Nursing Workforce Issues: Nursing Student Enrollment and Faculty Trends in the State of Maryland

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University.

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Acknowledgements

The author acknowledges the Maryland Colleagues in Caring and the Robert Wood Johnson Foundation for permission to analyze and report the data collected in the Maryland Colleagues in Caring Nursing Education Survey.

The author also acknowledges the wisdom, encouragement and guidance received from Dr. Jean Moore, Dr. James Vail and Dr. Dennis Dunklee.

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Abstract

NURSING WORKFORCE ISSUES: NURSING STUDENT ENROLLMENT AND FACULTY TRENDS IN THE STATE OF MARYLAND

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George Mason University, 2001

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The United States is experiencing a nursing shortage unlike any previous shortage. The nursing workforce is aging at a greater rate than the general workforce. Nursing school enrollments are not predicted to meet the demands created by older nurses leaving practice and increasing health care complexity. The purpose of this study was to identify potential disparities in the registered nurse workforce by collecting information about nursing schools and programs, nursing faculty, faculty hiring projections, nursing students and enrollment projections. This information should help managers and providers plan for future needs.

The study sample was schools of nursing in the State of Maryland. Using data collected with the Maryland Colleagues in Caring Nursing Education Survey, nursing programs were described. Faculty characteristics reported were ethnicity, gender, age, highest educational preparation, area of nursing specialty and employment status. Projected need for additional faculty was also reported. Information on nursing students

included ethnicity, gender and total number of graduates over a five-year academic period. Student enrollment was also projected

The findings indicate a worsening of the current nursing shortage, as the number of new graduates does not replace the decreasing supply of nurses. Nursing school enrollments in Maryland have decreased over the past three years. More than 50% of the nursing faculty is 50 years or older. A potential faculty shortage may result as younger nurses are choosing alternate practice areas. Neither the nursing faculty nor students reflect the ethnic or gender distribution of the general population.

Attention to the recruitment and retention of nurses is a priority for resolving the shortage. The strategies employed in the past to balance supply and demand are not as effective with this nursing shortage. As consumers and legislatures join the forces already addressing the nursing shortage, solutions will be presented. Research on the nursing workforce and the results of implementing solutions employed should continue. It is unlikely this shortage will resolve over the next five years.

Nursing Workforce Issues: Nursing Student Enrollment and Faculty Trends in the State of Maryland.

Introduction

Grim predictions of increasing health care needs and the decreasing nursing workforce are abundant (Abdellah, 1990; AONE, 2000; Buerhaus and Staiger, 1997; Buerhaus, Staiger & Auerbach, 2000 a, b, c; Prescott, 1991). The "Graying of America" is real and present and is adding to concerns of balance in the health care arena (Harty, 1991). With one third of the United States population reaching the age of 65 in 2011, a potential mismatch may exist between supply and demand of health care providers, specifically registered nurses.

With one third of the United States population reaching the age of 65 in 2011, a potential mismatch may exist between supply and demand of health care providers, specifically, registered nurses. The question arises about who will be providing health care to the population in general (American Association of Colleges of Nursing, 1998). To answer this question, at least in one state, this research was designed to identify nursing programs, enrollment and hiring projections for these programs, and the characteristics of nursing faculty in the State of Maryland. The research questions for this study were:

1. What are the characteristics of the nursing faculty in Maryland?

5. associate degree and baccalaureate degree programs in Maryland?
6. How do the projected student enrollments and hiring patterns of faculty compare?
7. How does the nursing faculty in Maryland compare to the National Sample Survey of Registered Nurses in the categories of age, gender, ethnicity and highest level of education?
8. How does the nursing student distribution in Maryland compare to the recommendations of the National Advisory Council on Nursing Education?

The information generated from this research was designed to project potential surpluses or deficits in registered nurses and nursing educators and was limited to the State of Maryland. The methodology for the collection of the information contained within this study may, with researcher caution, be used in other states to determine the same information about individual state's nursing workforce issues.

The Aging Workforce

Registered nurses (RN) are traditional health care providers across the continuum of care, especially in acute care settings. The National Advisory Council recommends a mix of nurses with differing educational preparation to include sixty-six percent baccalaureate nurses by 2010. (National Advisory Council, USDHHS, 1990) The increase in baccalaureate prepared nurses will be necessary to address the needs of increasingly complex care and the delivery of care in non-traditional settings. With an

aging population and an aging faculty, there are concerns about who will be educating and preparing all levels of nurses to meet the needs of the community. National trends show an increase in associate degree graduates and a slight decrease in enrollment in baccalaureate programs. If the current nursing shortage continues as predicted, there may not be enough nurses, and the recommended mix of nurses available to meet the healthcare demand. The nursing profession may need to re-examine the educational process and the abilities and responsibilities of all levels of nurses.

