hunting, fishing, boating, skiing, and other outdoor activities (Conte, et al., 1992; Jensen, 1988; Anderson, et al., 1994; Rourke, 1993), the distance to the nearest urban area, to friends and family, and to cultural events (Samaha, et al., 1987; Gordon, et al., 1992), and the general lifestyle of the rural community itself (Conte, et al., 1992; Rourke, 1993). These environmental community level variables are oftentimes labeled "quality of life" variables, which may attract a physician to a particular area.

Macro economic variables discovered at the at the community level by previous research to be tied to a physician's decision to practice in a rural area include the availability and/or quality of local housing and current community economic conditions (Gordon, et al., 1992). Recruitment process issues at the

community level found to be positively linked with physician recruitment include the use of a professional recruitment firm (Riley, et al., 1991; Tilden & Tilden, 1995), involvement of the local medical staff in the process, advertisement in medical and trade journals (Riley, et al., 1991), involvement of community leaders in the process, the candidate meeting with the medical staff and community leaders (Tilden & Tilden, 1995), and practice [job] opportunity fairs (Hobbs, et al., 1999).

State and National Level Recruitment Variables. Policymakers at both the state and national levels have implemented various government programs to encourage primary care physicians to practice in underserved areas. These programs generally can be categorized as either economic and/or recruitment process variables. For example, the National Health Service Corps (NHSC) scholarship program, the NHSC loan repayment program, and the Michigan State Loan Repayment Program (SLRP) can be categorized as both economic and recruitment process variables, since these programs offer financial incentives to induce a physician to practice in a rural area and are used as recruitment tools. A U.S. citizenship program such as the J-1 Visa Waiver Program is usually seen as only a recruitment process variable because no financial incentives are extended to the physician.

Both the NHSC scholarship (Cullen, et al., 1997; Rosenblatt, et al., 1996; Pathman, et al., 1992) and the NHSC loan repayment programs (Jarratt, et al., 1989) were found to be positively linked with a physician's decision to practice in a rural area. Creamer, et al. (1999) found that Michigan's SLRP had a strong

correlation with a physician's decision to practice in a rural community and to remain there. The J-1 Visa Waiver Program has been shown to be a major determining variable in International Medical Graduates' (IMG) decisions to practice in rural areas (KHA, 1997; Gordon, et al., 1992).

Variables of an environmental or contextual nature at the state level that have been linked with physician recruitment into rural areas include selective medical school curriculums and selective residency programs (Rabinowitz, 1993; Rosenblatt, et al., 1992; Brazeau, et al., 1990; Connor, et al., 1994). One example of a selective medical school curriculum is the Jefferson Medical College Physician Shortage Area Program (PSAP) studied by Rabinowitz. The PSAP selectively recruits and admits medical school applicants from rural backgrounds that intend to practice family medicine in rural and underserved areas. An example of a selective residency program is the Michigan State University College of Human Medicine Upper Peninsula (UP) residency program. All things being equal, applicants to this residency program who are from the UP or other rural Michigan areas are given preference for acceptance (Brazeau, et al., 1990). Both the Jefferson Medical College PSAP program and the MSU UP program have been found to be positively linked with physician recruitment into rural areas of the U.S.

Recruitment vs. Retention Variables. Interestingly, the literature suggests that positively related *recruitment* variables may become negatively related *retention* variables. For example, nearness of a community to a metropolitan area may be a positive recruitment variable, attracting physicians but if patients

leave the rural community and go to the metropolitan area for their health care it becomes a negative retention variable (Conte, et al., 1992). Because of this insight, the retention side of the study design for this research project explores many of the recruitment variables identified in the literature review as retention variables in an effort to determine if they also influence a physician's decision to remain in an area. However, my review of the literature revealed some variables that seem to be related to retention only. These are discussed below.

Individual Level Retention Variables. As with the recruitment variables reviewed above, researchers have identified variables at the micro, or individual level linked with retention that can be categorized into three types of variables: (1) those of a professional and/or clinical nature; (2) those that are personal and/or family related; and, (3) those that have an micro economic character.

Included among the professional and/or clinical retention variables are the degree of professional satisfaction (Pathman, et al., 1996; KHA, 1997), the level of support from hospital administration (Cutchin, et al., 1994; Tilden, 1998), and compatibility with and acceptance by the local medical staff (Cutchin, et al., 1994; Pathman, et al., 1993; Jensen, 1988; and Tilden, 1998). Higher levels of satisfaction, support of administration, and compatibility with the medical staff have been found to be positively linked with retention.

Individual level personal and/or family variables positively correlated with physician retention include the spouse's satisfaction and/or happiness (Cutchin, et al., 1994; Tilden, 1998). Finally, the literature revealed two micro economic variables at the micro level positively connected with physician retention. These

were (1) local hospital and/or community loan repayment assistance programs and (2) adequate marketing and promotion of the physician (Tilden & Tilden, 1995).

Community Level Retention Variables. Earlier research has identified macro, or community level variables correlated with a physician's decision to remain in a rural community that can be placed into two types of categories: (1) environmental or contextual and (2) personal and/or family variables. One environmental community level variable associated with physician retention is the opportunity for higher education (Gordon, et al., 1992 in Gesler & Ricketts). The potential for the physician to obtain another graduate level degree in the local community or nearby has been shown to be positively linked with retention. And, an important personal and/or family variable positively connected to physician retention is the community's acceptance of the physician and his or her spouse and family (Cutchin, et al., 1994).

2. Comparison of the Research Approaches

Both the micro- and macro-level research approaches to rural physician recruitment and retention attempt to make sense of a complex problem and to differentiate between individual characteristics and those variables beyond the individual that may influence a physician's decision to locate in a rural area and/or to remain there. The micro-level approach attempts to identify personal variables connected with a physician's choice to practice rural medicine, such as family background, location of medical training, and family needs. For example, being raised in a rural area, doing a residency program in a rural area, and the

desire to live in a small, safe town have been linked with positive rural physician recruitment and retention.

On the other hand, the macro-level approach examines contextual or environmental variables at the community, state and national levels that are passed on to the individual with little or no personal control over them. These variables would include, for example, medical school curriculum, governmental funding, and national immigration policies. Selective medical school curricula, student loan repayment programs, and immigration visa waiver programs have all been positively linked to rural physician recruitment and retention.

Variables examined in a micro-level research approach tend to be individualistic character traits that are either controlled by the physician or are a part and parcel of his or her personality and/or family background. For example, a physician may have made the choice to complete a residency program in a rural area thereby knowingly or unknowingly enhancing his or her chances of practicing in a rural area. One weakness of this approach is that it may overlook some of the mitigating big picture aspects, which may have also influenced the physician's personal choices. For example, a physician may have chosen to do a rural residency program because it was the only one offered to him or her.

The macro-level approach on the other hand looks at variables that are beyond the control of the individual. As an example, medical schools can and sometimes do screen applicants and select only those students who they believe will choose to practice in a rural area. This approach may overlook the highly

individualistic and idiosyncratic characteristics of the physician, which may be a stronger, or at least as strong an influence as variables beyond his or her control.

Both research approaches have been very effective in identifying either personal characteristics (micro level) or variables beyond the control of the individual (macro level) that appear to increase the probability that an individual will choose to practice medicine in a rural area, and remain there. However, as with most one-sided approaches to a concept or a process, some of the interstitial interaction may be overlooked. In the complex process of rural physician recruitment and retention, it is very likely that the personal characteristics of the individual as well as variables beyond the control of the individual are strongly interrelated. What each approach as a stand-alone approach may miss is the degree to which personal and outside variables are interconnected. Therefore, the research approach I have chosen for this study is a blend of the micro and the macro level approaches and I will examine variables from both camps, which may attract a physician to practice in a given area as well as to remain there.

CHAPTER 3: METHODOLOGY

1. Background

My original interest in rural physician recruitment and retention developed while living in West Texas with my spouse who has worked in the health care industry for over 30 years. Prior to moving to Michigan, we lived in Lubbock, Texas, an isolated, albeit metropolitan area of West Texas. I describe the area as "metropolitan" only because of its population size of about 200,000. However, this part of the state is deeply rooted in its rural beginnings. The number one industry in the area is agriculture, where "cotton is king." During the time we lived there I observed the difficulty that she had in attracting physicians to practice in the area and having them remain there. At the time, I attributed this problem to the rural, isolated and somewhat unattractive nature of the area and thought nothing more of it.

When we moved to Michigan for my spouse's career advancement, I made the decision to pursue a Ph.D. in sociology at Michigan State University. Initially I was attracted to the field of social psychology and my primary research interest was in the patient-physician relationship and the asymmetrical linguistic interaction between them. However, during the course of my studies at the university, I developed a strong interest in the study of small, rural communities, having been influenced by the work of Professor Marilyn Aronoff. Because my research interest changed from the micro to the macro level, I sought out a mentor in the sociology department who was knowledgeable about macro level issues of health care in the U.S. I was advised by the department's graduate

advisor to ask Professor Harry Perlstadt to chair my guidance committee, since he had an extensive background in public health research. He agreed to chair my committee and has done so for the past eight years.

The first major research project that Professor Perlstadt helped me with was my second year paper, which is the equivalent of a master's thesis in our department. Because of what I had witnessed in West Texas, I was interested in patient access to adequate health care in rural communities. The literature on health care research suggested that patient access to adequate health care in any community is in large part determined by the physician-to-population ratio. That is to say, are there enough physicians in the area to meet the patients' needs? A cursory examination of the physician-to-population ratio in the 58 designated rural counties of Michigan revealed a widespread disparity in this ratio. My initial thought was that there must be variables or characteristics within these counties that compel physicians to choose to practice in one area over another. Therefore, I set out to see if I could identify and document county level characteristics, which might predict the physician-to-population ratio in rural Michigan counties. Within a framework of human ecology theory, based primarily on the work of Duncan, I examined over 30 county-level variables using stepwise multiple linear regression analysis to develop a model that would predict the physician-to-population ratio. The result of my analysis of the data was a multivariate predictive equation of the physician-to-population ration in rural Michigan counties, consisting of six of the 30 county-level independent variables

examined. This equation explained over 68 percent of the variation in the dependent variable, the physician-to-population ratio.

One particular variable stood out in this equation. The absolute relative weight of the beta for the "number of hospital beds" suggested that this variable was the most significant predictor of the physician-to-population ratio. In other words, size counts – larger rural hospitals appeared to attract more physicians to a particular county. Based on this finding, I concluded that future studies should closely examine the role of the local hospital in the process of attracting and keeping physicians in rural Michigan counties. Further consultation with Dr. Perlstadt and the other members of my dissertation committee led me to decide that I should pursue the topic of rural Michigan physician recruitment and retention for my dissertation research. A serendipitous chain of events allowed me to begin this research. An explanation of these events follows.

2. The Larger Study

The state legislature, recognizing the special health care needs faced by the residents of Michigan's rural areas, identified Rural Health Initiatives (RHI) as a priority within the Michigan Department of Community Health (MDCH) fiscal year 2000 budget. General fund dollars were appropriated for this purpose with the understanding that a plan, reflecting the needs and values of Michigan's rural residents would be developed and implemented. A plan was developed based upon input from rural health care stakeholders who participated in a series of three meetings that were held in the county seat of three rural Michigan counties

(Sault Ste. Marie – Chippewa County; Ludington – Mason County; and, Mt. Pleasant – Isabella County) in late August and early September of 1999.

This plan resulted in the issuance of $4.3 million from Michigan's General Fund to support several rural health initiatives. A *Legislative Report of Findings and Spending Plan* was developed in October 1999 to guide the MDCH RHI. The legislative plan recommended allocating the RHI funds to four pools: (1) Rural Emergency Medical Services, (2) Community Collaborative Grants, (3) Network Development and Communications, and (4) Rural Non-Emergency Transportation.

Within the Community Collaborative Grants pool, the plan identified several community-based efforts, which could benefit from one time funding support. Physician recruitment and retention was one of these efforts. The work group participants recognized that attracting and keeping physicians was a key barrier in maintaining adequate access to vital health care services in rural Michigan. The work group process yielded three key hypotheses as to why rural physician recruitment remains a challenge: (1) Physicians perceive rural practice opportunities and hospitals as "behind the times;" (2) Information is lacking related to recruiting "best practices" and on what variables separate successful and unsuccessful rural communities in the recruiting process; and, (3) Coordinated information is lacking related to the scope and total levels of state and federal support for educational assistance for physicians and rural hospitals. Prior to the development of the *Legislative Report of Findings and Spending Plan*, the MDCH had contracted with the Michigan Center for Rural Health

(MCRH) in the summer of 1999 to conduct an evaluation of a state and federally supported educational assistance program, the Michigan State Loan Repayment Program (SLRP).

The evaluation of this program concluded that the SLRP was a useful and successful tool in helping to recruit and retain primary care health providers in rural Michigan, but that a more comprehensive study of the recruitment and retention of physicians into rural Health Personnel Shortage Areas (HPSA) was needed to address the overall physician-to-population ratio. Based in part on the results of the SLRP study, the RHI work group recommended funding a study to investigate why some rural hospitals and/or communities appear to be more successful in their recruitment and retention efforts than others.

The work group recognized that physician recruitment and retention is a complex set of variables, which include the involvement of local hospitals, the physician, his or her spouse, community leaders, the community itself, recruiters, government-funded programs, and area characteristics. However, a key variable is that while there is competition between health care organizations to obtain physician talent, many recruiters have never been "taught" how to recruit and may be spending unreasonable amounts of time and resources with limited success.

Recognizing this problem, the work group recommended that a six-month study assess how successful recruitment and retention is accomplished. The study would involve 20-25 rural hospitals and/or communities using face-to-face interviews, telephone surveys and mail questionnaires with those individuals who

recruit physicians. The study would also survey physicians (in face-to-face interviews and with mail questionnaires) who had been recruited into rural Michigan and were still working in these communities in an effort to determine what brought them there and what is keeping them there.

The work group recommended that the results of this study be published and used to create a manual, *Guidelines to Successful Community Recruitment and Retention*. This manual would be a template for rural Michigan hospitals/communities on how to effectively recruit and retain physicians, showing step-by-step processes. The manual would also showcase four to six communities that have been highly successful, elaborating on how they achieve their successes. The manual was to be distributed to all rural Michigan hospitals and other relevant rural health stakeholders. Funding for the study was set at $100,000.

The MCRH, which serves *de facto* as the State Office for Rural Health, contracted with the MDCH to conduct this study and to develop and publish a physician recruitment and retention manual for rural Michigan hospitals, communities and other health care stakeholders. Through a serendipitous chain of events, the executive director of the MCRH contacted me to see if I would lead this research project.

In early 1999 I was conducting preliminary literature and data research on rural physician recruitment and retention. I was attempting to find data on the retention rate in Michigan for the J-1 Visa Waiver Program, a federally legislated and state administered program designed to place primary care physicians in

underserved areas. I met with the local director of a family care health clinic who I was aware had employed J-1 Visa Waiver physicians. She suggested I contact the director of the MCRH for more information. I contacted him by e-mail and told him of my research interest. He advised me that he was beginning a study of the Michigan SLRP, a recruitment and retention program. I volunteered to do any "grunt" work he might need such as data entry to get the research experience. After meeting with him, he asked me to direct an analysis of the data he had collected via a mail survey instrument. I completed the study in the early summer and the final evaluation report was accepted by the MDCH in August.

Because of our previous work together on the SLRP, the director of the MCRH asked me to be the lead researcher in the rural physician recruitment and retention study. The research was conducted from December 1999 through June 2000. I was compensated for my time and all travel expenses. In addition, funding allowed the MCRH to hire a project director and technical assistance coordinator to support the other RHI activities, as well as assist me directly with the physician recruitment and retention study. Other MCRH staff members were available to help with the project as well.

The findings and recommendations of the RHI physician recruitment and retention study are published in a manual titled, *Rural Michigan Physician Recruitment and Retention Manual: The rural guide to successful physician recruitment and retention management.* Copies of this manual are available from the Michigan Center for Rural Health, B-218 West Fee Hall, Michigan State

University, East Lansing, MI 48824-1316, www.com.msu.edu/othermed/r-health, barnas@msu.edu.

As part of my agreement to lead the research team in this study, the MDCH granted me permission to use any of the data collected in this study for my dissertation project. While I directed the data collection for this project, it was nonetheless collected primarily for the state of Michigan FY1999-2000 RHI and I will be working *de facto* with secondary data in my dissertation. I applied to The University Committee on Research Involving Human Subjects (UCRIHS) in March of 2000 for approval to collect this data for my dissertation research. Approval was granted on March 10, 2000. Data collection began in late March and was completed during the summer of 2000.

3. Data Collection

Identifying the Subjects. The two primary populations of interest for this study were the approximately 2,700 physicians practicing in rural Michigan at the time of the survey, and the 59 rural hospitals and their recruiters. A current listing of both allopathic (MD) and osteopathic (DO) physicians, who are licensed in rural Michigan, was obtained from the Michigan Department of Consumer and Industry Services (MDCIS). This listing was used to create a mailing list for the rural physician survey instrument. The mailing list had limitations. One limitation is that the MDCIS licensing record does not identify whether a physician is in active practice or is in an administrative or teaching position, works for the federal government, or is retired. Another limitation of the mailing list is that depending on how each physician submitted license information, the address

shown is either the home or practice site address. A rural address does not necessarily mean that the physician is practicing in a rural area. The list is also known to contain some address inconsistencies or even incomplete addresses. These physicians were omitted from the list. Additionally, physicians with suspended licenses were deleted from the list. The final mailing list contained 2,167 names and addresses.

A list of the 59 rural Michigan hospitals and their recruiters was obtained from the Michigan Center for Rural Health (MCRH). Physician recruitment in some cases is a full-time job but in many instances it is a part-time job or a function of the CEO and President of the hospital. Many of these rural hospitals are located in isolated, remote areas of the state. Realizing that it would be an overly time-consuming process to complete face-to-face interviews with the recruiters and/or CEOs for all 59 hospitals, the MCRH research team as directed by the MDCH drew a random sample of 26 hospitals from the population in order to complete the recruiter survey in a timely manner.

Creating the Variables. Rather than re-inventing the wheel, the MCRH research team chose to replicate many of the recruitment and retention variables found in the review of the literature on rural physician recruitment and retention. In addition, new variables were created based on input from the physician and recruiter focus groups. On both the physician survey instrument and the recruiter interview questionnaire, the items to measure these variables were in the form of close-ended "How important is..." questions. These items were grouped by category – where possible – on both the physician survey instrument and the

recruiter interview questionnaire. The recruitment variable categories, discussed in the literature review section (see Chapter 2), were professional and/or clinical; personal and/or family; economic; socio-cultural and county, and process. For example, a recruitment variable of a professional and/or clinical nature was put in the form of a question such as, "How important is access to local specialists for consultation?" The respondents were asked to rate the relative importance of this variable using the scale discussed below. A comprehensive listing and description of the recruitment variables measured in this study is found in Chapter 4, "Descriptive Statistics."

The retention variables were created in a similar manner, using close-ended "How important is..." questions. As discussed in the literature review section (Chapter 2), the distinction between a recruitment variable and a retention variable is not always clear. And, in fact a positively rated recruitment variable can sometimes become a negatively rated retention variable. In an effort to determine whether or not some of the recruitment variables were either positively or negatively linked to retention, many of the recruitment questions were duplicated in the retention sections of both the recruiter interview questionnaire and the physician survey instrument. A comprehensive listing and description of the retention variables measured in this study is found in Chapter 4, "Descriptive Statistics."

Lastly, three identical open-ended questions were developed for both the physician survey instrument and the recruiter interview questionnaire in an effort to discover any variables that may have been overlooked in the literature and by

the focus groups. According to Dillman (1978, p.87), open-ended questions in a survey or interview "stimulate free thought, solicit suggestions, probe people's memories, and clarify positions. Further, they give respondents a chance to vent frustrations and state strong opinions." The MCRH research team felt that these open-ended questions could reveal the most important recruitment and retention variables, at least from the perspectives of the respondents. The responses to these open-ended questions were coded, and where possible grouped into one or more of the five categories listed above.

Specifying the Scales. The MCRH research team made the decision to measure the responses to close-ended questions in both the recruiter interview and the physician mail survey with the following rating scale:

1 = "not important at all"

2 = "somewhat not important"

3 = "somewhat important"

4 = "very important"

This rating scale created a set of recruitment and retention ordinal variables for analysis. A 1 to 4 rating scale was selected in an effort to keep the rating responses from drifting to the mean. That is to say, a neutral response was not an option; the respondent's options were either a positive or negative rating. This rating scale allowed the research team to easily identify those physician recruitment and retention characteristics or variables, which the physicians and recruiters believed to be the most, or least relevant in the process.

Demographic characteristics or variables were measured using typical data collection methods, producing a number of nominal and continuous variables for analyses. Examples of nominal variables included "sex," "marital status," "type of practice," "practice specialty," etc. Continuous variables included "age," "years in practice," "number of K-12 children," etc. These data allowed the research team to produce a profile of the "average" rural Michigan physician or recruiter, as well as a means to measure differences across groups.

Developing the Instruments. Both the physician survey instrument and the recruiter interview questionnaire were developed based on findings from an extensive literature review as well as input from a series of focus group meetings. The literature review disclosed many key physician recruitment and retention variables and/or issues recognized by previous studies. The findings from the literature review were used to develop a questionnaire for facilitating the focus group meetings as well as in the development of an interview questionnaire and mail survey instrument.

Following the literature review, a focus group meeting was held with rural Michigan hospital recruiters from across the state. The purpose of this meeting was to refine recruitment and retention issues noted in the literature as they pertained to this particular study. The group met to identify key recruitment and retention issues from a rural Michigan recruiter's perspective, and to share experiences, concerns, ideas and insights. Preliminary data collection instruments based on both the findings in the literature and from this focus group meeting were drafted for the broader study. This phase of the project identified

variables for data collection that otherwise may not have been revealed by the literature. For example, out of the recruiter focus group meeting came additional premises that having an open and honest dialogue about the practice opportunity and the community; utilizing the Internet to recruit; having a central contact person leading the recruitment process, and networking with other rural recruiters are variables that may affect physician recruitment.

Next, came a series of rural physician focus groups and further refinement of the data collection instruments. Only four rural counties are located in the southern one-third of the Lower Peninsula. The other 54 are located in the mid- and upper-lower peninsula and the Upper Peninsula (see Figure 1.2.2, page 24). As a result, the research team made the decision to hold the physician focus group meetings in communities within easy driving distance of the majority of rural Michigan counties. Three physician focus group meetings were held in (1) Central Michigan, (2) the Thumb Area, and (3) the UP in January 2000. Respectively these were in Mt. Pleasant (Isabella County), Cass City (Tuscola County), and Sault Ste. Marie (the UP). The goal of these meetings was for physicians currently practicing in rural Michigan to give insight on the variables identified by the literature and the recruiters' focus group and to reveal any additional variables that may have attracted them to a rural medical practice. Out of these focus group meetings came added beliefs that the acceptance of racial and ethnic diversity by the community; a quality promotional package introducing the community to the candidate and, a local or nearby religious support

organization were important variables. The feedback provided by these physician focus groups served to further refine the data collection instruments.

Description of the Instruments. Using findings from the literature review and the focus group meetings, the MCRH research team developed a rural recruiter interview questionnaire and a physician mail survey instrument to measure the relative importance of the key recruitment and retention variables that had been identified, as well as to collect important demographic data. The rural recruiter interview questionnaire was designed with three major sections: (1) a series of open- and closed-ended questions on the recruiters' perceptions about variables, which may have influenced the physician's decision to practice in their community; (2) a series of open- and closed-ended questions on the recruiters' perceptions about variables, which may have affected the physician's decision to remain in their community; and (3) a series of demographic questions about the hospital and the recruiter. The interview questionnaire was pre-tested with three rural recruiters who were not randomly selected to participate in the study. Minor refinements to the questionnaire were made following the pre-test interviews.

The physician mail questionnaire was also designed with three major sections, which paralleled the interview questionnaire. However, in an effort to encourage a statistically adequate level of response from the physicians, the survey instrument was limited to three (3) pages, and was therefore not as comprehensive as the recruiter interview questionnaire. The physician respondent needed only about ten minutes to complete the survey. The

research team pre-tested the physician survey instrument by distributing it and an explanatory cover letter via inter-office mail to all physicians at the Michigan State University College of Osteopathic Medicine, Family and Community Medicine. No major problems were noted in this test of the original instrument.

The Recruiter Interview Process. I contacted recruiters for each of the randomly chosen rural hospitals by telephone to notify them that they had been selected to participate in this study. If they agreed to an interview, a date and time were arranged during the initial contact. A follow-up letter was mailed to each confirming their agreement to participate and the date and time of the interview. Four (4) of the randomly selected hospitals declined to participate in the study, leaving a total of 22 hospitals in the survey sample, or about an 85 percent participation rate. Several attempts were made to contact the recruiters and/or CEOs at the hospitals that eventually decided not to participate in the study. By the time the MCRH research group learned that these hospitals were not going to participate, the deadline for collecting the data was nearing and the group decided that the smaller survey sample was adequate.

On the day of the interview, the participating recruiter was given an informed consent document stating the purpose of the study; acknowledging that the participant's involvement in the study was entirely voluntary; and assuring the participant of confidentiality. The recruiter was asked to read the document and acknowledge his or her understanding of its contents by signing it. A copy of the document was given to the recruiter and the signed copy was kept for UCRIHS verification. Also, I asked the recruiter for permission to make an audio recording

of the interview. No one refused to have the interview recorded. The interview lasted about one hour in most cases. Copies of the follow-up letter, the informed consent document and the interview questionnaire are found in Appendix A.

The Physician Survey Process. To promote candid responses, the physicians were assured of confidentiality in a cover letter mailed with the survey form. However, in an effort to determine the response distribution by geographic entity and by MD vs. DO licensure, the survey forms were coded and numbered. Each response was matched to the county and MD vs. DO database developed from the MDCIS licensure list. The cover letter and a survey form were mailed on May 19, 2000 to 2,167 rural Michigan physicians. While the survey form was intended to be a brief, "fax-it-back" questionnaire, the respondents were given the option of mailing the form back by providing them with a self-addressed envelope, postage not included to reduce costs. The initial due date for return of the survey form was June 9, 2000. A postcard was sent following the due date to serve as a "thank you" to physicians who had responded and a "reminder" to those who had not. The due date was extended to June 19, 2000, however survey forms were accepted during data entry and review until early July. A copy of the cover letter and the survey instrument are appended in Appendix A.

Response to the physician mail survey was positive. A total of 523 surveys were returned. Seventeen (17) of these were rejected for various reasons, resulting in a total of 506 acceptable responses and a response rate of 23 percent. A cross-tabulation analysis of the response distribution indicated that the self-selected survey sample was representative of the 58 rural Michigan

counties. That is to say, the responses were proportionate to the number of questionnaires mailed to each county.

Coding the Data. The first step of the analyses in the overall study was to check for data collection errors. After correcting for data collection errors, where possible, the data were coded, categorized and transferred to an SPSS or Excel database. The recruitment and retention variables from both the physician survey instrument and the interview questionnaire were coded and categorized into one of the five following categories.

> E = *Economic variables* – primarily financial elements, including earnings/compensation, employment arrangement, financial incentives, availability and quality of housing and community economic conditions.
>
> R = *Recruitment process variables* – components in the recruitment method, such as community member involvement, use of recruitment firms, having a single contact for recruitment.
>
> P = *Professional and clinical variables* – practice of medicine variables, for example the practice environment, medical community, access to consultation, local health resources, ancillary services.
>
> F = *Family variables*—things that affect family or personal life, like adequate leisure time, or family considerations.
>
> S = *Socio-cultural and community variables*—a broad category that includes variables such as community attributes, geographic location, quality of life, friendly people.

After coding was completed, tables were developed to describe the rank order finding of the scaled quantitative questions. Included in these tables were a description of the variable, its category, the number of responses, the rank order of the variable, and the average rating given by both the physicians and the recruiters (these tables are found in Chapter 5, "Analysis of the Data"). Other

descriptive data included frequency distribution analyses of county, hospital, area physician workforce, recruiter, and physician characteristics.

4. Research Questions

The Rural Health Initiative (RHI) work group process for the state of Michigan yielded three major hypotheses about the challenge of physician recruitment and retention in rural areas: (1) Physicians perceive rural practice opportunities and hospitals as "behind the times;" (2) Information is lacking related to recruiting "best practices" and on what separates successful and unsuccessful rural communities in the recruiting process; and, (3) Coordinated information is lacking related to the scope and total levels of state and federal support for educational assistance for physicians and rural hospitals. The first hypothesis was neither confirmed nor denied by the larger, overall study. There was strong evidence supporting both the second and third hypotheses of the work group.

My dissertation is a secondary analysis of the data collected for the larger study and builds on the above hypotheses. The hypotheses advanced by the RHI work group are more practical in nature than analytical since they deal more with identifying the problems with rural physician recruitment and retention, rather than looking for root causes. I propose that that taking the same data I will be able to analyze it and identify those variables that influence the perceptions of what leads to recruitment and retention from the viewpoints of the two major population groups in this dynamic process: physicians and recruiters.

I advance three research questions for analyses. First I will examine the theory that under certain conditions, such as a shortage of valuable resources or a natural disaster, communities (defined in Chapter 2) may come together and act to solve a problem. In this study, the problem being investigated is physician recruitment and retention. An inadequate physician supply can also be seen as a shortage of valuable resources. Thus, one research question of sociological interest is, "Do rural Michigan communities mobilize and take action to solve physician shortages?" In an attempt to answer this question, one statistical approach will be to perform a qualitative analysis of those items in the survey specific to community involvement in the rural physician recruitment and retention processes.

The finding that some rural communities in Michigan appear to be more successful than others in attracting and keeping physicians, leads to a second research question: "What are the county-level socio-demographic variables that help to explain a physician's decision to practice in one rural Michigan community versus another?" A regression analysis of the independent county-level socio-demographic variables found to be significantly correlated with the dependent variable, the population-to-physician ratio, as well as other independent variables suggested by the literature review and commonsense rationale will be performed in an effort to explain the variance observed in this ratio across the 58 rural Michigan counties. Since the ratio of population-to-physician at any given time consists of recently recruited physicians as well as physicians who remained in

the area, an *a priori* assumption is that the county-level variables identified in this analysis help to explain both recruitment and retention.

The relative importance ratings of the recruitment and retention variables measured in both the recruiter interviews and the physician mail survey come from the perspectives of two distinct and different groups, which calls attention to a third research question of importance: "Do recruiters and physicians attach different levels of importance to these economic, psychological and sociological variables and, if so to what degree?" A comparative analysis of the data will be performed to reveal whether or not physicians and recruiters place different, and statistically significant, levels of importance on these variables.

Lastly, an *a priori* assumption, which runs throughout this research project, is that groups of interrelated variables are being used to measure a common underlying value. For example, salaried employment, potential earnings and compensation, and loan repayment programs are variables that attempt to measure a common underlying value of an economic nature. Exploratory factor analysis will be used to test the hypothesis that this is in fact the case and that the variables examined in this can be reliably coded and categorized into the five typologies described above.

Answers to these research questions will, I believe, help to explain the variance in the population-to-physician ratio observed across Michigan's 58 rural counties and will have practical and helpful applications for hospitals and recruiters attempting to recruit and to keep physicians in these areas.

CHAPTER 4: DESCRIPTIVE STATISTICS

This chapter consists of three major sections. The first section is an overview of the characteristics of the hospitals; the area or county physician workforce status; the recruiters, and the physicians involved in this study. This overview is intended give the reader an understanding of: (1) the nature of the institutions; (2) the state of physician workforce in the areas of study; and, (3) the respondents who participated in this research.

