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Sociodemographic, Market, and Political Factors that
Influence Nurses Who Do Not Work in Nursing

By

Lisa M. Black

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

The School of Nursing and Department of Social and Behavioral Sciences

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA SAN FRANCISCO

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Lisa M. Black, PhD, RN

Dedication

This dissertation and all it represents is dedicated to my daughters, Rebecca and Kaitlyn. Without your never-ending support, patience, and willingness to grow up just a little too quickly, this would not have been possible.

Acknowledgments

Though only my name appears on the cover of this dissertation, a great many people have contributed immeasurably to it. I owe my gratitude to all those people who have made this journey possible and because of whom this dream has become a reality.

My deepest gratitude is to my advisor, Dr. Charlene Harrington. I have been amazingly fortunate to have an advisor who has given me the freedom to explore on my own and at the same time the guidance to recover when my steps faltered. Dr. Harrington's patience and support helped me overcome many crisis situations and finish this degree long distance. I hope that one day I will become as good an advisor to my students as Charlene has been to me.

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I would like to thank the faculty of the Orvis School of Nursing for your support and patience as I have navigated through these past two years of being both a full-time

faculty member and a doctoral student. Your understanding of my many crises and competing deadlines has been greatly appreciated. To Dr. Patsy Ruchala, the director of the Orvis School of Nursing, my most sincere thanks for your support and for keeping my teaching assignments manageable while I completed this degree.

None of this would have been possible without the love and support of my family and friends. My children, Rebecca and Kaitlyn, to whom this dissertation is dedicated, have been a constant source of love, strength, and inspiration. Their patience, willingness to grow up just a little too quickly, and tolerance of the many “dinner is on your own” nights have given me the time to focus on writing.

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To borrow the words of an African proverb, “It takes a village”

In this case, it certainly did.

Sociodemographic, Market, and Political Factors That

Influence Nurses Who Do Not Work in Nursing

By

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Abstract

Purpose: The purpose of this research was to describe registered nurses not working at all and those working in non-nursing compared to those working in nursing. Factors associated with registered nurses not working or working in non-nursing employment were examined in terms of sociodemographic characteristics, market factors, and political factors.

Background & Significance: Empiric and anecdotal literature have demonstrated an exodus of registered nurses from the nursing profession. This study has policy implications for addressing these workplace losses.

Conceptual Framework: This research is guided by economic labor market theory.

Research Design & Methods: Secondary data from the 2004 National Sample Survey of Registered Nurses with a sample of 35,635 nurses was used for the analysis. A two-stage least squares model was estimated using a predicted market wage for all nurses in the sample and univariate probit equations were used.

Key Findings: Nurses who worked in non-nursing and those who did not work at all were different from nurses who work in non-nursing. The main reason nurses gave for working in non-nursing was dissatisfaction with the nursing workplace. Salary was not a significant predictor controlling for other factors. Male nurses and nurses over the age of 45 were more likely to work in non-nursing than female nurses and younger nurses. Nurses with young children in the home, those with at least a baccalaureate degree in nursing, and those who lived in politically liberal counties were more likely to be employed in nursing than nurses without children, those in politically conservative states, and those with lesser education. Working in non-nursing was contingent upon not participating in the nursing market.

Implications for Health Policy: New policy remedies are needed to recruit new nurses to nursing and to retain those who are leaving the profession. Continued salary enhancements in the absence of real changes in the nursing workplace will not contribute significant long-term solutions to the current nursing shortage.

Committee Chairperson:
Charlene Harrington, RN, PhD, FAAN



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Sociodemographic, Market, and Political Factors that
Influence Nurses Who Do Not Work in Nursing

CHAPTER 1: INTRODUCTION

This study aims to examine the population of registered nurses in the United States who are either not working or are engaged in non-nursing employment. The presence of adequate numbers of registered nurses in direct care roles is essential to the well-being of the United States health care system. Empirical and anecdotal literature have demonstrated a significant exodus of registered nurses, particularly from hospital nursing. Hospital employment losses have been shown to occur in a bimodal pattern. Large numbers of nurses have been found to leave hospital nursing within five years of graduation from their basic program of nursing education, and then this pattern has been shown to level out until nurses reach forty-five to fifty-five years of age (Bowles & Candela, 2005; Buerhaus, Staiger, & Auerbach, 2000a). At these later ages, the exodus from nursing once again becomes acute.

Whether this reflects a shift of nurses out of the nursing market due to a specific set of sociodemographic variables of the nursing population or the market in which these nurses work, or whether this shift is merely representative of the societal trend to deliver nursing care in non-acute settings is unsettled in the available literature. Research (Buerhaus et al., 2000a; Buerhaus, Staiger, & Auerbach, 2000d, 2003) has demonstrated a trend toward fewer young people entering nursing in recent decades, leading to severe shortages of nurses at the bedside. Other research has suggested that this nursing

shortage trend may have an adverse effect on patient safety (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Long & Bernier, 2004).

It is important to identify factors that may contribute significantly to losses of nursing personnel. Identification of such factors may aid in the generation of future predictive models to estimate worsening nursing workforce trends, or may identify potential strategies toward future remediation of the ever-increasing nation-wide shortage of acute care registered nurses. Such predictive modeling may provide valuable policy insights and allow for the creation of policy remedies that might augment the supply of acute care registered nurses in a way that keeps pace with the changing health care needs of the United States population.

Background & Significance

Registered nurses comprise the largest number of health care professionals in the United States. The end of the old and the birth of the new millennium has been a time of turbulence for many of these nurses. Hospital re-engineering, cost containment, managed care, increased patient acuity, aging of the workforce, technological advances, increasing system complexity, and shifting of care from hospital to community and long-term settings all have had an impact on the environment in which nurses work (Buerhaus, Staiger, & Auerbach, 2000a). Nurses have been intimately affected by rapid and unpredictable changes. News reports discuss threats of nursing strikes over mandatory overtime, inadequate staffing, heavy workloads, over-reliance on lesser educated ancillary personnel, and other workplace issues. Other reports suggest that these concerns are generating a revolving door through which nurses enter and leave the bedside and the profession at increasingly alarming rates. Hours of research and large

sums of money have been expended trying to depict, interpret, understand, and resolve the phenomenon of nurses leaving nursing with little long-term success. Previous attempts retain nurses in the workforce have included hiring bonuses, wage increases, foreign nurse immigration, and educational assistance packages. A recurring theme in the body of nursing workforce literature suggests that if this trend of nursing exits continues unchecked, nursing workforce shortages are projected to continue and worsen into the next decade when 78 million baby boomers begin to reach retirement age and will likely begin to consume increasing amounts of health care resources (Buerhaus, 1999).

Employment patterns of registered nurses vary across time and are linked to many factors. Household income, marital status, number and age of children in the household, current working conditions, wages, and availability of career mobility all have been indicated as factors that influence employment patterns (Aiken, 1983; Buerhaus et al., 2000a; Buerhaus, 1991c; Prescott, 1989). Worker behavior, including the decision to work at all and for how long, is related to these social and economic factors. Labor force participation is ultimately a decision about how to spend time, whether in leisure or at work for pay. Labor supply theory suggests that in addition to workplace preferences, nurses' workplace behaviors concerning desired work hours depend on the nurse's wealth and the wage rate the nurse can command.

The phenomenon of career inactivity in professional nursing has been widely portrayed in the literature as a major cause of disequilibrium in the registered nurse labor supply (Aiken, Blendon, & Rogers, 1991; Fottler & Widra, 1995; Laird, 1993; Link & Settle, 1981; Schoen & Schoen, 1985). Yet, there has been a general lack of

understanding of the diverse forces and counterforces that shape the inactive nurse pool and the likelihood of this population to return to nursing.

The proportion of registered nurses who were not working in nursing was relatively stable throughout the 1990s. The 1992 and 1996 National Sample Surveys of Registered Nurses showed that approximately 71 – 73% of these nurses were employed outside of nursing, or had retired (Moses, 1992; Moses, 1996). However, in 2000 approximately 81,000 of those not working were age forty-three or younger, which is younger than the mean age of registered nurses currently working *in* nursing. Raising particular concern is the increasing proportion of new registered nurses who were not working in nursing. The proportion of new male entrants into the profession who were not working in nursing more than doubled between 1992 and 1996, from two percent to 4.6%, and then rose again by more than half to 7.5% in 2000. By comparison, the proportion of new female nurses who were not working in nursing also increased, although at a slower rate, from 2.7% to 4.1% and remained close to that level in 2000 and 2004 (Sochalski, 2002a).

The growth in those not employed in nursing between 1992 and 1996 is not wholly surprising given the lower demand for registered nurses during a period of major health care restructuring, especially in hospitals, where the majority of new graduates have historically been employed. However, the drop off in employment patterns for men between 1996 and 2000 occurred during a time of higher demand for nurses, raising questions as to why a larger group was exiting the profession during a time of plentiful employment opportunities in nursing (Sochalski, 2002a).

Sochalski (2002a) found that the reasons for nurses not working in nursing varied by gender. Among all nurses who were not employed in nursing in 2000, 56% of men were employed in other positions, roughly twice the rate of women (26%). This same pattern held among new entrants to the profession with 78% of men and 39% of women employed in fields other than nursing. Of new nurses surveyed in 2000, 25% of new nurses employed in other fields indicated that they had never worked in nursing. This pattern might be expected during times of economic hardship in the health care industry, such as during the emergence of prospective payment in the 1990's when 57% of new nurses working outside of nursing had no nursing experience. During this time, however, 56% of these nurses indicated they were actively seeking nursing employment, compared with only 13% of the nurses working outside of nursing in 2000. The most common reasons for working in other fields were better hours, more rewarding work, and better pay in other fields. This accelerating rate of loss of nurses during a time of increasing demand underscores the need to determine the reasons for the professional exodus (Sochalski, 2002a).

Brewer and Nauenberg (2003) found several important differences between registered nurses in hospital and non-hospital settings in relation to economic incentive to work, job perceptions, job satisfaction, and organizational commitment, though these differences did not predict markedly different intentions to leave their place of employment. Primarily, older, more experienced hospital nurses were found to be more likely to express an intention to leave their current place of employment and the nursing profession in general. This finding is supported in the work of Fottler and Wilda (1995) in which nurses working in hospitals were more likely to leave nursing employment than

were their non-hospital counterparts. Moreover, those leaving for employment-related reasons were more likely not to return if they were previously employed in a hospital. Additionally, those who left hospital employment for personal (non-employment related) reasons were more likely to return to nursing if they were currently out of the workforce than if they had accepted employment outside of nursing (Fottler & Widra, 1995). This latter group appeared to be largely lost to the nursing profession.

Dissatisfaction stemming from limited opportunities for promotion and further training have been found to have a greater impact on intentions to leave a workplace or the profession than did dissatisfaction stemming from excessive workload or inadequate wages (Shields & Ward, 2001). Additionally, registered nurse perceptions of hospital reorganization have been found to adversely affect intention to leave nursing employment (Shindul-Rothschild, Berry, & Long-Middleton, 1996; Sochalski, 2002a). Conversely, however, those nurses who possessed a high degree of attachment to the profession, perceived a high cost of having left nursing, and had a more positive view of the profession were likely to return to the workforce after they had left (Fottler & Widra, 1995). Inactive nurses also were more likely to return to the profession if they had more dependent children and a shorter period of inactivity. These findings were contrary to the relationship hypothesized by Fottler and Wildra (1995). Crosstabulation of workplace activity with income found that those registered nurses with more dependents supported their families with similar total family incomes to those with fewer dependents suggesting a lower per capita family income for registered nurses with more dependents, and thus, a greater incentive for the nurse to reenter the nursing labor market (Fottler & Widra, 1995).

Brewer et al. (2006) report the first study in the labor market literature that included market variables in the prediction of registered nurse workforce participation. This research used a bivariate probit model to determine if working full or part time was conditional on a choice to work in nursing and found that “working in nursing is not independent of working full time or part time” (p. 860). Other key findings of Brewer et al. (2006) were that age, other family income, and prior work experience were negatively related to the decision to work as a registered nurse, and that wage (as a predicted variable) was not related to the decision to work as a registered nurse, but negatively influenced whether or not a nurse worked full-time. Brewer et al. (2006) further found that age, children, minority status, student status, employment status, other income and job setting had a negative impact on whether a nurse worked full time. In Brewer’s (2006) work, health care experience prior to initial RN licensure had a positive effect on whether married registered nurses worked, and married nurses who were more dissatisfied with nursing employment were less likely to work full-time. With respect to the market-level factors, Brewer et al. (1996) found that market-level variables such as the percentage of the population over the age of 65, the number of uninsured, and unemployment rate were more likely to influence whether a nurse worked part-time or full-time than whether the nurse worked at all.

Contribution of this Dissertation Research

The factors that influence nurses to leave nursing employment or the profession are complex and interwoven. Little empirical work, and even less analytic research, has been undertaken that specifically examines the factors associated with registered nurses who either do not work at all, and those who choose to work in non-nursing employment.

Moreover, no analytical studies in the retrievable literature have specifically modeled nurses who work in non-nursing employment. Nurses who work in non-nursing employment are important to study because this group represents a population that does work, but does not contribute to the labor market for registered nursing. This dissertation research aims to close this knowledge gap and to identify sociodemographic, market, and political differences between nurses who are actively employed in nursing and those who work in non-nursing or do not work at all. Further, this research empirically examines the reasons that these nurses do not work in nursing. Additional study of the factors involved in the decisions of registered nurses not to work in nursing is needed to enhance understanding of the dynamics of nurses who choose not to nurse. Ultimately, this understanding may allow for the development of sound health care policy which will stem the flow of nurses away from the bedside.

Building on the work of Brewer et al. (2006), this study extends the body of knowledge in relation to registered nurse labor market behavior in four important ways. First, this research uses the most recent 2004 NSSRN data to determine if the new data produce findings consistent with the work of Brewer et al. (2006) that used 2000 data. Second, market analysis is conducted at the county level rather than at the MSA level to include rural and male nurses; populations that were excluded by Brewer. Third, this research includes measurement of the political environment in which nurses work that has not previously been examined in relation to registered nurse labor market behavior. Finally, this dissertation research specifically examines factors and covariates that predict nurses not working in nursing and those who work in non-nursing employment which have not previously been analytically examined in the available literature.

Specific Aims

Analysis of nursing workforce data offers the opportunity to address questions regarding the sociodemographics of the population of nurses who do not work in nursing. Examination of those nurses who participate in the labor market, but work in non nursing employment is equally important to understanding of the unique qualities of this population of nurses. Toward this end, this dissertation has six specific aims. This dissertation research aims to:

1. Describe registered nurses who are working in non-nursing employment and those who are not working at all compared with nurses who are working in nursing.
2. Examine the reasons that registered nurses gave for not working in nursing in terms of sociodemographic, market, and political factors.
3. Determine if registered nurses who work in non-nursing employment or do not work at all are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.
4. Determine if registered nurses who work in non-nursing jobs (excluding those who do not work) are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.
5. Determine if registered nurses who work in non-nursing employment are different from those who do not work at all in terms of sociodemographic characteristics, political factors, and market factors.
6. Measure the relative importance of factors that affect the joint decision not to work in nursing and to work in non-nursing.

Plan for the Dissertation

This chapter has provided an introduction to the problem to be investigated in this dissertation. The second chapter presents a thorough review of the nursing labor market literature. Chapter three provides a discussion of economic labor market theory and presents how traditional labor market theory is blended with the theoretical perspectives of the decision to work and household production to provide the guiding framework for this study. The data sources and the methods are presented and discussed in chapter four. Finally, the results of this study are presented in chapter five and are discussed in relation to previous research and theory in chapter six. Finally, implications for health policy and directions for future research are presented and further discussed.

CHAPTER II: REVIEW OF THE EMPIRICAL LITERATURE

Registered nurses comprise the largest number of health care professionals in the United States. The end of the old and the birth of the new millennium has been a time of turbulence for many of these nurses. Hospital re-engineering, cost containment, managed care, increased patient acuity, aging of the workforce, technological advances, increasing system complexity, and shifting of care from hospital to community and long-term settings have all had an impact on the environment in which nurses work (Buerhaus, Staiger, & Auerbach, 2000a). Nurses have been intimately affected by rapid and unpredictable changes. Headlines report that patients are being injured or are dying due to mistakes made by nurses, most often resulting from inherent failures in the health care delivery systems in which they work (Institute of Medicine, 2004). Other news reports discuss threats of nursing strikes over mandatory overtime, inadequate staffing, heavy workloads, over-reliance on lesser educated ancillary personnel, and other workplace issues. Warnings of nurse surpluses are quickly replaced with concerns about shortages. If these trends continue unchecked, nursing workforce shortages are projected to continue into the next decade when 78 million baby boomers begin to reach retirement age and will likely begin to consume increasing amounts of health care resources (Buerhaus, 1999).

Employment patterns of registered nurses vary across time and are linked to many factors. Household income, marital status, number and age of children in the household, current working conditions, wages, and availability of career mobility all have been indicated as factors that influence employment patterns (Aiken, 1983; Buerhaus et al., 2000a; Buerhaus, 1991c; Prescott, 1989). Worker behavior, including the decision to

work at all and for how long, is related to these social and economic factors. Labor force participation is ultimately a decision about how to spend time, whether in leisure or at work for pay. Labor supply theory suggests that in addition to workplace preferences, nurses' workplace behaviors concerning desired work hours depend on the nurse's wealth and the wage rate the nurse can command. Some individuals may prefer to spend more time in household tasks, caring for children, cooking, and cleaning while others are willing to pay other individuals for household maintenance. If the general economy is doing well and households have adequate wealth to buy more leisure time, some household members may choose to work less (Ehrenberg & Smith, 2005).

History indicates that there are cycles of increased need and utilization of nurses in the United States. Repeated cycles of nurse workforce shortages have existed since World War II (Huber, 2000). Schoeman (1988) indicates a shortage exists when the "number of hours of labor that nurses are willing to provide under current labor market conditions is less than the number of hours that employers would like to purchase under these conditions" (p.1). Possible causes, ramifications, and solutions for shortages are frequently explored because the ability to respond appropriately is a driving force in the health care industry. The cost involved in employing registered nurses is the largest single expenditure to health care facilities in the United States, comprising approximately 20% of the total hospital budget (Foley, 2002). Therefore, the ability to control cost while maintaining quality care through the employment of RNs is paramount to the health of the patient care industry.

Workforce shortages emerge as a result of an imbalance in supply and demand conditions (Aiken, 1995; Buerhaus, 1991c; Prescott, 1989; Ventura, 2004). Because

demographic and economic pressures influence both supply and demand, a better understanding of these pressures is necessary. Factors that drive supply and demand for nurses have varied over time. War, epidemics, changing health care delivery systems, technology, alternate employment opportunities for women, average length of tenure in nursing, and changes in the economy have all had an effect on the supply and demand for qualified registered nurses (Huber, 2000).

Previous attempts to recruit and retain nurses in the workforce have included hiring bonuses, wage increases, foreign nurse immigration, and educational assistance packages. Hours of research and large sums of money have been expended trying to depict, interpret, understand, and resolve the phenomenon of nurse shortages with little long-term success.

Competing theories currently exist to describe the cyclic patterns found in nurse workforce participation. It is important to understand that these cycles are interrelated with social and economic forces, shifts, and changes. In this age of complexity, it is imperative that the issue of nurse workforce participation be examined in the context of the total environment in which it occurs. The health care industry and the individual nurse are components of the general economy. Without inclusion of an examination of the economic forces present in the nursing workforce, it would be difficult to gain a better understanding of the causes, ramifications, and solutions to expected challenges within the health care environment.

Forecasting the future demand of registered nurses is important to health care planners and educators interested in tailoring the future supply of nurses to match anticipated demand (Aiken, Sochalski, & Anderson, 1996; Buerhaus, 1991c). A lack of

understanding of the nurse workforce labor market leads to inadequate policy decisions that adversely affect the quality of patient care (Buerhaus, 1999). Thorough review of the nursing workforce literature is essential to further understanding and future prediction of the dynamics of the need for nurses in coming years. Traditional economic models described in the literature have failed to adequately explain or predict RN workforce participation because of the nonlinear, dynamic complexity of the health care system. Review of past works pertaining to nursing workforce trends specific to workforce participation may provide insight into past and future resource availability, allowing for the development of sound health care policy that will stem the flow of nurses away from the bedside. Examining the recent history of nurse shortages may create the potential for a different approach to the challenge of understanding and projecting future RN workforce participation and labor market demand.

Research (Aiken, Clark, Cheung, Sloane, & Silber, 2003) has shown that adequate numbers of registered nurses at the bedside contribute significantly to successful patient outcomes. Registered nurses have been shown to be unique in their contributions to patient safety, given the focus on critical thinking and clinical judgment in registered nurse education. Given the important findings of Aiken and colleagues (2003), most contemporary labor market research has focused on the registered nurse labor market and the majority of available data measure this subset of the nursing market.

Review of the Nursing Workforce Literature

The remainder of this chapter reviews the nursing workforce literature with an emphasis on the workforce supply and demand and labor force participation literature. Considerable attention is given to econometric prediction models described in the

literature, most specifically those pertaining to the potential for monopsony in the registered nursing labor market. Finally, an overview of the nursing workforce shortage literature is discussed with attention to concerns raised by the aging of the nursing workforce, and the intentions of currently employed registered nurses to leave the labor market and of those not employed to re-enter nursing. Proposed solutions to nursing workforce concerns offered in this literature are explored.

Empirical studies for review were obtained via computerized literature search of PubMed, CINAHL, Social Service Abstracts, Social Sciences Citations Index, PsychInfo, and EconoLit using key words “nursing labor market,” “nurse AND work”, “nursing workforce,” and the key word string “nurs* labor not child* not infant not birth not pregnan*.” Searches were limited to studies published between 1995 and 2005, though seminal works found referenced in studies published prior to 1995 are included in this review. Government reports on the nursing workforce from 1980 – 2005 were obtained via electronic search of the Bureau of Health Professions, United States Department of Labor, and the United States Census Bureau websites and Lexis – Nexis Academic Universe. The SAGE publication *Policy, Politics, and Nursing Practice* is not indexed in any of the aforementioned databases and was felt to be relevant to this review and was searched by hand from its inception (February 2000) through November 2005. This search yielded 154 relevant nursing workforce studies and 18 government reports. These results were then limited to analytical nursing workforce studies and relevant government reports leaving 88 empirical articles and 12 government reports that were reviewed in detail, the results of which are presented in this literature review.

Categorization of the major themes present in the retrieved literature yielded five main categories that provide the organizing framework for the remainder of this chapter. These thematic categories were identified as: 1) descriptions of the registered nurse labor market in which the subthemes of a) economic predictions of labor market participation and b) work intentions of nurses in and out of nursing were identified; 2) evidence for the presence of monopsony power in the nursing labor market; 3) the nursing workforce shortage; 4) aging of the nursing population; and 5) foreign nurse recruitment. The remaining workforce studies in the literature that presented only descriptive findings were reviewed for the purposes of depth of understanding of the body of nursing workforce knowledge, and are included in this literature review, but were not reviewed in detail. Studies pertaining specifically to hospital staffing, quality of care, patient outcomes as a function of quality of care, skill mix in health care settings, and nursing care in non-acute settings are discussed tangentially, but are largely beyond the scope of this literature review and were not reviewed in detail.

The Registered Nurse Labor Market and Workforce Participation of Registered Nurses

The supply of nursing labor has long been an up-and-down phenomenon (McKibbin, 1990; Yett, 1970), however it experienced a brief period of equilibrium in the early 1980s (Brewer, 1996). The economy had recently recovered from a significant recession, the market had adjusted after the nursing shortages of the late 1970's, and health care institutions were preparing for major health care reform in the form of prospective payment.

Factors associated with labor force participation of women in general have been studied, but few have dealt specifically with a particular professional group and even

fewer have studied nursing in particular. Labor force participation can be conceptually measured in a number of ways and inconsistency in measurement is found in the relevant literature. The most frequently used method is to measure the number of annual hours contributed to the workforce, while workforce participation can also be measured as a dichotomous variable (working or not working). Laing and Rademaker (1990) have offered that a trichotomous variable (not working, working part-time, or working full-time) may be a more appropriate measure of labor force participation as a categorical variable, given the number of nurses who do participate in the workforce, but do so on a less-than-full-time basis. Laing and Rademaker (1990) also suggest that market participation decisions for nurses may be better measured over a more extended time frame (i.e. as a five year pattern of employment) rather than over a one-year period of time when contravening, but temporary, factors may create a less accurate portrayal of workplace participation.

The available nursing workforce studies posit various explanations and measurements of labor force participation of women, especially married women, and offer relatively inconsistent results. Laing and Rademaker (1990) found overall workforce participation rates of 84% and 85% in the study years of 1980 and 1985, which closely mirror the participation rates estimated by the NSSRN in 1980 and 1984 (Moses, 1980; Moses, 1984). Link (1992) also found that registered nurses had high participation rates with the participation rate of married registered nurses with children under age six to be 86.7%, compared to a participation rate of only 57.1% of the similar population in the general population. These findings are similar to those of Greenleaf (1983) who conducted separate discriminant function analyses on nurses, teachers, and a

composite group of other women and found that the presence of young children in the home keeps teachers and others out of the labor force, but has no effect on married nurses.

However, the continuous five year participation rate found by Laing & Rademaker (1990) using Current Population Survey data was 64.6%, meaning that only this share of the nursing workforce participates on a continual basis, either part time or full time, but 20% have some level of labor participation interruption during a five-year period. In fact, in Laing and Rademaker's (1990) work, only 24% of the nurses studied worked full time continuously for the five year period in which data were collected, and 27% worked part time for the entire period leaving an additional 13% of the nurses who *did* participate in the workforce continually over this time but alternated between full-time and part-time participation. These results are similar to the descriptive findings of Link (1992) who found that nearly 90% of single RNs and 66% of married RNs work at least 1,500 hours per year and 97% of single and 86% of married nurses work in excess of 1,000 hours per year.

Measurement of registered nurse labor market participation is most closely compared with that of teachers, as both are fields that are female dominated. When accounting for part-time work and workers who flux in and out of the workforce, participation rates of registered nurses, teachers, and the general population are similar. Bureau of Labor Statistics (2006) data show that registered nurses have an overall participation rate of 86% , while the participation rates of elementary and secondary educators averaged 81%. Nurses and teachers are quite different, however, in relation to the degree of their participation, with 93% of actively working teachers participating in

the labor market on a full-time basis compared to 67% of registered nurses who participate in the labor market on a full-time basis (BLS, 2005).

Generally, labor force participation has been found to be positively related to wage rate (Link, 1992; Phillips, 1995) and negatively related to husband's income and the presence of young children in the home (Ezrati, 1987; Link & Settle, 1985; Link, 1992; Phillips, 1995). Phillips (1995) found that holding a mortgage and being single encouraged participation in the workforce in the population of nurses in Great Britain, which was not entirely consistent with studies conducted on the American nursing workforce. Ezrati (1987) also found that in addition to predicted wage, the number of adults in the nurse's household was positively related to hours worked, although age, being married, the number of children in the home, and household income were negatively associated with the number of hours spent by nurses in the nursing workforce. Laing and Rademaker also found evidence of a "U-shaped" trend in workforce participation where the trough of the "U" corresponded to the presence of more children in the 2 – 11 year range, suggesting that nurses tend to interrupt their careers when their children were between two and eleven years of age, and then return to work. Yett's (1965; Yett, 1970) seminal work in this area also supports the general thesis that employment is increased when wages are higher and is decreased when the spouse's wage is higher and when children are present in the home. Bishop (1973) also noted a positive relationship between wage and labor force participation in her cross-sectional sample of over 31,000 married nurses.

Later, but still dated, work by Link (1992) demonstrated that while wage may have been previously shown to be a positive predictor of workforce participation,

registered nurses' own wage elasticity was small, making it doubtful that marginal wage increases would substantially raise the participation rate, as most nurses are already working – a point that has been supported in other research, both previous to and after Link's 1992 work (HRSA, 2005; Laing & Rademaker, 1990; Spratley, Johnson, Sochalski, Fritz, & Spencer, 2000). Link (1992) also found that nurses who have completed baccalaureate education are less likely to participate in the labor force than nurses with an associate degree, and when baccalaureate-educated nurses do work, they tend to work less than associate-educated nurses. Additionally, nurses with more experience are both more likely to work, and more likely to work longer hours than their less educated counterparts, though Link (1992) offers no theoretical explanation for these findings.

In contrast, Bognanno, Hixson, and Jeffers (1974) failed to identify any relationship between female wage and labor force participation, although a negative relationship to spousal income persisted. They also noted that the presence of children in the home did not affect the decision to work but was negatively related to the extent of labor force participation. Link and Settle (1980) also indicated a negative wage elasticity for married nurses indicating that increases in wages may actually decrease labor market participation by some nurses, theoretically because of increased utility found in other areas of life that may be better funded through fewer hours spent in the workforce. Some research also has found that nurses with children in the home were more likely to participate in the workforce, but tended to work fewer hours than those without children (Ezrati, 1987).

Laing and Rademaker (1990) included gender role attitudes in their measurement of nurses' labor force participation, which was a variable that had not previously been included in the participation literature. The measurement of gender role attitudes is intuitively significant to the measurement of labor force participation. Families that demonstrate more traditional gender role attitudes in which women primarily work in the home and men are responsible for working in the labor market for pay are less likely to have a female member in the labor market. Since most nurses are female, the more families in a given geographic locale with conservative gender role ideals, the lesser the nursing workforce participation in that area. Laing and Rademaker's (1990) analysis found that sex role attitudes were important nursing participation variables in the models they tested. Nurses holding an egalitarian sex role attitude were more likely to work more hours in a given year, and to work full-time both in point-estimates and over five year time periods. In order of importance, Laing and Rademaker (1990) found that after sex role attitudes, workforce position ranked second and presence of previous career interruptions ranked third in the decision of nurses to participate in the nursing workforce. The presence of children in the home, the shift the nurse worked, spouse's salary, health of the nurse, and the nurse's level of education were also significant predictors of workforce participation (Laing & Rademaker, 1990), but were of lesser importance than in previous work published on this topic (Bishop, 1973; Bognanno et al., 1974; Greenleaf, 1983; Link & Settle, 1979; Link & Settle, 1980; Sloan & Richupan, 1975). The nurse's wage, rural or urban residence, home ownership status, and the spouse's employment status were not found to be significant predictors of participation in this study. Of interest, workforce participation predictors found to be of primary

importance in previous work on this topic (Bishop, 1973; Bognanno et al., 1974; Greenleaf, 1983; Link & Settle, 1979; Link & Settle, 1980; Sloan & Richupan, 1975) were found to be either of lesser importance in the more recent work described by Laing and Rademaker (1990) or not significant at all in favor of variables such as sex role attitudes, previous participation interruptions, and shift work. These apparently superior variables had up-to-then been unmeasured in the participation literature and have not been yet been re-measured in subsequent work, raising question as to the validity of presumptions as to which variables are most likely to predict workforce participation among registered nurses.

While the findings of these aforementioned studies are relatively consistent in their finding that married women with young children whose spouse earns a higher salary are likely to demonstrate lapses in their labor participation, the age of these studies may render their findings largely irrelevant to current considerations of labor participation by similar demographics of nurses. More current study of this phenomenon may show important effects relevant to changing population dynamics in which most households have become highly reliant upon dual salaries to achieve the same level of utility that previously was attainable through the contributions of a single household member participating in the workforce. While regression coefficients reported in these largely cross-sectional studies support their stated findings, changes in the general economy are not considered as potential explanations for the increased likelihood of labor participation among the various subsets of nurses studied. Lack of attention to the evolving economy may lend bias to these findings beyond the age of the research, and may render these works to be suspect.

While these results and empirical findings relative to nursing workforce participation decisions by registered nurses provide insight into the factors that lead to nurse participation in the workforce, there is much conflict in exactly which factors predict labor participation, and which are the most important to the participation decision. Additionally, given that the majority of these studies examining workforce participation by registered nurses are at least 20 years old, leaving room for changes in the participation behavior of nurses in the past two decades. Therefore, while these data and findings are illuminating, and perhaps instructional, they may be of limited use in the creation of policy aimed at increasing labor force participation among registered nurses.

Economic determinants of nursing labor supply and participation. Labor supply research generally examines whether or not nurses choose to work, and the number of hours supplied by those nurses who participate in the workforce. Understanding of the dynamics of nursing labor supply is key to determining nursing labor policy, and must be understood in the context of current trends (Brewer, 1998) which are largely absent in the existing literature. In the late 1990's, research (Buerhaus & Staiger, 1996, 1997, 1999) documented slowed employment growth for registered nurses that fell significantly below the rate of employment growth for all occupations during the same period and increasing RN vacancies in all sectors of nursing employment (Cleary, Lacey, & Beck-Warden, 1998). Between 1994 and 1999, Buerhaus & Staiger (1999) documented that the rate of employment growth had slowed to under 2% per year after consistent growth at double the rate of other occupations between 1983 and 1994. Buerhaus & Staiger (1996; Buerhaus & Staiger, 1997, 1999) and Spetz (1999) have suggested that these trends first became apparent in states with relatively high HMO enrollment and gradually spread

throughout the market with the increased penetration of prospective payment systems. These authors concluded at the time of publication that worsening labor market conditions for registered nurses are largely attributable to growth in managed care and that this trend is likely to continue until a state of equilibrium in prospective payment penetration is reached though rationale for this conclusion is not explicated by the authors. Further research has not been conducted by these or other authors to examine if these postulates relating to the effect of managed care have worsened or lessened now that a certain degree of equilibrium has been reached in relation to the degree of market penetration of managed care in the health care industry with managed care organizations existing in most, if not all, segments of the health care market.

Research has suggested that “nurses are not income maximizers” (Aiken, 1984, p. 9). Those who choose nursing as a career base their decisions on factors other than lifetime earnings. Seminal nursing labor market study by Aiken (1984) suggests that nurses base labor market decisions on factors such as the quality of working life, evidence of having contributions recognized and valued, involvement in decision making and professional autonomy rather than on economic factors. Such satisfaction measures have been historically low in nursing, particularly following the redesign of care delivery systems in the 1990’s. A significant body of recent research (Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Aiken et al., 2002; Bowles & Candela, 2005; Buerhaus, Donelan, DesRoches, Lamkin, & Mallory, 2000b; Buerhaus et al., 2005a; Jackson, 2005; Long & Bernier, 2004; Lundgren, Nordholm, & Segesten, 2005; Martin, 2005; Roberts, Jones, & Lynn, 2004; Sales et al., 2005; Steinbrook, 2002; Ulrich, Buerhaus, Donelan, Norman, & Dittus, 2005; Unruh, 2005) and others have demonstrated that nurses perceive registered

nurse staffing levels to be frequently less than adequate, workplace conditions to be uncondusive to quality nursing care, nursing morale in nursing to be exceptionally low, and patient safety to be in jeopardy. Steinbrook (2002) states that “most health care workers entered their professions to ‘make a difference’ through personal interaction with people in need. Today, many in direct patient care feel tired and burned out from stressful, often understaffed environment , with little or no time to experience the one-on-one caring that [is] the heart of [health care] employment” (p. 1759). Buerhaus (2005a), however, has documented a possible up-turn in nursing morale with more employed registered nurses reporting being “very satisfied” with their current jobs and with nursing in 2004 than were in 2001, and that increased levels of satisfaction were largely predicted by organizational emphasis on quality patient care, management recognition of family life, and positive relationships with colleagues and management.

Almost paradoxically to indications in the literature that nurses seek “utility” over economic factors in labor supply decisions, nursing’s relative wage is central to much of the nursing workforce literature. Brewer (1996) states that “wage is the critical market variable that acts to equilibrate the supply of labor by nurses and demand for labor by employers” (p. 345). The economic term *elasticity* is used to describe the responsiveness of the nursing labor market to changes in the market wage. For example, in a unitary elastic market, a 10% increase in the prevailing wage will result in exactly a 10% increase in the labor the market is willing to supply. When nurses as a group are responsive to the wage, a 10% increase in the wage will increase the hours they work by more than 10%. In an elastic market, changing the prevailing wage is an effective means of adjusting the labor supply. When the reverse is true, and nurses are not responsive to

wage changes, the market is said to be inelastic and wage is a less effective tool to adjust the labor supply. In this inelastic market, characteristics of the job or workplace become relatively more important to the supply of nurses in the workforce (Brewer, 1996).

Research (Brewer, 1996; Chiha & Link, 2003; Link & Settle, 1985; Link & Settle, 1980, 1981) using OLS regression to analyze nurse responsiveness to changes in wage have demonstrated that differences exist in the elasticity of male and female supply curves with female nurses being more responsive to changes in wage than their male counterparts. Differences in labor elasticity also exist in respect to children, student status, and ethnicity (Brewer, 1996; Brewer, Feeley, & Servoss, 2003; Chiha & Link, 2003; Link, 1992; Link & Settle, 1980, 1981). Eastaugh (2004) has suggested that nurses exist in a competitive market with less control over the demand functions for their labor than other workers in the labor market. This assertion is contrary of the often stated role of nursing labor unions which have become prevalent in nursing to lobby workplaces for equitable wages, which should intuitively be subject to the control of the nurses participating in the collective bargaining unit. Brewer (1996) suggests that prompt labor market adjustment to the prevailing wage in response to these demonstrated market elasticities could, to some extent, moderate the roller coaster phenomena that plagues the nursing workforce, however, increasingly prevalent union contracts and other work agreements make wages “sticky” in a downward direction delaying market corrections.

In the extreme case of unresponsiveness to changes in the prevailing wage, nurses may actually *decrease* their labor response as the wage changes creating a backward bending labor supply thus named because of the shape of the supply curve when graphed. This effect is tested through OLS regression analysis using a square of the prevailing

wage or a categorical wage variable in which the data are examined to determine if higher wage may result in lower labor participation rates among nurses. Analysis by Brewer (1996) seems to suggest that beyond a certain wage level, further increases may actually produce a lower labor supply as workers seek “utility” over additional income. While Brewer (1996) and other authors investigating this phenomenon control for factors such as marital status, children in the home, and household income, they do not consistently indicate if these or other variables may be responsible for this backward bending effect. Additionally, it is possible that an untested time lag effect exists in the data that may explain these findings independent of wage. Indeed, evidence in the nursing workforce literature is mixed in relation to the presence of a backward bend in the supply of registered nurses. While some dated research suggests evidence of such a curve (Bognanno et al., 1974; Link & Settle, 1985; Link & Settle, 1980; Sloan & Richupan, 1975), more recent research (Buerhaus, 1991a, 1991b; Ezrati, 1987) has not demonstrated this effect. However, even this “more current research” is dated and no current research investigating this phenomenon is found in the available literature leaving the question of the existence of a backward bending curve in the nursing workforce dynamic unsettled and creating a significant gap in current knowledge.

Efforts to project registered nurse workforce needs documented in the literature (Cramer, Chen, Mueller, Shambaugh-Miller, & Agrawal, 2004; Dumpe, Herman, & Young, 1998) have attempted to identify the variables that would significantly affect hospital utilization by patients, and thus, nursing workforce needs. While these models may be useful in the prediction of workforce needs in the acute care setting, they fail to consider that more than a third of the nursing workforce practices in non-hospital

settings, rendering models that predict workforce based on hospital utilization rather narrow. Malloch et al. (2003) and Morgan and Tobin (2004) have also successfully documented the use of dynamic forecasting models to predict and plan for nursing workforce need using models that are more inclusive of the varied workforce settings of registered nurses.

Dumpe, Herman, and Young (1998) define contextual factors pertinent to nursing workforce forecasting as sociocultural values and government philosophy. Supply factors are empirically defined as the health care delivery system (wages, location, flexibility of hours, and benefits), the nursing education system (number and type of programs, number of graduates, funding), the economic system (inflation and unemployment), and demographics of the available nursing population (age, gender, race, job satisfaction, family composition). Demand factors were largely defined by Dumpe et al. (1998) as different components of the same domains that predicted supply. Health care delivery demand factors were defined as available services and technology, employee substitution, and patient acuity, while demand driven economic systems were comprised of sources to obtain reimbursement for nursing services and price controls. Demand driven education factors were defined as available faculty and educational sites, and population demographics were defined as the age, epidemiology, race, and distribution of the populace. Thus, Dumpe, Herman, and Young (1998) suggest that nursing workforce demand is a demand that derives from the contextual factors in which the labor market exists (Ehrenberg & Smith, 2006).

Using a dynamic forecasting model, Cramer et al. (2004) found that overall demand for hospitalization was related to urban influence area, age distribution of the

population, and predominant ethnic background of a community with a predictive validity of $R^2 = 0.178$. Remote rural counties had more hospital demand than metropolitan counties, likely due to increased skilled nursing days and longer lengths of stay resulting from more elderly and lesser insured populations in these areas. If Cramer's (2004) findings are to be believed, it is concerning that the greatest disparity between employed registered nurses and projected need for RN FTEs occurred in these most rural counties forcing rural hospitals to rely more heavily on lesser – educated licensed practical nurses and nursing assistants. While these conclusions seem to flow logically from the regression model proposed by Cramer et al. (2004), alternate explanations for increased rural demand are not considered by the authors. The lack of consideration of alternate explanations, however, raises caution in the use of these findings which are contrary to intuition and to other research suggesting that higher health care demand exists in urban areas due to the presence of larger tertiary treatment center availability.

Future work intentions of nurses in and out of nursing. The phenomenon of career inactivity in professional nursing has been widely portrayed in the literature as a major cause of disequilibrium in the registered nurse labor supply (Aiken et al., 1991; Fottler & Widra, 1995; Laird, 1993; Link & Settle, 1981; Schoen & Schoen, 1985). Yet, there has been a general lack of understanding of the diverse forces and counterforces that shape the inactive nurse pool and the likelihood of this population to return to nursing. Similar to the findings of economic labor force participation research described previously in this paper, empirical research predicting intent of inactive nurses to return to nursing has found that nurses are more likely to demonstrate an intent to return to

nursing if they have higher levels of affective and continuous commitment to nursing, if they have fewer dependent children, and if they have lower family income (Fottler & Widra, 1995).

The proportion of registered nurses who were not working in nursing was relatively stable throughout the 1990's. The 1992 and 1996 National Sample Surveys of Registered Nurses showed that approximately 71 – 73% of these nurses were employed outside of nursing, or had retired (Moses, 1992; Moses, 1996). However, in 2000 approximately 81,000 of those not working were age forty-three or younger, which is younger than the mean age of registered nurses currently working in nursing. Raising particular concern is the increasing proportion of new registered nurses who were not working in nursing. The proportion of new male entrants into the profession who were not working in nursing more than doubled between 1992 and 1996, from two percent to 4.6%, and then rose again by more than half to 7.5% in 2000. In comparison, the proportion of new female nurses who were not working in nursing also increased, although at a slower rate, from 2.7% to 4.1% and remained close to that level in 2000 and 2004 (Sochalski, 2002a).

The growth in those not employed in nursing between 1992 and 1996 is not wholly surprising given the lower demand for registered nurses during a period of major health care restructuring, especially in hospitals, where the majority of new graduates have historically been employed. However, the drop off in employment patterns for men between 1996 and 2000 occurred during a time of higher demand for nurses, raising questions as to why a larger group was exiting the profession during a time of plentiful employment opportunities in nursing (Sochalski, 2002a).

Sochalski (2002) found that the reasons for nurses not working in nursing varied by gender. Among all nurses who were not employed in nursing in 2000, 56% of men were employed in other positions, roughly twice the rate of women (26%). This same pattern held among new entrants to the profession with 78% of men and 39% of women employed in fields other than nursing. Of new nurses surveyed in 2000, 25% of new nurses employed in other fields indicated that they had never worked in nursing. This pattern might be expected during times of economic hardship in the health care industry such as during the emergence of prospective payment in the 1990's when 57% of new nurses working outside of nursing had no nursing experience. During this time, however, 56% of these nurses indicated they were actively seeking nursing employment, compared with only 13% of the nurses working outside of nursing in 2000. The most common reasons for working in other fields were better hours, more rewarding work, and better pay in other fields. This accelerating rate of loss of nurses during a time of increasing demand underscores the need to determine the reasons for the professional exodus (Sochalski, 2002a).

Two bodies of research, those dealing with economic labor supply and turnover theory, are relevant to this problem (Sochalski, 2002a). The body of turnover literature arising from the study of organizational behavior defined job satisfaction as the general attitude toward a job or specific dimensions of a job (Brewer & Nauenberg, 2003). Organizational commitment refers to the relative strength of an individual's identification with and involvement in an organization (Price, 1997). Research in the fields of organizational sociology examining these constructs finds that organizational commitment and intentions to leave are significantly correlated (Blegen, 1993; Irvine &

Evans, 1995). Also, economic factors have been found to heavily influence organizational commitment (McIntosh, Rambur, Palumbo, & Mongeon, 2003).

Mueller and Price (2004) linked the frameworks of economics and turnover research with an intent to examine the demographic, economic, and attitudinal factors that influence intention to leave or remain in a local labor market. Each of these factors were found to be significant contributors to the statistical model and each predicted intent to leave behaviors in the nurses studied (Cramer et al., 2004). This research also found that an oversupply of registered nurses in the local labor market depressed the turnover of nurses in the hospital studied. Additionally, relative wages have been found to play a small, but significant role in the decision to switch places of employment and/or occupations (Schumacher, 1997). Shader, Broome, Broome, West, and Nash (2001) also found that group cohesion was a possible mitigating factor affecting the relationship between work satisfaction and leave intentions with nurses who were members of less cohesive groups being those who were the most likely to leave their place of employment. While workplace satisfaction, organizational commitment, and group cohesion are certainly important contributors to future workforce intentions of nurses, more frequently cited variables such as family status and outside income were not measured in the models proposed by Schumacher (1997) and Broome et al. (2001).

Brewer and Nauenberg (2003) found several important differences between registered nurses in hospital and non-hospital settings in relation to economic incentive to work, job perceptions, job satisfaction, and organizational commitment, though these differences did not predict markedly different intentions to leave their place of employment. Primarily, older, more experienced hospital nurses were found to be more

likely to express an intention to leave their current place of employment and the nursing profession in general. This finding is supported in the work of Fottler and Wilda (1995) in which nurses working in hospitals were more likely to leave nursing employment than were their non-hospital counterparts. Moreover, those leaving for employment related reasons were more likely not to return if they were previously employed in a hospital. Additionally, those who left hospital employment for personal (non-employment related) reasons were more likely to return to nursing if they were currently out of the workforce, than if they had accepted employment outside of nursing (Fottler & Widra, 1995). This latter group appeared to be largely lost to the nursing profession.

Dissatisfaction stemming from limited opportunities for promotion and further training have been found to have a greater impact on intentions to leave a workplace or the profession than did dissatisfaction stemming from excessive workload or inadequate wages (Shields & Ward, 2001). Additionally, registered nurse perceptions of hospital reorganization have been found to adversely affect intention to leave nursing employment (Shindul-Rothschild et al., 1996; Sochalski, 2002a). Conversely, however, those nurses who possessed a high degree of attachment to the profession, perceived a high cost of having left nursing, and had a more positive view of the profession were likely to return to the workforce after they had left (Fottler & Widra, 1995). Inactive nurses were also more likely to return to the profession if they had more dependent children and a shorter period of inactivity. These findings were contrary to the relationship hypothesized by Fottler and Wildra (1995). Crosstabulation of workplace activity with income found that those registered nurses with more dependents supported their families with similar total family incomes to those with fewer dependents suggesting a lower per capita family

income for registered nurses with more dependents, and thus, a greater incentive for the nurse to reenter the nursing labor market (Fottler & Widra, 1995).

Both satisfaction and commitment are identified as precursors to intention to leave and turnover (Irvine & Evans, 1995). Intention to leave is the most direct precursor in turnover models to actual turnover and is also an indication of future labor behavior. External turnover is defined as leaving the employer rather than changing positions internally within an organization depresses the supply of registered nursing labor, particularly if these nurses tend to stay out of the labor market for an extended period of time, retire early, or permanently reduce their hours of work in the nursing profession (Brewer & Nauenberg, 2003).

The roots of the factors that influence nurses to leave employment or the profession are complex and interwoven, however little empirical work that specifically examines the workplace intentions of registered nurses leaving the profession or those who may re-enter has been undertaken. Thus, additional study of the salient factors of the decisions of registered nurses on the fringe of employment or non-employment in nursing is needed to enhance understanding of the professional career philosophies and variabilities in career participation patterns of nurses who vacillate between leaving nursing or remaining in the profession.

Signs of possible strengthening of the nursing workforce. More recently, Buerhaus, Staiger, and Auerbach (2004) have used U.S. Department of Labor Current Population Survey data to demonstrate signs of a strengthening U.S. nurse labor market with a growth of 205,000 registered nurse FTEs between 2001 and 2003 representing the largest two-year growth rate since 1983, though much of this job growth was attributable

to employment of nurses over age 50 who were presumably re-entering the workforce and foreign-born RNs who have historically been under-represented in the RN workforce. Buerhaus, Staiger, and Auerbach (2004) also document an “explosion” of young RNs (age 21 – 34) in the workforce in 2003, which is consistent with anecdotal reports of sizable gains in nursing school enrollments of younger students since 2001. Employment of male RNs continued to grow as well with a bimodal age distribution with 47% of male RNs in their thirties and 39% of male RNs over 50 years of age. During this same time, employment of married RNs rose 14% compared with 4.8% increase among unmarried RNs (Buerhaus et al., 2004) suggesting that recent changes in the work environment may be incentivizing some RNs who had been out of the labor market back into nursing.

Monopsony Power in the Nursing Labor Market

Monopsony is defined most clearly in contrast to the more familiar monopoly model, in which a single provider or a small group of providers provide the only means of receiving certain services that are essential to existence within a community. A monopsony is essentially the mirror-image of the more familiar monopoly model. Literally speaking, monopoly refers to a market in which there is only one seller, while monopsony speaks to a market in which only one buyer exists. In a monopsonistic labor market, a single employer provides all or the majority of the employment to a given group of workers in a community, thus affecting the dynamics of a labor market from a demand for service perspective. Thus, there is a single “buyer” for the entirety of a labor market, differentiating the market from one that is congruent with the competitive market predicted by classical economic theory. This single buyer faces a labor curve which, in contrast to the horizontal one faced by a competitive market, is likely to be “upward

sloping” suggesting that if additional workers are desired, the firm would have to pay all workers a higher wage. Consequently, the monopsonist will tend to hire additional workers just to the point where the value of their productivity equals the cost of hiring them. However, workers in a monopsonistic market will be paid less than their marginal revenue product. Thus, the monopsonist hires fewer workers than a competitive firm would hire, and pays them a wage that is less than what would prevail if the market were competitive.

A common historical textbook example of monopsony is the market for registered nurses employed in hospitals in the United States, though recent shifts toward out-of-hospital employment may make calculation of this effect problematic. The example offered most frequently in the literature is the case of nurses in a town with only one employer of nurses. Because this employer employs essentially the entire labor supply, they are able to exert downward pressures on the market, thus resulting in a lowered prevailing wage. The empirical literature on the presence of monopsony in the market for registered nurses, however, provides mixed conclusions.

Research that focuses on empirical estimates of RN labor supply elasticities facing hospitals finds evidence of labor supply curves that slope in an upward direction, which are suggestive of monopsonistic forces in the labor market (Buerhaus & Staiger, 1999; Sullivan, 1989). Other research that investigates whether relative wage and/or employment outcomes vary with respect to hospital concentration, labor market size, and other econometric factors have found little support for the presence of monopsony in the registered nursing labor market (Admache & Sloan, 1982; Hirsch & Schumacher, 1995).

Hirsch and Schumacher (1995) offer that these disparate results may be reconciled in several ways. One argument is that monopsonistic or oligopsonistic markets need not produce stable labor market outcomes. Rather, these outcomes may vary across time and with respect to market conditions. By this argument, one must search across different time periods and labor markets to identify evidence for oligopsonistic presence. A second argument offered by Hirsch and Schumacher (2005) is that monopsony is widespread; with employers in both concentrated and non-concentrated labor markets facing upward sloping supply curves, and thus insufficient labor at the wage rate the monopsonist is willing to pay (Manning, 2003). However, if the monopsonist were to pay a wage that equaled or exceeded the marginal revenue product, more labor would be available and more workers could be employed. Following the argument of the “new monopsony” literature (Hirsch & Schumacher, 1995), employers in large and small markets alike may face upward sloping labor market curves and that the industry as a whole may behave as collective oligopsonistic competitors. A third argument (Hirsch & Schumacher, 1995) is that upward sloping labor supply is a necessary but not sufficient condition for monopsonistic labor market behavior. Although evidence may support existence of upward sloping supply facing individual employers, it need not follow that monopsonistic outcomes result.

Hirsch and Schumacher (2005) question these contrasting views in an examination of wage determination in nursing labor markets, testing for the effects of both “classic” and “new” monopsony. Classic monopsony posits that relative wages of hospital registered nurses in urban markets are related to hospital system concentration and market size as an approximation of the number of non-nursing and non-hospital

nursing employers. Classic monopsony would predict differences in the relative nursing wage existing between highly concentrated and lesser concentrated nursing markets with those markets that are the least concentrated also offering the lowest prevailing wage for similar nursing services. This would suggest that a market in which many employers of nurses are present would tend to have higher nursing wages than markets in which relatively few employers of nurses exists.

The principle route through which classic monopsony is thought to impact nursing wages is through the market power of hospitals (Buerhaus & Staiger, 1999). Using Bureau of Labor Statistics Current Population Survey data, Hirsch & Schumacher (1995, 2005), failed to demonstrate evidence of a relationship between relative nursing wages and market size. In effect, there was no difference found between nursing markets with fewer employers which theory would predict to be monopsonistic and markets with many employers of nurses which should theoretically have higher wages due to competitive forces between employers. These data suggest that the relationship between wage and market size is flat indicating no support (absent covariates) for the negative relationship predicted by classic monopsony theory. If anything, Hirsch & Schumacher (2005) found that registered nurse wages that would be expected to increase with respect to market size actually decrease with increases in market size with relative nursing wages being 0.09 log points, or \$1 per hour, lower in cities of 1- 2 million and 2-5 million than in non-urban areas though this finding was not statistically significant ($p = .061$). Hirsch and Schumacher (2005) state it is not clear in their data what factors might explain these lower relative wages found for registered nurses in large cities, given that these findings suggest a pattern that is diametrically opposed to that which would be predicted by

classic monopsony. None of the aforementioned models consider the effect of immigrant nurse employment or family dynamics on the market structure and prevailing wage for nurses which may be important contributors to these models and might explain what the authors describe as counterintuitive findings. It is also possible that anecdotal reports of large city hospitals being more financially constrained due to higher turnover and thus higher vacancy rates due to increased mobility of nurses between employers (AHA, 2001) in larger markets may be an important factor to this debate.

Additional tests for the existence of “new” monopsony in the labor market relies on a simple measure of oligopsonistic power proposed by Manning (2003) – the proportion of new hires from outside employment. If the proportion of new hires from employment (i.e. other jobs) is high, the suggestion is that workers are mobile and monopsonistic power is weak. If new hires come primarily from outside of the labor market (i.e. unemployment), there may exist little mobility across employers suggesting a monopsonistic presence. The ability and willingness of workers to move between employers is what most constrains monopsonistic power (Manning, 2003). The lower the proportion of new hires coming from employment with other hospitals, the lower the expected wage, all else being equal. The potential for the presence of monopsony in the labor market has important implications for nursing. Wages paid to workers affect such things as retention, applicant queues, labor search costs and strategies, worker quality, and worker effort (Hirsch & Schumacher, 1995). Hirsch and Schumacher (2005) tested for the effects of new monopsony in their data and found little evidence for the effect of new monopsony in the RN labor market. More specifically, little, if any relationship was found between registered nurses wages and market concentration and registered nurse

new hires were more likely to have moved from other employers, than to have come from outside of the registered nurse labor market – a finding that is directly opposite to what would be expected in a new monopsony market, though differences between labor markets and nurse demographics were not controlled in the model proposed by Hirsch and Schumacher (2005). The authors explain this finding by suggesting that few of the skills acquired by registered nurses during their basic education and while on the job are hospital specific, making nurses more mobile and less affected by employer power than workers elsewhere. While this may be true in relation to technical skills practiced by nurses, the authors do not consider factors such as educational level of nurses which may be an important predictor of mobility of registered nurses to employers outside of the hospital setting. Education may be a particularly important predictor since many public health and community health nursing positions require at least a baccalaureate level of education which provides at least a fundamental introduction to the concepts of community care and health promotion – concepts which are generally absent from associate degree education (American Association of Colleges of Nursing, 1998). Nonetheless, given the absence of evidence for the monopsony model in the nursing workforce, Hirsch and Schumacher (1995) suggest that “economists should look elsewhere for a prototypical example of monopsony” (p. 475).

While these classic monopsonistic effects are not supported by much of the relevant literature in regard to long run prediction models, there is more clear evidence in the data that competition affects short run wage adjustments, with inverse relationships suggesting that relative wages fall when hospitals become more concentrated. Staiger, Spetz, and Phibbs (1999) provide evidence which suggests that hospitals do have short-

run market power in the nurse labor market and act as monopsonists in setting wages.