As the United States general population ages, so does the age of the nursing workforce. Nationally, the age of registered nurses has increased from 40.3 years in 1980 to 44.3 years in 1996 (USDHHS, 1997). This trend is similar in the State of Maryland with the average age of registered nurses at 47 in 1997 (Maryland Board of Nursing, 2001). Aging of the population in general is a major contributor to the RN aging trend. Entry into nursing education programs at a later age appears to be another factor adding to the overall age of the nursing workforce. The average age of beginning nursing students has increased from 23.3 years in 1980 to 31.7 years in 1991 (DHHS, 1997). Possible explanations for this change include the pursuit of nursing as a second career and decisions to pursue delayed education after child rearing. Desire to continue participation in the nursing workforce and in what capacity, should also be considered. Buerhaus (1994) examined the registered nurse, licensed practical nurse (LPN or LVN) and aide participation in the workforce in relationship to employment of spouses and the economic recession. When the economy is flourishing and unemployment rates are low, nurse with employed spouses tend to decrease work hours. When the economy is less

prosperous and unemployment rates are high, nurses with spouses tend to increase the number of hours worked.

The Nursing Shortage History

Nursing shortages have occurred over the decades and have been attributed to a variety of causes. Abdellah (1990) reports the nursing shortages of the 1970's and 1980's were a result of "attempts to balance the expertise of the nurse and the demand of employers for their expert services" (p. 510). Wages and job availability are attributed as major factors in the 1970's and early 1980's (McKibbin, 1990). The predicted nursing shortage for year 2000 and beyond appears to be guided by slightly different influences. Health Maintenance Organization (HMO) concentrations, the aging workforce, the decreased funding of nursing programs and predicted rise in health care demand are thought to have significant impacts. Historically a female profession, nursing as an educational choice, is challenged by increasing opportunities for women in all areas of study, especially the professions. Nursing continues to be predominantly female with males making up only 3.3% of RNs in the United States (McKibben, 1990; USDHHS, 1997) and 5% in Maryland (Maryland Board of Nursing, 2001).

Once a decision has been made to enter a nursing program, issues of the educational process must be considered. With numbers decreasing in the workforce and with faculty aging, there is concern that enough faculty with appropriate experience will be available to match the number of students. Preparing faculty to teach in the appropriate clinical areas is also a concern. As clinical sites face their own staffing and

budgetary dilemmas, there may be difficulty in finding sites with appropriate clinical experiences. This author is aware of at least three hospitals in one region of Maryland, where access to clinical areas was denied for schools of nursing. Faculty availability and preparation and availability of clinical sites are coupled with a desire to match nursing education program enrollment with the predicted demand for nurses in the future.

The State of Maryland

In the State of Maryland, consumers, health organizations and the state government monitor the issues of supply and demand for health care. The Maryland Health Resources Planning Commission (MHRPC) was established in 1982 for the purpose of planning to meet the current and future health care needs of the State's residents. Through regulation, the commission promotes financial and geographical access to quality health care at a reasonable cost. Described as "America in miniature" (Hall & Veise-Berry, 1998) due to geographical differences and diversity of the people in various regions of the state, Maryland is divided into five regions, each with its own distinct characteristics: Western Maryland, rural, (five counties), Central Maryland, urban, (four counties and Baltimore City), Montgomery County, suburban, Southern Maryland, suburban and rural, (four counties) and the Eastern Shore, commercial farming and fishing, (nine counties). The MHRPC monitors many aspects of the health care system including cost of care, excess and need of acute care beds, extended and long term care, and distribution of health care personnel, including excess and need. Estimates of capacity and need for Maryland health care services and health professionals are

determined by the commission which imposes restrictions and regulations as necessary (Maryland Manual, 1996-1997). Those interested in health care in Maryland should be questioning provision of care in the future, the teaching of future care providers, and the ability of these future care providers to meet the health care needs.