The second section examines the results of the physician mail survey. This section covers findings from the 21 closed-ended questions probing the participating physicians' attitudes toward recruitment attractors they were asked to rate. This is followed by a look at the results of an open-ended question on their view of the single most important attraction in their recruitment into the community in which they are currently practicing. I then examine the results of 16 closed-ended questions seeking the respondents' attitudes toward retention motivators, which may have kept them in the community. This is followed by a look at the results of an open-ended question on their view of the single most important retention motivator for keeping them in the community. In the last part of this section, I discuss the outcomes of the physicians' answers to an open-ended question asking them to offer their comments on any facets of the recruitment and retention process that may not have been fully addressed in the mail survey questionnaire.

The third section is a discussion of the data collected in face-to-face interviews with rural recruiters. This section opens with an examination of: (1)

the recruitment approaches used by the recruiters; (2) the level of community involvement in the recruitment process; and, (3) the degree to which a formal retention plan is used. I then look at the results of 40 closed-ended questions asked of recruiters in an effort to determine their attitudes toward recruitment attractors they were asked to rate. This is followed by a discussion of two open-ended questions relating to physician recruitment. The first open-ended question is to identify what in the eyes of the recruiter is the single most important recruitment attractor. The second question examines the intricacies of the recruitment process itself. Following these discussions is an analysis of recruiter responses to 21 closed-ended questions on the attitudes of the respondents towards retention motivators. Next is a discussion of two open-ended questions relating to physician retention. The first question attempts to identify the single most important retention motivator from the recruiters' perspective. The second examines the complexities of the retention process. The third section finishes with a look at an open-ended question regarding any comments or advice the recruiters might have about the recruitment and retention of physicians in rural Michigan, which might shed light on this perplexing process.

1. Overview of the Research Setting

Hospital Characteristics. The 22 rural hospitals randomly selected to participate in this study were state licensed acute care facilities with both in-patient and outpatient services. Eight of these hospitals also had licensed long-term care facilities on their main campuses. The control and governance of 14 of these hospitals (64 percent) were in the non-government realm. Five were city or

county-operated, two were church-operated and one was under the control of a hospital district. Eight or about 36 percent of the hospitals were part of a formal multi-hospital system. The fourteen others were independent entities.

The numbers of licensed acute care beds in these rural hospitals ranged from 25 to 151, with an average of 72. Staffing for these beds varied depending on the patient census, but generally ranged from 6 to about 121. The average daily census for the acute care facilities varied from about 6 to 69. When asked if the average daily census had changed in the past ten years, about half of the hospitals stated that it had increased. Nine hospitals (41 percent) said that their average daily census had decreased, while one stated it had stayed the same.

The numbers of licensed long-term care beds in the eight hospitals having these facilities had a range from 40 to 52. Staffing for these long-term care beds ranged from 40 to 52 as well and the average daily census for these facilities was from 40 to 50. The variation in licensed beds, staffing and average daily census for the eight hospitals with long-term care facilities was not as pronounced as for the acute care facilities. The average daily census numbers suggest that these facilities remain at almost 100 percent occupancy.

Area Physician Workforce Characteristics. As reported by the physician recruiters, the physician workforce in the areas served by the hospitals in the sample ranged from a low of eight to a high of 88 physicians, with the average being 33. Most of the recruiters interviewed stated that the number of physicians in their area had increased in the past ten years. Three stated that the number had stayed the same, and none said that it had decreased. Twenty or almost 91

percent of the 22 recruiters stated that they had an immediate need for more physicians. The number of physicians needed ranged from one to nine, with a mean of about four. These recruiters were asked how long this physician need had been recognized and the average response was six months to a year.

When asked if they had a physician workforce plan, half of the physician recruiters responded affirmatively. These 11 workforce plans were based on long term strategic plans approved by the boards of the hospitals. The hospitals without a formal physician workforce plan most often based their physician needs on access to health care indicators or other perceived needs. One example shared by a recruiter was that a long waiting period to get an appointment with a doctor was an indication that more physician workforce in that specialty was needed. The 20 hospitals with physician needs were recruiting to fill those needs at the time they were interviewed.

Recruiter Characteristics. The rural physician recruiters interviewed for this study were a diverse group of individuals. While all the recruiters interviewed were very personable and pleasant people, each had his or her own distinctive personality and recruitment style. Ten (45 percent) of the recruiters were male and the remaining 12 (55 percent) were female. With the exception of one recruiter, all had rural backgrounds and had lived in rural areas anywhere from three to 45 years. Almost one-half of the recruiters (nine) were either the CEO of the hospital or other high-level administrator. These hospital executives stated that they spent anywhere from 5 to 25 percent of their time on physician recruitment activities.

Only six (27 percent) of the recruiters, who were not the hospital CEO or other high-level administration, said that they dedicated 100 percent of their time to physician recruitment. The remaining seven non-administrative recruiters described their position as "part-time physician recruiter" with other job responsibilities at the hospital. The time they spent recruiting physicians ranged from 10 to 90 percent. Other job responsibilities of the part-time recruiters included public relations, auxiliary liaison, physician practice management, director of cardio-pulmonary services, foundation administrator and community relations.

Fourteen (64 percent) of the 22 rural physician recruiters said that they had someone to help them recruit physicians. This person was usually an administrative assistant or secretary and the time they devoted to helping recruit physicians ranged from two to 100 percent. The remaining eight recruiters handled the physician recruitment by themselves until they were ready to present a candidate to the hospital or group for which they were recruiting.

Preparatory training for the position of physician recruiter among the recruiters interviewed was practically non-existent. Almost 70 percent (15) said that they were given no training at all; were self-taught or relied on their life experiences. Two stated that their predecessor had given them some brief training. The remaining recruiters relied on seminars, mentors at other hospitals and networking with other recruiters for their training. The wide variety of job backgrounds these recruiters brought to their new job sheds some light on their lack of physician recruitment experience. Examples of the previous job

experiences of these recruiters included journalism, banking and business administration. The only recruiters who mentioned having experience recruiting physicians in their previous job were a few of the hospital CEOs.

Physician Characteristics. The socio-demographic characteristics of the physicians who responded to the survey are examined in this section. A large majority of the physicians who responded to the survey were male (79 percent). Most respondents were married (89 percent), and the average age of the respondents was about 47 years old. Of the physicians who responded to the question, 55 percent indicated that they had children age kindergarten through 12th grade. The average number of children in this age group was about two. Forty-five percent of responding physicians indicated that they had no children ages K-12.

On average, responding physicians had practiced in their present community for nearly 12 years, with the range being from one month to 54 years. Ninety-three percent of responding physicians were currently in active practice, and most (90 percent) worked full-time. Respondents most frequently indicated that they were in a group practice (53 percent) followed by solo practice (31 percent), or some other arrangement (16 percent), such as a community health clinic, hospital-employed, government/public sector employed, Veterans Administration facility, or other. About one-third (34 percent) of responding physicians were employed by the local hospital.

By practice category, 29 percent of responding physicians were general/family practice physicians, 14 percent were internal medicine, 6 percent

were pediatrics, another 6 percent were general surgeons, and 5 percent were obstetrics/gynecologists. That is to say, about 61 percent of the respondents were primary care physicians. The remaining 39 percent indicated another practice category, such as emergency medicine, radiology, pathology, ophthalmology, psychiatry, or a combination of specialties.

Almost 25 percent of the respondents had practiced in a rural community prior to coming to their current rural community. On average, these physicians had previously practiced for about 6 years in a rural area (range 3 months to 25 years). When asked if they had ever practiced in an urban community, 45 percent of responding physicians indicated that they had, and the average number of years in urban practice for these physicians was just over 6 years (range 3 months to 30 years). Of the responding physicians, 84 percent (424) had completed high school in the US, 82 percent (414) had completed medical school in the US, meaning that 91 of the respondents were International Medical School (IMG) graduates. Ninety-nine percent had completed their residency program in the United States.

2. Physician Mail Survey Results

Results of the physician mail survey are examined in this section. The physician survey instrument used to collect data for this study is described in detail in Chapter 3, "Methodology." A total of 2,167 surveys were mailed to physicians living in rural Michigan. 523 completed surveys were returned by the final cut-off date for response. Of the 523 physicians who returned surveys, 18 surveys were omitted from the analysis for various reasons: one declined to

participate; three lived in a rural area but practiced in an urban area; 14 were retired or no longer practicing. Responses from the remaining 505 surveys, about 23 percent of the total number of surveys mailed, were analyzed. Nearly all of the responding physicians completed each page of the survey and wrote answers or comments in response to the open-ended questions. The distribution of responses by county and by allopathic (MD) versus osteopathic (DO) physician were analyzed and found to be representative of the mailing list both geographically and by medical degree. While this sample cannot be taken to be completely representative of all rural Michigan physicians, there is no reason to believe that the participants in this survey were atypical of this group.

Attitudinal Recruitment Questions – Physician Survey

Rural physicians were asked a series of attitudinal questions regarding the relative importance of various aspects of physician recruitment and retention in rural Michigan. There were 21 closed-ended questions and one open-ended question on recruitment. Four of the close-ended questions on recruitment asked about the relative importance of government programs implemented to attract physicians into rural areas of the United States (these programs are described in Chapter 2). For purposes of illustration, the results of these four questions are shown below in Table 4.2.1.

Table 4.2.1 Rural Physician Opinion on Government Programs

"How vital were the following federal and state programs to your recruitment to the community?"

Programs	Mean Score	Somewhat and Very Important	N Respondents
J-1 Visa Waiver	1.38	14%	495
NHSC Loan Repayment	1.24	8%	481
State Loan Repayment	1.23	9%	480
NHSC Scholarship	1.14	5%	480

Government Programs – Physician Survey. As shown in Table 4.2.1 above, the highest ranked level of importance score for physicians among the public programs listed on the survey was 1.38 for the J-1 Visa Waiver program. Only 14 percent of the respondents rated this program as 'Somewhat to Very Important.' The other programs were rated even lower. Less than 10 percent of the respondents rated the NHSC Loan Repayment, the State Loan Repayment, and the NHSC Scholarship programs 'Somewhat to Very Important.' These low scores appear to indicate that government programs implemented to attract primary health care physicians into rural areas of the United States were relatively unimportant to physicians participating in this study. Results of the remaining 17 close-ended recruitment questions are listed in Table 4.2.2 on the following page.

Table 4.2.2 Rural Physician Opinion on Recruitment Variables

"How important were each of the following to your recruitment to the community?"

Variable	Attractor Category[1]	Mean Score	Somewhat and Very Important*	N[2] Respondents
Personal & professional match with the community	P	3.36	88%	498
Quality of children's lifestyle such as safety and good public schools	F	3.27	82%	498
Adequate leisure/personal time	F	3.21	82%	498
A realistic accurate description of the community and practice opportunities	R	2.98	76%	498
Availability of call coverage relief	P	2.90	70%	498
Access to local specialists for consultation and/or referral	P	2.86	72%	495
Projected earnings and/or compensation	P	2.83	73%	496
The community's proximity to friends/family	S	2.71	64%	500
One person leading the recruitment efforts and serving as the central contact point	R	2.50	57%	497
Spousal opportunities such as employment, career advancement, education, etc.	F	2.44	54%	498
Presence of a network, plan, or referral agreement with a tertiary hospital and/or non-local specialist for consult and/or referral	P	2.38	52%	494
A strategy in place to offer and to quickly close the contract if needed	R	2.22	46%	493
A high quality, comprehensive community promotional package	R	2.00	33%	500
Community member involvement in the recruitment process, such as school superintendent, realtors, bankers	R	1.96	36%	495
Salaried employment by the local hospital	E	1.89	34%	493
Professional recruitment firm(s)	R	1.35	11%	501
The Internet/Websites as recruiting tools	R	1.17	5%	498

Note: *Percentages are valid percent – missing cases excluded. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Family. [2]505 physicians in total responded.

Recruitment Attractors – Physician Survey. The average relative importance scores of the recruitment attractors rated by the physicians are shown in Table 4.2.2 above. The variables are listed in descending rank order of the average score of their relative level of importance as rated by the respondents. A brief discussion of the top five and the bottom five ranked recruitment attractors follows below.

Top Five Recruitment Attractors – Physician Survey. The highest rated recruitment attractor based on the average score among responding physicians was "Personal and professional match with the community." With an average level of importance of 3.36, this variable was 'Somewhat to Very important' for 88 percent of the respondents. This variable contains both personal and family elements as well as professional and/or clinical elements.

The second highest ranked attractor among the responding physicians' decisions to practice in rural Michigan was "Quality of children's lifestyle such as safety and good public schools," with an average level of importance score of 3.27. Eighty-two (82) percent of the respondents rated this variable 'Somewhat to Very important'. As noted earlier, more than half of responding physicians had children ages K-12 grade. Family considerations are also reflected in the third highest ranked recruitment attractor, "Adequate leisure and/or personal time" with an average score of 3.21. Again, 82 percent of the respondents rated this variable 'Somewhat to Very important.' The only recruitment process-related attractor that was in the top five recruitment variables was "A realistic, accurate description of the community and practice opportunities." This attractor was

ranked fourth from the highest with an average score of 2.98. The variable was 'Somewhat to Very important' for 76 percent of the responding physicians.

Finally, "Adequate call coverage relief," categorized as a professional and/or clinical variable was the fifth highest ranked recruitment attractor. Of note, when asked how many days (1 through 7) per week of on-call coverage obligation presented in a recruitment offer/package was reasonable, the majority of responding physicians (61 percent) indicated two or three days, the average response was 2.7 days, and the range was 1 day (17 percent) to 7 days (3 percent). This variable was rated 'Somewhat to Very important' by 70 percent of the responding physicians.

Lowest Five Recruitment Attractors – Physician Survey. While only one recruitment process category attractor was represented in the highest ranked five study recruitment variables, four out of the five variables having the lowest average scores among responding physicians were related to the recruitment process used to recruit them to their current rural community. Use of the Internet and recruitment websites as a tool (average score 1.17), and professional recruitment firms (average score 1.35) did not appear to play an important role in the responding physicians' decision to practice in their current rural community. Only 11 percent and 5 percent, respectively, of responding physicians indicated that these variables were 'Somewhat to Very Important.'

"Salaried employment by the local hospital, ' an attractor in the economic category, was a variable that only about one-third of responding physicians felt was 'Somewhat to Very Important' (34 percent, average score of 1.89).

Interestingly, 34 percent of the respondents in this survey were physicians employed by the local hospital, indicating that this attractor was probably important only to this group.

"Community member involvement in the recruitment process..." and "A high quality, comprehensive community promotional package" were the two highest rated attractors of the lowest five recruitment variables, with an average importance level score of 1.96 and 2.00, respectively. Just about one-third of the respondents (33 percent and 36 percent, respectively) rated these variables 'Somewhat to Very Important.'

Overview Recruitment Attractors – Physician Survey. Among the attractors rated in the survey by the physicians, those in professional and/or clinical and family recruitment categories were ranked higher than variables related to the recruitment process and economic categories. The recruitment attractors with values in the mid-range by average score tended to have more respondents indicating higher importance rather than lower importance. For example, two variables frequently cited in the literature were in this middle range. "Projected earnings and/or compensation" had an average level of importance of 2.83, with 73 percent of the respondents indicating that this attractor was 'Somewhat to Very Important.' The family category recruitment attractor, "Spousal opportunities such as employment..." was rated lower in the mid-range (2.44 on average) with just over one-half of respondents (54 percent) indicating that this variable was 'Somewhat to Very Important.'

Open-ended Recruitment Questions – Physician Survey. Physicians responding to the rural physician survey mailing answered 21 close-ended questions on recruitment attractors identified in the literature on and/or revealed by physician focus group participants. However, a blend of variables is likely to influence a physician's decision to locate in a rural area to practice medicine. In an effort to identify the attractor that most influenced rural Michigan physicians' decisions to practice in a rural community from their perspective, the physician survey started with the open-ended question, "What was the *single* most important variable in your decision to come to the community in which you now practice?"

Almost all of the physicians (490, or 97 percent) who completed and returned the survey wrote an answer to this open-ended question. Answers ranged from one word to several lines. Many offered a response that included a combination of variables. The responses offer a glimpse of the perceived motivation behind the decision that a physician makes to practice in a rural community. The project team spent much time carefully categorizing these open-ended responses for this research project. A few additional categories of responses were identified in the physicians' remarks, and a series of subcategories were developed that helped further define the broad categories and improved classification consistency.

The single most important attractor – Physician Survey. About 28 percent of 490 responding physicians identified as the most important variable in their decision to come to their current rural community cited an attractor that fell into

the socio-cultural and community category. These physicians were drawn to the area by community attributes such as the geographical location of the community; the community's proximity to outdoor recreational opportunities; the natural beauty, rural setting, small community size and four-seasons climate. Other community attributes that were noted included the lifestyle, friendly people, quality of life, and the safe living condition in their small town. Some examples of their responses follow below.

"Lifestyle outside work – favorite recreation out my door"
"Small community with little crime and abundant recreational opportunities"
"Desire to go rural in northern Michigan"
"Friendly community, beautiful setting"
"The rural setting – Lake Michigan"

Twenty percent (N = 97) of the physicians who wrote a response about the main reason that they decided to come to their current community provided family category answers. More than half of the responses that fell in this category were from physicians who made their decision to come to the community because of the proximity to family and/or friends, the fact that it was their hometown, or because they were born and raised in the community. Other responding physicians who had comments that fell in this category noted that this was their spouse's hometown, or the place that they wanted to raise their family, attend church, and have their children attend school. Below are a few examples of their responses.

"Closeness to family"
"My extended family lives here"
"It is my lifelong home, and the home of my wife's family"

"I grew up in rural Michigan"

"I grew up in this community and wanted to return to a rural setting. Family was here"

Almost as many physicians (N = 88, or 18 percent) indicated that a professional and/or clinical category variable was the single most important attractor in their decision to come to their current community. To most of these physicians, the practice opportunity was the driving variable in their decision. Comments about the reception that they received by local physicians, a positive impression about the quality of the medical community and colleagues in the area, and the availability, accessibility and/or quality of a local community hospital. For some, the scope of medical practice in a rural area was a motivation to come to their community. Some response examples are:

"Good opportunity for my specialty practice"

"Quality of care provided by medical community"

"I thought I would fit in with the group I was joining"

"It appeared to offer the diversity & practice scope that I was interested in"

"Provided the opportunity to practice wilderness medicine"

The other attractor categories had relatively fewer responses. As an example, only about 6 percent of physicians cited a purely economic reason for coming to their current community. None of the physicians mentioned strictly recruitment process-oriented variables as their main reason to come to their community. However, a few additional new categories emerged. For instance, about 8 percent of physicians who responded to the question indicated that the most important variable in their decision to come to the community was to fulfill an *obligation*, such as a loan repayment program, their J-1 Visa Waiver, or

another public or private contractual obligation. About 5 percent of responding physicians came to their current community to fill *a local need* for a physician and to provide access to care that was lacking.

Altogether, about one-half (48 percent) of the responses to the open-ended question asking the single most important reason a physician chose to practice in a particular community appear to be related to its location and other attributes of the community. These qualitative findings appear to reaffirm the quantitative findings as three of the top five attractors rated quantitatively in the physician survey measured similar attributes (see Table 4.2.2). A comprehensive list of the physicians' responses to the open-ended question regarding their choice of location is available upon request.

Attitudinal Retention Motivators – Physician Survey

Once a physician is recruited to a rural community many things can happen that affect that physician's willingness to stay in the community beyond his or her initial obligation. A community can experience severe strain as a result of the loss of the local doctor, hospital, or clinic. In addition, a constantly changing physician workforce can disrupt the continuity of care in a community. As such, physician recruitment efforts are only one side of the coin; retention efforts require attention, as well. This section of the physician survey attempts to determine what motivates a physician to remain in the community into which he or she was recruited.

In contrast to the wide range in responses from the rural physician survey section related to the relative importance of *recruitment* attractors, the section on

retention motivators yielded a more concentrated range of relative importance (Table 4.2.3). The survey asked physicians to rate 16 retention motivators in terms of importance in their decision to remain in the community in which they now practice. Almost 94 percent of the retention motivators were rated above 2.00, which is the mid-range of the scoring scale. Twelve of the 16 retention variables had an average score that fell in a range from 3.01 to 3.63, meaning that 75 percent of the motivators were rated in the upper 50 percentile of the scale.

Table 4.2.3 Rural Physician Opinion on Retention Variables

"How important were each of the following to your decision to remain in the community?"

Variable	Attractor Category[1]	Mean Score	Somewhat and Very Important*	N[2] Respondents
Professional satisfaction with current practice	P	3.63	96%	488
Quality of local hospital facilities	P	3.40	92%	491
Quality of hospital medical staff	P	3.34	90%	487
Compatibility/rapport with medical community peers	P	3.33	87%	489
Quality of children's lifestyle such as safety and quality public schools	F	3.33	82%	482
Time off for personal pursuits	F	3.29	86%	489
Quality of nursing and other non-physician personnel	P	3.24	87%	491
Access to local specialists for consultation and/or referral	P	3.14	82%	485
Spousal *satisfaction* with opportunities, such as employment, career, education, etc	F	3.11	77%	483
Actual earnings/compensation	E	3.07	83%	491
Continued support of hospital administration	P	3.05	75%	489
Presence of sufficient medical personnel in the community to provide professional, intellectual and emotional support	P	3.01	77%	486
Availability of call coverage relief	P	2.97	74%	487

Table 4.2.3 (Continued)

Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	P	2.60	60%	482
Community acceptance of racial and or ethnic diversity	F	2.36	49%	485
Additional educational loan repayment assistance	E	1.40	12%	484

Note: *Percentages are valid percent – missing cases excluded. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Family. [2]505 physicians in total responded.

Top Five Retention Motivators – Physician Survey. Four of the top five highest ranked retention motivators were in the professional and/or clinical category. "Professional satisfaction with current practice" had an average score of 3.63 and 96 percent of physicians responding indicated that this variable was 'Somewhat to Very important.' The "Quality of local hospital facilities" (average score 3.40), and the "Quality of hospital medical staff" (average score 3.34) were the next two highest-ranking motivators, with 92 percent and 90 percent of the respondents respectively rating these variables 'Somewhat to Very important.'

The "Quality of children's lifestyle..." a family category variable, was as highly rated as a retention motivator in importance to responding physicians as it was as a recruitment attractor. Eighty-two (82) percent of responding physicians indicated that this variable was 'Somewhat to Very Important.' Tied with this variable in terms of average level of importance (3.33) was a professional and/or clinical variable, "Compatibility/rapport with medical community peers." Eighty seven (87) percent of respondents indicated that this variable was 'Somewhat to Very Important.' Compatibility with medical community peers was a variable that was emphasized by physicians who participated in the study physician focus groups as a very positive force in physician retention.

Lowest Five Retention Motivators – Physician Survey. The lowest ranked motivator in terms of retention was "Additional educational loan repayment assistance," an economic category variable, with an average importance level score of 1.40. Only 12 percent of responding physicians indicated that additional loan repayment assistance was 'Somewhat to Very Important.' "Community acceptance of racial and/or ethnic diversity," included in the family category for purposes of this study, had an average score of 2.36, and was second to lowest motivator compared to the other variables. Less than 50 percent of the respondents rated this variable 'Somewhat to Very Important.' The "Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral," had an average score of 2.60, with 60 percent of the physicians rating this motivator 'Somewhat to Very Important.' The "Availability of call coverage relief" motivator, while in the lower quartile of the overall ranking based on the average ratings by respondents, had a fairly high average level of importance of 2.97. Seventy-four (74) percent of the responding physicians considered call coverage availability relief 'Somewhat to Very Important.'

Open-ended Retention Question – Physician Survey. The 16 retention motivators, which responding physicians rated in the closed-end questions appeared to be relatively important, but what retention variables are most important in the eyes of rural physicians? To try and identify the motivator that most influenced the respondents' decisions to remain in practice in a rural community, the first question of the survey was the open-ended question, "What

was the *single* most important variable in your decision to remain in the community in which you now practice?"

As with the open-ended question related to recruitment, nearly all of the physicians (459, or 91 percent) who completed and returned the survey wrote an answer to this open-ended retention question. Again, the research team coded these answers into the same attractor and motivator categories that were used to organize the quantitative recruitment and retention variables.

Six physicians indicated that they might not or would not remain in the community in which they currently practiced — two due to a lack of support or follow-through from the local hospital, three with no further explanation, and one because of earning package conflicts. A handful of physicians suggested that "inertia" or a lack of motivation was the main reason that they stay in their rural practice.

Single Most Important Retention Motivator – Physician Survey. While the majority of rural physicians remarked that the most important attractor in their decision to come to a rural community (*recruitment*) was the area and community attributes or location, the single most important motivator in the respondents' decisions to remain in their current rural community *(retention)* tended to relate to professional and clinical considerations.

Slightly more than 24 percent of responding physicians indicated that the most important reason that they stayed in the rural community in which they now practice was due to their satisfaction with their professional and/or clinical arrangement and practice attributes. "Professional satisfaction" was the

characterization used to describe many of the responses to this question. Good working relationships, a high regard for colleagues and/or the quality of health care resources in the community, satisfaction in the practice growth or success, dedication and high regard for patients, and satisfaction with the practice of medicine in a rural community were characterized in their comments.

"Good working relationship with medical colleagues"
"I love the patients, my partners and staff"
"Satisfaction with my growing practice and the medical community"
"Quality of the medical community and facilities"
"Ability to have my decisions/actions truly matter"

However, socio-cultural and community attributes were nearly as important as the professional and/or clinical variables in terms of the single most important retention motivator to responding physicians. About 24 percent of physicians cited community location or characteristics related to the lifestyle and quality of life, safety and security, or beauty and recreational opportunities as the most important reason that they remained in their rural community.

"Beautiful rural area"
"I like living here – I cannot imagine practicing anywhere else"
"Lifestyle" "Quality of life"
"Feeling part of and important to the community"
"I loved the people and they were great to me"

In a close third, personal and family reasons accounted for about 21 percent of the responses that physicians wrote in response to the question, "What was the single most important variable in your decision to remain in the community in which you now practice?" Proximity to family and friends, family obligations or desires, spousal satisfaction with living arrangements, and the

establishment of 'roots' or ties to the community were listed in this category of responses.

"It has become our home"

"Family ties (now I'm married, kids, nearby grandparents)"

"Personal ties with the people of this community"

"Roots" "Good family fit"

"Church, friends, schools"

Some of the other reasons that physicians cited as important in their decision to stay in their current rural community were motivators that fell into more than one category of responses. For instance about 5 percent of the responses had both a professional and/or clinical and a socio-cultural/community component.

"Built up a good practice; community is a good one"

"Patients are pleasant, community is supportive, hospital (employer) is supportive"

"Busy practice, nice community. Excellent recreation opportunities"

"The patients, the community, the people that work with me at my office/hospital"

"Acceptance and support of medical staff, hospital administration and local community leaders"

Some responses related to economic considerations (about 4 percent), such as satisfaction with compensation/earning potential. Other physicians acknowledged that they fill a need in their community, or had a contractual obligation or J-1 Visa Waiver obligation to fill. A few physicians wrote responses that contained elements of all of the motivator categories.

These qualitative findings on retention motivators appear to corroborate findings on the quantitatively rated variables in the physician survey. About 48

percent of the qualitative answers given to the question, "What was the *single* most important variable in your decision to remain in the community in which you now practice?" were related to professional, family and geographic area attributes. Similarly, the top five quantitatively rated motivators measured these same attributes. A comprehensive list of the physician open-ended answers regarding retention is available upon request.

Open-ended Comments Question – Physician Survey. Following the recruitment/retention-related questions on survey was an open-ended question, "Do you have any additional comments about variables that affect (positively or negatively) physician recruitment and retention in rural communities?" Responding physicians did not refrain from expressing opinions about additional variables that affect physician recruitment and retention in rural communities. A total of 198 comments were received. Many of the comments that were received provided advice or raised issues about the numerous facets of rural health care delivery that were not reflected in the study categories. Most of the comments expressed multiple variables or issues.

Physician Comments and Advice

Economic variables. About 20 percent of the final comments were related to economic issues. The two most frequently mentioned economic issues were salary and reimbursement. Both, according to some of responding physicians, are too low in rural areas. A smaller number of comments indicated a positive feeling about rural practice economics.

At least seven of the physicians stated a belief that they make less than their urban or suburban counterparts. A few felt that a "lucrative" or "reasonable" salary is imperative for physician retention. While not all of these comments had a negative tone, some were very negative.

> *"You must recognize that you will not be compensated as [you] were in a big city. Patients generally are nicer to physicians in a small town."*
>
> *"[Actual earnings/compensation] is somewhat important only to live comfortable. I could make twice what I make in a large city."*
>
> *"It's not the principle, it's the money. Rural physicians make less for the same work effort. Even equal pay with metro areas would change ease of recruitment."*
>
> *"Negatives – Large pay discrepancies between rural and down state doctors."*

Strong and mostly negative comments were made about reimbursement and the impact of low reimbursement on physicians' satisfaction with rural practice. Seventeen answers described how low Medicare and/or Medicaid reimbursement, low Blue Cross Blue Shield of Michigan and other private payer reimbursement, and the high (and increasing) proportion of Medicaid patient load that some rural physicians are experiencing negatively impact rural physicians.

> *"Due to current state and federal payment levels, as well as private insurance, I would not start a practice in Michigan if I had to start now."*
>
> *"Medicaid reimbursement is making rural practice untenable."*
>
> *"Poor insurance mix makes reimbursement for services lower than higher population centers."*
>
> *"Rural physicians are reimbursed less by Medicare for similar procedures than our urban peers due to 'lesser costs,' however in many cases we have higher costs due to lower volume and equal or higher cost for skilled labor. I would like to see these inequities corrected."*
>
> *"...Smaller hospitals can't provide adequate services due to poor reimbursement from Medicaid, Medicare and BCBS, we can't use the same diagnostic means we were trained with during our residencies."*

Process variables. Responding physicians provided some feedback on recruitment process issues, such as contracts, the use of "head-hunter" firms, and community member involvement with the recruitment and "settle-in" process.

> *"Local banker involvement essential for ease of home purchase or office set up."*
>
> *"...Help with housing – relocation expenses, old home sale..."*

But, the most frequently mentioned recruitment-related process theme the physicians expressed was the importance of honesty and accurate portrayal during the recruitment process of the practice opportunity and environment.

> *"The most important is making sure physician expectations, opportunities, and lifestyle are what we are led to believe they will be; i.e., deliver what is promised, meet expectations."*
>
> *"Honesty during recruitment about call, earnings and life"*
>
> *"I think some facilities tend to offer prospective recruits more money than that recruit will actually generate in an effort to get them. The relationship sours as time goes by and losses continue often both parties have unrealistic expectations."*

Professional and/or clinical variables. One out of every four comments cited at least one aspect of the professional/clinical rural practice of medicine. Most comments were positive, but some reflected negative experiences and dissatisfaction. A wide variety of elements are categorized as professional and clinical variables for the purpose of this study. Workload issues, call coverage, access to specialists, practice vitality and characteristics, local hospital support and financial viability, and relationships with professional peers were all categorized as professional/clinical elements. In terms of workload, comments reflected a wide range of opinions. Some physicians had huge workloads and/or

no call coverage, and some appreciated the ability to work "semi-retired" or part-time.

> *"I'm on call too much! (every other night, weekend, holiday, etc.) It is tempting to leave for a lighter call schedule."*
>
> *"Reasonable workload is key!"*
>
> *"New physicians coming in community are worked very hard because they provide relief for existing physicians (there is a chronic shortage of physicians in this area). They tend not to stay because of the huge workload..."*
>
> *"An over supply of physicians will negatively affect retention just as an under supply tends to – balance is important."*
>
> *"Good opportunities exist for physicians who want to work part time."*

Personal and family variables. At least 10 percent of the general comments received from responding physicians reflected on personal and family variables that influence recruitment and retention. Many of the remarks concerned the physicians' perception of how well (or poorly) their family and/or spouse fit in the community.