These findings suggest that the short-run labor curve facing individual hospitals is very inelastic, in that a ten percent increase in wage was estimated to increase labor supply by zero and two percent, suggesting minimal market mobility and significant monopsonistic presence in the market. Findings by Sullivan (1989) closely mirror those of Staiger and colleagues (1999), and also supportive of a significant short-run monopsony in the market for registered nurses. Sullivan (1989) and Staiger and Spetz and Phibbs (1999) go further to predict that if their data were capable of accurately demonstrating long-run effects, that this finding of monopsony in the market would persist through the long term, supporting the long-standing, but empirically questionable, thesis that the registered nursing labor market *is* the prototypical monopsony on which the theory was built.

Raising further question to the validity of this argument is the fact that the findings of Staiger, Spetz, and Phibbs (1999) and Sullivan (1989) are rather contradictory of much of the recent literature investigating monopsony, particularly that of Hirsch and Schumacher (2005). Staiger, Spetz, and Phibbs (1999) attribute these differences in findings in large part to the instruments used to identify the supply elasticity and the use of starting wage data, rather than average wages, which avoids potential aggregation bias that may lead to bias in estimating wage changes. Finally, the measurements used by Staiger, Spetz, and Phibbs (1999) rely on data from 1990 – 1992, while both Sullivan (1992) and Hirsch and Schumacher (1995) use data from the early and mid 1980's when dramatic changes in hospital reimbursement may have resulted in bias in previously measured data.

Common to all of the available studies examining the presence of monopsonistic forces in the nursing labor market is the absence of consideration of the cyclic periods of shortage and surplus of nurses that have existed in the U.S. economy since World War II. While some research seems to suggest the presence of monopsony in nursing and other, similarly conducted, studies do not, additional attention to the state of the nursing market at the time of data collection may provide important insights to this literature and may help to explain contradictory findings. Classic economic theory and simple intuition would seem to predict that monopsonistic forces are likely to exist during times of nursing equilibrium, but other market factors are more likely to affect the prevailing nursing wage when the market is facing a significant nursing shortage. Additionally, examination of specific subsets of the nursing labor market may be important to continued discussion of monopsony in nursing as it is highly possible that monopsony may exist in certain nursing subpopulations such as academia, while evidence of monopsonistic forces are not evident when the nursing market is examined in its aggregate form.

State of the Nursing Workforce Shortage

Registered Nurses underpin the entire health care delivery system. The primary reason that patients are admitted to hospitals and nursing homes is because they are in need twenty-four hour nursing care. The intensity and acuity of the care required coupled with increases in technology have created a need for a higher educated, better skilled nursing workforce than ever before.

Exactly what defines a nursing shortage has been open to interpretation over the decades (Agency for Healthcare Research and Quality, 2001; Rivers, Fottler, &

Kommenich, 2003). A shortage is defined by economic theory as a labor market situation where the labor force is unwilling or unable to supply the services needed by employers at the price the employers are willing to pay (Schoeman, 1988). This results in fewer available workers thereby creating a condition of disequilibrium, resulting in some combination of wage increase and/or decreased demands for labor services. Because of regional differences in the supply and demand of the nursing workforce, a shortage in one area may exist while another area is experiencing labor force reductions (Rivers et al., 2003).

A number of theories have been proposed to explain the phenomenon of nursing shortages and excess. Economists argue that shortages are related to a lack of or lagged increase in real wages (Friss, 1994), an imperfectly competitive market such as in monopsony or oligopsony (Yett, 1975), or a problem with geographic distribution (Friss, 1994; Yett, 1975). Some economists have proposed that shortages are in part related to the delay between the point when potential workers observe an increase in wages and the time it takes to receive the training necessary to enter the labor market (Seago, Ash, Spetz, Coffman, & Grumbach, 2001; Yett, 1975). Nursing leaders speculate that the image of nursing leads to nursing shortages (Friss, 1994); that shortages are a function of job satisfaction or dissatisfaction (Aiken et al., 2002; Buerhaus, Needleman, Mattke, & Stewart, 2002; Johnston, 1997; Prescott, 1989; Relf, 1995), downsizing or restructuring (Shogren, Calkins, & Wilburn, 1996), or that the shortage is characterized by too few nurses in specialty areas (Buerhaus et al., 2000d; Dracup & Bryan-Brown, 1998).

Two additional explanations existing in the literature for the emerging nursing shortages are educational bottlenecks (American Association of Colleges of Nursing,

1998) to producing more nurses and the unattractiveness of nursing due to negative employment factors (Aiken et al., 2002; Unruh, 2005). A National League for Nursing survey (2004) of nursing programs reveals that although nursing schools are experiencing a strong increase in applications since 2003, they are turning away thousands of qualified applicants. The American Association of Colleges of Nursing (2005) reports that 76.1% of nursing schools in the United States cite insufficient numbers of faculty as reasons for not accepting all of their qualified applicants. The NLN (2004) identified the problem as a “critical shortage of faculty” and stated that unless addressed, the gap between supply and demand will continue to grow. A shortage of available clinical sites is an additional constraint exacerbating the faculty shortage and impeding expansion of nursing educational programs (Unruh & Fottler, 2005).

Employment conditions have also emerged as a major cause of recruitment and retention difficulties. Unruh and Fottler (2005) found that four of the five reasons registered nurses cited for not working in nursing were employment related. Specifically, nurses cited better hours, more rewarding work, better salaries, and safer working conditions in non-nursing jobs as reasons for not working in nursing. These findings are widely supported in the empirical nursing workforce literature (Aiken et al., 2003; Aiken et al., 2002; Bowles & Candela, 2005; Buerhaus et al., 2000b; Buerhaus et al., 2005a; Jackson, 2005; Long & Bernier, 2004; Lundgren et al., 2005; Martin, 2005; Roberts et al., 2004; Sales et al., 2005; Steinbrook, 2002; Ulrich et al., 2005; Unruh, 2005). Without adequate working conditions, the RN workplace is not seen in a positive light, thereby exacerbating the nursing shortage by discouraging new and inactive registered nurses from entering/reentering the nursing workforce, much less practicing in direct bedside

care (Unruh & Fottler, 2005). In a review of the literature, Unruh & Fottler (2002), found research support for a “vicious spiral to the bottom” whereby the negative work environment characterized by work overload, poor nurse physical and mental health, and low job satisfaction increase nurse turnover and exits from the profession. This, in turn, creates a *more* negative work environment that increases turnover and withdrawal from the profession, thus further exacerbating the spiral into the depths of ever-increasing shortages of qualified nursing personnel (Unruh & Fottler, 2005).

Nursing shortages in the early part of the 20th century were nearly nonexistent due to the proliferation of hospital training programs that provided a majority of hospital care as a part of their training (Yett, 1975). According to Yett (1975), during the early 1930’s the federal Committee on the Grading of Nursing Schools closed over 219 schools of nursing, noting deficiencies in the standard of teaching. With the onset of World War II, nursing successfully met the health care demands of the country at home and abroad, leading to predictions of a surplus of nurses in the United States when the military nurses came home and resumed their hospital positions. This surplus did not occur (Rivers et al., 2003).

Periodic nurse shortages continued into the 1970’s and the 1980’s which were consistently resolved through a mix of wage adjustments and increased use of assistive personnel. Over time, nurses were faced with increasing patient acuities and fewer support staff during the rise of managed care during a time when increasing career opportunities were becoming available to the younger women who traditionally filled entry level nursing positions (U.S. General Accounting Office, 2001; Unruh & Fottler, 2002). The workforce response led young adults to pursue careers other than nursing as

opportunities for women opened up in careers such as medicine, law, engineering, and other traditionally male-dominated professions.

Since the late 1990's, research has predicted that the nursing profession would soon begin to slip into the chasm of a new and unprecedented nursing shortage. As predicted, the effects of this new shortage have been felt nation-wide and continue to become more acute. In 1998, hospitals began to experience the second nursing shortage of the decade (Buerhaus, Donelan, Ulrich, Norman, & Dittus, 2005b). Employing about 60% of all nurses, hospitals are often the first group affected by shortages. Unresolved registered nurse shortages can restrain a hospital's ability to provide services, increase nursing personnel costs, increase nurse stress and job dissatisfaction, and affect the quality of care and patient outcomes (Aiken et al., 2002; Buerhaus et al., 2002; Cooksey, McLaughlin, Russinof, Martinez, & Gordon, 2004). Initially, reports of the shortage were largely confined to intensive care units and operating rooms, but by 2000 the shortage had spread to general medical and surgical units (Buerhaus et al., 2000d). Policy experts have predicted that this "new" nursing shortage is different than any previously experienced and that it would not be as easily remedied as the cyclic nursing shortages that have plagued the profession since the 1940's (U.S. General Accounting Office, 2001).

By all accounts, the nursing shortage across the United States has now reached a critical level in nearly all states. In 2001, the national average hospital RN vacancy rate was estimated at 13%, and nearly one-fifth of hospitals reported vacancy rates averaging over 20% (American Hospital Association, 2001). These findings are similar to those found in the same year by Brewer and Kovner (2001) in which 30% of hospitals surveyed

indicated that it was taking three months or more to fill registered positions in perioperative, emergency, and critical care units across all shifts. Brewer & Kovner (2001) also found evidence of difficulties in filling medical-surgical nursing positions, which were indicative of more wide-spread and growing shortages of nursing personnel. A year later, the federal government reported that 30 states were experiencing shortages and estimated that the demand for RNs exceeded supply by 110,000 in 2002 (U.S. Department of Health & Human Services, 2002). In 2005, the current shortage entered its eighth year, easily becoming the longest lasting nursing shortage in half a century (Buerhaus et al., 2005b). If the profession continues down the current path, it is predicted that the national shortage of employed RNs will exceed 1,000,000 positions by 2010, and the vacancy rate for RN positions will exceed 20% by the year 2020 (U.S. Department of Health and Human Services, 2002; U.S. General Accounting Office, 2001).

Seago et al. (2001) examined the characteristics of hospitals that report shortages when a widespread shortage exists (as in 1990, when the U.S. nurse vacancy rate was 11%) and when the widespread shortage was no longer evident (as in 1992, when the national vacancy rate was 8.7%). These authors found that some hospitals always experienced shortages of nurses, even when a national or regional shortage did not exist, some hospitals never experienced workforce shortages, and others moved in and out of periods of shortage. Hospitals in the Midwest and South, particularly those with high percentages of Medicare or Medicaid patients with higher patient acuity, were at least 10 percentage points more likely than those in the Northeast to report a shortage as were hospitals located in counties with a higher percentage of nonwhite residents. Additionally, hospitals with team or functional nursing care delivery systems were seven

to ten percent more likely to report persistent shortages than those who implemented a primary care approach to staff their nursing care units. The presence of unit self-management was associated with a six percentage point lower likelihood of shortage and the presence of registered nurse and physician collaborative committees was associated with a six percent lower likelihood of shortage. Interestingly, this study by Seago et al. (2001) did not consider regional differences in wage and registered nurse prevalence as potential covariates in this model which aimed to predict trends in hospitals that tend to perennially experience shortage and those that never experience nursing shortages.

Analyses of 2000 NSSRN data by Unruh and Fottler (2005) indicate that if current trends continue, registered nurse supply will be sooner and more severely threatened than predicted by the Department of Health and Human Services in 2002. As indicators of future supply problems, Unruh and Fottler (2005) find that between 1992 and 2000, there was a reversal of long-term trends leading to decreases in the numbers of young people entering nursing, an increase in the percentage of registered nurses leaving nursing and a decline in the percentage of registered nurses employed in nursing. Additionally, Unruh and Fottler (2005) found a decrease in the percentage of nurses not employed in nursing who are seeking nursing work, an increase in the number of registered nurses citing employment-specific reasons for not working in nursing, and a decline in the percentage of registered nurses working in direct patient care. These authors conclude that future research and data analyzing the findings from the 2004 NSSRN and other sources of nursing workforce data will be integral to the determination of whether these trends are beginning to reverse, or if they have continued or accelerated, thus exacerbating this evolving human crisis (Unruh & Fottler, 2005).

Recently, state legislatures have begun to recognize the seriousness of this nursing shortage. In 2002, the nursing shortage was ranked as a “high priority” by 39 states and as a “priority” by seven (National Conference of State Legislatures, 2001). However, the policy options available to states to address a workforce shortage are relatively limited. The most common strategies are directed at increasing the supply through various educational initiatives to increase the numbers of new graduates (National Conference of State Legislatures, 2002; Salsberg, 2003). Other strategies target nurse retention or seek to reduce high demand for the profession through improvements in the efficiency of health care delivery or substitution of other, often lesser educated, nursing personnel (Cooksey et al., 2004). Although state legislative strategies have addressed different aspects of the shortage and its effect on patient care, there has been little reported on how these strategies have engaged nurses and other state stakeholders or the factors that influence strategy implementation within a state.

There is evidence, however, that attention to the state of the nursing shortage in recent years has begun to achieve significant progress. Recent workforce analysis suggests that this long-lasting nursing shortage may be easing (Buerhaus et al., 2005b; HRSA, 2005). National employment data suggest that hospitals have raised RN wages substantially above the increase in inflation (Buerhaus et al., 2005b; HRSA, 2005), and have hired an additional 185,000 registered nurses between 2001 and 2003 (Buerhaus, 1991a; Buerhaus et al., 2005b; Buerhaus et al., 2003). However, this unusually large increase in employment of registered nurses was largely supplied by nurses over the age of 50, and foreign born nurses (Buerhaus et al., 2004; HRSA, 2005). Optimism that is based on employment of nurses who likely will have a limited tenure in the profession

and solutions that may contribute to the declining health of poorer nations, however, may be misguided. Increased attention to the dynamics of the younger nursing workforce will be essential to the development of long-term solutions to the health care crisis in the United States. Little research has explicitly studied this younger population and urgent attention to the retention of this younger generation is essential to the long-run health of the nursing labor market and, indeed, to the U.S. population.

While indications of a lessening of the current nursing shortage are encouraging, and hospitals, nurses, physicians, nursing educators, and policymakers can take some measure of satisfaction that the current nursing shortage has eased and there has been some improvement in the workplace environment over the past few years, much work remains to be done to build a solid and well-prepared nursing workforce for the future. Recent increases in the number of registered nurses in the workforce and the finding that fewer nurses are voicing plans to leave their nursing positions may provide the time needed to improve the work environment in a meaningful way that will retain this stabilizing nursing workforce (Buerhaus et al., 2005b). Ultimately, strategies to recruit and retain the younger labor market in nursing will be essential to continued momentum toward lessening the nursing shortage that currently exists.

Aging of the Nursing Workforce

Attention toward the aging of the registered nurse workforce began after a study published in 2000 (Buerhaus et al., 2000a) identified several possible explanations for the increase in the average age of the registered nurse and described potential future aging trends and the resultant effects on supply through 2020. Buerhaus, Staiger, & Auerbach (2000) projected that the average age of the registered nurse workforce would continue to

increase at a rapid rate, rising nearly four years between 2000 and 2010, reaching 45 years of age, and continuing to rise through 2020 (Norman et al., 2005). Between 2010 and 2020, it is anticipated that 40% of the workforce will be over 50 years of age, and many registered nurses are expected to withdraw from the workforce as they reach retirement age (Norman et al., 2005).

Recent evidence suggests that these projections are on target. In fact, the average age of the registered nurse in the United States has reached 46.8 years (HRSA, 2005), exceeding the predictions made by Buerhaus and colleagues in 2000. Further, analysis of employment and earnings trends in the nurse labor market showed that 70.3% of the growth in employment in 2002 and 2003 was accounted for by re-entry of nurses over the age of 50 (Buerhaus et al., 2004). Between 1994 and 2001, the population of registered nurses over the age of 50 grew at a rate of 4.7% per year. Beginning in 2002, the numbers of registered nurses over the age of 50 rose to 15.8%. Meanwhile, the proportion of registered nurses under age 35 continues to decline, reflecting a growing trend of difficulty in recruiting younger people into the nursing profession (Norman et al., 2005).

Norman et al. (2005) predict that during the foreseeable future, the nursing workforce will be driven increasingly by the swelling number of older registered nurses and the labor market forces that influence their decision to participate in the nursing workforce. Consequently, obtaining a better understanding of older, employed nurses relative to their younger counterparts is critical to developing strategies to retain this rapidly growing segment of the workforce. Not only will the proportion of older nurses in the workforce continue to grow in the years to come, these older nurses possess a

wealth of experience and knowledge that make them invaluable resources to the nation's health care delivery system. At the same time, because the practice of nursing involves physically challenging work, attention must be paid to the environment in which these nurses work in order to retain these valuable healthcare assets at the bedside (Levtak, 2002, 2005; Norman et al., 2005).

The rapid aging of the RN workforce has been attributed, among other things to the older age of graduates from two-year associate degree nursing programs which have proliferated in recent years (Auerbach, Buerhaus, & Staiger, 2000). Associate degree programs seem to have attracted individuals in their mid-thirties interested in a career in nursing who did not wish to enroll in a four-year baccalaureate education program. Preliminary findings from the 2004 National Sample Survey of Registered Nurses estimate that 42.2% of currently practicing nurses received their initial nursing education at the baccalaureate level, compared to only 30.5% of nurses who were educated at the baccalaureate level prior to entering the profession. NSSRN data since 1977 have shown an increasing disparity between the age of the associate degree nurses and the baccalaureate-educated nurse (Auerbach et al., 2000) with associate degree graduates being nearly six years older than baccalaureate graduates by 2004 (HRSA, 2005).

Auerbach and colleagues (2000) have suggested that the increase in associate degree graduates does not appear to be a major cause of the rapid aging of the registered nursing workforce. Rather, findings suggest that both the aging of the nursing workforce and the rise in associate degree graduates may result from the same underlying cause. Specifically, Auerbach, Buerhaus, and Staiger (2000) found a dramatic decline in the propensity of birth cohorts born after 1955 to choose nursing as a career. This declining

propensity of young women to choose nursing as a career has been increasingly accepted as the primary factor causing the aging of the nursing workforce. Auerbach and colleagues (2000) suggest that this same force may be causing the rise in graduation age of registered nurses if cohorts born in the 1950's (who are currently 45 – 55 years old) continue to enter nursing programs, while cohorts born in later cohorts do not. Empirical findings support this thesis. Auerbach, Buerhaus, and Staiger (2000) found that the cohort born between 1955 – 1959 has produced more registered nursing graduates than any cohort before or since. The 1955 – 1959 cohort produced over 90,000 more graduates (nearly double) by age 25 than did the cohorts born ten years earlier (1945 – 1950) or ten years later (1965 – 1970) (Auerbach et al., 2000). Moreover, the work of Auerbach and colleagues (2000) found no evidence of “catching up” for the cohorts born in the 1960's and later. These cohorts continue to produce far fewer registered nurse graduates by age 30 – 35, than did the cohort born between 1955 – 1959. These cohort effects were further demonstrated by work during the same year by Buerhaus and colleagues (2000a) who state that “when these large cohorts were in their twenties and thirties, the RN workforce was dominated by young RNs, with more than half the workforce younger than forty” (p.2952) while in 2000 nurses in their forties outnumbered nurses in their twenties by four to one. Thus, it does not appear that these later cohorts are simply delaying the time at which they pursue a nursing education. Instead, there has been a substantial decline in the propensity of recent cohorts to ever become nurses. As supported by Buerhaus, Staiger, & Auerbach (2000a), this decline is most likely the result of expanded career opportunities for women outside of nursing and, therefore, is unlikely to be reversed in the near future underscoring the need for new strategies that both recruit

younger nurses to the profession while also retaining the more mature nurses that predominate the current nursing labor market.

Other studies suggest there may be important differences between older and younger registered nurses. Levtak (2002) reported that older nurses are more likely to work in outpatient, community, and other non-acute settings. These findings were supported by Norman et al. (2005), who found this difference as one of the few differences identified in their study between older and younger registered nurses. Norman et al. (2005) found that as the age of the registered nurse increased, the percentage of nurses working in acute care declined from 72% of 18 – 29 year olds, 67% of 30 – 39 year olds, 56% of 40 – 49 years olds, to only 38% over the age of 50 providing further evidence for the assertion that hospital nursing becomes less and less attractive as nurses age. What is not clear in this data is whether these aging nurses leave hospital nursing because they have acquired needed experience to practice in more advanced settings that offer greater autonomy and professional prestige, or if some dynamic in the hospital setting is responsible for the exodus of these older nurses from the hospital market. Buerhaus, Staiger, and Auerbach (2000d) found that these age-related differences have contributed to nursing workforce shortages, which have historically been more severe in critical care areas. Because critical care has historically attracted younger registered nurses, the rapid decline in the number of nurses in the workforce under the age of 30 plays a large role in these specialty unit shortages.

Norman et al. (2005) also found that one in three nurses over age 50 was planning to leave their nursing position within the next three years, with most retiring or leaving the nursing profession, findings that were supported by McIntosh, Rambur, Palumbo, and

Mongeon (2003) and Watson (2003). Thus, because the average age of nurses employed in non-acute settings is higher than in acute care settings, shortages of nurses in sub-acute, community organizations, and long term care organizations which provide a large amount of elderly care for an aging population are likely to worsen in coming years (Kovner, Mezey, & Harrington, 2002). There is also evidence that older nurses favor working eight instead of twelve hour shifts (Hoffman & Scott, 2003). However, results are mixed with respect to whether older registered nurses compared to their younger counterparts are more satisfied with both their current position and with nursing as a career (Hoffman & Scott, 2003; Norman et al., 2005; Spratley et al., 2000).

Norman et al. (2005) suggest that in addition to economic approaches, strategies to retain an older registered nursing population may include those that capitalize on the acute care nurse and lessen physical demands. They suggest that employers survey their workforce and determine what ergonomic challenges exist in their workplace. Implementing improvements such as assistive devices for patient lifting and handling would help to protect aging nurses from musculoskeletal injuries and industry wide implementation of safer needle devices and practices help protect *all* nurses from avoidable needlestick and sharps injuries. Buerhaus, Staiger, and Auerbach (2000) offer that it may be possible to delay some of the exodus from the workforce by extending the work life of registered nurses. With very large nursing cohorts reaching retirement age in the near future, even incentivizing a small percentage to work a few more years will have a relatively large impact. Moreover, it is important to realize that as these older nurses leave the workforce, they will take with them a great deal of the collective clinical experience and much of the knowledge base of the nursing profession.

Recruitment of Foreign Nurses

Today's health industry faces the challenge of providing high quality care within the context of increasing healthcare costs and limited resources. This growing crisis has spurred public and private sector health care leaders to advocate for solutions to bolster the supply of registered nurses in the United States. Health care facilities are adopting a host of strategies to attract new nurses to fill current nursing vacancies and to stave off future shortfalls (Brush, Sochalski, & Berger, 2004). Among these strategies is the recruitment and employment of foreign nurses (Ross, Polsky, & Sochalski, 2005). The demand-driven U.S. nursing shortage represents a strong migratory pull for nurses throughout the world, which has stimulated the incentive for for-profit organizations to serve as brokers to ease the way for nurses to emigrate to the United States. Many of the countries from which these nurses are recruited are poorly positioned to surrender large numbers of qualified nursing staff (Schubert, 2003). The consequences for these countries have been the focal point of much debate, though little consensus, much less resolution has been achieved. Meanwhile, the United States, while not the world's largest recruiter of foreign nurses, is recruiting greater numbers than it ever did in the past and is poised to greatly increase these efforts (Brush et al., 2004).

Understanding the movement patterns of nurses, as well as their causes and consequences is an important step in promoting a better long-term distribution of health care skills and competencies. Nurses in lesser-developed countries are motivated to migrate from their homeland by the search for professional development, better quality of life, and personal safety (Aiken, Buchan, Sochalski, Nichols, & Powell, 2004). Pay and learning opportunities are the most frequently reported incentives for nurse migration,

especially by nurses from less developed countries (Aiken et al., 2004; Brush et al., 2004). Foreign-educated nurses often have opportunities for wages far superior to that which can be earned in their home countries. In 2004, the U.S. Department of Labor reported median earning for registered nurses as \$48,090 and NSSRN data estimate the average wage to be \$56,784. These figures contrast sharply with the \$2000 - \$2400 annual salaries paid to nurses in the Philippines in 2002 (Brush et al., 2004). However, the positive economic, social, and professional development resulting from international migration needs to be weighed against the significant “brain drain” experienced by countries from which these nurses emigrate (Kline, 2003; Schubert, 2003). Also of concern is the potential vulnerability and potential for exploitation of these migrant nurses (Aiken et al., 2004; Kingma, 2001).

The Philippines has dominated the nurse migration pipeline to the United States and to other recruiting countries for decades (Choo, 2003; Gamble, 2002; U.S. General Accounting Office, 1989). Until the mid-1980’s, Filipino nurses represented 75% of all foreign nurses in the United States workforce. Representation of nurses emigrating from the Philippines dropped to 50.2% in 2004 (HRSA, 2005) as more countries began sending nurses abroad. However, recruitment from the Filipino health care market remains a significant source of nurses to fill the demands of the ever-increasing United States labor market (Gamble, 2002).

Upon immigrating to the United States, foreign nurses are employed in an increasingly diverse array of settings. Like their U.S. counterparts, the percentage of foreign nurses working in hospitals has steadily declined over the past decade as health care financing reform has encouraged movement of patient care out of hospitals. Unlike

domestic nurses, however, foreign nurse representation in extended care had risen from 7.4 – 9.3% by 2000 (Brush et al., 2004; Spratley et al., 2000) raising the question of exploitation of these foreign-born nurses and possible relegation to less-desirable segments of the U.S. nursing labor market, in which American born nurses are resistant to work.

Concern has also been expressed regarding the quality of care foreign-educated nurses provide, and whether the training they receive in their home countries prepares them to meet the challenges of the technologically advanced United States health care system (Flynn & Aiken, 2002). Stevens (1995) has argued that when discussing quality in an international context, one must distinguish between a nurse's ability to perform specific tasks and their ability to communicate effectively with patients and other professionals to provide appropriate nursing care (Brush et al., 2004).

The Commission on Graduates of Foreign Nursing Schools (CGFNS) was established in 1977 to ensure foreign nurses' technical and cultural competence prior to employment in the United States health care system. CGFNS verifies foreign nurses' credentials and educational qualifications and identified those at risk for failing the United States licensure exam prior to immigration. Foreign nurses must supply evidence that they completed prescribed amounts of didactic and clinical instruction and that they meet U.S. standards of technical competence. Passing the U.S. nurse licensure exam and English proficiency tests remains the marker for establishing competence among foreign nurses (Brush et al., 2004). However, no retrievable studies have determined whether foreign nurses' cultural orientation and technical competence produce different patient outcomes when compared to their domestically educated counterparts. Further

investigation of the outcomes of care provided by nurses educated outside of the United States may provide important information as to their potential contributions and what additional education of these nurses may be necessary for this population to contribute to the bridging of the health care quality gap that exists in the United States health care system.

The current U.S. nurse shortage and the profitability in recruiting foreign nurse to fill nurse vacancies will likely at least sustain, and possibly increase the interest in recruiting nurses from lesser-developed countries, despite ethical concerns (Aiken et al., 2004; Singh, Nkala, Amuah, Mehta, & Ahmad, 2003; Stilwell et al., 2003). Recent changes in immigration policy, recruitment practices, and licensure requirements will also permit a greater flow of foreign nurses to U.S. health care facilities (Rockett & Putnam, 1989). For example, the cost of immigration, initially shouldered by migrating nurses, is now transferred to the facilities themselves and the National Council of State Boards of Nursing has begun offering the National Council Licensure Examination for Registered Nurses (NCLEX-RN) overseas in an effort to facilitate the licensure process (Freiss, 2002). Recruitment agencies are now routinely based in the Philippines, India, and other key locations to aid nurses' access to information, English language classes, and exam preparation courses (Brush et al., 2004).

Brush, Sochalski, and Berger (2004) state that U.S. workforce must develop systems that monitor the inflow of foreign nurses, their countries of origin, the settings where they work, and their impact on the nursing shortage, both in the United States and in their native countries. Increasing demand for foreign nurses in the face of greater domestic production is a signal that domestic efforts are insufficient to keep up with

demand. Brush and colleagues (2004) further state that a broader-based workforce strategy that balances foreign nurse recruitment, domestic production, and concerted retention efforts is needed to ensure that the nursing care needs of the public will be met.

Summary

This review of the nursing workforce literature synthesized the findings of eighty-eight empirical research studies and twelve government reports into categories pertaining to workforce dynamics including a description of the labor market, predictors of labor market participation including econometric models of workforce prediction, description and analysis of monopsony forces in nursing, aging of the registered nursing workforce, and forces that contribute to international nurse migration.

An overwhelming majority of the nursing workforce literature identified for the purposes of this review is quantitative and nearly all of the eighty-eight studies reviewed use large national databases, or sizable subsets of them for the purposes of secondary data analysis. The most frequently used data sources are various iterations of the National Sample Survey of Registered Nurses and outgoing rotation groups or 1:100 samples of the Current Population Survey. While these national databases are widely considered to be the most representative samples of the nursing workforce in existence, the existence of sample response bias specifically in relation to nurses born and/or educated outside of the United States may exist. Over-sampling of minority nurses is attempted in the 2000 and 2004 iterations of the NSSRN to compensate for this effect, though estimates of the number of foreign educated nurses remain lower than what might be expected given the multitude of reports citing an influx of foreign-educated nurses into the American health care system in recent years.

Other studies examining dynamics of the nursing labor market used large datasets derived from U.S. census data, national social survey data, hospital employment and discharge data, aggregate hospital statistics, schools of nursing, nurse licensure data, and independent randomized surveys of registered nurses in the United States. Two of the studies examined conducted meta-analyses of previously examined data. A smaller proportion of studies, specifically those that examined workplace satisfaction measures, turnover models, effects of managed care, and workforce remedies utilized small samples that were derived from non-randomized sampling methodologies and the results of these studies must be interpreted with caution. Only one qualitative study which used a phenomenological approach to describe the lived experience of a “good day in nursing” was identified in the relevant literature.

Little congruence in theoretical approach is found across the subdomains of the nursing workforce literature, though various derivations of economic theory are both implicitly and explicitly used throughout the workforce participation studies. Classic economic theory was implicit in nearly all studies that described the nursing workforce or examined labor force participation and a ‘decision to work’ variant was explicitly stated in much of the literature that examined the covariates that predict nurses’ decisions about labor market participation. Both classic and new monopsony theory are presented and defined in discussions of differences in the prevailing nursing wage in markets of different size, concentration, and labor supply conditions though consistency is not found in the studies as to the presence of monopsony in the nursing labor market though the nursing labor market has long been described as the prototypical monopsonistic market.

While evidence of monopsony is not consistently found when the nursing labor market is examined in the aggregate, several factors as to yet unexplored in the literature may explain differences in findings explicated in the literature. None of the empirical works studying the presence of monopsonistic forces in the literature examine their findings in relation to the state or severity of cycles of shortage and surplus in the nursing market and little research investigates the importance (or lack thereof) of nursing labor unions to determination of the wage function. The presence of a union dynamic in a monopsonistic market would essentially create a bilateral monopoly, in which a labor supply monopoly (the labor union) faces a labor demand monopsony in the form of a single hospital employer. The relative strengths of the supply-side and demand-side monopolies would determine the effect on labor utilization in this market.

Additionally, it is possible that sub-classifications of the labor market may yield explanations for this lack of consistency in the demonstration of monopsonistic forces in nursing. Specifically, examination of salary disparities in academia which are classically lower than salaries earned by nurses of similar education and experience in the private sector may yield important evidence of monopsony in the labor market for nurses with master's or doctoral degrees.

Various satisfaction and turnover models are both implicitly and explicitly used in discussion of the nursing shortage literature and predictions of intentions to remain in or leave the nursing labor market. Classic Donabedian quality of care theory is implicit in much of the literature that pertains to restructuring of the health delivery processes in a way such that superior outcomes might be achieved.

Significant contributions have been made to the literature in recent years in relation to the vital importance of nurses at the bedside of patients in today's increasingly complex and technologically advanced health care systems. However, evidence exists in this review of the workforce literature that research examining the important contributions of registered nurses at the bedside toward improving patient outcomes, may have been conducted in earnest, to the exclusion of more basic examinations of the market for these essential health care personnel. It is essential that nursing take a step back from research that is currently "fashionable" or "in vogue" to examine fundamental changes in the workforce that will continue to influence the availability of these increasingly essential, highly qualified registered nurses for many years to come.

It is concerning that few, if any studies have examined variables that may predict absences from the labor market since the 1980's. Much of the data examined in relation to the effect of marital status, children in the home, and spousal income were collected prior to 1970, and no such studies examine data collected since 1990. Significant economic shifts have taken place in recent decades that raise serious question as to the current applicability of data collected and analyzed nearly two decades ago. Important changes have occurred in relation to population dynamics in which most households have become highly reliant upon dual salaries and significantly more women work outside the home today than in decades past. Consequently, while existing research relative to nursing workforce participation may provide insight into the factors that influence nursing workforce participation, the lack of current research creates conflict in relation to precisely which factors are the most important to nurses' participation in today's nursing labor market, largely due to the lack of research attention to this important area.

Also concerning in the retrievable literature is the dearth of current research empirically examining the nursing labor market in relation to economic conditions prevalent in regions of the United States with significant differences in the supply of registered nurse labor. This is startling in light of the fact that the ratio of nurses to population ranges from over 2,000 nurses per 100,000 population in the District of Columbia and Maryland to just over 600 nurses per 100,000 population in California and Nevada (HRSA, 2006). Specifically, the Western and Southern states tend to have severe nursing shortages while states along the North Eastern seaboard have relative surpluses of registered nurses. While several studies are identified that examine the dynamics of the nursing workforce in specific markets, no retrievable study examines regional differences, much less attempts to provide explanations for these hugely disparate populations of nurses in different regions of the United States. Much empirical attention in recent years has been paid to the detrimental effects of expanded occupational opportunities to women that make nursing a less viable career option for younger women. This fundamental shift in the labor market has led to a quantum shift in the age distribution of practicing registered nurses. These findings may be more clearly understood in relation to regional differences in workforce supply.

Perhaps most problematic in the existing literature is the lack of identification of clear and useful policy strategies that might be successful in reversing the aging trend in the nursing population, or at a minimum, identification of strategies that may incentivize older nurses to remain at the bedside until more stable long-run solutions can be implemented. Significant gaps exist in the knowledge of factors that might induce maturing nurses to remain in nursing past the age when they typically leave hospital

nursing and even larger knowledge gaps exist in relation to strategies that might attract young men and women with varied opportunities available to them to choose to enter, and then remain in the nursing profession.

While this review of the literature aimed to find commonalities in the empirical works that might guide the direction of future health policies aimed at achieving elusive labor market equilibrium in nursing, significant disparity exists in the methods, model assumptions, and findings of the retrievable literature that renders the development of such integrative policy difficult. In the absence of further research that aims to achieve cohesiveness in the causes and consequences of cyclic nursing labor market disequilibrium, policy created from existing data would most likely be unsuccessful.

Conclusions

This discussion yields several important implications for the nursing profession, the most important of which is that, recent gains in employment statistics notwithstanding, the profession faces continued difficulty in the foreseeable future. The literature has demonstrated that the dynamic nursing labor market disequilibrium currently plaguing the workforce is different in many dimensions than those in years past. For the health care industry in the United States to continue to meet the health care needs of an aging population, focused attention to these issues is imperative. Additional empirical and public policy attention must be paid to the dynamics of the nursing labor market, and the economic forces that influence nursing behavior in the health care workforce.

Thus, several possible directions for future research are revealed in this review of the nursing labor market literature. Most specifically, significant research is needed to

empirically examine various dimensions of the disequilibrium that currently exists in the labor market for nursing. Research that further examines demonstrated regional disparities in nursing labor supply might provide an important view of the covariates that contribute to such market disparities, thus paving the way for increasing equity in future nursing workforce supply distribution.

Regional differences notwithstanding, descriptive data suggest that schools of nursing in the United States are decreasingly able to meet the health care needs of an aging population due factors including inequity between academia and private sector employment. Currently unexplored labor market or econometric effects including the possibility of monopsonistic forces may make academia less attractive to highly educated nurses. While such an effect has not been documented in the empirical literature, it has been anecdotally stated that artificially low wages in nursing academia may be the result of monopsony in the market for terminally degreed nurses. This doctorally prepared nursing sub-market is largely employed in academia, and academic settings are few on most geographic locales, making the market ripe for monopsony. If such an effect exists, the implications of it would be important to the development of a stable academic nursing workforce. Empirical analysis of these factors may yield positive policy strategies that might render the educational system more capable of meeting nursing workforce demand.

Additionally, research is needed to empirically estimate whether current capacity in schools of nursing is sufficient to replace losses to the profession generated by exits from the nursing workforce in the form of young nurses who are dissatisfied with the profession and older nurses who are no longer able to function in today's health care environment. Alternately, empirical research conducted in an effort to identify and

remediate explanations for large losses from the younger and older “tails” of the nursing workforce may provide a more suitable up-stream approach than identifying solutions that attempt to fill an ever-emptying nursing void.

As demonstrated in the aforementioned discussion, several viable research directions exist that may well prove important to achieving equilibrium in the labor market for registered nurses in the United States. Only through decided efforts to address these gaps in current knowledge will nursing, the health care industry, and policy-makers be able to meet the nursing needs of future generations.

CHAPTER III: THEORETICAL FRAMEWORK

Nursing labor supply research generally examines whether or not nurses choose to work in health care, and the number of hours supplied by those nurses who participate in the healthcare workforce. The presence of adequate numbers of registered nurses in direct patient care roles is essential to the well-being of the United States health care system. Large bodies of literature, both anecdotal and empirical, have demonstrated a significant exodus of nurses from hospital nursing in the last decade. Many cite employment conditions in hospital nursing as an explanation for this exodus, while other health services research asserts that the shift of nurses out of hospital settings has merely followed the societal trend of increasing amounts of health care being delivered in non-acute settings. Theoretical literature points to supply and demand factors in the registered nursing market, as well as individual workforce participation priorities as key to understanding of the nursing labor market. In any case, rigorous study that aims to quantify both the magnitude of this nursing exodus and the antecedents to exit behavior among registered nurses are important to nursing workforce policy development.

Theoretical approaches for the examination of nursing labor market behavior are numerous in the workforce literature. While there is little consensus in the use of specific theoretical approaches, derivations of economic theory are commonly used in studies of workforce participation. Defined as “the study of the workings and outcomes of the market for labor” (Ehrenberg & Smith, 2005, p. 2), economic labor market theory is explicit in many studies that describe the nursing workforce. Given the relative prevalence of economic labor market theory in the nursing workforce literature, this chapter is devoted to an examination of three complimentary labor market theories.

While basic supply and demand is important to examination of any labor market, supply and demand driven theory does not specifically consider the reasons behind labor market behaviors of individual workers. Thus, the traditional theory is expanded to consider the economic theories of the decision to work and household production also discussed by Ehrenberg and Smith (2006). Both the decision to work and household production derive from the broader theory of time allocation originally explicated by Becker (1965). According to the theory of time allocation, household utility is a function of market purchased goods and non-market time. The commodities produced by combining these components of the utility function will determine which commodities will be produced with the objective of maximizing the utility function subject to the constraints of prices and time. In this framework, households spend time in one of three ways – market work, household work, or leisure (White, 2001). Each of these components of the household utility function are presumed to be mutually exclusive of each other as time spent in the pursuit of one cannot reasonably be used to simultaneously pursue either of the other two.

The “decision to work” is implicit in much of the classic literature relevant to the labor market for registered nurses. The decision to work is ultimately a decision about how to spend time. Ehrenberg and Smith (2006) state that people generally spend their time in one of two ways; either working for pay or engaged in leisure activities. While integral to the understanding of labor market behavior, the decision to work may be overly simple in that it does not consider the effect that family obligations may have on the decisions of a nurse who works in the labor market for pay (Buerhaus, 1990). Thus, the economic theory of household production will also be explicated to allow for

consideration of the effects of family obligations on the labor decisions of registered nurses. Ultimately, combining these three distinct, but complementary, theoretical perspectives is intended to provide clarity to understanding of the labor market behaviors of registered nurses in the United States.

Economic Labor Market Theory

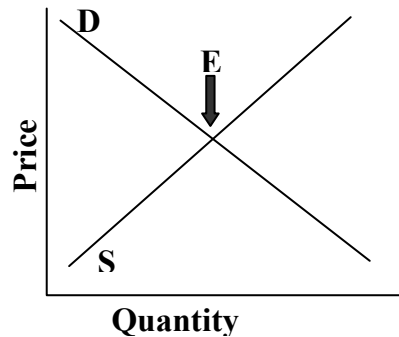
The wages and salaries that U.S. workers earn vary from occupation to occupation, across geographic regions, and according to workers' levels of education, training, experience, and skill. As with goods and services purchased by consumers, labor is traded in markets that reflect both supply and demand. In general, higher wages and salaries are paid in occupations where labor is scarcer – that is, in jobs where the demand for workers is relatively high and the supply of workers with the qualifications and ability to do that work is relatively low. The demand for workers in particular occupations depends largely on their marginal revenue product defined as the amount that their work adds to an employer's revenues. In other words, workers who create more products or higher-priced products will be worth more to employers than workers who make fewer or less valuable products. The supply of workers in any occupation is affected by the amount of time and effort required to enter that occupation compared to the other roles workers might fill (Kaufman & Hotchkiss, 2005).

Workers seeking higher wages often learn skills that will increase the likelihood of finding higher-paying employment. The knowledge, skills, and experience a worker has acquired are the worker's human capital (Netten & Knight, 1999). Education and training can clearly increase human capital and productivity, which makes workers more valuable to employers. In general, more educated individuals tend to earn more money in

their employment. However, a greater level of education does not always guarantee higher wages. Certain professions that demand a high level of education, such as teaching and nursing, are historically not high-paying. Such situations arise when the number of people with the training to do that job is relatively large compared with the number of people that employers want to hire (Folland, Goodman, & Stano, 2004). This situation can change over time, however, if fewer young people choose to enter the profession. This latter case has been the trend in nursing since the late 1990's (Buerhaus et al., 2000d). Since this time, nursing salaries have seen meaningful increases for the first time since the 1980's when a similar nursing shortage trend occurred (Chiha & Link, 2003; HRSA, 2005).

Labor economics is essentially the study of the interplay between employers and employees. Central concepts of labor economics are demand, supply, and market equilibrium (Ehrenberg & Smith, 2005). As applied to the labor market for nurses, demand for labor is defined by the employers for whom nurses work. Supply of nursing labor exists in the form of nurses who are available to fill this demand. Market equilibrium refers to the balance between supply and demand. Demand (shown as D in Figure 3.1) for nursing labor generally increases with decreases in the prevailing wage. Conversely, nursing labor market supply (shown as S), generally increases with increases in wage. The equilibrium point (E) shows the wage rate where supply and demand for nursing labor are in balance.

Figure 3.1: Graphical Depiction of Labor Market Supply and Demand



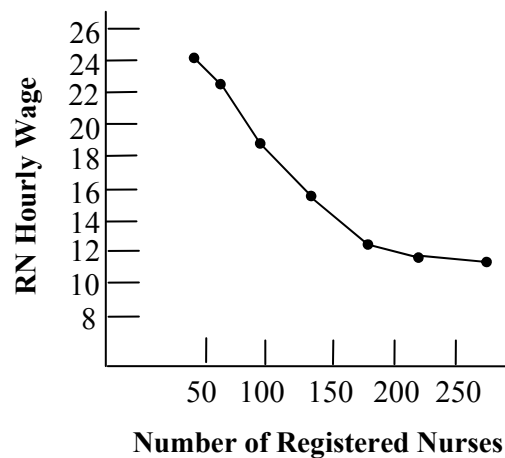
The Demand for Nursing Labor

Labor demand economics builds upon certain simplifying assumptions concerning the behavior of employers and workers in regard to the amount of labor demanded in a specific marketplace. In the purest definition, demand for labor is dependent upon changes in wage and changes in consumer demand for the product produced by the labor market (Kovner & Brewer, 2001). The theory of labor demand assumes that employers are rational. Thus, employers will tend to make employment decisions that will give them the greatest utility in the use of their employment dollars (Folland et al., 2004). Although the assumptions on which demand for labor is based are described in the literature as being overly simplistic (Link & Settle, 1981), they allow economists to parsimoniously predict how employers are likely to behave.

Changes in wage are assumed to have significant effects on the demand for nursing labor. First, higher nursing wages imply higher costs, and usually, higher consumer prices for health care services. Because consumers respond to higher prices by consuming less, other things being equal, employers would tend to reduce their levels of nursing service provided, and thus, nursing employment. This “scale effect” (Ehrenberg

& Smith, 2005, p.36) predicts a decline in desired nursing employment as a result of increases in wage. Second, as nursing wage increases, employers are incentivized to seek less expensive labor to replace costly registered nursing services. This second effect is termed a substitution effect, because as wages rise, less expensive employment alternatives are substituted for more costly options. Figure 3.2 shows a demand curve for nursing services as a function of wage proposed by Folland, Goodman, and Stano (2004). This demand curve has a negative slope, indicating that as wages rise, less registered nursing labor is demanded. Thus, the demand for labor is said to be a “downward-sloping function of the wage rate” (Ehrenberg & Smith, 2005, p. 59).

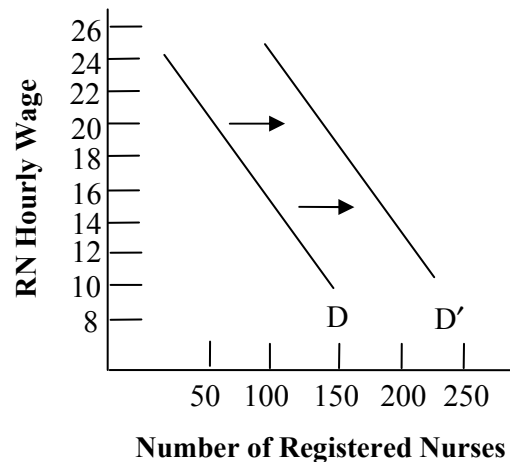
Figure 3.2: Graphical Depiction of Labor Market Demand



Demand for nursing labor is dependent on the effect that hiring additional nurses will have on an employer's marginal revenue and marginal cost. If hiring additional nurses will increase marginal revenue more than it increases marginal cost, hospitals will attempt to hire more nurses (Figure 3.3). Thus, the wage paid to recruit additional nurses will increase to a point where the marginal cost of employing one additional nurse equals the marginal revenue generated by all nursing labor (Chiha & Link, 2003; Kaufman &

Hotchkiss, 2005). When increased demand is not met as in the case of a limited supply of available nurses to employers, the wage will continue to increase until marginal revenue equals marginal cost (Hirsch & Schumacher, 1995).

Figure 3.3: Shift in Registered Nurse Employment Due to Increased Demand

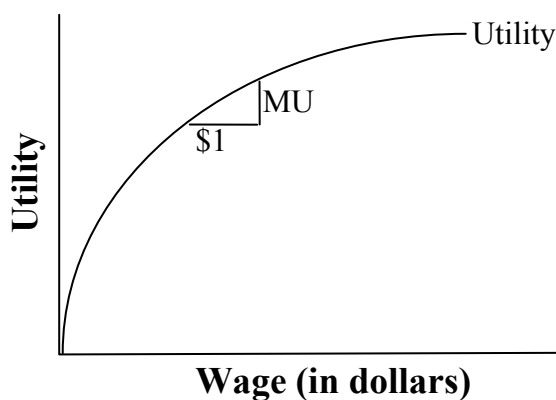


Wage-dependent demand for nursing labor can be analyzed on three levels. To analyze the demand for labor by a particular employer, one would examine how an increase in the nursing wage would affect nursing employment in that particular facility. However, nursing labor demand on an employer-specific level is neither meaningful nor applicable to the study of the labor market for registered nurses. To analyze the effect of wage increases on the hospital-based nursing labor market, examination of an industry demand curve would be essential. Finally, to examine how changes in the nursing wage might affect the entire labor market for registered nurses in all industries in which they are used, one must examine a market demand curve (Ehrenberg & Smith, 2005). Facility, industry, and market labor demand curves will vary in shape to some degree because the relevant scale and substitution effects have different strengths at each level. However, scale and substitution effects of a change in the prevailing nursing wage work in the same

direction at each level. Thus, firm, industry, and market demand curves will always slope downward (Ehrenberg & Smith, 2005; Kaufman & Hotchkiss, 2005).

Marginal utility of labor. Marginal utility is defined by Folland, Goodman, and Stano (2004) as “the extra utility achieved by consuming one more unit of a good” (p. 31). In the measurement of nursing labor markets, the “good” is represented as the additional wealth generated by one additional unit of labor. Thus, marginal utility in the labor market is the extra utility a worker achieves from each additional dollar of wealth earned while working for pay. If marginal utility is understood as the slope of the line in figure 3.4, this graphical representation suggests that the marginal utility earned from an additional unit of labor decreases as the wealth increases. This flattening of the slope at higher wage rates means that additional income generates more utility when overall wealth is low. Progressively less additional utility results from increases in wage after a certain level of wealth has been achieved.

Figure 3.4: Graphical Depiction of the Marginal Utility of Wage



Distinction must also be made between long-run and short-run labor market changes. Over short periods of time, employers find it difficult to make extensive substitutions for increasingly expensive registered nursing labor and are not likely to significantly change registered nursing employment levels (Schoeman, 1988). It takes time to fully adjust demand in response to a price change. However, over longer periods of time, a new state of equilibrium is reached in which changes in demand resulting from a change in wage are larger and more complete (Ehrenberg & Smith, 2005). In this example, it would be expected that fewer registered nurses would be employed and less expensive patient care alternatives would be sought.

Profit maximization. The fundamental assumption of labor market demand is that employers seek to maximize profits. In doing so, employers are assumed to continually ask, “can changes be made that will improve profits?” Two things must be noted about this constant search for enhanced profits. First, an employer can make changes only in variables that are within its control (Ehrenberg & Smith, 2005). Because the price a hospital can charge for its services and the wage it must pay to nurses are largely determined by the local market, profit-maximizing decisions largely involve the question of whether and how to increase or decrease nursing utilization. Second, because employers are assumed to constantly search for profit-maximizing opportunities, attention must be paid to the small (or marginal) changes that must be made almost daily. For example, major decisions such as whether to open a new nursing unit or a new hospital are relatively rare. Once having made such a large decision, the employer must then “approach profit maximization incrementally through the trial-and-error process of small changes” (Ehrenberg & Smith, 2005, p. 60) that aim to equilibrate marginal cost

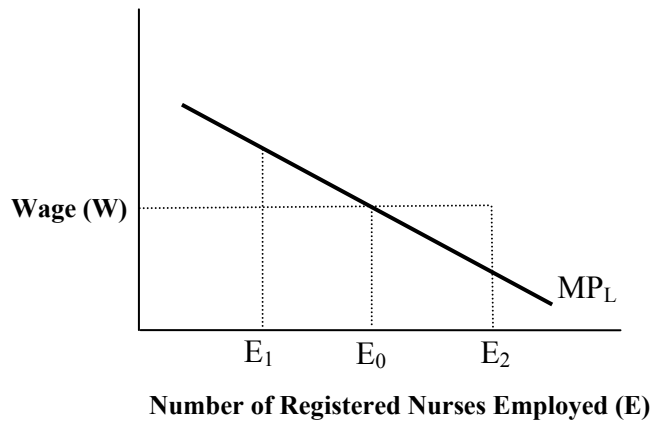
with marginal revenue. Hospital labor market profits are maximized when employment is such that marginal revenue equals the marginal cost of nursing employment.

With respect to employment of nurses, it is important to recognize that analyzing marginal change implies considering a small change in nursing employment, while holding all else constant (Kaufman & Hotchkiss, 2005). For as long as the marginal revenue from adding one more registered nurse to the payroll exceeds that nurses salary, the hospital will continue to seek additional nurses. However, when a point is reached that adding one more nurse results in the marginal revenue dropping below the wage rate, efforts will be made to curtail nursing employment. This basic tenet of labor market demand underscores the importance of reimbursement for health care services, and the effect such reimbursement has on the demand for nursing services. Reimbursement structures that limit the profit-maximization ability of nursing employers will logically result in the employer decreasing utilization of the variables under their control – the number of nurses employed and the wages that are paid to those nurses (Brewer, 1998; Buerhaus & Staiger, 1996).

The marginal product of labor. The marginal product of labor (MP_L) is formally defined by Ehrenberg and Smith (2006) as “the change in physical output produced by a change in the units of labor, holding capital constant” (p. 61). The following discussion utilizes the generic MP_L assumptions posed by Ehrenberg and Smith and applies them to prediction of employment of registered nurses by hospitals. Toward this end, figure 3.5 graphically depicts the marginal product of labor for an employer of registered nurses. In this figure, the marginal product of nursing labor is tabulated on the vertical axis and the number of nurses employed on the horizontal axis. As applied to hospital employment of

registered nurses, the negative slope indicates that each additional nurse employed produces a progressively smaller (but still positive) increase in service output.

Figure 3.5: Marginal Product of Labor



As depicted in figure 3.5, given any wage rate, the hospital would be expected to employ the number of registered nurses at which the marginal product of labor just equals the wage rate. At wage rate (W), the employer would employ E_0 employees. If the employer were to employ E_2 nurses, where E_2 is *any* number of nurses in excess of E_0 , the marginal cost of the last nurse hired would be greater than its marginal product. As a result, profit would be increased by reducing the number of nurses employed. Similarly, if a hospital were to employ E_1 nurses, profit levels would be increased by hiring additional nurses, and the employer would be expected to behave in this manner. Hence, to maximize profits, given any wage rate, a hospital would be expected to stop employing nurses at the point at which additional nurses would cost more than the revenue generated (Ehrenberg & Smith, 2005).

The Supply of Labor to the Nursing Workforce

Equally important as the buyer (demand) side of the nursing labor market, are the dynamics of the supply of nurses both to the labor market and to individual employers. An individual nurse's supply of labor to the labor market will generally depend on his or her opportunity for income from sources other than labor, and on the nurse's preference between leisure and earning income. It is important to first understand the economic factors that influence a person pursue a career in nursing. Understanding of the dynamics of nursing labor supply is key to determining nursing labor policy, and must be understood in the context of current trends (Brewer, 1998). Dumpe, Herman, & Young (1998) defined contextual factors pertinent to nursing workforce forecasting as sociocultural values and government philosophy. Supply factors are empirically defined by Dumpe, Herman, & Young (1998) as the health care delivery system (wages, location, flexibility of hours, and benefits), the nursing education system (number and type of programs, number of graduates, funding), the economic system (inflation and unemployment), and the demographics of the available nursing population (age, gender, race, job satisfaction, family composition).

The individual worker is not assumed to be simply a supplier of labor. In order to acquire purchasing power in the form of income, an individual must sell his or her labor (Kaufman & Hotchkiss, 2005). Career decisions within an economic framework are closely tied to the relative market wage. If salaries and wages in all other occupations are held constant and the prevailing nursing wage increases, more workers would be expected to enter nursing (Ehrenberg & Smith, 2005). However, certain numbers of workers would have personal preferences that affect the critical wage point at which they

would consider nursing as a career. Others would choose nursing as a career with much less significant changes, if any, in the prevailing wage.

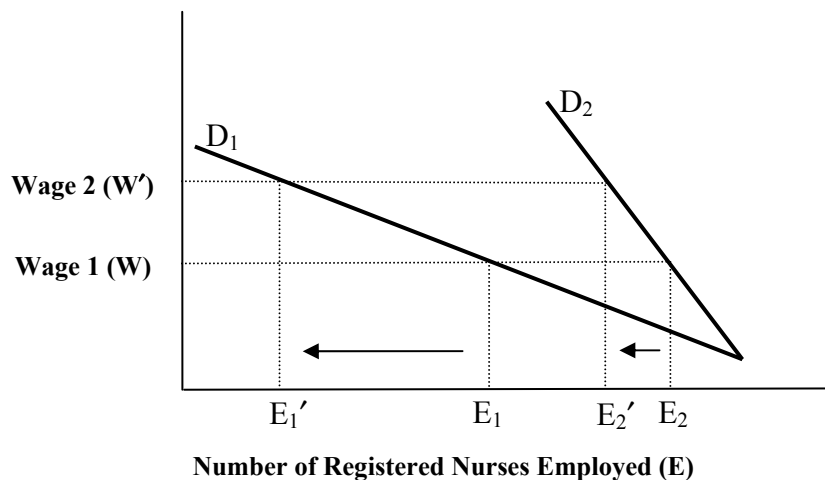
Measurement of nursing workforce participation. The most frequently used method of estimating nursing labor supply is to measure the number of annual hours contributed to the nursing workforce. Typically, workforce participation is measured as a dichotomous variable (working or not working). Laing and Rademaker (1990) have offered that a trichotomous variable (not working, working part-time, or working full-time) may be a more precise method to measure labor force participation as a categorical variable, as many nurses do participate in the workforce, but do so on a less-than-full-time basis. Laing and Rademaker (1990) also suggest that market participation decisions for nurses may be better measured over a more extended time frame (i.e. as a five year pattern of employment). This extended measure is preferable to measurement over a one-year period of time when contravening, but temporary, factors may create a less accurate portrayal of workplace participation.