Colleagues in Caring, Nursing Workforce Issues

The Robert Wood Johnson Foundation has recognized the potential exists for a health care mismatch across the nation (Isaacs & Knickman, 1997). To foster the creation of proactive strategies for balancing supply with demand, twenty regional projects investigating nursing workforce needs have been funded nationwide (Rapson & Rice, 1999; Rice & Rapson, 1997a, 1997b). The Maryland Nurses Foundation received funding for the Maryland Colleagues in Caring Regional Collaboratives for Nursing Work Force Development (CIC) which identified five major tasks crucial for developing a model to predict the nursing work force needs in the State of Maryland (Maryland Nurses Foundation, 1995):

Task 1 - comprehensive assessment of the current and projected nursing care needs throughout the state.

Task 2 - development and implementation of a predictive model for estimating future nursing care needs.

Task 3 - analysis of the capacity of the region's nursing work force to meet defined needs, and the area's educational infrastructure to produce the numbers and types of nursing professionals required.

Task 4 - development of a regional nursing work force consortium among schools, providers and other relevant institutions to plan and implement regional and/or state models that enhance educational and career mobility for nurses.

Task 5 - establishment of a formal mechanism to keep the consortium in place over the long term, so that monitoring of nursing care needs and the building of a work force with corresponding strengths become ongoing components of the region's health care structure.

The five tasks presented by the CIC are challenging and attainable but the answers cannot be obtained without exhaustive investigation. Even with an interested, dedicated and hardworking steering task force, some questions and areas of interest must go unexplored by the group due to time and budget constraints. From this existing project, questions arose regarding the "nursing pipeline" in the State of Maryland. The Maryland Board of Nursing provides much information for the registered nurse population of the state, but information about incoming nursing students, faculty, and educational institutions is fragmented or not readily available. From a supply-side perspective, the Maryland CIC steering task force was interested in characteristics of faculty and nursing students enrolled in the State's programs and projected student enrollment and faculty hiring. Unable to devote the time to analyzing such data, the steering task force suggested the possibility of mutual gain in providing information to the overall CIC project while developing a research program suitable for completion of doctoral requirements. I agreed to accept the challenge.

Purpose

The purpose of this study was to identify potential surpluses or deficiencies of registered nurses and nurse educators by identifying nursing programs, the enrollment and hiring projections for these programs, and determining the characteristics of nursing faculty and students in the State of Maryland. From this information, potential surpluses or deficiencies of registered nurses and nursing educators in the future could be projected. The Maryland CIC Steering Task Force developed a survey to obtain this information and made the surveys available for analysis and interpretation. From these surveys, the existing registered nursing education programs in the State of Maryland were described. Information about student and faculty characteristics, projected enrollment and faculty hiring was collected. Regional differences in the projected student enrollment and hiring of faculty, as well as characteristics of students and faculty were also compared and identified.

Theoretical Framework

Achieving balance between supply and demand is a basic task in life whether trying to purchase groceries to feed a family or employing nurses to provide health care to consumers. Many factors influence both sides of the supply and demand equation. Ability to collect data about influencing factors and predict what supplies exist and what demand will occur has been challenging.

The macroeconomic theory of supply and demand, while a basic theory, deserves some definition. Supply refers to the "number of units that sellers want to sell over a specified period of time" (p.71, Baumol & Blinder, 1998). Demand refers to the "number

of units that consumers want to buy over a specified period of time" (p. 70, Baumol & Blinder, 1998). These definitions can refer to the supply/demand for milk, hamburgers, and/or personnel. A shortage is said to exist when the quantity demanded is not matched by the quantity supplied and a surplus exists when the quantity supplied is greater than the quantity demanded (Baumol & Blinder, 1998). In this study, the theory of aggregate supply and demand will provide the general framework. "Aggregation means combining many individual markets into one overall market" (p. 96, Baumol & Blinder, 1998). Aggregate supply and demand examines the total amount that all consumers, business firms and government agencies are willing to spend on or to produce final goods and services (Baumol & Blinder, 1998).

Addressing the supply and demand of health personnel, Sorkin (1992) identifies five criteria for determining whether or not a shortage of health care professionals exists: biological demand, manpower population ratio, demand versus supply, relative income and internal rate of return. Prescott's (1991) five general approaches to manpower forecasting are similar to Sorkin's. The professional needs approach and personnel to population ratios introduced by Prescott are similar to the biological demand and manpower population ratios suggested by Sorkin. Prescott's econometric approach is a more complex approach to manpower prediction, incorporating demand for services, costs, wages and supply of personnel with other factors affecting the health care market. The Bureau of Labor Statistics, Prescott's fourth approach, looks at estimating demand for specific occupation using models of labor force, aggregate economy, industry final demand, input-output, industry employment and occupational employment. Buerhaus

(1993a, 1993b, 1994, 1996) used similar data in predicting RN workforce participation. The fifth approach, hybrid, combines historical trends, projected population changes, levels of service and service delivery, reimbursement issues and health insurance information to input data relevant to nursing workforce prediction.