> *"Keeping the family happy is probably the most important."*
>
> *"My spouse feels isolated here, so I am unsure how long we will remain."*
>
> *"Both my wife and I grew up in rural communities and this is very important to our level of satisfaction."*

Socio-cultural and Community variables. About 18 percent of physicians' final comments were related to socio-cultural and community aspects of rural life. In these comments, issues related to rural culture or environment emerged in both a positive and negative light, but the message that a physician needs to desire a rural lifestyle was prevalent.

> *"The trick is finding doctors (and their families) that prefer a rural lifestyle."*

"Essentially all my career has been spent in rural setting – I believe the primary draw must be that a person wants to LIVE in the community/region."

"I think that recruiting efforts under-emphasize the quality of community living and surrounding beauty in the Upper Peninsula as well as the diverse opportunities (or diversity in opportunity) available."

"There is no point to trying to recruit professionals who have no experience with rural living unless they have decided they need a big change and can tell you why they think city life is no longer for them."

"If a person likes the rural life – one will stay. If a person is not comfortable in rural life – that person will leave."

Other comments and advice offered by physicians. Among the other comments and advice that responding physicians wrote in their answers was the issue of medical training and continuing medical education. These could also be seen as professional and clinical variables.

"More familiarity with rural practice during training would be beneficial since people tend to 'go with what they know' and virtually all training programs are in larger communities."

"...Conferences very costly, airport's 2 hours away... Or provide more rural health opportunities for CME! When you're just out of residency, society dues, CME dues, etc. become difficult with the burden of loan debt."

"Tough issue, we're a dying breed. Most residents have no exposure to a rural or smaller practice setting. Only see tertiary care center with large practices and lots of specialists. This puts most of them off when looking at smaller practices and areas."

"Unrealistic views of residency teaching staff and mentors, as well as residency colleagues, toward both rural and metropolitan area practices likely negatively affect physician recruitment to rural areas."

Revealing comments about how physician and hospital relationships affect recruitment and retention were also provided.

"Decrease conflict in recruiting between hospital administration vs. staff."

"Hospital administration support of the staff in the hospital especially those that are not employed by the hospital. Hardest problem is that there is

conflict between private doctors (not employed by hospital) and the hospital administrator who employs other doctors."

"I feel the ability to adjust to rural community practice depends on hospital privileges and relations with hospital staff and administration. If this is satisfactory most other problems can be solved..."

'In our community, hospital administration is not physician friendly, and leads to a lot of physician turnover."

Lastly, a number of the comments that were received from responding physicians were general in nature, contained advice to rural providers and other physicians, or described opinions about the changing environment of rural health care and/or physicians. Among the general comments, a few physicians questioned their community's designation as rural. Traverse City was most frequently characterized as more urban than rural by responding physicians in their comments. Reflections and advice were shared about aspects of rural practice and living.

"Lack of anonymity is a real problem very hard to maintain privacy."

"Privacy in small community can be difficult"

"Would not suggest living and working in the same rural community."

"There is a need to prevent isolation – I don't feel it where I am but I see effects on surrounding providers."

Yet other comments described opinions about various forces in the rural health care environment and about other physicians.

"Community members want physicians that will stay! They are tired of getting a new doctor every 1 – 2 years and often go out of community for care due to turnover."

"Influx of J-1 and H-1 Visa physicians (who come and go) has caused some fragmentation of care and confusion for both patients and more stable practices—overall destabilizing effect."

"We don't need providers who want to become distant millionaires. Don't waste resources on J-1 Visa people who have no commitment to community."

Young people today have little work ethic. They want high pay, little call, new surroundings, little work!"

"Currently I see the encroachment of the rural communities by city hospitals a threat to the retention of physicians in the rural communities because the hospital will move the physician at their will if the dollars aren't coming to meet their expectation or for what ever other reasons they have..."

The responses from the participating physicians in the "any other comments" question seem to support the assertion that open-ended questions in a survey or interview can sometimes "stimulate free thought, solicit suggestions, probe people's memories, and clarify positions. Further, they give respondents a chance to vent frustrations and state strong opinions (Dillman, 1978)." Policy implications of these open-ended responses are addressed in Chapter 6, "Summary, Conclusions, and Recommendations." The results of face-to-face interviews with rural Michigan recruiters are next examined in the following section of this chapter.

3. Recruiter Interview Results

A major component of this study was face-to-face interviews with rural recruiters selected by a random sample of Michigan's 59 rural hospitals. The purpose of these interviews was to obtain the recruiters' perspectives on the relative importance of selected recruitment and retention variables. The interview instrument was designed to be administered face-to-face to 22 rural Michigan physician recruiters. The recruiter interview instrument used to collect data for this study is described in detail in Chapter 3, "Methodology." Due to family emergencies and/or unavoidable conflicts of schedule, three of the 22 interviews were conducted by telephone using the same interview instrument.

The data collected in these interviews do not suggest a "one size fits all" recruitment style. Many of the recruitment approaches are driven by data and group consensus. Some are guided by a physician workforce plan while others are guided by perceived needs. Relationship building with the prospective recruit was seen as an important component by several of the recruiters. Most approaches were informal, "loose by plan," as one recruiter noted. Just seven (32 percent) of the 22 recruiters followed a formalized, written recruitment plan, which sometimes included a step-by-step flow chart. Fifty percent of the recruiters used a formalized, written screening plan. A number of recruiters used professional consultants and recruitment firms to do their screening.

The level of community involvement in the recruitment process differed across the hospitals. Three hospitals did not involve community members at all. Seventeen recruiters stated that they involved community members but in widely varying degrees. The data on community involvement were missing for two cases. Most often community members were involved in the site visit only rather than in the earlier stages of the recruitment process such as screening the candidates. The candidate and family's involvement with community members consisted mostly of real estate tours, community tours and meeting with school officials, bankers and other prominent community leaders. I was told of only one instance of physician recruitment in which community members were formally involved in the process. This recruitment was for a very small, close-knit farming community, which wanted to make sure that the physician was a good community fit as well as a clinical fit. They wanted someone who would be

involved in civic clubs, little league baseball games, and other community activities.

Almost all of the recruiters stated that they considered the recruitment of a physician successful only if the physician stayed in the community. Yet, only four had developed a formalized, written retention plan. Most of these plans were recent developments and some of the recruiters were having a difficult time implementing them. However, a formal plan for physician retention is an area that more and more recruiters are investigating. As one hospital CEO stated, "That's an area my assistant and I talk quite a bit about. We do things on the retention side, but I think we could do much more. We'd like to get the joint board and medical staff recruitment committee to also focus on retention issues." A more detailed discussion about physician retention follows this section on recruitment attractors.

While the recruiter sample was not a stratified random sample, rural counties from Southern Michigan, Mid-Michigan, the Thumb Area, Northern Michigan and the Upper Peninsula were represented. The sample is probably not completely representative of the 59 rural Michigan hospitals, but there is no reason to believe that the respondents representing these 27 hospitals are atypical of their peers throughout the state.

Attitudinal Recruitment Questions – Recruiter Interviews.

The recruiter participants were asked a series of attitudinal questions regarding the relative importance of various aspects of physician recruitment and retention in rural Michigan. There were 40 closed-ended questions and one

open-ended question on recruitment. As with the physician participants, four of the close-ended questions on recruitment asked the recruiters about the relative importance of government programs implemented to attract physicians into rural areas of the United States (these programs are described in Chapter 2). For illustration, the results of these four questions from the recruiter interviews are shown below in Table 4.3.1

Table 4.3.1 Rural Recruiter Opinion on Government Programs

"How important are the following federal and state programs to recruiting physicians to your community?"

Programs	Mean Score	Somewhat and Very Important*	N Respondents
J-1 Visa Waiver	2.86	67%	21
State Loan Repayment	2.82	70%	17
NHSC Loan Repayment	2.42	48%	19
NHSC Scholarship	1.81	25%	16

*Note: Percentages are valid percent – missing cases not included. 22 recruiters total were interviewed.

Government Programs – Recruiter Interviews. As Table 4.3.1 shows, the highest ranked average level of importance as rated by the recruiters was 2.86 for the J-1 Visa Waiver Program, with 67 percent of the respondents rating this attractor "Somewhat to Very Important." The next highest ranked government program was the State Loan Repayment Program with an average score of 2.82, followed by the National Health Service Corps Loan Repayment program. The lowest ranked government program was the National Health Service Corps Scholarship program. Overall, the recruiters tended to rank these government programs much higher than did the physicians (see Table 4.2.1).

Table 4.3.2 Rural Recruiter Opinion on Recruitment Variables

"How important are each of the following to recruiting physicians to your community?"

Variable	Attractor Category	Mean Score	Very Important*	N Respondents
Having one person leading the recruitment efforts & serving as the central contact point	R	4.00	100%	21
Quality of children's lifestyle such as safety and good public schools	F	3.95	96%	22
Giving a realistic/honest picture of the practice opportunity	R	3.95	95%	21
Lifestyle/safety of the community	S	3.91	91%	22
Having recruits meet the medical staff	R	3.90	91%	21
Availability of call coverage relief	P	3.86	86%	22
Giving a realistic/honest picture of the community	R	3.86	86%	21
Quality of hospital facilities	P	3.82	82%	22
Quality of existing medical staff	P	3.68	73%	22
Adequate leisure/personal time	F	3.68	68%	22
Projected earnings/compensation	E	3.67	71%	21
Presence of a network or agreement for specialist consultation	P	3.64	64%	22
Presence of a network or agreement for referral and/or transfer	P	3.59	59%	22
Recreational opportunities	S	3.55	59%	22
Projected demand for the physician's specialty	P	3.55	64%	22
Having the medical staff recruit friends/colleagues	R	3.48	57%	21
Availability/quality of housing	E	3.43	43%	21
Having community members involved in the recruitment	R	3.33	43%	21

Note: *Percentages are valid percent – missing cases not included. 22 recruiters in total were interviewed. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Community.

Table 4.3.2 (Continued) Rural Recruiter Opinion on Recruitment Variables
"How important are each of the following to recruiting physicians to your community?"

Variable	Attractor Category	Mean Score	Very Important*	N Respondents
Networking with other rural recruiters	R	3.33	48%	21
Community acceptance of racial and ethnic diversity	S	3.32	42%	19
Having the lead person able to unilaterally "close the deal"	R	3.29	52%	21
A high quality, comprehensive community promotion package	R	3.27	50%	22
Spousal opportunities such as employment, career advancement, etc	F	3.27	41%	22
Quality of nursing staff and other non- physician support staff	P	3.27	32%	22
Proximity to an urban area	S	3.27	41%	22
Salaried employment	E	3.24	38%	21
Access to local specialists for consultation	P	3.23	41%	22
Using the Internet/Web sites as recruitment tools	R	3.20	35%	20
Religious support structure	F	3.18	41%	22
Community economy	E	3.14	33%	21
Access to local specialists for referral	P	3.14	36%	22
Proximity to cultural events	S	3.09	23%	22
Proximity to friends/family	S	3.09	18%	22
Having recruits meet community leaders	R	2.90	24%	21
Advertising in medical and/or association journals	R	2.52	19%	21
Using a professional recruitment firm	R	2.29	10%	21

*Note: Percentages are valid percent – missing cases not included. 22 recruiters in total were interviewed. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Community.

Recruitment Attractors – Recruiter Interviews. The average relative importance scores of the recruitment attractors rated by the recruiters in the remaining 36 closed-ended questions are shown in Table 4.3.2 above. The

variables are listed in descending rank order of the average score of their relative level of importance as rated by the recruiters interviewed. A brief discussion of the top five and the bottom five ranked recruitment attractors follows.

Top Five Study Recruitment Attractors – Recruiter Interviews. The recruitment attractor ranked number one by the recruiters was in the process category. The recruiter was asked, "How important do you feel it is to have one person lead the recruitment effort and serve as the central contact point?" One hundred (100) percent of the recruiters ranked this variable "Very important," giving it a mean score of 4.0. To put it another way, the recruiters were in total agreement that a single contact person is vital to the recruitment process.

The next two highest ranked variables were given a relative importance of 3.95 by the recruiters. The first of these, in the personal and family attractor category was, "How important do you feel is the quality of children's lifestyles in the community such as safety and good schools?" Ninety-six (96) percent of the recruiters interviewed stated that this was "Very important." The second number two-ranked attractor, in the process category was, "How important is it to communicate to the physician an honest and realistic picture of the practice opportunity." Ninety-five (95) percent of the recruiters responded that this was "Very important."

The fourth highest ranked attractor, in the socio-cultural and community category was, "How important do you feel is the lifestyle and safety of the community?" Ninety-one (91) percent of the recruiters believed that this was 'Very important, giving this variable an average score of 3.91.

The attractor ranked fifth from the top was in the process category and asked, "How important is it that the recruit meet the medical staff?" Eighty-six (86) percent of the recruiters said that this was "Very important." The mean score for this variable was 3.90.

In summary, of the top five ranked attractors rated by these rural physician recruiters, three were related to the process, while one was a personal and family variable and one was a socio-cultural and community variable. That is to say, three-fifths of the top recruitment variables cited by the recruiters as having a high level of importance were process-related.

Lowest Five Recruitment Attractors – Recruiter Interviews. The lowest ranked attractor was in the process category and asked, "How important is it to use a professional recruitment firm?" Only 10 percent of the recruiters ranked this variable "Very important," giving it an average score of 2.29.

The second lowest ranked attractor was also in the process category. The recruiters were asked to rate the relative importance of advertising physician practice opportunities in medical trade journals and magazines. Just 19 percent rated this variable "Very important," giving it a mean score of 2.52.

The recruitment attractor ranked third lowest was yet another in the process category and asked, "How important is it to have recruits meet community members?" While the 2.90 mean score for this variable was almost in the upper 50 percentile of importance, only 24 percent of the recruiters rated it "Very important".

The fourth lowest ranked recruitment attractor was in the personal and family category asking, "How important is the proximity to family and friends?" This variable had an average relative importance scale of 3.09 and was rated "Very important" by 18 percent of the respondents. Although it scores fairly high on the scale, many other attractors scored even higher.

The attractor ranked fifth lowest was in the socio-cultural and community category and asked, "How important is the proximity of the community to cultural events?" This variable, as the two preceding had a fairly high mean score at 3.09, but only 23 percent of the recruiters rated it "Very important."

Interestingly, as with the top-five ranked attractors, the five lowest ranked variables as rated by the recruiters were dominated by those in the process category. According to the recruiters, three of the five least important recruitment variables were process-related. Of the remaining two, one was a personal/family variable, and one was socio-cultural and community variable.

Physician Recruitment – Recruiter Insight. As in the physician survey, the closed-ended questions asking recruiters to rate the relative importance of various recruitment attractors were based on variables identified either in the literature review or in the physician and recruiter focus group sessions. However, there is most likely a complex interplay of many variables that affect a physician's decision to locate to a certain area. In an effort to identify attractors that may not have surfaced in either the literature or the focus groups, I asked the recruiters in their interviews the open-ended question, "In your view, what is

the single most important variable in recruiting a physicians into your community?"

Five answers were process-oriented, four had to do with the "personal and family" category, three were linked to the "professional and clinical" category, and two were related to "community." The remaining five answers involved a combination of the attractor categories.

The process-related variables revolved around detail and thoroughness, honest communication, relationship building, teamwork and meeting expectations. Following are some condensed comments on the "single most important recruitment variable" made by the recruiters that were categorized as process-related attractors.

> *"I guess maybe thoroughness, follow-through on the process."*
>
> *"Honesty. I have found that that works best for me."*
>
> *"Regular personal contact between the recruiter and the physician."*
>
> *"To have everyone on the same page. Administration, medical staff, community and board members are a unified team."*
>
> *"I would think we meeting their expectations of us."*

The personal and family related attractors dealt with issues of personality matches, spouse's needs, and the family and spouse's desire to live there. Below are some of the recruiters' abbreviated statements on the "single most important recruitment variable," which were categorized as personal and family-related attractors.

> *"I think just personality. Getting a competent physician who has a good personality."*
>
> *"The physician and family must want – and be content in – a rural community."*
>
> *"Their spouse. If the spouse wants to live in the community."*

The professional and clinical "single most important recruitment variables" identified by the recruiters focused on administration, existing medical staff and professional satisfaction. The following paraphrases are examples of the statements that were coded professional/clinical.

"I think that there needs to be a trust in administrative leadership."
"A fit with the existing medical staff."
"For the physician to know that he is going to have a successful practice."

The two "single most important recruitment variables" shared by the recruiters and classified as community-related by the research team are illustrated in the following paraphrases.

"I think the area itself."
"A desire to be in a rural area with a lifestyle of outdoor activities."

The remaining five recruiters gave a "single most important recruitment variable" that the research team either saw as some combination of the attractor categories, or one that did not neatly fit into any of the categories. One appeared to be both professional/clinical and socio-cultural/community – "*a need for the physician's service; adequate facilities and equipment; support of medical staff; and, the community itself.*" Another seemed to be both professional/clinical and personal/family – "*the practice opportunity and meeting the needs of the spouse and family.*" A third was socio-cultural and community and personal/family – "*the quality of life issue and a good place to raise children.*" The fourth seemed to suggest that all study variables were important – "*a complete match with the community.*" And, the last was not easily coded into any of the attractor

categories the team had identified – "*rural hospitals want an all-American physician, American-trained and no accent.*"

Overall, taking into account the combination variables, process-related and professional and clinical attractors were equal with mentions of five each, but personal and family variables had the most mentions at six. Attractors in the socio-cultural and community category had a total of four mentions. Interestingly, there were no mentions of economic-related variables. These qualitative data appear to reflect the findings in the quantitative data in that three of the top five attractors quantitatively rated by the respondents were in the process category (see Table 4.3.2).

Open-ended Recruitment Process Questions – Recruiter Interviews. The recruiters were also asked series of open-ended questions regarding the overall recruitment process. This section of the interview was probing for answers to questions about how a physician need was recognized; how the process to recruit to fill this need was implemented; what tools were used in the process; what the level of community involvement was; if they were involved, who the community members were; what kinds of promotional materials, if any, were used; what community attributes the physician most often asked about; what was being done to try and retain physicians; how much physician turnover had they experienced; and, what did they do when they found out a physician was leaving.

In response to the question, "In your own words, what would you say is a successful recruiting program?" fourteen related to "filling the need," eight mentioned "retention," four responses were "process-oriented," three were

"happiness-related," three had to do with "fit or match," and one was "family-oriented." At 42 percent, "filling the need" was the most frequent response with "retention" the second most frequently mentioned at 24 percent.

> *Filling the need: "I think that it would have to do with filling your manpower needs in a cost-effective manner and within the time constraints that are given."*
>
> *Retention: "I would say that if a physician comes and stays three years that we've successfully recruited!"*
>
> *Process-oriented: "[A program] I think that is detail-oriented...you need to do your homework up front and make sure you know as much as you can about the doctor and his family before he comes [for a site visit]...the practice opportunity needs to be defined as well."*
>
> *Happiness: "A happy physician and spouse in the community!"*
>
> *Fit or match: "One where you find a candidate who is the right fit for not only the practice, but the hospital and the community."*
>
> *Family: "One that is focused on the physician and the family."*

The first process-related open-ended question we asked was "Do you have a standard plan or model that you use to determine you community's physician manpower needs?" Eleven recruiters answered, "Yes" and nine answered, "No." Two cases were missing. In the eleven standardized physician workforce plans shared with us, we identified seven that were driven by a "strategic plan," six by "data," one by a "committee," and one by the "physician community." Totals add up to more than eleven because some plans included more than one of these components. Almost 47 percent of the responses included a hospital strategic plan as the basis for the workforce plan. Another 40 percent mention data as the basis.

> *Strategic Plan: "I'm given a copy of my part of the strategic plan that tells me what the board, administration and the medical executive committee would like to recruit for the next year."*

Data: "We look at the national data from four different resources and average it for each specialty to determine our physician needs."

Committee: "The recruitment committee makes a recommendation to the hospital board based on population needs."

Physician Community: "We did a strategic plan years ago but found out that unless it was the physicians' plan, it didn't mean a hoot."

In the nine non-formalized physician workforce plans, the analysis of the data revealed that five were driven by the "physician community," four by "data," and one by a "committee." Totals add up to more than nine because one plan included more than one of these elements.

Physician Community: "The physicians have determined that what they really need is four to five physicians in the community."

Data: "What we do is look at the demographics, listen to what the people say and look at what are considered shortage areas in our area."

Committee: "We have a committee that looks at MGMA and AMA statistics and a community group that conducted a needs assessment."

The recruiters were also asked, "Do you have a standard plan or strategy that you use to recruit physicians?" Six recruiters stated they had a formalized recruitment plan, which they used as a guide for all physician recruitments. Fourteen replied that they did not have a formalized plan. Two cases were missing. Of the recruiters who responded to this question, 70 percent of them did not have or use a standard recruitment plan.

No formal plan: "It depends on the specialty and the practice type, if it's an employed physician, a group or a solo practice, with variations for each search. It's a plan that's loose by design."

Standardized plan: "I have a formalized plan that utilizes forms and checklists for each step of the recruitment process."

When the recruiters were asked, "Do you have a standard screening tool that you use when recruiting physicians?" ten (53 percent) replied, "No" and nine

(47 percent) answered, "Yes." Three cases were missing. Recruiters who did not have a formalized screening tool used the telephone to do their initial screening but did not follow a standard "checklist." Samples of formalized screening plans are available upon request.

Tilden & Tilden (1995) found that community involvement is a vital part of the recruitment process. The participating recruiters were asked, "Are members of the community involved in the recruitment process?" Eighty-five percent (17) replied, "Yes" while 3 stated that community members were not involved. Two cases were missing. Among the 17 affirmative answers, about half (8) appeared to have a moderate-level of community involvement, while the others indicated a low-level of community involvement. Much of the community member involvement took place during the site visit at which the candidate met with various citizens and/or were taken on community and/or reality tours.

The research team wanted to identify these community members and asked the recruiters who these community members were. The most frequently mentioned were the hospital board members, with eleven mentions. In addition, there were 9 references to school officials, 8 to realtors, 5 to bankers, 5 to business owners, 2 to physician spouses, and 2 to hospital auxiliary members.

Promotional materials utilized by the recruiters in this study in their recruitment processes varied by location. All but one recruiter stated that he or she sent promotional materials to the prospective candidate. Most of the materials were in the form of brochures and booklets, though some (6) included videos. The most frequently mentioned promotional brochure was on the

hospital (13). Next highest was one from chamber of commerce (12). Then came literature on the schools (9), real estate information (3), recreational activities (3), higher education facilities (3) and state of Michigan information (2). Examples of the contents of these promotional packages are available upon request.

This study also sought to determine what community attributes, in the recruiters' view, were most important to the physicians being recruited. The recruiters were asked, "What community attributes do recruits most frequently ask about?" In most cases, the recruiters named about three attributes. The most frequently mentioned attribute was schools (16). Thirteen of recruiters named this attribute first. Next highest were recreational activities at nine mentions. Then came safety (7), shopping (5), housing (4), community lifestyle (3), economy (2), churches (2), and hospital technology (1).

While "successfully" attracting a physician to a rural community is important in filling the health care needs of its population, recruitment is only one side of the coin. As the reader will note in the following sections, a substantial majority of the recruiters interviewed believed that recruitment was "successful" only if the physician remained in and became a part of the community.

Attitudinal Retention Questions – Recruiter Interviews

As with the recruitment attractor categories, rural physician retention motivator categories were developed based on the literature with input from the physician and recruiter focus group sessions and identified in the interview instrument. Additionally, the literature suggested that positively related

recruitment attractors could become negatively related *retention* motivators. Therefore, the retention side of this study design also included many of the previously identified recruitment variables to determine if they too influenced physician retention. The more salient questions were, as with the recruitment side of this study, what is the relative importance of these variables to rural Michigan physicians and recruiters and, what can we determine from our analysis of the data to enable rural physician retention? The same rating system and coding categories were used for the retention variables as for the recruitment variables. Many of the participants felt a need to vocally elaborate their answers and were not prevented from doing so. These elaborations were recorded and many were transcribed.

Retention Variables – Recruiter Interviews. The relative importance mean scores of the retention motivators that the recruiters were asked to rate on the closed-ended questions during the interviews are shown in Table 4.3.3 on the following page. The variables are listed in descending rank order of the average score of their relative level of importance as rated by the recruiters who were interviewed.

Table 4.3.3 Rural Recruiter Opinion on Retention Variables

"How important are each of the following to keeping physicians in your community?"

Variable	Attractor Category[1]	Mean Score	Very Important*	N[2] Respondents
Professional satisfaction	P	3.95	95%	21
Lifestyle/safety of the community	S	3.90	91%	21
Continuing support of the hospital administration	P	3.90	91%	21
Community acceptance and support of the physician	S	3.90	91%	21
Quality of children's lifestyles	F	3.86	86%	21
Spousal satisfaction with opportunities	F	3.86	91%	21
Adequate leisure/personal time	F	3.81	81%	21
Medical staff acceptance and support of the physician	P	3.76	76%	21
Quality of hospital facilities	P	3.71	71%	21
Quality of existing medical staff	P	3.67	67%	21
Actual earnings and/or compensation	E	3.67	67%	21
Availability of call coverage relief	P	3.67	71%	21
Community acceptance and/or support of spouse/family	S	3.67	67%	21
Presence of network and/or agreement for referral and/or transfer	P	3.62	67%	21
Presence of network and/or agreement for specialist consultation	P	3.62	67%	21
Recreational opportunities	S	3.43	57%	21
Availability/quality of housing	E	3.38	38%	21
Adequate marketing and/ or promotion of the physician	P	3.33	43%	21
Proximity to an urban area	S	3.24	38%	21
Quality of nursing staff and other non-physician support staff	P	3.24	29%	21
Proximity to friends/family	S	3.19	24%	21

Note: *Percentages are valid percent – missing cases not included. 22 recruiters in total were interviewed. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Community.

Table 4.3.3 (Continued) Rural Recruiter Opinion on Retention Variables

"How important are each of the following to keeping physicians in your community?"

Variable	Attractor Category[1]	Mean Score	Very Important*	N[2] Respondents
Community acceptance of racial/ethnic diversity	F	3.14	24%	21
Access to local specialists for referral	P	3.14	43%	21
Access to local specialists for consultation	P	3.14	43%	21
Community economic conditions	E	3.05	5%	21
Religious support structure	F	3.05	29%	21
Proximity to cultural events	S	3.00	14%	21
Higher education opportunities	S	3.00	24%	21
Additional educational loan assistance	E	2.70	35%	20

Note: *Percentages are valid percent – missing cases not included. 22 recruiters in total were interviewed. [1]E = Economic, R = Recruitment Process, P = Professional & Clinical, F = Family, S = Socio-Cultural/Community.

Top Five Retention Motivators – Recruiter Interviews. The physician retention motivator that these rural Michigan recruiters ranked the highest was in the professional and clinical category and asked, "How important is professional satisfaction in keeping a physician in your community?" Ninety-five (95) percent of the recruiters responded that this variable was "Very important," giving it an average score of 3.95.

The next three motivators were ranked equally in their relative importance for physician retention. The first of these, in the socio-cultural and community category, was "How important is the lifestyle and safety of the community in keeping a physician in your community?" Ninety-one (91) percent of the recruiters said that it was "Very important" and gave it a mean score of 3.90.

The next second-ranked retention study motivator, with a mean score of 3.90, was in the professional and clinical category and asked, "How important is the continuing support of hospital administration in keeping a physician in your community?" Again, ninety-one (91) percent of the recruiters replied that it was "Very important."

The third motivator ranked second highest by the recruiters was in the socio-cultural and community category, asking "How important is the community's acceptance and support of the physician in keeping them here?" As with the other two second-ranked motivators, ninety-one (91) percent of the recruiters said that this was "Very important," resulting in a mean score of 3.90.

The overall fifth highest ranked physician retention variable with a mean score of 3.86 was in the personal and family category, and asked "How important is the quality of children's lifestyles such as safety and good schools in keeping a physician in your community?" Eighty-six (86) percent of the respondents replied, "Very important."

As the mean scores indicate, these five motivators were rated very highly by the recruiters. The mean scores ranged from 3.86 to 3.95, or less than one-tenth of a point difference between the motivator ranked most important to the motivator ranked fifth most important. Two of the five highest ranked motivators were in the professional and clinical category, two were socio-cultural/community and one was of a personal and family nature.

Lowest Five Retention Motivators – Recruiter Interviews. The lowest ranked retention motivator, with an overall mean score of 2.70, was in the

economic category and asked, "How important is additional loan repayment assistance from the hospital and/or the community in keeping a physician in your community?" Only 35% of the respondents rated this motivator "Very important."

The second lowest ranked retention motivator, in the socio-cultural and community category asked, "How important is access to higher education opportunities in keeping a physician in your community." Although this motivator is ranked among the five lowest rated variables by the recruiters, its mean relative importance (3.0) suggests that the recruiters felt that this community-based variable is fairly important in retaining physicians, yet only 24 percent of them rated this motivator "Very important."

The third lowest ranked retention variable, again in the socio-cultural and community category, asked "How important is proximity to cultural events in keeping a physician in your community." Proximity was defined as a short drive of two hours or so. As with the preceding motivator, this variable although low-ranked compared to the others, has an affirmative mean relative importance (3.0). However, just 14 percent of the recruiters rated this motivator "Very important."

The variable that was ranked the fourth lowest was in the personal and family category and asked, "How important is a religious support structure in the community in keeping a physician in your community?" Again, though comparatively low-ranked to other retention variables, this variable overall was rated highly by the recruiters with a mean score of 3.05. Twenty-nine (29) percent of the respondents rated this variable "Very important."

The fifth lowest ranked motivator, in the economic category, asked "How important are current community economic conditions in keeping a physician in your community?" Though ranked fifth from the lowest rated variable, overall this motivator had a fairly high mean score of 3.05. Only one recruiter (5 percent of the total) rated this variable "Very important."

With the exception of the lowest-ranked motivator, the level of importance of retention variables rated by the recruiters had a range of 3.0 to 3.95. In other words, there was less than one point difference between the highest ranked variable and the second lowest ranked. Overall, it appears that all of the retention motivators selected for the interview instrument had a high level of importance for this group of recruiters.

Physician Retention – Recruiter Insight. As noted in the previous section, all of the retention motivators in the closed-ended questions section of the interview were rated at a fairly high level by the participating recruiters. A more compelling question is what retention variable(s) is (are) the *most* important from the recruiters' viewpoint? To try and determine what variables the recruiters felt most influenced rural Michigan physicians to remain and practice in a rural community, the interview guide included the open-ended question, "What, in your view, is the single most important variable in keeping a physician in your community?"

Six of the responses (32 percent) were categorized as a combination of professional and clinical and personal/family categories. Five (26 percent) were categorized personal/family only motivators, three were professional and clinical

only, two were economic only, two were a combination of personal/family and professional/clinical variables and one was in the socio-cultural and community category. Three cases were missing.