Labor demand elasticities of registered nurses. The responsiveness of labor demand to a change in wage rates is referred to as wage elasticity. Wage elasticity is defined by Ehrenberg and Smith (2006) as the “percentage change in employment brought about by a one percent change in wage” (p. 94). Since it has been previously shown that labor demand curves slope downward (an increase in the wage rate will cause employment demand to decrease), the elasticity of labor market demand is, therefore, a negative number. What is at issue is the magnitude of this decrease. The larger the absolute value of the wage elasticity for registered nurses, the larger will be the percentage decline in employment associated with any given percentage increase in

wage. If the absolute value is greater than 1.0, a one percent increase in nursing wages will lead to an employment decline of greater than one percent. This situation is referred to as an elastic demand curve. In contrast, if the absolute value of the nursing wage change is less than 1.0, the demand curve is said to be inelastic and a one percent increase in nursing wages will lead to a proportionately smaller decline in employment (Ehrenberg & Smith, 2005).

If demand is elastic, aggregate nursing earnings (defined here as the nursing wage times the number of nurses employed) will decline when the wage rate increases, because employment falls at a faster rate than wages rise. Conversely, if demand is inelastic, aggregate nursing earnings will increase when the nursing wage is increased. If the elasticity of the nursing wage just equals negative one, the demand curve is said to be unitary elastic, and aggregate earnings will remain unchanged as wages increase. Figure 3.6 shows that the flatter of the two demand curves graphed (D_1) has a greater elasticity than the steeper (D_2). Thus, a given wage change will yield greater responses in employment with demand curve D_1 than with D_2 .

Figure 3.6: Relative Demand Elasticities



Nursing labor market research (Brewer, 1996; Chiha & Link, 2003; Link & Settle, 1985; Link & Settle, 1980, 1981) has demonstrated that differences exist in the elasticity of male and female supply curves with female nurses being more responsive to changes in wage than their male counterparts. The number of children in the household, ethnicity, and student status also have been shown to affect the wage elasticity of supply for nurses in the labor market (Brewer, 1996; Brewer et al., 2003; Chiha & Link, 2003; Link, 1992; Link & Settle, 1980, 1981). Ezrati (1987) found a negative wage elasticity in relation to presence of children in the home in that nurses with children were likely to work fewer hours than those without children. Chiha and Link (2003) found that the more children there were in the household, the less responsive nurses were overall to changes in wage. Likewise, nurses were enrolled in educational programs were also less responsive to changes in wage than were nurses who were not students (Brewer, 1998). However, nurses of non-white ethnicity were more responsive to wage changes, whether or not children were in the home (Chiha & Link, 2003).

Link (1992), however, demonstrated that registered nurses' own wage elasticity was small, making it doubtful that marginal wage increases would substantially raise the participation rate, as most nurses are already working. This point has been supported in other research, both previous to and after Link's 1992 work (HRSA, 2005; Laing & Rademaker, 1990; Spratley et al., 2000). In an inelastic market such as that demonstrated by Link (1992), characteristics of the job or workplace become relatively more important to the supply of nurses in the workforce (Brewer, 1996). Link and Settle (1980) also demonstrated a negative wage elasticity for married nurses indicating that increases in wage may actually decrease labor market participation by some nurses, theoretically

because of increased utility found in other areas of life that may be better funded through fewer hours spent in the workforce.

The role of the wage and family in nursing workforce supply. Almost paradoxically to indications in the literature that nurses seek manageable workloads and autonomy over wages and benefits (American Nurses Association, 2003), nursing's relative wage is central to much of the nursing workforce literature. Brewer (1996) states that "wage is the critical market variable that acts to equilibrate the supply of labor by nurses and demand for labor by employers" (p. 345). Generally, labor force participation has been found to be positively related to wage rate (Link, 1992; Phillips, 1995) and negatively related to husband's income and the presence of young children in the home (Ezrati, 1987; Link & Settle, 1985; Link, 1992; Phillips, 1995). Phillips (1995) also found that holding a mortgage and being single encouraged nursing labor market participation. Additionally, Ezrati (1987) found that in addition to predicted wage, and numbers of adults in the nurse's household were positively related to hours worked. However, age, being married, the number of children in the home, and household income were negatively associated with workforce participation (Ezrati, 1987). Laing & Rademaker (1990) found evidence of a "U-shaped" trend in workforce participation where the trough of the "U" corresponded to the presence of more children in the 2 – 11 year range, suggesting that nurses tend to interrupt their careers when their children were between two and eleven years of age, and then return to work. Yett's (1965; Yett, 1970) seminal work in this area also supports the general thesis that employment is increased when wages are higher and is decreased when the spouse's wage is higher and when children are present in the home.

While these supply predictors noted in the empirical literature are important, it also must be noted that employers compete within a labor force particular to the skill or expertise needed. Therefore, the notion of competitive wage must be viewed in this comparative context. In addition to pecuniary factors, wages may also be defined to include benefits such as desirable hours, schedules, holidays, vacations, pensions, and the like (Ehrenberg & Smith, 2005). The shift the nurse worked, spouse's salary, the health of the nurse, and the nurse's level of education were found to be significant negative predictors of workforce participation (Laing & Rademaker, 1990). The nurse's wage, urban vs. rural residence, home ownership status, and the spouse's employment status were significant positive predictors of workforce participation (Laing & Rademaker, 1990).

The Economic Theory of the Decision to Work

It is appropriate to begin describing the economic theory of the decision to work by placing its role, and that of economics in general, within the larger context of human behavior. Decisions about work are but one facet of this behavior. Buerhaus (1990) states that use of economic theory as a lens through which to view workplace behavior "is [most useful] when people are on the verge of making decisions or, as economists would say, when people are 'at the margin'" (p. 15). To illustrate a worker who is 'at the margin,' consider a registered nurse who is deciding whether to spend an additional hour at work, or whether to spend that hour in the pursuit of leisure activity. It is when the nurse is on the borderline of making a decision and is contemplating how that extra hour will be spent is what defines the crux of the interest of the economic theory of the decision to work. When labor market participants are at that margin, economic theory is

helpful in understanding the way workers think about the benefits and costs of the work-leisure choice. This also lends understanding to which economic forces and covariates play a role in the decision to work or not work. The economic theory of the decision to work is useful in the analysis of the nursing labor market because it is believed that among the nation's nearly three million RNs (HRSA, 2005), a considerable number may be at the margin with respect to making decisions about work (Chiha & Link, 2003).

Lionel Robbins (1930) was the first to use economic concepts and relationships to analyze decisions individuals make concerning the amount of labor they are willing to supply to employers. Robbins (1930) divided an individual's time into leisure and work activities and identified how a wage increase might affect the amount of time an individual would spend working. The term *leisure* is operationally defined as any activity that is not work related. For example, leisure time could refer to time spent relaxing, shopping, reading, cooking, or engaged in a myriad of similar activities (Buerhaus, 1990). Through this definition, it would be assumed that people decide how much of their time each day will be spent performing ordinary activities of daily living, as well as how much of their time will be spent working for pay. For the purposes of this discussion, the terms leisure and work are presumed to be mutually exclusive as a person cannot realistically participate in both activities simultaneously. Thus, the economic theory of the decision to work conceptualizes an individual's *demand for leisure time* as the alternative to or the reverse of the time that is supplied to work activities. Demand for leisure is calculated as the difference between the total number of available hours and the number of hours an individual is willing to spend at work for pay (Ehrenberg & Smith, 2005).

The price of leisure is conceptualized as consisting of what one could have earned in pay had that hour of leisure time actually been spent working. Because the alternative to spending time in leisure activity is to spend time working, the price of leisure is considered to be closely related to the wage one is paid for working. More strictly defined, the opportunity cost of leisure is the marginal wage rate, which is the wage one could receive for one extra hour of work (Ehrenberg & Smith, 2005).

The labor-leisure tradeoff. While viewed by contemporary economics as being an overly-simplistic model (Brewer, 1998; Buerhaus, 1991b; Ezrati, 1987; Phillips, 1995), this dichotomous choice is referred to in labor economics as the leisure – labor tradeoff. If a person desires leisure, they will tend to spend less time at work for pay. However, this means that they will not be able to purchase as many goods as a person who spends more time in the work force. If, on the other hand, this same person chooses to consume more goods, then they will spend more time at work, but will sacrifice leisure time. Their preferences for leisure and all other goods (consumption), combined with the current market wage, will determine what combination of leisure and consumption the person will choose. This relationship is analogous to the manner in which an individual desires regular commodities. The market price of different goods will determine what combination of goods that individual will buy. Thus, even though workers are the suppliers of labor, they make their working decisions in a manner similar to the way in which they make their buying decisions. Such decisions are largely based on individual preference and price (Ehrenberg & Smith, 2005).

In consumer economics, the demand for any good or commodity is postulated to be a function of its price, the individual's level of wealth, and the person's preferences

for the good independent of his or her wealth or the price of the good (Buerhaus, 1990; Mansfield, 1982). In equation form, Buerhaus (1990) expressed these relationships such that the demand (D) for any good is a function of its price (P) and the level of wealth (W):

$$D = f(P, W) \quad \text{Equation 1}$$

where (f) means that the particular relationship between demand and the variables price (P) and wealth (W) are dependent on the individual's personal preferences for the good (Buerhaus, 1990; Ehrenberg & Smith, 2005).

An individual's level of wealth, is conceptualized as the monetary value associated with assets, such as holdings in bank accounts, financial investments, physical property, and human attributes (Buerhaus, 1990; Ehrenberg & Smith, 2005). An individual's skills such as those which are acquired from investing in a nursing education and applying the knowledge in nursing practice, is an example of human assets. "The more one can get in wages, the larger is the value of one's human assets" (Ehrenberg & Smith, 2005, p. 148). However, economic labor market studies typically use total income as an indicator of total wealth. Buerhaus (1990) expresses the relationship between these economic variables as:

$$DL = f(W^+ Y^-) \quad \text{Equation 2}$$

where DL is the demand for leisure time, (W) is the wage rate earned from work, (Y) is total income, and (f) represents the personal preferences individuals have for leisure

independent of W and Y . Holding the other variable constant, and assuming that leisure is a normal good (i.e., more of it is demanded as one's wealth increases), the signs above W and Y indicate what happens to the demand for leisure as either variable increases (Ehrenberg & Smith, 2005).

Equation two suggests that if income (Y) increases and wages (W) and preferences (f) are held constant, the demand for leisure increases. Recalling that time spent in leisure is the opposite of time spent working, then it is possible to think of equation two in terms of hours of work. Adopting this perspective, the opposite relationship will occur: if income (Y) increases (decreases), holding wages (W) and personal preferences (f) constant, hours of work will decrease (increase). This predicted effect is termed the income effect (Buerhaus, 1990; Ehrenberg & Smith, 2005) meaning that as income rises, holding all else constant, people will want to consume more leisure which is to say they will want to work less. It must be recognized, however, that the application of this equation is limited to measurement of the sector of the labor market that is, or could be, engaged in work for pay. For retired seniors, or others who are not members of the labor market for any number of reasons, income would be a poor proxy for measurement of wealth.

Income and substitution effects of labor. The equation describing the demand for leisure also indicates that if income is held constant, an increase (decrease) in the hourly wage will decrease (increase) the demand for leisure hours. Expressing this relationship with respect to hours of work, if wages increase (decrease), holding income and personal preferences constant, hours of work will increase (decrease). This predicted relationship is termed the *substitution effect of labor* (Buerhaus, 1990). This effect occurs because

wage increases make the economic value of time spent in leisure activities more expensive. Holding income and personal preferences constant, individuals will tend to substitute working hours for leisure hours. In contrast to the income effect, which is negatively related to hours of work, the substitution effect is positively related to hours of work in response to an increase in wage (Ehrenberg & Smith, 2005).

While it is possible for situations to exist that create either a “pure” income or substitution effect, usually both effects occur simultaneously (Buerhaus, 1990). In effect, they work against each other in the determination of the number of hours a person will spend at work for pay. For example, the change in the number of hours worked by an individual registered nurse resulting from an increase in wage will involve both an income and a substitution effect. The income effect is predicted to occur because the person’s wealth is enhanced after the wage increase. A higher level of wealth permits a greater ability to consume goods and, because leisure is assumed to be a normal good, more leisure will be demanded as income increases. This is analogous to saying that less time will be spent working for pay. At the same time, however, a substitution effect exists because the wage increase raises the price of time spent in leisure. In this case, not working is more expensive because the individual is giving up more monetary income by spending more time in leisure activities. Consequently, the individual will tend to consume less leisure which is equivalent to stating that s/he will substitute work hours for leisure. Thus, the income and substitution effects may potentially work against each other when wages increase (Buerhaus, 1990).

In the extreme case of unresponsiveness to changes in the prevailing wage, some research has shown that nurses may actually *decrease* their labor response as the wage

changes creating a backward bending labor supply. Analysis by Brewer (1996) suggests that beyond a certain wage level, further increases may actually produce a lower labor supply as workers seek “utility” over additional income from work in the labor market. Evidence in the nursing workforce literature, however, is mixed in relation to the presence of a backward bend in the supply of registered nurses, raising question as to the presence of imperfect competition effects in certain subdomains of the nursing workforce.

Because the income and substitution effects usually occur simultaneously and work in opposite directions, the actual net change in the number of work hours supplied by an individual registered nurse in response to a change in the wage rate is the sum of the two effects (Buerhaus, 1990; Ehrenberg & Smith, 2005). Classical economic theories including the economic theory of the decision to work are incapable of predicting a priori which effect will be stronger. This creates difficulty in predicting the actual change in the number of hours worked. If the income effect is stronger than the substitution effect, a registered nurse will likely respond to a wage increase by decreasing the amount of time allocated to work. However, if the substitution effect dominates, the nurse is likely to work more hours, assuming all else is held constant. Finally, if a change in wealth results solely from nonlabor-related sources, such as winning a lottery, the substitution effect will not take place at all. However, in this case the income effect would result in a net decrease in the number of hours worked as is often observed when people quit working altogether and retire after winning a lottery or receiving a large inheritance (Buerhaus, 1990).

For unmarried or unpartnered nurses, it is reasonable to expect that working for pay is the principal alternative to spending time consuming leisure (Buerhaus, 1990). Marriage or partnership, however, may introduce the negative income effect on hours of work because the nurse's total wealth will increase due to the addition of the household partner's labor earnings. While this addition to the nurse's overall wealth does not change the nurse's own wage rate, partner income still may result in a substitution effect in which more time is spent in the pursuit of leisure activities (Buerhaus, 1990). Because 70.5% of all registered nurses are married (HRSA, 2005), the income effect associated with spousal earnings or other sources of wealth can be expected to exert a considerable effect on the total number of hours registered nurses supply to the labor market.

A significant shortfall of the economic theory of the decision to work as applied to nursing is seen in the case where the nurse cares for young children in the home (Ezrati, 1987; Greenleaf, 1983). The presence of children in the home integrally changes the relative productivity of the parent's time spent either in leisure or at work (Ehrenberg & Smith, 2005). Stated differently, "the presence of children changes the cost of consuming leisure" (Buerhaus, 1990, p. 24). As previously discussed in relation to income and substitution effects, one of the determinants of the demand for leisure is its cost. Consequently, changes in the cost of leisure will have a direct effect on how much time is allocated to working in the labor market for pay.

Economists measuring the interdependency of family members in making labor decisions provide an explanation of the economic theory of household production as a possible way to bridge the gaps that exist in classical economic theories. The central concepts and theoretical relationships of the economic theory of household production

described by Ehrenberg and Smith (2006) and the application of these principles to nursing as explicated by Buerhaus (1990) are presented below.

The Economic Theory of Household Production

The economic theory of household production differs from the theory of the decision to work as it explicitly recognizes the *family* as the basic decision-making entity in society. The family makes decisions about who works and how much work is supplied to the labor market (Ehrenberg & Smith, 2005). Household production theory assumes that it is the family that derives utility from the consumption of goods, that both consumption and production occur in the home, and that the family has a choice of whether to purchase goods or produce the goods themselves. To illustrate, consider Ehrenberg and Smith's (2006) example of the care of dependent children. Choices exist in regard to how children will be cared for and each yields a different level of utility. The family might choose to pay others to care for children, have one member of the family stay home full-time or part-time to provide childcare, or work opposing schedules so that childcare is provided by each of the parents equally. Clearly, the household production time spent on childcare increases respectively with each of these options. The theory of household production asserts that the means a family chooses to care for dependent children will depend on the wage earned by each of the household members, non-wage family income, and personal values and beliefs about child-rearing.

Traditionally, married or partnered women have been engaged in the production of household goods to a greater extent than have married or partnered men. Additionally, the wage rate for women has historically been less than what has been paid to men. Women have also been more socialized in child rearing practices and household

management than have men. When a married or partnered woman who works outside the home receives a wage increase, both income and substitution effects frequently result. It is important to note that the decision-making unit is now the family, and the income effect generated by the higher wage now adds to the *family's* total wealth and the family is consequently better positioned to purchase more household goods (Buerhaus, 1990; Ehrenberg & Smith, 2005). From the perspective of household production theory, the income effect will push the woman out of the labor market and into the home where, because she is more productive relative to her partner, she can produce more household goods. However, the wage increase also results in a substitution effect which induces the family to produce household goods in ways that are less time-intensive. In turn, this allows the partnered woman to spend more time outside the home working in the labor market earning income. In this situation, the substitution effect is directed at the *process* of household production. Simply put, less time-intensive options are sought in favor of the utility provided by bringing more income into the family unit.

Another type of substitution effect exists in that when the market wage rate of the primary producer of household goods changes, the family will have a tendency to change the composition of the goods it consumes (Buerhaus, 1990). Consequently, assuming that the absolute price of those items purchased for household production remains constant, wage increases will result in a relative decrease in the types of goods that require a great deal of time to produce. As stated by Ehrenberg and Smith (2006):

When women's wages rise ... there will be substitution effects in both production and consumption. Women will tend to consume less time-intensive goods, but as household producers they will also adopt less time-intensive modes of production.

They will substitute frozen foods, day care for children, and automatic washing machines for household production time; this substitution effect in production is more or less added to the one in consumption to yield a stronger overall substitution effect than is observed for males. (p. 187)

The decision of who stays home and who works in the market for pay. When both household partners are capable of working inside and outside of the home, the family must make decisions about who will spend relatively more time in the market working for pay and who will be primarily responsible for production of household goods (Ehrenberg & Smith, 2005). This is a situation that increasingly describes contemporary society. Because both household partners are productive both in the labor market and in the home, their labor supply decisions will be made jointly. In making these decisions, the family will determine who is relatively more productive in each role, and labor market participation decisions will be made accordingly (Buerhaus, 1990).

The economic theory of household production views the choice of who stays home to raise children or produce other types of household goods as a function of who is relatively more productive in performing this type of work. Furthermore, household production theory recognizes that home production arrangements change as both wages and relative productivities of the household members change (Ehrenberg & Smith, 2005). For example, if the market wage increases for the primary household producer, one could expect an increased demand for purchased services. Assuming that traditional gender roles continue to become less rigid, the likelihood that more men will increasingly be involved in household tasks (such as raising children) would be consistent with the

premise of the economic theory of household production (Buerhaus, 1990). As Ehrenberg and Smith (2006) write:

Modeling the choice of who stays home to raise children as a function of relative productivities, and not just custom, emphasizes that child-rearing arrangements will probably change as wages and home productivities change. If discrimination against women is eliminated, or if sex roles in childhood become less distinct for boys and girls, we could well observe more men rearing children in the future. (p. 189)

The effect of the presence of children in the home. Earlier economists (Bowen & Finegan, 1967; Cain, 1966; Gronau, 1973) have noted that, historically, the effect of very young children in the home has been to increase the marginal home productivity of the female partner. Consequently, the female partner tends to specialize in non-market work. An hour of time spent producing household goods given up by the female partner would require a relatively large compensation in order for the family's level of utility to remain constant. As the number of children in the home increases, the household's demand for this female partner's time also increases. However, as children become older, they may be capable of performing more household work and thereby become substitutes for the mother in the production of at least certain home goods. Thus, after some critical point in family size and development is reached, there well may be a tendency for the mother to increase her allocation of time to the market working for pay (Buerhaus, 1990). This is consistent with the findings of Laing & Rademaker (1990) and Ezrati (1987) where female nurses were found to return to the labor market as children aged.

Age and the decision to work. Decisions about when to work during one's life span also involve comparisons of market productivity and home productivity. When an individual's earnings are low relative to home productivity, as in the adult years, the person would be expected to spend more time working in the market for pay. If home productivity is more or less constant, it would be expected that people would spend the most time working in their middle years, and comparably less time working during the very early and very late years of the career trajectory. Seen from this perspective, the relationship between the decision to work for pay and age is determined by the individual taking into account when over the course of the life span s/he is most productive (Buerhaus, 1990).

Bognanno (1974) adds that young and recently graduated registered nurses can be expected to prefer market work to household production due to their desire to establish themselves as apart from their parents. Furthermore, because young nurses are often unmarried do not yet have children, they tend to spend more time working in the labor market. During the marriage and child-rearing years of the life-cycle, however, preferences shift toward household work and the production of home-produced goods, resulting in fewer hours spent in the labor market working for pay. Once children are grown and are less dependent on the parent (nurse) for support, preferences for market work will again increase and more time will be devoted to working outside the home. Finally, "it is customary during the later years of the life cycle for both married and unmarried registered nurses to retire and consume more hours of leisure activities and to live off their lifetime accumulation of wealth" (Ehrenberg & Smith, 2005, p. 36).

Work Satisfaction and Registered Nurse Preferences

While considerable attention in this paper will not be paid to the many work satisfaction models that exist in this chapter, a cursory mention of work satisfaction in relation to the satisfaction gained from nursing work is appropriate. According to the economic theories underlying registered nurse labor supply decisions, the interaction of the income and substitution effects determines the number of hours worked in response to any given change in wage. The relative strengths of these two opposing forces are dependent on the nurse's preferences for work and/or leisure. A factor given increasing attention in the recent literature is the influence on the decision to work attributed to the amount of satisfaction a registered nurse gains from working. The absence of nonpecuniary factors (other than the effects of age and children) is particularly interesting in light of Piore's (1979) comments, cited by Buerhaus (1990):

Most economic theory is predicated on the notion that the production of income ... is the only function of work, and that people will thus move around from one job to another in response to variations in economic rewards. But to the considerable extent that the job, and the work it entails, serves itself to define our social and personal selves, there are decided limits upon what we feel willing and able to do simply to earn money. (p. 19)

The major theoretical perspectives on work satisfaction have their roots in the disciplines of psychology, sociology, and organizational behavior. Psychologists attend to issues regarding the fulfillment of an individual's real or perceived needs, the processes of how one assesses the degree to which they are fulfilled, and the type of needs which might be satisfied in the work place. The theoretical contribution of

sociologists has been to broaden the thinking about work satisfaction beyond the individual. This perspective stresses the influence of relationships with co-workers, and the relevance of other factors that determine work satisfaction. The last theoretical perspective focuses on the things that organizations do that affect work satisfaction. This view recognizes that the organization is concerned that the inducements it offers are satisfying enough to get back needed contributions from its employees. If the inducements do not result in sufficient contributions, then the organization's interest to survive motivates it to change the inducements it offers. Taken together, the uniqueness and the value of each of these perspectives demonstrates not only the complexity of work satisfaction, but also why no universally accepted theoretical perspective of work satisfaction has emerged. Nevertheless, nurses and others have viewed work satisfaction as inextricably linked to shortages of nurses. The effectiveness of policies aimed at reducing shortages will be severely compromised if they do not acknowledge the importance of work satisfaction as a determinant to workplace behavior (Aiken et al., 2002; Buerhaus et al., 2005a; Lundgren et al., 2005; Roberts et al., 2004; Steinbrook, 2002).

Given the recognition that nonpecuniary factors affect labor supply decision, it can be presumed that nurses who derive high levels of satisfaction from working in nursing may be more likely to give up leisure time for market time at a greater rate than nurses who derive little satisfaction from working. A registered nurse who derives higher levels of satisfaction and more social identity from work would be more likely to place a higher value on time spent working relative to time spent in leisure (Buerhaus, 1990). Therefore, it would take a smaller increase in wages to induce an extra hour of

work than it would if the nurse derived less satisfaction and/or social identity from market work. Economic studies of RN labor supply have not consistently considered the possibility that work satisfaction is a determinant of a registered nurse's preference for market work or the number of hours spent in the labor market. Much empirical work, however, has underscored the role of work satisfaction as a significant determinant of nurses withdrawing from the workplace. Thus, while beyond the scope of this dissertation, empirical attention must be paid to workplace satisfaction and social identity derived from work as a determinant of labor market participation.

Consistent with the postulates of the various work satisfaction theories, research has suggested that "nurses are not income maximizers"(Aiken, 1984, p. 9). Those who choose nursing as a career base their decisions on factors other than lifetime earnings. Seminal nursing labor market study by Aiken (1984) suggests that nurses base labor market decisions on factors such as the quality of working life, evidence of having contributions recognized and valued, involvement in decision making and professional autonomy rather than on economic factors. Therefore, consideration of these factors as well as those factors traditionally examined in labor market theories is essential to meaningful exploration of the registered nursing workforce.

Summary and Conclusions

This chapter has proposed a three-pronged approach to theoretical consideration of the nursing workforce, and the decisions of nurses to work in the nursing labor market for pay, or to spend time either in pursuit of leisure or in household production. Traditional economic labor market theory provides a framework through which the classical economic principles of supply, demand, and price are applied to the labor

market for nursing. As described in the foregoing discussions, the contributions of traditional price theory are not sufficient to fully describe the dynamics of the nursing workforce in which decisions about labor participation decisions are made. Thus, consideration of economic theory variants that more specifically examine the “labor-leisure tradeoff” as it applies to both unpartnered and family-unit oriented registered nurses is essential. Toward this end, the economic theories of the decision to work and household production are explicated and examples of their applicability to the nursing labor market are discussed. Collective consideration of these sub-perspectives in conjunction with traditional economic labor market theory may more fully address the dynamics unique to the labor market for registered nurses in the United States. These theoretical approaches, taken together, may provide a unique lens through which important extensions of current nursing labor market knowledge may be defined.

CHAPTER IV: RESEARCH DESIGN & METHODS

This dissertation research utilized secondary survey data from two large national research databases. Secondary analysis of cross-sectional research has historically been the method-of-choice in health services research (Davies, 1994). Data collection is efficient and methodologically simple involving the measurement of all variable(s) for all cases within a narrow time span so that the measurements may be viewed as contemporaneous. Essentially, data are collected at only one point in time, comparing different participants at different ages (Baltes, Reese, & Nesselroade, 1988; Creswell, 1998) to extract differences that may be due to age or time. One advantage of cross-sectional research is that it is more economical in terms of both time and cost than other designs. Data are collected over the course of days or weeks, rather than decades as might be required to collect the same data in a longitudinal design. For the participants, there is only one period of data collection, and the researcher is not faced with the difficulty and cost of maintaining contact with subjects over a long period of time.

Sources of Data & Sample

Understanding of the factors that may predict exits from nursing employment are essential to ensure that adequate numbers of highly qualified nurses are available to care for patients. Several large national data sources have been identified in previous nursing workforce and labor market research and each presents unique contributions to the study of nursing demographics and behavior. An ideal data set to measure exits of nurses from hospital employment would consist of a large, nationally representative sample of registered nurses that measures variables identified in the empirical, theoretical, and anecdotal literature as potentially important to the prediction of nursing

workforce inactivity. Such variables include measurements of gender, age, family status, nursing education, work environment and setting, salary, union representation, and work satisfaction. Additional market variables useful to the prediction of exits from hospital employment would include measures of median housing prices, urban influence, median population income, median RN income, hospital concentration, managed care penetration, and employment opportunities outside of nursing.

The National Sample Survey of the Population of Registered Nurses

The National Sample Survey of the Population of Registered Nurses (NSSRN) is the nation's most extensive and comprehensive source of statistics on all those with current licenses to practice nursing in the United States whether or not they are employed in nursing. It provides information on the estimated number of registered nurses (RNs) in the United States including their educational background and specialty areas, employment status including type of employment setting, position level, salaries, geographic distribution, and the nurses' personal characteristics including gender, racial/ethnic background, age, and family status (HRSA, 2006a). Reports and data files for eight studies, those conducted in September 1977, November 1980 and 1984, and March 1988, 1992 and 1996, 2000, and 2004 have been published and made available to those involved in health care planning and evaluation as well as to the public (HRSA, 2006a).

The NSSRN has been repeated on a quadrennial basis since its initiation in 1977 utilizing a weighted, alpha-nested cross-sectional sampling methodology that intentionally over-samples states with fewer RNs to achieve a sampling frame from which valid inferences may be made to the target population of all those with current

licenses in the United States. The NSSRN employs the use of a very large sample ($N = 35,724$ in 2004; (HRSA, 2005)) that minimizes sampling error, non-response error, and sampling bias contributing substantively to the validity of the data derived from its analysis. Face validity and content validity are established by criterion-referenced congruence with other national datasets such as the US Census Bureau Current Population Survey, and the Bureau of Health Professions Area Resource Files that demonstrate similar trends in the nursing workforce (Auerbach et al., 2000; Buerhaus & Auerbach, 1999; Buerhaus et al., 2000d; Sochalski, 2002a).

The development of a design for collecting data through sample surveys of RNs was initiated in July 1975. The survey design for the 2004 NSSRN follows that of the previous seven surveys. A probability sample is selected from a sampling frame compiled from files provided by the State Boards of Nursing in the 50 States and the District of Columbia. However, the sample frame and weighting procedures are designed to provide an unduplicated count of licensed RNs rather than of licenses, given that many RNs have licenses in more than one state. Sampling rates are set for each state based on considerations of statistical precision of the estimates and the costs involved in obtaining reliable national and state level estimates (HRSA, 2006a). The 2004 NSSRN eligible sample size of 56,917 licensed RNs yielded 50,691 eligible sampled RNs who were sent surveys, of whom 35,724 individual RNs responded for a response rate of 70.5 percent. The resulting database for the 2004 NSSRN is comprised of 35,635 individual licensed RNs from all 50 States and the District of Columbia (HRSA, 2005).

To the extent that samples are sufficiently large, relatively precise estimates of characteristics of the licensed RN population of the United States can be made because of

the underlying probability structure of the sample data. However, such estimates remain subject to sampling and nonsampling errors (HRSA, 2006). A probability sample such as the NSSRN (2004) is designed so that estimates of the magnitude of the sampling and nonsampling error can be computed from the sample data. Nonsampling error such as unusable responses to some questions and nonresponse from some nurses are, to a considerable extent, beyond the control of those who secondarily analyze data collected by others (HRSA, 2006).

When nonsampling errors are random, they tend to compensate for each other and do not cause bias in estimates of totals, percents, or averages (HRSA, 2006). However, random errors may introduce systematic bias and this bias must be managed through statistical estimation (HRSA, 2006). Systematic sampling errors are often due to systematic nonresponse by certain population cohorts may be a source of bias for sample estimates, particularly in the case of weighted samples such as the NSSRN. Such errors are not reduced by increasing the size of the sample, and the sample data generally do not provide clear indications of the magnitude of these errors (HRSA, 2006).

Nonresponse to the survey is one of the largest sources of bias in probability studies because respondents and nonrespondents may differ substantially on any number of characteristics being estimated by the survey (HRSA, 2006). Considerable effort was taken in the collection of NSSRN (2004) data to obtain a high response rate by respondent motivation and follow-up procedures. Nonrespondents were mailed additional surveys and telephone follow-up was also conducted to achieve the highest, most representative sample possible. While the overall response rate to this survey was 70.5 percent, state-level response rates ranged from 61.9 percent to 81.6 percent

except for the District of Columbia where the response rate (46.1 percent) was lower (HRSA, 2006).

Systematic sampling, which was used in this study, does not always permit unbiased estimation of the variability of survey estimates unless additional procedures are employed. In an effort to reduce nonresponse bias to the extent possible, direct estimates of sampling variance were obtained for a set of important variables for each State and for the United States using jackknife post-stratification estimation procedures with 20 replicates of the sampling frame (HRSA, 2006). Because of the complex and methodologically sound post-stratification techniques used in the weighting of the NSSRN data, these data are conventionally viewed as the most accurate and representative measures of the nursing workforce available to health services researchers in the United States (HRSA, 2006).

The 2004 National Sample Survey of Registered Nurses contains significant enhancements over previous iterations of the survey that make it uniquely capable of assisting in the measurement of the characteristics and behaviors of nurses who do not participate in the nursing labor market. The next section of this chapter will briefly summarize the primary components of the National Sample Survey of Registered Nurses.

The variables measured in the 2004 National Sample Survey of Registered Nurses are broadly categorized into sections that measure demographic and subjective variables. NSSRN measurement categories potentially important to measurement of exits from hospital nursing include: a) educational background and geographic location in which basic and advanced nursing education was received, b) professional certifications obtained since basic licensure, c) occupational background prior to nursing education, d)

current employment in nursing including geographic location, type and setting of primary and secondary nursing practice, percentage of time spent in direct care, e) salary, f) union representation, g) perception/satisfaction of current work environment, h) employment outside of nursing including reasons for choosing to work outside of nursing, i) reasons for mobility in nursing employment if a respondent had changed employment settings within the past year, j) geographic mobility if a respondent had moved from one geographic location to another in the past year, and k) demographics including gender, year of birth, ethnicity, marital status, number and age of children in the home, and total household income. As described in chapter two, a multitude of combinations of these variables have been used throughout the workforce literature to describe, explain, and predict varying facets of nursing labor market participation, but no retrievable study has empirically sought to utilize these variables to generate a statistical model that might predict or explain labor market inactivity among registered nurses.

The National Sample Survey of Registered Nurses provides useful data through which the current state of the registered nursing workforce may be described and inactivity in the nursing labor market may be predicted. Ordinary least squares and logistic or probit regression statistical modeling would be useful in measuring sociodemographic differences between nurses who work in nursing, nurses who work in non-nursing, and nurses who do not work at all. For such prediction to be valid, additional sociodemographic, market, and political variables must be measured. Additional independent variables that are useful to this analysis are found in the Bureau of Health Professions' Area Resource File.

Bureau of Health Professions' Area Resource File

The Bureau of Health Professions Area Resource File (ARF) is a county-unit database with over 6,000 data elements for each county in the U.S., with the exception of Alaska for which there is a state total, and certain independent cities which have been combined into their appropriate counties (Bureau of Health Professions, 2006). The purpose of the ARF is to summarize data from many sources into a single file to facilitate health analysis, thus different measurements are conducted in different years and the most recent availability of specific measures varies. The data elements in the ARF include in part: 1) county, state, and regional descriptors, 2) numbers of health care professionals by specialty, 3) health care facility data, 4) population descriptors, 5) numbers of health care professional education programs and graduation rates, 6) health care expenditure data, 7) economic data, and 8) environmental measures (Bureau of Health Professions, 2006).

Variables in the area resource file of primary interest to the prediction of nursing inactivity consist of those that quantify the numbers and concentration of registered nurses in a given health care service area. Consideration of socio-demographic data available in the area resource file including ethnicity, gender, median income levels, and urban influence may add criterion referenced validity to studies of nursing behavior. Additionally, consideration of variables that describe hospital concentration in specific metropolitan, urban, and rural communities, registered nurse concentration per population base, as well as managed care penetration in specific metropolitan and health care service areas may provide important independent variables important to understanding of the

socio-demographic, economic, and political factors that predict nursing labor market inactivity in socio-demographically different communities.

Description of Variables - Dependent Variables

Registered nurses not working in nursing. The primary dependent variable for this research is the registered nurse who is not engaged in nursing employment.

Examination of the population of nurses not working in nursing may provide a valuable window into the characteristics of RNs that are leaving the nursing workforce, the reasons behind that departure, and what it may take to retain them (Sochalski, 2002b).

Registered nurses not working in nursing employment were measured through question #19 of the NSSRN (2004) survey as a binary variable. Response categories for this variable were recoded from the original NSSRN coding strategy so that nurses who are not presently employed or self-employed in nursing were dummy-coded as “1” and those who are employed in nursing were coded “0”.

Registered nurses working in non-nursing employment. While the primary dependent variable of interest is the nurse who is not working in nursing, it is equally important to also understand the behaviors and decision-making process of nurses who work in non-nursing employment. Fottler and Widra (1995) found that nurses were more likely to return to nursing if they were currently out of the workforce, than if they had accepted employment outside of nursing (Fottler & Widra, 1995). This latter group appeared to be largely lost to the nursing profession. Analysis of this dependent variable was carried out primarily through analysis of the nurse’s binary-coded response to question #43 of the NSSRN (2004) survey which queries whether the nurse is currently

employed in an occupation other than nursing. A nurse who is working in non-nursing employment was coded as “1” and a nurse who is working in nursing was coded as “0”.

Registered nurses working in nursing. The majority of the existing nursing labor market literature specifically models registered nurses who work in nursing. While this is an important group to study, the main populations of interest in this research are nurses who work in non-nursing and those who do not work at all. Registered nurses who work in nursing will be used as a comparison variable from which to determine sociodemographic, market, and political differences between nurses who work in nursing and nurses who work in non-nursing or do not work at all. A nurse who is working in nursing will be coded as “0” in all analytic models in this study.

Description of Variables – Endogenous Variables

Predicted nursing market wage. Much conflict exists in the literature in relation to the effect salary has on nursing workforce participation. Link (1992) and Phillips (1995) have found that workforce participation is positively related to wage and others (Buerhaus, 1990, 1993) have found relatively small own-wage elasticity between registered nurse salary and workforce participation. Still other research (Bognanno et al., 1974; Link & Settle, 1985; Link & Settle, 1980; Sloan & Richupan, 1975) has suggested the existence of a backward bend to the labor supply curve in which nurses may actually *decrease* their workforce participation in response to increases in wage. Much of the research related to the effect of wage on labor participation of registered nurses is quite dated. Therefore, it is important that current empirical estimates aim to add further evidence to this debate. Chiha and Link (2003) and Brewer et al. (2006) argue that it is important to address the endogeneity of wages and the decision to work. The NSSRN

(2004) contains data on the RNs annual salary from primary and secondary employment and annual hours.

For the purposes of this research, calculation of the nursing market followed the convention employed by Link and Settle (2003) and Brewer et al. (2006) whereby the sample of RNs working in nursing was used to estimate an OLS regression model of the market wage. The calculation of the predicted wage is further discussed in the presentation of the analytic model that was used in this study.

Square of the predicted market wage. The issue of whether a quadratic relationship exists in the nursing labor market with respect to wage is unsettled in the literature. Some (Bognanno et al., 1974; Link & Settle, 1985; Link & Settle, 1980; Sloan & Richupan, 1975) have suggested a backward bend to the wage effect in that nurses with higher salaries may actually *decrease* their labor market participation. Brewer (2006) found this effect to be present in married registered nurses, but not in single nurses. Still others (Buerhaus, 1990; Buerhaus, 1993, 1995) have found no evidence of a backward bending wage effect. To add further evidence to this debate, this research included a squared wage variable to determine whether a backward bending wage function exists in these data. This variable was computed as the square of the predicted nursing market wage described above.

Description of Variables – Sociodemographic Independent Variables

Age. The average age of the registered nurse in the United States is 46.8 years (HRSA, 2005), more than a year older than the average age of 45.2 years in 2000 (Spratley et al., 2000), and more than four years greater than the average age of 42.3 years in 1996 (Moses, 1996). Nursing labor market research (Aiken et al., 2002;

Auerbach et al., 2000; Bowles & Candela, 2005; Buerhaus, 2001) has demonstrated a significant relationship between age and labor market participation with older nurses tending to move out of direct patient care roles. In this study, age was measured as a calculated variable derived by subtracting the nurse's year of birth (NSSRN question #65) from 2004 (the year in which the NSSRN data were collected) and were stratified as previously done by Chiha & Link (2003) and Brewer et al. (2006).

Gender. Continuing the history of nursing, relatively few men are licensed as registered nurses with a slight increase in 2004 from 5.4% in 2000 (Spratley et al., 2000) to 5.7% in 2004 (HRSA, 2005). While female nurses far outnumber their male counterparts, Laing & Rademaker have shown that male nurses tend to be more likely to participate in the labor market than female nurses. Gender was measured through NSSRN (2004) data as derived from question #64 of the 2004 survey and was dummy-coded as (0 = Female; 1 = Male).

Race/Ethnicity. Available data from the preliminary findings report of the 2004 NSSRN suggest that most (81.8%) registered nurses in the United States are white. Precise delineation of ethnicity in the current RN workforce is may prove difficult as 7.5% of those surveyed declined to specify their ethnic background. Of the nurses who indicated their ethnicity, however, 4.6% were Black, 3.3% were Asian, 1.8% were Hispanic, 0.4% were American Indian and 1.5% identified themselves as being from two or more ethnic backgrounds (HRSA, 2005). Previous research has found that nurses of ethnic backgrounds other than white are more likely to participate in the workforce, are more likely to work for a lower wage, and are likely to work in settings such as extended care that are often viewed as "undesirable" by their white colleagues (Chiha & Link,

2003). Ethnicity was measured using questions 66 and 67 of the 2004 NSSRN survey where question #66 specifically queries Hispanic or Latino Background and question #67 measures more broad based racial background. Race and ethnicity was then binary dummy coded with “other than white” equal to “1” and white equal to “0”.

Marital status. An overwhelming majority (70.5%) of registered nurses in the United States are married (HRSA, 2005). Ezrati (1987), Laing and Rademaker (1990), and Link & Settle (1980) have found that marital status is negatively associated with labor market participation. Marital status was measured through NSSRN (2004) data as derived from question #69 of the 2004 survey. Previous research has demonstrated that different explanatory models exist for married and unmarried registered nurses, therefore, all results were analyzed and presented separated by marital status.

Highest Educational Achievement. The most common initial educational preparation for nurses in the United States is the associate’s degree with 42.2% of the nursing workforce obtaining their basic nursing education at this level, while 30.5% of registered nurses are educated at the baccalaureate level (HRSA, 2005). Previous NSSRN data has demonstrated that nurses with higher levels of education are more likely to work in nursing, and when they do work, they work more hours. Specifically, nurses with a BSN degree worked more than those with an ADN degree and those whose education was at the graduate level worked more than both BSN and ADN educated nurses (Chiha & Link, 2003). However, more nurses currently in the nurse workforce are educated at the ADN level and those with graduate education are less likely to provide bedside care, thus providing an area for further research and possible policy direction. NSSRN data provide measures of both initial educational achievement and highest

educational achievement, though these two variables would likely be highly correlated if examined simultaneously. Chiha and Link (2003) and Brewer (2006) state that highest educational achievement is a preferable measure as this reflects the nurse's current earning power and potential work setting. The convention of dummy-coding of highest academic degree introduced by Brewer (2006) was used in this research. Data were derived from question 11 of the NSSRN where if the respondent indicated that s/he has completed additional academic degrees after initial registered nurse education, the response were coded as in Brewer (2006). If the nurse has not completed education beyond their initial educational preparation, the nurse's indication of their initial preparation was coded as the nurse's highest educational preparation.

Children. Over half of nurses (52.1%) have minor children living in the home, with 28.3% of these nurses having one or more children under the age of six (HRSA, 2005). Previous research (Ezrati, 1987; Link, 1992; Phillips, 1995; Yett, 1965; Yett, 1970) over three decades has consistently demonstrated that workforce participation is decreased when children in the home. Laing and Rademaker (1995) also found evidence of a "U-shaped" trend in workforce participation were the trough of the "U" corresponded to the presence of more children in the 2 – 11 year range, suggesting that nurses tend to interrupt their careers when their children were between two and eleven years of age, and then return to work. One-zero dummy variables were created to signify the presence of children in different age groups (all children less than 6, all children greater than 6, some greater and some less than six, and no children at home).

Other family income. Previous research has demonstrated a consistently negative relationship between household income and workforce participation (Brewer &

Nauenberg, 2003; Kovner & Brewer, 2001). Nurses whose household income is greater tend to work fewer hours, though they do generally participate in the nursing workforce to some degree. Chiha and Link (2003) argue that it is important to explicitly measure income from sources other than the RN's wage. The NSSRN (2004) data provide a measure of total household income as a categorical variable and RN salary from primary and secondary employment. Thus, other family income was calculated as the midpoint of the total household income categorical variable (Q71) minus the RNs income from primary (Q34) and secondary (Q40) employment.

Foreign-educated. Over half (50.2%) of foreign – educated registered nurses received their education in the Philippines, and 20.2% were educated in Canada. A much smaller portion of the foreign-educated nursing workforce received their nursing education in other countries such as the United Kingdom (8.4%), followed at a distance by Nigeria (2.3%), Ireland (1.5%), India (1.3%), Hong Kong (1.2%), Jamaica (1.1%), Israel (1.0%), and South Korea (1.0%) (HRSA, 2005). These foreign-educated nurses make up 25% of the nursing population in California, 9.6% of the nursing population in Florida, 9.3% of the nursing population in New York, 6.7% of the nursing population in Texas, and 6.1% of the nursing population in New Jersey (HRSA, 2005). Measurement of these foreign-educated nurses is important because previous research has demonstrated that, like ethnic nurses, foreign-educated nurses are more likely to participate in the workforce, are more likely to work for a lower wage, and are likely to work in settings such as extended care that are often viewed as “undesirable” by their domestically-educated colleagues (Chiha & Link, 2003; Kingma, 2001). A nurse who is “*foreign-educated*” was measured through question #4 of the NSSRN (2004) survey which queries

in which U.S. State, U.S. Territory, or foreign country was the nurse's initial educational program that qualified the nurse to sit for the RN licensure exam was located. Responses to this question other than U.S. states or the District of Columbia were considered to be representative of foreign nursing education and assumed the value of "1" for the purposes of analysis.

Student status. Chiha and Link (2003) and Brewer (2006) both found that a registered nurse's student status was a significant predictor of workforce participation. This finding is intuitively logical as a nurse who is currently participating in a part-time or full-time educational program, would have less time to devote to the labor market. Further, this finding can be important to the study of the nursing labor market in two ways. Nurses initially educated at the ADN level who seek baccalaureate education, are likely to contribute more hours in bedside care. However, those who seek education beyond the baccalaureate may be less likely to continue in direct patient care, thus exacerbating the shortage of nurses at the bedside. This trend requires further study. Student status in this research was dummy-coded following the convention in Brewer (2006) where part-time students and full-time student status were both dummy coded as "1" and compared to nurses who are not students. Data were derived from Q15 of the NSSRN (2004).

Years since graduation. Chiha and Link (2003) propose that a measure of the number of years since graduation from initial nursing preparation provides a proxy for earning potential for nurses who either do not work in nursing or have had lapses in nursing employment. This variable was included in the prediction of a nursing market wage discussed below which is included in the probit equations to adjust for bias in the

wage variable created by nurses who select not to participate in the nursing labor market. This variable was computed by subtracting the year the nurse completed basic nursing education (NSSRN Q3) from 2004, the year in which data were collected.

Previous health care employment. Chiha and Link (2003) and Brewer (2006) measured previous health care employment as a possible indicator of demonstrated attachment to the health professions. Previous health care employment is measured in the NSSRN (2004) as a categorical variable that queries whether the nurse was previously employed as a nursing assistant, licensed practical nurse, allied health technician, manager in a health care setting, clerk in a health care setting, or another health-related position. Following the convention used by Brewer (2006), each of these categories was tested as dummy-coded variables with no previous healthcare employment as a nursing assistant as the reference variable.

Independent Variables: Market Factors

Urban influence. Research by Cramer and colleagues (2004) found that remote rural counties had more hospital demand than metropolitan counties, likely due to increased skilled nursing days and longer lengths of stay resulting from more elderly and lesser insured populations in these areas. If Cramer's (2004) findings are to be believed, it is concerning that the greatest disparity between employed registered nurses and projected need for RN FTEs occurred in these most rural counties forcing rural hospitals to rely more heavily on lesser – educated licensed practical nurses and nursing assistants. While these conclusions seem to flow logically from the regression model proposed by Cramer et al. (2004), alternate explanations for increased rural demand are not considered by these or other authors. An area's geographic context has a significant effect on its

development. Economic opportunities accrue to a place by virtue of both its size and its access to larger economies (Economic Research Service, 2003). Access to larger economies which act as centers of information, communication, trade, and finance enables a smaller economy to connect to national and international marketplaces. These relationships among economies are basic concepts of the central place theory commonly studied in regional economics. Population size, urbanization, and access to larger communities are often crucial elements in research dependent on county-level data sets. To further such research, ERS developed a set of county-level urban influence categories that captures some differences in economic opportunities (Economic Research Service, 2003).

The 2003 Urban Influence Codes divide the 3,141 counties, county equivalents, and independent cities in the United States into 12 groups. Metropolitan counties are divided into two groups by the size of the metropolitan area – those in "large" areas with at least 1 million residents and those in "small" areas with fewer than 1 million residents. Micropolitan counties are divided into five groups by their adjacency to metro areas; adjacent to a large metro area, adjacent to a small metro area, and not adjacent to a metropolitan area. Rural counties are divided into five groups by their adjacency to metropolitan or micropolitan areas and whether or not they have their "own town" of at least 2,500 residents (Economic Research Service, 2003). For the purposes of this research, the 2003 Urban Influence Codes available in the ARF were collapsed into those that reflect counties that are metropolitan (UIC 1 and 2), micropolitan (UIC 3 – 7), and rural (UIC 8-12).

Hospital days per 1,000 population. Hospital length of stay is a measure the duration of a single episode of hospitalization. Inpatient days are calculated by subtracting day of admission from day of discharge, so persons entering and leaving a hospital on the same day have a length of stay of zero. A popular statistic associated with length of stay is the hospital days per 1,000 population which is a measurement of the number of days of hospital care used in a year. For the purposes of this study, hospital days per 1,000 population was calculated as the total number of annual hospital days in a county as reported in the 2003 ARF data divided by the county population multiplied by 1,000.

RNs per 1,000. Widespread shortages of registered nurses in health care have galvanized stakeholders and policy-makers to develop strategies to recruit and retain nursing labor. Shortages have been blamed on lagged wage increases (Friss, 1995), imperfectly competitive markets (Hirsch & Schumacher, 1995, 2005; Schumacher, 1997; Yett, 1970), educational bottlenecks (American Association of Colleges of Nursing, 1998), and faculty shortages (Kovner & Brewer, 2001), or problems with geographic distribution (Friss, 1995, Yett, 1975). In a review of the literature, Unruh & Fottler (2002), found research support for a “vicious spiral to the bottom” (p. 11) whereby the negative work environment characterized by work overload, poor nurse physical and mental health, and low job satisfaction increased nurse turnover and exits from the profession leading to progressively more widespread nursing shortages. This, in turn, creates a *more* negative work environment that increases turnover and withdrawal from the profession, thus further exacerbating the spiral into the depths of ever-increasing shortages of qualified nursing personnel (Unruh & Fottler, 2005). Evaluation of the

relative numbers of RNs per 1,000 population are important to ongoing monitoring of possible worsening or lessening of the current registered nursing shortage. For the purposes of this study, county-level measures of the number of registered nurses per 1,000 population were measured through the NSSRN (2004) weighted estimates of the registered nurse workforce. The total number of registered nurses in a county were divided by the county population and multiplied by 1,000 to yield the total number of registered nurses per 1,000.

Total MDs per 1,000 population. Brewer et al. (2006) offer that nurses may be considered complements to physicians, so that as demand for physicians rises, demand for RNs may also rise. Link (1992) found a positive relationship of physicians per 1,000 population with the RN wage, but not specifically with work RN work behavior. However, Brewer (2006) hypothesized a significant and positive relationship between MD concentration and demand for RNs in that greater numbers of physicians have been associated with higher health care utilization by patients, which was hypothesized to result in a similar increased demand for RNs. This effect was found to be significant for married registered nurses. The ARF data measures the total number of MDs per county unit and provides estimates of total county population. MD concentration per 1,000 population was derived as the total number of MDs per county in 2004 divided by the county's 2004 census population estimate multiplied by 1,000.

Managed care penetration. Buerhaus & Staiger (1996, 1997, 1999) and Spetz (1999) have suggested that slowed employment growth for registered nurses in the 1990's first became apparent in states with relatively high HMO enrollment and gradually spread throughout the market with the increased penetration of prospective

payment systems. These authors concluded that worsening labor market conditions for registered nurses are largely attributable to growth in managed care and that this trend is likely to continue until a state of equilibrium in prospective payment penetration is reached though rationale for this conclusion is not explicated by the authors. Further research has not been conducted by these or other authors to examine if these postulates relating to the effect of managed care have worsened or lessened now that a certain degree of equilibrium has been reached with managed care organizations existing in most, if not all, segments of the health care market. Brewer et al. (2006) used an index of HMO competition derived from the *InterStudy Competitive Edge part III Regional Market Analysis* data to measure the effect of managed care on RN labor market behavior. These data, however, are not publicly available for the purposes of dissertation research. Therefore, for the purposes of this research, managed care penetration was measured through the most recent data available in the BHP_r ARF specific to managed care presence in given markets. The ARF data include a measure of the HMO index of competition which is based on 1998 estimates. While the use of 1998 data is less than ideal, more recent data is not readily available and this measure, while dated, should provide reasonably reliable data through which to estimate the effect of managed care penetration on RN behavior.

Unemployment rate. Brewer et al. (2006) posit that a low unemployment rate may affect RN labor supply because this measure indicates employment opportunities for RNs and their spouses. They further suggest that employment rates may also affect the demand for RNs because the population's health may be worse in communities with high levels of unemployment, and thus, uninsurance. As cited in Brewer et al. (2006), Ruhm

(2003), suggests that unemployment may not translate into more RN job opportunities because those who are unemployed likely have a more difficult time paying for health care and are less likely to seek health care services. The empirical evidence in relation to the effect local unemployment has on RN employment is mixed (Brewer, 2006).

Buerhaus (1995) states that hospital nurse vacancy rates, and thus, employment opportunities, are inversely related to the unemployment rate. Seago (2001) found the opposite to be true. Dusansky et al. (1985) found the local unemployment rate to be unrelated to RN workforce participation.¹ For the purposes of this study, local unemployment rate was measured as derived from 2004 ARF data that measure the unemployment rate among those over the age of 16.

Percentage uninsured. Previous to the work of Brewer (2006), the relationship between the proportion of uninsured to RN employment has not been studied. Brewer found the percentage of uninsured as measured in the *InterStudy Competitive Edge part III Regional Market Analysis* data to be positively associated with married registered nurse work participation, but this effect was not significant with single nurses. Uninsured rates can be measured indirectly through the 2000 ARF data. The ARF measures “persons with health insurance by age category.” By collapsing these categories into a single variable measuring the total number of county residents with health insurance, one can infer the number of uninsured as the total county population minus the number of insured. This discrete number was then transformed into the percentage of uninsured residents by dividing this number of uninsured by the total county population.

¹ The findings of Buerhaus (1995), Seago (2001), and Dusansky (1985) are as cited in Brewer et al. (2006).

Independent Variables: Political Factors

State congressional liberalism measure. Liberalism has long been associated with greater levels of support for social policy initiatives important to nursing and health care. While liberalism measures have not been previously analyzed in relation to nursing workforce participation, this research aims to lend support or refute prior claims that political liberalism contributes to a more favorable nursing work environment. If such claims are true, a liberal political climate would logically encourage nurses to more readily participate in the nursing labor market. For the purposes of this analysis, congressional liberalism were measured by the 2004 average composite liberal scores for state delegations as measured by the politically neutral National Journal. The National Journal's scores, which have been compiled each year since 1981, are based on lawmakers' votes in three areas: economic policy, social policy, and foreign policy. These vote ratings rank members of Congress on how they vote relative to each other on a conservative-to-liberal scale in each chamber. The scores are determined by a computer-assisted calculation that ranks members from one end of the ideological spectrum to the other, based on key votes. The 2004 composite liberal scores for state delegations are presented in Appendix D. As categorized by the National Journal, a state was coded as having a liberal congressional measure if the congressional liberalism score was ≥ 60 , a centrist congressional measure if the liberalism score was between 40 – 59, and a conservative congressional measure if the liberalism score was < 40 .

Political affiliation of state Governor. While not previously measured in the retrievable literature relevant to nursing workforce participation, democratic government is anecdotally associated with support for social policy issues such as nursing. This

research aims to lend support for or refute this anecdotally held belief that a “left-of-center” government is supportive of social issues such as education, funding for health care access, and other interests important to nursing. For the purposes of this research, gubernatorial political affiliation was measured as the political party of the seated governor as of July 1, 2006. Data were obtained from the National Governor’s Association website and are presented in Appendix E.

Independent Variables: Sociodemographics of County

U.S. census region. A frequent organizational strategy in health policy analysis is to stratify national level analyses according to the U.S. census regions. The bureau recognizes four census regions within the United States, and further organizes them into nine divisions. These regions are groupings of states that subdivide the United States for the presentation of data. They should not be construed as bound together by any geographical, historical, or cultural concerns (U.S. Census Bureau, 2000). For the purposes of this research, data were stratified by the four U.S. Census regions (Northeast, South, Midwest, West). The states that make up each of these census regions are presented in Appendix C.