In 1994, the United States Department of Health and Human Services, Division of Nursing, in association with Vector Research, Inc., released a "Nursing Demand Model" to forecast employer demand for nursing personnel in the United States. Using assumptions about growth and demographic characteristics of the United States, a computerized quantitative program generates predictions of oversupply or undersupply allowing a variety of scenarios for RN, LPN and aides. The model is reported to be most accurate with large data sets and reliability depends upon the quality of the data used to estimate the model. Less reliability is projected with data at the individual state level especially for smaller states (p. ES-8, Vector Research, Inc., 1991). The Nursing Workforce Survey from the Colleagues in Caring is aimed at providing similar but very specific information for the State of Maryland. (Maryland Nurses Foundation, 1997)

Any model presented has strengths and weaknesses including ease or difficulty in gathering data, the impact of advances in disease management and technology, generalizations in demand for services based on specific geographic regions and population characteristics, impact of third party payors and health maintenance organizations, regulatory issues and unexpected changes in the labor market. Of the models reviewed, two recently developed, but untested models for predicting nursing workforce, are emerging.

Dumpe, Herman and Young (1998) have developed a "Forecasting Model for Nursing Workforce" also based upon the theory of aggregate supply and demand. Using supply/demand factors of health care delivery, nursing education and economic systems along with demographics of the population and nurses, the model includes consideration of socio-cultural values and government philosophy to provide a structure for determining market equilibrium (balance between supply and demand) in the nursing workforce. This model is similar to the Maryland Colleagues in Caring Data Analysis Model (1997) but was not published until 1998, limiting its usefulness to the CIC project.

The Maryland Colleagues in Caring Data Analysis Model (Appendix A) developed early in the life of the project, includes three primary databases: the Maryland Board of Nursing License Renewal data, the Colleagues in Caring Work Force Survey and the Maryland Health Resources Planning Commission projections of categorical service needs for health care services. Alternative sources of information, including data from the CIC Nursing Education Survey, would be compiled to validate the reliability and confidence in model projections. This model was planned to help predict workforce needs for the state. Based upon the macroeconomic theory of aggregate supply and demand, nursing work force predictions aimed at market equilibrium will be determined. The nursing education survey is a component of this model and seeks to provide additional information on the supply side of the nursing workforce issue. (See Appendix A.)

Conceptually, Prescott's hybrid approach, the Nursing Demand Model, the Forecasting Model for Nursing and the Maryland CIC Workforce Data Analysis Model

are similar. After reviewing these frameworks, the most appropriate theory to guide this research was determined to be the model of supply and demand.

Chapter 2: Literature Review

In order to investigate the questions about nursing programs and faculty availability in the State of Maryland, background information was obtained about the aging of America, the nursing workforce, the nursing shortage, and the characteristics and distribution of nursing school faculty nationally.

Aging in America

According to the United States Census estimates, the mean age of the population has increased from 35.8 years in 1995 to 36.6 years in 2000 (US Bureau of Census, 2001). The 60+ population in the United States is expected to increase from 16.7% of the total population in 1995 to 22.7% in 2020 (Maryland Department on Aging, 1999). Baby boomers make up 52% of the working population and with one boomer turning 50 every 8 seconds, the aging of the workforce was an issue as year 2000 arrived (Caudron, 1997). This generation (born in 1946 though 1964) have redefined work rules, such as more casual dress, flexible schedules and working out of the home, and demanded more "family friendly" programs (Caudron, 1997). The possibility of retirement, early or traditional, has the potential for dramatically reducing the workforce. Retirement income planning has been affected by the tendency to spend rather than save. It is predicted that the boomers will not overwhelmingly retire at the traditional age of 65 because of need

for income to maintain the standard of living (Caudron, 1997; Crispell et al, 1997). "If men and women currently aged 45 to 54 kept up the same work rates they have now, we would have 26 million workers aged 65 to 74 in 2020" (Crispell et al, 1997).

In the State of Maryland, nearly 21 percent of the population falls into the baby-boomer 45-64 year range. Fifteen percent of the residents are 60 and older with an increase to 23% expected by 2020 (Maryland Department on Aging, 1999). The growth of Maryland's 60+ group reflects a similar growth in the United States. Across the five regions defined by the Maryland Health Resource Planning Commission, the age distribution is similar, however the Eastern Shore has the highest 65 years and older population at 14 percent with 45-64 year range at 21.35 percent (Maryland Office of Planning, 1995). There may be an impact on health care on the Eastern Shore due to the large number of older residents.