Taking into account the combinations of retention motivators identified in this section of the interview, the most frequently mentioned motivator was a personal and family type with 13 mentions. Next was a professional and clinical motivator with 11 mentions. However, a professional and clinical motivator was mentioned first (9 instances), more often than the personal and family category (7 first mentions). The least frequently mentioned motivators were economic (two mentions) and socio-cultural and community (one mention). Some examples of these responses are:

> *Professional/clinical and Personal/family: "If they're not professionally happy or not personally happy, they're not going to stay."*
>
> *Personal/family and Professional/clinical: "The spouse must be happy and the call coverage you promised must be there."*
>
> *Professional/clinical: "You need to have modern ancillary professional support. And, the physician needs to develop professional collegial relationships with his peers."*
>
> *Personal/family: "The family environment, having a comfortable environment for their family...the whole family fit."*
>
> *Economic: "Probably financial or contractual...mutually agreeable terms on a future contract."*
>
> *Sociocultural/community: "Getting them active in the community, the whole family."*

Taking into account in the total number of mentions and the number of first mentions, the recruiters appear to have given almost equal weight to the relative importance of those motivators in the professional and clinical category and those of a personal and family nature. Economic and socio-cultural/community

motivators seemed to be the least important. This qualitative data somewhat reflects the opinion of the recruiters on the closed-end questions on retention motivators. For example, in ratings of the closed-ended questions three of the top five ranked motivators were either in the professional and clinical or the personal and family category. And, four of the bottom five ranked motivators were either in the economic or the socio-cultural and community category (see Table 4.3.3, page 123).

Open-ended Retention Process Questions – Recruiter Interviews. The recruiters were also asked series of open-ended questions regarding the overall retention process. This part of the study was probing for answers to questions about how "successful" retention was defined in the eyes of the recruiters; what was being done to try and retain physicians; how much physician turnover had they experienced; and, what did they do when they found out a physician was leaving.

The recruiters were asked, "In your own words, how would you define successful retention?" Fourteen recruiters (70 percent) defined successful retention in terms of the number of years a physician remained in the community. Three to five years was the most frequently mentioned period of time that indicated to the recruiter that a physician had been successfully retained. Three recruiters stated that involvement of the physician and family in the community was a signal of successful retention. One said spousal happiness, and two stated that it was "professional satisfaction." Two cases were missing.

Although most of the recruiters acknowledged that the recruitment of a physician was successful only if he or she remained in the community, only four (21 percent) had implemented a formal retention plan. Fifteen of the recruiters said that they either had no plan or that it was informal. Three cases were missing. Frequently cited reasons attributed to successful retention were open lines of communication, the relationship between the physician and the recruiter, access to the hospital CEO, and the use of a physician-mentoring program.

A major indicator of the success of a retention program is the physician turnover in a community. The recruiters were asked, "What kind of turnover do you experience with physicians after they have fulfilled their initial recruitment contract obligations?" The range was from a high of one in two leaving to a low of no turnover other than through retirement or death. On average, about one in five physicians recruited leave after their initial contract obligations are completed, giving this group of hospitals about an 80 percent retention rate.

Finally, the recruiters were asked, "What do you usually do when you find out that a physician is thinking of leaving?" Most of the recruiters (5) tried to find out "why" the physician was leaving to see if they could change his or her mind. Three of the recruiters said they tried to find out "why" to help them in their future retention efforts. Other mentions were to "anticipate" their leaving (1), to begin recruiting immediately for their replacement (1), and to "cry" (2). For two of the recruiters, retention was "not an issue."

Comments and Advice – Recruiter Interviews. At the end of the interview, the last question put to the recruiters was "Is there anything that we have not

discussed that you feel is important to either or both physician recruitment or retention?" A broad assortment of responses was received. Three recruiters suggested that "relationship" building with the physician was an important issue. One recruiter brought up Michigan's weather. Three said that they felt open, honest communication was the most important variable. One stated that the compensation package should be fair with reasonable expectations. Another suggested targeting doctors who were familiar with Michigan (those who were raised in Michigan, had completed their undergraduate or medical school curriculum, or residency program here). One recruiter said that biases against International Medical Graduates (IMG) in some small rural communities need to be recognized. One recruiter mentioned that rural communities need specialists to deliver the same level of health care as in the urban areas of the state. And, lastly, one was concerned about the legal and human resource issues that need to be addressed during the recruitment process.

As the variety of these responses indicates, there was a broad complex of answers to the open-ended questions presented to the recruiters. And, as the research literature suggested, these open-ended questions did allow the recruiters to freely express themselves during the interviews. Free thought was stimulated, suggestions were given and positions were clarified. Reading through the transcribed interviews, some frustrations were vented and strong opinions were noted. It appears that these open-ended questions yielded the rich mix of data on the topic of physician recruitment and retention that the interview instrument was designed to obtain.

Implications and interpretation of the data collected and described in this chapter from both the physician mail survey and the recruiter face-to-face interviews are examined and discussed in detail in Chapter 6, "Summary, Conclusions, and Recommendations" of this document.

CHAPTER 5: ANALYSIS OF THE DATA

Introduction

In this chapter I examine a series of quantitative analyses performed on the data collected during the recruiter interviews and the physician mail survey, as well as data on county-level socio-demographic characteristics. Participating physicians and recruiters were asked on the survey instruments to rate the relative importance of a number of recruitment attractors and retention variables using the following ordinal scale: 1 = not at all important, 2 = somewhat not important, 3 = somewhat important, and 4 = very important. County-level socio-demographic data were collected from various sources including the U.S. Census Bureau, the National Center for Health Statistics, the Michigan Department of Community Health, and the Michigan Hospital Association.

In the first section of this chapter, I examine four distinct exploratory factor analyses (EFA) performed to test the hypothesis that recruitment attractors and retention motivators can be reliably coded using the typology discussed in Chapter 3. The second section of this chapter looks at a progression of bivariate and multivariate regression analyses of various county-level socio-demographic characteristics to test the hypothesis of the "push-pull" theory that some variables that will "pull" a physician into a particular county while others may "push" him or her away. In the third and fourth sections of this chapter, a cross-comparison of the ratings and rankings given by both groups to the recruitment attractors and the retention motivators examined in this study is analyzed to test the hypothesis

that recruiters and physicians as separate groups may place significantly different values on some of these variables.

1. Testing the Typology

One way of conceptualizing the physician recruitment and retention process is to think of the recruiters as salespersons and the physicians as customers. The recruiters are "selling" the physician on coming to live and practice medicine in their community. A good salesperson attempts to point out the advantages of the product they are selling over the competition's product. Most often recruiters will try to emphasize the strongest advantages or selling points of the practice, the hospital and the community into which they recruiting the physician. As an example, the recruiter might point out the patient base the physician will be working with; the on-call coverage policy; the quality of the nursing staff (all professional variables); and, expected income from the practice (an economic variable).

Previous experience taught me that a successful sales technique most importantly includes first determining the customer's needs and wants. Most successful recruiters implement this strategy during the screening phase of the recruitment process. If they have properly screened the candidate, then they can reach into their sales kit and select the two or three recruitment tools they have determined are important to the potential recruit.

A review of the literature (see for example Conte, 1992) suggested that recruitment and retention attitudinal variables examined in this study could be coded and categorized according to the following typology:

> E = *Economic variables* – primarily financial elements, including earnings/compensation, employment arrangement, financial incentives, availability and quality of housing and community economic conditions.
>
> R = *Recruitment process variables* – components in the recruitment method, such as community member involvement, use of recruitment firms, having a single contact for recruitment.
>
> P = *Professional and clinical variables* – practice of medicine variables, for example the practice environment, the medical community, access to consultation, local health resources, ancillary services.
>
> F = *Family variables*—things that affect family or personal life, like adequate leisure time, or family considerations.
>
> S = *Socio-cultural and community variables*—a broad category that includes variables such as community attributes, geographic location, quality of life, friendly people.

This coding system makes the *a priori* supposition that physician recruitment and retention variables can be combined into five factors. The typology assumes that all variables coded into any one of the established categories would have relatively equal importance on that respective category.

One of the research questions advanced by this study is to test the practicality and validity of such an *a priori* coding system. Exploratory Factor Analysis (EFA) will be used to evaluate whether or not each variable examined in this study can be neatly coded and placed into one of five factors that will correspond to the categories listed above.

To test this hypothesis, a series of two different EFAs were performed on the recruitment and retention attitudinal variable datasets collected from both the

physicians and the recruiters. If the variables can be validly coded into the specific categories discussed above and in Chapter 3, then one would expect that attitudinal variables coded into the same category would load onto the same factor. First, four exploratory factor analyses extracting exactly five factors were performed. However, limiting the number of factors extracted may not fully detect the structure in the relationships between variables. Therefore, a second series of EFAs using the eigenvalue >1 method discussed below was also performed.

In the social sciences, Principle Components Analysis (PCA) is the method most often used to extract initial factors and to reduce the number of variables for further analysis. However, this method extracts as many factors as there are variables. To limit the number of factors, SPSS is usually asked to extract only factors with an eigenvalue of >1.0. An eigenvalue is a measure the amount of variation in the total sample accounted for by each factor. However, this method may not be appropriate if there are *a priori* assumptions, as there are in this study, since theoretical considerations are not taken into account by using eigenvalues of >1.0 to extract factors. In my study, one *a priori* assumption is that there are five underlying categories of recruitment and retention variables and the five factors generated by an EFA will correspond to these five categories. As an example, this hypothesis suggests that all variables coded "family" (F) will load onto the same factor in an EFA.

Due to my *a priori* assumption, in the first part of this analysis, I asked SPSS to extract exactly five factors, regardless of the size of the eigenvalue of

the factor. Scree plots were also created to approximate the appropriate number of factors to extract. However, to further explore the structure of the relationship among the variables, a second factor analysis of the recruitment and retention variables rated by both groups was performed asking SPSS to extract all factors with an eigenvalue >1.

Another common EFA procedure is to use a rotation to make the output more understandable. It is usually necessary to facilitate the interpretation of factors. Rotation of the axes causes the factor loadings of each variable to be more clearly differentiated by factor. Oblique rotations allow the factors to be correlated, whereas an orthogonal method such as varimax constrains the factors to be uncorrelated. There is no reason to believe that the factors in this study are uncorrelated. Hence, the rotation procedure chosen for the EFAs of the attitudinal recruitment and retention variables was an oblique rotation, oblimin with Kaiser normalization.

The size or strength of the factor loading is used to determine whether or not a variable "belongs" to a particular factor. Researchers in the social sciences commonly use 0.30 to 0.35 as a minimum cutoff. However, in an effort to assure that a variable is likely a defining part of a particular factor, I elected to use another arbitrary rule-of-thumb, which defines loadings as "weak" if less than 0.40, "strong" if more than 0.60, and otherwise as "moderate." Variables found to have loadings of 0.40 or more with two or more factors were deleted from the analysis in an attempt to diminish or eliminate the ambiguity of which factor the variable is measuring.

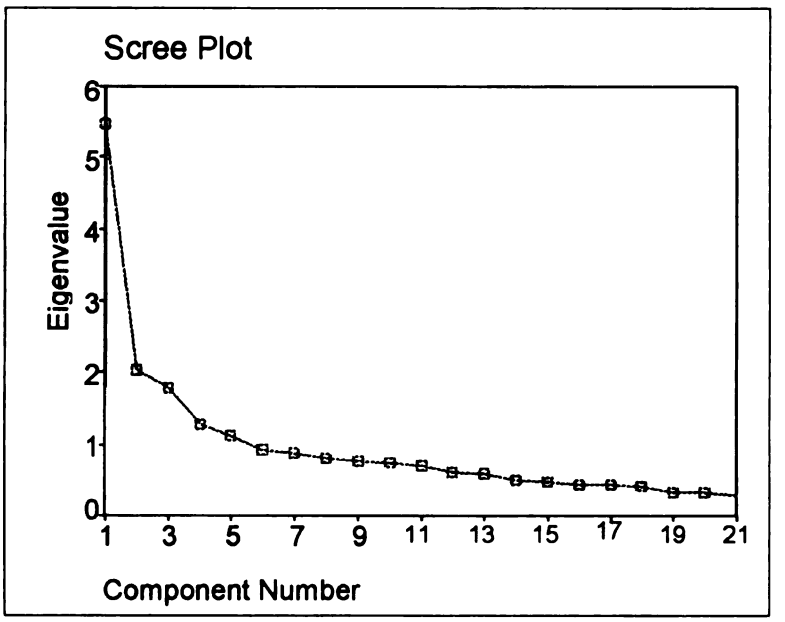
Four separate and distinct EFAs using both methods (extracting exactly five factors and extracting all factors with eignvalue >1) were carried out on the physician and recruiter recruitment and retention attitudinal variable databases. Four sets of variables were analyzed: (1) recruitment attractors rated by the physicians; (2) retention motivators rated by the physicians; (3) recruitment attractors rated by recruiters; and, (4) retention motivators rated by the recruiters. Findings of these EFAs are discussed in the following section.

EFAs Extracting Exactly Five Factors

Physician Recruitment Attractor Dataset

The scree plot created for this first EFA indicates that the recruitment attractors rated by the physicians cluster substantially on about five components or factors. See Figure 5.1.1 below.

Figure 5.1.1 Scree Plot Physician Recruitment Attractor Dataset



The five factors extracted for this EFA accounted for over 55 percent of the variance in the total sample. See Table 5.1.1 below.

Table 5.1.1 Total Variance Explained Physician Recruitment Attractor Dataset Extracting Five Factors

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	5.48	26.1	26.1
2	2.03	9.67	35.8
3	1.78	8.46	44.3
4	1.27	6.05	50.3
5	1.13	5.39	55.7

Extraction Method: Principal Component

Table 5.1.2 below illustrates the five factors extracted in this EFA and the variables loading on each. Included in this table is a column labeled "Category" which is the theoretical category into which the variable was coded. Following Table 5.1.2 is a discussion of the findings.

Table 5.1.2 Pattern Matrix Physician Recruitment Attractors Extracting Five Factors

Category*	Variable	1	2	3	4	5
F	Adequate Personal Time	**0.85**				
P	Call Coverage Available	**0.75**				
P	Local Specialists for Consultation	**0.65**				
E	Projected Earnings/Compensation	**0.60**				
P	Network Specialists for Consultation	**0.56**				
E	NHSC Loan Program		**0.86**			
E	State Loan Repayment Program		**0.83**			
E	NHSC Scholarship		**0.79**			
R	J1Visa Program			**-0.69**		
R	Web Site as Recruitment Tool			**-0.54**		
E	Salaried Employment			**-0.47**		
R	Professional Recruitment Firms			**-0.41**		
R	Community Members Involved				**-0.87**	
R	One Lead Person				**-0.73**	
R	Strategy to Quickly Close Contract				**-0.59**	
R	Realistic Description of Community & Practice				**-0.58**	
R	Community Promotion Package				**-0.48**	
P	Personal/Professional Match with Community				**-0.42**	
S	Proximity to Family and Friends					**0.76**
F	Quality of Children's Lifestyle					**0.48**
F	Spousal Opportunities					**0.47**

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 33 iterations.

The first factor (eigenvalue 5.48) accounts for 26.1 percent of the variance and had five attractors loading on it. One was coded "family" (F); three were coded "professional and/or clinical" (P), and another was coded "economic" (E). While the five variables loading on factor 1 were not coded the same, these attractors may have commonly-held underlying values to the physicians in terms of time and peer support. Having adequate personal time, call coverage, local specialists for consultation, and a network of specialists for consultation suggest an appreciation for personal time and peer support. The remaining variable, projected earnings and/or compensation, which was coded "economic", does not

at first glance appear to neatly match either of these underlying values. However, a physician's earnings are in large part determined by referrals from other physicians, and in this light earnings and/or compensation can also be seen as a variable having a peer support side.

The second factor (eigenvalue 2.03) accounts for 9.67 percent of the variance and had three attractors loading on it, all of which had been coded "economic" (E). While the NHSC loan repayment program, state loan repayment program, and the NHSC scholarship program clearly have an economic side, they also can be seen as forms of repayment obligations. To qualify for any of these programs, a physician is obligated to practice in an underserved area for a committed period of time. Thus, while these variables plainly have economic benefits for the physician, they appear to have an obligatory nature as well.

The third factor (eigenvalue 1.78) accounts for 8.46 percent of the variance and had four attractors loading on it. Three were coded "recruitment process" (R) types and one had been coded "economic" (E). The J1 Visa Waiver program and the use of websites as well as the use of professional recruitment firms (all coded R) can be seen as recruitment process tools. Although salaried employment was coded "economic (E)," salaried employment (a guaranteed income) is often used as a physician recruitment tool. Therefore, the common trait underpinning these four attractors appears to be "recruitment process tools."

The fourth factor (eigenvalue 1.27) accounts for 6.05 percent of the variance and has six attractors loading onto it. Five were coded "recruitment process" (R) and one was coded "professional and/or clinical" (P). Involving

community members, having on person leading the process, having a strategy in place to quickly close the contract, and using a quality community promotion package are in many instances directly part of the recruitment process activities. While the attractor, "a personal/professional match with the community," had been coded "professional/clinical" (P) by our research team, it also can be seen as a screening device used during the recruitment process, reflecting a common characteristic among these six variables of "recruitment process" activities.

The fifth factor (eigenvalue 1.13) accounted for 5.39 percent of the variance and had three recruitment attractors loading on it. Two were coded "family" (F) and one was coded "socio-cultural and community" (S). The variables "quality of children's lifestyle" and "spousal opportunities" were coded "family," while "proximity to family and friends" was coded "socio-cultural and community" based on geographic location of the community (proximity to...). However, this variable has strong "family" aspects as well. Therefore, I would argue that the "importance of family" appears to be the underlying value of the variables onto this factor.

The range of the loadings on these five factors was from "moderate" to "strong," ranging from a low of 0.42 to a high of 0.87 (see Table 5.1.2 above), suggesting that the variables loading on each of these five factors have a fairly strong association with that factor.

While the variables loading onto each of the five factors in this EFA were not in all cases coded the same by our research team, a closer examination of the underlying values of the loadings suggests that there is a common theme

within each grouping. For example, factor 1 has variables loading on it, which upon closer examination seem to reflect a common value of "personal time and peer support." Peer support as discussed above is closely associated with the personal time available to a physician. The variables loading on factor 2 were all coded E (economic), yet a more appropriate description of a common value among them might be "repayment of an obligation." Three of the variables loading onto factor 3 were coded R (recruitment process) and one was coded E (economic). Taking a closer look, the variable coded E (salaried employment) can also be seen as a recruitment tool as a guaranteed salary is often used to entice a physician to practice in a given area. The variables loading onto factor 3 can be seen as having a common theme of "recruitment tools." Five of the six variables loading on factor 4 were coded R (recruitment process). The sixth, personal and/or professional match with the community, was coded P (professional and/or clinical). From another view, this variable can be seen as part of the recruitment process since the recruiter usually screens the recruit for a community match. One could then conclude that the variables loading onto factor 4 have the common underlying theme of "recruitment process." Two of the three motivators loading onto factor 5 were coded F (family/personal) and the third, proximity to family and friends, was coded S (socio-cultural and/or community) based on the community's distance from family and friends. But, this motivator can also be seen as linked with the importance of family and friends, giving factor 5 an overall theme of "family and/or personal" values.

As stated in the introduction to this section of the chapter, one cannot rule out the possibility that these factors may be correlated. An examination of the component correlation matrix for this EFA suggests that the factors have fairly weak associations. The negative correlation between factor 1 and factor 4 is moderately strong, indicating that they may be valued in opposite directions by the physicians participating in this study.

Table 5.1.3 Component Correlation Matrix Physician Recruitment Attractors With 5 Factors Extracted

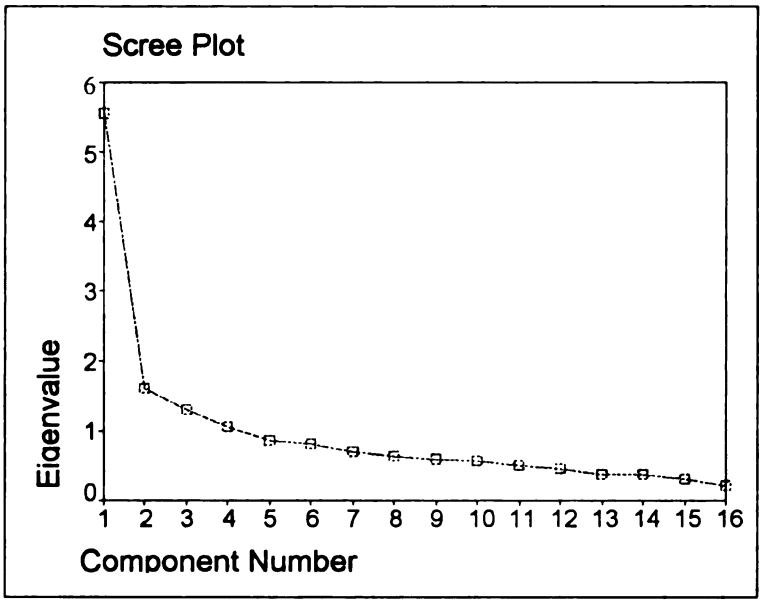
Component	1	2	3	4	5
1	1.000				
2	0.148	1.000			
3	-0.116	-0.126	1.000		
4	-0.414	-0.148	0.181	1.000	
5	0.153	0.119	0.060	-0.073	1.000

Given the dual nature of many of the variables explored in the EFA on the physician recruitment variable database, this analysis appears to support the hypothesis that the recruitment attractors rated by the participating physicians can be coded into typologies although they are not exactly the same categories discussed in Chapter 3. This finding should not be surprising since the coding used by Conte (1992) is only a guide and reveals that in actuality coding can be a somewhat subjective process. This EFA appears to more clearly point out what may be the actual underlying values of the variables loading onto each of the five factors and gives us a guide for more valid coding in future studies.

Physician Retention Motivator Dataset

The scree plot created for this EFA appears to indicate that the retention motivators rated by the physicians participating in this study cluster largely on around four to five components or factors. See Figure 5.1.2 below.

Figure 5.1.2 Scree Plot Physician Retention Motivator Dataset



The five factors extracted in this EFA account for almost 65 percent of the variance in the sample. See Table 5.1.4, below.

Table 5.1.4 Total Variance Explained Physician Retention Motivator Dataset EFA Extracting Five Factors

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	5.55	34.7	34.7
2	1.62	10.1	44.8
3	1.31	8.16	53.0
4	1.06	6.59	59.6
5	0.86	5.39	65.0

Extraction Method: Principal Component

Table 5.1.5 below illustrates the five factors extracted in this EFA and the variables loading on each. Included in this table is a column labeled "Category" which is the theoretical category into which the variable was coded. Following Table 5.1.5 is a discussion of the findings for this EFA.

Table 5.1.5 Pattern Matrix Physician Retention Motivators Extracting Five Factors

Category*	Variable	1	2	3	4	5
P	Quality of Hospital Facilities	**0.88**				
P	Quality of Medical Staff	**0.86**				
P	Quality of Nursing Staff	**0.79**				
P	Professional Satisfaction	**0.69**				
P	Compatibility with Peers	**0.54**				
P	Adequate Medical Personnel in Community	**0.53**				
P	Support of Hospital Administration	**0.50**				
F	Adequate Personal Time		**0.73**			
P	Call Coverage Available		**0.70**			
E	Earnings/Compensation		**0.67**			
F	Quality of Children's Lifestyles			**0.86**		
F	Spousal Satisfaction			**0.78**		
P	Network Specialists for Consultation				**-0.71**	
P	Local Specialists for Consultation				**-0.65**	
S	Community Acceptance of Racial Diversity				**-0.63**	
E	Additional Educational Loan					**0.92**

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization.Rotation converged in 33 iterations.
*Theoretical Variable Category: E = *Economic,* R = *Retention Process,* P = *Professional and clinical,* F = *Family,* S = *Socio-cultural and community*

The first factor (eigenvalue 5.55) accounts for 34.7 percent of the variance and had seven variables loading on it that had been coded "professional and/or clinical," or P. The retention motivators loading onto this factor were: (1) the quality of the hospital facilities; (2) the quality of the medical staff; (3) the quality of the nursing staff; (4) professional satisfaction; (5) compatibility with peers; (6) an adequate number of medical personnel in the community; and, (7) support of hospital administration. The seven variables loading on this factor appear to be linked to professional and clinical issues and physician satisfaction with these issues as coded.

The second factor (eigenvalue 1.61) accounted for 10.1 percent of the variance and had three motivators loading on it (Table 5.1.5). One had been

coded "family" (F), another was coded "professional and clinical" (P), and the third was coded "economic" (E). The variable coded F was adequate personal time. The one coded P is the availability of call coverage. And, the one coded E is earnings and/or compensation. As with the recruitment attractors loading on factor 1 in the physician variable dataset EFA above, the underlying value of the first two retention motivators loading on factor 2 in the EFA on the physician retention motivators dataset appears to be of a personal time nature. The personal time available to a physician is determined in part by call coverage responsibilities, which has links with peer support. Interestingly, earnings and/or compensation also loaded on this factor just as it did in the physician recruitment attractors EFA. To reiterate, a physician's actual earnings and compensation are in part determined by referrals from other physicians giving this variable another side, which can be seen as peer support. Therefore, perhaps the fundamental value of these three motivators to the participating physicians is a combination of personal time and peer support.

The third factor (eigenvalue 1.30) accounted for 8.2 percent of the variance and had two motivators coded "family" (F) loading on it. These two variables were (1) the quality of children's lifestyles and (2) spousal satisfaction, both of which can be seen as values of general family well being.

The fourth factor (eigenvalue 1.06) had three motivators loading on it and accounted for 6.6 percent of the variance. Two of these variables, a network of specialists for consultation and local specialists for consultation, were coded "professional and clinical" (P) and the third, community acceptance of racial

diversity, was coded "socio-cultural and community" (S). While the first two motivators have clear ties with professional and clinical issues, they also can be seen as being fundamental aspects of the medical community. A network of specialists for consultation is usually developed by the community hospital and local specialists for consultation are part of the local medical community. The three variables loading on this factor appear to reflect a community theme with aspects of medical community issues and lay community tolerance.

The fifth factor (eigenvalue 0.86) accounted for 5.4 percent of the variance and had only one motivator loading on it. This variable, coded "economic" (E), was the offer of additional educational loans to motivate the physician to remain in the community. While this variable does have an economic side, it also can be seen as having an obligatory nature. Additional educational loans to physicians beyond their initial contract usually include an obligation to continue practicing in the community for a given period of time.

The loadings on these factors ranged from "moderate" to "very strong," with a range from 0.50 to 0.92 (Table 5.1.5), once again suggesting that the variables loading on each of the five factors have a fairly strong association with that factor.

To summarize, the seven variables loading on factor 1 indicate that the underlying value of these retention motivators to the physicians is that of a professional practice of medicine and clinical character. The underlying value of the variables loading on factor 2 seems to be linked with personal time issues. The variables loading on factor 3 suggest that it has a family-values nature. Peer

support within the medical community is the apparent general composition of factor 4. Community acceptance of racial diversity could be loading on this factor since many physicians practicing in rural Michigan are foreign medical graduates and peer support would be important for these physicians to succeed in a less than tolerant community. The fifth factor has only one variable loading onto it, which was coded E (economic) but it can also be seen as an obligation to remain in the community.

An examination of the component correlation matrix for this EFA shows that in general the five factors in this analysis have a fairly weak association among themselves. This correlation matrix is illustrated in Table 5.1.6 below. There is a somewhat moderate positive association between factor 1 and factor 2, suggesting that the physician might value these variables in the same direction. On the other hand, there is a moderate negative association between factor 1 and factor 4, suggesting that they may have opposite values to the participating physicians.

Table 5.1.6 Component Correlation Matrix Physician Retention Motivators With 5 Factors Extracted

Component	1	2	3	4	5
1	1.000				
2	0.318	1.000			
3	0.210	0.195	1.000		
4	-0.328	-0.236	-0.149	1.000	
5	-0.021	0.173	-0.007	-0.021	1.000

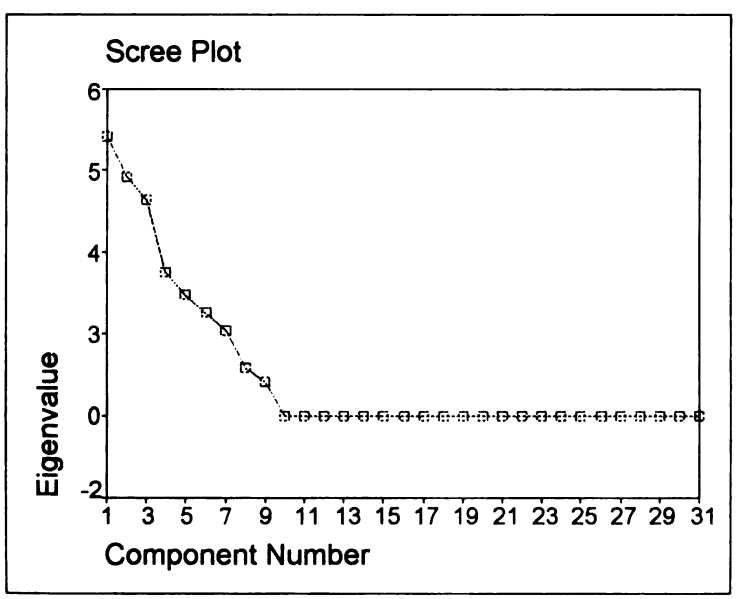
Similar to the recruitment attractors rated by the physicians, the retention motivators did not neatly cluster onto factors 2 and 4 according to the typology discussed in Chapter 3. However, as with the physician recruitment attractors

EFA, this analysis seems to reveal some general underlying themes, which otherwise might have gone unnoticed. For example, physicians in this study seem to link personal time with peer support and it appears that the two are related. In general, this analysis too appears to support the hypothesis that these motivators can be validly coded and categorized, although not exactly as discussed in Chapter 3.

Recruiter Recruitment Attractor Dataset

The scree plot created for this EFA (Figure 5.1.3, below) appears to suggest that about eight to nine factors should be extracted from the recruitment attractors rated by the recruiters. However, in order to remain consistent with the number of factors extracted from the recruitment attractors rated by the physicians and keeping in mind theoretical considerations, SPSS was asked to perform an EFA extracting exactly five factors.

Figure 5.1.3 Scree Plot Recruiter Recruitment Attractor Dataset



The five factors extracted in this EFA accounted for almost 79 percent of the variance in the sample. See Table 5.1.7.

Table 5.1.7 Total Variance Explained Recruiter Recruitment Attractor Dataset EFA Extracting Five Factors

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	6.81	21.98	21.98
2	5.84	18.82	40.80
3	5.28	17.04	57.84
4	3.50	11.29	69.13
5	2.98	9.61	78.74

Extraction Method: Principal Component

Table 5.1.8 below illustrates the five factors extracted in this EFA and the variables loading on each. Included in this table is a column labeled "Category" which is the theoretical category into which the variable was coded. Following Table 5.1.8 is a discussion of the findings for this EFA.