Percent of residents > 65 years of age. Counties with larger elderly populations logically utilize larger amounts of health care resources due to increased hospital demand likely due to increased skilled nursing days and longer lengths of stay. Consequently, these counties would be predicted to demand nursing labor at a greater rate than communities with lesser elderly populations. The percent of persons over 65 years of age was calculated as the number of persons 65 years and over as measured in 2004 Bureau of Health Professions Area Resource File divided by the total population of the county.

Analytical Model

As presented in Chapter 1, this dissertation research posed six specific aims. This study aimed to (1) describe registered nurses who are working in non-nursing employment and those who are not working at all compared with nurses who are working in nursing, (2) examine the reasons that registered nurses gave for not working in nursing in terms of sociodemographic, market, political, and geographic factors, (3) determine if registered nurses who work in non-nursing employment or do not work at all are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors, (4) determine if registered nurses who work in non-nursing (excluding those who do not work) are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors, (5) determine if registered nurses who work in non-nursing employment are different from those who do not work at all in terms of sociodemographic characteristics, political factors, and market factors, and (6) measure the relative importance of factors that affect the joint decision not to work in nursing and to work in non-nursing.

The descriptive data for not working in nursing, working in nonnursing, and not working were examined by sociodemographic, market, and political independent variables as were the reasons that nurses in this study gave for working in non-nursing or not working at all. Three analytic models were analyzed separately using a two-stage least squares approach: (1) working in nursing vs. not working in nursing, (2) working in non-nursing vs. working in nursing (excluding those who did not work at all), and (3) working in non-nursing vs. not working at all. Each of the analytic models were analyzed in separate univariate probit regression equations using a predicted market wage

to address the potential endogeneity of the wage variable and to predict a nursing market wage for those nurses who did not work in nursing. Finally, a bivariate probit regression equation was estimated to determine if working in non-nursing was contingent on a decision not to work in nursing.

Table 4.1 shows the specific hypothesized relationships between the independent variables and working in non-nursing or not working at all. Pearson correlations among the predictor variables were found to be weak to modest, suggesting that multicollinearity was not likely to be problematic. Tolerance statistics were also calculated which did not detect a high degree of multicollinearity between the independent variables.

Table 4.1: Specific Hypothesized Relationships

Potential Explanatory Variable (reference category in parentheses)		Registered Nurses Not Working in Any Employment		RNs Working in Non-Nursing Employment	
		Single	Married	Single	Married
Endogenous Variables					
	<i>Predicted nursing market wage</i>	—	—	—	—
	<i>Square of predicted nursing market wage</i>	—	—	—	—
Sociodemographic Variables					
	<i>Age</i>				
	<i>Age < 30 (reference category)</i>				
	<i>Age 30 - 44</i>	+	+	+	+
	<i>Age 45 - 64 (<30)</i>	+	+	+	+
	<i>Age 65+ (<25)</i>	+	+	+	+
	<i>Gender (Male = 1; Female = 0)</i>	—	—	—	—
	<i>Race/Ethnicity – (Other = 1; White = 0)</i>	—	—	—	—
	<i>Marital status (Married = 1; Not married = 0)</i>	—	—	—	—
	<i>Highest educational achievement</i>				
	<i>Diploma (reference category)</i>				
	<i>Associate Degree (Diploma)</i>	—	—	—	—
	<i>Baccalaureate (Diploma)</i>	+	+	+	+
	<i>Graduate (Diploma)</i>	—	—	+	+
	<i>Children (reference category = no children)</i>				
	<i>No children (reference category)</i>				
	<i>All < 6 years old (no children at home)</i>	+	+	—	—
	<i>All > 6 years old (no children at home)</i>	+	+	—	—
	<i>Some < 6; some > 6 (no children at home)</i>	+	+	—	—
	<i>Other family income (reference category = no other family income)</i>				
	<i>Under \$25K (no other family income)</i>	—	—	+	+
	<i>\$25 – 50K (no other family income)</i>	—	—	+	+
	<i>\$50 – 100K (no other family income)</i>	+	+	—	—
	<i>> \$100K (no other family income)</i>	+	+	—	—

	<i>Foreign-Educated</i> (foreign educated = 1; not foreign educated = 0)	—	—	—	—
	<i>Full/part-time student</i> (full or part time student = 1; not a student = 0)	—	—	—	—
	<i>Years since graduation</i>				
	0 – 5 years (reference category)				
	6 – 10 years (0 – 5 years)	+	+	+	+
	11 – 15 years (0 – 5 years)	+	+	+	+
	16 – 25 years (0 – 5 years)	+	+	+	+
	26+ years (0 – 5 years)	+	+	+	+
	<i>Previous health care employment</i> (reference category = no previous experience)				
	No previous health employment (reference category)				
	Nursing Assistant (None)	—	—	+	+
	LPN (None)	—	—	+	+
	Allied Health (None)	+	+	+	+
	Other health (None)	+	+	+	+
Market Factors					
	Hospital days per 1,000 population	—	—	—	—
	RNs per 1,000	—	—	—	—
	MDs per 1,000	—	—	—	—
	Managed Care Penetration (HMO IOC)	+	+	+	+
	Unemployment rate	—	—	+	+
	Percent uninsured	+	+	+	+
	<i>Urban Influence</i> (reference category = Metropolitan)				
	Micropolitan (Metropolitan)	—	—	—	—
	Rural (Metropolitan)	—	—	—	—
	Percent of residents > 65 years of age	—	—	—	—
	<i>U.S. census region</i> (reference category = Northeast)				
	Northeast (Reference category)				
	South (Northeast)	+	+	+	+
	Midwest (Northeast)	+	+	+	+
	West (Northeast)	+	+	+	+
Political Factors					
	<i>State congressional liberalism measure</i> (reference category = conservative)				
	Conservative (reference category)				
	Centrist (Conservative)	—	—	—	—
	Liberal (Conservative)	—	—	—	—
	<i>Political affiliation of state Governor</i>				
	Democratic = 1; Republican = 0	—	—	—	—

Data Analysis

To accomplish the aims of this study, data from the National Sample Survey of Registered Nurses were merged with the previously defined variables from the Bureau of Health Professions' Area Resource File. Data merge was conducted based on the county in which the registered nurse resides as described in the NSSRN and the final working

database was compiled in a STATA 9.0 data file in order to allow for weighted probability sample analysis. Political data relative to the congressional liberalism measure and gubernatorial political affiliation were then be added to the compiled data set. Data were cleaned and response codes were labeled as detailed in the NSSRN code book provided by the bureau of health professions except as previously defined.

Maximum likelihood estimation conducted by Chiha and Link (2003) and Brewer (2006) demonstrated different explanatory models for married and single female registered nurses necessitating separate reporting of these sub-populations, although Brewer (2006) studied only female nurses. While it is possible that male nurses may also be analytically different from female nurses, the literature suggests that the difference between married and single nurses is a more important factor to examine separately. Gender in this study was used as an independent variable to identify labor market differences between male and female registered nurses.

All analyses are reported as population weighted data using the NSSRN sampling weights in STATA 9.0 which were created by the Bureau of Health Professions to provide national estimates of the entire RN population. The weights that are assigned to each sample nurse may be interpreted as the number of nurses in the target population that the sample nurse represents (Sochalski, 2002a). Utilizing the NSSRN sampling methodology, the weight for each respondent RN is the reciprocal of the nurse's probability of selection in her/his priority state, adjusted to account for nonresponse. These weights accommodate all of the design features in the NSSRN sampling methodology, including the oversampling of high-minority states in 2000 and 2004 (HRSA, 2005; Spratley et al., 2000). The probability sample design of the survey permits

the computation of unbiased estimates of characteristics of the target population. These estimates are based on weights that reflect the complex design and compensate for the potential risk of nonresponse bias to the extent feasible (Sochalski, 2002a).

Descriptive Analysis

To accomplish the first aim of this study, descriptive statistics by county were utilized to describe the populations of registered nurses who are working in nursing, those who are not working at all, and those registered nurses who are working in non-nursing employment. Results are presented as cross-tabulated data by each of the independent variables previously defined. Differences between married and unmarried nurses for each of the independent variables were calculated using chi-square tests. Those employed in nursing, those employed in non-nursing, and those who were not employed at all were analyzed separately.

The National Sample of Registered Nurses (2004) queries respondents who do not work in nursing to determine the reasons for their absence from the nursing labor market. To accomplish the second aim of this study, these nurse-identified reasons for not working in nursing were collapsed into four main categories shown in Table 4.2 that more broadly describe the reasons that nurses in this study did not work in nursing.

Table 4.2: Categories of Nurses Not Working in Nursing

<i>Personal/Family</i>	<i>Retired</i>
Disability	Retirement
Illness	
Taking Care of Home or Family	
Went back to School	
<i>Personal/Career</i>	<i>Workplace</i>
Career Change	Burnout/Stressful Work Environment
Difficult to Find a Nursing Position	Inadequate Staffing
Inability to Practice Nursing on a Professional Level	Lack of Collaboration and/or Communication Between Health Care Professionals
Liability Concerns	Salaries Too Low/Better Pay Elsewhere

Physical Demands of the Job	Lack of Advancement Opportunities
Skills are Out of Date	Scheduling/Inconvenient Hours/Too Many Hours
Volunteering in Nursing	

Descriptive statistics were calculated based on these broad categories and cross-tabulations were calculated on each of the independent variables previously defined.

Initial analysis demonstrated that inclusion of nurses over the age of 65 may yield results that do not accurately reflect the population of nurses who might potentially participate in the nursing labor market. Therefore, all cross-tabulations were calculated both including and excluding nurses over the age of 65. All results are presented as population weighted statistics using the NSSRN (2004) weighting convention. Differences between married and unmarried nurses were calculated using chi square. As was done in the first research aim, those employed in nursing, those employed in non-nursing, and those who were not employed were analyzed and are reported separately.

Regression Models

The regression models were conducted using a two-stage least squares estimation technique. First, the sample of working nurses in the NSSRN (2004) was used to estimate a market wage for all nurses in the sample. This predicted wage variable was used to estimate a market wage for nurses who did not work at all and for whom wage data were missing. This approach where a market wage is predicted for all nurses in the sample controls for the potential endogeneity of the wage in nurses who do work. Second, the predicted wage was then included in the univariate and bivariate probit regression analyses to address the third through sixth aims of this study.

Table 4.3: Variables to Predict Registered Nurse Market Wages

Predictor (Reference Category in parentheses)	Data Source
<i>Median Wage: All Occupations</i>	NSSRN (2004)
<i>Percent of State RNs Unionized</i>	NSSRN (2004)
<i>MD's per 1,000 population</i>	ARF (2004) ²
<i>Gender (Male)</i>	NSSRN (2004)
<i>Race (White)</i>	NSSRN (2004)
<i>Marital Status (Married)</i>	NSSRN (2004)
<i>Education (Diploma)</i>	NSSRN (2004)
Associate degree	
Baccalaureate degree	
Graduate degree	
<i>Children (No children at home)</i>	NSSRN (2004)
All children < 6 years	
All children > 6 years	
Some < and some > 6 years	
<i>Years since graduation (5 years or less)</i>	NSSRN (2004)
6 – 10 years	
11 – 15 years	
16 – 25 years	
26 years or more	
<i>Foreign educated (foreign)</i>	NSSRN (2004)
<i>Student status (FT or PT student)</i>	NSSRN (2004)
<i>Region of employment (Northeast)</i>	NSSRN (2004)
South (Northeast)	
Midwest (Northeast)	
West (Northeast)	
Wage equation: $\hat{P}wage = B_0 + B_1X_{MdnWage} + B_2X_{UnionizedRNs} + B_3X_{MDs/1,000} + B_4X_{Gender} + B_6X_{race} + B_7X_{MaritalStatus} + B_{8_{1-4}}X_{HighEducation} + B_{9_{1-4}}X_{Children} + B_{10}X_{Foreign} + B_{11}X_{Student} + B_{12_{1-5}}X_{YrsSinceGrad} + B_{13_{1-4}}X_{Region} + \varepsilon$	

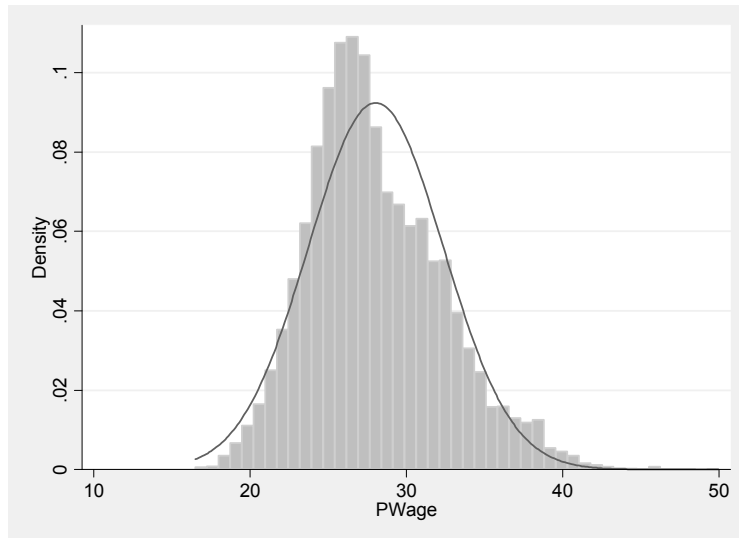
Prediction of market wages. Data from the population of working nurses in the NSSRN (2004) sample were used to estimate an OLS regression model to predict the nursing market wages for all nurses – whether working or not working. First, the raw hourly wage for each working RN was calculated by dividing the annual salary reported for the nurse's primary employment by the number of annual hours worked in that job. Independent variables previously identified by Brewer (2006) and Chiha and Link (2003) were included in this imputation (Table 4.3).

² The date in parentheses reflects the most current data available for this variable in the 2006 ARF file.

Because of the potential endogeneity of the predicted wage variable, two instrumental variables were selected to predict the market wage: (1) the median wage for all occupations, and (2) the percentage of nurses in the state who were unionized. These instrumental variables were selected because previous research has not shown these variables to be predictive of nursing labor market behavior, but they were expected to predict the endogenous wage variable. Exclusion tests were performed to verify that the instruments predicted the endogenous wage variable, but not whether nurses worked in nursing. A comparison of the R^2 was performed using a reduced form probit regression and joint F tests were calculated. The joint F-test was significant ($p < .001$) and Wald test of exogeneity showed that both median wage for all occupations and percent of unionized RNs were significant in the wage regression ($p < .001$) and were exogenous to not working in nursing and therefore appropriately excluded from the analytic model predicting not working in nursing ($p = .53$). However, tests for overidentifying restrictions of both variables tested together were significant ($p < .05$) meaning that the two proposed instrumental variables were not simultaneously valid as instruments in the analytical model. The instrumental variables were then tested individually. The median wage for all occupations was significant in the wage regression, but was found not to be a valid instrument. However, this variable was retained in the wage equation to adjust for cost of living and differences in regional prevailing wages. The percentage of unionized registered nurses in the state was found to be exogenous to the work/not-work equation ($p = .62$) and tests of overidentifying restrictions were acceptable ($p = .17$) showing that this variable was an appropriate instrument to predict the endogenous wage variable, and was appropriately excluded from the analytical model for not working in nursing.

Previous research (Brewer et al., 2006) has suggested that it is necessary to take the natural log of the predicted wage to normalize the wage distribution. Eleven outlier cases in which the predicted hourly wage was over \$250 were dropped resulting in a near normal distribution of the predicted wage as shown in Figure 4.1. Regressions were tested both with the logged predicted wage and with the non-logged wage variable and were not found to be different. Therefore, the non-logged wage was used in the final analytical models in this study due to the more direct interpretation offered by the non-logged wage.

Figure 4.1: Predicted hourly market wage distribution after removing outliers



Contribution and Interpretation of Probit Analysis

Chiha and Link (2003) and Brewer (2006) pose that a bivariate probit model with selection bias correction is best used to estimate nursing workforce participation, as bivariate probit is designed to model two different but potentially conditional outcomes. Probit analysis affords the ability to directly interpret marginal effects (ME) as the effect a given change in ME has on the likelihood of the dependent variable assuming the value

of “1”, when all other variables are held constant. The marginal effect is interpreted as the raw change in the probability of the dependent variable assuming a value of “1” (in this case, either not working at all, or working in non-nursing employment. For example, if the calculated marginal effect is -.25, this means that when the variable in question increases by one unit (from 0 to 1), the probability decreases by 25 percentage points. To further illustrate, (Brewer et al., 2006) found that the marginal effect that a single RN over the age of 65 would be in the workforce was equal to -.25. Thus, the probability of a registered nurse over the age of 65 participating in the workforce was 25 percentage points less than the predicted probability of a nurse under the age of 25 (the reference category) working in nursing. Given that the probability of a registered nurse under the age of 25 working was calculated as 0.6, the probability for a nurse over the age of 65 participating in the workforce dropped to .35 – a change of 42%.

Data exploration

After examination of the cross-tabulated data for general descriptive trends, and conformity to the limitations and assumptions of the probit analyses were assessed and determined to be present, chi square statistics were examined for overall model significance. As discussed in the descriptive analytic strategy, Brewer (2006) and Chiha and Link (2003) have previously demonstrated through maximum likelihood analysis that married and single registered nurses had different explanatory models, thus necessitating that married and single nurses be analyzed and reported separately. This analytic strategy was employed in this research as well, except that male nurses, excluded by Brewer et al. (2006) and Chiha and Link (2003) were included in this analysis.

Missing data. Missing data diagnostics demonstrated that 2,804 out of 35,635

cases in the NSSRN sample (7.8%) had at least some missing data. Of these cases with missing data, 2,110 (5.9%) had four or more missing observations. Race/Ethnicity had 2,554 cases with missing observations, 15 cases had missing gender data, 730 cases had missing data for marital status, and 854 cases were missing data specific to work experience prior to RN licensure. Because the sample was very large and the amount of missing data was relatively small, all cases with missing data were dropped from the regression models.

Estimation of the Univariate Probit Models

After ensuring conformity to the assumptions of probit analysis, the dependent variables were first examined separately in separate univariate probit analysis to determine significant sociodemographic, job, market, and political predictors of each dependent variable. Dependent variables were binary coded as “1 = Yes; 0 = No” in relation to whether the respondent was employed in non-nursing or was not employed. Model specification was assessed through examination of Akaike Information Criteria (AIC) to assess goodness of fit for each of the univariate probit models. AIC is an appropriate indication for fitting the model for these data given the large number of variables posed for study as it aids in the estimation of a parsimonious predictive model. A best-fitted model is estimated when the essential variables are present in the predictive equation but the equation does not include additional variables that do not add substantively to the model. The AIC value aids in this determination as it “penalizes” the model for each additional parameter that is included, thus requiring the development of a parsimonious model that maximizes the model’s power while minimizing the number of extraneous variables in the model. Variables to be included in the univariate probit

equations and sources of data to predict nurses who work in non-nursing and nurses who do not work at all are presented in Table 4.4.

Table 4.4: Variables Used in the Univariate and Bivariate Probit Equations¹

Potentially Explanatory Variables Predicting Work – Non-Work Behavior (reference category in parentheses)		Data Source
Endogenous Variables		
	<i>Predicted market wage</i>	Predicted from NSSRN (2004) and ARF Variables in Table 4.3
	<i>Square of predicted market wage</i>	Predicted from NSSRN (2004) and ARF Variables in Table 4.3
Sociodemographic Variables		
	<i>Age</i>	NSSRN (2004)
	<i>Age < 30 (reference category)</i>	
	<i>Age 30 - 44</i>	
	<i>Age 45 – 64 (<30)</i>	
	<i>Age 65+ (<25)</i>	
	<i>Gender (Male = 1; Female = 0)</i>	NSSRN (2004)
	<i>Race/Ethnicity – (Other = 1; White = 0)</i>	NSSRN (2004)
	<i>Marital status (Married = 1; Not married = 0)</i>	NSSRN (2004)
	<i>Highest educational achievement</i>	NSSRN (2004)
	<i>Diploma (reference category)</i>	
	<i>Associate Degree (Diploma)</i>	
	<i>Baccalaureate (Diploma)</i>	
	<i>Graduate (Diploma)</i>	
	<i>Children (reference category = no children)</i>	NSSRN (2004)
	<i>No children (reference category)</i>	
	<i>All < 6 years old (no children at home)</i>	
	<i>All > 6 years old (no children at home)</i>	
	<i>Some < 6; some > 6 (no children at home)</i>	
	<i>Other family income</i>	NSSRN (2004)
	<i>(reference category = no other family income)</i>	
	<i>No other family income (reference category)</i>	
	<i>Under \$25K (no other family income)</i>	
	<i>\$25 – 50K (no other family income)</i>	
	<i>\$50 – 100K (no other family income)</i>	
	<i>> \$100K (no other family income)</i>	
	<i>Foreign-Educated</i>	NSSRN (2004)
	<i>(foreign educated = 1; not foreign educated = 0)</i>	
	<i>Full/part-time student</i>	NSSRN (2004)
	<i>(full or part time student = 1; not a student = 0)</i>	
	<i>Years since graduation</i>	NSSRN (2004)
	<i>0 – 5 years (reference category)</i>	
	<i>6 – 10 years (0 – 5 years)</i>	
	<i>11 – 15 years (0 – 5 years)</i>	
	<i>16 – 25 years (0 – 5 years)</i>	
	<i>26+ years (0 – 5 years)</i>	
	<i>Previous health care employment</i>	NSSRN (2004)
	<i>(reference category = no previous experience)</i>	

	<i>No previous health employment (reference category)</i>	
	<i>Nursing Assistant (None)</i>	
	<i>LPN (None)</i>	
	<i>Allied Health (None)</i>	
	<i>Other health (None)</i>	
Market Factors		
	<i>Hospital days per 1,000 population</i>	ARF (2003)
	<i>RNs per 1,000</i>	ARF (2004)
	<i>MDs per 1,000</i>	ARF (2004)
	<i>Managed Care Penetration (HMO IOC)</i>	ARF (1998)
	<i>Unemployment rate</i>	ARF (2004)
	<i>Percent uninsured</i>	ARF (2000)
	<i>Urban Influence (reference category = Metropolitan)</i>	ARF (2003)
	<i>Micropolitan (Metropolitan)</i>	
	<i>Rural (Metropolitan)</i>	
	<i>Percent of residents > 65 years of age</i>	ARF (2003)
	<i>U.S. census region (reference category = Northeast)</i>	NSSRN (2004)
	<i>Northeast (Reference category)</i>	
	<i>South (Northeast)</i>	
	<i>Midwest (Northeast)</i>	
	<i>West (Northeast)</i>	
Political Factors		
	<i>State congressional liberalism measure (reference category = conservative)</i>	NJ (2004)
	<i>Conservative (reference category)</i>	
	<i>Centrist (Conservative)</i>	
	<i>Liberal (Conservative)</i>	
	<i>Political affiliation of state Governor</i>	NGA (2004)
	<i>Democratic = 1; Republican = 0</i>	
<p>¹Nurses who do not work and those who work in non-nursing employment were measured in separate univariate probit equations and results are presented separately. All analyses were separated by marital status.</p> <p>NSSRN – National Sample Survey of Registered Nurses ARF – Area Resource File NJ – National Journal Congressional Liberalism Ranking NGA – National Governor's Association</p>		
<p>Univariate Probit Work – Non-work Equations: (simplified equation): $\Pr(y_{nonwork} = 1 x) = \Phi(B_0 + B_1 X_{endogenous} + B_2 X_{sociodemographic} + B_3 X_{market} + B_4 X_{political} + \epsilon)$</p>		
<p>(Expanded equation): $\Pr(y_{DV} = 1 x) = \Phi(B_0 + B_{1-4} X_{age} + B_2 X_{gender} + B_3 X_{Race/Ethnicity} + B_4 X_{Married} + B_{5-4} X_{children} + B_{6-5} X_{OFI} + B_7 X_{ForeignEducated} + B_8 X_{student} + B_{9-5} X_{YrsSinceGrad} + B_{10} X_{PWage} + B_{11} X_{PWage^2} + B_{12-5} X_{PrevHealthEmp} + B_{13} X_{HospDays/1,000} + B_{14} X_{RNs/1,000} + B_{15} X_{MDs/1,000} + B_{16} X_{HMOIOC} + B_{17} X_{UnempRate} + B_{18} X_{\%Uninsured} + B_{19-3} X_{UIC} + B_{20} X_{Liberalism} + B_{21} X_{Governor} + B_{22} X_{\%Over65} + B_{23-4} X_{CensusRegion} + \epsilon)$</p>		

Three separate univariate probit models were estimated to determine if nurses who worked in nursing were different from those who did not work in nursing, if nurses who work in non-nursing were different from those who work in nursing (excluding those who do not work), and if nurses who work in non-nursing were different from those who did not work at all. Initially, all nurses were examined together in each of these analyses and then married and unmarried nurses were examined independent of one another. The resulting data separated by marital status were examined for overall significance and then individual variables were examined for significant contribution to the model.

Estimation of the bivariate probit model

While Brewer et al. (2006) used only variables that had been significant in the univariate equations in the final bivariate model, this study used a reduced form bivariate equation where all predictors were included in the bivariate model simultaneously. The final bivariate model was estimated as $\Pr(y_1 y_2 = 1 | x) = \Phi(B_0 + B_1 X_1 + B_2 X_2 + \varepsilon)$ where X_1 represents the work/not-work equation ($y_1=1; y_2=0$) and X_2 represents the simultaneous prediction of nurses who do not work in nursing and nurses who work in non-nursing ($y_1=1; y_2=1$). The dependent variables in the above equation are represented as y_1 (nurses who do not work) and y_2 (nurses who work in non-nursing employment). As previously stated, bivariate probit offers the ability to model two different, but potentially conditional outcomes (Brewer et al., 2006). If the estimated disturbance correlation of the bivariate model is significant ($p < .05$), then the two dependent variables (not working and working in non-nursing employment) are related and one can be presumed to be conditional on the other. Intuitively, this conditional

relationship would be that working in non-nursing employment is conditional on not working in nursing, although it is possible that the reverse relationship may be true. This distinction is important because those who are not working in nursing, but have not accepted non-nursing employment may potentially be incentivized to return to the bedside while those who are working in non-nursing employment are often lost to nursing (Fottler & Widra, 1995). Relative importance of factors important to not working in nursing and then conditional on not working in nursing, working in non-nursing will be determined. The results of the bivariate probit analyses are expressed both in terms of unstandardized beta coefficients and marginal effects.

Protection of Human Subjects

This project involves secondary analysis of publicly available data originally collected by the U.S. Department of Health and Human Services Bureau of Health Professions and meets the requirements for “exempt categories” of research [Category 4 - involving the collection of existing data that are publicly available] by the Human Research Protection Program at the University of California, San Francisco. No participant identifiers were maintained in the publicly available data files of either the NSSRN or the ARF. An exempt certification was received from the Office of Human Research Protection.

Conclusion

Examination of the population of nurses not working in nursing provides a valuable window into the characteristics of RNs that are leaving the nursing workforce, the reasons behind that departure, and what it may take to retain them (Sochalski, 2002b). Data available in the National Sample Survey of Registered Nurses and the Bureau of

Health Professions Area Resource File allow for analysis of factors that contribute to the decision-making process of registered nurses who do not work in nursing and those who choose to work in non-nursing employment. Results of these analyses are presented in chapter five and further discussed in chapter six of this dissertation.

CHAPTER V: RESULTS

This study examined patterns of labor market participation of registered nurses who were actively licensed as of March 1, 2003. The study examined data from the National Sample Survey of Registered Nurses (N = 35,635), a national probability survey, which are weighted to represent 2,909,357 registered nurses. Results will be presented in relation to the specific aims of this study. Previous research (Brewer et al., 2006; Chiha & Link, 2003) has demonstrated that distinct analytical models exist for married and single registered nurses. Inasmuch, these populations were analyzed and will be presented and discussed separately. Descriptive findings will be discussed first, and then analytical results will be presented. Finally, the results of the bivariate probit analyses will be examined and conclusions will be drawn whether working in non-nursing employment is contingent upon a decision to not participate in nursing employment.

DESCRIPTIVE FINDINGS

Specific Aim #1: Describe registered nurses who are working in non-nursing employment and those who are not working at all compared with nurses who are working in nursing.

Of the 2,909,357 registered nurses in the United States, 2,432,124 (83.7%) are actively employed in nursing which represents an increase from the 81.7% of nurses who were employed in nursing in 2000. While this increase in the percentage of nurses working in nursing is encouraging, still, 122,178 (4.2%) work in non-nursing employment and 352,313 (12.1%) do not work at all. While it may be logical to assume that a large number of these nurses who do not work at all may be of retirement age and

therefore disengaged from the labor market, further understanding of the sociodemographics of nurses who work in nursing compared to those who do not is important.

To achieve the first aim of this study, descriptive data were analyzed in terms of the independent variables defined in chapter four and nurses employed in nursing, those employed in non-nursing, and those who were not employed were all analyzed separately by marital status. Results are presented in tables simultaneously for the purposes of comparison. Chi square tests were performed to identify differences between married and unmarried nurses for each of the categorical independent variables and these findings are discussed below.

Age

Nurses are less likely to work in nursing as they age. Table 5.1 shows descriptive data for nurses who are employed in nursing, employed in non-nursing, and not employed by the age cohort of the nurse. Differences between married and unmarried nurses are noted in the table.

Table 5.1: Registered Nurse Employment Status by Age in 2004⁺

<i>Age of Nurse in 2003</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Age < 30</i>	133,394 ⁺ (91.45)	86,975 (95.13)	2,606 (1.79)	1,081 (1.18)	9,859 ⁺ (6.76)	3,373 (3.69)
<i>Age 30-44</i>	664,548 ⁺ (88.66)	189,829 (91.95)	20,417 (2.72)	6,618 (3.21)	64,568 ⁺ (8.61)	9,999 (4.84)
<i>Age 45-64</i>	920,324 ⁺ (82.77)	357,380 (85.93)	58,862 (5.29)	21,030 (5.06)	132,706 ⁺ (11.94)	37,499 (9.02)
<i>Age 65+</i>	42,726 ⁺ (39.91)	36,946 (47.08)	7,369 (6.88)	4,193 (5.34)	56,970 ⁺ (53.21)	37,337 (47.58)

(* p < .05; + p < .01)

Unmarried nurses under the age of 30 were most likely to work in nursing with 95.1 percent of this population actively engaged in nursing employment. As hypothesized, younger nurses were more likely to be employed in nursing and the percentage of nurses actively employed in nursing consistently decreased with increasing age. A striking contrast is seen when comparing the youngest age group to the oldest nurses in the sample. Of those nurses who were under age thirty, 91.5% of married nurses and 95.1% of unmarried nurses were employed in nursing. In contrast, only 47.1 percent of married and 39.9 percent of unmarried nurses over the age of 65 worked in nursing. When viewed by age stratification, those nurses who were unmarried are more likely to work, whether in nursing or in non-nursing.

While differences between married and unmarried nurses who work in non-nursing were not significant, it is notable that larger numbers of older nurses worked in non-nursing than younger nurses. Approximately five percent of married and unmarried nurses between the ages of 45 – 64 were employed in non-nursing compared to less than two percent of those who were less than 30 years of age. Consistent with the trend of older nurses working in non-nursing, older nurses were also more likely not to work at all. In this group of non-working nurses, marital status appears to be an important predictor in that married nurses are more likely not to work than those nurses who are not married. While the dramatic increase in the population of nurses over the age of 65 who do not work clearly reflects retirement in this age group, it is notable that this trend persists in nurses of non-retirement age as well. While 3.7 percent of unmarried and 6.8 percent of married nurses under the age of 30 do not work, these numbers increase to nine percent of unmarried and 11.9 percent of married nurses not working in the 45 – 64

year age group. This particular age group of nurses is important in this analysis because they are younger than the traditional retirement age and reflect the largest segment of the nursing workforce (Buerhaus, 2001).

Gender

With more men entering the nursing profession in recent years, it is important to understand differences in labor market behavior of male nurses. Descriptive findings by gender specific to nurses who work in nursing, non-nursing, and those who do not work are presented in Table 5.2. Differences by marital status are noted in the table.

Table 5.2: Registered Nurse Employment Status by Gender in 2004⁺

<i>Gender</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing [Unmarried] N (%)</i>	<i>Employed in Non- Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Male</i>	104,562 (88.53)	45,012 (89.10)	7,577 ⁺ (6.41)	1,621 (5.21)	5,972* (5.06)	3,888 (7.7)
<i>Female</i>	1,656,43 (82.98)	626,119 ⁺ (84.41)	81,680 (4.09)	31,302 (4.22)	258,132 ⁺ (12.93)	84,321 (15.37)

(* p < .05; + p < .01)

Table 5.2 shows that male nurses were more likely to work, whether in nursing or in non-nursing. Male nurses who worked in non-nursing were different by marital status with 6.4% of married male nurses and 5.2% unmarried male nurses employed in non-nursing, though male nurses who worked in nursing were not different by marital status. More unmarried female nurses were employed in nursing than married female nurses, though female nurses, whether married or not, were almost twice as likely as male nurses to not be employed at all.

Highest Educational Achievement

Entry-level education for registered nursing in the United States has long been debated and little research has examined whether differences in labor market behavior attributable to educational level are present. Table 5.3 presents descriptive findings relevant to the highest level of educational achievement of nurses who were employed in nursing, employed in non-nursing, and not employed.

Table 5.3: Registered Nurse Employment Status by Highest Educational Achievement in 2004⁺

<i>Highest Educational Achievement</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Diploma</i>	270,438 (72.89)	6,828 (72.26)	21,457 (5.78)	31,357 (4.96)	79,131 (21.33)	37,659 (22.78)
<i>Associate Degree</i>	651,160 ⁺ (87.71)	249,854 (89.47)	20,065 (2.70)	7,205 (2.58)	71,184 ⁺ (9.59)	22,208 (7.95)
<i>Baccalaureate Degree</i>	618,104 ⁺ (84.36)	231,394 (86.79)	32,296 (4.41)	11,949 (4.48)	82,301 ⁺ (11.23)	23,255 (8.72)
<i>Graduate Degree</i>	221,291 (82.50)	90,410 (83.14)	15,439 (5.76)	6,940 (6.38)	31,488 (11.74)	11,389 (10.47)

(* p < .05; + p < .01)

Unmarried nurses with an associate degree were most likely to be employed in nursing with 89.5% of this population actively engaged in nursing employment. While it would appear from Table 5.3 that diploma educated nurses, whether married or unmarried, were less likely to be employed in nursing than nurses of other levels of educational preparation, this effect may be more clearly explained in the context of age. Examination of highest educational achievement by age demonstrates that while 17.6 percent of all nurses are diploma-educated, nearly half (44.3%) were over age 65 and

therefore were more likely to be retired, thus providing a clearer context to these counterintuitive findings. Interestingly, associate and baccalaureate-educated nurses who were unmarried were more likely to work in nursing than similarly educated married nurses, though differences attributable to marital status were not seen in nurses with a graduate degree. Nurses with a graduate degree who did not work also were not different by marital status, though differences were apparent among nurses with lesser education who are more likely to work in direct care roles.

Age of Children at Home

Relationships between the age of children living in the nurse's home and employment in nursing, employment in non-nursing, and not working at all by the age of the children in the home are shown in Table 5.4. Significant relationships between married and unmarried nurses are noted in the table.

Table 5.4: Registered Nurse Employment Status by Age of Children at Home in 2004⁺

<i>Age of Children at Home</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>No Children at Home</i>	784,862 ⁺ (78.55)	486,088 (82.80)	54,191 ⁺ (5.42)	26,349 (4.49)	160,165 ⁺ (16.03)	74,650 (12.72)
<i>All Children Under Age 6</i>	260,799 ⁺ (86.98)	27,189 (84.43)	6,987 (2.33)	552 (1.71)	32,059 ⁺ (13.69)	4,461 (10.85)
<i>All Children Over Age 6</i>	574,166 ⁺ (88.16)	140,865 (90.77)	24,235 (3.72)	5,808 (3.74)	52,852 ⁺ (8.12)	8,519 (5.49)
<i>Children Under and Over Age 6</i>	141,165 ⁺ (86.06)	16,989 (95.54)	3,844 (2.34)	213 (1.2)	19,028 ⁺ (11.6)	579 (3.26)

(* p < .05; + p < .01)

Unmarried nurses with at least some children over the age of six were most likely to work in nursing with 95.6% of those who were unmarried with some children under

and some over the age of six actively engaged in nursing employment. This finding is surprising and is counter to the hypothesis that nurses with no children at home would be most likely to be working in nursing. This finding may be due to the fact that nurses with no children at home may be older and thus, may be approaching retirement age and therefore be less likely to be actively engaged in nursing. This trend toward older nurses disengaging from nursing employment was previously discussed in relation to Table 5.1.

Nurses with no children at home, whether married or unmarried were most likely to be engaged in non-nursing employment, though married nurses with no children were more likely to work in non-nursing than unmarried nurses. Nurses without children were also the most likely to not be employed at all with married nurses being more likely than unmarried nurses with no children to not be employed. Again, this effect is likely due to age with older nurses who have been previously demonstrated to be more likely to work outside of nursing having no children at home. Not surprisingly, those with or without children of any age at home who were married were the most likely to be not employed. These married nurses likely have the benefit of spousal income that was not present for unmarried nurses.

Race/Ethnicity:

Table 5.5 shows the descriptive data by racial or ethnic heritage for nurses who work in nursing, nurses who work in non-nursing, and those who do not work. Due to small numbers of minority nurses in specific ethnic categories, nurses were dichotomized as white or non-white.

Table 5.5: Registered Nurse Employment Status by Race/Ethnicity in 2004⁺

<i>Race/ Ethnicity</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>White</i>	1,577,831 ⁺ (82.80)	579,039 (84.10)	83,603 (4.39)	30,014 (4.36)	244,120 ⁺ (12.81)	79,462 (11.54)
<i>Other than White</i>	183,162 (87.72)	92,093 (88.77)	5,653 (2.71)	2,908 (2.80)	19,984 (9.57)	8,748 (8.43)

(* p < .05; + p < .01)

Non-white nurses were more likely to work in nursing than were their white counterparts with 87.7 - 88.8% of non-white nurses actively engaged in nursing employment. Married white nurses were most likely to not be employed at all with 12.8% of this population not working. White nurses were also more likely than non-white nurses to be employed outside of nursing with 4.4% of married and unmarried white nurses working in non-nursing employment.

U.S. vs Foreign Education

Nurses who work in nursing, non-nursing, and those who do not work are presented by whether they received their nursing education in the United States or in another country in Table 5.6.

Table 5.6: Registered Nurse Employment Status by US Education vs Foreign Education in 2004⁺

<i>Foreign- Educated</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>U.S. Educated</i>	1,692,949 ⁺ (83.03)	646,996 (84.60)	88,439 (4.34)	32,515 (4.25)	257,498 ⁺ (12.63)	85,232 (11.15)

<i>Foreign Educated</i>	68,044* (90.16)	24,135 (87.70)	817 (1.08)	407 (1.48)	6,606 (8.75)	2,977 (10.82)
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(* p < .05; + p < .01)

In line with the trend of non-white nurses being most likely to work in nursing, those who were educated outside of the United States were also more likely to work in nursing, less likely to be not employed, and less likely to be engaged in non-nursing employment than their U.S. educated counterparts. Notably, 4.3% of married and unmarried American-educated nurses were employed in non-nursing compared to 1.1 – 1.5% of married or unmarried nurses educated outside the United States.

While American-educated nurses who were unmarried were more likely to work in nursing than married nurses, the reverse was true for nurses educated outside the United States. In this foreign-educated population, those who were married (90.2%) were more likely to work in nursing than those who were unmarried (87.7%) though both of these rates are still higher than the rates of nursing employment for U.S. educated nurses (83.0% and 84.6% respectively for married and unmarried U.S. educated nurses). Similar differences between married and unmarried nurses were not seen in those who worked in non-nursing, though the lack of differences in this group may be attributable to the much smaller non-nursing sample.

Other Family Income

Other sources of income in the household are important in the decision-making process of registered nurses. Descriptive statistics by the amount of other income in the household are presented in Table 5.7. Differences by marital status for each of the salary levels are noted in the table.

Table 5.7: Registered Nurse Employment Status by Other Family Income in 2004⁺

<i>Other Family Income</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>No Other Family Income</i>	124,687 (95.15)	226,228 (96.01)	4,380 (3.34)	9,188 (3.90)	1,980 ⁺ (1.51)	201 (0.09)
<i>Under \$25,000</i>	423,697* (92.4)	330,066 (87.59)	14,955 (3.26)	13,874 (3.86)	19,899 ⁺ (4.34)	32,886 (8.73)
<i>\$25,001 - \$50,000</i>	504,944 ⁺ (86.84)	54,245 (59.73)	20,773* (3.57)	4,747 (5.23)	55,768 ⁺ (9.59)	31,820 (35.04)
<i>\$50,001 - \$100,000</i>	610,377 ⁺ (79.61)	56,622 (68.43)	34,954* (4.56)	4,103 (4.96)	121,334 ⁺ (15.83)	22,015 (26.61)
<i>Over \$100,000</i>	97,287 ⁺ (55.09)	3,970 (63.34)	14,194* (8.04)	1,011 (16.13)	65,122 ⁺ (36.87)	1,287 (20.53)

(* p < .05; + p < .01)

Not surprisingly and as hypothesized, an inverse relationship exists between the dollar amount of other family income and likelihood of nurses to be engaged in nursing employment, suggesting that nurses with higher levels of non-wage income are less likely to be employed in nursing. Specifically, 95.2% to 96.0% percent of married and of unmarried nurses with no other family income actively worked in nursing. By contrast, 55.1% of married and 63.3% of unmarried nurses who had other family income in excess of \$100,000 worked in nursing. Similarly, a direct relationship existed between other family income and the likelihood of not being employed at all with 1.5% of married and 0.1% of unmarried nurses with no other income not being employed compared to 36.9% of married and 20.5% of unmarried nurses whose family income exceeded \$100,000 not being employed.

Contrary to the hypothesized relationship, nurses were more likely to work *outside* of nursing as their levels of other family income increased with 8.0% of married and 16.1% of unmarried nurses with other family income in excess of \$100,000 actively engaged in non-nursing employment. These rates of non-nursing employment are contrasted with the 3.3% to 3.9% of married and unmarried nurses with no other family income who were engaged in non-nursing employment.

Student Status

Nurses who are enrolled in formal educational programs are an important population within nursing as these nurses may be aiming to either further their attachment to nursing or to remove themselves from the profession. Descriptive data specific to nurses who are enrolled full-time or part-time in a formal educational program are presented in Table 5.8.

Table 5.8: Registered Nurse Employment by Student Status in 2004⁺

<i>Student Status</i>	<i>Employed in Nursing – [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Student (FT or PT)</i>	127,816 (89.69)	62,913 (89.70)	5,596 (3.93)	3,328 (4.74)	9,103 (6.39)	3,898 (5.56)
<i>Not a Student</i>	1,633,177 ⁺ (82.83)	608,219 (84.23)	83,660 (4.24)	29,595 (4.10)	255,000 ⁺ (12.93)	84,312 (11.68)

(* p < .05; + p < .01)

Counter to the hypothesized relationship between student status and nursing employment, those nurses who were full-time or part-time students were more likely to be employed in nursing than nurses who were not students with 89.7% of married and unmarried students actively working in nursing. While these findings suggest that nurses participating in educational programs are more likely to work in nursing, others (Brewer

et al., 2006) have shown that these nurses work fewer hours and may not contribute to the workforce as much as non-students despite seemingly higher levels of engagement with nursing employment. Differences were small between nurses who were students with respect to non-nursing work. Those who worked in non-nursing did not differ by marital status. Those who were not students were more likely to not be employed; however this effect may be due to the age distribution of those who are not working. Logically, those who are retired or are approaching retirement age would likely not be engaged in educational pursuits.

Years since Graduation

Nurses who have been out of school the longest are logically more likely to disengage from the workforce as they age. Descriptive statistics measuring nursing employment patterns by the length of time since a nurse completed his or her basic program of nursing education are presented in Table 5.9. Differences attributable to marital status are noted in the table.

Table 5.9: Registered Nurse Employment Status by Years Since Graduation in 2004⁺

<i>Years Since Graduation</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>0 – 5 Years</i>	242,756* (94.28)	138,997 (95.90)	2,217 (0.86)	1,156 (0.80)	12,510 (4.86)	4,789 (3.30)
<i>6 – 10 Years</i>	303,833 (91.02)	94,731 (91.55)	8,364 (2.51)	3,397 (3.28)	21,616* (6.48)	5,349 (5.17)
<i>11 – 15 Years</i>	232,959 ⁺ (88.14)	78,537 (93.04)	7,340 (2.78)	1,700 (2.01)	24,004 ⁺ (9.08)	4,177 (4.95)
<i>16 – 25 Years</i>	492,053 ⁺	157,495	24,753	9,363	67,795 ⁺	14,626

	(84.17)	(86.78)	(4.23)	(5.16)	(11.6)	(8.06)
> 26 Years	489,390 (72.59)	201,370 (72.45)	46,581 (6.91)	17,305 (6.23)	138,176 (20.5)	59,265 (21.32)

(* p < .05; + p < .01)

Nursing employment consistently declined with years since graduation with 94.86% of nurses (aggregated married and unmarried) within five years of graduation actively working in nursing compared to 72.6% of those who had been out of school more than 25 years. While this decline in nursing participation may be due to aging, it is noteworthy that this trend does not persist when considering nurses who work in non-nursing employment. In this latter group, the rates of non-nursing employment actually *increase* with years since graduation from a basic program of nursing education with 6.7% of all nurses who have been out of school at least 25 years employed outside of nursing compared to 0.8% of those who had been out of school for less than five years.

Previous Health Care Employment

Experience in health care prior to initial RN licensure may be important to predicting long-term attachment to the nursing profession. Nurses who work in nursing, non-nursing, and those who do not work at all are presented in Table 5.10 in relation to healthcare experience prior to RN licensure.

Table 5.10: Registered Nurse Employment Status by Health Care Experience Prior to RN Licensure in 2004⁺

<i>Work Experience Before RN Licensure</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>No Prior Healthcare Experience</i>	820,597 (80.13)	296,049 (81.19)	48,171 (4.70)	16,470 (4.52)	155,315 (15.17)	52,103 (14.29)

<i>CNA Before RN Licensure</i>	474,928 ⁺ (84.89)	181,680 (87.64)	24,129 (4.31)	9,203 (4.44)	60,380 ⁺ (10.79)	16,426 (7.92)
<i>LPN Before RN Licensure</i>	197,937 (88.48)	84,614 (88.39)	4,453 (1.99)	2,549 (2.66)	21,310 (9.53)	8,562 (8.94)
<i>Allied Health Technician Before RN Licensure</i>	99,106 (87.39)	40,328 (88.50)	4,672 (4.12)	1,456 (3.20)	9,627 (8.49)	3,782 (8.30)
<i>Other Healthcare Experience before RN Licensure</i>	168,421 (86.94)	68,458 (86.62)	7,828 (4.04)	3,241 (4.10)	17,470 (9.02)	7,334 (9.28)

(* p < .05; + p < .01)

Nurses who had healthcare experience prior to receiving their initial RN licensure were more engaged in nursing than those who had no prior healthcare experience and those who were licensed as LPNs before RN licensure were most likely to participate in nursing employment with 88.5% of (aggregated married and unmarried) these nurses actively employed in nursing. Aggregated rates of nursing engagement among married and unmarried RNs who were CNAs (85.64%), allied health technicians (87.7%), and those with other healthcare experience (86.9%) were also higher than both the participation rate of nurses with no previous healthcare experience (80.4%), and the nursing employment participation rates for all nurses of 83.7%.

Less consistent patterns were seen among nurses who work in non-nursing employment. Consistent with the prevalence of nurses who were LPNs prior to RN licensure working in nursing, this population was also less likely to work in non-nursing employment than those who were CNAs, allied health technicians, and those who worked in other healthcare employment, or had no healthcare experience prior to initial RN licensure. This tendency of nurses who had been licensed as LPNs prior to RN licensure

to largely work in nursing is, in large part, explained by the fact that these nurses also tended to receive lesser educational preparation than other registered nurses with 66.5% of these nurses having an associate degree as their highest level of educational preparation compared to the entire population of registered nurses of whom 35.2% were educated at the associate degree level. Given that the associate degree prepares nurses well for bedside roles, but not as well for roles away from the bedside it is not surprising that this population of nurses tended to gravitate to the bedside.

Considerably more nurses who had no healthcare experience before RN licensure were out of the workforce entirely with 14.9% of these nurses not working. Nurses who had some level of healthcare experience before initial RN licensure were less likely to be out of the workforce entirely.

Urban Influence

Nurses living in metropolitan and micropolitan areas were less likely to work in nursing than those in rural settings with 80.6% of metropolitan nurses actively working in nursing compared to 85.8% of rural nurses. Similarly, rural nurses were less likely to be engaged in non-nursing employment and were less likely to be not employed than were metropolitan and micropolitan nurses. Differences attributable to marital status were very small when examining employment status by urban influence.

Congressional Liberalism

It has long been anecdotally stated that more liberal political environments may be more supportive of social policy issues such as nursing. Descriptive data relative to congressional liberalism as measured by the national journal is presented in Table 5.12.

While differences attributable to political climate are apparent in this table, no differences attributable to marital status were evidenced in this comparison.

Table 5.12: Registered Nurse Employment Status by Congressional Liberalism in 2004⁺

<i>Congressional Liberalism</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Most Conservative</i>	417,986 (81.35)	151,666 (82.17)	22,617 (4.51)	7,355 (4.13)	60,877 (13.14)	19,060 (12.70)
<i>Centrist</i>	909,466 (83.40)	333,357 (83.32)	44,190 (4.05)	14,474 (3.70)	136,824 (12.55)	42,878 (11.97)
<i>Most Liberal</i>	433,539 (84.99)	186,107 (85.28)	22,447 (4.30)	11,092 (4.96)	66,401 (10.71)	26,270 (10.76)

(* p < .05; + p < .01)

As hypothesized, nurses living in states with more liberal congressional leadership appear to be more likely to work in nursing than those living in the most conservative states, though this relationship was not specifically tested in this analysis. Unmarried registered nurses living in the most liberal states also appear to be the most likely to work in nursing with 85.3% of these nurses working in nursing, compared to 81.4% of married nursing living in the most conservative states. While these differences suggest that congressional liberalism may contribute to a nurse's likelihood to work in nursing, little pattern was seen among nurses working in non-nursing employment.

Gubernatorial Political Affiliation

A different measure of the relationship between political ideology and nursing labor market behavior can be found in examining nursing labor market behavior in relation to the political party affiliation of the governor of the state in which the nurse resides. Descriptive data are presented in Table 5.13 that show the relationships between

gubernatorial political affiliation and whether nurses in this study worked in nursing, non-nursing, or did not work at all.

Table 5.13: Registered Nurse Employment Status by Gubernatorial Political Affiliation in 2004⁺

<i>Gubernatorial Political Affiliation</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing [Unmarried] N (%)</i>	<i>Employed in Non-Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Republican</i>	704,223 (81.34)	256,654 (82.30)	36,774 (4.20)	12,738 (4.18)	114,236 (14.36)	35,051 (13.51)
<i>Democrat</i>	1,056,769 (84.93)	414,476 (84.97)	52,481 (4.17)	20,183 (4.14)	149,866 (10.90)	53,158 (10.20)

(* p < .05; + p < .01)

Given that nurses living in states with more liberal congressional ideologies were more likely to work in nursing, it is not surprising that this same pattern was true for nurses living in states with a democratic governor with 84.9% of nurses in democratic-led states working in nursing compared to 81.3% of married nurses in republican-led states, though these differences were small. Few differences are seen between democratic and republican states with regard to nurses working in non-nursing employment and no differences are seen that might be attributable to the marital status of the nurse. Nurses in republican-led states were more likely to not work at all with 13.5% to 14.4% of unmarried and married nurses in republican states being out of the workforce altogether compared to ten percent of unmarried nurses in democratic states who were not employed at all.

U.S. Census Region

Geographical variations in nursing behavior in the marketplace can be demonstrated through examination of the U.S. census region in which a nurse resides.

Descriptive data showing registered nurse employment in the Northeastern, Southern, Midwestern, and Western census regions is presented in Table 5.14.

Table 5.14: Registered Nurse Employment Status by U.S. Census Region in 2004⁺

<i>U.S. Census Region</i>	<i>Employed in Nursing [Married] N (%)</i>	<i>Employed in Nursing – [Unmarried] N (%)</i>	<i>Employed in Non- Nursing [Married] N (%)</i>	<i>Employed in Non-Nursing [Unmarried] N (%)</i>	<i>Not Employed [Married] N (%)</i>	<i>Not Employed [Unmarried] N (%)</i>
<i>Northeast</i>	381,521 (80.95)	148,173 (80.43)	23,319* (4.95)	11,326 (6.15)	66,456 (14.10)	24,725 (13.42)
<i>South</i>	601,449 ⁺ (84.05)	224,761 (86.79)	27,802 (3.89)	8,300 (3.21)	86,320 ⁺ (12.06)	25,910 (10.01)
<i>Midwest</i>	465,339 (84.64)	153,739 (85.74)	22,534 (4.10)	6,891 (3.84)	61,881 (11.26)	18,673 (10.41)
<i>West</i>	312,682 ⁺ (82.78)	144,456 (85.09)	15,600 (4.13)	6,403 (3.77)	49,445 ⁺ (13.09)	18,899 (11.13)

(* $p < .05$; + $p < .01$)

While no explicit relationship was hypothesized between census region of residence and likelihood to work in nursing, nurses in the Northeast were less likely to work in nursing with approximately eighty percent of Northeastern nurses working in nursing compared to 84.1 to 86.8% percent of married and unmarried Southern nurses actively engaged in nursing. Interestingly, this population that was the most likely to not work in nursing was also the population that was the most likely to work in non-nursing employment with 6.2% of unmarried nurses in the Northeast engaged in non-nursing employment. This trend did not persist as clearly through other census regions though Southern nurses, who were most likely to work *in* nursing, were also the group who were the least likely work in non-nursing and were also least likely to not be employed at all with just 10.0% of unmarried and 12.1% of married Southern nurses being out of the workforce entirely.

Specific Aim #2: Examine the reasons that registered nurses gave for not working in nursing in terms of sociodemographic, market, and political, factors.

Of the 2,909,357 registered nurses who are licensed to practice in the United States, 122,178 (4.2%) work in non-nursing employment and 352,313 (12.1%) do not work at all. While it may be logical to assume that a large number of these nurses who do not work at all may be of retirement age and therefore disengaged from the labor market, further understanding of the sociodemographics of nurses who work in nursing compared to those who do not is important. Nurses who were engaged in non-nursing employment were employed in a diverse range of employment options as shown in Table 5.15.

Table 5.15: Type of Employment outside of Nursing

	<i>N</i>	<i>%</i>
<i>Accounting, bookkeeping, or computer services</i>	8,334	3.8
<i>Administration or Management</i>	34,130	15.4
<i>Administrative or clerical support</i>	12,686	5.7
<i>Artist/Horticulturist</i>	4,818	2.2
<i>Consultant or legal work</i>	12,715	5.7
<i>Elementary or secondary education</i>	9,634	4.4
<i>Faculty or instructor</i>	7,490	3.4
<i>Farming or animal husbandry</i>	6,005	2.7
<i>Government</i>	4,977	2.2
<i>Health related service provider</i>	35,028	15.8
<i>Homemaker or childcare</i>	5,098	2.3
<i>Pharmaceutical services or medical hardware services</i>	9,344	4.2
<i>Real estate, financial, or insurance services</i>	12,727	5.7
<i>Recreation services</i>	7,832	3.5
<i>Religious or musical services</i>	7,168	3.2
<i>Retail sales or services</i>	32,900	14.9
<i>Other</i>	10,486	4.7
<i>Total</i>	221,373	100.0

It is noteworthy that a decided minority of these nurses remained in any healthcare related field with 15.8% working as another health service provider and 4.2% working in pharmaceutical sales. All other employment categories described by nurses working in non-nursing employment were decidedly unrelated to nursing including such employment categories as accounting, elementary or secondary education, and retail sales.

Nurses choose not to work in nursing for many reasons that can be broadly categorized into personal reasons related to the personal concerns or family obligations, not being attracted to a career in nursing, workplace concerns, and retirement. These broad categories are more specifically described in the table below.

Table 5:16: Categories of Nurses Not Working in Nursing

<i>Personal/Family</i>	<i>Retired</i>
Disability	Retirement
Illness	
Taking Care of Home or Family	
Went back to School	
<i>Personal/Career</i>	<i>Workplace</i>
Career Change	Burnout/Stressful Work Environment
Difficulty to Find a Nursing Position	Inadequate Staffing
Inability to Practice Nursing on a Professional Level	Lack of Collaboration and/or Communication Between Health Care Professionals
Liability Concerns	Salaries Too Low/Better Pay Elsewhere
Physical Demands of the Job	Lack of Advancement Opportunities
Skills are Out of Date	Scheduling/Inconvenient Hours/Too Many Hours
Volunteering in Nursing	

Among nurses who were not employed at all, 51,106 (16.7%) cited personal or family reasons, 26,398 (8.6%) cited career-related reasons, 78,394 (25.6%) were not working for reasons related to the nursing workplace, and 149,530 (48.8%) of these nurses were retired. While nearly half of this population was retired and unlikely to re-enter the labor market, 155,898 (50.9%) of them were out of the workforce for reasons

other than employment and therefore, given the right conditions, might consider returning to nursing.