Nursing Workforce

As early as 1949, attempts have been made to determine the number and characteristics of the nursing workforce in the United States. The registered nurse licensing mechanism was utilized as a basis for information by the American Nurses Association (ANA) in 1949. Where licensing was not a good source of information, state nurses associations and employing agencies were queried. Subsequent surveys were conducted by the ANA through the early 1970's when the Federal government required the examination of the current and future supply, demand, and distribution of the registered nurse workforce.

The Division of Nursing, Bureau of Health Professions, a part of the Health Resources and Services Administration under the United States Department of Health and Human Services, provides the Federal focus of nursing education and practice and investigates issues of supply and demand of the nursing workforce (USDHHS, 1997, p. 1). In 1975, to gain information about the nursing workforce, the Division of Nursing and Westat, a contract agency, developed a design for collecting data through sample surveys of registered nurses across the United States. The design has been refined as a total of seven sample surveys has been conducted, the last, in 2000 by contractor, The Research Triangle Institute. The survey design and statistical techniques used in summarizing the data are reported in Appendix B of the 1996 report. The overall response rate of the sample was 72.34% with a total of 29,950 individual nurse responses which were used to derive the data (USDHHS, 1997, p. 3). The sample design includes weighting to allow for differences in state size, screening for duplicate licenses in more than one state, follow up procedures for unreturned surveys, and other procedures and methodologies in an attempt to gather, analyze and report the most reliable data possible. The survey is repeated every four years with preliminary results for the year 2000 reported in February, 2001.

From the 1996 National Sample Survey of Registered Nurses, it is estimated that there are 2,558,874 individuals licensed as registered nurses in the United States. This number shows a 54% increase in nurses over the 1980 survey and an annual rate of growth of 3.4% since the 1992 survey. With 82.7% of the RN population employed in nursing in the 1996 survey, the number of employed nurses grew at an average annual

rate of 3.4% with an increase in the number of full time employees (up an average of 4.3% per year since the 1992 survey). The number of part time nurses grew by only 5% for the four-year period. The number of nurses not employed is currently 17.3% as it was in 1992, and has been as high as 23.4% in 1980 (USDHHS, 1997, p. 5).

Of the many characteristics reported in the national survey, four are consistent with information about faculty from the Colleagues in Caring Nursing Education Survey and the Maryland Board of Nursing: age, gender, ethnic background and educational preparation. Employment (part-time and full-time) will also be presented due to the relevance to the overall demand for nursing. Elements such as salary, number of jobs held, advanced practice credentialing, family status, geographic and employment mobility and others will not be included in this review.

The sample survey documents the aging of the RN population consistent with the aging of the population in general. For the 1980 survey, RNs under 30 years old represented approximately 25 percent of the population, by 1996, this group represented less than 10 percent of the total nurse population. The "less than 50 year old" group decreased from 74 percent in 1980 to about 70 percent in 1996, with an increase in the 40 to 50 year old category from 20 percent in 1980 to 33 percent in 1996. The average age has increased from 40.3 years in 1980 to 44.3 years in 1996 (USDHHS, 1997, p. 7-8).

While still less than five percent of the total group of nurses, the number of males is showing a steady increase with an average annual growth rate of 8.9 percent between 1992 and 1996, which is higher than the growth rate for nurses overall (3.4%) (USDHHS, 1997, p. 8).

The nursing work force remains predominately White, non-Hispanic at 89.7 percent. Asian/Pacific Islander and American Indian/Alaskan Native showed increases in numbers but comprise only 3.9% (3.4 and .5 percent respectively) of the total nurse population. The number of Hispanic nurses has increased over the 1980-1996 survey period but the group represented only 1.6 percent of the total in 1996. Black, non-Hispanic, showed the smallest increase in numbers but continues to be the largest of the minorities in nursing, at 4.2%. Compared to the United States population distribution for 1996, minority representation is not equally distributed in the nursing population. In the general population, White, non-Hispanic represents 72.3%, Black, non-Hispanic, 12.5%, Hispanic, 10.6%, Asian/Pacific Islander, 3.7% and American Indian/Alaskan Native, .9% (USDHHS, 1997, p. 9).