Table 5.1.8 Pattern Matrix Recruiter Recruitment Attractors Extracting Five Factors

Category*	Variable	1	2	3	4	5
E	Availability/Quality Housing	**0.80**				
R	Unilaterally Close Deal	**-0.78**				
S	Recreational Opportunities	**-0.75**				
P	Personal/Professional Match with Community	**0.73**				
P	Network Specialists for Referral	**0.71**				
P	Network Specialists for Consultation	**0.71**				
R	J1Visa Program	**0.53**				
R	Community Members Involved		**0.93**			
R	Web Site as Recruitment Tool		**0.87**			
R	Recruits Meet Community Leaders		**0.87**			
S	Proximity to Family and Friends			**-0.79**		
P	Quality of Nursing Staff			**0.79**		
R	Professional Recruitment Firms			**0.76**		
R	Networking With Other Recruiters			**-0.54**		
E	NHSC Loan Program				**0.90**	
P	Quality of Medical Staff				**0.87**	
E	NHSC Scholarship				**0.70**	
E	State Loan Repayment Program				**0.67**	
S	Proximity to Cultural Events					**-0.71**
E	Community Economy					**0.71**
S	Proximity to Urban Area					**-0.42**

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 33 iterations.
*Theoretical Variable Category: E = *Economic,* R = *Recruitment Process,* P = *Professional and clinical,* F = *Family,* S = *Socio-cultural and community*

The first factor (eigenvalue 6.81), which accounts for 22.0 percent of the variance, has seven attractors loading on it (Table 5.1.8). One was coded "economic" (E), two were coded "recruitment process" (R), another was coded "socio-cultural and/or community" (S), and three were coded "professional and clinical character" (P). The attractor coded E was the availability and/or quality of local housing. Although coded economic, this variable can also be seen as an intrinsic feature of the community, or code S. The two attractors coded R were the ability of one person to unilaterally close the deal and use of the J-1 Visa Waiver program to entice a physician to practice in the community. In order to

quality for utilization of the J-1 Visa Waiver program, a community must meet certain federal criteria and therefore this variable could also be seen having a link to community characteristics. The one attractor coded S, or "socio-cultural and/or community" was the accessibility to recreational opportunities in the area, which is clearly a community characteristic. The three attractors coded P, or "professional and clinical" were: (1) the physician being a personal and/or professional match with the community; (2) the presence of a network of specialists for referral; and, (3) the presence of a network of specialists for consultation. While these last three variables obviously are linked to professional issues of the practice of medicine, they also can be seen as unique and intrinsic parts of the community itself, thereby tying them with community characteristics as well. The overarching theme of the attractors loading on factor 1 and rated by the recruiters appears to be community features associated with the recruitment process.

The second factor (eigenvalue 5.84) accounts for 18.8 percent of the variance and has three attractors coded "recruitment process" (R) loading on it. The attractors loading onto the second factor are: (1) involving community members in the process; (2) using a Website as a recruitment tool; and, (3) having potential recruits meet the community leaders. The underlying value or importance to the recruiters of the variables loading on factor 2 appears to be the physician recruitment process itself.

The third factor (eigenvalue 5.28) accounted for 17.0 percent of the variance and has four attractors loading on it. One, proximity of the community

to family and friends, is coded "socio-cultural and/or community" (S) due to the community's geographic locale. Another coded "professional and/or clinical" (P), is the quality of the nursing staff. While the latter variable clearly has practice of medicine links, it can also be seen as a community element since the nursing staff is a part of the community, and therefore a community characteristic. Lastly, two of the variables were coded "recruitment process" (R): (1) the use of professional recruitment firms and (2) networking with other recruiters, both of which are elements of the recruitment process. The four variables loading on factor 3 do not appear to have a clearly delineated single underlying theme, but rather they seem to be about equally split among community characteristics and recruitment process activities.

The fourth factor (eigenvalue 3.50) accounts for 11.3 percent of the variance and has four attractors loading on it, three of which are coded "economic" (E) and one of which is coded "professional and/or clinical" (P). The three variables coded E using the Conte typology are economic incentives used to attract a physician to a particular community: (1) the NHSC loan repayment program; (2) the NHSC scholarship program and, (3) the state educational loan repayment program. While these three variables were coded E, they can also reflections of community features. To qualify for these economic programs, a physician is obligated to practice for a minimum period of time in a health provider underserved community, which is a community aspect. The fourth variable is the quality of the existing medical staff and was coded P. However, this variable also has community aspects in that the medical staff is part of the

community into which the physician is being recruited. The variables loading onto factor 4 could represent a medical staffing dimension specific to certain communities.

The fifth factor (eigenvalue 2.98) accounts for 9.6 percent of the variance and has three attractors loading on it two of which are coded "socio-cultural and/or community" (S) and one of which is coded "economic" (E). The two variables coded S are (1) the community's proximity to cultural events and (2) it's proximity to an urban area, both of which are distance features of the community. The variable coded E is the economic condition of the community. While this is plainly economic in nature, it could also be seen as a fundamental characteristic of the community. The shared underlying theme of these three variables can be seen as geographic and economic aspects of the community itself.

The loadings of the variables on these five factors range from "moderate" to "very strong," ranging from 0.42 to 0.93 (see Table 5.1.8), which suggests a moderately strong association between the variables and the factors upon which they loaded.

An examination of the component correlation matrix for this EFA shows that in the five factors in this analysis have very weak associations and may be independently valued by the participating recruiters. This correlation matrix is illustrated in Table 5.1.9 on the following page.

Table 5.1.9 Component Correlation Matrix Recruiter Recruitment Attractors With 5 Factors Extracted

Component	1	2	3	4	5
1	1.000				
2	-0.071	1.000			
3	-0.031	-0.020	1.000		
4	0.065	0.052	-0.120	1.000	
5	-0.116	-0.054	-0.076	-0.074	1.000

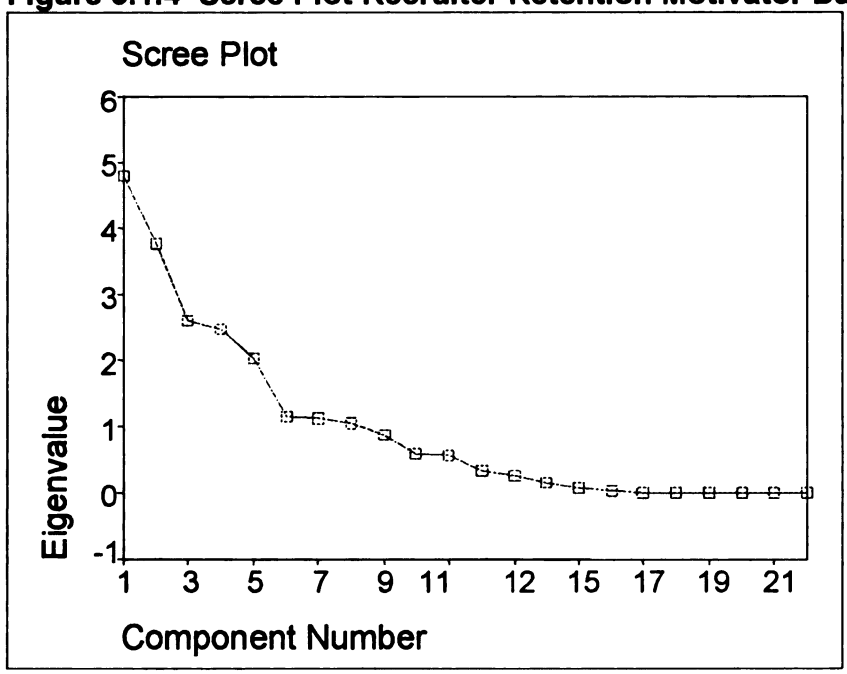
To sum up this factor analysis, variables loading on factor 1 in the EFA on the recruiter recruitment attractor dataset appear to have an overarching theme of community characteristics linked to the recruitment process. Factor 2 is comprised of active recruitment process elements. The third factor in this EFA appears to have a theme of both the community aspects and recruitment process activities. The underlying value of the variables loading on Factor 4 is has variables loading on it, which appear to have a medical staffing dimension specific to certain communities. Lastly, the fifth factor is made-up of variables tied to the community characteristics of location and economy.

In general, the five factors extracted for this EFA on the recruiter recruitment attractor dataset appear to have an overarching theme of community with related but distinctly different features of community loading on each. The factors extracted in the EFA of the recruiters' ratings of recruitment motivators were not easily interpreted as those extracted in the EFA of the physicians' ratings of recruitment motivators. For example, factor 3 extracted in the EFA on the recruiters' recruitment attractors appears to have variables loading on it that are equally divided between community characteristics and recruitment process activities. The linkage among the variables loading on factor 3 is not clear.

Recruiter Retention Motivator Dataset

The scree plot created for this EFA (Figure 5.1.3, below) suggests that about five factors should be extracted from the retention motivators rated by the recruiters. This is consistent with the five-category typology hypothesis being tested and SPSS was asked to perform an EFA extracting exactly five factors.

Figure 5.1.4 Scree Plot Recruiter Retention Motivator Dataset



Altogether, the five factors extracted for this EFA explain around 71 percent of the variance in the sample. See Table 5.1.10 below.

Table 5.1.10 Total Variance Explained Recruiter Retention Motivator Dataset EFA Extracting Five Factors

Component	Extraction Sums of Square Loadings Total	Percent of Variance	Cumulative Percent of Variance
1	4.80	21.82	21.82
2	3.77	17.12	38.93
3	2.61	11.87	50.80
4	2.46	11.20	62.00
5	2.04	9.28	71.28

Extraction Method: Principal Component

Table 5.1.11 below illustrates the five factors extracted in this EFA and the variables loading on each. Included in this table is a column labeled "Category" which is the theoretical category into which the variable was coded. Following Table 5.1.11 is a discussion of the findings for this EFA.

Table 5.1.11 Pattern Matrix Recruiter Retention Motivators Extracting Five Factors

Category*	Variable	1	2	3	4	5
P	Local Specialists for Consultation	**0.94**				
P	Adequate Medical Personnel in Community	**0.94**				
S	Proximity to Urban Area	**0.76**				
P	Adequate Marketing/Promotion of Physician	**0.53**				
F	Adequate Personal Time		**-0.90**			
P	Compatibility with Peers		**-0.82**			
P	Call Coverage Available		**-0.69**			
P	Quality of Nursing Staff		**-0.59**			
E	Earnings/Compensation		**-0.58**			
E	Availability/Quality Housing			**-0.77**		
P	Quality of Hospital Facilities			**-0.74**		
S	Proximity to Family and Friends			**0.74**		
S	Proximity to Cultural Events			**-0.63**		
S	Community Acceptance Family			**0.58**		
P	Network Specialists for Referral				**-0.89**	
P	Network Specialists for Consultation				**-0.89**	
S	Higher Education Opportunities				**0.67**	
S	Community Acceptance of Racial Diversity					**0.77**
F	Religious Support Structure					**0.73**
E	Additional Educational Loan					**0.65**
P	Quality of Medical Staff					**0.55**

Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 33 iterations.
*Theoretical Variable Category: E = *Economic*, R = *Retention Process*, P = *Professional and clinical*, F = *Family*, S = *Socio-cultural and community*

The first factor (eigenvalue 4.80) accounts for 21.8 percent of the variance and has four motivators loading on it, three of which are coded "professional and/or clinical" (P) and one of which is coded "socio-cultural and/or community" (S). The three variables coded P are: (1) the availability of local specialists in the community for consultation; (2) an adequate number of medical personnel in the

community for peer interaction; and (3) adequate marketing and promotion of the physician to the lay community. While these three motivators clearly are tied to professional and/or clinical issues, they also reflect aspects of the community. The one variable coded S is the community's proximity to an urban area, a geographic distance feature of the community. Therefore, factor 1 appears to have four retention motivators loading on it that are aspects of the community.

The second factor (eigenvalue 3.77) accounted for 17.1 percent of the variance has five motivators loading on it (Table 5.1.11). One of the motivators is coded "family" (F). Three are coded "professional and/or clinical" (P). And, one is coded "economic" (E). The variable coded F is adequate personal time. The three variables coded P are (1) the physician's compatibility with peers; (2) the availability of call coverage; and, (3) the quality of the nursing staff. The fifth variable, coded E is realized earnings and/or compensation. As in the pattern matrix for retention motivators rated by participating physicians (see Table 5.1.10), the variables "adequate personal time," "call coverage," and "earnings and/or compensation" are loading on the same factor. The former two appear to be related with how much time a physician has to spend with family while the latter can be seen as being linked with the professional variable "compatibility with peers," or peer support since a physician's actual earnings are based in part on referrals by other physicians. The variables loading on factor 2 could be representative of an element particular to the underlying value of personal time and peer support.

The third factor (eigenvalue 2.61) accounts for 11.9 percent of the variance and has five motivators loading on it (Table 5.1.11). One of the variables is coded "economic" (E). Another is coded "professional and clinical" (P) and three are coded "socio-cultural and community" (S). The motivator coded E is the availability and quality of local housing. Although economic in nature, this variable can also be seen as a community feature. The variable coded P is the quality of local hospital facilities. Again, while this variable has a clinical side, the hospital itself can also be seen as an element of the community. Lastly, the three coded S are: (1) the community's proximity to family and friends; (2) the community's proximity to cultural events; and, (3) the community's acceptance of the physician and his or her family, all characteristics of the community. The common thread connecting the five motivators that loaded on factor 3 appears to be various features of the community: housing, a hospital, distance to friends and family, and acceptance.

The fourth factor (eigenvalue 2.46) has three motivators loading on it, which account for 11.2 percent of the variance (Table 5.1.11). Two of the variables were coded "professional and clinical" (P) and one was coded "socio-cultural and community" (S). The two variables coded P are (1) a network of specialists for referral and (2) a network of specialists for consultation. The variable coded S is the opportunity for higher education either in the community or nearby. While this last motivator can be seen as a feature of the community, it also can be seen as an opportunity for a physician to advance him or herself professionally with another graduate level degree such as an MBA or MPH. The

variables loading on factor 4 could be characterized as having an underlying value specific to professional fulfillment.

The fifth factor (eigenvalue 2.04) accounted for 9.3 percent of the variance and has four motivators loading on it (Table 5.1.11). Each variable was coded differently. The community's acceptance of racial diversity was coded "socio-cultural and community (S). A religious support structure in the community or nearby was coded "family" (F). The offer of financial assistance in the form of additional educational loan repayment by the local hospital was coded "economic" (E). And, the quality of the local medical staff was coded "professional and clinical" (P). While each motivator was coded differently, the common thread linking these four variables appears to be aspects of both the lay and medical community: community acceptance of racial diversity; religious support structure in the community; local community hospital loan assistance; and, the quality of the local community medical staff.

The loadings of the motivators on these factors ranged from 0.53 to 0.94, or "moderately strong" to "very strong" (see Table 5.1.11), suggesting a fairly strong association between the variables and the factor they loaded on in this EFA.

An examination of the component correlation matrix for this EFA suggests that the five factors extracted have fairly weak associations. Just as in the EFA of the recruiter recruitment attractors, the factors extracted in this EFA appear to be independently valued by the recruiters who participated in this study. See Table 5.1.12 below.

Table 5.1.12 Component Correlation Matrix Recruiter Retention Motivators With 5 Factors Extracted

Component	1	2	3	4	5
1	1.000				
2	0.002	1.000			
3	-0.068	0.117	1.000		
4	-0.041	-0.038	0.094	1.000	
5	0.193	0.038	-0.065	-0.016	1.000

In review, the variables associated with factor 1 in the EFA on recruiter retention motivators appear to carry a common theme of community features including medical personnel, marketing physician to the lay community, and distance to an urban area. Factor 2 appears to be reflecting the underlying values of personal time and peer support. The motivators loading onto factor 3 although coded differently appear to carry a community theme with aspects of housing, a hospital, distance to friends and family, and acceptance. Factor 4 appears to be reflecting a theme of professional satisfaction. Lastly, the variables loaded onto factor 5 appear to suggest that this factor has underlying aspects of both the lay and medical community: tolerance, religious support, local hospital loan, and local medical staff. Three of the five factors extracted in EFA of the recruiter retention motivators are dominated by variables reflecting attributes of the community suggesting that recruiters may view these motivators are essential for keeping physicians in the community.

Comparing the Four Five-Factor EFAs

The five factors extracted in each of the exploratory factor analyses of the physicians' ratings of recruitment attractors and retention motivators appear to be more clearly defined and distinct than the factors extracted from the recruiters'

ratings of these variables. For example, the factors extracted from the EFA of the physicians' ratings of the recruitment attractors suggest five fairly distinct categories or themes: (1) personal time linked with peer support; (2) economic variables linked with obligation; (3) recruitment tools; (4) recruitment activities; and, (5) variables of a family nature. On the other hand, the factors extracted from the EFA of the recruiters' ratings of the recruitment attractors suggest only two general themes among the five factors: (1) variables with community characteristics clustered on three of the five; and (2) variables linked with recruitment activities loaded on two of the five.

A similar pattern was noted in factors extracted in the EFA of retention variables rated by both groups. Again, factors extracted from the physicians' ratings of the retention motivators suggested five fairly distinct categories or themes: (1) variables of a professional and clinical nature; (2) a theme of personal time linked with peer support; (3) variables of a family nature; (4) a theme of community characteristics; and, (5) economic variables linked with obligation. As with the factors extracted from the EFA of the recruiters' ratings of recruitment attractors, factors extracted from the EFA of their ratings of retention variables were not as distinct as for the physicians. There were three general themes among the five factors extracted: (1) community characteristics loaded on three of the five factors; (2) personal time linked with peer support loaded on one of the factors; and (3) professional and clinical variables clustered on the fifth factor.

It is unclear why the underlying themes among the factors extracted in the EFAs performed on the physician variables appear to be more easily identified than among the factors extracted from the recruiter variables. This problem of interpreting the findings of the recruiter EFAs may be linked with the recruiters' consistently high ratings among both the recruitment attractors and the retention motivators. Their enthusiasm for rating these variables is covered in more detail in section 4 of this chapter.

Summary of the Four Five-Factor EFAs

While the four exploratory factor analyses carried out on the recruitment attractors and retention motivators rated by the physicians and recruiters in this study do not confirm the hypothesis that variables coded alike using the typology discussed in Chapter 3 will load together on one factor, there is an indication that this might be due to the multifaceted nature of many of the variables. To give an example, the general economic conditions of the community would be a variable coded "economic" (E) in the Conte typology, but it could just as easily be seen as an aspect of the community itself and coded "socio-cultural and community" (S). This suggests, and comes to me as no surprise, that although coding these variables might be thought of as a rational and objective process, there is much subjectivity involved as well. Broader implications of the possible ambiguity of some of the recruitment attractors and retention motivators are discussed in Chapter 6, "Summary, Conclusions, and Recommendations."

EFAs Extracting Factors with Eigenvalue >1

As discussed above there are limitations to using an arbitrary cutoff such as I used in the preceding section of this analysis. While an EFA calling for the extraction of exactly five factors may seem to be more consistent with my *a priori* assumption that there are five underlying values among both the recruitment attractors and the retention motivators, this method may miss some of the structural relationships among the variables. In the following section, I examine the findings of four EFAs performed using the criterion of extracting all factors with eigenvalue >1, which though somewhat subjective, is more likely to reveal a more complete set of relationships among the variables.

Physician Recruitment Attractor Dataset

Listed below in Table 5.1.13 are the results of the EFA on the Physician Recruitment Attractor Dataset asking SPSS to extract all factors with an eigenvalue > 1. Interestingly, the results are identical to the EFA asking SPSS to extract exactly five factors (see Table 5.1.2, page 132), indicating that there are only five factors with an eigenvalue > 1. A discussion of the results illustrated in Table 5.1.13 would be the same as that for the EFA discussed on pages 130 – 136 of this chapter on the Physician Recruitment Attractor Dataset in which exactly five factors were extracted.

Table 5.1.13 Pattern Matrix Physician Recruitment Attractors Extracting Factors With Eigenvalue > 1

Category*	Variable	1	2	3	4	5
P	Adequate Personal Time	0.85				
P	Call Coverage Available	0.75				
E	Local Specialists for Consultation	0.65				
P	Earnings/Compensation	0.60				
E	Network Specialists for Consultation	0.56				
E	NHSC Loan Program		0.86			
E	State Loan Repayment Program		0.83			
R	NHSC Scholarship		0.79			
R	J1Visa Program			-0.69		
E	Web Site as Recruitment Tool			-0.54		
R	Salaried Employment			-0.47		
R	Professional Recruitment Firms			-0.41		
R	Community Members Involved				-0.87	
R	One Lead Person				-0.73	
R	Unilaterally Close Deal				-0.59	
R	Honest Picture of the Practice				-0.58	
P	Community Promotion Package				-0.48	
S	Personal/Professional Match with Community				-0.42	
F	Proximity to Family and Friends					0.76
F	Quality of Childrens' Lifestyle					0.48
P	Spousal Opportunities					0.47

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 23 iterations.
*Theoretical Variable Category: E = *Economic*, R = *Recruitment Process*, P = *Professional and clinical*, F = *Family*, S = *Socio-cultural and community*

Physician Retention Motivator Dataset

Shown in Table 5.1.14 below are the results of the EFA on the Physician Retention Motivator Dataset asking SPSS to extract all factors having an eigenvalue > 1. Four factors were extracted. Factor 1 is almost identical to factor 1 extracted in the EFA asking SPSS to extract exactly five factors. The variable, "adequate medical personnel in the community," loaded almost equally on factor 1 and factor 4 in this EFA and was deleted from the analysis. Factor 2 in this EFA is again almost the same as factor 2 in the five-factor analysis. This

time, however, the variable, "additional educational loan," loaded on factor 2 instead of being a stand-alone motivator on the fifth factor. Factors 3 and 4 in Table 5.1.14 are identical to factors 3 and 4 in Table 5.1.5, page 138.

Table 5.1.14 Pattern Matrix Physician Retention Motivators Extracting Factors With Eigenvalue > 1

Category*	Variable	1	2	3	4
P	Quality of Hospital Facilities	0.86			
P	Quality of Medical Staff	0.83			
P	Quality of Nursing Staff	0.76			
P	Professional Satisfaction	0.72			
P	Compatibility with Peers	0.62			
P	Support of Hospital Administration	0.51			
E	Earnings/Compensation		0.73		
F	Adequate Personal Time		0.61		
E	Additional Educational Loan		0.58		
P	Call Coverage Available		0.57		
F	Quality of Children's Lifestyles			0.85	
F	Spousal Satisfaction			0.79	
P	Network Specialists for Consultation				-0.71
P	Local Specialists for Consultation				-0.65
S	Community Acceptance of Racial Diversity				-0.62

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 13 iterations.
*Theoretical Variable Category: E = *Economic,* R = *Recruitment Process,* P = *Professional and clinical,* F = *Family,* S = *Socio-cultural and community*

The four factors extracted in this EFA accounted for almost 60 percent of the variance in the sample, whereas the EFA extracting exactly five factors accounted for about 65 percent (Table 5.1.4, page 138).

Table 5.1.15 Total Variance Explained Physician Retention Motivator Dataset Extracting Factors With Eigenvalue >1

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	5.55	34.71	34.71
2	1.62	10.10	44.81
3	1.31	8.16	52.97
4	1.05	6.59	59.57

Extraction Method: Principal Component

The four factors with eigenvalue > 1 extracted in the EFA on the Physician Retention Motivator Dataset are weakly to moderately correlated. Factor 1 and 4 have a moderate negative correlation suggesting that the variables clustering on these two factors may be valued in opposite directions by the physicians participating in this study. See Table 5.1.16 below.

Table 5.1.16 Component Correlation Matrix Physician Retention Motivators With Factors Eigenvalue > 1Extracted

Component	1	2	3	4
1	1.000			
2	0.226	1.000		
3	0.210	0.182	1.000	
4	-0.322	-0.223	-0.154	1.000

Similar to the findings on the EFA extracting exactly five factors, the six variables loading on factor 1 in this EFA appear to imply that the underlying value of these retention motivators to the physicians is of a "professional practice of medicine and clinical" character. The underlying theme of three of the variables loading on factor 2 (adequate personal time, call coverage, and earnings and compensation) seems to be of a personal time and peer support nature. It is not clear to me why the fourth variable, additional educational loan, loaded onto this factor. The variables loading on factor 3 indicate that it has a "family-values" theme. "Peer support within the medical community" is the apparent general composition of factor 4. Community acceptance of racial diversity might be loading on this factor since many physicians practicing in rural Michigan are foreign medical graduates and peer support would be important for these physicians to succeed in a less than tolerant community

In summary, the results of the EFA on the Physician Retention Motivators Database asking SPSS to extract all factors having an eigenvalue > 1 seems to be giving about the same information as the EFA extracting exactly five factors.

Recruiter Recruitment Attractor Dataset

Listed below in Table 5.1.17 are the results of the EFA on the Recruiter Recruitment Attractor Dataset in which SPSS was asked to extract all factors with an eigenvalue > 1. Eight factors were extracted. Just as with the EFA asking SPSS to extract exactly five factors for the Recruiter Recruitment Attractor Database, the clustering of variables in this EFA is not clearly delineated along the theoretical variable categories discussed in Chapter 3. In fact, interpretation of what might be the underlying theme of the attractors clustered on each of the eight factors is even more difficult.

Table 5.1.17 Pattern Matrix Recruiter Recruitment Attractors Extracting Factors With Eigenvalue > 1

*	Variable	1	2	3	4	5	6	7	8
P	Network Specialists for Referral	.98							
P	Network Specialists for Consultation	.98							
E	Availability/Quality Housing	.72							
R	Recruits Meet Community Leaders		.91						
P	Local Specialists for Consultation		-.84						
R	Community Members Involved		.77						
R	Professional Recruitment Firms			.86					
R	Community Promotion Package			.48					
E	NHSC Loan Program				.91				
E	NHSC Scholarship				.87				
P	Quality of Medical Staff				.74				
E	State Loan Repayment Program				.73				
R	Networking With Other Recruiters					.76			
E	Community Economy					.70			
P	Quality of Hospital Facilities					.55			
R	Unilaterally Close Deal						.93		
F	Spousal Opportunities						.86		
E	Salaried Employment						.79		
S	Proximity to Cultural Events							.95	
R	J1Visa Program							.77	
P	Personal/Professional Match with Community							.70	
P	Quality of Nursing Staff								-.93
S	Proximity to Family and Friends								.83
F	Adequate Personal Time								-.74

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 45 iterations.
*Theoretical Variable Category: E = *Economic,* R = *Recruitment Process,* P = *Professional and clinical,* F = *Family,* S = *Socio-cultural and community*

Arguably, the variables loading on factors 1 and 2 have an undertone of "community." For example, looking at factor 1, outside networks of specialists for referral and consultation are usually developed by the community's hospital; and, the availability and quality of housing is a community characteristic. Looking at the variables loaded on factor 2, community leaders, local specialists for consultation, and community members are part and parcel of the community.

Factor 3 clearly is linked with the recruitment "process." Factor 4 seems to reflect some aspect of "obligation" in that the NHSC programs and the SLRP program obligate a physician to practice in an underserved area. It is not clear to

me why the attractor, quality of medical staff, is loaded on this factor. Two of the variables loaded on factor 5 can be seen to have a "community" connotation. The economy of the community as well as the quality of the local hospital facilities can be interpreted as community features. The attractor, networking with other recruiters, also loaded on factor 5. It would be difficult to interpret this variable as having a "community" connection and it does not seem to fit with the other variables loaded on this factor.

Factor 6 seems to be suggesting a theme of recruitment "process." The ability to unilaterally close the deal is clearly part of the process and salaried employment is sometimes offered while recruiting. Spousal opportunities might also be pointed out during the process in an active sense, rather than the physician having to seek out this knowledge.

Factor 7, just as with some of the previously discussed factors, seems to have an undertone of "community." Proximity to cultural events is a geographic feature of the community. The community has to have certain health care characteristics in order to qualify as a location for the J-1 Visa Waiver Program. And, personal and/or professional fit with the community would be linked with community attributes.

Lastly, factor 8 appears to be mostly of a "family" nature. While proximity to family and friends can be interpreted as a geographic feature of the community, it also can be seen as having family values. Adequate personal time is clearly an important aspect especially if the physician has family. However, it is not clear to me why the variable, *quality of the nursing staff*, loaded onto this

factor. This attractor seems to unmistakably have connotations of a professional and/or clinical nature and does not appear to belong to this factor.

The eight factors extracted in this EFA accounted for almost all of the variance in the sample at a little over 97 percent (Table 5.1.18 below). On the other hand, the EFA extracting exactly five factors from the Recruiter Recruitment Attractor Dataset accounted for about 79 percent of the variance (see Table 5.1.7, page 143).

Table 5.1.18 Total Variance Explained Recruiter Recruitment Attractor Dataset Extracting Factors With Eigenvalue >1

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	6.81	21.98	21.98
2	5.84	18.82	40.80
3	5.28	17.04	57.84
4	3.50	11.29	69.13
5	2.98	9.61	78.74
6	2.52	8.14	86.88
7	2.09	6.73	93.61
8	1.15	3.71	97.32

Extraction Method: Principal Component

As shown in Table 5.1.19 below the eight factors extracted in this EFA generally are weakly correlated, suggested these factors are independent.

Table 5.1.19 Component Correlation Matrix Recruiter Recruitment Attractors With Factors Eigenvalue > 1Extracted

Component	1	2	3	4	5	6	7	8
1	1.000							
2	-0.123	1.000						
3	0.088	0.197	1.000					
4	-0.045	0.098	0.013	1.000				
5	-0.023	0.039	-0.130	0.003	1.000			
6	-0.160	0.018	-0.025	-0.023	-0.077	1.000		
7	0.184	-0.024	0.130	0.106	-0.097	-0.175	1.000	
8	-0.030	0.128	-0.218	0.113	0.084	-0.120	0.106	1.000

In summing up the EFA on the Recruiter Recruitment Attractor Dataset in which SPSS was asked to extract all factors with eigenvalue > 1, I would argue that this analysis makes it difficult to detect the structure of the relationships among the variables in this database. The arbitrary cut-off point used in the five-factor analysis appears to more clearly delineate these relationships.

Recruiter Retention Motivator Dataset

Results of the EFA on the Recruiter Retention Motivator Dataset asking SPSS to extract all factors with eigenvalue > 1 are shown in Table 5.1.20 below. Eight factors were extracted. Just as in the EFA on this database requesting SPSS to extract exactly five factors, the overarching nature of the variables loading onto each factor is not clearly delineate along the lines of the theoretical variable categories.

Table 5.1.20 Pattern Matrix Recruiter Retention Motivators Extracting Factors With Eigenvalue > 1

	Variable	1	2	3	4	5	6	7	8
P	Local Specialists for Consultation	.97							
P	Adequate Medical Personnel in Community	.97							
S	Proximity to Urban Area	.84							
E	Earnings/Compensation		-.94						
F	Adequate Personal Time		-.70						
S	Community Acceptance Family			.94					
E	Availability/Quality Housing			-.50					
P	Network Specialists for Referral				-.93				
P	Network Specialists for Consultation				-.93				
S	Higher Education Opportunities				.65				
F	Religious Support Structure					.84			
S	Community Acceptance of Racial Diversity					.74			
P	Quality of Nursing Staff						-.90		
S	Recreational Opportunities						-.68		
P	Quality of Medical Staff						-.66		
P	Adequate Marketing/Promotion of Physician							.86	
S	Proximity to Family and Friends							.46	
P	Call Coverage Available								-.91
P	Quality of Hospital Facilities								.71

Extraction Method: Principal Component Analysis.Rotation Method: Oblimin with Kaiser Normalization. Rotation converged in 28 iterations.

*Theoretical Variable Category: E = *Economic*, R = *Recruitment Process*, P = *Professional and clinical*, F = *Family*, S = *Socio-cultural and community*

The variables loading onto factor 1 can be interpreted as "community" values with a profession slant. Local specialists and adequate medical personnel are a part of the community and those physicians wishing to be near their urban colleagues could value proximity to an urban area, a community attribute. Factor 2 can be seen as having an underlying value of "peer support." I have argued elsewhere in this research that a physician's earnings and compensation are in part based on referrals by his or her peers and adequate personal time is also in large determined by peer support in the form of call coverage.

The two variables loading onto factor 3 appear to reflect a common theme of intrinsic "community" features. The community's acceptance of the physician's family and the availability and quality of house are clearly attributes of the community. Factor 4, just as factor 1, seems to have an underlying value of "community" with a professional slant. Outside networks of specialists for referral and consultation are generally developed in the community and higher education opportunities for professional advancement may be found in the community itself or nearby.