When one examines the population of nurses who are working outside of nursing, even more nurses are out of the nursing labor market for reasons related to the profession that could possibly be addressed by well-designed policy initiatives. Of the nurses who were working in non-nursing employment, 4,670 (4.1%) cited personal or family reasons, 22,652 (19.7%) cited career-related reasons, 73,882 (64.1%) had chosen non-nursing employment because of discontent with the nursing workplace, and 13,561 (11.8%) had retired from nursing employment.

While this latter group that was retired from nursing likely was engaged in casual and/or part-time employment, considering those who were not employed at all and those who were employed in non-nursing, there exist potentially 257,102 currently licensed registered nurses who have not yet retired, yet do not work in nursing. Given commonly accepted statistics that approximately 120,000 registered nurse positions are unfilled in the United States, if just half of the 257,102 nurses who are not working in nursing would return to the bedside, every one of these vacant positions would be filled. Further exploration, however, is needed to examine the likelihood of these nurses returning to nursing and the changes in the profession that might be needed to fill these vacant nursing positions.

To achieve the second aim of this study, reasons that nurses work in non-nursing or do not work at all were examined in terms of sociodemographic, market, and political factors. The reasons nurses do not work in nursing are categorized for the purposes of descriptive presentation as family concerns, career-related reasons, retirement, and

workplace concerns. Those citing family, career, or retirement reasons for absence from the nursing workforce were added together to create an aggregate category of nurses who work in non-nursing or do not work at all due to reasons that are not attributable to the nursing workplace. Chi-square analysis of the workplace vs. non-workplace reasons for working in non-nursing or not working at all to determine if the workplace is a significant factor in currently licensed nurses not working in nursing.

When examining nurses who do not work in nursing, one must consider the heavy influence of the population of nurses who are over 65 years of age and have retired from the profession, yet remain actively licensed. Thus, examination of these non-working nurses will be conducted both including the effect of these older nurses and excluding nurses over the age of 65.

Nurses Not Working in Nursing by Age

Nurses who are older naturally begin to disengage from the labor market as they approach retirement age. Table 5.17 presents the reasons that nurses in this study cited for not working in nursing by age cohort. Differences between workplace-related and non-workplace reasons for not working in nursing are noted in the table.

Table 5.17: Registered Nurse Reasons Not Working in Nursing by Age in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Age < 30</i>	66	2.9	140	6.1	0	0.0	206	9.0	2,079 ⁺	91.0
<i>Age 30 - 44</i>	1,871	7.1	3,273	12.4	340	1.3	5,484	20.9	20,833 ⁺	79.1
<i>Age 45 - 64</i>	2,318	3.0	17,304	22.2	8,262	10.6	27,884	36.2	49,659 ⁺	63.8
<i>Age 65+</i>	827	3.4	1,936	23.3	4,668	56.2	7,431 ⁺	84.2	1,311	15.8
<i>Total*</i>	4,537	4.2	22,652	19.8	13,271	11.6	40,460	35.6	73,882 ⁺	64.4
<i>Not Employed</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Age < 30</i>	2,874	36.4	436	5.5	0	0.0	3310	41.9	4,588 ⁺	58.1
<i>Age 30 - 44</i>	23,039	40.1	6,131	10.7	0	0.0	27,610	48.0	29,170*	50.8
<i>Age 45 - 64</i>	21,381	14.3	17,968	12.1	66,679	44.7	106,028 ⁺	71.3	42,873	28.7

<i>Age 65+</i>	3,749	4.15	1,672	1.9	81,384	90.1	86,805 ⁺	96.6	3,025	3.4
<i>Total*</i>	51,043	16.7	26,207	8.6	148,769	48.8	226,019 ⁺	74.4	78,096	25.6

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

The nursing workplace was the key reason that nurses worked in non-nursing employment for all ages examined in this study except those over the age of 65 who were largely retired. Among nurses who did not work at all, the workplace was the key reason nurses under the age of 45 did not work in nursing, while older nurses were out of the workforce for non-workplace reasons. A disturbing trend is seen when examining reasons that younger nurses do not work in nursing. Among nurses under the age of 30 who work in non-nursing employment, 91% of these nurses cited workplace concerns as the reason they did not work in nursing. This trend continued, albeit to a lesser extent with slightly older nurses with 79.1% of nurses between the ages of 30 and 44 and 63.8% of nurses between the ages of 45 and 64 who worked in non-nursing employment choosing not to work in nursing because of concerns with the nursing work environment.

Among nurses over the age of 65 who do not work at all, over 90% of them consider themselves to be retired. It is interesting, however, that a large number of those younger than the conventionally accepted retirement age of sixty-five also cited retirement as a reason for not working in nursing. Specifically, 44.7% of non-working nurses and 10.6% of those working in non-nursing who were between the ages of 45 and 64 stated that they were retired from the nursing profession.

Nurses Not Working in Nursing by Gender

Nurses differ by gender in relation to the reasons they do not work in nursing. Specific reasons that male and female nurses worked in non-nursing or did not work at all

are presented in Table 5.18. Differences between workplace-related and non-workplace reasons for not working in nursing are noted in the table.

Table 5.18: Registered Nurse Reason Not Working in Nursing by Gender in 2004[†]

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Male</i>	139	1.7	1,349	16.1	437	5.2	1,925	23.3	6,410 ⁺	76.7
<i>Female</i>	4,530	4.2	21,302	19.9	13,123	12.3	38,955	36.8	67,471 ⁺	63.2
<i>Total*</i>	4,670	4.1	22,652	19.7	13,561	11.8	40,883	35.9	73,882 ⁺	64.1
<i>Not Employed (Including Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Male</i>	987	14.7	1,306	19.4	2,995	44.6	5,288 ⁺	78.7	1,435	21.3
<i>Female</i>	50,096	16.7	25,092	8.4	146,535	48.9	224,718 ⁺	74.3	76,959	25.7
<i>Total*</i>	51,106	16.7	26,398	8.6	149,530	48.8	227,034 ⁺	74.4	78,394	25.6
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Male</i>	987	16.5	1,306	21.9	2,240	37.5	4,533 ⁺	76.0	1,435	24.0
<i>Female</i>	46,347	22.1	23,420	11.2	65,907	31.4	135,674 ⁺	64.8	73,935	35.2
<i>Total*</i>	47,334	21.9	24,726	11.5	68,146	31.6	140,206 ⁺	65.1	75,370	34.9

(* $p < .05$; + $p < .01$; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

As was the case with age, the workplace was a key reason that nurses in this study worked in non-nursing employment, though male nurses were more likely to cite workplace reasons for working in non-nursing than female nurses. While specific relationships were not tested, female nurses were more likely than male nurses to cite family obligations, career-related, and retirement reasons for working in non-nursing.

Among nurses who were not employed, the nursing workplace was not as important a factor as was seen in nurses who work in non-nursing, likely due to the prevalence of retired nurses among those who are not employed at all. However, in examining nurses who are retired, an interesting paradox is seen. When nurses over the

age of 65 were included in the sample female nurses were more likely to be retired, though this relationship flipped when older nurses were excluded.

Nurses Not Working in Nursing by Marital Status

The workplace continued to be a primary reason that nurses chose to work in non-nursing, whether the nurse was married or not married. Reasons for not being employed in nursing by marital status are shown in Table 5.19.

Table 5.19: Registered Nurse Reasons Not Working in Nursing by Marital Status in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Married</i>	4,087	4.8	16,574	19.6	9,062	10.7	29,714	35.5	54,485 ⁺	64.5
<i>Not Married</i>	583	1.9	5,969	19.6	4,402	14.5	10,954	36.6	19,272 ⁺	63.4
<i>Total*</i>	4,670	4.1	22,543	19.6	13,463	11.7	40,676	35.8	73,757 ⁺	64.2
<i>Not Employed (Including Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Married</i>	42,572	18.5	20,480	8.9	102,126	44.3	165,178 ⁺	71.9	64,657	28.1
<i>Not Married</i>	8,154	11.0	5,650	7.7	46,491	62.9	60,295 ⁺	81.9	13,335	18.1
<i>Total*</i>	50,726	16.7	26,131	8.6	148,616	48.8	225,473 ⁺	74.4	77,993	25.6
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Married</i>	40,658	23.1	19,441	11.0	52,930	30.0	113,029 ⁺	64.2	63,108	35.8
<i>Not Married</i>	6,392	16.8	5,017	13.2	14,799	38.9	26,208 ⁺	60.8	11,861	31.2
<i>Total*</i>	47,049	21.9	24,458	11.4	67,729	31.6	139,236 ⁺	65.0	74,968	35.0

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Both married and unmarried nurses cited workplace concerns as the primary reason they worked in non-nursing with nearly two-thirds of married and unmarried nurses working in non-nursing because of concerns with the nursing workplace. Again, among nurses who do not work at all, retirement is a much larger factor and nurses were

more likely to cite non-workplace reasons for not working. While the workplace was not as important a factor for these non-working nurses, it is notable that (excluding nurses over age 65) nearly a third of nurses who did not work cited the nursing workplace as the primary reason for their absence from the workplace.

Among nurses who did not work, 23.1 percent of those who were married cited family reasons for not working in nursing, and 97.6% of these nurses were female.

Nurses who were married were more likely to cite personal or family reasons, career-related reasons, or workplace concerns for not working in nursing than were unmarried nurses and these trends persisted whether nurses over the age of 65 were included or excluded from the sample. However, the reverse was true in relation to retirement.

Nurses who were not married were much more likely to cite retirement as a reason for not working in nursing than were married nurses. This trend persisted whether nurses over the age of 65 were included or excluded from the sample, though, as would be expected, this trend was much more pronounced with this population included.

Nurses Not Working in Nursing by Highest Level of Educational Preparation

When examining nurses' reasons for working in non-nursing by highest level of educational preparation, it is noteworthy that baccalaureate-educated nurses and associate-degreed nurses were very similar to each other and were quite different from nurses with a diploma education. Reasons that nurses did not work in nursing by the nurse's highest level of educational preparation are presented in Table 5.20. Differences between workplace and non-workplace-related reasons are noted in the table.

Table 5.20: Registered Nurse Reasons Not Working in Nursing by Highest Educational Preparation in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Associate Degree</i>	1,062	4.2	4,157	16.3	2,127	8.33	7,346	28.9	18,160 ⁺	71.1
<i>Diploma</i>	1,226	4.7	5,350	20.4	4,815	18.4	11,391	44.1	14,461 ⁺	55.9
<i>Baccalaureate</i>	1,999	4.8	6,962	16.7	3,388	8.0	12,349	29.8	29,259 ⁺	70.2
<i>Graduate</i>	375	1.8	5,470	26	3,281	15	416	44.6	11,426 ⁺	55.4
<i>Total*</i>	4,662	4.1	21,940	19.2	13,561	11.9	39,713	35.6	73,485 ⁺	64.4
<i>Not Employed (Including Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Associate Degree</i>	14,912	20.2	8,614	11.7	24,351	32.9	47,877 ⁺	64.7	26,077	35.3
<i>Diploma</i>	10,079	9.9	7,105	7.0	69,910	68.7	87,094 ⁺	85.8	14,444	14.2
<i>Baccalaureate</i>	20,041	22.0	7,009	7.7	33,599	36.8	60,649 ⁺	65.7	30,351	33.3
<i>Graduate</i>	5,631	15.1	3,417	9.2	20,875	56.0	29,923 ⁺	81.3	6,960	18.7
<i>Total*</i>	50,664	16.7	26,147	8.6	148,735	49.0	225,546 ⁺	74.4	77,831	25.6
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Associate Degree</i>	14,231	22.3	8,186	12.8	15,983	25.0	38,400 ⁺	60.1	25,444	39.9
<i>Diploma</i>	8,059	14.9	6,315	11.7	26,346	48.7	40,720 ⁺	75.3	13,377	24.7
<i>Baccalaureate</i>	19,430	26.9	6,817	9.4	16,052	22.2	42,299 ⁺	58.8	29,735	41.2
<i>Graduate</i>	5,335	21.7	3,156	12.8	9,611	39.1	18,102 ⁺	74.0	6,392	26.0
<i>Total*</i>	47,055	21.9	24,474	11.4	67,992	31.7	139,521 ⁺	65.1	74,948	34.9

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Again, the workplace remained the key reason that nurses worked in non-nursing, regardless of educational level. It is notable that associate-degreed and baccalaureate-educated nurses were quite similar in this regard given the body of literature that questions whether diploma-educated, associate-degreed, and baccalaureate-prepared nurses are different from one another in regard to their attachment to the direct patient care settings (Aiken et al., 2002; Auerbach et al., 2000; Chiha & Link, 2003; Link, 1992). As demonstrated in Table 5.20, nurses with post-baccalaureate degrees were more likely than nurses with lesser education to cite career-related reasons and were far less likely to cite family obligations for working in non-nursing. This is intuitively due to the fact that

nurses with post-baccalaureate education are likely to be older than lesser educated nurses and less likely to have child-rearing concerns, but it is noteworthy that this population was also less-likely to cite retirement as a reason for working in non-nursing than were diploma-educated nurses.

These patterns are less clear, but still present when considering nurses who do not work at all. When excluding nurses over the age of 65 who were more likely to be retired, associate-degreed and baccalaureate-educated nurses remained more likely than diploma-educated nurses to cite family or workplace concerns as reasons for not working in nursing. Diploma-educated nurses were most likely to be retired largely reflecting the fact that diploma-based nursing education has been much less prevalent in recent years and most diploma-educated nurses are nearing retirement age.

Nurses Not Working in Nursing by Age of Children at Home

Nurses with at least some children in the home under the age of six were most likely to cite family reasons for working in non-nursing. An interesting trend, however, is seen in that this population was also the most likely to cite workplace concerns as reasons for working in non-nursing. Descriptive findings related to the age of the nurse's children in the home are presented in Table 5.21 and differences attributable to workplace vs. non-workplace concerns are noted in the table.

Table 5.21: Registered Nurse Reasons Not Working in Nursing by Age of Children at Home in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>No children</i>	2,464	3.3	15,944	21.0	12,242	16.2	30,650	40.8	44,830 ⁺	59.2
<i>All < 6</i>	543	11.9	291	6.4	16	0.4	850	18.8	3,694 ⁺	81.2
<i>All > 6</i>	1,175	4.0	5,707	19.5	722	2.5	7,604	26.5	21,545 ⁺	73.5
<i>Some < 6 & > 6</i>	355	9.7	185	5.0	102	2.8	642	17.4	3,042 ⁺	82.6

<i>Total*</i>	4,537	4.0	22,127	19.5	13,083	11.6	39,747	35.5	73,111 ⁺	64.5
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>No children</i>	15,174	12.3	14,312	11.6	61,901	50.1	91,387 ⁺	74.1	32,014	25.9
<i>All < 6</i>	9,274	42.0	1,428	6.5	1,291	5.9	11,993 ⁺	54.3	10,092	45.7
<i>All > 6</i>	13,144	27.9	6,762	14.4	2,431	5.2	22,337 ⁺	47.5	24,707	52.5
<i>Some < 6 & > 6</i>	9,203	49.4	1,509	8.1	359	1.9	11,071 ⁺	59.4	7,565	40.6
<i>Total*</i>	46,796	22.1	24,011	11.4	65,983	31.2	136,790 ⁺	64.8	74,379	35.2

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Nurses with at least some children under the age of six were the most likely to cite workplace concerns as a reason for working in non-nursing, though the workplace was the key reason nurses with children at home worked in non-nursing. These trends continued, but to a different degree when examining nurses who do not work at all. In this subpopulation, nurses with at least some children at home under the age of six who did not work at all were much more likely to cite family reasons for not working than were nurses who work in non-nursing. Different from nurses who worked in non-nursing, nurses with children at home who were all over the age of six were most likely to cite workplace concerns as a reason for not working. Even when excluding nurses over the age of 65, nurses with no children at home who did not work were very likely to be retired from the nursing profession with 50.1% of this population citing retirement as a cite retirement as a reason for not working in nursing. Logically, these nurses with no children at home were likely to be older and therefore it is not surprising that many of these nurses cite retirement as a reason for not working.

Nurses Not Working in Nursing by Ethnicity and U.S. vs. Foreign Nursing Education

White nurses were more likely than their non-white counterparts to cite workplace or career-related concerns as the primary reason for working in non-nursing, though the

nursing workplace was a key reason cited by both white and non-white nurses for working in non-nursing. Descriptive data describing reasons nurses did not work in nursing specific to ethnicity or location of nursing education are presented in Table 5.22.

Table 5.22: Registered Nurse Reasons Not Working in Nursing by Ethnicity (White or Non-White) and Location of Nursing Education (Foreign vs. U.S.) in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>White</i>	3,974	3.9	20,116	19.6	11,559	11.3	35,649	35.2	66,340 ⁺	64.8
<i>Other than white</i>	466	6.4	1,135	15.7	1,417	19.6	3,018	41.6	4,228 ⁺	58.4
<i>U.S. Educated</i>	4,486	3.9	22,118	19.5	13,234	11.7	39,838	35.6	72,854 ⁺	64.4
<i>Foreign Educated</i>	132	12.4	261	24.5	230	21.6	623 ⁺	58.8	439	41.2
<i>Not Employed (Including Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>White</i>	44,199	16.5	23,007	8.6	130,771	48.8	197,977 ⁺	74.1	69,351	25.9
<i>Other than white</i>	3,209	14.6	2,059	9.4	11,378	51.8	16,646 ⁺	75.7	5,309	24.3
<i>U.S. Educated</i>	48,744	16.5	25,263	8.5	143,365	48.7	217,372 ⁺	74.2	76,208	25.8
<i>Foreign Educated</i>	1,179	17.5	741	11.0	3,314	49.2	5,234 ⁺	77.8	1,495	22.2
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>White</i>	41,028	21.6	21,335	11.2	60,662	31.9	123,025 ⁺	64.8	66,917	35.2
<i>Other than white</i>	2,781	19.1	2,059	14.2	4,841	33.3	9,681 ⁺	66.6	4,860	33.4
<i>U.S. Educated</i>	45,460	21.7	23,757	11.3	65,922	31.5	136,139 ⁺	64.8	73,632	35.2
<i>Foreign Educated</i>	1,179	26.0	741	16.3	1,407	31.0	3,327 ⁺	73.5	1,202	26.5

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

The nursing workplace was the main reason both white and non-white nurses worked in non-nursing, however, different relationships were seen with respect to the location of the nurse's basic nursing education. Nurses who were educated outside the United States were the only group examined who did not cite concerns with the nursing

workplace as the primary reason for working in non-nursing. Non-white nurses were more likely to be retired from nursing or to cite family obligations as the reason for working in non-nursing than white nurses.

These trends were largely reversed, however, when examining nurses who did not work at all. Excluding those nurses over the age of 65 who were likely to be retired, white nurses were more likely than non-white nurses to be out of the workforce due to family concerns. Non-white nurses were also more likely than white nurses to be out of the workforce because of concerns related to nursing as a career. White nurses, however, remained slightly more likely to be not working at all related to concerns with the nursing workplace than were non-white nurses.

Not surprisingly, foreign-educated nurses are similar to nurses who are of other than white ethnicity and were more likely to cite family obligations, career considerations, or retirement as reasons for working in non-nursing. As was the case with white nurses, nurses who were educated in the United States were more likely than foreign-educated nurses to be employed in non-nursing for reasons attributable to the nursing workplace. These patterns persisted among nurses who were not employed at all, with the notable exception that very little difference existed between U.S. and foreign-educated nurses with respect to retirement, and that both groups were nearly equally as likely to cite retirement as a reason for being out of the workforce.

Nurses Not Working in Nursing by Amount of Other Family Income

Table 5.23 presents reasons nurses worked in non-nursing or did not work at all by the amount of income in the home in excess of the nurse's personal salary. It is notable that with each incremental increase in other family income, nurses were more

likely to cite personal or family reasons for working in non-nursing and for not working at all.

Table 5.23: Registered Nurse Reasons Not Working in Nursing by Other Family Income in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>No Other Income</i>	0	0.0	3,602	27.8	296	2.3	3,898	30.1	9,079 ⁺	69.9
<i>< \$25,000</i>	573	2.2	5,610	21.2	3,984	15.1	10,167	39.2	16,095 ⁺	60.8
<i>\$25,001 - \$50,000</i>	955	4.4	4,285	19.7	2,464	11.3	7,704	35.8	13,994 ⁺	64.2
<i>\$50,001 - \$100,000</i>	1,210	4.3	4,211	14.9	3,536	12.5	8,957	31.8	19,330 ⁺	68.2
<i>> \$100,000</i>	1,075	7.1	2,743	18.1	2,099	13.9	5,917	39.5	9,173 ⁺	60.5
<i>Total*</i>	3,813	3.6	20,449	19.5	12,379	11.8	36,641	35.4	67,672 ⁺	64.6
<i>Not Employed (Including Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>No Other Income</i>	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<i>< \$25,000</i>	5,834	12.8	4,323	9.5	25,885	56.9	36,042 ⁺	80.0	9,092	20.0
<i>\$25,001 - \$50,000</i>	8,331	10.6	5,378	6.9	50,567	64.3	64,276 ⁺	81.9	14,181	18.1
<i>\$50,001 - \$100,000</i>	15,004	17.2	7,750	8.9	39,938	45.7	62,692 ⁺	72.1	24,426	27.9
<i>> \$100,000</i>	16,772	27.6	5,966	9.8	13,136	21.6	35,874 ⁺	59.2	24,785	40.8
<i>Total*</i>	50,195	16.9	25,683	8.6	143,473	48.3	219,351 ⁺	74.1	77,116	25.9
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>No Other Income</i>	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
<i>< \$25,000</i>	4,814	17.8	4,153	19.1	7,055	29.0	16,022 ⁺	66.0	8,260	34.0
<i>\$25,001 - \$50,000</i>	7,279	15.8	4,917	10.7	20,218	44.0	32,414 ⁺	70.8	13,409	29.2
<i>\$50,001 - \$100,000</i>	14,441	21.2	7,118	10.4	22,618	33.2	44,177 ⁺	65.2	23,674	34.8
<i>> \$100,000</i>	16,654	29.0	5,966	10.4	10,076	17.6	32,696 ⁺	57.1	24,569	42.9
<i>Total*</i>	43,190	22.1	22,155	11.3	59,969	30.6	125,314 ⁺	64.3	69,914	35.7

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

As was been the case with each of the independent variables previously discussed, the workplace is an important factor among nurses who work in non-nursing when the data are examined by the amount of other family income. Of note, no nurses who

reported having no other family income cited personal or family reasons for working in non-nursing and 7.1% of nurses with other family income levels in excess of \$100,000 cited family reasons for working in non-nursing. Interestingly, clear patterns were not seen in relation to retirement or career-related reasons for working in non-nursing though nurses trended to be less likely to cite career-related reasons for working in non-nursing as other family income increased. No clear retirement pattern attributable to other family income is seen in nurses working in non-nursing.

While the findings attributable to other family income are not clear, clearer patterns exist when examining nurses who do not work at all. Most notable, there was no nurse in the sample who state s/he was not working if no other source of income existed. Excluding nurses over the age of 65, nurses trended to be more likely to cite personal and family reasons for not working in nursing as other family income increased. Little difference existed by family income in nurses choosing not to work because of career-related reasons with the exception that the group of nurses with other family income of less than \$25,000 annually. This subgroup was nearly twice as likely to be out of the workforce due to career-related concerns as were nurses of any other stratification of other family income. Surprisingly, whether or not nurses over the age of 65 were excluded from the sample, the group least likely to be retired from nursing and not working at all was the group reporting other family income in excess of \$100,000.

Nurses Not Working in Nursing by Student Status

Reasons that nurses who were enrolled in educational programs worked in non-nursing or did not work at all are shown in Table 5.24. Nurses who were students were more likely to cite workplace concerns as the reason they were employed in non-nursing

than were nurses who were not students. Nurses enrolled part or full-time in a formal educational program were also less likely to cite reasons attributable to personal or family obligations or the nursing career for working in non-nursing than were nurses who were not students. Not surprisingly, very few nurses working in non-nursing who were enrolled in educational programs stated that they were retired from nursing.

Table 5.24: Registered Nurse Reasons Not Working in Nursing by Student Status in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Student (FT or PT)</i>	65	0.7	1,499	17.5	26	0.3	1,590	18.8	6,958 ⁺	81.2
<i>Not a Student</i>	4,604	4.3	21,152	19.8	13,534	12.6	39,290	37.7	66,924 ⁺	62.7
<i>Total*</i>	4,670	4.0	22,651	19.6	13,561	11.7	40,882	35.9	73,882 ⁺	64.1
<i>Not Employed (Including Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Student (FT or PT)</i>	2,772	28.2	1,429	14.5	586	5.9	4,787	50.3	4,883	49.7
<i>Not a Student</i>	48,333	16.3	24,969	8.4	148,943	50.2	222,243 ⁺	75.2	73,510	24.8
<i>Total*</i>	51,105	16.6	26,398	8.6	149,530	48.8	227,033 ⁺	74.5	78,394	25.5
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Student (FT or PT)</i>	2,772	28.7	1,429	14.8	410	4.2	4,611	49.4	4,883	50.6
<i>Not a Student</i>	44,584	21.6	23,296	11.3	67,735	32.8	135,616 ⁺	65.9	70,486	34.1
<i>Total*</i>	47,356	21.9	24,726	11.4	68,146	31.5	140,228 ⁺	65.1	75,369	34.9

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Among nurses who were not working at all, no difference was seen between workplace and non-workplace reasons for not working in nursing. As was the case with nurses working in non-nursing, very few (4.2%) of nurses who were students considered themselves to be retired. A reverse trend existed among nurses who were not employed

than was seen with nurses working in non-nursing with respect to family obligations and career-related reasons cited for not working. Specifically, 28.7% of nurses who were students cited personal or family reasons for being out of the workforce compared to 21.6% of nurses who not students. Likewise, 14.8% of nurses who were students cited career-related reasons for being out of nursing compared to 11.3% of those who were not students.

Nurses Not Working in Nursing by Years Since Graduation from Basic Nursing Program

Nurses who had been out of school the longest were also the most likely to cite retirement as a reason for working in non-nursing employment. This trend is not at all surprising as nurses who have been out of school the longest are likely to be older than those with less tenure in nursing. Descriptive statistics presenting the reasons nurses did not work in nursing by the length of time since graduation from their basic program of nursing education are shown in Table 5.25

Table 5.25: Registered Nurse Reasons Not Working in Nursing by Years Since Graduation in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>< 10 Years</i>	486	3.3	1,341	9.2	201	1.4	2,028	14.0	12,601 ⁺	86.0
<i>11 – 15 Yrs</i>	797	9.2	1,354	15.7	165	1.9	2,316	26.9	6,311 ⁺	73.1
<i>16 – 25 Yrs</i>	1,280	3.8	6,081	18.1	2,295	6.8	9,656	29.3	23,692 ⁺	70.7
<i>> 26 Years</i>	2,105	3.6	13,642	23.6	10,738	18.6	26,485	46.4	30,982 ⁺	53.6
<i>Total*</i>	4,670	4.0	22,420	19.5	13,401	11.7	40,491	35.8	73,588 ⁺	64.2
<i>Not Employed (Including Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>< 10 Years</i>	10,907	35.4	3,405	11.1	1,174	3.8	15,323	49.7	15,486 ⁺	50.3
<i>11 – 15 Yrs</i>	7,921	34.3	2,019	8.7	2,928	12.7	8,830 ⁺	55.9	10,185	44.1
<i>16 – 25 Yrs</i>	18,511	26.9	8,136	11.8	15,100	21.9	41,747 ⁺	60.8	27,028	39.2
<i>> 26 Years</i>	13,408	7.4	12,550	6.9	128,875	71.1	154,833 ⁺	86.0	25,425	14.0
<i>Total*</i>	50,749	16.7	26,113	8.6	148,078	48.7	224,940 ⁺	74.4	77,963	25.6
<i>Not Employed (Excluding</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	

<i>Age 65+</i>										
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
<i>< 10 Years</i>	10,907	35.6	3,405	11.1	802	3.2	15,114	49.6	15,323 ⁺	50.4
<i>11 – 15Yrs</i>	7,881	35.0	2,019	8.9	2,385	10.6	12,285 ⁺	54.7	10,185	45.3
<i>16 – 25 Yrs</i>	18,228	28.5	8,116	12.7	10,756	16.8	37,100 ⁺	58.3	26,609	41.7
<i>> 26 Years</i>	10,098	10.3	11,106	11.3	53,558	54.7	74,762 ⁺	76.7	22,818	23.3
<i>Total*</i>	47,115	21.9	24,649	11.4	67,703	31.5	139,467 ⁺	65.1	74,938	34.9

(* $p < .05$; + $p < .01$; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

A troubling trend is seen in terms of the patterns of nurses who cite the nursing workplace as a reason for working in non-nursing employment. In this case, nurses who have been out of school the least amount of time were the most likely to be working in non-nursing due to concerns with the nursing workplace. Specifically, among nurses who had graduated within ten years, 86% of those who were working in non-nursing were doing so because of challenges present in the nursing workplace compared to 53.6% of nurses who had been out of school more than 25 years. While the differences in this latter group are largely attributable to retirement in this older population, it is notable that this trend toward the nursing workplace being the main reason nurses work in non-nursing consistently increased as nurses were fewer years from graduation.

Similar relationships were seen among nurses who were not working at all. Specifically, nurses who had been out of school the longest were the most likely to cite retirement as a reason for not working and nurses who had been out of school the least amount of time were the most likely to cite workplace concerns as a reason for not working with 50% (excluding nurses over the age of 65) of nurses who had been out of school less than 10 years citing workplace concerns as the primary reason they were not employed in nursing.

Nurses Not Working in Nursing by Urban Influence

Geographic variations were present in reasons cited for not working in nursing.

Reasons cited by nurses in metropolitan, micropolitan, and rural settings for working in non-nursing and not working at all are presented in Table 5.26.

Table 5.26: Registered Nurse Reasons Not Working in Nursing by Urban Influence in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Micropolitan</i>	203	1.7	2,460	21.5	1,525	13.3	4,188	37.3	7,156 ⁺	62.7
<i>Metropolitan</i>	4,180	4.2	19,084	19.6	11,482	11.7	34,746	36.1	62,310 ⁺	63.9
<i>Rural</i>	273	4.4	1,107	18.1	553	9.0	1,933	32.7	4,104 ⁺	67.3
<i>Total*</i>	4,657	4.0	22,651	19.7	13,561	11.8	40,869	36.0	73,571 ⁺	64.0
<i>Not Employed (Including Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Micropolitan</i>	3,411	11.0	4,080	13.1	16,829	54.2	24,320 ⁺	78.7	6,615	21.3
<i>Metropolitan</i>	45,648	17.7	20,209	7.8	122,991	47.8	188,848 ⁺	73.8	67,507	26.2
<i>Rural</i>	2,027	11.5	1,918	10.9	9,404	53.6	13,349 ⁺	76.6	4,117	23.4
<i>Total*</i>	51,086	16.7	26,208	8.5	149,224	48.8	226,518 ⁺	74.4	78,240	25.6
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Micropolitan</i>	3,411	14.7	3,636	15.7	9,516	41.1	16,563 ⁺	72.0	6,473	28.0
<i>Metropolitan</i>	42,052	23.3	19,012	10.5	54,340	30.1	115,404 ⁺	64.2	64,698	35.8
<i>Rural</i>	1,874	15.4	1,887	15.5	4,269	35.2	8,030 ⁺	66.7	4,044	33.3
<i>Total*</i>	47,337	21.9	24,536	11.3	68,125	31.6	139,998 ⁺	65.1	75,215	34.9

(* $p < .05$; + $p < .01$; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Nurses in all urban influence settings were more likely to cite workplace rather than non-workplace reasons for working in non-nursing. This finding is consistent with the patterns that have been seen with respect to other independent variables examined thus far and lends further support to the thesis that nurses choose to work in non-nursing for reasons attributable to concerns with the environment in which nurses work.

Nurses in metropolitan and micropolitan areas were more likely to cite retirement as a reason for working in non-nursing than were nurses in rural areas with only 9.0% of rural nurses working in non-nursing due to retirement compared to 13.3% of micropolitan and 11.7% of metropolitan nurses citing retirement as a reason for working in non-nursing. While the differences were small and were not specifically tested for significance, nurses in rural settings were the most likely to cite workplace concerns as the primary reason for working in non-nursing. Interestingly, rather large differences existed between metropolitan and micropolitan nurses with 1.7% of micropolitan nurses citing personal or family reasons for working in non-nursing compared to 4.2% of metropolitan and 4.4% of rural nurses stating personal or family reasons for working in non-nursing.

While retirement patterns were not clear when all nurses were included in the sample, excluding nurses over the age of 65 demonstrated that nurses in micropolitan settings were more likely to cite retirement before the age of 65 as a reason for not working in nursing (41.1%), than were nurses in metropolitan (30.1%) or rural (35.2%) areas. Also, among nurses who were not employed, those in metropolitan areas were most likely to cite the workplace as the primary reason for not working in nursing. Trends that were seen in relation to personal and family reasons for nurses working in non-nursing were not seen in relation to nurses who were not working at all, though more metropolitan nurses cited personal or family reasons for not working in nursing than did micropolitan or rural nurses.

Congressional Liberalism and Gubernatorial Political Affiliation

As seen in Table 5.27, nurses in all political climates examined were more likely to cite workplace reasons over non-workplace reasons for working in non-nursing.

Table 5.27: Registered Nurse Reasons Not Working in Nursing by Congressional Liberalism and Gubernatorial Political Affiliation in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Conservative</i>	855	3.1	3,800	13.8	3,130	11.3	7,785	29.5	19,433 ⁺	70.5
<i>Centrist</i>	2,526	4.4	10,941	19.2	6,304	11.0	19,771	34.9	37,094 ⁺	65.1
<i>Liberal</i>	1,287	4.1	7,910	25.7	4,126	13.4	13,323	43.6	17,353 ⁺	56.4
<i>Republican</i>	2,637	3.8	13,869	20.3	7,913	11.6	24,419	34.1	43,613 ⁺	65.9
<i>Democrat</i>	2,032	4.3	8,782	18.7	5,647	12.0	16,461	35.7	30,159 ⁺	64.3
<i>Not Employed (Including Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Conservative</i>	13,119	18.7	6,020	8.6	32,767	46.8	51,906 ⁺	74.5	17,886	25.5
<i>Centrist</i>	26,278	16.7	13,318	8.5	76,185	48.6	115,781 ⁺	74.3	40,335	25.7
<i>Liberal</i>	11,707	14.7	7,058	8.8	40,577	50.9	59,342 ⁺	74.7	20,172	25.3
<i>Republican</i>	28,468	16.1	16,150	9.1	84,988	48.3	129,606 ⁺	74.0	45,795	26.0
<i>Democrat</i>	22,613	17.3	10,167	7.8	64,378	49.4	97,158 ⁺	75.1	32,485	24.9
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/Family</i>		<i>Personal/Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Conservative</i>	12,046	23.4	5,623	10.9	16,514	32.0	34,183 ⁺	66.6	17,233	33.4
<i>Centrist</i>	24,429	22.0	12,388	11.1	34,819	31.4	71,636 ⁺	64.8	39,024	35.2
<i>Liberal</i>	10,881	20.2	6,714	12.5	16,812	31.3	34,407 ⁺	64.4	19,111	35.6
<i>Republican</i>	26,510	21.3	15,199	12.2	38,201	30.7	79,910 ⁺	64.5	44,217	35.5
<i>Democrat</i>	20,823	22.8	9,445	10.3	29,898	32.7	60,166 ⁺	66.0	31,039	34.0

(* $p < .05$; + $p < .01$; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

Nurses living in the most politically conservative states (70.5%) were more likely to cite workplace concerns as the primary reason for working in non-nursing employment than were nurses living in politically centrist (65.1%) or politically liberal (56.4%) states. Conversely, nurses living in more politically liberal states were more likely to cite career-related reasons for working in non-nursing than were nurses in centrist or politically conservative states. Less clear patterns were seen in relation to other reasons for working

in non-nursing though nurses living in the most liberal states were more likely to report being retired than were nurses in states that were less politically liberal.

While these patterns persisted among nurses who were not employed at all, they were much less pronounced with (excluding nurses over the age of 65), 35.6% of nurses in politically liberal, 35.2% of nurses in politically centrist, and 33.4% of nurses in politically conservative states citing the workplace as a reason for not working in nursing. Similarly, 12.5% of nurses in liberal states stated career-related reasons for not working in nursing compared to 11.1% of nurses in centrist states and 10.9% of nurses in politically conservative states citing career-related reasons for not working in nursing. Contrary to the pattern seen among nurses who worked in non-nursing, nurses who lived in more politically conservative states were slightly more likely to cite retirement as a reason for not working in nursing than were nurses in centrist or politically liberal states.

Relatively few differences were seen between nurses living in states with a republican governor compared to nurses living in states with a democratic governor, though those with republican gubernatorial affiliation were slightly more likely to cite workplace concerns as a reason for working in non-nursing. Likewise, these democratically led nurses were also slightly more likely to cite career-related reasons for working in non-nursing than were nurses living in republican-led states. Nurses working in non-nursing who lived in states with a democratic governor were slightly more likely to be retired than similar nurses who lived in a republican-led state. These patterns remained true among nurses who did not work at all, though the differences between nurses in republican vs. democratic-led states remained very small.

Nurses Not Working in Nursing by Census Region

Nurses living in the South and Midwest were more likely to state that they worked in non-nursing because of concerns with the nursing workplace than were nurses in the Northeast or in the West. Specific reasons cited by nurses for not working in nursing are shown in Table 5.28.

Table 5.28: Registered Nurse Reasons Not Working in Nursing by Census Region in 2004⁺

<i>Employed in Non-Nursing</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace[†]</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>North East</i>	1,401	4.3	8,486	26.2	3,983	12.3	13,870	42.8	18,508 ⁺	57.2
<i>South</i>	1170	3.5	4,657	13.9	3,272	9.7	9,099	28.1	24,114 ⁺	71.9
<i>Midwest</i>	742	2.6	4,817	16.8	3,202	11.2	8,761	30.6	19,884 ⁺	69.4
<i>West</i>	1,353	6.6	4,689	22.8	3,100	15.0	9,142	44.8	11,372 ⁺	55.2
<i>Total*</i>	4,670	4.0	22,651	19.6	13,561	11.7	40,882	35.9	73,882 ⁺	64.1
<i>Not Employed (Including Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>North East</i>	12,356	15.2	8,641	10.7	44,226	54.6	65,223 ⁺	80.5	15,843	19.5
<i>South</i>	17,352	17.9	8,393	8.7	43,998	45.4	69,743 ⁺	72.3	26,789	27.7
<i>Midwest</i>	12,251	17.3	4,722	6.7	33,741	47.7	50,714 ⁺	72.0	19,793	28.0
<i>West</i>	9,141	15.9	4,637	8.0	27,561	47.8	41,339 ⁺	72.3	15,965	27.7
<i>Total*</i>	51,105	16.6	26,398	8.6	149,530	48.8	227,033 ⁺	74.5	78,394	25.5
<i>Not Employed (Excluding Age 65+)</i>	<i>Personal/ Family</i>		<i>Personal/ Career</i>		<i>Retired</i>		<i>Sum of Non-Workplace</i>		<i>Workplace</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>North East</i>	11,478	20.6	8,356	15.0	20,715	37.2	40,549 ⁺	72.9	15,064	27.1
<i>South</i>	16,640	21.6	8,032	10.4	25,923	33.7	50,595 ⁺	65.8	26,268	34.2
<i>Midwest</i>	11,348	21.3	4,481	8.4	17,952	33.6	33,781 ⁺	63.5	19,495	36.5
<i>West</i>	8,319	19.8	4,358	10.4	13,996	33.3	26,673 ⁺	63.9	15,152	36.1
<i>Total*</i>	47,789	20.9	25,231	11.0	78,589	34.4	151,609 ⁺	66.7	75,984	33.3

(* p < .05; + p < .01; † Sum or non-workplace = family + career + retirement reasons for not working in nursing)

In contrast to Southern and Midwestern nurses, nurses in the Northeast and the West were more likely to cite career-related reasons for working in non-nursing than were nurses in the South or the Midwest. Nurses in the West were most likely to cite retirement or family concerns as reasons for working in non-nursing.

These patterns remained true with nurses who did not work at all, although the differences between Northeastern, Southern, and Western nurses were not as great. Among nurses who were not working at all, nurses in the Northeast were the least likely to cite workplace concerns and those in the Midwest were the most likely to cite reasons specific to the workplace for not working in nursing. Excluding nurses over the age of 65, nurses in the Northeast were the most likely (15%) and nurses in the Midwest (8.4%) were the least likely to cite career-related reasons for not working in nursing. Few differences were seen in relation to retirement and family obligations though nurses in the Northeast (37.2%) were the most likely to cite retirement as a reason for not working in nursing and nurses in the South were the most likely to cite family reasons for not working in nursing.

Specific Aim #3: Determine if registered nurses who work in non-nursing employment or do not work at all are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.

The third aim of this study was examined using a two-stage least squares estimation. First, a market wage was estimated for all nurses in the sample to control for the missing wage data in the sample of nonworking nurses and for the potential endogeneity of the wage in nurses who work. In the second stage, the estimated wage was used in a univariate probit model to estimate the probability of not working in nursing compared to working in nursing. Means and standard deviations for the continuous variables and percentages for the categorical variables for each of the three groups (nurses working in non-nursing employment, nurses not working, and nurses

working in nursing) are shown in Table 5.29. Differences in the continuous variables between nurses working in nursing, nurses working in non-nursing, and those who did not work at all were calculated using a oneway ANOVA with Bonferroni post-hoc comparison.

Table 5.29: Descriptive Statistics (M, SD, %)
Nurses Employed in Nursing, Employed in Non-Nursing, and Not Employed

	Employed in Nursing		Employed in Non-Nursing		Not Employed		ANOVA
	N = 2,432,124		N = 122,178		N = 352,313		
	M / %	SD	M / %	SD	M / %	SD	F Statistic
Endogenous Variables							
Predicted Wage	27.94	4.36	29.04	4.22	28.54	3.89	71.52*
Square of Predicted Wage	799.83	256.14	861.27	257.75	830.10	234.49	58.67*
Total Nurse's Income	49,453	27,467	41,789	46,989	—	—	8,188 ⁺
Sociodemographic Variables							
Age	45.36	10.78	50.82	9.88	55.16	13.269	1199.57*
Age2	2,153	1,000	2,671	1,013	3,204	1,434	1487.60*
Age: < 30	9.1%	—	3.0%	—	3.8%	—	—
Age: 30 – 44	35.1%	—	22.1%	—	21.2%	—	—
Age: 45 – 64	52.5%	—	65.4%	—	48.3%	—	—
Age: 65+	3.3%	—	9.5%	—	26.8%	—	—
Gender							
Male	6.2%	—	7.5%	—	2.8%	—	—
Female	93.6%	—	92.5%	—	97.2%	—	—
Race/Ethnicity							
White	88.7%	—	93.0%	—	91.8%	—	—
Other than White	11.3%	—	7.0%	—	8.2%	—	—
Highest Education							
Diploma	15.2%	—	23.2%	—	31.4%	—	—
Associate	37.1%	—	22.3%	—	26.5%	—	—
Baccalaureate	34.9%	—	36.2%	—	30.0%	—	—
Graduate	12.8%	—	18.2%	—	12.2%	—	—
Age of Children							
No Children	52.3%	—	65.9%	—	66.7%	—	—
All < 6	11.8%	—	6.2%	—	10.4%	—	—
All > 6	29.4%	—	24.6%	—	17.4%	—	—
Some < & Some > 6	6.5%	—	3.3%	—	5.6%	—	—
Other Family Income	34,674	33,100	48,490	42044	69,246	42,943	89.96*
No other family income	14.4%	—	11.1%	—	0.6%	—	—
OFI: Under 25K	31.0%	—	23.6%	—	15.0%	—	—
OFI: 25 – 50K	23.0%	—	20.9%	—	24.9%	—	—
OFI: 50 – 100K	27.4%	—	32.0%	—	40.7%	—	—
OFI: > 100K	4.2%	—	12.4%	—	18.9%	—	—
Country of Education							
U.S.	96.2%	—	99.0%	—	97.3%	—	—
Other than U.S.	3.8%	—	1.0%	—	2.7%	—	—

<i>Student Status</i>								
	<i>Not a Student</i>	92.2%	—	92.7%	—	96.3%	—	—
	<i>Full or Part-time Student</i>	7.8%	—	7.3%	—	3.7%	—	—
<i>Years Since Graduation</i>		18.35	11.80	25.39	11.27	29.14	14.82	1187.81*
	<i>5 or Less</i>	15.7%	—	2.8%	—	4.9%	—	—
	<i>6 – 10</i>	16.4%	—	9.6%	—	7.7%	—	—
	<i>11 – 15</i>	12.8%	—	7.4%	—	8.0%	—	—
	<i>16 – 25</i>	26.7%	—	27.9%	—	23.4%	—	—
	<i>25+</i>	28.4%	—	52.3%	—	56.0%	—	—
<i>Work Before RN Licensure</i>								
	<i>None</i>	45.9%	—	52.9%	—	58.9%	—	—
	<i>CNA</i>	27.0%	—	27.3%	—	21.8%	—	—
	<i>LPN</i>	11.6%	—	5.7%	—	8.5%	—	—
	<i>Allied Health</i>	5.7%	—	5.0%	—	3.8%	—	—
	<i>Other</i>	9.7%	—	9.1%	—	7.0%	—	—
<i>Urban Influence</i>		50.32	13.7	50.77	13.8	50.65	13.13	337
	<i>Metropolitan</i>	84.9%	—	84.7%	—	84.0%	—	—
	<i>Micropolitan</i>	8.9%	—	10.3%	—	10.3%	—	—
	<i>Rural</i>	6.1%	—	5.0%	—	5.7%	—	—
<i>Census Region</i>								
	<i>Northeast</i>	21.8%	—	28.4%	—	25.9%	—	—
	<i>South</i>	34.0%	—	29.6%	—	31.9%	—	—
	<i>Midwest</i>	25.5%	—	24.1%	—	22.9%	—	—
	<i>West</i>	18.8%	—	18.0%	—	19.4%	—	—
Market Variables								
	<i>RNs/1,000</i>	12.97	7.06	12.19	6.01	12.18	7.32	2,488 ⁺
	<i>MDs/1,000</i>	3.30	2.46	2.91	1.914	2.89	2.12	5,685 ⁺
	<i>HMO Index of Competition</i>	0.64	0.24	0.65	.23	0.64	0.24	125
	<i>Hospital Days/1,000</i>	1,034.63	931.65	903.54	1142.30	888.30	827.89	4,685
	<i>Unemployment Rate</i>	5.44	1.80	5.25	1.70	5.32	1.68	1,209
	<i>Percent Uninsured</i>	13.44	4.12	12.83	4.09	12.94	4.01	3,355 ⁺
	<i>% of Population over Age 65</i>	12.25	3.44	12.39	3.72	12.62	3.90	1,761
Political Variables								
<i>Liberalism</i>		50.32	13.70	50.77	13.80	50.65	13.13	337
	<i>Most Conservative</i>	23.4%	—	24.5%	—	22.7%	—	—
	<i>Centrist</i>	51.1%	—	48.0%	—	51.0%	—	—
	<i>Most Liberal</i>	25.5%	—	27.5%	—	26.3%	—	—
<i>Gubernatorial Affiliation</i>								
	<i>Democrat</i>	60.5%	—	59.5%	—	57.6%	—	—
	<i>Republican</i>	39.5%	—	40.5%	—	42.4%	—	—

- + Employed in Nursing \neq Employed in Non-Nursing; $p < .05$
 † Employed in Nursing \neq Not Employed; $p < .05$
 ± Employed in Non-Nursing \neq Not Employed; $p < .05$
 * Employed in Nursing \neq Employed in Non-Nursing \neq Not Employed; $p < .05$

First Stage Model

Variables in the predicted wage equation are presented in Table 5.30 and generally followed the lead of Brewer (2006) and included gender, race/ethnicity, marital status, highest educational preparation, age of children in the home, location of basic program of nursing education (U.S. vs. foreign), years since graduation, U.S. census region, and whether or not the nurse was a student. Different from previous research, this study used the state percentage of unionized RNs as an instrumental variable in the wage estimation equation. Exclusion tests were performed to verify that the instrument predicted the endogenous wage variable, but not whether nurses worked in nursing.

Table 5.30: OLS Regression Equation to Predict Hourly Wage for All RNs in 2004 NSSRN Sample (Standard errors adjusted for clustering on FIPS)

Predicted Wage OLS Regression						
Number of obs = 27,642 Sum of Population = 2,211,600 F(21, 27620) = 142.66 Prob > F = 0.0000 R-squared = 0.3377 Root MSE = 24.115						
	Coef.	Robust SE	T	P>t	95% CI	
<i>Percent of State RNs Unionized (IV)</i>	0.0416	0.0144	2.8900	0.0040	0.0134	0.0698
<i>Median Wage: All Occupations</i>	1.0640	0.0901	11.8000	0.0000	0.8873	1.2407
<i>Gender: Male</i>	3.6421	0.4500	8.0900	0.0000	2.7600	4.5241
<i>Married</i>	-0.1083	0.2249	-0.4800	0.6300	-0.5490	0.3324
<i>Highest Education: Assoc</i>	-0.7770	0.3622	-2.1500	0.0320	-1.4868	-0.0671
<i>Highest Education: Baccalaureate</i>	0.7472	0.3501	2.1300	0.0330	0.0609	1.4335
<i>Highest Education: Graduate</i>	6.4432	0.4373	14.7400	0.0000	5.5861	7.3002
<i>Children: All < 6</i>	2.4056	0.4218	5.7000	0.0000	1.5789	3.2323
<i>Children: All > 6</i>	0.3236	0.2275	1.4200	0.1550	-0.1224	0.7695
<i>Children: < and > 6</i>	2.1938	0.5114	4.2900	0.0000	1.1915	3.1961
<i>Foreign Educated</i>	1.2891	0.7375	1.7500	0.0800	-0.1563	2.7346

<i>Currently a Student</i>	0.1096	0.3072	0.3600	0.7210	-0.4926	0.7117
<i>Years Since Graduation: 6 - 10</i>	2.5966	0.3253	7.9800	0.0000	1.9590	3.2343
<i>Years Since Graduation: 11 - 15</i>	3.7831	0.3607	10.4900	0.0000	3.0760	4.4902
<i>Years Since Graduation: 16 – 25</i>	4.5731	0.2811	16.2700	0.0000	4.0221	5.1241
<i>Years Since Graduation: 25+</i>	4.8771	0.3250	15.0100	0.0000	4.2401	5.5141
<i>Census Region: South</i>	1.3374	0.3517	3.8000	0.0000	0.6481	2.0267
<i>Census Region: Midwest</i>	-0.6470	0.3264	-1.9800	0.0470	-1.2869	-0.0072
<i>Census Region: West</i>	2.5393	0.3610	7.0300	0.0000	1.8318	3.2468
<i>MDs/1,000</i>	0.3497	0.0428	8.1800	0.0000	0.2659	0.4336
<i>Constant</i>	5.3665	1.3287	4.0400	0.0000	2.7622	7.9709
Highest Education Reference Category = Diploma Children Reference Category = No Children Years Since Graduation Reference Category = < 5 Years Census Region Reference Category = Northeast						

As Table 5.30 shows, the percent of unionized RNs was a significant predictor of the market wage in the OLS regression. Other significant predictors of the nursing market wage were gender, highest educational level, having children under the age of six in the home, years since graduation, the number of physicians per capita, and living in the Southern or Western United States.

Second Stage Model

As noted previously, married and unmarried registered nurses have been previously demonstrated to have different explanatory models (Brewer et al., 2006; Chiha & Link, 2003), and were therefore analyzed and are presented separately in these findings. Given that all market-level and political variables were reported on a county or state level, all probit analyses were calculated based on the more conservative of these and all standard errors are adjusted for 2,409 FIPS code clusters. The univariate probit findings are reported as the marginal effect (Df/Dx) at the mean for continuous variables, and the effect for categorical variables when they change from zero to one. In all univariate tables, the marginal effects are reported as the effect of the variables on the

probability of not working in nursing (including those nurses who work in non-nursing or who are not working) ($\text{Prob}[\text{NW}=1]$). The marginal effect is interpreted as the raw change in the probability of not working in nursing. Table 5.31 shows the results of the comparison of nurses who are not working (including both those who work in non-nursing and those who are not working) in the model (coded as 1) compared to those who are working in nursing (coded as 0).

Table 5.31: Univariate Probit Regression:

Married and Unmarried Nurses Not Working in Nursing (Including Those Who Work in Non-Nursing Employment or Who Do Not Work) Compared to Nurses Who Work in Nursing in 2004 DV: Not Working in Nursing =1)

(Standard errors adjusted for clustering on FIPS)

	Married (N = 2,114,400)							Unmarried (N = 792,260)						
	Number of obs = 26,073 Sum of Weight = 2,114,400 Wald chi2(42) =1813.42 Prob > chi2 = 0.0000 Log pseudolikelihood = -6831.6506 Pseudo R2 = 0.4194 Predicted Probability: .1288 (at x-bar)							Number of obs = 9,562 Sum of Weight = 792,260 Wald chi2(42) =1470.85 Prob > chi2 = 0.0000 Log pseudolikelihood = -3101.95466831.6506 Pseudo R2 = 0.2415 Predicted Probability: .0994 (at x-bar)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
Endogenous Variables														
Predicted Wage	0.0069	0.0078	0.8900	0.3750	28.273	-0.0083	0.0221	-0.0047	0.0112	-0.4200	0.6730	28.1950	-0.0267	0.0172
Square of Predicted Wage	-0.0001	0.0001	-0.7200	0.4690	816.971	-0.0003	0.0002	-0.0001	0.0002	0.7000	0.4850	813.9870	-0.0002	0.0005
Sociodemographic Variables														
Age: 30 – 44	0.0397	0.0143	2.6900	0.0070	0.3544	0.0117	0.0677	-0.0179	0.0214	0.8600	0.3880	0.2606	-0.0240	0.0598
Age: 45 – 64	0.0448	0.0169	2.6700	0.0080	0.5260	0.0117	0.0780	-0.0252	0.0197	1.2800	0.2010	0.5250	-0.0133	0.0637
Age: 65+	0.2641	0.0343	9.6100	0.0000	0.0506	0.1969	0.3314	0.2383	0.0425	7.4000	0.0000	0.0991	0.1550	0.3215
Gender: Male	-0.0252	0.0146	1.8200	0.0480	0.0559	-0.0034	-0.0537	-0.0083	0.0197	-0.4100	0.6810	0.0638	-0.0469	0.0303
Race/Ethnicity: Other than White	0.0132	0.0110	1.2300	0.2180	0.0988	-0.0084	0.0347	-0.0173	0.0107	-1.5300	0.1250	0.1310	-0.0383	0.0037

**Table 5.31 [Continued]: Univariate Probit Regression:
Married and Unmarried Nurses Not Working in Nursing (Including Those Who Work in Non-Nursing Employment or Who Do Not Work) Compared to Nurses Who Work in Nursing in 2004 DV: Not Working in Nursing =1)**
(Standard errors adjusted for clustering on FIPS)

	Married (N = 2,114,400)							Unmarried (N = 792,260)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
<i>Highest Education: Associate</i>	-0.0266	0.0075	-3.4900	0.0000	0.3511	-0.0413	-0.0119	-0.0255	0.0114	-2.1800	0.0290	0.3525	-0.0478	-0.0032
<i>Highest Education: Baccalaureate</i>	0.0263	0.0071	-3.6700	0.0000	0.3465	-0.0401	-0.0125	-0.0179	0.0103	-1.7100	0.0880	0.3365	-0.0380	0.0022
<i>Highest Education: Graduate</i>	-0.0453	0.0126	-3.2200	0.0010	0.1269	-0.0701	-0.0206	-0.0472	0.0146	-2.8000	0.0050	0.1373	-0.0758	-0.0187
<i>Children: All < 6</i>	0.0134	0.0097	-2.5400	0.0400	0.1418	0.0024	0.0257	0.0138	0.0198	0.7300	0.0230	0.1959	-0.0429	-0.0045
<i>Children: All > 6</i>	-0.0534	0.0061	-8.2600	0.0000	0.3080	-0.0652	-0.0415	-0.0237	0.0098	-2.2800	0.4650	0.0406	-0.0249	0.0526
<i>Children: Some < and > 6</i>	-0.0032	0.0112	-0.2800	0.7800	0.0776	-0.0251	0.0188	-0.0646	0.0180	-2.3800	0.0170	0.0224	-0.0999	-0.0292
<i>OFI: Under 25K</i>	0.0294	0.0158	1.9400	0.0520	0.2169	-0.0015	0.0604	0.0809	0.0112	6.9100	0.0000	0.4756	0.0590	0.1028
<i>OFI: 25 – 50K</i>	0.1010	0.0167	6.6500	0.0000	0.2750	0.0683	0.1337	0.3619	0.0265	16.3500	0.0000	0.1146	0.3100	0.4139
<i>OFI: 50 – 100K</i>	0.1765	0.0169	11.4900	0.0000	0.3626	0.1434	0.2095	0.3903	0.0264	14.8200	0.0000	0.1044	0.2687	0.3720
<i>OFI: > 100K</i>	0.5033	0.0260	21.5600	0.0000	0.0835	0.4524	0.5542	0.4211	0.0768	6.8400	0.0000	0.0079	0.2705	0.5718
<i>Foreign Educated</i>	-0.0711	0.0107	-5.1000	0.0000	0.0357	-0.0920	-0.0501	-0.0574	0.0137	-3.0300	0.0020	0.0347	-0.0843	-0.0305
<i>Student: Full or Part time</i>	-0.0109	0.0109	-0.9700	0.3310	0.0674	-0.0323	0.0105	0.0208	0.0169	1.3000	0.1940	0.0885	-0.0123	0.0539
<i>Years Since Graduation: 6 – 10</i>	0.0484	0.0167	3.1100	0.0020	0.1579	0.0157	0.0812	0.0843	0.0310	1.7100	0.0860	0.1065	-0.0123	0.1063
<i>Years Since Graduation: 11 – 15</i>	0.0949	0.0201	5.3600	0.0000	0.1250	0.0554	0.1343	0.0470	0.0303	3.1600	0.0020	0.1306	0.0236	0.1451
<i>Years Since Graduation: 16 – 25</i>	0.1346	0.0207	7.2500	0.0000	0.2765	0.0940	0.1752	0.1209	0.0329	4.2800	0.0000	0.2291	0.0565	0.1853
<i>Years Since Graduation: > 26</i>	0.1754	0.0228	8.5900	0.0000	0.3188	0.1308	0.2200	0.1552	0.0319	5.4500	0.0000	0.3508	0.0926	0.2178

Table 5.31 [Continued]: Univariate Probit Regression:
Married and Unmarried Nurses Not Working in Nursing (Including Those Who Work in Non-Nursing Employment or Who Do Not Work) Compared to Nurses Who Work in Nursing in 2004 DV: Not Working in Nursing =1)
 (Standard errors adjusted for clustering on FIPS)

	Married (N = 2,114,400)							Unmarried (N = 792,260)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
<i>Work Before RN Licensure: CNA</i>	-0.0345	0.0058	-2.4300	0.0150	0.2646	-0.0259	-0.0030	-0.0123	0.0088	-1.3700	0.1710	0.2617	-0.0297	0.0050
<i>Work Before RN Licensure: LPN</i>	-0.0180	0.0092	-1.8800	0.0600	0.1058	-0.0360	0.0000	-0.0085	0.0132	-0.6300	0.5280	0.1208	-0.0343	0.0173
<i>Work Before RN Licensure: Allied Health</i>	0.0051	0.0120	-0.4200	0.6710	0.0536	-0.0286	0.0183	0.0072	0.0193	0.3800	0.7020	0.0575	-0.0306	0.0450
<i>Work Before RN Licensure: Other</i>	-0.0093	0.0289	-0.0800	0.0580	0.0916	-0.0366	0.0019	0.0175	0.0138	1.3300	0.1830	0.0998	-0.0095	0.0445
Market Variables														
<i>UIC: Micropolitan</i>	0.0173	0.0106	1.6900	0.0920	0.0974	-0.0036	0.0382	0.0217	0.0166	1.4000	0.1620	0.0761	-0.0107	0.0542
<i>UIC: Rural</i>	0.0056	0.0108	-0.5100	0.6100	0.0643	-0.0269	0.0157	0.0108	0.0192	0.5800	0.5600	0.0496	-0.0268	0.0483
<i>Census Region: South</i>	0.0054	0.0110	0.5000	0.6180	0.3384	-0.0161	0.0270	-0.0283	0.0113	-2.4000	0.0170	0.3269	-0.0506	-0.0061
<i>Census Region: Midwest</i>	-0.0141	0.0098	-1.4200	0.1560	0.2600	-0.0333	0.0050	-0.0215	0.0120	-1.7000	0.0890	0.2263	-0.0451	0.0021
<i>Census Region: West</i>	0.0165	0.0117	1.4500	0.1470	0.1787	-0.0064	0.0394	-0.0366	0.0125	-2.6700	0.0080	0.2143	-0.0611	-0.0121
<i>RNs/1,000</i>	0.0005	0.0007	0.6900	0.4890	12.9057	-0.0008	0.0017	-0.0007	0.0010	-0.7500	0.4500	12.8405	-0.0026	0.0012
<i>MDs/1,000</i>	-0.0107	0.0024	-4.3600	0.0000	3.1878	-0.0154	-0.0060	0.4321	0.0030	-1.4200	0.1570	3.3814	-0.0103	0.0017
<i>HMO Index of Competition</i>	0.0167	0.0125	1.3300	0.1840	0.6274	-0.0079	0.0412	0.0163	0.0172	0.9500	0.3400	0.6475	-0.0174	0.0499
<i>Hospital Days/1,000</i>	0.0000	0.0000	-0.9200	0.3560	1006.44	0.0000	0.0000	0.0000	0.0000	-1.9300	0.0530	1023.98	0.0000	0.0000
<i>Unemployment Rate</i>	-0.0023	0.0017	-1.3800	0.1660	5.389	-0.0057	0.0010	-0.0007	0.0027	-0.2800	0.7820	5.4545	-0.0060	0.0045
<i>Percent Uninsured</i>	-0.0030	0.0010	-2.8800	0.0040	13.2437	-0.0050	-0.0009	0.0003	0.0014	-0.1900	0.8520	13.6072	-0.0031	0.0026
<i>% of Population over Age 65</i>	0.0017	0.0007	2.2800	0.0220	12.3282	0.0002	0.0032	0.0008	0.0011	0.6900	0.4930	12.3330	-0.0015	0.0030

Table 5.31[Continued]: Univariate Probit Regression:
Married and Unmarried Nurses Not Working in Nursing (Including Those Who Work in Non-Nursing Employment or Who Do Not Work) Compared to Nurses Who Work in Nursing in 2004 DV: Not Working in Nursing =1)
 (Standard errors adjusted for clustering on FIPS)

	Married (N = 2,114,400)							Unmarried (N = 792,260)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
Political Variables														
<i>Liberalism: Centrist</i>	-0.0036	0.0069	-0.5300	0.5980	0.5158	-0.0171	0.0099	-0.0119	0.0102	-1.1600	0.2440	0.4932	-0.0319	0.0081
<i>Liberalism: Liberal</i>	-0.0127	0.0109	-1.1400	0.2550	0.2471	-0.0341	0.0087	-0.0210	0.0128	-1.5800	0.1150	0.2821	-0.0462	0.0041
<i>Democratic Governor</i>	0.0051	0.0067	0.7600	0.4480	0.4045	-0.0081	0.0183	0.0033	0.0084	0.3900	0.6960	0.3843	-0.0131	0.0197
<i>Reference Category for Age = < 30 Years</i> <i>Reference Category for Highest Educational Preparation = Diploma</i> <i>Reference Category for Age of Children in the Home = No Children</i> <i>Reference Category for Other Family Income = No Other Family Income</i> <i>Reference Category for Length of Time Since Graduation = < 5 Years</i> <i>Reference Category for Work Before RN Licensure = No Healthcare Work Before RN</i> <i>Reference Category for Urban Influence = Metropolitan</i> <i>Reference Category for Congressional Liberalism = Conservative</i> <i>Reference Category for U.S. Census Region = Northeast</i>														

Table 5.31 shows the omnibus test for differences between nurses who work in nursing and those who do not was significant both for married and unmarried nurses ($p < .001$). The predicted probability of a married nurse not working in nursing was 12.9% and the predicted probability of an unmarried nurse not working in nursing was 9.9%.

Endogenous Variables

Predicted wage and square of the predicted wage. Neither the predicted wage nor the square of the predicted wage were significant in this reduced form equation of nurses working in nursing compared to nursing who did not work at all when controlling for all other factors in the model (Table 5.31). This finding is important given the large amount of debate in the literature whether salary is an important predictor of labor market behavior of registered nurses in the United States. Previous research (Brewer et al., 2003; Kovner & Brewer, 2001) has suggested both that the wage is central to the labor market for registered nurses and that nurses may indeed work less as wage increases. The lack of both linear and quadratic wage effects in these data when controlling for sociodemographic, market, and political factors suggests that factors other than wage are important to understanding why nurses choose not to work in nursing and therefore, solutions that go beyond wage incentives are necessary to influence nurses to participate in the nursing labor market.

Sociodemographic Characteristics

Age. All stratifications of age were significant in the model for married nurses with nurses at each increasing age group over the age of 30 being more likely to not work in nursing (Table 5.31). Married nurses over the age of 65 were 26.4% less likely to work in nursing than were nurses under the age of 30. Age was not as significant a

predictor among unmarried nurses with the only significant age group predictor of not working in nursing being those that were over the age of 65 who were 23.8% less likely to work in nursing than were nurses under 30 years of age.

Gender and marriage and highest educational preparation. Gender was significant for married nurses, with male nurses 2.5% more likely to work in nursing than female nurses, but there was no difference in the unmarried nurses. Highest educational preparation was a significant predictor of working in nursing for both married and unmarried nurses. Married (2.7%) and unmarried (2.6%) nurses with an associate degree were more likely to work in nursing than nurses with a hospital diploma. Similarly, nurses with a graduate degree in nursing were 4.5% (married) and 4.7% (unmarried) more likely to work in nursing than diploma-educated nurses. By contrast, however, married nurses with a baccalaureate degree were 2.6% more likely to be out of the nursing labor market than were nurses who had earned only a hospital diploma.

Children. The presence of children under the age of six was a significant predictor of not working in nursing for both married and unmarried nurses. Nurses who reported that all of their children were under the age of six were 1.3% (married) and 1.4% (unmarried) less likely to work in nursing than were nurses with no children in the home. Nurses with some children under the age of six and some children over the age of six were different by marital status. Having children in the home who are all over the age of six was a significant predictor for married nurses, but was not significant for unmarried nurses. However, the direction of the prediction for this group of married nurses with all of their children over the age of six was in the opposite direction as was the case when the children were all younger. Married nurses whose children were all over the age of six

were actually 5.3% *more* likely to work in nursing than were nurses with no children.

This same pattern was true for unmarried nurses who had some children under and some over the age of six with these unmarried nurses being 6.5% more likely to work in nursing than a nurse with no children at home.

Other family income. The presence of other family income was progressively more important as other family income increased past \$25,000. The presence of other family income between zero and \$25,000 was significant for unmarried but not for married nurses and unmarried nurses with other family income of less than \$25,000 were 8.1% less likely to work in nursing than were nurses with no other family income. Higher levels of other family income were powerful predictors of working in nursing. Most striking were the nurses with other family income in excess of \$100,000 with these nurses being 50.3% (married) and 42.1% (unmarried) less likely to work in nursing than nurses with no other family income.

Race and foreign education. While being of other than white ethnicity was not a significant predictor of working in nursing for married or unmarried nurses, foreign education was significant for both groups. Nurses who were educated outside of the United States, but were licensed in the United States were 7.1% (married) and 5.7% (unmarried) more likely to work in nursing than were nurses who were educated in the United States.

Years since graduation. The number of years that had elapsed since a nurse graduated from their basic program of nursing education was a significant predictor of absence from the nursing workforce for both married and unmarried nurses. However, married nurses left the nursing workforce sooner than unmarried nurses as evidenced by

the fact that married nurses who had graduated from nursing school six to ten years prior to data collection were 4.8% less likely to work in nursing than nurses who had been out of nursing for less than five years. Unmarried nurses who had been out of nursing school six to ten years were not different than unmarried nurses who had been out of school less than five years. After ten years, however, married and unmarried nurses were progressively less likely to be engaged in nursing employment with each time stratification that was measured in this study. Married nurses who had been out of nursing school in excess of 25 years were 17.5% less likely to be employed in nursing than nurses who had been out of school for less than five years, compared to 15.5% of nurses of the same graduation cohort who were unmarried.

Work before RN licensure. Having been employed as a certified nursing assistant was a significant predictor of nursing employment for married nurses, but was not significant in unmarried nurses. Married nurses who had been certified as nursing assistants prior to RN licensure were 3.4% more likely to work in nursing than a nurse who had no healthcare experience prior to completing their nursing education. Other healthcare experience prior to RN licensure was not significant in the prediction of a nurse's likelihood to be employed in nursing.

Market and Political Factors

Very few of the market factors and none of the political factors measured in this study were significant predictors of nurses participating in the nursing labor market in this regression model. The number of physicians per 1,000 population, percent uninsured, and the percent of the county population over the age of 65 were significant predictors for married nurses only. For each unit increase at the mean of 3.18 physicians

per 1,000 county residents, married nurses were 1.1% more likely to work in nursing though no effect was seen for unmarried nurses. As the rate of uninsured members of the population increased, married nurses were more likely to work in nursing, though this effect was not seen for unmarried nurses. Given the mean of 13.2% uninsurance measured at the county level, each unit increase in the percent of uninsured citizens resulted in a 0.3% increased likelihood of married nurses working in nursing. Finally, as the percent of county residents over the age of 65 increased, nurses were more likely to be absent from the nursing workforce, though this effect was small. Specifically, with each one unit increase in the percentage of county residents over 65, nurses were 0.2% less likely to be employed in nursing.

Specific Aim #4: Determine if registered nurses who work in non-nursing (excluding those who do not work) are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.

The fourth aim of this study was accomplished using a two-stage least squares estimation. First, the sample of working nurses in the NSSRN (2004) was used to estimate a market wage for all nurses in the sample. This estimated market wage controlled for the missing wage data in the sample of nonworking nurses and for the potential endogeneity of the wage in nurses who work. In the second stage, the estimated wage was used in a univariate probit model to estimate the probability of working in non-nursing compared to working in nursing (excluding those who did not work at all). Given that all market-level and political variables were reported on a county or state level, all probit analyses were calculated based on the more conservative of these and all

standard errors are adjusted for 2,409 FIPS code clusters. The first stage model is discussed in the third aim of this study and the same procedure was used in this analysis. The univariate probit analysis used in the second stage model is shown in Table 5.32.

Table 5.32: Univariate Probit Regression:
Married and Unmarried Nurses Working in Non-Nursing Compared to Working in Nursing in 2004
(DV: Working in Non-Nursing = 1) (Excludes Nurses Not Working) (Standard errors adjusted for clustering on FIPS)

	Married (N = 1,850,200)							Unmarried (N = 704,050)						
	Number of obs = 23,086 Sum of Weight = 1,850,200 Wald chi2(42) = 524.77 Prob > chi2 = 0.0000 Log pseudolikelihood = -4056.1612 Pseudo R2 = 0.2311 Predicted Probability: 0.0345 (at x-bar)							Number of obs = 8,595 Sum of Weight = 704,050 Wald chi2(42) = 216.92 Prob > chi2 = 0.0000 Log pseudolikelihood = -1459.2386 Pseudo R2 = 0.2811 Predicted Probability: 0.0307 (at x-bar)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
Endogenous Variables														
Predicted Wage	0.0034	0.0041	0.8300	0.4060	28.2173	-0.0047	0.0115	-0.0073	0.0054	-1.3500	0.1770	28.1056	-0.0179	0.0033
Square of Predicted Wage	0.0000	0.0001	-0.7200	0.4710	814.2810	-0.0002	0.0001	0.0001	0.0001	1.7000	0.0880	809.3660	0.0000	0.0003
Sociodemographic Variables														
Age: 30 – 44 *	-0.0116	0.0086	-1.3000	0.1940	0.3701	-0.0285	0.0053	0.0120	0.0162	0.8000	0.4270	0.2790	-0.0197	0.0437
Age: 45 – 64*	-0.0102	0.0096	-1.0800	0.2810	0.5293	-0.0290	0.0085	0.0095	0.0144	0.6600	0.5120	0.5375	-0.0188	0.0377
Age: 65+ *	0.0313	0.0182	2.1800	0.0290	0.0271	-0.0043	0.0670	0.0308	0.0267	1.4800	0.1390	0.0584	-0.0214	0.0831
Gender: Male	0.0409	0.0109	4.8800	0.0000	0.0606	0.0197	0.0622	-0.0065	0.0092	-0.6600	0.5120	0.0662	-0.0245	0.0114
Race/Ethnicity: Other than White	-0.0009	0.0055	-0.1600	0.8770	0.1020	-0.0117	0.0100	-0.0104	0.0057	-1.6200	0.1050	0.1349	-0.0216	0.0008
Highest Education: Associate**	-0.0091	0.0043	-2.0500	0.0400	0.3628	-0.0175	-0.0007	-0.0050	0.0067	-0.7400	0.4620	0.3651	-0.0182	0.0081
Highest Education: Baccalaureate**	0.0010	0.0041	0.2600	0.7990	0.3515	-0.0070	0.0090	0.0085	0.0066	1.3500	0.1780	0.3456	-0.0044	0.0215
Highest Education: Graduate**	-0.0009	0.0075	-0.1200	0.9050	0.1279	-0.0156	0.0138	-0.0026	0.0102	-0.2500	0.8060	0.1383	-0.0227	0.0175
Children: All < 6***	-0.0143	0.0044	-2.8000	0.0050	0.1447	-0.0230	-0.0056	-0.0156	0.0081	-1.4600	0.0450	0.0394	-0.0216	-0.0083
Children: All > 6***	-0.0125	0.0032	-3.7800	0.0000	0.3234	-0.0186	-0.0063	-0.0046	0.0052	-0.8600	0.3890	0.2083	-0.0148	0.0055
Children: Some < and > 6***	-0.0136	0.0050	-2.3200	0.0200	0.0784	-0.0233	-0.0039	-0.0233	0.0058	-2.2900	0.0220	0.0244	-0.0347	-0.0119

Table 5.32 [Continued]: Univariate Probit Regression:
Married and Unmarried Nurses Working in Non-Nursing Compared to Working in Nursing in 2004
(DV: Working in Non-Nursing = 1) (Excludes Nurses Not Working) (Standard errors adjusted for clustering on FIPS)

	Married (N = 1,850,200)							Unmarried (N = 704,050)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
<i>OFI: Under 25K****</i>	0.0006	0.0064	0.0900	0.9240	0.2371	-0.0119	0.0131	-0.0017	0.0048	-0.3700	0.7130	0.4885	-0.0111	0.0076
<i>OFI: 25 – 50K****</i>	0.0064	0.0066	1.0100	0.3130	0.2841	-0.0065	0.0193	0.0258	0.0112	2.8500	0.0040	0.0838	0.0039	0.0477
<i>OFI: 50 – 100K****</i>	0.0182	0.0068	2.8600	0.0040	0.3488	0.0049	0.0316	0.0166	0.0097	1.9700	0.0490	0.0863	0.0024	0.0157
<i>OFI: > 100K****</i>	0.0851	0.0170	7.3800	0.0000	0.0603	0.0519	0.1183	0.1180	0.0550	3.4800	0.0010	0.0071	0.0103	0.2258
<i>Foreign Educated</i>	-0.0308	0.0030	-4.8000	0.0000	0.0372	-0.0367	-0.0249	-0.0249	0.0055	-2.4200	0.0150	0.0349	-0.0357	-0.0142
<i>Student: Full or Part time</i>	0.0060	0.0062	1.0300	0.3040	0.0721	-0.0061	0.0181	0.0137	0.0091	1.7100	0.0870	0.0941	-0.0041	0.0314
<i>Years Since Graduation: 6 – 10+</i>	0.0435	0.0148	3.6500	0.0000	0.1687	0.0145	0.0726	0.0617	0.0265	3.1700	0.0020	0.1394	0.0097	0.1137
<i>Years Since Graduation: 11 – 15+</i>	0.0553	0.0189	3.8500	0.0000	0.1299	0.0182	0.0923	0.0315	0.0230	1.7000	0.0900	0.1140	-0.0137	0.0766
<i>Years Since Graduation: 16 – 25+</i>	0.0692	0.0170	5.1800	0.0000	0.2793	0.0359	0.1024	0.0784	0.0282	3.7900	0.0000	0.2370	0.0232	0.1336
<i>Years Since Graduation: > 26+</i>	0.0908	0.0199	6.0300	0.0000	0.2897	0.0517	0.1299	0.0841	0.0276	4.0400	0.0000	0.3106	0.0300	0.1382
<i>Work Before RN Licensure: CNA++</i>	-0.0045	0.0031	-1.4100	0.1580	0.2697	-0.0105	0.0016	-0.0017	0.0049	-0.3500	0.7290	0.2711	-0.0112	0.0078
<i>Work Before RN Licensure: LPN++</i>	-0.0177	0.0039	-3.7000	0.0000	0.1094	-0.0254	-0.0101	-0.0077	0.0066	-1.0800	0.2790	0.1238	-0.0206	0.0052
<i>Work Before RN Licensure: Allied Health++</i>	0.0036	0.0067	0.5600	0.5740	0.0561	-0.0094	0.0167	-0.0004	0.0105	-0.0400	0.9680	0.0594	-0.0211	0.0202
<i>Work Before RN Licensure: Other++</i>	0.0015	0.0050	0.3200	0.7520	0.0953	-0.0082	0.0113	0.0069	0.0085	0.8700	0.3860	0.1018	-0.0097	0.0234
Market Variables														
<i>UIC: Micropolitan+++</i>	0.0049	0.0052	0.9900	0.3240	0.0965	-0.0053	0.0151	-0.0005	0.0084	-0.0600	0.9500	0.0729	-0.0170	0.0159
<i>UIC: Rural+++</i>	-0.0060	0.0051	-1.1000	0.2710	0.0651	-0.0159	0.0040	0.0023	0.0104	0.2300	0.8180	0.0496	-0.0180	0.0226
<i>Census Region: South+++++</i>	-0.0053	0.0046	-1.1300	0.2590	0.3401	-0.0142	0.0037	-0.0239	0.0054	-4.1100	0.0000	0.3310	-0.0344	-0.0134
<i>Census Region:</i>	-0.0048	0.0046	-1.0300	0.3030	0.2637	-0.0138	0.0041	-0.0138	0.0060	-2.0600	0.0400	0.2282	-0.0256	-0.0019

Table 5.32 shows that the omnibus test for significant differences between nurses working in non-nursing compared to nurses working in nursing is significant for both married and unmarried nurses ($p < .001$). The predicted probability of working in non-nursing compared to working in nursing was similar for both groups of nurses with a 3.44% probability of working in non-nursing for married nurses and a 3.08% probability of working in non-nursing for unmarried nurses.

Endogenous Variables

Predicted wage and square of the predicted wage. As was the case when in the previous model, neither the predicted wage nor the square of the predicted wage were significant in this equation, when controlling for sociodemographic, market, and political factors (Table 5.32). The lack of both linear and quadratic wage effects in these data suggests that factors other than wage are important to understanding why some nurses choose to work in non-nursing positions.

Sociodemographic Characteristics

Age and gender. Age-related differences were not seen between nurses working in non-nursing employment and those working in nursing except in married nurses over the age of 65. These older nurses were 3.1% more likely to work in non-nursing over working in nursing than nurses under the age of 30 (the reference category) (Table 5.31). Differences attributable to gender were also evident when comparing nurses who work in non-nursing employment and those who work in nursing. Married male nurses were 4.1% more likely than were female nurses to work in non-nursing employment. These differences, however, were not seen in unmarried male nurses.

Age of children in the home. Married nurses who had children in the home, regardless of age, were more likely to work in nursing (compared to non-nursing) than nurses who had no children in the home (Table 5.32). The effect of children under the age of six was most notable and was seen in both married and unmarried nurses with children under the age of six, whether or not there were older children in the home as well. Consistently, nurses with young children were more likely to work in nursing than were nurses with no children at home at all. The largest effect was seen in unmarried nurses with some children under and some over the age of six. These nurses were 2.3% more likely than unmarried nurses with no children at home to work in nursing.

Other family income. Other family income was an important predictor of nurses choosing to work in non-nursing employment, whether the nurse was married or unmarried. Married nurses who had sources of other family income between \$50,000 and \$100,000 were 1.8% and married nurses with other family income in excess of \$100,000 were 8.5% more likely to work in non-nursing employment than nurses with no other family income (Table 5.32). This effect of other family income was even more pronounced in unmarried nurses with other family income over \$100,000. These unmarried nurses with the largest amounts of other family income were 11.8% more likely to work in non-nursing employment than were unmarried nurses with no other family income.

Race/Ethnicity and foreign education. While being of white ethnicity or of other than white ethnic heritage was not a significant predictor of working in non-nursing over working in nursing, married nurses who were educated outside the United States were 3.1% more likely to work in nursing over non-nursing than nurses who were educated in

the U.S. Unmarried nurses who were educated outside of the United States were 2.5% more likely to work in nursing over non-nursing than nurses who were educated in the United States.

Time since graduation. The longer married nurses had been out of their basic program of nursing education, the more likely they were to work in non-nursing employment. Married registered nurses who had been out of school for six to ten years were 4.4% more likely to work in non-nursing (compared to working in nursing) than were nurses who had been out of school for less than five years (the reference category). By contrast, married nurses who had been out of school over 25 years were 9.1% more likely to work in non-nursing than a married nurse who had been out of school less than five years. This same pattern was present in unmarried nurses. Unmarried nurses who had been out of school between six and ten years were 6.2% more likely to work in non-nursing employment than an unmarried nurse who had been out of school less than five years. Similar to married nurses, an unmarried nurse who had been out of school in excess of 25 years was 8.4% more likely to work in non-nursing employment than a nurse who had been out of school for less than five years.

Healthcare employment before RN licensure. Unlike other comparisons that have been made, healthcare employment prior to initial RN licensure was not an important predictor of working in non-nursing employment, when compared to work in nursing. The only difference attributable to healthcare employment prior to initial RN licensure was seen in relation to married nurses who had been employed as licensed practical/vocational nurses prior to becoming a registered nurse. These married nurses who had been LPN/LVNs prior to initial RN licensure were 1.8% more likely to work in

nursing (compared to working in non-nursing) than were nurses who had no healthcare experience prior to initial RN licensure.

Market and Political Factors

Congressional liberalism. Married registered nurses working in states with more politically liberal congressional representation were more likely to work in nursing than nurses living in politically conservative states. While these differences were small, this may be an important finding as political environment has not been widely viewed as an important predictor of workplace behavior for registered nurses in the United States. Married nurses who worked in states with liberal congressional representation were 3.9% more likely to work in nursing than nurses who lived in states with conservative congressional representatives. While congressional liberalism appeared to be important to workplace behavior of married nurses, similar differences were not seen with unmarried nurses.

Census region. Census region was not an important predictor of nurses choosing to work in non-nursing for married registered nurses in this study, but unmarried nurses in the South, Midwest, and the West were more likely to work in nursing than were unmarried nurses in the Northeast, those these differences were small and may be of limited importance.

Physicians per 1,000 population and managed care penetration. As the number of physicians increased in a given county, registered nurses were more likely to work in nursing than to work in non-nursing employment, though the effect was small. Specifically, for each one unit increase in physicians per one-thousand county population, registered nurses were 0.4% (married) and 0.5% (unmarried) more likely to choose

nursing employment over non-nursing work. Managed care penetration was also a significant predictor of registered nurse workplace behavior, but the direction of influence was not the direction that would be sought by healthcare policy-makers. With each one unit increase in HMO penetration, nurses were 2.2% more likely to choose non-nursing work over employment in nursing. While this effect appears to be small, the additive effects may be very important to the nursing workforce when one considers that a ten percent increase in HMO penetration may increase a nurse's likelihood to choose non-nursing work over nursing by as much as 22.2%.

Specific Aim #5: Determine if registered nurses who work in non-nursing employment are different from those who do not work at all in terms of sociodemographic characteristics, political factors, and market factors.

The fifth aim of this study was accomplished using a two-stage least squares estimation. First, a market wage was estimated for all nurses in the sample as described earlier. In the second stage, the estimated wage was used in a univariate probit model to estimate the probability of working in non-nursing compared to not working at all. Given that all market-level and political variables were reported on a county or state level, all probit analyses were calculated based on the more conservative of these and all standard errors are adjusted for 2,409 FIPS code clusters. The univariate probit analysis used to test differences between nurses who work in non-nursing and those who do not work at all is shown in Table 5.33.

Table 5.33: Univariate Probit Regression:
Married and Unmarried Nurses Working in Non-Nursing Compared to Not Working in 2004 (DV: Working in Non-Nursing = 1)
 (Standard errors adjusted for clustering on FIPS) (Excludes Nurses Who are Working in Nursing)

	Married (N = 353.360)							Unmarried (N = 121,130)						
	Number of obs = 3975 Sum of Weight = 353,360 Wald chi2(42) = 333.37 Prob > chi2 = 0.0000 Log pseudolikelihood = -1993.1303 Pseudo R2 = 0.3828 Predicted Probability: .2291 (at x-bar)							Number of obs = 1327 Sum of Weight = 121,130 Wald chi2(42) = 264.67 Prob > chi2 = 0.0000 Log pseudolikelihood = -535.37444 Pseudo R2 = 0.3104 Predicted Probability: .2366 (at x-bar)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
Endogenous Variables														
Predicted Wage	0.0091	0.0258	0.3500	0.7250	28.7796	-0.0415	0.0597	-0.0306	0.0478	-0.6400	0.5220	29.0803	-0.1242	0.0630
Square of Predicted Wage	-0.0002	0.0004	-0.3900	0.6950	842.869	-0.0010	0.0007	0.0007	0.0008	0.9400	0.3490	861.6860	-0.0008	0.0022
Sociodemographic Variables														
Age: 30 – 44 *	0.0192	0.0579	0.3300	0.7380	0.2405	-0.0943	0.1327	0.0687	0.1140	0.6300	0.5290	0.1372	-0.1549	0.2922
Age: 45 – 64*	0.0400	0.0572	0.7000	0.4870	0.5421	-0.0722	0.1522	-0.0338	0.1063	-0.3200	0.7510	0.4832	-0.2421	0.1746
Age: 65+ *	-0.1498	0.0443	-2.8100	0.0050	0.1821	-0.2367	-0.0629	-0.1999	0.0916	-1.9500	0.0510	0.3428	-0.3795	-0.0204
Gender: Male	0.2374	0.0539	4.8300	0.0000	0.0383	0.1318	0.3430	-0.0319	0.0804	-0.3800	0.7020	0.0455	-0.1894	0.1256
Race/Ethnicity: Other than White	-0.0314	0.0304	-1.0000	0.3200	0.0726	-0.0911	0.0282	0.0503	0.0589	0.8900	0.3750	0.0962	-0.0651	0.1656
Highest Education: Associate**	-0.0189	0.0255	-0.7300	0.4640	0.2582	-0.0688	0.0310	0.0284	0.0503	0.5700	0.5670	0.2428	-0.0702	0.1269

Table 5.33 [Continued]: Univariate Probit Regression:
Married and Unmarried Nurses Working in Non-Nursing Compared to Not Working in 2004 (DV: Working in Non-Nursing = 1)
 (Standard errors adjusted for clustering on FIPS) (Excludes Nurses Who are Working in Nursing)

	Married (N = 353.360)							Unmarried (N = 121,130)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
<i>Highest Education: Baccalaureate**</i>	0.0650	0.0241	2.7600	0.0060	0.3243	0.0179	0.1122	0.0767	0.0445	1.7700	0.0770	0.2906	-0.0105	0.1638
<i>Highest Education: Graduate**</i>	0.1329	0.0541	2.6400	0.0080	0.1328	0.0268	0.2390	0.0709	0.0904	0.8200	0.4130	0.1513	-0.1062	0.2480
<i>Children: All < 6***</i>	-0.0539	0.0319	-1.5900	0.1120	0.1105	-0.1165	0.0086	-0.1615	0.0479	-2.3400	0.0190	0.0414	-0.2554	-0.0676
<i>Children: All > 6***</i>	0.0673	0.0240	2.9000	0.0040	0.2182	0.0202	0.1144	0.0614	0.0538	1.1900	0.2330	0.1183	-0.0441	0.1670
<i>Children: Some < and > 6***</i>	-0.0636	0.0352	-1.6600	0.0970	0.0647	-0.1326	0.0054	-0.9318	0.1174	-0.6800	0.4980	0.0065	-0.3232	0.1368
<i>OFI: Under 25K****</i>	-0.1130	0.0416	-2.3000	0.0210	0.0986	-0.1945	-0.0315	-0.5734	0.0494	-9.6900	0.0000	0.3860	-0.6701	-0.4767
<i>OFI: 25 – 50K****</i>	-0.2103	0.0348	-4.7300	0.0000	0.2166	-0.2785	-0.1422	-0.5856	0.0379	-12.0100	0.0000	0.3019	-0.6599	-0.5113
<i>OFI: 50 – 100K****</i>	-0.3046	0.0461	-6.1000	0.0000	0.4423	-0.3951	-0.2142	-0.4762	0.0322	-11.7000	0.0000	0.2156	-0.5393	-0.4130
<i>OFI: > 100K****</i>	-0.2967	0.0268	-7.4800	0.0000	0.2245	-0.3493	-0.2441	-0.2537	0.0169	-6.2200	0.0000	0.0190	-0.2868	-0.2207
<i>Foreign Educated</i>	-0.1227	0.0462	-2.0500	0.0410	0.0210	-0.2133	-0.0321	-0.1879	0.0477	-2.3100	0.0210	0.0279	-0.2814	-0.0943
<i>Student: Full or Part time</i>	0.0783	0.0434	1.9200	0.0540	0.0416	-0.0067	0.1634	0.0943	0.0751	1.3400	0.1790	0.0596	-0.0528	0.2415
<i>Years Since Graduation: 6 – 10+</i>	0.1710	0.0694	2.6900	0.0070	0.0848	0.0350	0.3070	0.1274	0.1225	1.1200	0.2630	0.0722	-0.1127	0.3675
<i>Years Since Graduation: 11 – 15+</i>	0.1247	0.0734	1.8400	0.0660	0.0887	-0.0192	0.2686	0.1465	0.1510	1.0500	0.2920	0.0485	-0.1494	0.4423
<i>Years Since Graduation: 16 – 25+</i>	0.1236	0.0673	1.9300	0.0530	0.2619	-0.0082	0.2554	0.2241	0.1347	1.7800	0.0750	0.1981	-0.0399	0.4881
<i>Years Since Graduation: > 26+</i>	0.1451	0.0618	2.3100	0.0210	0.5229	0.0240	0.2663	0.1595	0.1032	1.4500	0.1480	0.6321	-0.0427	0.3618
<i>Work Before RN Licensure: CNA++</i>	0.0154	0.0199	0.7800	0.4340	0.2392	-0.0235	0.0543	0.0484	0.0405	1.2300	0.2180	0.2116	-0.0309	0.1278
<i>Work Before RN Licensure: LPN++</i>	-0.0725	0.0299	-2.1900	0.0290	0.0729	-0.1312	-0.0139	-0.0542	0.0469	-1.0900	0.2750	0.0917	-0.1462	0.0378
<i>Work Before RN Licensure: Allied</i>	0.0508	0.0424	1.2500	0.2100	0.0405	-0.0323	0.1340	-0.0014	0.0794	-0.0200	0.9860	0.0432	-0.1570	0.1542

<i>Health++</i>														
Table 5.33 [Continued]: Univariate Probit Regression:														
Married and Unmarried Nurses Working in Non-Nursing Compared to Not Working in 2004 (DV: Working in Non-Nursing = 1)														
(Standard errors adjusted for clustering on FIPS) (Excludes Nurses Who are Working in Nursing)														
	Married (N = 353.360)							Unmarried (N = 121,130)						
	Df/Dx	Robust SE	Z	P> z	x-bar	95% CI		Df/Dx	Robust SE	Z	P> z	x-bar	95% CI	
<i>Work Before RN Licensure: Other++</i>	0.0676	0.0334	2.1400	0.0330	0.0716	0.0022	0.1330	0.0166	0.0615	0.2700	0.7840	0.0873	-0.1040	0.1372
Market Variables														
<i>UIC: Micropolitan+++</i>	0.0095	0.0283	0.3400	0.7360	0.1066	-0.0460	0.0649	-0.0396	0.0548	-0.6900	0.4880	0.0938	-0.1470	0.0678
<i>UIC: Rural+++</i>	-0.0191	0.0332	-0.5600	0.5730	0.0579	-0.0843	0.0460	-0.1077	0.0555	-1.6400	0.1020	0.0469	-0.2165	0.0010
<i>Census Region: South+++++</i>	-0.0584	0.0265	-2.1400	0.0320	0.3230	-0.1103	-0.0065	-0.1672	0.0435	-3.4400	0.0010	0.2824	-0.2525	-0.0819
<i>Census Region: Midwest+++++</i>	-0.0158	0.0275	-0.5700	0.5700	0.2389	-0.0696	0.0381	-0.0676	0.0462	-1.3900	0.1640	0.2111	-0.1583	0.0230
<i>Census Region: West+++++</i>	-0.0340	0.0295	-1.1200	0.2620	0.1841	-0.0918	0.0237	-0.1535	0.0428	-3.1100	0.0020	0.2089	-0.2375	-0.0695
<i>RNs/1,000</i>	0.0010	0.0015	0.6900	0.4930	12.3426	-0.0019	0.0039	0.0023	0.0028	0.8200	0.4130	12.1237	-0.0032	0.0079
<i>MDs/1,000</i>	-0.0018	0.0053	-0.3400	0.7370	2.8784	-0.0121	0.0086	-0.0312	0.0107	-2.9100	0.0040	3.0827	-0.0522	-0.0101
<i>HMO Index of Competition</i>	0.0039	0.0394	0.1000	0.9210	0.6371	-0.0732	0.0811	0.0759	0.0794	0.9600	0.3390	0.6519	-0.0798	0.2315
<i>Hospital Days/1,000</i>	0.0000	0.0000	0.4500	0.6550	903.463	0.0000	0.0000	0.0000	0.0000	0.7500	0.4520	896.7100	0.0000	0.0001
<i>Unemployment Rate</i>	0.0024	0.0055	0.4400	0.6600	5.2700	-0.0083	0.0132	-0.0097	0.0110	-0.8700	0.3820	5.4116	-0.0313	0.0120
<i>Percent Uninsured</i>	0.0000	0.0027	0.0000	0.9980	12.8126	-0.0053	0.0053	0.0049	0.0052	0.9300	0.3510	13.2206	-0.0054	0.0151
<i>% of Population over Age 65</i>	-0.0012	0.0024	-0.4900	0.6250	12.5402	-0.0060	0.0036	-0.0054	0.0046	-1.1800	0.2380	12.6833	-0.0144	0.0036
Political Variables														
<i>Liberalism: Centrist++++</i>	-0.0508	0.0205	-2.4700	0.0130	0.5123	-0.0909	-0.0106	-0.0818	0.0453	-1.7900	0.0730	0.4735	-0.1705	0.0069
<i>Liberalism: Liberal++++</i>	-0.0562	0.0294	-1.8400	0.0660	0.2514	-0.1138	0.0014	-0.0703	0.0583	-1.1600	0.2440	0.3084	-0.1847	0.0440
<i>Democratic Governor</i>	-0.0185	0.0176	-1.0500	0.2940	0.4274	-0.0529	0.0159	-0.0172	0.0357	-0.4800	0.6300	0.3945	-0.0871	0.0527

Reference Category for Age = < 30 Years

Reference Category for Highest Educational Preparation = Diploma

Reference Category for Age of Children in the Home = No Children

Reference Category for Other Family Income = No Other Family Income

Reference Category for Length of Time Since Graduation = < 5 Years

Reference Category for Work Before RN Licensure = No Healthcare Work Before RN

Reference Category for Urban Influence = Metropolitan

Reference Category for Congressional Liberalism = Conservative

Reference Category for U.S. Census Region = Northeast

Table 5.33 shows the omnibus test for significant differences between nurses working in non-nursing compared to nurses not working at all is significant for both married and unmarried nurses ($p < .001$). The predicted probability of working in non-nursing compared to not working at all was similar for both groups of nurses with a 22.91% probability of working in non-nursing for married nurses and a 23.66% probability of working in non-nursing for unmarried nurses.

Endogenous Variables

Predicted wage and square of the predicted wage. Neither the predicted wage nor the square of the predicted wage were significant in this model of nurses working in non-nursing compared to nursing who did not work at all when controlling for sociodemographic, market, and political factors. In short, factors other than wage appear to be critical to labor market decisions of registered nurses.

Sociodemographic Characteristics

Age, gender, and age of children. When comparing a choice to work in non-nursing compared to not working at all, married nurses over the age of 65 were 14.9% more likely to not work at all than were nurses under age 30 (Table 5.33). Other differences attributable to age between nurses who work in non-nursing and those who do not work at all were not evident in this analysis. Male nurses who were married were 23.7% more likely to work in non-nursing over not working at all than were female nurses. Unmarried nurses with children who were all under the age of six were 16.2% less likely to work in non-nursing compared to unmarried nurses with no children. An interesting contrast is seen in the case of married nurses whose children are all over the

age of six. In this case, married nurses whose children were all over the age of six were 6.7% *more* likely to work in non-nursing than were nurses with no children.

Highest educational achievement and years since graduation. No differences were seen between nurses with an associate degree and nurses with a hospital diploma with regard to working in non-nursing compared to not working at all (Table 5.33). Married nurses with a baccalaureate degree were 6.5% and married nurses with a graduate degree were 13.3% more likely to work in non-nursing (compared to being not employed) than were nurses with a diploma education. The only differences seen in regard to length of time since graduation were seen in married nurses who had been out of school six to ten years. This group was 17.1% more likely to work in non-nursing than nurses who had been out of school less than five years.

Other family income and work before RN licensure. Other family income was a significant predictor of working in non-nursing vs. not working at all for both married and unmarried nurses. Married nurses with other family income in excess of \$50,000 were 30% more likely to not work at all than nurses with no other family income (Table 5.33). Unmarried nurses with other family income over \$100,000 were 25.4% more likely to not work at all than unmarried nurses with no other family income. Married nurses who had been licensed as LPNs prior to initial RN licensure were 7.3% more likely to not work at all than were nurses with no healthcare employment experience prior to initial RN licensure. By contrast, nurses who worked in “other” (undefined) nursing employment prior to initial RN licensure were 6.8% more likely to work in non-nursing than were nurses with no healthcare experience prior to initial RN licensure.

Market and Political Factors

Married nurses who lived in states with centrist congressional representation were 5.1% more likely not to participate in the labor market (compared to working in non-nursing) than were nurses in conservative states (Table 5.32). However, no other political factors were significant for either married or unmarried nurses in this study. Registered nurses residing in the Southern U.S. census region, regardless of marital status, were more likely to not work than to work in non-nursing employment. Specifically nurses in the South who were married were 5.8% and Southern nurses who were unmarried were 16.7% more likely than Northeastern nurses (the reference category) to not work at all, rather than work in non-nursing employment. Nurses in the Western U.S. census region were also 15.4% more likely to not work at all than to work in non-nursing compared to nurses in the Northeast U.S. census region.

Specific Aim #6: Measure the relative importance of factors that affect the joint decision not to work in nursing and to work in non-nursing.

The bivariate results presented in Appendix B report the unstandardized coefficients, the marginal effects at the mean for continuous variables, and the marginal effect for categorical variables when they change from zero to one. Appendix B first presents the coefficients and marginal effects for the work in nursing vs. not work in nursing (WN/NWN) equation ($\text{Prob}[\text{NWN}=1]$). The marginal effects are the effects of the variables on the probability of not working in nursing controlling for non-nursing work. The second part of Appendix B presents the coefficients and marginal effects for the work in non-nursing vs. working in nursing (WNN/WN) equation accounting for the

conditioning on the not working in nursing variable in the bivariate regression. The marginal effects shown in the second part of Appendix B are the effects of these variables on the simultaneous probability of a registered nurse not working in nursing and working in non-nursing ($\text{Prob}[\text{NWN}=1; \text{WNN}=1]$).

The bivariate probit analysis supports the hypothesis that working in non-nursing employment is contingent upon a decision not to participate in the nursing labor market ($p < .001$) for both married and unmarried nurses (Appendix B) and that independent factors are responsible for each of these outcomes. The probability of a married registered nurse not working in nursing was 9.1% and the probability of a married nurse who does not participate in the nursing labor market then choosing to work in non-nursing employment was 4.3%. Unmarried nurses were less likely to be out of the nursing workforce (6.8%) than married nurses, and were also less likely to then choose to work in non-nursing (3.1%) than were married nurses.

Significant Variables for the Work in Nursing vs. Not Work in Nursing Equation

For both married and unmarried nurses, age had no effect other than for nurses over the age of 65 where the effect was positive supporting the hypothesis that nurses over the age of 65 were more likely not to participate in the nursing labor market than nurses under the age of thirty (the reference category) (Appendix B). Married nurses with all levels of education beyond the associate degree were less likely to be absent from the nursing workforce than were nurses with a diploma education. Similar patterns attributable to education were seen in unmarried nurses in that nurses with associate and graduate education were less likely to be absent from the labor market, though no differences were seen with baccalaureate educated nurses. A positive relationship existed

in relation to the age of children in the home, especially when the children were under the age of six. Married nurses with children of any age were more likely to be out of the nursing labor market than nurses with no children, though this effect held for married nurses only when the nurse had children under the age of six. Both married and unmarried nurses with other family income were more likely to be absent from the nursing workforce than nurses with no other family income and the longer a nurse had been out of school, the less likely they were to work in nursing, whether the nurse was married or unmarried. Married nurses who had been employed as certified nursing assistants or licensed practical/vocational nurses were less likely to be absent from the nursing workforce than nurses with no healthcare experience prior to initial RN licensure, though this effect was not seen in unmarried nurses.

While differences attributable to urban influence or congressional liberalism were not seen in unmarried nurses, married nurses who lived in micropolitan settings were more likely to be absent from the nursing labor market than those in metropolitan settings. Those with more liberal congressional representation were more likely to work in nursing than nurses in more conservative political climates. Differences between U.S. census regions were inconsistent between married and unmarried nurses, though all significant differences attributable to geographic location were negative. Specifically, unmarried nurses in the South and the West and married nurses in the Midwest were less likely to be absent from nursing than those in the Northeast census region. The number of physicians per thousand residents and the percent of the population that was uninsured had a negative effect on absence from the nursing labor market, but only for married nurses.

Significant Variables for the Work in Non-Nursing Equation

Bivariate analysis shows that nurses who did not work in nursing who then chose to work in non-nursing were different from those who did not pursue non-nursing work. When accounting for the conditioning of not working in nursing, married male nurses were 5.8% more likely to work in non-nursing than were female nurses (Appendix B). Further, nurses with children under the age of six were more likely to work in non-nursing than were nurses with no children. Other family income remained a positive predictor of absence from the workforce, though at higher levels was seen in the univariate equations. In the bivariate model, married nurses with other family income over \$50,000 and unmarried nurses with other family income over \$100,000 were more likely to work in non-nursing than were nurses with no other family income. Lesser amounts of other family income had no effect. As the length of time since graduation from the nurse's basic program of nursing education increased, nurses who did not work in nursing were progressively less likely to work in non-nursing. Married registered nurses who had been licensed as practical/vocational nurses prior to initial RN licensure were less likely to work in non-nursing than nurses with no healthcare experience prior to RN licensure. No other differences attributable to work experience were seen in the bivariate model. Married nurses in centrist or politically liberal states, and nurses in the South and the West who did not work in nursing, were less were less likely to work in non-nursing than nurses in more conservative political environments and in the Northeastern United States.

Summary

The findings of this study support the hypothesis that different factors jointly affect nurses who work in non-nursing when accounting for the conditioning of not participating in the nursing market. Important demographic differences are seen between married and unmarried nurses in relation to their attachment to the nursing labor market. Specifically, nurses who are married are less likely to work in nursing than unmarried nurses. Unmarried registered nurses with at least an associate degree in nursing and no children under the age of six are the most likely to be employed in nursing, though male nurses of this population are also more likely to be engaged in non-nursing employment. Additionally, nurses with education beyond the associate degree were more likely to work in non-nursing employment than nurses with an associate degree or hospital diploma. Nurses with other sources of family income, and those who have been out of school for longer periods of time are significantly less likely to work in nursing than are nurses with no other family income and those who have been out of school the least amount of time. The likelihood of a registered nurse being out of the nursing labor market increases as other family income and time since graduation increases. Nurses who had been employed as certified nursing assistants or licensed practical/vocational nurses were more likely to work in nursing than nurses who had no healthcare experience prior to initial RN licensure.

Relatively few of the market factors measured in this study were significant predictors of nursing labor market participation, though nurses living in counties with a higher proportion of practicing physicians and higher rates of uninsured citizens were more likely to work in nursing. Generally, nurses living in areas with higher numbers of

people over the age of sixty-five were more likely to be absent from the nursing workforce. Nurses residing in politically conservative or moderate congressional districts and those in the Southern U.S. Census district were more likely to be absent from the nursing labor market than were nurses in more liberal political environments, though this effect was small.

Among nurses not working in nursing and those working in non-nursing employment, the nursing workplace was a major factor in these absences from the nursing labor market. Nearly all of the independent variables examined in this study clearly demonstrated that nurses who choose not to participate in the labor market and those who work in non-nursing employment choose these career options because they find the nursing labor market unattractive for a variety of reasons including but not limited to inadequate staffing, burnout, stressful work environment, lack of collaboration between healthcare professionals, and unattractive scheduling options present in nursing employment. These findings have significant policy implications for healthcare workforce planning and the development of strategies to alleviate the severe shortage of qualified nursing personnel that currently plagues United States healthcare settings.

These findings will be further discussed in chapter six. Specifically, congruence with and disparities between the hypothesized relationships and the actual findings of this study will be discussed and further explored in relation to the specific aims of this research. Finally, these findings will be compared to those of previous studies that examined participation in the nursing labor market and consistency with the postulates of economic labor market theory will be explored.

CHAPTER VI: DISCUSSION

This chapter will present a discussion of the results of this dissertation research in terms of the specific aims of the study. Consistencies with previous nursing labor market research will be examined and support for the economic labor market theories presented in chapter three will be discussed. Finally, the limitations of this study will be discussed and conclusions and implications for health care policy and future research will be offered.

Specific Aim #1: Describe registered nurses who are working in non-nursing employment and those who are not working at all compared with nurses who are working in nursing.

These findings demonstrate an increase in the percentage of registered nurses who are actively employed in nursing from 81.7% in 2000 to 83.68% in 2004. This is consistent with the findings of Buerhaus et al. (2004) who used U.S. Department of Labor Current Population Survey data to demonstrate signs of a strengthening U.S. nurse labor market with a growth of 205,000 registered nurse FTEs between 2001 and 2003 representing the largest two-year growth rate since 1983. While this congruency in findings is encouraging, Buerhaus et al. (2004) also found that much of this job growth was attributable to employment of nurse over age 50 who were presumably re-entering the workforce and foreign-born RNs who have historically been under-represented in the RN workforce. This latter finding is supported in this research which also demonstrates that gains in nursing employment in 2004 are largely attributable to the work of nurses in the 45 – 64 year-old age group. Buerhaus et al. (2004) also documented an “explosion”

of young RNs (age 21 – 34) in the workforce which was consistent with anecdotal reports of sizable gains in nursing school enrollments of younger students since 2001. This finding was not validated by this research, though this effect was not specifically tested for.

While these increases in the numbers of registered nurses actively employed in nursing are encouraging, they have not been sufficient to make measurable change in the shortage of qualified nursing personnel in the United States. By all accounts, the nursing shortage persists. There is evidence in these findings, however, that the severity of the shortage may be lessening, albeit to a small degree. The number of registered nurses in the United States increased in 2004 to 825 per 100,000 population, up from 792 per 100,000 in 2000. However, wide geographic variations persist with the District of Columbia having the largest concentration of registered nurses with 2,093 per 100,000 and California having the lowest concentration with only 589 registered nurses per 100,000. These patterns have perplexed policy-makers and health care researchers since these numbers were first published and explanations for these regional variations remain largely elusive.

An encouraging trend is seen in the number of nurses not actively employed in nursing. The 2004 National Sample Survey of Registered Nurses (HRSA, 2006b) suggests that the finding of 120,512 registered nurses employed in non-nursing occupations in March 2004 represents an 11.2% decrease in the number of registered nurses engaged in non-nursing employment since 2000. This suggests that a trend toward increased employment in non-nursing positions that began in 1992 may be reversing

(HRSA, 2006b). Interestingly, this number of registered nurses not working in nursing includes 2,209 who have never worked in nursing.

The largest segment of registered nurses not employed in nursing were neither employed in nor seeking employment in nursing. This group consisted of 326,526 registered nurses, which represents 11.2% of all registered nurses. While a large number of these nurses were older than the conventional retirement age of 65 years, a sizable number of these non-employed nurses were younger than 65. Most of these non-active registered nurses were older (55.3 years on average) compared to the 46.8 year average age for all registered nurses. While retirement appears to be a large factor among these non-active nurses, the reasons behind the 14.5% of nurses under the age of 40 who were absent from the workforce are not adequately explained by these findings. Several possibilities exist in relation to why these younger nurses do not work in nursing. It is possible that some of these nurses may be temporarily out of the workforce while raising young families and will return once their children begin school. It is also possible some of these inactive nurses, particularly those who are older, may not work in nursing because of challenges with the physical demands of the profession.

While direct comparisons cannot be made due to different age categorizations used in the NSSRN survey methodology, the findings of Laing and Rademaker (1990) are supported in this study. Nurses with children under the age of six were less likely to work in nursing than nurses with no children or nurses with children who were all over the age of six. However, this effect was only true for married nurses in this study. The findings of this study that unmarried nurses with some children under and some over the age of six were more likely to work in nursing were unexpected and were not consistent

with previous research. These counterintuitive findings may reflect a need for unmarried nurses to work in the nursing labor market in order to support their children in the absence of a secondary source of household income. This theory is further supported in the finding that nurses who were married with higher levels of other family income were the most likely to not be employed in nursing. Conversely, those nurses who were unmarried and had no family income were the most likely to participate in the nursing labor market. These findings are also consistent with the theoretical model proposed in chapter three. The presence of young children in the home and other family income may act as substitution effects and are suggestive of a shift of the labor-leisure choice toward spending more time in the home, and therefore relatively less time working in the labor market for pay.

This study suggests that only eight percent of the currently working registered nurses in the United States are less than 30 years of age, which reflects a decrease from nine percent in 2000 and 25.1 percent in 1980 (HRSA, 2006). Mirroring this decrease is the increase in older nurses in the labor market. The NSSRN findings show that 41.1% of nurses in 2004 were over the age of fifty. This is an increase from 33% in 2000 and 25.1% in 1980 who were over 50 years of age. This increase in the number of older nurses in the labor market may reflect an influx of older nurses returning to the workforce in response to higher salaries and reported shortages in recent years (Buerhaus et al., 2005b; HRSA, 2006b).

Male nurses were found to be more likely to participate in the labor market than female nurses, whether in nursing or in non-nursing. This finding is consistent with the economic labor market theory of household production which suggests that women and

men involved in a marital dyad make decisions about who will participate in the labor market for pay based upon which member of the family unit is the most productive in each setting (Ehrenberg & Smith, 2005). Theory further states that the female partner tends to be more productive in the home setting. Therefore, it is a logical assumption under the premise of economic labor market theory that when family units decide that the female member will not work outside the home, the male partner contributes to the family income by working in the labor market for pay.

Nurses who were non-white and/or educated outside the United States were the most likely to be employed in nursing. This is consistent with previous research (Spetz, 1995) which found that these non-native nurses actually work more than white nurses and consequently earn a higher salary. This finding may be explained by the fact that many of these foreign nurses originate from lesser socioeconomically advantaged countries and maintain family contacts in their country of origin. Further, many of these nurses contribute to the support of families who remain in the nurse's country of origin while working in the United States (Buchan & Sochalski, 2004; Kingma, 2001).

Contrary to the hypothesized negative relationship between student status and nursing employment, nurses who were full or part time students were found to be more likely to be employed in nursing than nurses who were not students. While the hypothesized relationship was not supported in these findings, this relationship suggests that nurses who are also students may be more likely to work in nursing. First, many of the nurses in this study who did not work in nursing were older and therefore more likely to be retired. It is likely that older nurses, who are more likely to be absent from the workforce, are also less likely to be engaged in educational pursuits. Second, these

findings suggest that these nurses who are pursuing further education may be seeking higher education IN nursing, and therefore remain employed in the profession while going to school. A third consideration in relation to these findings, however, is found in the work of Brewer (2006) who found that while these nurses who participate in educational programs are more likely to work in nursing, they work fewer hours and may not contribute to the nursing workforce as much as non-students despite seemingly higher levels of engagement with the nursing labor market.