Factor 5 can be interpreted as having an underlying value of "community" with a personal and family viewpoint. A religious support structure and community of acceptance of racial diversity are two important elements of personal and family happiness and are found within the community. Two of the three variables loading onto factor 6, *quality of nursing staff* and *quality of medical staff*, are linked with professional and clinical values. However, it is

unclear to me why the motivator, *recreational opportunities*, also loads onto this factor.

Factor 7 appears to value a mix of "community" with both a professional and personal point of view. Adequate marketing and promotion of the physician to the lay community is linked with the physician's professional success and proximity to family and friends, a geographic attribute of the community, may be linked with the physician's personal happiness. Lastly, the two motivators loading onto factor 8, *call coverage* and *quality of hospital facilities*, seem to be linked to professional and clinical values.

The eight factors extracted in this exploratory factor analysis accounted for almost 87 percent of the variance in the sample (see Table 5.1.21 below). The EFA of this same database that extracted exactly five factors accounted for about 70 percent of the variance (Table 5.1.10, page 148).

Table 5.1.21 Total Variance Explained Recruiter Retention Motivator Dataset Extracting Factors With Eigenvalue >1

Component	Eigenvalue	Percent of Variance	Cumulative Percent of Variance
1	4.80	21.82	21.82
2	3.77	17.12	38.93
3	2.61	11.87	50.80
4	2.46	11.20	62.00
5	2.04	9.28	71.28
6	1.16	5.29	76.57
7	1.14	5.18	81.75
8	1.06	4.82	86.58

Extraction Method: Principal Component

The component correlation matrix for the eight factors extracted in the EFA of the Recruiter Retention Motivator Data shows that the association among them is relatively weak indicating they are fairly independent of one another.

Table 5.1.22 Component Correlation Matrix Recruiter Retention Motivators With Factors Eigenvalue > 1Extracted

Component	1	2	3	4	5	6	7	8
1	1.000							
2	-0.010	1.000						
3	-0.077	0.087	1.000					
4	-0.055	-0.124	0.053	1.000				
5	0.065	0.076	0.063	-0.095	1.000			
6	-0.266	0.190	0.193	-0.042	-0.107	1.000		
7	0.057	0.051	0.227	0.008	0.081	0.088	1.000	
8	0.119	0.223	-0.080	0.002	0.168	0.003	-0.016	1.000

In summary, the EFA on the Recruiter Retention Motivator Dataset in which SPSS was asked to extract all factors with eigenvalue > 1 was somewhat more difficult to interpret than the EFA extracting exactly five factors from this database. Interestingly, in both EFAs a majority of the factors appeared to have attributes of the community as their underlying value. It seems that recruiters find community-linked motivators are an important part of keeping physicians in the community.

Comparing the Two EFA Methods

In this section of the data analysis, two methods of exploratory factor analysis were performed on variables in both the physicians' and the recruiters' databases of recruitment attractors and retention motivators to test the hypothesis that five types or categories of variables underlie values that attract and keep physicians in a community. The first method was to perform an EFA on the datasets extracting exactly five factors from the variables. The second method was to ask SPSS to extract all factors with eigenvalue > 1.

Interestingly, the results from both methods of EFA performed on the physician datasets were very similar. In fact, the results of the EFA performed on

the Physician Recruitment Attractor Dataset were identical for both methods. The results of the EFA performed on the Physician Retention Motivator Dataset were nearly identical, with the difference being that the second method extracted only four factors. However, the underlying values of these four factors appeared to mirror those of the EFA in which exactly five factors were extracted.

The results from both methods of EFA performed on the recruiter datasets were very different. While method one called for exactly five factors, method two yielded eight factors for both the Recruiter Recruitment Attractors Dataset and the Recruiter Retention Motivator Dataset. In both methods, the underlying value of the variables loading onto the factors extracted was neither clear nor distinct. Due to the larger number of factors yielded by method two, interpretation of the results was more difficult, especially for the recruiter recruitment attractor variables.

In the five-factor analysis of the Recruiter Recruitment Attractors Dataset, three factors had variables of a community nature loading on them and two had variables of recruitment activities loading on them. While four of the eight factors extracted by EFA method two were also of a community nature and two also had variables mostly of recruitment activities loading on them, two additional categories surfaced: one factor had variables of mostly an "obligatory" nature loading on it and another had variables of mostly a "family" nature loading on it. However, neither of these two factors was completely pristine in that each had another variable loaded on it, which did not seem to belong.

The results of the EFA performed on the Recruiter Retention Motivator dataset were very similar for both methods. Again, in both instances the factors were neither clear nor distinct. The five-factor analysis yielded factors carrying three general themes: community, peer support and professional and clinical aspects. The second method yielded eight factors with these same three general themes. However, the nuances of especially the community themed factors appeared to be subtler in that it was possible to detect a professional slant in several of the "community" factors.

Summary of the Two EFA Methods

Neither method confirmed the hypothesis that the underlying values of the variables that either attract or detract physicians from Michigan's rural counties exactly fit into the five categories discussed in Chapter 3. Both methods gave insight into possible new fundamental themes among the variables thought to be attractors or motivators. Results of the eigenvalue > 1 method were more difficult to interpret, especially on the EFA of the Recruiter Recruitment Attractor Database. The upside of the latter method may be its subtler nuances.

2. Testing the "Push-Pull" Theory

A major hypothesis advanced by this study is that I will be able to identify socio-demographic characteristics at the county-level, which will help to explain what it is about the county that might either attract physicians into or detract them away from certain rural Michigan counties. In immigration studies this is known as "push-pull" theory, which hypothesizes that there are variables that either pull

a population into an area or push them away from it. One county level socio-demographic measure, which indicates physicians are being attracted, or pulled into a certain county is the population-to-physician ratio. As the number of physicians attracted to the county increases, this ratio decreases. Thus, there is by definition an inverse relation between the population-to-PCP physician ratio and the independent variables that either "pull" physicians into an area or "push" them away from it. A county-level socio-demographic characteristic that decreases the population-to-physician ratio will be identified as an "attractor," whereas one that increases it will be identified as a "detractor." Therefore, the correlation between attractors and the dependent variable should be negative, while the correlation between detractors and the dependent variable should be positive. For example, I would expect county-level socio-demographic statistics such as the level of poverty and the percent of Medicaid-eligible patients to be "detractors," since they could negatively impact a physician's income and "push" him or her away from the county. On the other hand, county-level socio-demographic statistics such as the type of major economic base and the existence of a local hospital would probably be "attractors." For example, manufacturing-based economies tend to have higher levels of insured patients, especially if unions are present. Since this type of economic base could positively affect or increase a physician's income, I would hypothesize that it would "pull" him or her into an area. Similarly, hospitals usually have the technology and resources a physician needs for his or her practice and the presence of a hospital could act as an attractor.

I will use multiple linear regression analysis to test the hypothesis of the immigration studies "push-pull" theory that one can identify county-level socio-demographics, which might either attract physicians into or detract them away from certain rural Michigan counties, thereby helping to explain the observed differences in the population-to-physician ratio among Michigan's 58 rural counties. In general, the purpose of multiple regression analysis is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. Altogether, 41 independent county-level socio-demographic variables were selected for this regression analysis. This selection was based on findings in the physician recruitment literature as well as generally accepted indicators of appropriate access to health care that are often linked with the availability of an adequate number of physicians in the area. These variables include measures of health insurance, the county's major economic base, health status indicators, health care facilities and health personnel, the county's degree of rurality, population and housing density, ethnic mix of the population, general economic conditions, percent aging population, and levels of education.

The population-to-physician ratio was the county-level socio-demographic selected as the dependent variable for the regression analyses because this ratio indicates if there are an adequate number of primary care physicians (PCP) serving the population of any given county. According to federal guidelines, a population-to-PCP physician ratio less than 3500 people per PCP indicates that the county is being adequately served. A ratio greater than 3500 persons per primary care physician indicates that the county is being inadequately served.

The federal government designates a county such at this as a health personnel shortage area (HPSA).

A zero-order correlation matrix analysis determined that 12 of the 41 designated independent variables in the county-level socio-demographics database had a significant bivariate correlation coefficient with the dependent variable, or the population-to-physician ratio in that county. In retrospect, three of these variables probably should by definition be correlated with the population-to-PCP physician ratio. For example, the variable "number of FTE physicians" includes the PCP physicians that are used in the calculation of the dependent variable ratio. Similarly, the variable "percent of physicians in internal medicine" includes some of the PCP physicians that are in the ratio. On the other hand, while the variable "urban population of 2,500 to 19,999 and not adjacent to a metro area" appears to take in the population that is included in the calculation of this ratio, it is actually a measure of "rurality" and consists of a population range as well as its proximity to an urban area. Also, the dichotomous variable "full county is or is not a medically underserved area" appears to be part of the ratio as well, but it is not defined by the population-to-PCP physician ratio alone; it also takes into account various other factors such as the percent of population over age 65 and the infant mortality rate. However, it is understandable that it would be correlated with the dependent variable, but its weak correlation (0.280) suggests that this dichotomization probably explains very little of the variance in the ratio. These 12 independent variables and their respective correlations with the dependent variable are listed and described in Table 5.2.1 below.

Table 5.2.1 County-Level Independent Variables Having Significant Correlation Coefficients With Population-to-PCP Physician Ratio

Variable	Pearson's r
Hospital in the county[1]	-0.486**
Number of set-up and staffed hospital beds	-0.463**
Number of FTE physicians	-0.434**
Urban population 2,500 to 19,999, not adjacent to a metro area[1]	-0.388**
Percent of physicians not in primary care	-0.374**
Major economy is the service industry[1]	-0.329*
Number of hospitals	-0.326*
Major economy is farming[1]	0.311*
Percent of physicians in internal medicine	0.311*
Retirement destination[1]	0.294*
Full county is a medically underserved area[1]	0.280*
Number of nurse practitioners	-0.274*

[1]Note: Dummy variable, Yes =1, No = 0
*p = 0.05 (2-tailed) **p = 0.01 (2-tailed)

Although many of the correlations are in the direction hypothesized, there are a couple of surprises. For example, I expected the variable "major economy of the county is the service industry" would increase the population-to-PCP physician ratio. Since many businesses in the service industry catering to the tourist trade in rural Michigan tend to be fast food and other restaurants as well as "mom and pop" gift shops and other small businesses, employee benefits such as health insurance are usually minimal. Low rates of insured population were hypothesized to be detractors, thereby increasing the population-to-PCP physician ratio. Its negative correlation with the ratio suggests otherwise. In a like manner, I hypothesized that the variable "retirement destination" would be negatively correlated with the ratio. Retirement destination rural counties generally have higher family income levels than non-retirement destination counties due to the influx of retired persons (Cordes, 1987 in Gesler & Ricketts,

1992). I had expected that this county-level characteristic would be an "attractor" and therefore lower the physician-to-PCP physician ratio, but it appears to do the opposite. However, its relatively weak correlation (0.294) with the dependent variable suggests that it may explain very little of the variance observed in this ratio.

Since three of the variables – *number of FTE physicians, percent of physicians not in primary care,* and *percent of physicians in internal medicine* – in the correlation matrix are the number of physicians in the county by type, they should by definition be correlated with the dependent variable and therefore the decision was made not to include them in the regression analysis.

Using the bivariate correlation matrix as a guide to decide which variables to include in the initial analysis, a regression analysis with the remaining 9 independent variables produced a predictive model with an R^2 of 0.576 explaining about 57 percent of the observed variance in the dependent variable. However, two of the variables included in this model, *full county is a medically underserved area* and *number of nurse practitioners*, are weakly correlated with the dependent variable (0.280 and –0.274, respectively) and their t-statistics in the regression model (0.367 and 0.523, respectively) suggested that they may explain very little of the observed variance in the ratio. A second regression analysis (Model 2) was performed with these two weakly correlated independent variables removed to observe for any substantial changes in the R^2. Predictive Model 2 with 7 independent variables had a slightly lower R^2 of 0.541 affirming somewhat that the two omitted independent variables probably explained little of

the observed variance in the population-to-PCP physician ratio. Coefficients of the 7 independent variables in Model 2 are shown below in Table 5.2.2.

Table 5.2.2 Regression Model 2 Coefficients

Model 2	Unstandardized Coefficients		Standardized Coefficients		
Variable	**B**	**Std. Error**	**Beta**	**t**	**Sig**
Constant (A)	4183.9	505.5		8.3	.000
Urban population 2,500 to 19,999, not adjacent to a metro area[1]	-816.3	277.6	-.336	-2.9	.005
Number of set-up and staffed beds	-5.6	2.2	-.368	-2.5	.015
Major economy is farming[1]	1569.0	698.4	.250	2.3	.030
Hospital in the county[1]	-999.9	571.6	-.283	-1.8	.087
Retirement destination[1]	-101.0	413.2	-.035	-.24	.808
Major economy is service industry[1]	-42.8	558.0	-.010	-.08	.939
Number of hospitals	-15.8	277.2	-.010	-.06	.955

[1]Note: Dummy variable, Yes =1, No = 0
Dependent Variable: Ratio of Population to PCP Physician (1995)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	0.735	0.541	0.468	889.9

a Predictors: (Constant), USDA County Code 7, Farming Economic Type (1989), Set Up and Staffed Beds, Retirement Destination County, Service Economic Type (1989), Hospital in County, Number Hospitals in the County

In examining the standardized coefficients of these 7 variables, I detected that three of them had relatively weak betas suggesting that they probably were explaining very little of the observed variance in the dependent variable. These variables were *major economy is the service industry, number of hospitals,* and *retirement destination* listed in Table 5.2.2 above. I then decided to perform a third regression analysis removing these three variables and observing for changes in the R^2. This third regression yielded a predictive model (Model 3) with a very slightly lower R^2 of .540 explaining about 50 percent of the observed variance in the population-to-PCP physician ratio (R = .736, Adjusted R square =

.490, standard error of estimate = 858.8). Predictive Model 3 appears to be a simple, effective and parsimonious model for explaining much of the observed variance in the dependent variable. The coefficients of the 4 independent variables in regression Model 3 are listed below in Table 5.2.3.

Table 5.2.3 Regression Model 3 Coefficients

Model 3	Unstandardized Coefficients		Standardized Coefficients		
Variable	**B**	**Std. Error**	**Beta**	**t**	**Sig**
Constant (A)	4100.8	344.4		11.9	.000
Urban population 2,500 to 19,999, not adjacent to a metro area[1]	-825.7	242.9	-.340	-3.4	.001
Number of set-up and staffed beds	-5.8	1.7	-.380	-3.4	.001
Major economy is farming[1]	1564.2	640.3	.249	2.4	.018
Hospital in the county[1]	-932.3	406.6	-.263	-2.3	.026

[1]Note: Dummy variable, Yes =1, No = 0
Dependent Variable: Ratio of Population to PCP Physician (1995)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3	0.735	0.540	0.490	871.2

a Predictors: (Constant), USDA County Code 7, Farming Economic Type (1989), Set Up and Staffed Beds, Manufacturing Economic Type (1989), Hospital in County

However, using only the bivariate correlations to decide which variables to include in the regression models as predictors may not be the most effective method as it may not be an appropriate guide to what happens when controlling for other predictors. With this in mind, I decided to explore other possible predictors based on findings in the literature and commonsense rationale, even though they were not significantly correlated with the ratio. Altogether, I elected to explore the effects of 24 other county-level socio-demographic variables by adding them one at a time to regression Model 3. If there was no substantial increase in R^2 or if the total variance explained was less or unchanged, the

variable was removed from the resultant new model and another predictor was examined. If there was a substantial increase in R^2, it remained in the new model while the other predictors were explored.

As an example, I earlier hypothesized that a county with an economy based on manufacturing would be an attractor since this type industry tends to have good health care plans especially if unions are present. However, adding this predictor to Model 3 resulted in no change to R^2. Similarly, rural counties with larger urban populations and in close proximity to a metropolitan are generally seen as attractors to physicians, but including this predictor in the model resulted in no change to R^2. In total, 5 of the additional 24 predictors examined contributed substantially to the variance explained by Model 3 alone (R^2 increased from 0.540 to 0.694). However, because of strong correlations among three of the independent variables – *major economy is government, population density, and percent poverty level* – I removed these variables from the model. The resulting model with six predictors, Model 4, is shown in Table 5.2.4 below.

Table 5.2.4 Regression Model 4 Coefficients

Model 4	Unstandardized Coefficients		Standardized Coefficients		
Variable	**B**	**Std. Error**	**Beta**	**t**	**Sig**
Constant (A)	5099.0	646.1		7.9	.000
Number of set-up and staffed beds	-5.9	1.7	-.381	-3.4	.001
Hospital in the county[1]	-1269.1	407.2	-.368	-3.1	.003
Major economy is farming[1]	1501.2	605.6	.246	2.5	.017
Urban population 2,500 to 19,999, not adjacent to a metro area[1]	-586.6	254.8	-.242	-2.3	.026
Major economy is mining[1]	1299.0	592.0	.213	2.2	.034
Percent Medicare	-45.4	24.8	-.203	-1.8	.075

*Note: Dummy variable, Yes =1, No = 0
Dependent Variable: Ratio of Population to PCP Physician (1995)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
4	0.782[a]	0.611	0.557	812.42

a Predictors: (Constant), Set Up and Staffed Beds, Farming Economic Type (1989), Mining Economic Type (1989), USDA County Code 7, Percent County Medicare Eligible (2000), Hospital in County

The two predictors added to Model 3 and shown in Model 4 are *major economy is mining*, and *percent Medicare*. These two variables appear to predict in the direction that would be expected. Remembering that attractors are negatively related to the dependent variable (the ratio decreases) and detractors are positively related (the ratio increases), the predictor *percent Medicare* appears to be an attractor. This can somewhat be explained in that Medicare patients as a population have a higher demand for health care services than the general population and it may be that recruiters in areas with a high percentage of Medicare patients recruit aggressively, thereby bringing more physicians into the area.

On the other hand, he county-level socio-demographic variable, *major economy is mining*, is a detractor in this model and predicts a larger population-to-PCP physician ratio. Today in Michigan, counties dependent on mining for their economic base tend to be isolated, sparsely populated and economically depressed. It is somewhat understandable that physicians might not be attracted into these areas.

Regression Model 4 can be illustrated in equation form as follows:

population-to-PCP ratio = 5099.0 + (-5.9 x *set-up and staffed beds*) + (-1269.1 x *hospital in the county*) + (1501.2 x *major economy is farming*) + (-586.6 x *urban population...*) + (1299 x *major economy is mining*) + (-45.4 x *percent medicare*)

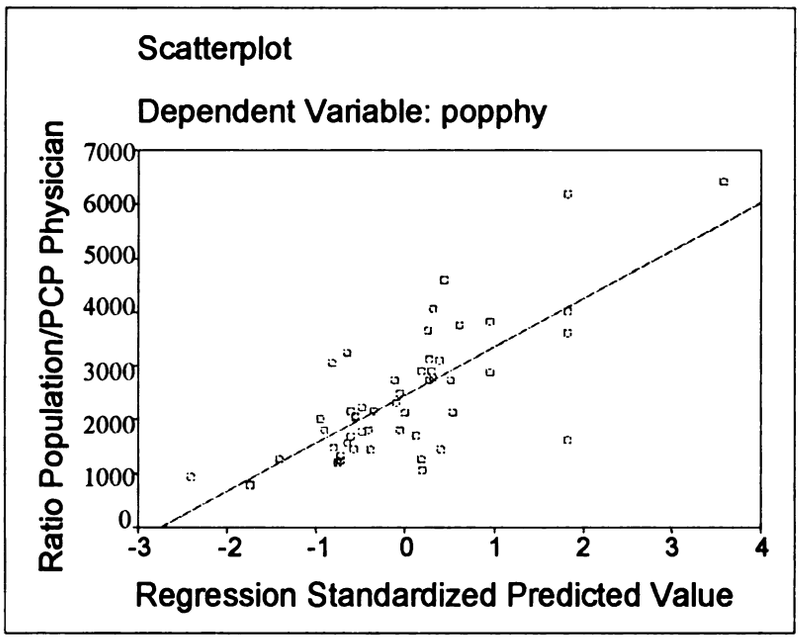
The independent variable "*set-up and staffed beds*" is an interval variable and is the number of set-up and staffed acute care beds in the county. The independent variable "*hospital in the county*" is a dummy variable and was coded 1 = Yes (there is a hospital in the county) and 0 = No. The independent variable "*major economy is farming*" is a dummy variable and was coded 1 = Yes (the major economic force in the county is farming) and 0 = Otherwise. The independent variable "*urban population...*" is also a dummy variable and was coded 1 = Yes (the county is non-metropolitan, has an urban population of 2,500 to 19,999 and is not adjacent to a metropolitan area) and 0 = Otherwise. The independent variable "*major economy is mining*" is another dummy variable and was coded 1 = Yes (the major industry in the county is mining) and 0 = Otherwise.

Regression Model 4 is interpreted as follows: for every set-up and staffed hospital bed in the county, the ratio decreases by 5.9 units; if there is a hospital in the county, it decreases by 1,269.1 units; if the major industry is farming, this

ratio increases by 1,501.2 units; if the county non-metropolitan, has an urban population of 2,500 to 19,999 and is not adjacent to a metropolitan area, the ratio decreases by 586.6 units; if the major industry is mining, it increases by 1,299 units; and, for every one percent increase in Medicare patients, the ratio decreases by 45.4 units.

A scatterplot of the residuals with both the regression standardized predicted value and the dependent variable, the population-to-PCP physician ratio (*popphy*), indicates that regression Model 4 measures a linear relationship between the selected predictors and the dependent variable (Figure 5.5).

Figure 5.2.1 Scatterplot Model 4



This regression analysis appears to substantiate the immigration "push-pull" theory that some county characteristics will "pull" (attract) physicians into the county whereas others may "push" them away, or detract them. Regression Model 4 indicates that 4 of the 6 variables in the equation are attractors while two

are detractors. According to this model the attractors are (1) the number of set-up and staffed hospital beds; (2) a county with at least one hospital in it; (3) a county with an urban population of 2,500 to 19,999 and not adjacent to a metro area; and, (4) the percent of Medicare eligible persons in the county. On the other hand, counties having either mining or farming as their major industry appear to detract physicians. Broader and more far-reaching implications of this regression analysis and its limitations are discussed in Chapter 6, "Summary, Conclusions, and Recommendations."

3. Group Mean Rating Comparison

The two groups involved in this research, recruiters and physicians, have different though related agendas in the rural physician recruitment and retention process. On the one hand, recruiters are attempting to fill a community need for a physician who will come to practice and remain in the community. On the other hand, physicians are seeking a place to practice, which they perceive will best fill their family, professional and career needs. Ideally, both needs will be met.

However, these two groups may have different viewpoints on how best to fill their needs. Therefore, I speculated that as a group they would have strong and probably different feelings about the value of certain recruitment attractors and retention motivators, and that in fact the difference in their opinions might be statistically significant. I did not find anything in the literature to suggest that this is the case, but my many years of association with physicians and other people in the medical field led me to believe that my hypothesis could very well be valid. The value of this research question, which goes beyond the literature is I believe

to try and identity those variables that are most significant in a physician's decision-making to come and practice in a particular area and remain there. I felt that the recruiters could very well be either over or under emphasizing certain aspects of the recruitment and retention process from the perspective of the physicians and by doing so either over- or underutilizing what may be valuable and sometimes scarce resources.

The statistical approach I will use for testing this hypothesis is to average the group ratings of the two sets of variables rated by both the 506 physician respondents and the 22 recruiter participants during the physician mail survey and the recruiter interview data collection phases of the larger study conducted by the MDCH. One set of variables consisted of 16 recruitment motivators and the other set consisted of 14 retention variables. Following this, the Mann-Whitney nonparametric test of significance for two independent samples of ordinal variables was performed on each variable in both sets to test the null hypothesis that the two group mean rankings on the variable are equal in the population.

The data were collected using the same rating scale for both groups: 1 = "not important at all;" 2 = "somewhat not important;" 3 = "somewhat important;" and, 4 = "very important." Not surprisingly, several recruitment attractors and retention motivators had comparable levels of importance to both the recruiters and physicians. However, some considerable disparities were found between the ratings given to a number of variables by these two groups of respondents.

Overall, the recruiters as a group tended to rate both the recruitment attractors and retention motivators higher than did the physicians as a group. The recruiters on average rated all 16 attractors higher than did the physicians and all but two of the 14 retention motivators were rated on average higher by the recruiters than the physicians. The average rating by the recruiter group across the 16 recruitment attractors was 3.43 vs. 2.42 for the physician group. Similarly, the average rating by the recruiters across the 14 retention motivators was 3.57 vs. 3.00 for the physician group. It is not clear why the recruiter group consistently rated the variables higher than did the physicians. It could be that the recruiters on the whole are a much more enthusiastic group and are very optimistic about the importance of the recruitment and retention process variables, which they work with on a daily basis. For example, the sample of recruiters were in total agreement that having one point person central to the recruitment process was very important, with an average rating score of 4.00. Physicians, on the other hand, rated this variable between somewhat and somewhat not important, with an average score of 2.50. This might be because they may experience the recruitment and retention process only once or twice in their lifetime and may be more cautious and conservative and even possibly cynical about the worth of these attractors and motivators. Another possibility is that it may have been some time since many of the physicians were recruited and they simply don't recall how important or unimportant a variable was to them at the time.

Whatever the reason for the observed differences between the average group ratings of these two sets of variables, it seemed apparent that because of the sizeable differences that a test of significance of the means between these two independent samples of ordinal variables would most likely reject the null hypothesis that the group means were the same in the two populations. To reduce the differences in the average group ratings of the variables in these sets, the raw scores of the relative importance for the recruitment attractors and the retention motivators were adjusted using the following method. First the average group rating for each set of variables (attractors and motivators) was calculated (see above). Subtracting the group set average from the raw score for that case then created a new adjusted variable for each case. This adjusted score is the deviation of the importance given by each person to a variable from the group set mean of all respondents in their particular group, either physicians or recruiters.

Example:
Group 1, (recruiters) var001 average raw score = 4.00
Group 2, (physicians) var001 average raw score = 2.49
Absolute difference without adjustment = 1.51

Group 1 (recruiters) recruitment attractors set mean = 3.43
If var001, case 1 = 4.00, then adjusted var001, case 1 = 4.00 – 3.43 = 0.57

Group 2 (physicians) recruitment attractors set mean = 2.42
If var001, case 1 = 2.0, then adjusted var001, case 1 = 2.0 – 2.42 = -0.42

Group 1, (recruiters) var001 adjusted average score = 0.57
Group 2, (physicians) var001 adjusted average score = 0.08
Absolute difference with adjustment = 0.49

As this example illustrates, using this adjustment method on the case raw scores substantially lowered the absolute difference between the recruiter average group rating of var001 ("one person leading the recruitment process") and the physician average group rating of this variable. The unadjusted absolute

group mean difference on var001 was 1.51, whereas the adjusted difference was only 0.49. The adjusted scores were used to test the group mean rankings for each variable in both sets of data for statistical significance.

Group mean adjusted scores for the recruitment attractors and retention motivators are examined and discussed following an examination and discussion first of the unadjusted group mean ratings of these variables. The unadjusted scores are illustrated below in Table 5.3.1 and Table 5.3.2, whereas the adjusted group mean scores are shown in Table 5.3.3 and Table 5.3.5.

Overview of the Group Ratings

In the first part of this section I give an overview of the unadjusted average group rating scores given to 16 recruitment attractors and 14 retention motivators rated by both the recruiters and the physicians. This is followed by a discussion of those variables that were rated "somewhat important" to "very important" to both groups; then a discussion of those variables that were "not important at all" to "somewhat not important" to both groups, followed by a discussion of those variables having a sizeable difference of opinion between the two groups of respondents.

Comparison of Recruitment Attractor Group Mean Ratings

Recruiters were asked to rate the relative importance of 16 recruitment attractors on a scale of one to four (1 = least important, 4 = most important) in questions asked during face-to-face interviews. Physicians were asked to rate these same 16 attractors by answering questions on the physician mail survey questionnaire. A test for significance on the means of these two independent

samples was performed on each variable using the adjusted mean scores discussed above. However, for purposes of this overview on the mean ratings of these variables, the unadjusted group mean score is used to more meaningfully express the scoring scale used in this study (1 = least important) to 4 = most important).

Listed below in Table 5.3.1 are the unadjusted average group rating scores given to these 16 physician recruitment attractors by both groups. These group average ratings include two combined recruiter inquiries. Twenty-two recruiter interviews and 506 physician survey responses were analyzed. The 16 attractors rated by both groups are listed in descending order according to the recruiters' mean rating. For purposes of comparison, the physicians' group mean rating is listed next to the recruiters' group meaning rating of the corresponding attractor. Also included in this table is the group rank order based on the mean rating for each variable. Overall, recruiters tended to rate recruitment attractors higher than did the physicians. In addition, the spread from low to high of the mean scores of recruitment attractors for the recruiters was less (1.71) than for the physicians (2.19).

Table 5.3.1. Comparison of Group Mean Ratings on Recruitment Variables

"How important are each of the following attractors in recruiting physicians?"

Attractor	Recruiters		Physicians	
Description	**Mean Score[1]**	**Rank* Order**	**Mean Score[1]**	**Rank* Order**
One person leading the recruitment efforts and serving as the central contact point	4.00	1	2.50	8
Quality of children's lifestyle such as safety and good public schools	3.95	2	3.27	1
A realistic, accurate description of the community and practice opportunities	3.90[2]	3	2.98	3
Availability of call coverage relief	3.86	4	2.90	4
Adequate leisure/personal time	3.68	5	3.21	2
Projected earnings and/or compensation	3.67	6	2.83	6
Presence of a network, plan, or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	3.62[2]	7	2.38	10
Community member involvement in the recruitment process, such as school superintendent, realtors, bankers	3.33	8	1.96	13
A strategy in place to offer and to quickly close the contract if needed	3.29	9	2.22	11
A high quality, comprehensive community promotional package	3.27	10	2.00	12
Spousal opportunities such as employment, career advancement, education, etc	3.27	11	2.44	9
Salaried employment by the local hospital	3.24	12	1.89	14
Access to local specialists for consultation and/or referral	3.23	13	2.86	5
The Internet/Websites as recruiting tools	3.20	14	1.17	16
The community's proximity to friends/family	3.09	15	2.71	7
Professional recruitment firm(s)	2.29	16	1.35	15

[1] 4 = highest possible score, 1 = lowest possible score. * Rank order determined by group average mean score. [2]Combined responses to two recruiter inquiries to compare with a combined question on the physician survey

Recruitment Attractors Rated Most Important to Both Groups.

The two groups of respondents in this study appeared to generally agree on the relative importance of 5 of the 16 recruitment attractors, rating them from between "somewhat important" to "very important." These five variables were in the top six ranked attractors for both groups. First, both the recruiters and the physicians gave a very high average rating to the recruitment attractor, "Quality of children's lifestyle such as safety and good public schools." Recruiters gave it an average score of 3.95 while the physicians rated this variable at an average level of importance of 3.27. Following this, giving or obtaining "a realistic, honest,

and accurate description of the community and the practice opportunity" was also seen as having a high level of importance for both groups. The recruiters rated this attractor with an average score of 3.90 and the physicians gave it a mean score of 2.98. The recruiters with an average score of 3.86 rated the "availability of call coverage relief" very highly. This attractor also scored somewhat highly with physicians with a 2.90 average rating. Next, the recruitment variable, "Adequate leisure and/or personal time," was rated highly by both groups. The recruiters rated it with an average score of 3.68, whereas the physicians scored it with an average rating of 3.21. Following this, "projected earnings and/or compensation" was rated highly by both groups with a mean score of 3.67 and 2.83 respectively for the recruiters and the physicians. Interestingly, recruiters placed themselves as lead contact point as the most important recruitment variable, which was not fully appreciated by the physicians. Physicians appeared to be more interested in local specialists than with links to tertiary hospitals.