While it follows intuitively that nurses who have been out of school for longer periods of time may be less likely to work in nursing as they approach retirement, the findings of this study suggest that nurses are leaving the workforce long before traditional employment tenure would predict. Specifically, the findings of this study suggest that nearly 95% of nurses who were within five years of graduation from their initial nursing education program work in nursing. This number is contrasted with 72.6% of nurses who had been out of school in excess of 25 years being actively employed in nursing. While this trend may reflect the influence of retirement as nurses age, it is noteworthy that the rates of employment in non-nursing actually consistently *increased* with years since graduation from a basic program of nursing education. This particular finding has implications for the nursing workplace. As this trend continues and more and more of these experienced nurses depart from the nursing workforce, the profession continues to lose its institutional knowledge. Further, this trend may negatively impact the morale and quality of care at the bedside as fewer experienced nurses are available to mentor the newest entrants to the labor market.

The findings of this study in relation to urban influence are consistent with previous literature on this topic. Specifically, these findings suggest that nurses in rural areas may be more likely to work in nursing than are nurses in micropolitan and metropolitan areas (Buerhaus & Staiger, 1997; Chiha & Link, 2003). While these differences are small, it is possible that more opportunities outside of the nursing labor market may exist in non-rural areas and therefore nurses who may be dissatisfied with nursing may be more able to pursue non-nursing opportunities. This finding is further supported in the finding that most nurses in rural areas who did not work in nursing, did not work at all. However, nurses in non-rural settings who did not work in nursing, were more likely to remain employed, but in non-nursing settings.

Specific Aim #2: Examine the reasons that registered nurses gave for not working in nursing in terms of sociodemographic, market, and political factors.

A somewhat encouraging trend is seen in the finding that over half (52.3%) of the registered nurses who are employed in non-nursing are working in health-related occupations. This represents a change from 2000 when nurses working in non-nursing employment were more likely to have left the healthcare setting entirely (HRSA, 2006b). Specifically, the most often reported non-nursing, but health-related occupations that nurses were engaged in were administrative/management, health-related service, and pharmaceutical sales and service.

Less encouraging statistics are seen in the reasons that nurses choose to work in non-nursing employment. These nurses predominantly cited career change (65.8%), burnout/stressful work environment (44.9%), scheduling challenges or working too many

hours (41.4%), better pay in non-nursing employment (34%), inadequate staffing (33.3%), and the physical demands of working in nursing (28.1%) as reasons for seeking employment outside of the nursing workforce (HRSA, 2006b). These numbers have implications for the future of the nursing profession in a time when it is increasingly important to address the reasons that nurses leave nursing so that the profession may both stem the flow away from the bedside and simultaneously attempt to influence nurses who have previously left nursing to return to the profession.

While much research attention has been placed on the shortage of nurses in the United States, relatively little emphasis has been placed on examination of the population of nurses who maintain licensure as registered nurses, but do not work in nursing. Even less focus has been placed on the reasons these nurses do not work in nursing. The American Hospital Association has long stated that the reason nurses are moving out of traditional nursing roles is because nursing itself is moving away from the traditional hospital environment (AHA, 2001; 2003). Nurses in this study chose not to work in nursing for many reasons that can be broadly categorized into personal concerns or family obligations, not being attracted to a career in nursing, concerns with the nursing workplace, and retirement. The findings of this study make a compelling argument that the movement of care away from more traditional settings is but a small factor in the movement of nurses away from the bedside. In nearly all of the variables examined in this study, dissatisfaction with the nursing workplace and with nursing as a career are at the root of the rationale behind the employment patterns of this subset of the nursing population.

Examination of reasons that nurses don't work in nursing by age reveals two interesting trends. First, nurses seem to state retirement as a reason for being out of the workforce at younger ages than do workers of other populations. While the traditional age of retirement is stated at 65 years of age political pressures are driving that age up and 67 is rapidly becoming the age at which most employees may begin to draw retirement benefits. However, nurses do not fit this trend toward increasing retirement ages. The findings of this study suggest that nearly half (44.7%) of nurses between the ages of 45 and 64 who did not work in nursing cited retirement as the reason for their absence from the labor market. This finding may be attributable to the physical demands of the nursing career that make nursing a challenging career for nurses as they age. Norman et al. (2005) suggest that in addition to economic approaches, strategies to retain an older registered nursing population may include those that capitalize on the acute care nurse and lessen physical demands. Implementing improvements such as assistive devices for patient lifting and handling would help to protect aging nurses from musculoskeletal injuries and industry wide implementation of safer needle devices and practices help protect all nurses from avoidable needlestick and sharps injuries. Buerhaus, Staiger, and Auerbach (2000) offer that it may be possible to delay some of the exodus from the workforce by extending the work life of registered nurses. With very large nursing cohorts reaching retirement age in the near future, even incentivizing a small percentage to work a few more years may have a relatively large impact.

Even more disturbing than the tendency of middle-aged nurses to retire early are the trends among younger nurses and those who have been out of school for the least amount of time to choose not to work in nursing. Nearly all (91.0%) nurses under the age

of thirty and 86% of those who had been out of school less than ten years who seek employment outside of the nursing labor market do so because of dissatisfaction with the nursing workplace. It is important to realize that this younger and newly graduated cohort of nurses has innumerable employment opportunities available to them and these nurses seek different things from employment than nurses in generations past. It is quite possible that these younger nurses are pursuing these alternate opportunities in favor of a career in nursing. Previous research has underscored the need to attract larger numbers of younger nurses to the profession so that nursing will be prepared to meet the challenge of caring for an aging baby-boomer generation.

These findings suggests that those young nurses who are being recruited to the profession may also be the most likely to leave the profession when they face working conditions that are less desirable than can be achieved in other employment sectors. This finding may be in part due to different generational traits found in the younger population. The population of young people who are now entering college represent the beginning of the entry of the “microwave generation” (Hu, Herrick, & Hodgin, 2004) to the workforce. This younger population has been previously documented to have a different work ethic than nurses of previous generations. While it was common for nurses of previous generations to work in one place for the length of their career, younger nurses tend to move around in search of a work environment that will best suit their personal goals (Hu et al., 2004). The implications of these changing generational values must be further examined so that effective changes can be made to the strategies that are used to recruit and retain these younger nurses.

Consistent with the work of previous authors (Brewer et al., 2006; Laing & Rademaker, 1990; Link & Settle, 1981) and with household production economic theory, married female nurses in this study were more likely than male nurses to be out of the nursing labor market for family reasons. This pattern was more pronounced among those nurses with young children in the home. It is possible that these nurses are reflective of those referred to by Laing and Rademaker (1990) who leave the nursing market when their children are small and then return to nursing when their children are more able to assist in the needs of the household.

These findings suggests that nurses who were diploma-educated were less likely than nurses with an associate degree or baccalaureate education to cite the nursing workplace as a reason for being out of the nursing labor market. While it may seem that diploma-educated nurses are less dissatisfied with the work environment than otherwise educated nurses, one must consider the demographics of this cohort of the nursing workforce. Nurses who are diploma-educated are likely to be older nurses who graduated from nursing school in a time when hospital diploma programs dominated the nursing education market, and many of these nurses are now approaching retirement age.

An interesting finding of this research is seen in the apparent lack of differences between nurses with associate and baccalaureate education in terms of the reasons they choose to work in non-nursing. Given the large body of research that suggests that nurses with an associate degree education are prepared to work at the bedside in hospitals or other similar acute care settings, little difference is seen between associate-degreed and baccalaureate-educated nurses in terms of the numbers who do not work in nursing and the reasons they cite for seeking employment outside of the nursing labor market. This

finding may be attributable to the fact that associate-degreed nurses and baccalaureate-educated nurses practice side by side in most segments of the labor market with little differentiation in job description or expectations.

Nurses who were educated outside the United States or were of other than white ethnicity appear to be less likely than white nurses who were educated in the United States to cite the workplace as a reason for not working in nursing. This trend was larger among nurses who worked in non-nursing employment. There exists possible other explanations for this finding, but this trend again raises the question of possible exploitation of the population of nurses who immigrate to the United States in search of opportunity. Previous research has found that these foreign-trained nurses consistently work more hours, are more likely to work full-time, and tend to be employed in less desirable work settings than white nurses who were educated in the United States (Kingma, 2001; Spetz, 1995).

Consistent with existing theory (Buerhaus, 1990; Ehrenberg & Smith, 2006), income and substitution effects are seen when examining nurses who do not work in nursing by other sources of family income. Economic labor market theory (Ehrenberg & Smith, 2006) would suggest that those with more family income are able to substitute more time in the home or other sources of leisure for time in the workforce. This substitution effect is seen in the increasing numbers of nurses who cite personal and family concerns as a reason for not participating in the nursing workplace as the amount of family income increases. These nurses seem to be able to substitute time at home for time at work. An interesting statement is made in that those nurses with no other family income who work in non-nursing employment cite concerns with the nursing workplace

as a reason for this decision. These findings suggest that if a nurse can choose to substitute household time or leisure for working in nursing, they choose to do so. Moreover, if these nurses cannot afford to pursue another alternative, then they appear to be more likely to remain in the nursing workforce or choose to work in other than nursing employment.

Few clear reasons for the patterns of nursing employment among nurses in rural, micropolitan, and metropolitan are seen in these findings and the available literature does not offer explanation. Rural nurses who were previously noted to be more likely to work in nursing than metropolitan or micropolitan nurses, also appear to be the most likely to cite dissatisfaction with the nursing workplace as a reason for working outside of nursing, or for not participating in the nursing labor market. These findings suggest that it is possible that these rural nurses *do* face fewer employment opportunities than nurses in larger settings, and therefore may be more likely to remain in nursing despite favorable conditions. However, these findings further suggest that when rural nurses do cross the marginal point at which the nursing workplace brings them more stressors than reward, they may leave the labor market as a result of these concerns.

As was previously stated in the discussion of the first aim of this study, nurses in politically conservative states may be less likely to work in nursing than nurses who work in more politically liberal environments. Specifically, 70.5% of nurses who live and work in politically conservative states cite dissatisfaction with the nursing workplace as a reason for seeking employment outside of nursing. This compares to 65.1% of nurses in politically moderate states and 56.4% of nurses in politically liberal states who cite the nursing workplace as a reason for working outside of nursing. These findings suggest the

possibility that the economic-driven conservative mindset may not be amenable to the changes that are needed in the nursing workplace to make the nursing labor market an employer of choice. Conversely, more liberal environments with a focus on individualism and social reform issues may be more conducive to nursing, which is often viewed as a social policy issue.

This research suggests that second to retirement, dissatisfaction with the nursing workplace is *the* overarching reason that nurses do not work in nursing. Moreover, these findings suggest that there exist potentially 257,102 currently licensed registered nurses who have not yet retired, yet do not work in nursing. Given the commonly accepted statistics that approximately 120,000 registered nurse positions are unfilled in the United States, if just half of the 257,102 nurses who are not working in nursing were to return to the bedside, it is possible that a large portion of these vacant positions would be filled.

Specific Aim #3: Determine if registered nurses who work in non-nursing employment or do not work at all are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.

Nurses who work in nursing were different from those who do not work in nursing and several socioeconomic, political, and market factors were found to contribute to these differences. Counter to existing theory, the nursing wage as predicted in this study was not a significant factor in predicting nursing labor market behavior controlling for other factors. This finding is counter to traditional economic theory which would predict that increases in the wage would result in an increased likelihood for nurses to work in whichever setting the wage is highest. That neither the predicted wage nor the

square of the predicted wage was significant in this analysis might be explained in a number of ways. First, it is possible that there truly are no differences in the wage between nursing and non-nursing settings. However, it is also possible that if the wage were higher or if it did not keep pace with inflation leading to a lower real wage, that salary might be an important predictor of workforce behavior. It is noteworthy that the predicted wage in this study *did* differ between nurses who worked in nursing and those who worked in non-nursing, but the predicted wage was not different from the actual wage in nurses who work. Given the lack of significance of the wage variable in this study when controlling for other factors, it is likely that some combination of factors other than wage were more important than wage to nursing labor market behavior.

Consistent with previous research examining labor market trends in nursing (Auerbach et al., 2000; Buerhaus et al., 2000a; Buerhaus, 2001; Buerhaus, Staiger, & Auerbach, 2000c; Kovner et al., 2002; McIntosh et al., 2003; Watson et al., 2003) and with decision to work theory (Ehrenberg & Smith, 2006), nurses were more likely to be absent from the nursing work force as they age. Buerhaus, Staiger, & Auerbach (2000a) have previously found that the nursing workforce is aging at an alarming rate. As of 2004, the average age of the registered nurse (including those who are not employed in nursing) was estimated at 46.8 years. This current average age is the highest since the inception of the NSSRN survey and is more than a full year older than the average age of the registered nurse in 2000 (45.2 years) and is more than two years older than the 44.3 year average age of the registered nurse in 1996 (HRSA, 2006b). Despite evidence that more young people may be entering the profession (Buerhaus, 2004), this aging trend continues and the NSSRN data do not show this influx of young nurses suggested by

Buerhaus (2004). Rather, the NSSRN data reflect fewer young nurses entering the nursing labor market, large cohorts of the nursing population moving into their fifties and sixties, and older graduates from nursing programs entering nursing. This finding is further supported in the work of Buerhaus (2000a; , 2001) who has previously shown that the cohort of nurses born in the 1950's to 1960's have contributed more nurses to the workforce than any cohort before or since. Moreover, this research suggests that later cohorts are not just delaying the time at which they enter the workforce. Rather, the findings of Buerhaus et al. (2004) suggest that younger generations are not producing the numbers of nurses needed to fill vacant positions in the United States and those from the higher-contributing cohorts of the 1950s and 1960s will soon begin to retire from the profession leaving an ever-increasing void in the nursing workforce.

This increasing trend of older nurses making up large segments of the market is disturbing given the findings of this study that this larger group is also the group that is the least likely to work in direct care roles and are the most likely to work in non-nursing employment . Specifically, this research found that those nurses under the age of thirty, whether married or unmarried, were most likely to be employed in nursing. It is likely that these youngest nurses work in nursing because they are also the population that is the most recently graduated into the profession. Possibly, these younger, recently graduated nurses have not yet had families and are working in the field immediately after graduation to gain experience in the profession before lessening their attachment to nursing when they have young children in their home. These findings are consistent with the seminal labor market work of Bognanno (1974) who found that because young nurses are often unmarried do not yet have children, they tend to spend more time

working in the labor market. Economic labor market theory would suggest that “it is customary during the later years of the life cycle for both married and unmarried [registered nurses] to retire and consume more hours of leisure activities and to live off their lifetime accumulation of wealth” (Ehrenberg & Smith, 2005, p. 36), thus explaining why nurses in their later years are so much more likely to be absent from the nursing labor market.

Further, the findings of this research suggest that the likelihood of a nurse working in non-nursing employment increased with each increasing categorization of age. This finding may be due to the fact that many retirees may seek casual employment after having left their profession of choice. The nursing profession presents considerable challenges to nurses who might wish to remain tangentially attached to the profession after retirement. Most nurses work twelve hour shifts, and the nature of nursing employment requires large amounts of lifting, bending, and walking; all of which pose considerable challenges to older populations of nurses. Consequently, the influx of nurses to the labor market, which is made up primarily of older nurses who are returning to the labor market in response to recent spikes in salary and other inducements must be viewed with caution and is not wholly encouraging.

Consistent with the theoretical perspective of household production (Buerhaus, 1990; Ehrenberg & Smith, 2006), married male nurses were more likely to be actively engaged in nursing than were married female nurses. While intuitive, this is an important finding of this study because the majority of previous research on the labor market participation of registered nurses measured only female participation. Thus, this finding

provides support for the theory of household production that has not previously been well-established in studies of the labor market for registered nurses.

Male nurses in this study were more likely to participate in the labor market than female nurses, but these male nurses were also more likely to work outside of the nursing labor market than their female counterparts. This is consistent with previous research that has demonstrated similar trends (Brewer et al., 2006; Buerhaus et al., 2004; Sochalski, 2002a; Sochalski, 2002b). This finding is further supported by the work of Laing and Rademaker (1990) who included gender role attitudes in their measurement of nurses' labor force participation. These authors found that families with more traditional gender role attitudes in which women primarily work in the home and men are responsible for working in the labor market for pay, are less likely to have a female member in the labor market. Since most nurses are female, the more families in a given geographic locale with conservative gender role ideals, the lesser the nursing workforce participation in that area. This is also consistent with the findings in this current research that nurses in more politically conservative areas were less likely to work in nursing. This was also true in the work of Sochalski (2002) who found that the reasons for nurses not working in nursing varied by gender. Sochalski (2002) found that among all nurses who were not employed in nursing in 2000, 56% of men were employed in other positions, roughly twice the rate of women (26%).

Not surprisingly, nurses with young children in the home were also less likely to work in nursing than were nurses with no children. This finding is consistent with existing household production theory (Ehrenberg & Smith, 2006) and is likely due to the income and substitution effects that are present in many families when decisions must be

made regarding who will care for the needs of the household and specifically, who will contribute most to the raising of children. Also consistent with theory, these nurses tended to re-enter the profession when their children were older. Specifically, in this study, married nurses whose children were all over the age of six were *more* likely to work in nursing than were nurses with no children. This may be because as children become older, they are capable of performing more household work and thereby become substitutes for the mother in the production of at least certain home goods. Thus, after some critical point in family size and development is reached, there well may be a tendency for the mother to increase her allocation of time to the market working for pay (Buerhaus, 1990). This is also consistent with the findings of Laing and Rademaker (1990) and Ezrati (1987) where female nurses were found to return to the labor market as children age.

Household production theory (Ehrenberg & Smith; Buerhaus, 1990) poses that when decisions need to be made about who will work outside the home, it is generally the male who fills this role, which is consistent with the findings of this study. Additionally, the wage rate for women has historically been less than what has been paid to men, and despite the overrepresentation of females in the nursing labor market, this societal trend remains true in nursing (HRSA, 2006b). Women have also been more socialized in child rearing practices and household management than have men. It is important to note that the decision-making unit is now the family, and the income effect generated by the higher wage now adds to the family's total wealth and the family is consequently better positioned to purchase more household goods (Buerhaus, 1990; Ehrenberg & Smith, 2005).

From the perspective of household production theory (Ehrenberg & Smith, 2006), this income effect will push the woman out of the labor market and into the home where she has traditionally been viewed as more productive in this setting. It is also not surprising and is consistent with theory that these effects were seen to a much lesser degree when the nurse was not married and therefore did not have another wage-earner on whom to rely for the additional family income. This lack of additional family income creates a nearly pure income effect in the sense that the unmarried nurse, particularly one with children in the home, must sacrifice time in the home in pursuit of household activities for time in the labor market working for pay. This effect was seen in this study when examining participation in the nursing labor market as a function of other family income. Those nurses with other family income, presumably arising in large part from spousal earnings, demonstrated a significant substitution effect in which they substitute non-labor market activities for work in nursing. Most notable, married nurses with other family income in excess of \$100,000 were over 50% less likely to work in nursing than nurses with no other family income, representing a clear substitution effect.

Nurses who were non-white and/or educated outside the United States were the most likely to be employed in nursing. This is consistent with previous findings that have previously been viewed as a sign of potential exploitation of these vulnerable groups that immigrate to the United States in search of better opportunities and higher pay than what is available in their countries of origin (Kingma, 2001). Interestingly, this research has shown that while married white nurses are less likely to work, this same trend does not hold true for nurses of other than white ethnicity. Previous research (Spetz, 1995) has suggested that these non-white nurses actually work more hours than white nurses, and

therefore earn a higher salary. Upon immigrating to the United States, foreign nurses are employed in an increasingly diverse array of settings. Like their U.S. counterparts, the percentage of foreign nurses working in hospitals has steadily declined over the past decade as health care financing reform has encouraged movement of patient care out of hospitals. Unlike domestic nurses, however, foreign nurse representation in extended care had risen from 7.4 – 9.3% by 2000 (Brush et al., 2004; Spratley et al., 2000) raising the question of exploitation of these foreign-born nurses and possible relegation to less-desirable segments of the U.S. nursing labor market, in which American born nurses are resistant to work. So, while it may be true that nurses of other than white ethnicity who may be trained outside of the United States are more likely to work in nursing than white U.S. educated nurses, there exists a need to further examine the specific patterns of these nurses and whether the quality of their care results in satisfactory patient care outcomes.

As was previously discussed in relation to the first specific aim of this study, nurses who had healthcare experience prior to initial RN licensure were more likely to be employed in nursing. It is interesting that this effect was true only for married nurses. The lack of effect of prior healthcare employment in unmarried nurses may be attributable to the fact that these nurses may have fewer resources external to their own salary, and therefore are less likely to opt out of the labor market. However, given that this effect is seen in the population of nurses who make up the largest segment of the profession and are the most able to make alternate employment decisions, it must be considered that experience in nursing prior to RN licensure is an important factor in lessening the role socialization difficulties that may eventually drive many disillusioned nurses out of the workforce.

Brewer (2006) had previously suggested that the number of physicians per capita may predict an increased need for registered nurses in a given county. The findings of this study lend further support for this theory. Specifically, this study found that married nurses were more likely to work in nursing as the number of physicians in a county increased, though this effect was not seen in unmarried nurses. It is possible that an increased prevalence of medical practitioners may create RN labor in the form of an increased number of procedures being performed in a community. This increased utilization of medical services very well may generate a need for larger numbers of nurses to care for these patients.

Previous research (Brewer et al., 2006; Chiha & Link, 2003) has found that larger numbers of uninsured tend to draw nurses into the labor market, though the opposite relationship was hypothesized by Brewer et al. (2006). While the uninsured may represent a less desirable clientele, the increased health care needs created by the lack of available preventative care for this population seems to create a need for more registered nurses in the labor market. This increased need may pose challenges for health care facilities in counties with higher numbers of uninsured to develop successful strategies to lure married nurses, who might otherwise choose not to work back to the workforce. In times of significant nursing shortages, there may be lessons to be learned by further examination of these counties.

Finally, it was hypothesized that a higher prevalence of older citizens in a county would lead nurses to be more likely to participate in the labor market. In fact, the opposite relationship was seen in this study. While it makes intuitive sense that higher numbers of people over the age of sixty-five would create more healthcare need, and

therefore might draw nurses to the labor market, this hypothesis is not supported by these findings. Further consideration of the logic behind this hypothesis, however, reveals a possible explanation. It is quite possible that nurses are actually less likely to participate in the nursing labor market in these retirement communities, because the nurses themselves are retiring as well. Consequently, these retirement communities may well attract retiring nurses along with other retirees, thereby actually *diluting* the numbers of nurses available to care for these older populations.

Specific Aim #4: Determine if registered nurses who work in non-nursing (excluding those who do not work) are different from those who work in nursing in terms of sociodemographic characteristics, political factors, and market factors.

Nurses who work in non-nursing are different from nurses who work in nursing in respect to a variety of sociodemographic, market, and political variables. Again, controlling for other factors, the endogenous predicted wage variable was not significant in this comparison of nurses who work in non-nursing and nurses who work in nursing which is counter to what would be predicted by labor market theory. Again, several explanations exist for this counter-intuitive finding. It is again possible that there truly are no differences in the wage between nursing and non-nursing employment. It is also possible that differences attributable to wage would be seen if the wage were higher or lower, but is just not significant at its current level. As was the case with the third aim of this study, the lack of significance of the wage variable is likely due to the effect of the other variables measured in this study leading to a conclusion that factors other than wage are most important to nursing labor market behavior.

While age did not contribute much to examination of this model, nurses over the age of 65 who did work were more likely to work in non-nursing than to work in nursing. This finding is consistent with existing economic theory and may be explained in a couple of ways. First, previous research has suggested that the nursing work settings are not accommodating to older nurses (Buerhaus et al., 2000a; Buerhaus, 2001; Buerhaus, Staiger, & Auerbach, 2000c; Kovner & Harrington, 2002; Watson et al., 2003). Specifically, many older nurses have found that the physical demands of nursing employment are more difficult to meet as they age. Consequently, those nurses who do continue to work past the age of 65 may be more likely to seek work outside of nursing that is less physically demanding. Second, this finding may simply reflect casual employment in non-professional settings that is commonly sought by elders who choose to work to supplement retirement income. Again, however, it must be considered whether these older nurses would choose nursing employment during their latter years if the nursing workplace was more amenable to the challenges these nurses face as they age.

While age was not a significant predictor of working in choosing non-nursing work over nursing employment, the amount of time since graduation from the nurse's basic program of nursing education was predictive of a nurse choosing non-nursing work. This finding is consistent with previous labor market research (Brewer et al., 2006; Unruh, 2005; Unruh & Fottler, 2005) and poses challenges to the profession. This finding is also consistent with existing decision to work theory (Ehrenberg & Smith, 2006) in that it suggests that nurses are likely to work in nursing shortly after they graduate from their basic nursing education program, but then seek other employment

alternatives as they progress in their employment tenure. Given the findings discussed in the second aim of this study, it is possible that concerns with the nursing workplace, burnout, and scheduling concerns lead these nurses to choose non-nursing work as has previously been documented (Aiken et al., 2002; Bowles & Candela, 2005; Duchscher & Cowin, 2004; Roberts et al., 2004). The absence of these more experienced nurses from the nursing workforce contributes to a brain-drain of the profession that has received recent attention in the empirical literature (Auerbach et al., 2000; Buerhaus et al., 2000a; Buerhaus, 2001; Buerhaus et al., 2000c; Watson et al., 2003).

Male nurses were more likely to choose non-nursing employment over nursing employment than were female nurses. While the findings discussed in the third and fourth aims of this study suggested that male nurses are simply more likely to work than female nurses, the finding that male nurses were more likely to seek non-nursing employment has not been previously demonstrated in the available empirical literature and has implications for the nursing labor market. While wage was not a significant factor in the probit regressions, it is notable that the wage was different between nursing and non-nursing employment when tested without the other variables measured in this study (Table 5.29) and this difference in wage may influence male nurses differently than it does female nurses. It is also possible that different opportunities may exist for male nurses than are available to female nurses. Given that nearly ninety-five percent of the working nursing population is female, any effect that the wage may independently have on male nurses would not likely be seen in this regression. Future modeling is needed to independently measure male nurse's wages to determine how male labor market behaviors differs from that of female nurses.

It is also possible that these male nurses represent a further marginalized population that exists within nursing, which has long been described as an oppressed group (Duchscher & Cowin, 2004; Vasas, 2005). Male nurses are a subpopulation of the nursing workforce and male nurses may be further marginalized by virtue of their pervasively small numbers. Nursing has historically been viewed as a women's profession and this finding that men who are licensed as nurses are more likely to choose non-nursing work raises questions about the socialization process of male nurses into the profession. This finding suggests that these male nurses may seek employment where they are less marginalized than within the ranks of nursing. These men who work in non-nursing may also be better equipped to seek traditionally higher-paid non-nursing jobs than women who tend to command lower salaries and may be less likely to be offered higher-powered positions away from the nursing bedside.

A surprising finding of this study was that nurses with young children in the home were more likely to work in nursing than in non-nursing. While this is counter to what would be predicted by household production and decision to work theories and was not an expected finding, this may reflect both effects of age and tenure in the profession. It has previously been demonstrated that older nurses are more likely to work in non-nursing than younger nurses. Likewise, nurses who had been out of school the least amount of time were the most likely to work in nursing. Nurses with children in the home are likely to be both younger and more recently graduated than nurses whose children are already grown. Therefore, it is actually consistent with previous findings and possibly with theory that these nurses who are raising children are more likely to work in nursing than in non-nursing. While this might otherwise be an encouraging

finding, Brewer et al. (2006) and Chiha and Link (2003) have found, however, that these nurses are likely to work only part time in nursing and therefore to not contribute as much to the nursing labor market as might be expected.

A significant substitution effect is seen among nurses with sources of income external to their nursing wage. According to the premise of economic labor theory (Ehrenberg & Smith, 2005), these nurses choose to spend time engaged in leisure activities rather than engaged in either nursing or non-nursing work. Labor market theory would suggest that large incentives, either monetary or otherwise, would be required to entice these nurses into the labor market (Buerhaus, 1990). In the absence of such incentives, these nurses are likely to be difficult to recruit into nursing positions.

Nurses who were educated outside of the United States were more likely to work in nursing over non-nursing, whether these nurses were married or unmarried. Existing literature points to conflicting explanations for the behavior of these foreign-trained nurses. Kingma (2001) suggests that these nurses are more likely to work in nursing and are more likely to fill nursing positions that are viewed as less desirable than positions that are traditionally sought by American-educated nurses. Other research (Spetz, 1995) has found that foreign-educated nurses work more hours and therefore earn a higher salary in nursing, which may explain why these nurses elect to remain engaged in nursing employment while other, American-educated nurses, might tend to gravitate toward non-nursing opportunities.

Again, examination of this study aim shows that nurses living in more politically liberal environments may be more likely to work in nursing than nurses in politically conservative states. While this finding has not been previously documented in the

available research literature, this has been a consistent theme among each of the aims of this study and presents health care policy implications. It has long been anecdotally believed that politically liberal governmental structures may be more supportive of social policy issues such as nursing and therefore may yield a more favorable work environment than more conservative political climates.

As was seen when considering nurses who work in nursing compared to those who do not, the number of physicians per capita appears to have an effect. While the source of this effect is not clear, it is possible that increased numbers of physicians in a given county increases the demand for nursing labor through increased utilization in the form of additional procedures and consumption of health care services. In this way, physician concentration may act as a proxy of sorts for nursing demand. The association between physician concentration and demand for nursing labor was previously demonstrated by Brewer et al. (2006). While the effects of physicians per capita in this study were small, this may have important implications for health care planning. Specifically, it is possible that areas traditionally experiencing shortages of physicians as well as registered nurses may be well-advised to strengthen efforts to recruit and retain both.

An effect that has not previously been seen in this study is evident when comparing nurses who work in nursing to those who work in non-nursing. Nurses working in geographic areas with higher levels of HMO penetration appear to be less likely to work in nursing. While this finding must be viewed with some degree of caution given that the data measuring HMO penetration stems from 1998, this phenomenon has been previously seen in the research literature (Brewer, 1998; Buerhaus

& Staiger, 1996, 1997; Spetz, 1999). It is possible that this finding reflects profit maximization activity on the part of the health care facilities that employ registered nurses in the face of declining reimbursements that exist with increased penetration of managed care into a specific market. It is possible that the framework of managed care that potentiates the fast-paced health care environment that hospitalizes only the sickest of patients has led to a dynamic at the bedside whereby increasing patient acuities pose significant challenges to nursing efficacy and morale.

Previous work has shown that when morale in nursing declines, nurses experience burnout and are less likely to remain in the profession (Aiken et al., 2002; Lundgren et al., 2005; Yang & Huang, 2005). This finding is important and requires further examination. Research dating closer to entry of prospective payment into the health care arena consistently found that counties and metropolitan service areas with higher levels of managed care consistently have more difficulty retaining nurses (Buerhaus & Staiger, 1996, 1997; Spetz, 1999).

Since 1998, the penetration of managed care has become much more widespread leading to two possible outcomes. It is possible that the continued growth of managed care in today's health care environment may continue to pose a significant challenge to the recruitment and retention of qualified nursing personnel. Alternately, it is quite possible that a level of equilibrium has been reached in the health care markets as prospective payment systems have become widespread and that the effects have lessened over time. In any case, additional research that examines this trend with more current data is needed to fully evaluate the impact of managed care on the current health care workforce.

Specific Aim #5: Determine if registered nurses who work in non-nursing employment are different from those who do not work at all in terms of sociodemographic characteristics, political factors, and market factors.

While nurses who worked in non-nursing were different from nurses who did not work at all, these populations differed on relatively few variables measured in this study. This finding is likely due to the relatively low number of nurses who work in non-nursing compared to those who work in the profession or do not work at all. This smaller sample size poses statistical challenges and significance is less likely to be achieved, even when important differences may exist in these populations.

As was the case in the previous two analytical aims, the endogenous predicted wage variable was not significant in this comparison of nurses who work in non-nursing and nurses do not work at all, controlling for other factors. As previously discussed in reference to the fourth and fifth aims, other explanations for the lack of importance of the wage variable may exist. However, the lack of significance of this wage variable is counter to existing labor market theory that would predict an income effect would be seen and that wage would be an important factor in whether nurses work, regardless of setting (Ehrenberg & Smith, 2006).

When examining nurses who work in non-nursing compared to nurses who do not work at all, age was significant for only married nurses over the age of 65. These older nurses were almost certainly retired from the profession and therefore are not likely to be enticed back to the bedside, no matter what the incentive. This is consistent with previous literature on aging nurses (Buerhaus et al., 2000c; McIntosh et al., 2003) which

has found that nurses over the age of 65 are not likely to return to nursing in any meaningful capacity once they have left the profession. This finding is also consistent with existing labor market theory (Ehrenberg & Smith, 2006) which suggests that nurses disengage from the market as they approach retirement age and begin to live off of their lifetime accumulation of wealth.

Not surprisingly, married male nurses in this study were more likely to work in non-nursing than to be unemployed when compared to female nurses. Again, this finding is consistent with the premise of economic labor market theory and lends further support for the statements of Ehrenberg and Smith (2005) that male members of a marital dyad tend to be more likely to participate in the labor market than the female partner. An interesting comparison is seen when comparing the role of men in the third and fourth specific aims of this study. In the third specific aim, it was found that married males were more likely to work in nursing than their female counterparts. In this fourth specific aim, it is evident that males are also more likely to work in non-nursing than females. This suggests that males are more likely to work in general, whether that work be within or outside of the nursing labor market. Again, this is an important finding of this study as most research previous to this study has not examined the labor market behaviors of male nurses and thus, the labor market theories have not been tested in regard to the behavior of this subset of the nursing population.

Similar to the findings of the third aim of this study, married nurses with children over the age of six who had no younger children in the home were actually *more* likely to work in non-nursing over not working in nursing than nurses with no children. This is counter to economic theory which would suggest that household production needs would

push these nurses with children out of the workforce into the home where they are more productive in meeting the needs of the family (Ehrenberg & Smith, 2006). This finding also may represent a substitution effect where with increases in family size, the female partner's income becomes increasingly important to the success of the family in meeting its financial goals. Buerhaus (1990) has previously posed that once young children are in school during the day, the required household production time lessens, thus affording the female partner the opportunity to return to the workforce for pay. This finding is again consistent with previous research examining labor market behavior of registered nurses as previously stated in the discussion of the third aim of this study. Interestingly, this tendency of married nurses to re-enter the labor market as their children age is not specific to the nursing labor market. In fact, these nurses who re-enter the labor market may choose to again work in nursing, but they might also choose employment outside of the nursing market. Thus, it is important for the nursing profession to identify strategies to entice these nurses who re-enter the workforce as their children age to choose nursing as the career they return to over non-nursing alternatives.

While nurses with an associate degree were no more likely to more likely to work in non-nursing than nurses with a diploma education, differences were seen in nurses with higher levels of education. Specifically, nurses with a baccalaureate or graduate degree were more likely to be employed in non-nursing rather than being unemployed. These same nurses were also more likely to be employed in nursing as discussed in the second aim of this study. Again, this appears to be a population that tends to be employed; whether that employment is in nursing or in non-nursing. It is also possible that nurses educated at a baccalaureate or graduate level are more adequately prepared for

jobs away from the bedside that may rely on the critical thinking and leadership skills that are taught in higher academia. This trend is not one that has previously been demonstrated in the available literature. Consequently, it is important that future research further test for this difference between associate-degreed and more highly educated nurses. Additional knowledge will allow for policy initiatives to be identified that will make the nursing market attractive enough that these nurses who may be on the margin between nursing work and non-nursing work to choose to participate in the nursing workforce.

A substitution effect was present among nurses with relatively large sources of other family income. This is consistent with the work of previous authors (Brewer et al., 2006; Chiha & Link, 2003; Muntaner et al., 2004) and is consistent with economic labor market theory as proposed by Ehrenberg and Smith (2005). Nurses with higher levels of family income were much less likely to work in nursing or in non-nursing than were nurses with lesser amounts of wealth external to their own wage. This finding is consistent with the premise of basic labor market theory in which workers may choose additional time spent in leisure activities over work activities as wealth increases (Ehrenberg & Smith, 2005). In these cases, it may be true that either very large increases in the prevailing wage, or other non-pecuniary incentives to participate in the labor market would be needed to draw these nurses back to the labor market, whether they were to participate in nursing or in non-nursing work.

The political environment in which a nurse lives may influence the likelihood of working, whether that work is in nursing or in non-nursing. As was the case when examining nurses' likelihood to work in nursing, nurses in the most politically

conservative states appear to be the least likely to work – whether in nursing or in non-nursing, though these effects were small. While little literature exists in reference to political influences of nurses' labor market behavior, this finding is consistent with anecdote that more politically conservative environments are the least supportive of participation in the labor market. An interesting implication of these findings is that a tendency may exist in politically conservative areas to push nurses out of the labor market; whether this push out of the market occurs in nursing or in non-nursing. More simply put, nurses in politically conservative environments may be less likely to work at all, whether in nursing or non-nursing.

The findings of this study also suggest that nurses living in the Southern and Western states may be more likely to not work at all than to work in non-nursing. This finding is also consistent with the findings in the third aim of this study where it was found that nurses in the South and in the West seemed to be less likely to work in nursing than to not. These two findings, taken together, suggest that nurses in these census regions were less likely to work, whether in nursing or in non-nursing than nurses in the Northeast. This finding could be associated with the previously discussed finding that nurses in more politically conservative states were less likely to participate in the labor market, as further examination of these southern states reveals that the majority of these southern states were also states that were politically conservative.

Specific Aim #6: Measure the relative importance of factors that affect the joint decision not to work in nursing and to work in non-nursing.

The bivariate results of this study clearly suggest that nurses who choose to work in non-nursing employment do so contingent upon a decision not to participate in the nursing labor market and that different factors affect the decision to work in non-nursing than to not work. This study further suggests that nurses who are married may be more likely to work in non-nursing than are unmarried nurses. That these two outcomes were closely related was an expected finding of this study. However, when examining nursing labor market behavior considering the conditioning of these two dependent variables, the effects are different than were expected. Specifically, when controlling for the conditioning of the not working in nursing, these findings suggest that married nurses were more likely to chose non-nursing work than were unmarried nurses. This finding suggests the emergence of a theme that has evolved over the findings of each of the specific aims of this study. Specifically, these findings suggest that married nurses generally have more choice in their employment decisions than unmarried nurses do. This has also been documented in previous nursing labor market research (Brewer et al., 2006; Greenleaf, 1983; Laing & Rademaker, 1990; Sochalski, 2002b).

A persistent theme in the analysis is that other family income is important to the work decisions of nurses. This effect remains important in the bivariate model adding further credibility to the theory that nurses who are married, and consequently are more likely to have additional sources of family income appear to be more able to choose alternate work environments. Likewise, these results suggest that while unmarried nurses with fewer options outside of nursing may also be discontent with the nursing workplace,

they may have fewer options available to them and therefore may be more likely to remain employed in nursing.

Limitations of the Study

This study is limited in seven major ways. First, the NSSRN (2004) data only allows for the analysis of registered nurses who remain actively licensed to practice nursing in the United States. It is possible that former nurses who are no longer licensed to practice may be different from those in this sample who do not work in nursing.

Second, actual wage data were not collected from nurses who worked in non-nursing employment. While a market wage was predicted for all nurses in the sample, it is possible that this predicted wage may have been different if more accurate precise wage data were available for those nurses who work in non-nursing employment.

Third, this research utilizes only one year of study data. An important limitation of cross-sectional research is the inability to distinguish, age, period, and cohort effects. Differences seen between subjects at different ages in the dataset could be genuinely related to age effects, or could just as likely be captured within some cohort phenomenon common to that subgroup of the sample (Davies, 1994). Thus, differences that could be related to age, time period, or birth cohort must be interpreted with caution.

Fourth, given that this research secondarily analyzed existing cross-sectional data, inferences about causal relationship cannot be made. Doubts about the direction and causality of results obtained by secondary analysis of cross-sectional data are common in health sciences research and, in these circumstances, cross-sectional data are unable to resolve the ambiguities present in correlations or other measures of association (Davies,

1994).

Fifth, while Chiha and Link (2003), Brewer et al. (2006), and others (Buerhaus & Staiger, 1996, 1997; Spetz, 1999) have shown that managed care penetration is an important variable to predict the registered nurse labor market, current measures of managed care penetration were not available for the purposes of this dissertation research. The most current managed care measures that exist in the ARF files reflect 1998 data. Brewer et al. (2006) used the Interstudy Competitive Edge Regional Market Analysis to measure managed care penetration using 2001 data, however these data are not available for the purposes of this dissertation research.

Sixth, while married and unmarried registered nurses were analyzed separately in this study, male nurses were included in the analysis with female nurses. The findings of this study offer clear evidence that male nurses may, in fact, be quite different from female nurses and therefore may require separate analysis. While separate analysis of this subpopulation of nursing would likely reveal important differences that necessitate individualized policy remedies, individual analysis of male nurses poses significant empirical challenges due to the relatively small number of male nurses in the nursing workforce. Most existing data sources that might lend themselves to such analysis collect data on male and female nurses simultaneously. Unfortunately, the representation of male nurses in this sampling strategy does not lend itself well to individual analysis.

Finally, while previous authors have shown that the nursing labor market is the quintessential example of monopsonistic market behavior, this study did not include a measure of competition among nursing employers of varying size or influence. Given that the debate whether classic or new monopsony is present in the labor market for

registered nurses is far from settled, additional research is needed that will either lend support for monopsony in nursing or refute its existence.

Implications for Health Policy

The findings of this study have implications for health policy. While encouraging trends are seen in the numbers of nurses working in nursing, additional increases are needed. The pervasiveness of the current shortage of nurses provides evidence that sound policy remedies are needed to both recruit new nurses to the profession and to retain those nurses who tend to leave the profession, if not the labor market entirely. Furthermore, recent history has demonstrated that salary enhancements that have been used to remedy past shortages are not bringing the needed influx of nurses to ebb this current nursing shortage.

While the common response to increased employment vacancies in nursing has been to increase the market wage, this research lends further support to previous findings (Aiken, 1984; Aiken et al., 2003) that suggest that wage is not the key factor that the employment decisions of registered nurses in the United States. It has been previously stated that “nurses are not income maximizers” (Aiken, 1984, p. 9). Seminal nursing labor market study by Aiken (1984) suggests that nurses base labor market decisions on factors such as the quality of working life, evidence of having contributions recognized and valued, involvement in decision making and professional autonomy rather than on economic factors. When controlling for the other variables measured in this study, neither the market wage nor the square of the market wage were significant predictors of the labor market behaviors of registered nurses when controlling for other factors in any

of the probit regressions tested in this study. This lack of importance of the wage variable in this study lends support to the theory that wage may not be the key motivating factor that drives the employment decisions of registered nurses. Yet, the average market wage for registered nurses in the United States has increased from \$46,782 in 2000 to \$57,785 in 2004 in an effort to recruit new nurses to the profession. The findings of this and other research suggest that new strategies are needed. Continued increases in the wage paid to nurses, in the absence of other real changes in the nursing workplace will not likely be sufficient to bring “real” solutions to the shortage of registered nurses in the United States.

While encouraging gains in nurses returning to the bedside have been seen in recent years, it is concerning that these gains are largely due to movement of nurses in the 45 – 64 year age group. The nursing profession has begun to breathe a “sigh of relief” as employment numbers have suggested a possible lessening in severity of the current nursing shortage. This and other research would offer that these feelings of relief may be misplaced. If this cohort of nurses who have returned to the profession in response to salary incentives is in any way representative of the majority of the profession, they will begin to disengage from the labor market within a relatively short amount of time. Given that most current research is not demonstrating a significant influx of younger nurses into the profession, the exodus created when these “baby-boomer” nurses retire will be acute. The end effect of these two events coming to fruition simultaneously, will likely mark the beginning of yet another severe nursing shortage. This next shortage, however, will likely be compounded by the fact that the current shortage will likely not have abated completely before the next one becomes acute.

This impending crisis may have cataclysmic effects on the profession and likely will continue to drive the profession to identify ways to meet the health care needs of the population with fewer and fewer registered nurses at the bedside. These strategies are beginning to materialize in many states as efforts are underway to compensate for a lack of educated and qualified registered nurses to care for patients. Many states have begun to train nurse's aides to administer medications. Most states are currently considering educational alternatives that will allow programs of nursing to educate more nurses in shorter amounts of time with lesser educated faculty. This trend is seen in the shortened trajectory from admission to graduation in many associate and baccalaureate nursing programs across the country. While these programs previously educated students over (for example) a period of time that spanned two full years after completion of the required prerequisites, many programs are dispensing with traditional summer and winter vacation time and consequently preparing nurses to sit for the National Council Licensure Examination for Registered Nurses in as little as sixteen months (NCSBN, 2007). Ultimately, the effect of these lessened standards in a time of rising healthcare demands and ever-increasing patient acuity may manifest as decremental changes in patient outcomes and further distrust in the healthcare system in the United States.

Furthermore, changes in the healthcare system that decrease the role of the registered nurse at the bedside may domino into increased dissatisfaction among practicing nurses with the health care workplace. Exactly the opposite needs to happen. It is important that policy-makers and health care administrators take the appropriate steps *now* to stem the flow of nurses away from the profession. To be sure, efforts to recruit young people into the profession are important. However, these efforts will not be

ultimately successful in meeting the real needs of the profession for as long as these newly educated nurses continue to become quickly disenchanted with the profession. Moreover, nursing is in need of seasoned long-term members of the profession to better socialize newer nurses into the profession and to assist these new nurses in developing a professional identity that will sustain them during their career.

As efforts to recruit and retain larger numbers of younger nurses into the profession become successful, it will be increasingly important to develop strategies that will allow these nurses to fully participate in the profession during the childbearing years when many leave. While some healthcare workplaces have childcare opportunities available to their employees, most of these centers have long waiting lists and are not available to nurses who work other than day shift hours. Additional child-care resources are needed for nurses who have young children, particularly during less conventional scheduling times. In this same realm, many nurses who do not participate in nursing while their children are small do so because the hours required by most nursing positions are not conducive to family life. Most nursing units begin the work day before 7:00 in the morning and the typical nurse works until after 7:00 in the evening. More flexible scheduling alternatives might also help to incentivize younger nurses back to the profession while they are raising young families.

Changes in the work environment that will allow aging nurses to continue to practice are needed. This research has demonstrated that nurses leave their chosen profession at younger ages than workers in other professions (BLS, 2006). This exodus of older nurses may be at least in part due to the challenges these older nurses face in meeting the demands of bedside nursing. Nurses are required to spend large amounts of

any given day bending, stooping, lifting, and walking; activities that become increasingly a cause of injuries as nurses age. Implementation of safe patient handling alternatives that include “no-lift” policies and the changes to the work setting to be able to successfully implement these policies are needed. Only when these important changes have take place at the patient’s bedside will the aging cohort of nurses in the United States be able to successfully extend their working years and contribution to the profession.

While a global approach to retaining nurses at the bedside is imperative, increased attention to the unique strategies required to retain male nurses in the profession must be identified and implemented. While there have been slight increases in the numbers of males in the profession in recent years, these nurses have been shown to much more readily leave the profession when opportunities outside of nursing arise. Nursing is a profession that continues to be viewed as one that is dominated by women and women in American society tend to be viewed with less professional respect than male-dominated professions. While it is equally important for nursing to address the challenges to our professional identity that are independent of gender, it also is important for nursing to rid itself of the stereotype of being a profession reserved for women. Consequently, it is incumbent upon educators, policy-makers, and the profession to develop clear strategies to both recruit and retain a male presence in the nursing workforce.

Implications for Future Research

Significant contributions have been made to the literature in recent years in relation to the vital importance of nurses at the bedside of patients in today’s increasingly

complex and technologically advanced health care systems. However, evidence exists in this review of the workforce literature that research examining the important contributions of registered nurses at the bedside toward improving patient outcomes, may have been conducted in earnest, to the exclusion of more basic examinations of the market for these essential health care personnel. It is essential that nursing take a step back from research that is currently “fashionable” or “in vogue” to examine fundamental changes in the workforce that will continue to influence the availability of these increasingly essential, highly qualified registered nurses for many years to come.

The findings of this study clearly suggest that many different avenues for continued research are available and that many questions remain unsettled. This research offers a cursory presentation of the labor market behaviors of male registered nurses. This population is one that is frequently excluded from research examining the labor market behavior of registered nurses because they contribute such a small percentage of the total nursing market. However, this research has demonstrated that male nurses behave differently in the health care labor markets than female nurses do. Additional research would be needed to specifically examine the motivating and confounding forces behind the behaviors of this important subset of the nursing population.

This research allowed examination of the rationale behind the decisions of nurses who do not participate in the nursing workforce. However, given the structure of the NSSRN survey, research using NSSRN data does not allow examination of the attitudes and intentions of nurses who currently do work in nursing, but may be at the margin in terms of their participation in the nursing labor market. This population is important to study further because if the profession were able to identify nurses who may be at risk for

leaving the profession, it is possible that more “upstream” strategies might be identified to retain these nurses in the profession, rather than study the reasons for their departure after they have left.

An important gap in the research literature exists in relation to the workplace behaviors of the younger generation of nurses who almost universally cite the nursing workplace as a reason for departure from the workforce when they leave nursing positions. It is this very population that the profession absolutely *must* retain. Therefore, important research must be done to identify strategies to retain these younger nurses in the profession. On the other end of this spectrum, additional research is also needed that might identify sound strategies to retain aging nursing in the profession as well. Existing literature has pointed to some strategies to possibly extend the work life of this aging cohort, but widely implementable policy alternatives have not yet been identified or clearly supported in the empirical literature.

It is concerning that few, if any studies have examined variables that may predict absences from the labor market since the 1980's. Much of the data examined in relation to the effect of marital status, children in the home, and spousal income were collected prior to 1970, and no such studies examine data collected since 1990. Significant economic shifts have taken place in recent decades that raise serious question as to the current applicability of data collected and analyzed nearly two decades ago. Important changes have occurred in relation to population dynamics in which most households have become highly reliant upon dual salaries and significantly more women work outside the home today than in decades past. Consequently, while existing research relative to nursing workforce participation may provide insight into the factors that influence

nursing workforce participation, the lack of current research creates conflict in relation to precisely which factors are the most important to nurses' participation in today's nursing labor market, largely due to the lack of research attention to this important area.

Also concerning in the retrievable literature is the dearth of current research empirically examining the nursing labor market in relation to economic conditions prevalent in regions of the United States with significant differences in the supply of registered nurse labor. This is startling in light of the fact that the ratio of nurses to population ranges from over 2,000 nurses per 100,000 population in the District of Columbia and Maryland to just over 600 nurses per 100,000 population in California and Nevada. Specifically, the Western and Southern states tend to have severe nursing shortages while states along the North Eastern seaboard have relative surpluses of registered nurses. While several studies are identified that examine the dynamics of the nursing workforce in specific markets, no retrievable study examines regional differences, much less attempts to provide explanations for these hugely disparate populations of nurses in different regions of the United States. Much empirical attention in recent years has been paid to the detrimental effects of expanded occupational opportunities to women that make nursing a less viable career option for younger women. This fundamental shift in the labor market has led to a quantum shift in the age distribution of practicing registered nurses. These findings may be more clearly understood in relation to regional differences in workforce supply.

Additionally, research is needed to empirically estimate whether current capacity in schools of nursing is sufficient to replace losses to the profession generated by exits from the nursing workforce in the form of young nurses who are dissatisfied with the

profession and older nurses who are no longer able to function in today's health care environment. Alternately, empirical research conducted in an effort to identify and remediate explanations for large losses from the younger and older "tails" of the nursing workforce may provide a more suitable up-stream approach than identifying solutions that attempt to fill an ever-emptying nursing void.

Regional differences notwithstanding, descriptive data suggest that schools of nursing in the United States are decreasingly able to meet the health care needs of an aging population due factors including inequity between academia and private sector employment. Currently unexplored labor market or econometric effects including the possibility of monopsonistic forces may make academia less attractive to highly educated nurses. While such an effect has not been documented in the empirical literature, it has been anecdotally stated that artificially low wages in nursing academia may be the result of monopsony in the market for terminally degreed nurses. This doctorally prepared nursing sub-market is largely employed in academia, and academic settings are few in most geographic locales, making the market ripe for monopsony. If such an effect exists, the implications of it would be important to the development of a stable academic nursing workforce. Empirical analysis of these factors may yield positive policy strategies that might render the educational system more capable of meeting nursing workforce demand.

Summary and Conclusions

This study addressed six major research aims that are more broadly categorized into four major research goals. First, this study presented a descriptive overview of the population of registered nurses in the United States that allowed for discussion of the

choices nurses make in relation to work in nursing, work in non-nursing, and absence from the nursing labor market. Second, it described the population of nurses who do not work in nursing and provided evidence that the nursing workplace is a major contributing factor to the decisions of nurses who do not work in nursing. Third, this research provided analytic evidence of sociodemographic, market, and political differences between nurses who work in nursing, those who work in non-nursing and those who do not work at all. Fourth, this study analytically demonstrated that nurses who choose to work in non-nursing employment do so conditional on a clear decision not to participate in the traditional labor market for registered nurses.

The first chapter of this dissertation research provided an introduction to the significance of employment choice in nursing and presented a discussion of the specific aims of this research study and the unique contributions of this study to the current body of knowledge. The second chapter presented an extensive review of the empirical literature relative to the nursing workforce in the United States. This was followed by a discussion of the economic labor market theories that provided a guiding framework for this study. Through this discussion, an overview of the theoretical assumptions and applications of basic economic labor market theory, decision to work, and household production were further explicated. A methodological discussion of the empirical methods to be followed in this research was reviewed in chapter four and the results of these analyses were presented in chapter five. Finally, this sixth chapter has presented a discussion of the major findings of this study and has offered implications for policy and future research.

In conclusion, this dissertation yields several important implications for the nursing profession, the most important of which is that, recent gains in employment statistics notwithstanding, the profession faces continued difficulty in the foreseeable future. This research has lent further support to the previously stated belief that the dynamic nursing labor market disequilibrium currently plaguing the workforce is different in many dimensions than those in years past. For the health care industry in the United States to continue to meet the health care needs of an aging population, additional focused attention to these issues is imperative. Additional empirical and public policy attention must be paid to the dynamics of the nursing labor market, and the economic forces that influence nursing behavior in the health care workforce.

As has been demonstrated in this research, urgent attention to the many facets of the nursing labor market is needed. Specifically, the profession must develop strategies to retain nurses at the bedside and to incentivize those who have left to return to the profession. Several viable research directions exist that may well prove important to achieving equilibrium in the labor market for registered nurses in the United States. Only through decided efforts to address these continued gaps in existing health policy will nursing, the health care industry, and policy-makers be able to meet the nursing needs of future generations.