Recruitment Attractors Rated Least Important to Both Groups.

Both recruiters and physicians appeared to agree that one attractor, "the use of professional recruitment firms," was not very important. Recruiters rated this variable with a mean score of 2.29, or about "somewhat not important," while physicians gave it an average rating of 1.35, or almost "not important at all." Based on group mean ratings, there appeared to be sizeable disagreement between these two groups on the relative importance of the remaining eight recruitment attractors.

Disparity in Opinions.

Altogether, there were somewhat disparate opinions on eight (50 percent) of the 16 recruitment attractors. The biggest difference of opinion between the two groups was their rating of the attractor, "using the Internet and/or websites as recruiting tools." The recruiters gave this variable a mean score 3.20, or a rating of "somewhat important," whereas the physicians rated it with an average score of 1.17, or "not important at all." The next largest rating discrepancy between the recruiters and the physicians was on the attractor, "having one person leading the recruitment efforts and serving as the central contact point." The recruiters rated it "very important" with an average score of 4.00, while the physicians saw this variable between "somewhat not important" and "somewhat important," giving it an average score of 2.50. This should not be surprising since recruiters probably view themselves as that point person. Following this, the recruiters found the attractor, "community member involvement in the recruitment process," to be "somewhat important" with a mean score of 3.33 while physicians rated it "somewhat not important" with a mean score of 1.96. Another disparate opinion according to group mean rating was the use of "a high quality, comprehensive community promotion package." Recruiters felt this was "somewhat important" with an average score of 3.27, whereas the physicians rated it "somewhat not important," giving it a mean score of 2.00. Again, this should not be too surprising since the recruiters are usually responsible for assembling these promotion packages. Following this, salaried employment by the local hospital" was rated "somewhat important" by the recruiters (mean score 3.24) but it was

rated "somewhat not important" by the physicians with an average score of 1.89. The "presence of a network, plan, or referral agreement...for consultation and/or referral" was seen as almost " very important" by the recruiters (average score 3.62) but it was rated about "somewhat not important" by the physicians with a mean score of 2.38. The recruiters felt that having "a strategy in place to offer and quickly close the contract if needed" was "somewhat important" with an average score of 3.29, whereas the physicians viewed it as "somewhat not important" giving this attractor a mean score of 2.22. Finally, the recruitment attractor, "spousal opportunities," was rated "somewhat important" by the recruiters with an average score of 3.27, but the physicians rated it about "somewhat not important" giving it a mean score of 2.44.

The preceding examination of a comparison between the recruiters' and the physicians' mean ratings of the 16 recruitment attractors suggests that in general, physicians tended to rate recruitment attractors of a "process" nature relatively less important than did the recruiters. These appear to be variables that the recruiters have some control over. It could be that recruiters are more focused on the process since that is their job, whereas physicians may be unaware of the process, or accept it as a given. On the other hand, recruitment attractors of either a personal and/or leisure time nature or having professional and/or clinical aspects tended to be rated higher by physicians than by recruiters. As with the recruiters, these appear to be variables that the physicians have, or would like to have, some control over or their work may be directly impacted by some of the variables, especially those of a clinical nature.

Comparison of Retention Motivator Group Mean Ratings

Recruiters were also asked to rate the relative importance of 14 retention motivators on a scale of one to four (1 = least important, 4 = most important) in questions presented during face-to-face interviews. Physicians were asked to rate these same 14 motivators by answering questions on the physician mail survey questionnaire. Listed below in Table 5.3.2, page 178, are the unadjusted average group ratings given to these 14 physician retention motivators by both groups: the recruiters and the physicians. These group average ratings include two combined recruiter inquiries. A test for significance on the means of these two independent samples was performed on each variable using the adjusted mean scores discussed above. However, for purposes of this overview on the mean ratings of these variables, the unadjusted group mean score is used to more meaningfully express the scoring scale used in this study (1 = least important) to 4 = most important). Listed below in Table 5.3.1 are the average group rating scores given to these 16 physician recruitment attractors by both groups. These group average ratings include two combined recruiter inquiries. Twenty-two recruiter interviews and 506 physician survey responses were analyzed.

The 14 motivators rated by both groups are listed in descending order according to the recruiters' group mean rating. For purposes of comparison, the physicians' group mean rating is listed next to the recruiters' group meaning rating of the corresponding attractor. Also included in this table is the group rank order based on the group mean rating for each variable.

Overall, recruiters tended to rate retention motivators slightly higher than did the physicians. The average rating by the recruiters across the 14 retention motivators was 3.57 vs. 3.00 for the physician group. In addition, the spread from low to high of the mean scores of recruitment attractors for the recruiters was less (1.25) than for the physicians (2.23). This difference in range seems to suggest that there is a higher level of agreement among the recruiters on the relative level of importance of the motivators than among the physicians.

Table 5.3.2. Comparison of Group Mean Ratings on Retention Variables

"How important are each of the following motivators in retaining physicians?"

Motivator	Recruiters		Physicians	
Description	**Mean Score[1]**	**Rank Order**	**Mean Score[1]**	**Rank Order**
Professional satisfaction with current practice	3.95	1	3.63	1
Continued support of hospital administration	3.90	2	3.05	10
Quality of children's lifestyle such as safety and quality public schools	3.86	3	3.33	4
Spousal satisfaction with opportunities, such as employment, career, education, etc	3.86	4	3.11	8
Time off for personal pursuits	3.81	5	3.29	5
Quality of local hospital facilities	3.71	6	3.40	2
Quality of hospital medical staff	3.67	7	3.34	3
Actual earnings/compensation	3.67	8	3.07	9
Availability of call coverage relief	3.67	9	2.97	11
Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	3.62[2]	10	2.60	12
Quality of nursing and other non-physician personnel	3.24	11	3.24	6
Community acceptance of racial and or ethnic diversity	3.14	12	2.36	13
Access to local specialists for consultation and/or referral	3.14[2]	13	3.14	7
Additional educational loan repayment assistance	2.70	14	1.40	14

[1] 4 = highest possible score, 1 = lowest possible score. [2]Combined responses to two recruiter inquiries to compare with a combined question on the physician survey.

Retention Motivators Rated Most Important to Both Groups.

Unlike the recruitment attractors, the recruiters and the physicians appear to be much more in agreement in their assessment of the relative importance of the retention motivators measured in this study, based on group mean scores.

For example, the motivator "professional satisfaction" was rated "very important" by both groups with a recruiter average score of 3.95 and a physician mean score of 3.63. They were mostly in agreement on the next eight variables in the table listed in order of the recruiters' mean ratings with the recruiters rating the "very important" while the physicians rated them "somewhat important." These eight retention motivators are: (1) "continued support of hospital administration;" (2) "quality of children's lifestyle; (3) "spousal satisfaction;" (4) "time off for personal pursuits;" (5) "quality of local hospital facilities;" (6) "quality of hospital medical staff;" (7) "actual earnings and/or compensation;" and, (8) "availability of call coverage relief." The recruiters' mean scores for these motivators respectively were 3.90, 3.86, 3.86, 3.81, 3.71, 3.67, 3.67, and 3.67. For the physician group the respective mean scores were 3.05, 3.33, 3.11, 3.29, 3.40, 3.34, 3.07, and 2.97. While the physicians' mean scores for each of these eight motivators were slightly lower, the differences did not appear to be substantial.

Both groups had the same mean rating on two of the retention motivators: (1) "quality of the nursing staff and other non-physician personnel; and (2) 'access to local specialists for consultation and/or referral." The respective mean scores for these two variables for both groups were 3.24 and 3.14, making them "somewhat important" to both recruiters and physicians.

Retention Motivators Rated Least Important to Both Groups.

The least important retention motivator for both groups was "additional educational loan repayment assistance." While there is a sizeable difference in

the group mean ratings (2.70 for recruiters, 1.40 for physicians), this variable was nonetheless the lowest rated by both recruiters and physicians.

Disparity in Opinions.

While both groups of respondents were mostly in agreement about the relative importance of these 14 retention motivators, there were three observable dissimilar opinions. First, the "presence of a network or referral agreement...for consultation and/or referral" was given an average score of 3.62 by the recruiters indicating that in their view this motivator is very important in the retention process. On the other hand, the mean score given to it by the physicians was 2.60, or just slightly more than "somewhat not important." As observed among the recruitment attractors, physicians appear to be more interested in local medical specialists for consultation and referral rather than a network of specialists outside the community. Next, the retention motivator "community acceptance of racial and/or ethnic diversity" had a mean score of 3.14 with the recruiters and 2.36 with the physicians. These scores indicate that recruiters saw this variable as "somewhat important," whereas in the view of the physicians it was "somewhat not important." It appears that recruiters are more sensitive to their community's acceptance of diversity than are physicians. While many international medical graduates (IMG) work in rural areas under the J-1 Visa Waiver program, this research does not indicate they are particularly sensitive to the community's acceptance of their diversity. Lastly, the variable with greatest disparity between the two groups was "additional educational loan repayment assistance" after initial obligations were fulfilled. While it was the lowest rated

variable for both groups, recruiters rated this motivator an average score of 2.70, indicating that it was "somewhat important," while physicians gave it a mean score of 1.40, indicating that it was "not at all important" to them. This difference could be because many of the responding physicians either had no educational loan obligations or had repaid them after their initial contract was completed. On the other hand, recruiters may have rated it higher because they saw it as a useful retention tool, again a process related variable.

Tests for Statistical Significance – Attractors

The Mann-Whitney nonparametric test of significance for two independent samples of ordinal variables was performed on each the recruitment attractors to test the null hypothesis that the two group mean rankings are equal in the population. In an effort to avoid a Type I error (rejecting the null hypothesis even though it is true), the average mean scores for both groups were adjusted using the methodology discussed at the beginning of this section. These adjusted group mean scores are show below in Table 5.3.3.

Table 5.3.3 Comparison of Adjusted Group Mean Ratings on Recruitment Variables

Attractor	Recruiters		Physicians	
Description	**Mean Score[1]**	**Rank Order**	**Mean Score[1]**	**Rank Order**
One person leading the recruitment efforts and serving as the central contact point	.57	1	.08	8
Quality of children's lifestyle such as safety and good public schools	.52	2	.85	1
A realistic, accurate description of the community and practice opportunities	.52[2]	3	.56	3
Availability of call coverage relief	.43	4	.48	4
Adequate leisure/personal time	.24	5	.79	2
Projected earnings and/or compensation	.24	6	.41	6
Presence of a network, plan, or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	.19	7	-.04	10
Community member involvement in the recruitment process, such as school superintendent, realtors, bankers	-.09	8	-.46	13
A strategy in place to offer and to quickly close the contract if needed	-.14	9	-.20	11
A high quality, comprehensive community promotional package	-.19	10	-.42	12
Spousal opportunities such as employment, career advancement, education, etc	-.19	11	-.02	9
Salaried employment by the local hospital	-.19	12	-.53	14
Access to local specialists for consultation and/or referral	-.19	13	.44	5
The Internet/Websites as recruiting tools	-.23	14	-1.24	16
The community's proximity to friends/family	-.33	15	.29	7
Professional recruitment firm(s)	-1.14	16	-1.07	15

[1] Adjusted mean score (see page 185). [2]Combined responses to two recruiter inquiries to compare with a combined question on the physician survey

A comparison of Table 5.3.3 with Table 5.3.1 on page 187 indicates that the adjusted group mean scores did not affect the observed rank-order based on the non-adjusted group mean ratings.

Each recruitment variable was tested using the Mann-Whitney test of the means of two independent samples of ordinal variables. The results of these tests are show in Table 5.3.4 below.

Table 5.3.4 Results of Statistical Significance Test on Recruiter and Physician Samples of Adjusted Mean Ratings of Recruitment Attractors

Recruitment Attractor Description	Score[1] Difference	p Value
One person leading the recruitment efforts and serving as the central contact point	.49	.277
Quality of children's lifestyle such as safety and good public schools	-.33	.000*
A realistic, accurate description of the community and practice opportunities	-.04	.000*
Availability of call coverage relief	-.05	.001*
Adequate leisure/personal time	-.55	.000*
Projected earnings and/or compensation	-.17	.000*
Presence of a network, plan, or referral agreement with a tertiary hospital and/or non-local specialist for consult and/or referral	.23	.267
Community member involvement in the recruitment process, such as school superintendent, realtors, bankers	.37	.637
A strategy in place to offer and to quickly close the contract if needed	.06	.099
A high quality, comprehensive community promotional package	.23	.765
Spousal opportunities such as employment, career advancement, education, etc	-.17	.006
Salaried employment by the local hospital	.34	.316
Access to local specialists for consultation and/or referral	-.63	000*
The Internet/Websites as recruiting tools	1.01	.000*
The community's proximity to friends/family	-.62	.000*
Professional recruitment firm(s)	-.07	.002*

[1] Difference between recruiter and physician adjusted mean score (score difference = recruiter adjusted score minus physician adjusted score). *Significant at $p \leq .003$

In an effort to reduce the probability that any significant p-levels revealed by this test were not random occurrences, a Bonferroni correction factor was calculated by dividing .05 by the number of variables tested (16). This correction makes the differences observed in the recruitment attractors statistically significant at $p \leq .003$. Tests for statistical significance on the observed variance in the adjusted mean scores on each recruitment attractor rated by the two groups revealed 9 of 16 attractors in which these differences were statistically significant at $p \leq .003$. These tests indicate that the two sample groups are probably independent in the population and that we can reject the null hypothesis that the two group mean rankings on 9 of the variables tested are equal in the

population. The Mann-Whitney test for significance indicates that the two groups ranked these variables differently and that one is higher than the other. On the other hand, we cannot reject the null hypothesis on the other seven attractors tested. Broader implications of these findings are discussed below in Chapter 6.

Tests for Statistical Significance - Motivators.

The Mann-Whitney nonparametric test of significance for two independent samples of ordinal variables was also performed on each of the retention motivators to test the null hypothesis that the two group mean rankings are equal in the population. Again, in an effort to avoid a Type I error (rejecting the null hypothesis even though it is true), the average mean scores for both groups were adjusted using the methodology discussed at the beginning of this section. These adjusted group mean scores are show below in Table 5.3.5.

Table 5.3.5 Comparison of Adjusted Group Mean Ratings on Retention Variables

Motivator	Recruiters		Physicians	
Description	**Mean Score[1]**	**Rank Order**	**Mean Score[1]**	**Rank Order**
Professional satisfaction with current practice	.52	1	1.21	1
Continued support of hospital administration	.47	2	.63	10
Quality of children's lifestyle such as safety and quality public schools	.43	3	.91	4
Spousal satisfaction with opportunities, such as employment, career, education, etc	.43	4	.69	8
Time off for personal pursuits	.38	5	.89	5
Quality of local hospital facilities	.28	6	.98	2
Quality of hospital medical staff	.24	7	.92	3
Actual earnings/compensation	.24	8	.65	9
Availability of call coverage relief	.24	9	.55	11
Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	.19[2]	10	.18	12
Quality of nursing and other non-physician personnel	-.19	11	.82	6
Community acceptance of racial and or ethnic diversity	-.29	12	-.06	13
Access to local specialists for consultation and/or referral	-.29[2]	13	.72	7
Additional educational loan repayment assistance	-.73	14	-1.02	14

[1] Adjusted mean score (see page 185). [2]Combined responses to two recruiter inquiries to compare with a combined question on the physician survey.

A comparison of Table 5.3.5 with Table 5.3.2 on page 198 indicates that the adjusted group mean scores of the retention motivators did not affect the observed rank-order based on the non-adjusted group mean ratings.

Each retention variable was tested using the Mann-Whitney test of the means of two independent samples of ordinal variables. The results of these tests are show in Table 5.3.6 below.

Table 5.3.6 Results Statistical Significance Test on Recruiter and Physician Samples of Adjusted Mean Ratings of Retention Motivators

Retention Motivator Description	Score[1] Difference	p Value
Professional satisfaction with current practice	-.69	.000*
Continued support of hospital administration	-.16	.000*
Quality of children's lifestyle such as safety and quality of public schools	-.48	.000*
Spousal satisfaction with opportunities, such as employment, career, education, etc	-.26	.000*
Time off for personal pursuits	-.51	.000*
Quality of local hospital facilities	-.70	.000*
Quality of hospital medical staff	-.68	.000*
Actual earnings/compensation	-.41	.000*
Availability of call coverage relief	-.31	.000*
Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	.01	.007
Quality of nursing and other non-physician personnel	-1.01	.000*
Community acceptance of racial and or ethnic diversity	-.23	.004*
Access to local specialists for consultation and/or referral	-1.01	.000*
Additional educational loan repayment assistance	.29	.135

[1] Difference between recruiter and physician adjusted mean score (score difference = recruiter adjusted score minus physician adjusted score). *Significant at $p \leq .004$

Again, in an effort to reduce the probability that any significant p-levels revealed by this test were not random occurrences, a Bonferroni correction factor was calculated by dividing .05 by the number of variables tested (14). This correction makes the differences observed in the recruitment attractors statistically significant at $p \leq .004$. Tests for statistical significance on the observed variance in the adjusted mean scores on each retention motivator

revealed 12 of 14 variables in which these differences were statistically significant at $p < .004$. These tests indicate that the two sample groups are probably independent in the population and we can reject the null hypothesis that the two group mean rankings of these 12 variables are equal in the population. The Mann-Whitney test for significance indicates that the two groups ranked these variables differently and that one is higher than the other. Broader implications of these findings are discussed below in Chapter 6.

4. Observed Group Rank-Order Comparison

While we can reject the null hypothesis that the two group mean ratings on most of the attractors and motivators are equal in the population, a look at the group *rank-order* of these variables, based on their group mean ratings, indicates that the two groups may not be that far apart on their opinions of the relative importance of the variables they were asked to rate.

Recruitment Motivator Group Rank-Order

Referring back to Table 5.3.3 above, we can see that the rank-order of the 16 recruitment attractors examined in this research shows that all but four of the variables are ranked closely in both groups. For example, in the six top-ranked variables of the recruiter group we find five of the six top-ranked variables in the physician group. These variables are (1) the quality of children's lifestyle, (2) a realistic and accurate description of the community and practice, (3) the availability of call coverage relief, (4) adequate leisure and/or personal time, and (5) projected earnings and/or compensation. In the mid-range of the recruiter group rank-orders (7 – 12), we find four of the six mid-range ranked physician

group variables. These recruitment attractors are (1) the presence of a network, plan or referral agreement with a tertiary hospital, (2) a strategy in place to offer and to quickly close the contract, (3) a high quality community promotion package, and (4) spousal opportunities for employment, career advancement, and/or education. Finally in the four lowest-ranked recruiter variables, we find two of the four lowest-ranked attractors in the physician group. The two variables in the low-range rank-order of both groups are (1) using the Internet and websites as recruitment tools, and (2) the use of professional recruitment firms.

Based on the group mean scores attached to the recruitment attractors by both groups, one of the six top-ranked recruiter variables was not found in the six top-ranked physician variables. This recruitment attractor is "one person leading the recruitment efforts and serving as the central contact point." The rank-order of this variable in the recruiter group was number 1, whereas it was number 8 in the physician group.

Similarly, two of the six mid-range ranked recruiter variables were not found in the six mid-range ranked physician variables. These attractors are (1) community member involvement in the recruitment process, and (2) salaried employment by the local hospital. The former variable was ranked number 8 in the recruiter group and number 13 in the physician group. The latter was ranked number 12 in the recruiter group and number 14 in the physician group. Still, the overall rank-order of this variable in both groups is very close.

Lastly, two of the four lowest-ranked recruiter variables were not in the four lowest-ranked physician variables. These attractors are (1) access to local

specialists for consultation and/or referral, and (2) the community's proximity to friend and/or family. The former variable was ranked number 13 in the recruiter group and number 5 in the physician group. The latter was ranked number 15 in the recruiter group and number 7 in the physician group.

Altogether, 12 of the 16 recruitment attractors examined in this study are ranked within three positions of each other in each group based on the group mean scores of the variables, suggesting that the two groups may not be that far apart in their assessment of the relative importance of these variables. It was however noted that two of the four attractors that were not closely ranked by each group were recruitment process variables, which ranked highly in the recruiter group (1 and 8 respectively) but less highly in the physician group (8 and 13 respectively). See Table 5.3.3 above. This finding seems to reaffirm the finding in the group rating comparison that recruiters are more interested in those variables in the recruitment process that they can either control or are central to them, whereas with physicians these variables are less visible and therefore less important, or may even be seen as a given. On the other hand, again similar to the findings in the group rating comparison, the other two attractors that were not closely ranked in each group were locale variables of a clinical or family nature. These two variables were ranked 5 and 7 respectively in the physician group, whereas they were ranked 13 and 15 respectively in the recruiter group. It could be that recruiters as a group underestimate the importance of local clinical variables and family issues to the prospective physician candidates.

Retention Motivator Group Rank-Order

Looking back to Table 5.3.5, page 198, we can see that the rank-order of the group mean scores on the 14 retention motivators examined in this research are not as closely ranked in both groups overall, as were the recruitment attractors. As an example, three of the five top-ranked physician retention variables (professional satisfaction with current practice, quality of children's lifestyle, and time off for personal pursuits) are also in the five top-ranked recruiter group motivators. Yet, in the mid-range of the recruiter group rank-orders (6 – 10), we find only one of the six mid-range ranked physician group variables. This is the retention motivator "actual earnings and/or compensation." Lastly, in the four lowest-ranked recruiter group variables we find two of the four lowest-ranked physician variables. These are the retention motivators "community acceptance of racial and/or ethnic diversity" and "additional educational loan repayment assistance."

Two other motivators in the lower half of the rank-orders were ranked fairly closely in both groups. These were the variables "availability of call coverage relief" and "the presence of a network or referral agreement with a tertiary hospital." The former variable was ranked number 9 in the recruiter group and number 11 in the physician group. The latter was ranked number 10 in the recruiter group and number 12 in the physician group

While 8 of the 14 retention motivators examined in this study appear to be somewhat closely ranked by both groups according to the group mean ratings, six do not appear to be closely ranked at all. To give an example, the variable

"continued support of hospital administration" is ranked number 2 in the recruiter group whereas it is ranked much further down at number 10 in the physician group. This could be due to the recruiters' affinity with hospital administration where on the other hand physicians tend to be alienated from administration.

Other examples of less closely ranked variables within the groups include "spousal satisfaction with opportunities," ranked number 4 in the recruiter group but appreciably lower at number 8 in the physician group; "quality of local hospital facilities," ranked number 6 in the recruiter group but much higher in the physician group at number 2; "quality of the hospital medical staff," ranked number 7 in the recruiter group but again much higher in the physician group at number 3; "quality of nursing and other non-physician personnel," ranked number 11 in the recruiter group but noticeably higher at number 6 in the physician group; and, "access to local specialists for consultation and/or referral," ranked near the bottom at number 13 in the recruiter group but at the mid-point, number 7 in the physician group.

With the exception of the "spousal opportunities" variable, the motivators in the preceding paragraph having a noticeable dissimilarity between group rank-orders are of a professional and/or clinical nature. In all instances, these clinical-type variables were ranked appreciably higher in the physician group than in the recruiter group, possibly reflecting the value to physicians of retention variables related to their profession.

While the participating recruiters and physicians were not asked to rank the recruitment and retention variables of interest to this research, a comparison

of the rank-orders of these variables by group mean ratings appears to suggest there is more agreement among the groups than disagreement. However, perhaps a more informative discovery of this group rank-order comparison is a reaffirmation of disparate opinions between recruiters and physicians on key recruitment and retention variables.

For example, on the recruitment side in both the rating and rank-order comparisons, recruiters placed relatively higher levels of importance on process variables than did physicians. Two variables stand out: (1) one person leading the recruitment process and (2) involving community members in the process. Again, these appear to be variables that focus on the recruiter and which he or she has some control over. On the other hand, for the physician group two recruitment variables of a professional and family nature stand out in the rank-order comparison: (1) access to local physicians for referral and consultation, and (2) proximity to family and friends. In the group rank-order comparison, as in the group mean ratings, recruiters tended to place less importance on these variables than did physicians.

On the retention side of the rank-order comparison, the continued support of administration, a process variable, was ranked relatively more important by recruiters than physicians, supporting findings in the group mean ratings. On the other hand, variables of a professional and clinical nature ranked relatively higher in the physician group than among the recruiters. Although this rank-order comparison cannot draw statistical conclusions about the within group rankings of these recruitment and retention variables in the population, it does appear to

support findings of the group mean rating comparison that recruiters tend to place a relatively higher level of importance on process variables whereas professional and clinical variables appear to be more important to physicians.

Summary of Chapter 5

Four different sets of quantitative analyses were performed on the data collected in this study to test three research agendas. The first research item tests the hypothesis that recruitment attractors and retention motivators can be reliably coded for research purposes using an *a priori* typology of five different underlying factors or categories. The second tests the "push-pull" theory used in immigration studies to identity major county-level socio-demographic variables, which may either attract physicians into an area or detract them away from it. The third research question seeks to discover whether or not recruiters and physicians place significantly different values on the relative importance of the recruitment and retention variables examined in this study.

Exploratory factor analyses of four sets of recruitment and retention data appeared to support the notion that many of the variables studied seem to have similar underlying values or factors and can be coded as such for research purposes. However, the exploratory factor analyses did not entirely support the typology used to code variables in this research project.

A multivariate regression analysis of the county-level socio-demographic variables collected for this research identified six major variables that accounted for more than 60 percent of the observed variance in the population-to-PCP physician across Michigan's 58 rural counties. While rural physician recruiters

may have little or no control over these variables, they nonetheless should be aware that there are certain county-level characteristics, which may attract a physician to their area or push him or her away from it, and work to emphasize the attractors and to overcome the detractors.

A group means rating comparison and a group rank-order comparison suggested that recruiters and physicians tend to place relatively different levels of importance on certain type of recruitment and retention variables. Most notably, recruiters tended to rate process-type variables higher than did physicians. On the other hand, the physician group tended to rate variables of a professional and family nature higher than did the recruiters. However, no statistical conclusions were reached about the within group mean rankings of these variables in the population. Results of these three quantitative analyses are discussed in greater depth in the following chapter.

CHAPTER 6: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter is based on the findings of this research project. The results of the study are discussed and summarized in terms of their implications and limitations. Recommendations for further study are made.

1. Summary

The issue of inadequate and inequitable access to health care in some areas of the U.S. served as the background for this study. One measure of access to health care commonly used by policymakers and health care researchers is the ratio of the population-to-primary care physician. It has been long recognized that this ratio varies considerably between most metropolitan and many rural and inner-city areas. However, scant attention has been given to explain the substantial differences in this ratio across rural counties themselves.

Given this framework, the purpose of this study was to investigate and to explain these differences. Three research questions were advanced: (1) do rural communities come together and act to solve physician shortages in their area? (2) What, if any, county-level socio-demographic variables can help to explain a physician's decision to practice or not in a particular area? And, (3) do physicians and recruiters place different values on recruitment and retention variables? One hypothesis was advanced: an *a priori* assumption in the research effort is that groupings of interrelated variables can be used to measure five underlying values posited by the MDCH research team and the literature among the recruitment and retention items of interest in this study.

Respondents participating in this study were a mail survey sample of 505 physicians from a population of approximately 2,700 practicing in rural Michigan and a random sample of 22 physician recruiters representing 27 of Michigan's 59 rural hospitals. The physicians were asked to complete a short mail survey questionnaire that required about ten minutes to complete. The recruiters were interviewed face-to-face in their community in an interview taking approximately one hour to complete.

Qualitative and quantitative analyses were performed on the data in an attempt to answer the research questions and to test the hypothesis. Descriptive statistics and frequencies were provided for the demographic data.

2. Findings

Based on the scant and incomplete data collected regarding community action to fill a perceived physician need, the answer to the first research question is inconclusive. There is qualitative evidence that at least in the cases of the 27-hospital area communities represented by the recruiter random sample in this study that none of the communities acted on their own volition to solve the problem. Answers to the open-ended questions on the recruiter interview surveys indicated that community participation in the recruitment and retention processes was a *post hoc* action. Community medical leaders were the ones to make the decision to pursue a physician and to actively begin the process. Community laypersons were only peripheral to the process. Many such as bankers, lawyers, civic officials, and school principals were active only in the site visit by a prospective recruit and were invited to participate by the local recruiter.

Additionally, an independent variable measuring the importance of community involvement by both groups of respondents was tested in a regression analysis. No change in R^2 was observed when this variable was added to the regression model. While not statistically conclusive, the data collected in this study indicates that rural Michigan communities do not come together and act to solve a physician shortage problem.

A regression analysis of the county-level socio-demographic variables measured in this study revealed that six variables helped considerably to explain a physician's decision to practice or not in a particular area. Based on the ratio of the physician-to-PCP as an indicator of physicians choosing or not to practice in a given county, over 60 percent of the variance observed in this ratio across the 58 rural Michigan counties was explained by this analysis. Two of the variables were hospital related: (1) a county with a hospital was predicted to have a lower population-to-PCP ratio. And, (2) the ratio was predicted to be lower in counties with larger hospitals as indicated by number of staffed and setup beds. Two of the variables were related to the major industry in the county. Counties with either a farming or a mining based economy were predicted to have a higher population-to-PCP. One variable was related to the degree of rurality of the county. Counties with mid-size urban populations and not located adjacent to a metropolitan area were predicted to have a lower population-to-PCP ratio. Lastly, an age and insurance-type related variable, the percent of Medicare patients in the county, predicted that higher levels of Medicare patients would lower the ratio. Implications of this analysis are discussed below.

A rating and rank-order comparison of the recruitment attractors and the retention motivators rated by both groups of respondents was performed in an attempt to answer the third research question. A non-parametric test of significance was applied to the ratings of these variables by both groups. This analysis indicated that the two groups ranked these variables differently and in a statistically significant way. The null hypothesis that the group mean ranking for these two independent samples of ordinal variables is the same in the population was rejected for most of the variables measured. The Mann-Whitney test for significance indicates that the two groups ranked these variables differently and that one is higher than the other. This finding is discussed below.

Based on two different methods of exploratory factor analyses of the recruitment attractors and the retention motivators rated by the two groups of respondents, the hypothesis and *a priori* assumption in the research effort that groupings of interrelated variables can be used to measure the five underlying values posited by the literature and the MDCH research team among the study's recruitment attractors and the retention motivators was rejected.

3. Discussion

There are many potential reasons why the research questions of this study were either not answered, or were at best vaguely answered and why the hypothesis advanced was rejected. Some of these reasons are discussed below.

Question One

While there are many credible studies (see for example, Aronoff, 1993; Erikson, 1976; and Kroll-Smith & Couch, 1990) indicating that communities do indeed come together and act in a time of crisis and need, this behavior was not apparent among the communities involved in this study. A shortage of physicians has been endemic in rural America for some time and has worsened since the late 1940s (COGME, 1998). People living in rural Michigan may simply accept this problem as a fact of life. As a result, it could be that the lay community in these counties did not perceive physician shortages as an issue critical enough to act upon. Another reason might be that especially in counties having a hospital, the lay community expects hospital officials and the medical community to take care of their physician needs. This study did cite one case in which a community was actively involved in the recruitment of a physician, but this action apparently was not predicated on a perceived critical need but rather the community's desire to find a physician who was a fit with the community. Nonetheless, this research cannot conclude that rural Michigan communities will come together and act to address critical physician shortages in their area. Further study is needed.

Question 2

The six independent variables found to be significant in the regression analysis of the county-level socio-demographic variables are apparently fairly good predictors of the population-to-POP ratio across the 58 rural Michigan counties, but they do not completely explain a physician's decision-making in

whether or not to practice in a particular community. For example, I would argue that it is unlikely that a prospective physician recruit researches the major industry or economic base of a county as part of his or her decision-making process. More likely, counties with either a mining industry or farming economic base (two of the predictors in the regression model) may detract physicians for other reasons, or there may be a confounding variable. For instance, Missaukee County has a farming based economy and a very high population-to-PCP ratio (as would be predicted by the regression model), no hospital and only one practicing physician. However, closer examination reveals that the county is contiguous with Wexford County, which has a very low population-to-PCP ratio. It could be that residents of Missaukee County travel to nearby Cadillac, MI for their health care needs and that physicians choose to locate in Wexford County filling their need for contact with colleagues and to avoid professional isolation (Conte, 1992), which they might experience in Missaukee County. Also, it is not logical to me that physicians would deliberately seek out a county with a high level of Medicare patients with low reimbursement rates (another predictor in the regression model). In fact, commonsense would suggest otherwise. Again, a confounding variable may be intervening. On the other hand, the presence of a hospital (a predictor) and its facilities and personnel has been shown to be a physician attractor (Conte, 1992). And, the size of a hospital (also a predictor) and its concurrent greater resources and technology has also been shown to be an attractor (Jarratt, 1989), although Ricketts, et al. (1996) dispute the finding that size of hospital affects the in or out migration of physicians. Lastly, while the

literature suggests that rural physicians have a tendency to choose to practice in a county near an urban area (Samaha, et al., 1987; Gordon, et al., 1992) the findings of this regression analysis show that physicians choosing to practice in rural Michigan tend to do otherwise. A county with a mid-range urban population and not adjacent to a metropolitan area (Beale Code 7) was also determined to be a predictor of a lower population-to-PCP ratio indicating that physicians were choosing to practice in these counties. Beale Code 7 counties are a plurality with 25 of the 58 rural Michigan counties being classified in this category. It appears that physicians choosing to practice in rural Michigan prefer the remoteness, rurality and wide open spaces of these counties, most of which are located in northern Michigan and the Upper Peninsula, and perhaps the opportunity to practice "wilderness medicine," as one respondent stated.

Question 3

The purpose of this research question was to determine if physicians and recruiters would place different levels of importance on the recruitment and retention variables measured in this study. It was hoped that an affirmative answer to this question could be used to alert recruiters that their viewpoint on the value of certain attractors and motivators might be much different than the physician's and as such they might either be either over or under emphasizing the value of certain variables from the physician's perspective. Tests of significance on the group mean ratings of these two independent samples determined that with 10 of the 16 attractors and 13 of the 14 motivators we could reject the null hypothesis that the group mean rankings in the population for the

two groups are equal. This finding confirms that in large part, the group mean rankings of these variables in the two groups are different at a statistically significant level. The observed rank-order analysis seemed to dispute this statistical analysis. However, statistically significant rankings within the two groups were not determined. Further testing is needed.

Hypothesis

The hypothesis and *a priori* assumption which ran throughout this study is that groupings of interrelated recruitment attractors and retention motivators can be used to identify the five underlying values (see Chapter 3) posited by the literature and the MDCH research team was rejected by the exploratory factor analyses. This most likely is attributable to the multi-faceted nature of many of the variables and multiple possibilities of coding errors. While in some instances, the variables loaded onto a factor loaded in a grouping almost exactly as originally hypothesized, the categorization of variables into clear and distinct typologies may not be nearly as "black and white" as the MDCH research team believed.

This test of the hypothesis did however suggest there might be different and possibly more descriptive ways of grouping and categorizing the variables. For example, in the five-factor EFA on the Physician Recruitment Attractor Dataset, a new grouping of variables, which appeared to be related to the value of "personal time and peer support," was suggested by one factor loading. The variables loading on this factor had been grouped into family, professional and clinical, and economic categories using the original template, but they could also

be seen as an interrelated grouping of variables denoting the single category, "personal time and peer support."

This exercise in exploratory factor analysis of the recruitment attractors and retention motivators suggested that there are subtle nuances in using typologies, which should be carefully scrutinized. To wit, some of the broader categories used in this research might be subsumed into other categories. For example, the EFA using the method of extracting factors with eigenvalue >1 suggested that the categories "family" and "professional and clinical" could be seen as a sub theme of the community category.

This rejection of the original hypothesis is not to say that the use of a typology such as that posited by the literature and the MDCH research team is not helpful in this type of research. Validly identified categories could allow researchers to make broader generalizations about various types of recruitment and retention variables. For example, a statement such as, "Variables of a 'personal time and peer support' nature are valued more highly by physicians than by recruiters" could be useful in this type research.

Limitations

The findings or lack thereof in this study may have been limited by the fact that secondary data was used in an effort to answer the research questions and hypothesis posed in this study. The original data were collected by the MDCH to investigate a different set of research questions and hypotheses with questionnaires designed specifically to get at the data addressing those questions and hypotheses. Also, the findings may have been affected by some

of the limitations of the study discussed in Chapter 1, especially the use of the county as the unit of analysis. This may explain some of the questionable findings such as the percent of Medicare patients in the county being an attractor, or decreasing the population-to-PCP ratio, in the regression model.

Summary

A number of confounding and intervening variables may have influenced the results of this study. It is also possible that the research that led the principal investigator to pose the research questions and hypothesis may have been incomplete. There may be many other variables not identified in the literature that can influence a physician's decision to choose to practice and remain in a particular rural area. Lastly, the methodology may have been flawed. The most compelling question regarding differences in the value place on certain attractors and motivators by the two groups of participants goes largely unanswered.

4. Recommendations

The unanswered and incomplete research questions require further exploration. The following recommendations for future research are made:

1. The study should be replicated in rural counties in other states using the same cross-comparison method between physician and recruiter attitudes.
2. Community leaders should be interviewed in an effort to better understand the role of the community in solving the problem of a physician shortage.

3. A concerted effort should be made to interview or survey physicians who left a rural area to practice elsewhere in order to try and find out why they left the area. This knowledge would be equally helpful as knowing why they came and stayed, I think, in understanding the shortage of physicians in rural America.
4. The finding in this study that the more rural and isolated counties tend to attract physicians should be investigated in greater detail. Perhaps one of the most compelling reasons for a physician to choose a rural practice location may be its geography and recreational opportunities. Other researchers including Anderson (1994), Conte (1992), Jensen (1988), Rourke (1993), Fisher (1993), and Cutchin (1994) have also made this observation.
5. Replicate the study using prospective rather than retrospective methodology. One of the weaknesses of the retrospective method is respondents are often being asked to remember what brought them to a certain area many years ago. They may have forgotten or what was important to them then is not important now. Surveying or interviewing new physician recruits might give more meaningful results about why they chose an area. However, this methodology would by fiat eliminate the retention side of the study, which is equally important.
6. Stratify the physician data by age, gender, residency program, and other demographics to compare the level of importance placed on the recruitment and retention variables by various groups of physicians.

Age, for example, might explain the low level of importance place on the government program variables by this sample of physicians. Some of these variables may be very important to younger physicians coming out of a recently complete residency program with large education debt loans.

7. The finding that rural Michigan residents are apparently healthier than their urban counterparts suggests that the population to PCP ratio may not be an accurate measure of access to quality primary health care. Research on what this ratio is actually measuring should be conducted as well as research seeking an explanation for the apparent good health of rural Michigan residents considering that the majority of rural Michigan counties are designated "medically underserved."

5. Conclusions

With the exception of the identification of various county-level socio-demographic variables, which may influence a physician's decision to practice in a particular rural Michigan area, the answers to the research questions posed in this study go largely unanswered.

Most of the findings in this study appear to be consistent with the literature on rural physician recruitment and retention. Both groups gave high ratings to community attributes such as safety, quality of children's lifestyle, good public schools and recreational opportunities in terms of recruitment attractors and retention motivators. Open and honest communication about the community and practice opportunities and job satisfaction were also highly rated by both groups.

These findings are consistent with the variables positively correlated to rural physician recruitment and retention noted from previous research in Chapter 2.

Some findings however seem to go beyond the literature. The enthusiasm shown by the recruiters as a group to highly rate most of the recruitment and retention variables measured by the study was unexpected. Conversely, the consistently low rating given by physicians to these same variables was also unexpected. There may be personality characteristics at play in these group dynamics that the research design did not anticipate.

Another unexpected find was the recruiter group's obsession to give high levels of importance to variables related to the recruitment process itself. This was especially apparent in the open-ended question in which they were asked to state in their opinion what the single most important recruitment variable was. A plurality of the respondents cited variables related to the activity of recruiting that were in their control.

Lastly, was the unexpected finding that counties with mid-size urban populations and not located adjacent to a metropolitan area were predicted to have a low population-to-PCP ratio. This is contrary to Boyd's (1992) finding that the greater the county population, the better the physician to population ratio and Gordon, et al.'s (1992) finding that the nearer a community is to a metropolitan area, the more likely it is to attract physician. This finding is likely attributable to the geographic location and recreational opportunities that these rural Michigan counties have to offer.

Recruiters and communities throughout rural Michigan clearly have the opportunity to improve the physician workforce level in their area through careful consideration and recognition of the prospective recruit's professional, personal and family needs and wants. Complete screening for these needs and wants is a priority.

Appendix A

RECRUITER NOTIFICATION LETTER

February 11, 2000

Name
Address
Address
City, State Zip

Dear <Salutation><Last Name>:

The Michigan Center for Rural Health (MCRH), under contract with the Michigan Department of Community Health (MDCH) has undertaken a six-month study working with physician recruiters, physicians, and rural communities to identify and assess successful physician recruitment and retention strategies. The results from the study will be used to create a manual, "Guidelines to Successful Community Recruitment and Retention." This manual will serve as a template for rural hospital/community physician recruitment and retention efforts and will be distributed to all rural Michigan hospitals and health care stakeholders.

You are one of a small number of rural physician recruiters who have been randomly selected to be interviewed for this study. In order for the results of this study to be truly representative of rural physician recruitment in Michigan, it is important that we complete a personal interview with you.

You may be assured of complete confidentiality. The interviewer will identify your interview by number only. This is so he can check your name off of the list as interviews are completed. Your name will never appear on the questionnaire or his interview notes. Your privacy will be protected to the maximum extent allowable by law.

However, if you would be willing to share documentation about your physician recruitment process to be incorporated into the "Guidelines to Successful Community Recruitment and Retention" manual, we would properly cite all materials or remove all organization-specific references from your materials per your instructions. Examples of useful materials for the manual would be your organization's pre-screening questionnaire, promotional materials packet, recruitment procedures/manual, follow-up/retention procedures, or other tools that might provide useful examples to other rural communities.

Travis Fojtasek, senior research associate with the MCRH will contact you in the next two weeks to set up an interview time and date with you. Although this study is being conducted and funded as part of the MDCH Rural Health Initiative, some of the data collected may be used for his dissertation research. Please call me if you have any questions about the MCRH Physician Recruitment and Retention Study or about the interview process (517) 432-1066.

Sincerely,

Nancy Struthers
Project Director

cc: Travis Fojtasek

April 3, 2000

RECRUITER FOLLOW-UP LETTER

Name
Title
Hospital
Address
City, MI Zip

Dear_____,

Thank you for agreeing to participate in an interview on the rural physician recruitment and retention study that we are conducting for the Michigan Department of Community Health. I have our meeting scheduled for 1:00PM on April 4, 2000 at your office. Please advise if this does not agree with your schedule.

This interview should last approximately one hour. If you have standard, written policies or procedures for (1) determining physician manpower needs, (2) physician recruitment, (3) physician retention and (4) physician screening, having these materials on hand will facilitate the interview and move it along more quickly. Any other recruitment and retention materials you can share with us would be appreciated.

I look forward to our meeting tomorrow and my first trip to_____.

Thanks again for your assistance in this project.

Sincerely,

Travis Fojtasek
Senior Research Associate

Phone: (517) 788-7378
Fax: (517) 788-8137
E-mail: fojtasek@pilot.msu.edu

INFORMED CONSENT FORM

To Whom It May Concern:

We are conducting a study for the Michigan Department of Community Health through the Michigan Center for Rural Health to determine how successful recruitment and retention of rural physicians in Michigan is accomplished. A previous study that we co-authored indicated that some rural areas in Michigan have been more successful in attracting and keeping physicians than others. To our knowledge, there has not been a statewide study conducted to learn how these rural communities achieve their successes.

Your participation is, of course, voluntary. It is okay not to answer any of the questions and you may discontinue the interview at any time without penalty. This interview should take approximately one hour to complete. You indicate your voluntary agreement to participate by completing this interview.

The information you provide will be held in the strictest of confidence. You will remain anonymous in any report of research findings. Your name will not be used at any time. All tapes, computer disks and interview notes will be kept in a locked file cabinet. Your privacy will be protected to the maximum extent allowable by law.

We appreciate your participation in this study. If you have any comments or suggestions regarding this project, please contact any of the persons noted below.

Travis Fojtasek	Dr. Harry Perlstadt	Nancy Struthers
Department of Sociology	Department of Sociology	MCRH
Michigan State University	Michigan State University	Michigan State University
East Lansing, MI 48824	East Lansing, MI 48824	East Lansing, MI 48824
Telephone: 517/788-7378	Telephone: 517/353-5089	Telephone: 517/432-1066

If you have any questions about participants' rights as human subjects of research, please contact the person noted below.

David Wright, Chair
University Committee on Research Involving Human Subjects
246 Administration Building
Michigan State University
East Lansing, MI 48824-1046
Phone 517-355-2180

Name_____

(Signature and date)_____
I have read and understand the above statements.

RECRUITER INTERVIEW QUESTIONNAIRE

SECTION A, "HOSPITAL CHARACTERISTICS"

*To start with, I'd like for you to verify some published statistics about **[NAME OF HOSPITAL]** and ask you a few questions about the hospital and your community.*

A.1. The American Hospital Association (AHA) shows that your hospital is licensed for **[NUMBER]** acute care beds.

Is this correct? YES___ NO___ DK___ **[If "NO," go to A.1.a, if "YES" or "DK," go to A.2]**

A.1.a. How many beds are you licensed for? _____

A.2. The AHA shows that your hospital is staffed for **[NUMBER]** acute care beds.

Is this correct? YES___ NO___ DK___ **[If "NO," go to A.2.a, if "YES" or "DK," go to A.3]**

A.2.a. How many beds are you staffed for? _____

A.3. The AHA shows that your average daily census is **[NUMBER]**.

Is this correct? YES___ NO___ DK___ **[If "NO," go to A.3.a, if "YES" or "DK," go to A.4]**

A.3.a. What is your average daily census? _____

A.4. Has your average daily census has (increased) (stayed the same) (decreased) during the past ten years?

A.5. The AHA shows that your hospital is a **[TYPE OF CONTROL]** owned facility.

Is this correct? YES___ NO___ DK___ **[If "NO," go to A.5.a, if "YES" or "DK," go to A.6]**

A.5.a. Who does own and/or control the hospital?

A.6. Is your hospital is part of a multi-hospital system? YES___ NO___ DK___

[If "YES," go to A.6.a, if "NO" or "DK,' go to A.7]

A.6.a. Which system are you a part of?

A.7. According to the American Medical Association, there are about **[NUMBER]** non-federal physicians practicing in your community.

Is this correct? YES___ NO___ DK___**[If "NO," go to A.7.a, if "YES" or "DK," go to A.8]**

A.7.a. About how many physicians are practicing in your community? _____

A.8. Has the number of physicians has (increased) (stayed the same) (decreased) during the past ten years?

B.2. Do you have a standard plan or model that you use to determine your community's physician manpower needs?

YES___ NO___ DK___ **[If "YES," go to B.3, if "NO" or "DK," go to B.4]**

B.3. Can you share a copy of this plan or explain to me how it works? **[Go to B.5]**

B.4. How do you determine your community's physician manpower needs?

A.9. Does your community need any more physicians at this time?

YES___ NO___ DK___ **[IF "YES," go to A.9.a, if "NO" or "DK," go to A.10]]**

A.9.a. About how many more physicians are needed at this time? _____

A.9.b. About how long have these physicians have been needed? _____

A.9.c. Are you now recruiting for these physicians? YES___ NO___

[If "NO," go to A.9.d, if "YES", go to A.10]

A.9.d. Do you intend to recruit for these physicians? YES___ NO___ DK___

A.10. Does your hospital have any nursing positions that need to be filled?

YES___ NO___ DK___ **[If "YES," go to A.10.a, if "NO" or "DK," go to next section]**

A.10.a. About how many nursing positions need to be filled? _____

A.10.b. About how long have these positions been vacant? _____

A.10.c. Are you now recruiting for these positions? YES___ NO___ DK___

[IF "NO," go to A.10.d, if "YES" or "DK," go to next section]

A.10.d. Do you intend to recruit for these positions? YES___ NO___ DK___

SECTION B, "RECRUITMENT STRATEGIES"

A primary purpose of this study is to identity "successful" physician recruiting strategies and programs in rural Michigan.

B.1.a. In your own words, what would you say is a "successful" recruiting program?

B.1.b. In your view, what is the single most important factor in recruiting a physician into your community?

B.5. Do you have a standard plan or strategy that you use to recruit physicians?

YES___ NO___ DK___ **[If "YES," go to B.6, if "NO" or "DK," go to B.7]**

B.6. Can you share a copy of this plan or explain to me how it works? **[Go to B.8]**

B.7. How do you go about recruiting a new physician?

B.8. Do you have a standard screening tool that you use when recruiting physicians?

YES___ NO___ DK___ **[If "YES," go to B.9, if "NO" or "DK," go to B.10]**

B.9. Can you share a copy of this screening tool or explain to me how it works? **[Go to B.11]**

B.10. How do you screen when recruiting a new physician?

B.11. Are members of the community involved in the recruitment process?

YES___ NO___ DK___ **[If "YES," go to B.12, if "NO," or "DK," go to next section]**

B.12. Who are these community members? For example, are they board members, school superintendents, realtors or what?

B.13. How are they involved in the recruitment process?

SECTION C, "RANKING RECRUITMENT FACTORS"

I have a list of Recruitment Factors that rural recruiters and physicians have told us are important in the recruitment process. I am now going to ask you to rank each of these factors on a scale of 1 – 4. Here is a copy of the scale to help you decide the relative importance of each of these factors:

1 = Not Important at all

2 = Somewhat Not important

3 = Somewhat Important

4 = Very Important

In recruiting prospective physicians, how important do you think each of the following is in presenting the opportunities available at your hospital?

Professional/Clinical Factors

C.1. Projected demand for the physician's specialty....._____

C.2. Availability of call coverage relief....._____

C.2.e. When putting together a recruitment package or offer, about how many days per week of on-call coverage obligation, expected of the candidate, do you feel are reasonable?_____

C.3. Adequate leisure/personal time....._____

C.4. Access to local specialists for consultation....._____

C.4.a. Access to local specialists for referral....._____

C.4.b. Presence of a network and /or agreement with a tertiary care facility for:

C.4.b.1. Specialist consult....._____

C.4.b.2 . Referral and/or transfer....._____

C.6. Quality of hospital facilities (technology, infrastructure, etc)....._____

C.7. Quality of existing hospital medical staff....._____

C.8. Quality of nursing staff and other non-physician support....._____

In recruiting prospective physicians, how important do you think each of the following is in presenting the opportunities available in your community?

Personal/Family Factors

C.9. Quality of children's lifestyles such as safety and good schools....._____

C.10. Religious support structure....._____

C.11. Spousal opportunities such as employment, career advancement, education, etc....._____

Sociocultural/Community Factors

C.12. Recreational opportunities....._____

C.14. Proximity to an urban area....._____

C.15. Proximity to friends/family....._____

C.16. Proximity to cultural events....._____

C.17. Lifestyle/safety of community....._____

C.17.a. Community acceptance of racial/ethnic diversity ....._____

C.18. A high quality, comprehensive community promotion package....._____

C.18.a. What kinds of promotional materials do you send to potential recruits?

C.18.b. What community attributes do recruits most frequently ask about?

In recruiting prospective physicians, how important do you think each of the following government programs are?

C.19. National Health Service Corps (NHSC) scholarship program....._____

C.19.a. NHSC loan repayment program....._____

C.19.b. J-1 visa waiver program....._____

C.20. State Loan Repayment Program....._____

In recruiting prospective physicians, how important do you think each of the following is in presenting the economic opportunities available to them?

Economic Factors

C.21. Projected earnings/compensation....._____

C.21.a. Salaried employment....._____

C.21.b. Availability/quality of housing....._____

C.21.c. Community economy, e.g., average income, % below poverty, % Medicaid patients_____

In recruiting prospective physicians, how important do you think each of the following is in the recruitment process?

Process Factors

C.22. Using a professional recruitment firm....._____

C.23. Having a one person leading the recruitment efforts & serving as the contact point..._____

C.23.a. Having the lead person to have the ability to unilaterally "close the deal"... ._____

C.24. Having the medical staff recruit friends/colleagues....._____

C.25. Having community members such as the school superintendent, realtors and bankers involved in recruitment....._____

C.26. Having recruits meet the medical staff....._____

C.27. Having recruits meet community leaders....._____

C.28. Giving a realistic/honest picture of the practice pportunities....._____

C.29. Giving a realistic/honest picture of the community..... _____

C.30. Using the internet/websites as recruitment tools....._____

C.31. Advertising in medical/association journals....._____

C.32. Networking with other rural recruiters....._____

SECTION D, "RETENTION FACTORS"

A second purpose of this study is to identify successful strategies or programs for keeping the physician in the community after the initial recruitment contract.

D.1. In your own words, how would you define "successful" physician retention?

D.2. What, in your view, is the single most important factor in keeping a physician in your community?

D.3. Do you have a standard plan or strategy that you use to retain physicians?

YES___ NO___ DK___ **[If "YES," go to D.3.a, if "NO" or "DK," go to D.3.b]**

D.3.a. Can you share a copy of this plan or explain to me how it works? **[Go to D.4]**

D.3.b. How do you try to make sure that physicians stay in the community?

D.4. What kind of turnover do you experience with physicians after they have fulfilled their initial recruitment contract obligations?

D.5. What do you usually do when you find out a physician is thinking of leaving?

I now have a list of Retention Factors that rural recruiters and physicians have told us are important for keeping the physician in the community. I am now going to ask you to rank each of these factors on a scale of 1 – 4. Please refer to the copy of the scale that I gave you earlier to help you decide the relative importance of each of these factors:

1 = Not Important at all

2 = Somewhat Not important

3 = Somewhat Important

4 = Very Important

How important are the following elements in the retention of physicians past their initial contract?

Professional/Clinical Factors

D.6. Availability of call coverage relief....._____

D.6.e. Once the new physician is practicing in your community and making his/her decision to stay, about how many days per week of actual call coverage obligation do you feel they consider are reasonable?_____

D.8. Adequate leisure/personal time....._____

D.9. Access to local specialists for consultation....._____

D.9.a. Access to local specialists for referral....._____

D.9.b. Presence of a network and /or agreement with a tertiary care facility for:

D.9.b.1. Specialist consult....._____

D.9.b.2 . Referral and/or transfer....._____

D.11. Quality of hospital facilities....._____

D.12. Quality of existing medical staff....._____

D.13. Quality of nursing staff and other non-physician support....._____

D.14. Professional satisfaction **[DEFINE]**....._____

D.15. Continuing support of hospital administration....._____

D.16. Medical staff acceptance/support of the physician **[COMPATIBILITY?]**....._____

Personal/Family Factors

D.17. Quality of children's lifestyles such as safety and good schools....._____

D.18. Religious support structure....._____

D.19. Spousal satisfaction with opportunities such as employment, career advancement...._____

D.20. Community acceptance of racial/ethnic diversity ....._____

Sociocultural/Community Factors

D.21. Recreational opportunities....._____

D.22. Higher education opportunities....._____

D,23. Proximity to an urban area....._____

D.24. Proximity to friends/family....._____

D.25. Proximity to cultural events....._____

D.26. Lifestyle/safety of community....._____

D.27. Community acceptance/support of physician....._____

D.28. Community acceptance/support of spouse/family....._____

Economic Factors

D.29. Community economic conditions, i.e., have things changed?....._____

D.30. Additional educational loan repayment assistance from hospital and/or community...._____

D.31. Actual earnings/compensation....._____

D.32. Availability/quality of housing....._____

D.33. Adequate marketing/promotion of the physician....._____

SECTION E, "RECRUITER CHARACTERISTICS"

Now I'd like to take just a few minutes to ask you some questions about yourself.

E.1. How long have you been recruiting physicians for this hospital? _____

E.1.a. How much time do you spend recruiting physicians? _____

[If 100%, go to E.2, if less go to E.2.a]

E.1.b. Does anyone assist you in recruitment activities? Yes_____ No_____ **[If "Yes," go to E.1.c.]**

E.1.c. Who is this person?

E.1.c. How much time do they spend on recruitment activities? _____

E.2. What did you do before you did this for this hospital? **[Go to E.3]**

E.2.a. What else do you do for this hospital?

E.3. What type of training did you receive for physician recruitment?

E.4. What is your highest education degree? _____

E.5. How long have you lived in this community? _____

E.6. How long have you lived in rural areas? _____

Blind Demographic: Sex of recruiter_____

SECTION F, "CLOSING QUESTION"

Before we end this interview, I would like for you to take a moment to mull over the multitude of recruiting and retention factors and strategies that we have discussed today.

F.1. Is there anything that we have not discussed that you feel is important to either or both physician recruitment and retention?

Thank you for taking the time to participate in this interview. We sincerely believe that this study, conducted by the Michigan Center for Rural Health for the Michigan Department of Community Health, will have practical and usable results. Our goal is to publish a manual that can be used by all Michigan rural hospitals and other interested parties as a template for successful physician recruitment and retention.

MCRH PHYSICIAN RECRUITMENT AND RETENTION PHYSICIAN MAIL SURVEY QUESTIONNAIRE

1. What was the *single* most important factor in your decision to come to the community in which you now practice?

_____

_____

Please rate the following recruitment and retention-related issues in terms of their importance in your experience in the community in which you now practice. *(Check <u>one</u> box per factor)*

Recruitment Factors	Not at all important	Somewhat not important	Somewhat important	Very important
2. How vital were the following Federal and State programs to your recruitment to the community?				
a. J-1 Visa Waiver	☐	☐	☐	☐
b. National Health Service Corps—Scholar Program	☐	☐	☐	☐
c. National Health Service Corps—Loan Repayment	☐	☐	☐	☐
d. State Loan Repayment Program	☐	☐	☐	☐
3. How important were the following factors in your decision to come to the rural community in which you currently practice?	Not at all important	Somewhat not important	Somewhat important	Very important
a. The community's proximity to friends/family	☐	☐	☐	☐
b. A high quality, comprehensive community promotional package	☐	☐	☐	☐
c. A realistic, accurate description of the community and practice opportunities	☐	☐	☐	☐
d. Professional recruitment firm(s)	☐	☐	☐	☐
e. The Internet/Websites as recruiting tools	☐	☐	☐	☐
f. Community member involvement in the recruitment process, such as school superintendent, realtors, bankers	☐	☐	☐	☐
g. One person leading the recruitment efforts and serving as the central contact point	☐	☐	☐	☐
h. A strategy in place to offer and to quickly close the contract if needed	☐	☐	☐	☐
i. Projected earnings/compensation	☐	☐	☐	☐
j. Salaried employment by the local hospital	☐	☐	☐	☐
k. Access to local specialists for consultation and/or referral	☐	☐	☐	☐
l. Presence of a network, plan, or referral agreement with a tertiary hospital and/or non-local specialist for consult and/or referral	☐	☐	☐	☐
m. Availability of call coverage relief	☐	☐	☐	☐
n. Adequate leisure/personal time	☐	☐	☐	☐
o. Spousal opportunities such as employment, career advancement, education, etc.	☐	☐	☐	☐
p. Quality of children's lifestyle such as safety and good public schools	☐	☐	☐	☐
q. Personal & professional match with the community	☐	☐	☐	☐

4. When you consider a recruitment offer/package, how many *days per week* of on-call coverage obligation do you consider reasonable? *(Circle a number of days per week)*

1 2 3 4 5 6 7

5. What was the single most important factor in your decision to remain in the community in which you now practice?

_____

_____

Retention Factors	Not at all important	Somewhat not important	Somewhat important	Very important
6. How important are the following factors in your decision to stay in the rural community in which you practice				
a. Actual earnings/compensation	☐	☐	☐	☐
b. Additional educational loan repayment assistance	☐	☐	☐	☐
c. Availability of call coverage relief	☐	☐	☐	☐
d. Compatibility/rapport with medical community peers	☐	☐	☐	☐
e. Professional satisfaction with current practice	☐	☐	☐	☐
f. Quality of local hospital facilities	☐	☐	☐	☐
g. Quality of nursing and other non-physician personnel	☐	☐	☐	☐
h. Quality of hospital medical staff	☐	☐	☐	☐
i. Continued support of hospital administration	☐	☐	☐	☐
j. Access to local specialists for consultation and/or referral	☐	☐	☐	☐
k. Presence of a network or referral agreement with a tertiary hospital and/or non-local specialist for consult or referral	☐	☐	☐	☐
l. Presence of sufficient medical personnel in the community to provide professional, intellectual and emotional support	☐	☐	☐	☐
m. Spousal *satisfaction* with opportunities, such as employment, career, education, etc	☐	☐	☐	☐
n. Quality of children's lifestyle such as safety and quality public schools	☐	☐	☐	☐
o. Community acceptance of racial and or ethnic diversity	☐	☐	☐	☐
p. Time off for personal pursuits	☐	☐	☐	☐

7. **Other Factors/Comments.** Do you have any additional comments about factors that affect (positively or negatively) physician recruitment and retention in rural communities?

_____

_____

_____

Physician and Practice Profile Characteristics—please provide the following demographic and practice information.

Note: Your responses and participation in this study will remain strictly confidential. NO PHYSICIAN-SPECIFIC INFORMATION OR RESPONSES WILL BE REVEALED IN THIS STUDY. Results will be expressed in aggregates.

8. Sex: ☐ Male ☐ Female

9. Marital Status: ☐ Married ☐ Single ☐ Widowed ☐ Divorced

10. Age: _____

11. How many children ages kindergarten through grade 12? _____

12. How long have you practiced in this rural community? ____ years ____ months

13. Currently in active practice? ☐ Yes ☐ No

13a. (If currently in active practice) Work schedule? ☐ Full-time ☐ Part-time

14. Is your current practice: ☐ Solo practice ☐ Group practice ☐ other (specify)

_____

15. Are you employed by the local community hospital? ☐ Yes ☐ No

16. Are you: ☐ General/Family Practice ☐ Pediatrics

☐ OB/GYN ☐ General Surgery

☐ Internal Medicine ☐ Other (please specify) _____

17. Had you ever practiced in rural community prior to coming to this community? ☐ Yes

☐ No

17.a. If "Yes" to previous question, how long? ____ years ____ months

18. Have you ever practiced in an urban community? ☐ Yes ☐ No

18.a. If "Yes" to previous question, how long? ____ years ____ months

19. In what city, state and country did you complete the following education and training; and in what Michigan city do you currently practice?

	City	State	Country
High School			
Medical School			
Residency Program			
Current Practice			

20. How far from an urban area (Metropolitan Statistical Area) would you be willing to practice medicine? _____(number of miles)

Thank you for your participation in this study. Please FAX or mail your completed survey by ***June 9, 2000*** *to:*

Michigan Center for Rural Health
B-218 West Fee Hall
Michigan State University
East Lansing, MI 48824-1316 0
Telephone: 517-432-1066
FAX: 517-432-0007

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