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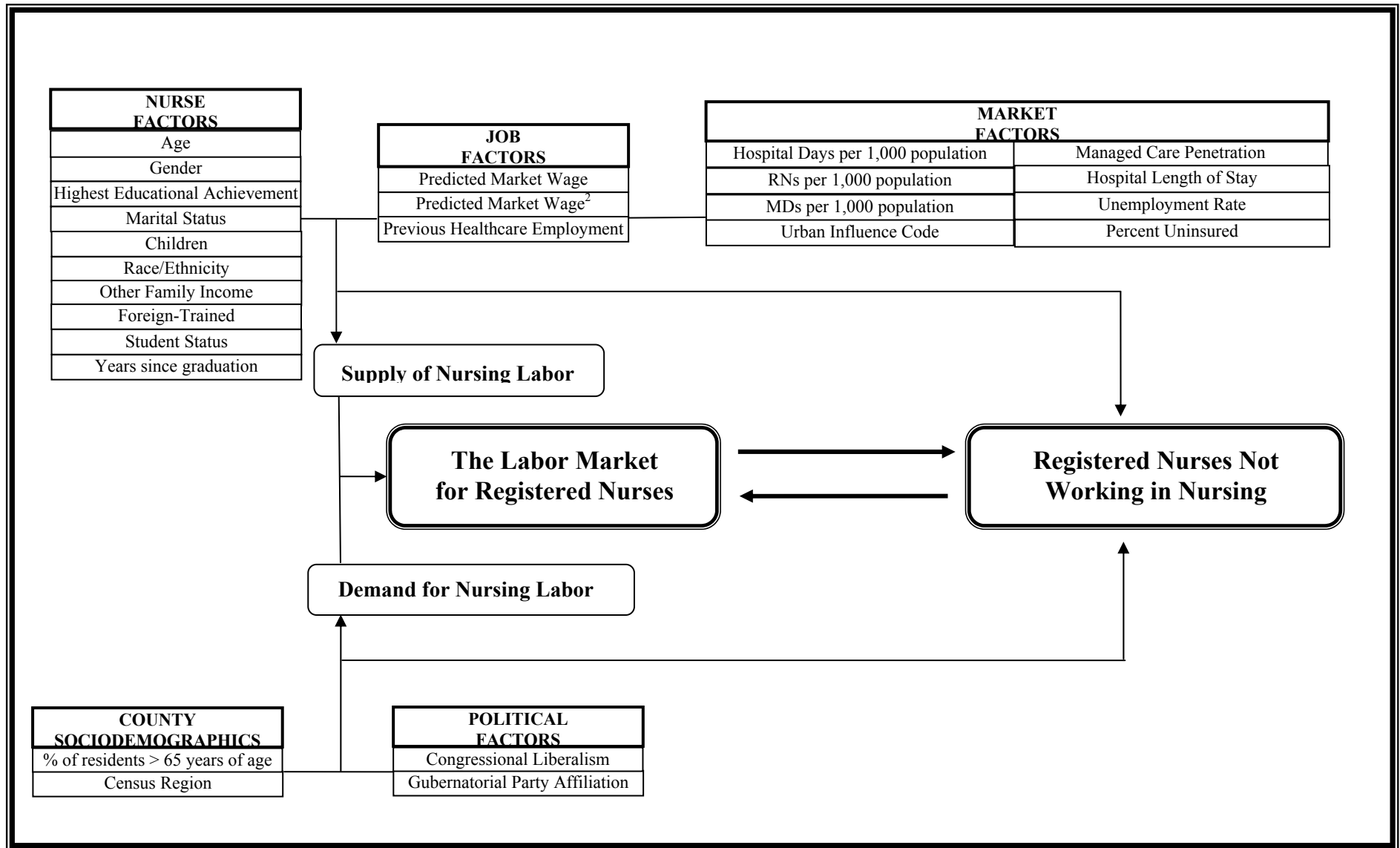
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Appendix A: Theoretical Model of Registered Nurses Who Do Not Work in Nursing



Appendix B: Bivariate Probit Regression

Bivariate Probit Regression: Working is Non-Nursing Conditional on Not Working in Nursing for Married and Unmarried Registered Nurses in 2004 (DVs: Not Working in Nursing vs. Working in Nursing, Employed in Non-Nursing vs. Working in Nursing) (Standard errors adjusted for clustering on FIPS)																
	Married (N = 2,114,400)								Unmarried (N = 792,260)							
	Number of obs = 23,086 Sum of Weight = 2,114,400 Wald chi2(84) = 4,690.02 Prob > chi2 = 0.0000 Comparison log pseudolikelihood = -18,832.19 Log pseudolikelihood = -1295004.7								Number of obs = 9,562 Sum of Weight = 792,260 Wald chi2(84) = 216.92 Prob > chi2 = 0.0000 Comparison log pseudolikelihood = -4648.76 Log pseudolikelihood = -310385.52							
Not Working in Nursing (NW)	Coef.	Robust SE	Z	P> z	95% CI	ME	X	Coef.	Robust SE	Z	P> z	95% CI	ME	X		
Endogenous Variables																
Predicted Wage	0.0163	0.0305	0.5300	0.5930	-0.0435	0.0760	0.0023	28.2517	-0.0192	0.0606	-0.3200	0.7520	-0.1380	0.0997	0.0015	28.1950
Square of Predicted Wage	-0.0001	0.0005	-0.2100	0.8370	-0.0011	0.0009	0.0000	816.158	0.0006	0.0010	0.5700	0.5660	-0.0014	0.0025	0.0000	813.987
Sociodemographic Variables																
Age: 30 – 44 *	-0.1162	0.0592	-1.9600	0.0500	-0.2322	-0.0001	-0.0171	0.3288	0.0924	0.1243	0.7400	0.4570	-0.1512	0.3360	0.0069	0.2606
Age: 45 – 64*	-0.1202	0.0617	-1.9500	0.0510	-0.2412	0.0008	-0.0181	0.5257	0.1296	0.1274	1.0200	0.3090	-0.1201	0.3793	0.0158	0.5250
Age: 65+ *	0.9135	0.0702	13.0100	0.0000	0.7759	1.0512	0.2758	0.0638	0.9063	0.1384	6.5500	0.0000	0.6350	1.1776	0.2356	0.0991
Gender: Male	0.0774	0.0540	1.4300	0.1520	-0.0285	0.1833	-0.0016	0.0580	-0.0321	0.1055	-0.3000	0.7610	-0.2390	0.1747	0.0017	0.0638
Race/Ethnicity: Other than White	0.0295	0.0384	0.7700	0.4430	-0.0458	0.1048	0.0072	0.1075	-0.0795	0.0713	-1.1200	0.2640	-0.2192	0.0601	-0.0079	0.1310
Highest Education: Associate**	-0.1172	0.0331	-3.5400	0.0000	-0.1820	-0.0523	-0.0173	0.3515	-0.1425	0.0657	-2.1700	0.0300	-0.2712	-0.0138	-0.0222	0.3525
Highest Education: Baccalaureate**	-0.1094	0.0302	-3.6300	0.0000	-0.1686	-0.0503	-0.0247	0.3438	-0.1082	0.0594	-1.8200	0.0690	-0.2246	0.0083	-0.0241	0.3365
Highest Education: Graduate**	-0.2548	0.0590	-4.3200	0.0000	-0.3705	-0.1391	-0.0468	0.1297	-0.3091	0.1173	-2.6300	0.0080	-0.5391	-0.0792	-0.0390	0.1373
Children: All < 6***	0.0829	0.0417	1.9900	0.0470	0.1646	0.0011	0.0017	0.1142	0.1335	0.0607	2.2000	0.0280	0.2525	0.0145	0.0172	0.1959

Working in Non-Nursing (WNN)	Coef.	Robust SE	Z	P> z	95% CI		ME	X	Coef.	Robust SE	Z	P> z	95% CI		ME	X
Endogenous Variables																
<i>Predicted Wage</i>	0.0139	0.0387	0.3600	0.7190	-0.0620	0.0899	0.0010	28.2517	-0.0695	0.0793	-0.8800	0.3810	-0.2250	0.0860	-0.0048	28.1950
<i>Square of Predicted Wage</i>	0.0000	0.0006	0.0000	0.9970	-0.0012	0.0012	0.0000	816.158	0.0016	0.0012	1.2700	0.2020	-0.0009	0.0040	0.0001	813.987
Sociodemographic Variables																
<i>Age: 30 – 44 *</i>	-0.0843	0.0951	-0.8900	0.3760	-0.2708	0.1022	-0.0060	0.3288	0.1298	0.1951	0.6700	0.5060	-0.2525	0.5121	0.0096	0.2606
<i>Age: 45 – 64*</i>	-0.0891	0.0964	-0.9200	0.3550	-0.2780	0.0998	-0.0066	0.5257	0.0953	0.2086	0.4600	0.6480	-0.3136	0.5043	0.0066	0.5250
<i>Age: 65+*</i>	-0.0993	0.1092	-0.9100	0.3630	-0.3133	0.1146	-0.0067	0.0638	-0.0184	0.2236	-0.0800	0.9340	-0.4566	0.4198	-0.0013	0.0991
<i>Gender: Male</i>	0.2077	0.0655	3.1700	0.0020	0.0794	0.3361	0.0180	0.0580	-0.1125	0.1443	-0.7800	0.4360	-0.3953	0.1703	-0.0072	0.0638
<i>Race/Ethnicity: Other than White</i>	-0.0150	0.0519	-0.2900	0.7730	-0.1168	0.0868	-0.0011	0.1075	-0.0827	0.0900	-0.9200	0.3580	-0.2591	0.0936	-0.0055	0.1310
<i>Highest Education: Associate**</i>	-0.0856	0.0492	-1.7400	0.0820	-0.1820	0.0108	-0.0061	0.3515	-0.0284	0.0918	-0.3100	0.7570	-0.2083	0.1516	-0.0020	0.3525
<i>Highest Education: Baccalaureate**</i>	0.0382	0.0437	0.8700	0.3820	-0.0474	0.1239	0.0028	0.3438	0.0804	0.0775	1.0400	0.3000	-0.0716	0.2323	0.0057	0.3365
<i>Highest Education: Graduate**</i>	0.0043	0.0742	0.0600	0.9540	-0.1412	0.1498	0.0003	0.1297	-0.1152	0.1395	-0.8300	0.4090	-0.3885	0.1582	-0.0074	0.1373
<i>Children: All < 6***</i>	0.2348	0.0626	3.7500	0.0000	0.1121	0.3576	0.0146	0.1142	0.2580	0.1036	3.2700	0.0205	0.0171	0.3811	0.0144	0.0406
<i>Children: All > 6***</i>	0.1435	0.0407	3.5300	0.0000	0.0637	0.2233	0.0099	0.2775	0.0722	0.0743	0.9700	0.3310	0.2178	0.0734	-0.0048	0.1959
<i>Children: Some < and > 6***</i>	0.2179	0.0795	2.7400	0.0060	0.0622	0.3737	0.0134	0.0626	0.4937	0.2376	2.0800	0.0380	0.0279	0.9594	0.0223	0.0224
<i>OFI: Under 25K****</i>	0.0448	0.0541	0.8300	0.4070	-0.0612	0.1508	0.0033	0.2874	0.0619	0.0790	0.7800	0.4330	-0.0929	0.2168	0.0043	0.4756
<i>OFI: 25 – 50K****</i>	0.0984	0.0563	1.7500	0.0810	-0.0120	0.2089	0.0076	0.2313	0.1371	0.1019	1.3500	0.1780	-0.0626	0.3369	0.0106	0.1146
<i>OFI: 50 – 100K****</i>	0.1758	0.0537	3.2700	0.0010	0.0704	0.2811	0.0138	0.2922	0.1449	0.1037	1.4000	0.1630	-0.0585	0.3482	0.0112	0.1044
<i>OFI: > 100K****</i>	0.4458	0.0664	6.7200	0.0000	0.3158	0.5759	0.0465	0.0629	0.7192	0.2244	3.2000	0.0010	0.2792	1.1591	0.0937	0.0079
<i>Foreign Educated</i>	-0.5393	0.1265	-4.2600	0.0000	-0.7872	-0.2914	-0.0251	0.0354	-0.4623	0.1577	-2.9300	0.0030	-0.7714	-0.1531	-0.0217	0.0347
<i>Student: Full or Part time</i>	0.0556	0.0563	0.9900	0.3230	-0.0547	0.1659	0.0042	0.0732	0.1295	0.0988	1.3100	0.1900	-0.0641	0.3231	0.0100	0.0885
<i>Years Since Graduation: 6 – 10+</i>	0.3821	0.0894	4.2700	0.0000	0.2068	0.5574	0.0358	0.1504	0.4840	0.1410	3.4300	0.0010	0.2077	0.7602	0.0472	0.1306
<i>Years Since Graduation: 11 – 15+</i>	0.3856	0.1017	3.7900	0.0000	0.1863	0.5850	0.0370	0.1200	0.2744	0.1790	1.5300	0.1250	-0.0763	0.6252	0.0234	0.1065
<i>Years Since Graduation: 16 – 25+</i>	0.5862	0.0959	6.1100	0.0000	0.3982	0.7743	0.0563	0.2636	0.6334	0.1739	3.6400	0.0000	0.2925	0.9742	0.0618	0.2291
<i>Years Since Graduation:</i>	0.7304	0.1016	7.1900	0.0000	0.5312	0.9296	0.0697	0.3276	0.7638	0.1832	4.1700	0.0000	0.4047	1.1229	0.0687	0.3508

> 26+																
Working in Non-Nursing (WNN)	Coef.	Robust SE	Z	P> z	95% CI		ME	X	Coef.	Robust SE	Z	P> z	95% CI		ME	X
Work Before RN Licensure: CNA++	-0.0266	0.0330	-0.8100	0.4200	-0.0911 0.0380	-0.0019	0.2638	-0.0125	0.0650	-0.1900	0.8480	-0.1399	0.1149	-0.0009	0.2617	
Work Before RN Licensure: LPN++	-0.1546	0.0580	-2.6700	0.0080	-0.2683 -0.0410	-0.0101	0.1099	-0.0752	0.0957	-0.7900	0.4320	-0.2628	0.1123	-0.0050	0.1208	
Work Before RN Licensure: Allied Health++	0.0596	0.0620	0.9600	0.3360	-0.0619 0.1811	0.0046	0.0547	0.0416	0.1411	0.2900	0.7680	-0.2351	0.3182	0.0030	0.0575	
Work Before RN Licensure: Other++	0.0418	0.0498	0.8400	0.4010	-0.0558 0.1395	0.0032	0.0938	0.0624	0.0900	0.6900	0.4890	-0.1141	0.2388	0.0046	0.0998	
Market Variables																
UIC: Micropolitan+++	0.0466	0.0479	0.9700	0.3310	-0.0473 0.1405	0.0035	0.0916	0.0274	0.1007	0.2700	0.7850	-0.1699	0.2248	0.0020	0.0761	
UIC: Rural+++	-0.0932	0.0639	-1.4600	0.1440	-0.2184 0.0319	-0.0063	0.0603	-0.0646	0.1227	-0.5300	0.5990	-0.3051	0.1759	-0.0043	0.0496	
Census Region: South+++++	-0.1268	0.0456	-2.7800	0.0050	-0.2161 -0.0376	-0.0089	0.3353	-0.2832	0.0851	-3.3300	0.0010	-0.4501	-0.1163	-0.0182	0.3269	
Census Region: Midwest+++++	-0.0583	0.0479	-1.2200	0.2230	-0.1521 0.0355	-0.0042	0.2508	-0.1384	0.0907	-1.5300	0.1270	-0.3161	0.0393	-0.0090	0.2263	
Census Region: West+++++	-0.0994	0.0491	-2.0300	0.0430	-0.1956 -0.0032	-0.0069	0.1884	-0.3450	0.0925	-3.7300	0.0000	-0.5262	-0.1637	-0.0202	0.2143	
RNs/1,000	0.0032	0.0031	1.0200	0.3080	-0.0029 0.0093	0.0002	12.8879	-0.0002	0.0057	-0.0400	0.9670	-0.0115	0.0110	0.0000	12.8405	
MDs/1,000	-0.0507	0.0092	-5.4900	0.0000	-0.0687 -0.0326	-0.0037	3.2405	-0.0544	0.0189	-2.8700	0.0040	-0.0915	-0.0172	-0.0038	3.3814	
HMO Index of Competition	0.0841	0.0672	1.2500	0.2110	-0.0477 0.2158	0.0062	0.6329	0.1840	0.1408	1.3100	0.1910	-0.0919	0.4599	0.0128	0.6475	
Hospital Days/1,000	0.0000	0.0000	-0.6900	0.4920	-0.0001 0.0000	0.0000	1011.22	-0.0001	0.0000	-1.3900	0.1650	-0.0002	0.0000	0.0000	1023.98	
Unemployment Rate	-0.0137	0.0094	-1.4500	0.1460	-0.0322 0.0048	-0.0010	5.4069	-0.0188	0.0170	-1.1000	0.2710	-0.0522	0.0146	-0.0013	5.4545	
Percent Uninsured	-0.0045	0.0047	-0.9500	0.3440	-0.0137 0.0048	-0.0003	13.3427	0.0037	0.0101	0.3700	0.7110	-0.0160	0.0234	0.0003	13.6072	
% of Population over Age 65	0.0006	0.0042	0.1500	0.8820	-0.0076 0.0088	0.0000	12.3295	-0.0030	0.0072	-0.4200	0.6770	-0.0171	0.0111	-0.0002	12.3330	
Political Variables																
Liberalism: Centrist++++	-0.0954	0.0355	-2.6900	0.0070	-0.1649 -0.0258	-0.0070	0.5096	-0.1000	0.0755	-1.3300	0.1850	-0.2480	0.0479	-0.0070	0.4932	
Liberalism: Liberal++++	-0.1255	0.0495	-2.5400	0.0110	-0.2226 -0.0285	-0.0087	0.2566	-0.1012	0.0940	-1.0800	0.2820	-0.2854	0.0830	-0.0068	0.2821	
Democratic Governor	0.0017	0.0297	0.0600	0.9530	-0.0565 0.0600	0.0001	0.3990	0.0271	0.0579	0.4700	0.6390	-0.0863	0.1405	0.0019	0.3843	
Constant	-2.2801	0.5972	-3.8200	0.0000	-3.4507 -1.1096			-1.2801	0.5972	-2.8200	0.0320	-4.4507	-1.1096			

Appendix C: US Census Regions and Divisions

Region 1: Northeast

Division 1: New England

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
New Hampshire

Division 2: Middle Atlantic

New Jersey
New York
Pennsylvania

Region 2: Midwest

Division 3: East North Central

Indiana
Illinois
Michigan
Ohio
Wisconsin

Division 4: West North Central

Iowa
Kansas
Minnesota
Missouri
Nebraska
South Dakota
North Dakota

Region 3: South

Division 5: South Atlantic

Delaware
District of Columbia
Florida

Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

Division 6: East South Central

Alabama
Kentucky
Mississippi
Tennessee

Division 7: West South Central

Arkansas
Louisiana
Oklahoma
Texas

Region 4: West

Division 8: Mountain

Arizona
Colorado
Idaho
New Mexico
Montana
Utah
Nevada
Wyoming

Division 9: Pacific

Alaska
California
Hawaii
Oregon
Washington

Appendix D: Average Composite Liberal Scores for State Delegations

2004 Vote Ratings

How They Measured Up

Richard E. Cohen

28 February 2004

National Journal

(c) 2004 by National Journal Group Inc. Available at www.nationaljournal.com.

National Journal's vote ratings rank members of Congress on how they vote relative to each other on a conservative-to-liberal scale in each chamber. The scores, which have been compiled each year since 1981, are based on lawmakers' votes in three areas: economic policy, social policy, and foreign policy. The scores are determined by a computer-assisted calculation that ranks members from one end of the ideological spectrum to the other, based on key votes -- 62 in the Senate in 2003 -- selected by National Journal reporters and editors.

This listing shows the most-liberal to most-conservative congressional delegations in the House and Senate, based on average composite liberal scores in National Journal's 2004 vote ratings.

Most-Liberal State Delegations

Massachusetts 89

Vermont 84

Rhode Island 78

Maine 76

Hawaii 75

Oregon 69

New York 68

Maryland 67

Connecticut 65

California 61

Centrist State Delegations

New Jersey 59

Wisconsin 59

North Dakota 57

Washington 57

West Virginia 56

Illinois 54

Delaware 53

Arkansas 52

Minnesota 51

New Mexico 49

Michigan 48

North Carolina 47

Mississippi 46

Ohio 46

Pennsylvania 46

Tennessee 46

Missouri 44

Texas 44

Colorado 43

Arizona 42

New Hampshire 42

Indiana 41

Most-Conservative State Delegations

Iowa 39

South Carolina 39

Virginia 39

Florida 38

Nevada 38

Georgia 36

Nebraska 36

Idaho 35

Louisiana 35

Kansas 33

Kentucky 30

Alabama 27

Oklahoma 25

Utah 25

Alaska 23

Montana 23

South Dakota 21

Wyoming 14

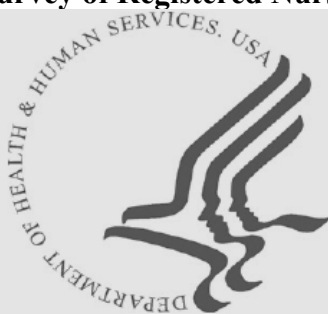
Appendix E: Political Affiliation of State Governors



GOVERNORS' POLITICAL AFFILIATIONS & TERMS OF OFFICE, 2006

<i>State or jurisdiction</i>	<i>Governor</i>	<i>Present term began</i>	<i>Present term ends</i>	<i>Number of previous terms</i>	<i>Maximum consecutive terms</i>
Alabama	<i>Bob Riley (R)</i>	1-03	1-07	—	2
Alaska	<i>Frank Murkowski (R)</i>	12-02	12-06	—	2
American Samoa	Togiola T.A. Tulafono (D)	4-03 (a)	1-09	1	2
Arizona	Janet Napolitano (D)	1-03	1-07	—	2
Arkansas	<i>Mike Huckabee (R)</i>	1-03	1-07	2 (b)	2
California	<i>Arnold Schwarzenegger (R)</i>	11-03 (c)	1-07	—	2
Colorado	<i>Bill Owens (R)</i>	1-03	1-07	1	2
Connecticut	<i>M. Jodi Rell (R)</i>	7-04 (d)	1-07	—	—
Delaware	Ruth Ann Minner (D)	1-05	1-09	1	2 (e)
Florida	<i>Jeb Bush (R)</i>	1-03	1-07	1	2
Georgia	<i>Sonny Perdue (R)</i>	1-03	1-07	—	2
Guam	<i>Felix Perez Camacho (R)</i>	1-03	1-07	—	2
Hawaii	<i>Linda Lingle (R)</i>	12-02	12-06	—	2
Idaho	<i>James E. Risch (R)</i>	5-06 (f)	1-07	—	2
Illinois	Rod Blagojevich (D)	1-03	1-07	—	—
Indiana	<i>Mitch Daniels (R)</i>	1-05	1-09	—	2
Iowa	Tom Vilsack (D)	1-03	1-07	1	—
Kansas	Kathleen Sebelius (D)	1-03	1-07	—	2
Kentucky	<i>Ernie Fletcher (R)</i>	12-03	12-07	—	2
Louisiana	Kathleen Babineaux Blanco (D)	1-04	1-08	—	2
Maine	John Baldacci (D)	1-03	1-07	—	2
Maryland	<i>Robert Ehrlich (R)</i>	1-03	1-07	—	2
Massachusetts	<i>Mitt Romney (R)</i>	1-03	1-07	—	—
Michigan	Jennifer Granholm (D)	1-03	1-07	—	2
Minnesota	<i>Tim Pawlenty (R)</i>	1-03	1-07	—	—
Mississippi	<i>Haley Barbour (R)</i>	1-04	1-08	—	2
Missouri	<i>Matt Blunt (R)</i>	1-05	1-09	—	2
Montana	Brian Schweitzer (D)	1-05	1-09	—	2 (g)
Nebraska	<i>Dave Heineman (R)</i>	1-05 (h)	1-07	1	2 (i)
Nevada	<i>Kenny C. Guinn (R)</i>	1-03	1-07	1	2
New Hampshire	John Lynch (D)	1-05	1-07 (j)	—	—
New Jersey	Jon Corzine (D)	1-06	1-10	—	2
New Mexico	Bill Richardson (D)	1-03	1-07	—	2
New York	<i>George E. Pataki (R)</i>	1-03	1-07	2	—
North Carolina	Michael F. Easley (D)	1-05	1-09	1	2
North Dakota	<i>John Hoeven (R)</i>	12-04	12-08	1	—
Northern Mariana Is.	Benigno Fitial (Covenant)	1-06	1-10	—	2
Ohio	<i>Bob Taft (R)</i>	1-03	1-07	1	2
Oklahoma	Brad Henry (D)	1-03	1-07	—	2
Oregon	Ted Kulongoski (D)	1-03	1-07	—	2
Pennsylvania	Edward G. Rendell (D)	1-03	1-07	—	2
Puerto Rico	Anibal Acevedo Vilá (D)	1-05	1-09	—	—
Rhode Island	<i>Don Carcieri (R)</i>	1-03	1-07	—	2
South Carolina	<i>Mark Sanford (R)</i>	1-03	1-07	—	2
South Dakota	<i>Michael Rounds (R)</i>	1-03	1-07	—	2
Tennessee	Phil Bredesen (D)	1-03	1-07	—	2
Texas	<i>Rick Perry (R)</i>	1-03 (k)	1-07	1	—
Utah	<i>Jon Huntsman, Jr. (R)</i>	1-05	1-09	—	3
Vermont	Jim Douglas (R)	1-05	1-07 (l)	1	—
Virginia	Tim Kaine (D)	1-06	1-10	—	(m)
Virgin Islands	Charles W. Turnbull (D)	1-03	1-07	1	2
Washington	Christine Gregoire (D)	1-05	1-09	—	—
West Virginia	Joe Manchin III (D)	1-05	1-09	—	2
Wisconsin	Jim Doyle (D)	1-03	1-07	—	—
Wyoming	David Freudenthal (D)	1-03	1-07	—	2

Appendix F: National Sample Survey of Registered Nurses (2004) Questionnaire



U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Health Resources and Services Administration

2004 National Sample Survey of Registered Nurses

Conducted by
The Gallup Organization

The 2004 National Sample Survey of Registered Nurses is being conducted for the Health Resources and Services Administration of the U.S. Department of Health and Human Services in compliance with Title VIII, Public Law 94-63, the Nurse Training Act of 1975, section 951; and Public Law 105-392, section 806(f), the Health Professions Education Partnerships Act of 1998; 42 USC 295k, section 792 of the U.S. Public Health Service Act. **Strict confidentiality of all information obtained from individuals surveyed in NSSRN is assured by current Federal laws and regulations.** An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for this project is 0915-0276. Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching data sources, gathering or maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the HRSA Reports Clearance Officer, 5600 Fishers Lane, Room 14-45, Rockville, Maryland, 20857. The Gallup Organization will process all personal data you provide and will use such information for statistical and research purposes. By completing and returning this survey, you give your consent to process and transfer your personal data to the United States.

Please complete only one questionnaire and return any extra copies you receive, preferably in the same envelope (see Instructions on page 1).

Please correct any errors in the name/address information and States where you are actively licensed.

<input type="text"/>	<input type="text"/>
Corrections to First Name	Corrections to M.I.
<input type="text"/>	
Corrections to Last Name	
<input type="text"/>	
Corrections to Number and Street	
<input type="text"/>	
Corrections to City/Town	
<input type="text"/>	<input type="text"/>
Corrections to State	Corrections to ZIP Code
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Corrections to State(s) Where Actively Licensed (If there are any corrections to the list in the box to the right, please re-list ALL of the States where you are actively licensed.)

[First Name M.I. Last Name]

[Address 1]

[Address 2]

[City, State ZIP Code]

State(s) Where Actively Licensed:

[State 1, State 2, State 3]

Web Site URL: https://gx.gallup.com/nurse_gx

Access Code: [XXXXXXX]

Quex # [X]

OMB No. 0915-0276
Expiration Date: 8/31/2005

Instructions

How do I complete the survey electronically?

On your Web browser, log onto <https://gx.gallup.com/nurse.gx> and type in your unique Access Code that is printed in the box in the lower right corner of the questionnaire cover page. If you complete the survey online, you do not need to return this paper questionnaire.

What if I received more than one questionnaire?

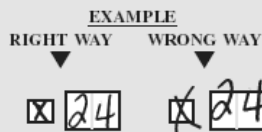
We may not have been able to eliminate all of the duplications in our list of nurses who have more than one license, so you may receive more than one questionnaire. **Please complete only one questionnaire but return any extra copies you receive, preferably in the same envelope as your completed survey. Please write "DUPLICATE" at the top of these blank surveys.** By returning extra surveys, we can avoid unnecessary follow-up mailings to you. (For those who receive duplicate questionnaires, if you choose to respond by the Web, you will be asked to enter a unique code from each of the duplicate surveys you receive.)

What if I have questions about this survey?

If you have any questions about this survey or about how to complete it electronically, please call Gallup Client Support (toll-free) at 1-888-297-8999, or send an e-mail to galluppoll@gallup.com.

Section A. Eligibility and Education

Please mark an "X" in the box corresponding to your answer in each question, or supply the requested information. Use blue or black ink.



- 1** As of March 10, 2004, were you actively licensed to practice as a registered nurse (RN) in any U.S. State or the District of Columbia (whether or not you were employed in nursing at that time)? (Please mark ☒ the appropriate box.)

- ¹ ☐ Yes (You are eligible to complete this questionnaire. Please continue to the next question.)
- ² ☐ No (You do not need to complete this questionnaire. Please stop here and return this questionnaire to Gallup so we know you are not eligible.)

- 2** Which initial educational program qualified you to sit for the RN licensure exam? (Mark one box.)

- ¹ ☐ Diploma Program
- ² ☐ Associate Degree
- ³ ☐ Bachelor's Degree
- ⁴ ☐ Master's Degree
- ⁵ ☐ Doctorate (N.D.)

- 3** In what month and year did you graduate from this program?

Month			Year			

- 4** In which U.S. State (including the District of Columbia), U.S. Territory, or foreign country was this program located?

- 5** In what U.S. State (or District of Columbia) were you issued your first RN license?

State:

Year:

(PLEASE CONTINUE TO PAGE 2)

6 How did you finance your initial nursing education?
(Mark all that apply.)

- ☐ 1 Personal resources (you or your spouse)
- ☐ 2 Family resources (parents or other relatives)
- ☐ 3 Employer tuition reimbursement plan (including Veterans Administration employer tuition plan)
- ☐ 4 Federal traineeship, scholarship, or grant
- ☐ 5 Federally-assisted loan
- ☐ 6 State/local government scholarship, loan, or grant
- ☐ 7 Non-government scholarship, loan, or grant
- ☐ 8 Other resources

7 At any time, have you ever been licensed as a practical or vocational nurse (LPN/LVN)?

- ☐ 1 Yes
- ☐ 2 No

8 Before starting your initial RN educational program, were you ever employed as any of the following: (Mark all that apply.)

- ☐ 0 No
- ☐ 1 Nursing Aide
- ☐ 2 Licensed Practical/Vocational Nurse (LPN/LVN)
- ☐ 3 Allied Health technician/technologist (e.g., radiologic technician)
- ☐ 4 Manager in health care setting
- ☐ 5 Clerk in health care setting
- ☐ 6 Another type of health-related position
(Please specify below.)

9 Indicate all degrees you received before starting your initial RN educational program.
(Mark all that apply.)

- ☐ 0 None (Skip to Question 11, page 3)

- ☐ 1 Associate Degree
- ☐ 2 Bachelor's Degree
- ☐ 3 Master's Degree
- ☐ 4 Doctorate
- ☐ 5 Other (Specify)

10 What was the field of study for your highest degree identified in Question 9? (Mark one box.)

- ☐ 1 Health-related field
or

Non-Health related field

- ☐ 2 Biological or Physical Science
- ☐ 3 Business or Management
- ☐ 4 Education
- ☐ 5 Liberal Arts, Social Science, or Humanities
- ☐ 6 Law
- ☐ 7 Computer Science
- ☐ 8 Social Work
- ☐ 9 Other non-health-related field
(Please specify below.)

(PLEASE CONTINUE TO PAGE 3)

11 Did you earn any additional academic degrees AFTER graduating from your initial registered nurse education program that you described in Question 2? (Do not include degrees you are currently working towards.)

☐ Yes (Please complete all columns for each degree you earned.)

☐ No (Skip to Question 12, page 4)

	A	B	C	D	E
Type of Degree	Did you receive this degree? (Mark all that apply.)	If so, did the degree enhance your nursing career? (Mark yes or no.)	Which two-digit code from the table below best describes the primary focus of this degree?	In what state or country did you receive the degree?	In what year did you receive the degree?
a. Associate Degree in nursing	<input type="checkbox"/>	_____	_____	<input type="text"/>	<input type="text"/>
b. Associate Degree in another field	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____	<input type="text"/>	<input type="text"/>
c. Bachelor's degree in nursing	<input type="checkbox"/>	_____	_____	<input type="text"/>	<input type="text"/>
d. Bachelor's degree in another field	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Master's in nursing (after any initial MSN mentioned in Question 2)	<input type="checkbox"/>	_____	<input type="text"/>	<input type="text"/>	<input type="text"/>
f. Additional Master's in nursing	<input type="checkbox"/>	_____	<input type="text"/>	<input type="text"/>	<input type="text"/>
g. Master's in another field	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="text"/>	<input type="text"/>	<input type="text"/>
h. Doctorate in nursing	<input type="checkbox"/>	_____	<input type="text"/>	<input type="text"/>	<input type="text"/>
i. Doctorate in another field	<input type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="text"/>	<input type="text"/>	<input type="text"/>

For Column C, enter the appropriate two-digit code for each Bachelor's (other), Master's, or Doctorate degree above.

Primary Focus of Degree

- 01 Clinical Practice
- 02 Education
- 03 Supervision/Administration
- 04 Research
- 05 Law
- 06 Informatics
- 07 Business
- 08 Public Health
- 09 Social Science
- 10 Humanities
- 11 Basic Sciences (i.e., Biology)
- 12 Computer Science
- 13 Social Work
- 14 Other

12 Since graduating from the initial nursing program you described in Question 2, have you completed a formal educational program preparing you for advanced practice nursing (APN) as a clinical nurse specialist, nurse anesthetist, nurse-midwife, or nurse practitioner?

☐ Yes (Please complete columns on pages 4-6 for each specialty you have obtained.)

☐ No (Skip to Question 13, Page 6)

	A	B	C	D
Information on Advanced Practice Nurse Preparation and Credentials	Clinical Nurse Specialist (CNS)	Nurse Anesthetist (NA)	Nurse-Midwife (NM)	Nurse Practitioner (NP)
12a Did you receive advance practice preparation as a ...? (Mark each column if yes.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12b What was the length of the program? 1. Less than 3 months 2. 3 through 8 months 3. 9 months or more	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3
12c What was the highest credential you received in that program? 1. Certificate/Award 2. Bachelor's Degree 3. Master's Degree 4. Post-Master's Certificate 5. Doctorate	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	(Mark one) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
12d In what year did you receive this APN credential?	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12e Which one of these was the primary specialty you studied? 1. Acute Care/Critical Care 2. Adult Health/Medical Surgical 3. Anesthesia 4. Community Health 5. Family 6. Geriatric/Gerontology 7. Home Health 8. Maternal-Child Health 9. Neonatal 10. Nurse-Midwifery 11. Obstetric/Gynecology 12. Occupational Health 13. Oncology 14. Palliative Care 15. Pediatrics 16. Psychiatric/Mental Health 17. Rehabilitation 18. School Health 19. Women's Health 20. Other (Specify in appropriate column.)	(Mark one) <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 (Specify) <input type="text"/>	(Mark one) <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 (Specify) <input type="text"/>	(Mark one) <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 (Specify) <input type="text"/>	(Mark one) <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 (Specify) <input type="text"/>

	A	B	C	D
Information on Advanced Practice Nurse Preparation and Credentials (Question 12 continued from previous page.)	Clinical Nurse Specialist (CNS)	Nurse Anesthetist (NA)	Nurse-Midwife (NM)	Nurse Practitioner (NP)
12f Is your current APN status certified by any of these national bodies?				
1. American Association of Critical Care Nurses Certification Corp. 2. American Academy of Nurse Practitioners 3. American Association of Nurse Anesthetists 4. ACNM Certification Council, Inc. (ACC) (including previous ACNM certification) 5. American Nurses Credentialing Center (ANCC) 6. National Certification Board of Pediatric Nurse Practitioners & Nurses (NCPNP/N) 7. National Certification Corporation for the Obstetric, Gynecologist, and Neonatal Nursing Specialties (NCC) 8. Other (Specify in appropriate column.)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	(Specify if other)	(Specify if other)	(Specify if other)	(Specify if other)
12g If Yes above, what is the primary type of national certification you have?	(Mark one)	(Mark one)	(Mark one)	(Mark one)
1. Acute Care NP	<input type="checkbox"/> 01	<input type="checkbox"/> 01	<input type="checkbox"/> 01	<input type="checkbox"/> 01
2. Acute Care/Critical Care (Adult) CNS	<input type="checkbox"/> 02	<input type="checkbox"/> 02	<input type="checkbox"/> 02	<input type="checkbox"/> 02
3. Acute Care/Critical Care (Pediatric or Neonatal) CNS	<input type="checkbox"/> 03	<input type="checkbox"/> 03	<input type="checkbox"/> 03	<input type="checkbox"/> 03
4. Adult NP	<input type="checkbox"/> 04	<input type="checkbox"/> 04	<input type="checkbox"/> 04	<input type="checkbox"/> 04
5. Certified Registered Nurse Anesthetist (CRNA)	<input type="checkbox"/> 05	<input type="checkbox"/> 05	<input type="checkbox"/> 05	<input type="checkbox"/> 05
6. Certified Nurse-Midwife (CNM)	<input type="checkbox"/> 06	<input type="checkbox"/> 06	<input type="checkbox"/> 06	<input type="checkbox"/> 06
7. Community Health CNS	<input type="checkbox"/> 07	<input type="checkbox"/> 07	<input type="checkbox"/> 07	<input type="checkbox"/> 07
8. Family NP	<input type="checkbox"/> 08	<input type="checkbox"/> 08	<input type="checkbox"/> 08	<input type="checkbox"/> 08
9. Gerontological CNS or NP	<input type="checkbox"/> 09	<input type="checkbox"/> 09	<input type="checkbox"/> 09	<input type="checkbox"/> 09
10. Home Health CNS	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> 10
11. Medical Surgical CNS	<input type="checkbox"/> 11	<input type="checkbox"/> 11	<input type="checkbox"/> 11	<input type="checkbox"/> 11
12. Neonatal NP	<input type="checkbox"/> 12	<input type="checkbox"/> 12	<input type="checkbox"/> 12	<input type="checkbox"/> 12
13. Occupational Health NP	<input type="checkbox"/> 13	<input type="checkbox"/> 13	<input type="checkbox"/> 13	<input type="checkbox"/> 13
14. Pediatric CNS or NP	<input type="checkbox"/> 14	<input type="checkbox"/> 14	<input type="checkbox"/> 14	<input type="checkbox"/> 14
15. Palliative Care CNS or NP	<input type="checkbox"/> 15	<input type="checkbox"/> 15	<input type="checkbox"/> 15	<input type="checkbox"/> 15
16. Psychiatric & Mental Health—Adult NP or CNS	<input type="checkbox"/> 16	<input type="checkbox"/> 16	<input type="checkbox"/> 16	<input type="checkbox"/> 16
17. Psychiatric & Mental Health (Family) NP	<input type="checkbox"/> 17	<input type="checkbox"/> 17	<input type="checkbox"/> 17	<input type="checkbox"/> 17
18. Psychiatric & Mental Health Child/Adolescent CNS	<input type="checkbox"/> 18	<input type="checkbox"/> 18	<input type="checkbox"/> 18	<input type="checkbox"/> 18
19. School NP	<input type="checkbox"/> 19	<input type="checkbox"/> 19	<input type="checkbox"/> 19	<input type="checkbox"/> 19
20. Women's Health Care NP (Ob-Gyn NP)	<input type="checkbox"/> 20	<input type="checkbox"/> 20	<input type="checkbox"/> 20	<input type="checkbox"/> 20
21. No National Certificate Exam Available	<input type="checkbox"/> 21	<input type="checkbox"/> 21	<input type="checkbox"/> 21	<input type="checkbox"/> 21
22. Other (Specify in appropriate column.)	<input type="checkbox"/> 22	<input type="checkbox"/> 22	<input type="checkbox"/> 22	<input type="checkbox"/> 22
	(Specify)	(Specify)	(Specify)	(Specify)

	A	B	C	D
Information on Advanced Practice Nurse Preparation and Credentials (Question 12 continued from previous page.)	Clinical Nurse Specialist (CNS)	Nurse Anesthetist (NA)	Nurse - Midwife (NM)	Nurse Practitioner (NP)
12b Do you have any current certification, licensure, or other official recognition of your APN status from any <u>State</u> Board of Nursing?	¹ <input type="checkbox"/> Yes ² <input type="checkbox"/> No	¹ <input type="checkbox"/> Yes ² <input type="checkbox"/> No	¹ <input type="checkbox"/> Yes ² <input type="checkbox"/> No	¹ <input type="checkbox"/> Yes ² <input type="checkbox"/> No

13 Please identify any professional certifications in nursing you have received (e.g., critical care, emergency, oncology, case management, etc.). Do not include advanced practice nursing certifications reported above.

⁰ ☐ None

Specify:

Specify:

Specify:

14 Since January 2000, please indicate if you have received training in recognizing or responding to the following emergencies. (Mark all that apply.)

⁰ ☐ None (Skip to Question 15)

¹ ☐ Biological attack

² ☐ Chemical attack

³ ☐ Nuclear/radiologic attack

⁴ ☐ Infectious disease epidemics

⁵ ☐ Natural disaster or other public health emergencies

14a (If you have marked any of the above types of training:) Please specify the TOTAL number of hours spent in the above training(s) since January 2000.

Hours in training

14b Pertaining to the training in emergencies you marked above, will the training enable you to effectively participate in an organized multidisciplinary response to such an emergency?

¹ ☐ Yes

² ☐ No

15 Are you currently enrolled in a formal education program leading to an academic degree or certificate?

¹ ☐ Yes

² ☐ No (Skip to Question 19, page 7)

16 Is this formal education program...? (Mark one box.)

¹ ☐ In nursing

² ☐ In a non-nursing field useful to enhance your career in nursing

³ ☐ In another field to allow you to pursue career opportunities outside of nursing

17 Are you a full-time or part-time student?

¹ ☐ Full-time student

² ☐ Part-time student

18 What type of degree/award are you currently working toward in this program? (Mark one box.)

¹ ☐ Associate Degree

² ☐ Bachelor's Degree

³ ☐ Master's Degree

⁴ ☐ Doctorate

⁵ ☐ Certificate

(PLEASE CONTINUE TO PAGE 7)

Section B. Primary Nursing Employment

- 19** Are you employed or self-employed in nursing?
(Employment also includes: being on a temporary leave of absence from your nursing position; on vacation; being on sick leave; or working through a temporary employment service or practicing private duty nursing and not on a case at the moment.)

¹ ☐ Yes
² ☐ No (Skip to Question 41, page 9)

- 20** Are you required to maintain an active RN license in order to hold your principal nursing position?
(If you hold more than one nursing position, your principal nursing position is the one at which you work the most hours during your regular work year.)

¹ ☐ Yes
² ☐ No

- 21** Where is the location of your principal nursing position? This information is critical for developing State employment estimates and supply and demand projections. (If you are not employed in a fixed location, enter the geographic area where you spend most of your working time.)

City/Town:

County:

State (or country if not USA):

ZIP+4 code: -
(if available)

- 22** In your principal nursing position, are you...?
(Mark one box.)

¹ ☐ An employee of the organization or facility for which you are working
² ☐ Employed through an employment agency
³ ☐ Self-employed, per diem, or on as-needed basis

- 23** Using the list of NURSING EMPLOYMENT SETTINGS on page 15, write in the code that best describes your principal nursing employment setting. (If you work in more than one setting, indicate the one setting in which you spend most of your working time.)

Code for employment setting from page 15

If this code is labeled as "Other," please specify the setting below.

- 24** Which one of the following best corresponds to the position title for your principal nursing position?
(Mark one box.)

- ⁰¹ ☐ Administrator of organization/facility/agency or assistant administrator
⁰² ☐ Administrator of nursing or assistant (e.g., vice president for nursing, director or assistant director of nursing services)
⁰³ ☐ Case manager
⁰⁴ ☐ Certified nurse anesthetist (CRNA)
⁰⁵ ☐ Charge nurse
⁰⁶ ☐ Clinical nurse specialist
⁰⁷ ☐ Consultant
⁰⁸ ☐ Dean, director, or assistant/associate director of nursing education program
⁰⁹ ☐ Float nurse
¹⁰ ☐ Discharge planner/outcomes manager
¹¹ ☐ Head nurse or assistant head nurse
¹² ☐ Infection control nurse
¹³ ☐ Informatics nurse
¹⁴ ☐ Instructor at a school of nursing
¹⁵ ☐ Insurance reviewer
¹⁶ ☐ Nurse clinician
¹⁷ ☐ Nurse coordinator
¹⁸ ☐ Nurse manager
¹⁹ ☐ Nurse-midwife
²⁰ ☐ Nurse practitioner
²¹ ☐ Nursing staff development director
²² ☐ Nursing staff development instructor
²³ ☐ Patient care coordinator
²⁴ ☐ Private duty nurse
²⁵ ☐ Professor or assistant/associate professor
²⁶ ☐ Public health nurse
²⁷ ☐ Quality improvement nurse
²⁸ ☐ Researcher
²⁹ ☐ School nurse
³⁰ ☐ Staff nurse
³¹ ☐ Supervisor or assistant supervisor
³² ☐ Surveyor/auditor/regulator
³³ ☐ Team leader
³⁴ ☐ Traveling nurse
³⁵ ☐ Visiting nurse/home health nurse
³⁶ ☐ No position title
³⁷ ☐ Other (Specify)

25 For your principal nursing position, estimate the percentage of your time spent in the following activities during a usual workweek. (The total should equal 100%. Do not use decimal places.)

- a. Administration %
- b. Consultation with agencies and/or professionals %
- c. Direct patient care not including staff supervision %
- d. Research %
- e. Supervision/Management %
- f. Teaching nursing or other health profession students (include class preparation time) %
- g. Other %
- TOTAL (confirm sum is 100%) 1 0 0 %

26 In a typical week in your principal nursing position, do you provide direct patient care in a hospital setting? (Exclude nursing home units. Include all clinics and other services of the hospitals.)

- 1 ☐ Yes
- 2 ☐ No (Skip to Question 28)

27 During a typical workweek in your principal nursing position, in what type of unit do you spend the majority of your patient care time? (Mark one box.)

- 01 ☐ Critical care unit (ICU/CCU)
- 02 ☐ Emergency department
- 03 ☐ General/specialty inpatient unit (other than critical care or step-down)
- 04 ☐ Home health care
- 05 ☐ Hospice unit
- 06 ☐ Labor/delivery room
- 07 ☐ Operating room
- 08 ☐ Outpatient department
- 09 ☐ Perioperative unit
- 10 ☐ Radiologic (diagnostic or therapeutic)
- 11 ☐ Step-down, transitional, progressive, telemetry unit
- 12 ☐ Sub-acute care unit
- 13 ☐ Multiple units, none over 50%
- 14 ☐ No specific assigned type of area
- 15 ☐ Other specific area (Specify) _____

28 What type of patient is primarily treated in the unit/organization in which you work? (Mark one box.)

- 01 ☐ No patient care – Unit/organization does not provide patient care
- 02 ☐ Adult care (general)
- 03 ☐ Cardiovascular
- 04 ☐ Chronic care
- 05 ☐ Neurological
- 06 ☐ Newborn
- 07 ☐ Obstetrics/gynecologic
- 08 ☐ Oncology
- 09 ☐ Orthopedic
- 10 ☐ Pediatric
- 11 ☐ Psychiatric
- 12 ☐ Rehabilitation
- 13 ☐ Renal
- 14 ☐ Work with multiple patient types
- 15 ☐ Other (Specify) _____

29 In your principal nursing position, do you work...? (Mark one box.)

- 1 ☐ The entire calendar year or school/academic year
- 2 ☐ Only part of the calendar year or school/academic year

30 When you work at this principal nursing position, do you work...? (Mark one box.)

- 1 ☐ Full-time
- 2 ☐ Part-time

31 How many weeks do you normally work per year in this job? (Enter a number from 01 to 52.)

weeks

32 How would you best describe your feelings about your principal nursing position? (Mark one box.)

- 1 ☐ Extremely dissatisfied
- 2 ☐ Moderately dissatisfied
- 3 ☐ Neither satisfied nor dissatisfied
- 4 ☐ Moderately satisfied
- 5 ☐ Extremely satisfied

- 33** Please provide information about the number of hours you worked in your last full workweek at your principal nursing position.
- Number of hours worked in your last full workweek (including paid hours of on-call duty and overtime)
 - Number of hours reported in Item 33a that were paid on-call
(Enter 00 if none)
 - Number of hours reported in Item 33a that were paid as overtime
(Enter 00 if none)
 - Number of overtime hours reported in Item 33c that were mandatory/
unscheduled
(Enter 00 if none)
- 34** Please estimate your current, gross annual earnings (pre-tax) from your principal nursing position. Include overtime and bonuses, but exclude sign-on bonuses.
- \$. 00 per year
- 35** Are you represented by a labor union in your principal nursing position?
- 1 ☐ Yes
 - 2 ☐ No

Section C. Secondary Employment in Nursing

- 36** Aside from the principal nursing position you just described, do you hold any other positions in nursing for pay?
- 1 ☐ Yes
- 2 ☐ No (*Skip to Question 43, page 10*)
- 37** In your other nursing position(s), are you...?
(Mark all that apply.)
- 1 ☐ An employee of the organization or facility for which you are working
- 2 ☐ Employed through an employment agency
- 3 ☐ Self-employed, per diem, or on as-needed basis

- 38** What type of work setting best describes where you work for your other nursing position(s)?
(Mark one box. Refer to categories on page 15 for further clarification.)
- 100 ☐ Hospital
200 ☐ Nursing home/extended care facility
300 ☐ Nursing education program
400 ☐ Public or community health setting
500 ☐ School health service
600 ☐ Occupational health
700 ☐ Ambulatory care setting
800 ☐ Insurance claims/benefits
900 ☐ Policy/planning/regulatory/licensing agency
950 ☐ Other
- 39** Which of the following categories best describes the amount you work in all of your other nursing position(s)? Your best estimate is fine. (Note that 2,000 hours per year is full-time year-round. 1,000 hours per year is half-time year-round or full-time for half a year. 500 hours per year is 10 hours per week year round, or full-time for 3 months of the year.)
(Mark one box.)
- 1 ☐ Less than 500 hours per year
2 ☐ 500 hours per year
3 ☐ 501-999 hours per year
4 ☐ 1,000 hours per year
5 ☐ 1,001-1,499 hours per year
6 ☐ 1,500 hours per year
7 ☐ 1,501-1,999 hours per year
8 ☐ 2,000 hours per year or more

Section D. Employment Outside of Paid Nursing

If you are currently working for pay in nursing, please skip to Question 43, Page 10.

- 41** If you are not working for pay in nursing, how long has it been since you last were employed or self-employed as a registered nurse?
- ⁰ ☐ Mark here if you never worked as a registered nurse
- ¹ ☐ Mark here if less than one year
- Write in number of years if one or more

53 Were you employed in nursing one year ago?

- 1 ☐ Yes
2 ☐ No (Skip to Question 61, page 12)

54 In your principal nursing position one year ago, did you work...? (Mark one box.)

- 1 ☐ The entire calendar year or school/academic year
2 ☐ Only part of the calendar year or school/academic year

55 When you worked at this principal nursing position one year ago, did you work...? (Mark one box.)

- 1 ☐ Full-time
2 ☐ Part-time

56 What was the location of your principal nursing position one year ago? (If you were not employed in a fixed location enter the geographic area where you spent most of your working time.)

City/Town:

County:

State (or country if not USA):

ZIP+4 code:

(if available)

57 In your principal nursing position one year ago, did you spend the majority of your working hours in inpatient units?

- 1 ☐ Yes
2 ☐ No

58 How would you describe your principal nursing position one year ago?

- 1 ☐ Same position/same employer as current principal nursing position (Skip to Question 61, page 12)
2 ☐ Different position/same employer as current one
3 ☐ Different employer than current one

59 Were any of the following the primary reason(s) for this change? (Mark yes or no for each item.)

	Yes	No
a. Burnout/stressful work environment	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
b. Career advancement/promotion	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
c. Disability	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
d. Illness	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
e. Interested in another position/job	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
f. Lack of collaboration/communication between health care professionals	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
g. Laid off/downsizing of staff	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
h. Opportunity to do the kind of nursing that I like	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
i. Pay/benefits better	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
j. Reorganization that shifted positions	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
k. Relocated to different geographic area	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
l. Retired	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
m. Scheduling/inconvenient hours/too many hours	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
n. Sign-on bonus offered	<input type="checkbox"/> ¹	<input type="checkbox"/> ²
o. Other (Specify)	<input type="text"/>	

60 Using the list of NURSING EMPLOYMENT SETTINGS on page 15, write in the code that best describes your principal nursing employment setting one year ago. (If you worked in more than one setting, indicate the one setting in which you spent most of your working time.)

Code for employment setting from page 15

If this code is labeled as "Other," please specify the setting below.

(PLEASE CONTINUE TO PAGE 12)

Section G. General Information

Answers to the following questions will be used only to statistically interpret your responses.

61 Where do you currently reside? This information is critical for producing State estimates.

City/Town:

County:

State (or country if not USA):

ZIP+4 code: -
(if available)

62 Did you reside in the same city/town a year ago?

¹ ☐ Yes (Skip to Question 64)

² ☐ No

63 Where did you reside a year ago? This information is critical for producing State estimates.

City/Town:

County:

State (or country if not USA):

ZIP+4 code: -
(if available)

64 What is your gender?

¹ ☐ Male

² ☐ Female

65 What is your year of birth?

19

66 What is your ethnic background?

¹ ☐ Hispanic or Latino

² ☐ Not Hispanic or Latino

67 What is your racial background? (Mark one or more races.)

¹ ☐ American Indian or Alaska Native

² ☐ Asian

³ ☐ Black or African American

⁴ ☐ Native Hawaiian or Other Pacific Islander

⁵ ☐ White

⁶ ☐ Other (Specify)

68 What languages do you speak fluently other than English? (Enter all that apply.)

⁰ ☐ No other languages

¹ ☐ Language #1

² ☐ Language #2

³ ☐ Language #3

69 Which best describes your current marital status?

¹ ☐ Now married

² ☐ Widowed, divorced, or separated

³ ☐ Never married

70 Describe the children/parents/dependents who either live at home with you or for whom you provide a significant amount of care. (Mark all that apply.)

¹ ☐ No children/parents/dependents at home

² ☐ Child(ren) less than 6 years old at home

³ ☐ Child(ren) 6 to 18 years old at home

⁴ ☐ Other adults at home (i.e., parents or dependents)

⁵ ☐ Others living elsewhere (i.e., children, parents or dependents)

71 What is your current, gross annual household income (pre-tax)?

¹ ☐ \$15,000 or less

² ☐ \$15,001 to \$25,000

³ ☐ \$25,001 to \$35,000

⁴ ☐ \$35,001 to \$50,000

⁵ ☐ \$50,001 to \$75,000

⁶ ☐ \$75,001 to \$100,000

⁷ ☐ \$100,001 to \$150,000

⁸ ☐ More than \$150,000

Section H. Licensure Information

Answers to the following questions will be kept strictly confidential under Federal Law 42 USC 295k, section 792 of the U.S. Public Health Service (PHS) Act and will only be used to develop accurate estimates of the number of RNs in the country and in each State.

- 72** Please provide the information on the State(s) in which you hold an active RN license. This information is critical to confirm that you are the individual we intended to complete the survey, not just someone with a similar name, and that you still hold an active license.

	A	B	C	D
State of licensure	Permanent number on certificate of registration	What is the last name on the license?	What is the first name on the license?	What is the middle initial on the license?
1. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5. <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Section I. Contact Information/Comments

- 73** If we need to contact you about any of your responses, please provide your e-mail address and telephone number, as well as the best time of day to reach you.

E-mail address:

Telephone No.: () -

Area Code Telephone Number

☐ Home ☐ Work ☐ Cell

Time of day/week best to contact you by phone:

74 Do you have any recommendations for how this survey could be improved? Please print clearly.

*Thank you! Please return this survey and any duplicate surveys
in the enclosed postage-paid envelope.*

NURSING EMPLOYMENT SETTINGS & CODES

(Use this list for Questions 23 and 60)

	<u>CODE</u>
<u>Hospital</u> (Exclude nursing home units and all off-site units of hospitals, but include all on-site clinics and other services of the hospitals.)	
Non-Federal, short-term hospital, except psychiatric (for example, acute care hospital) ..	110
Non-Federal, long-term hospital, except psychiatric ..	120
Non-Federal psychiatric hospital ..	130
Federal Government hospital ..	140
Other type of hospital ..	150
<u>Nursing Home/Extended Care Facility</u>	
Nursing home unit in hospital ..	210
Other nursing home ..	220
Facility for mentally retarded ..	230
Other type of extended care facility ..	240
<u>Nursing Education Program</u>	
LPN/LVN program ..	310
Diploma program (RN) ..	320
Associate degree program ..	330
Bachelor's and/or higher degree nursing program ..	340
Other program ..	350
<u>Public or Community Health Setting</u>	
Official State Health Department ..	402
Official State Mental Health Agency ..	405
Official City or County Health Department ..	410
Combination (official/voluntary) nursing service ..	415
Visiting nurse service (VNS/NA) ..	420
Home health service unit (hospital-based) ..	422
Home health agency (non-hospital based) ..	425
Community mental-health organization or facility (including freestanding psychiatric outpatient clinics) ..	430
Substance abuse center/clinic ..	431
Community/neighborhood health center ..	435
Planned Parenthood/family planning center ..	440
Day care center ..	445
Rural health care center ..	450
Retirement community center ..	455
Hospice ..	460
Other ..	465

	<u>CODE</u>
<u>School Health Service</u>	
Public school system ..	510
Private or parochial elementary or secondary school ...	520
College or university ..	530
Other ..	540
<u>Occupational Health (Employee Health Service)</u>	
Private industry ..	610
Government ..	620
Other ..	630
<u>Ambulatory Care Setting</u>	
Solo practice (physician) ..	710
Solo practice (nurse) ..	715
Partnerships (physicians) ..	720
Partnerships (nurses) ..	725
Group practice (physicians) ..	730
Group practice (nurses) ..	735
Partnership or group practice (mixed group of professionals) ..	740
Freestanding clinic (physicians) ..	750
Freestanding clinic (nurses) ..	755
Ambulatory surgical center ..	760
Dialysis center/clinic ..	761
Dental practice ..	770
Hospital owned off-site clinics ..	775
Health Maintenance Organization (HMO) ..	780
Other ..	790
<u>Insurance Claims/Benefits</u>	
Government ..	810
State or local agencies ..	820
Insurance company ..	830
Private industry/organization ..	840
<u>Policy, Planning, Regulatory, or Licensing Agency</u>	
Central or regional Federal agency ..	910
State Board of Nursing ..	920
Nursing or health professional membership association ..	930
Health planning agency, non-Federal ..	940
Other ..	945
<u>Other</u>	
Correctional facility ..	950
Private duty in a home setting ..	955
Home-based self-employment ..	960
Other ..	965


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Author Signature

May 7, 2007

Date