Educational background is reported in two categories: basic educational preparation and highest educational level attained. Results show a steady increase in the percentage of associate degree as the basic RN preparation, with about 38 percent of the total RN population in 1996, an increase from 19 percent in 1980. Diploma graduates decreased from 63 percent in 1980 to 36 percent in 1996. Baccalaureate basic preparation makes up the remaining 26 percent of graduates in 1996, an overall increase of 8% since 1980. About 20 percent of the 1996 RN population completed additional academic programs in either nursing or nursing-related areas and approximately 8 percent were enrolled in a formal education program leading to a nursing or nursing-related degree (USDHHS, 1997, p. 17). Overall, the highest nursing-related educational preparation was reported as 23.8 percent for diploma, 34.6 percent for associate degree, 31.8 percent for

baccalaureate, and 9.8 percent for masters or doctoral degree (USDHHS, 1997, p. 74).

With limited state specific data reported, Maryland is grouped with six other states and the District of Columbia resulting in the "South Atlantic" region for the sample survey. According to the sample survey, the State of Maryland had 48,789 RNs in 1996 of which 87.5 percent were employed, 71.6 percent of which were employed full time (USDHHS, 1997,p.72). By age, the South Atlantic region is reported to have 9.7 percent of the RNs under the age of 30, 27.4 percent between 30 and 39, 32 percent between 40 and 49, 18.1 percent between 50 and 59 and 12.3 percent over 60 years of age (USDHHS, 1997,p. 78) Gender is not reported by region. Racial/ethnic background is reported for the South Atlantic region as 87.4 percent White, non-Hispanic; 7.3 percent Black, non-Hispanic; 2.7 percent Asian/Pacific Islander; 0.2 percent American Indian/Alaskan Native and 1.4 percent Hispanic (USDHHS, 1997,p.77).

For "highest nursing-related educational preparation", states were reported individually, with Maryland having 17.6 percent holding diplomas, 32.1 percent as associate degree, 35 percent as baccalaureate degree and 15.4 percent with masters or doctoral degrees, (the highest percentage in the United States) (USDHHS, 1997, p 74).

Information about the Maryland nursing workforce for the early 1990's was unavailable from the Maryland Board of Nursing. Selected data were reported to the Maryland Statewide Commission on the Crisis in Nursing (Maryland Board of Nursing, 2001). From 1996 to 2000, the number of RN's with active licenses and a Maryland address decreased. The Maryland Board of Nursing (MBON) reported 46,990 licensed RN's (less than the estimated 48,789 RN's in the sample survey). The number of inactive

licenses increased from slightly more than 2000 in 1997 to near 3500 in 2000. The Maryland nursing workforce is predominantly white (79%) and female (95%). Ethnic minorities were reported in a group as 21% of the total licenses. The average age of RN's was 46 years of age, with the largest age group of 38-47 years. Both admissions to and graduation from Maryland schools of nursing decreased from 1997 to 1999 (MBON, 2001).

Nursing Shortage

Trends in nursing supply and demand have been monitored over several decades. Nursing shortages have been reported since the early 1950's and again in early and late 1960's (Abdellah, 1990). A surplus of nurses was reported in the mid 1970's. The current nursing shortage is reported to have begun around 1986 when the registered nurse (RN) vacancy rate in hospitals, the largest employers of RNs, climbed from 6.3% in 1985 to 11% in 1986 (McKibben, 1990). This current shortage represents the most persistent and prolonged shortage since data were collected. A nursing shortage is said to exist "when the numbers 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" (USDHHS, 1988, p. ix-2). The Secretary's Commission on Nursing (USDHHS, 1988) determined the nursing shortage of the late 1980's resulted from an increase in demand rather than a decrease in supply. Abdellah (1990) predicts the demand for nursing services will continue to increase as nurses become better educated and participate more in health policy formulation.

Based on the economic theory of supply and demand, previous nursing shortages have been explained by factors such as:

1. time lags in employer recognition of a shortage and implementation of an action plan, usually wage adjustments, to address the shortage
2. wage factors such as limitations with annual increases and hesitation to adjust salaries in one employee group and not another
3. market competition factors in which there may only be one major RN employer or multiple employers agree to limit competition by keeping pay ranges consistent among facilities
4. geographically immobile workforce which tends not to relocate in search of better wages or opportunities. This immobility could lead to surpluses in some and shortages in other geographical areas
5. discrimination (intentional and unintentional) based on the traditional belief that nursing is women's work. The resulting lack of recognition, wage issues, and attention given to nursing issues affect the resolutions of shortages

Employer and market responses to these factors alleviated the shortage in approximately three years. Increasing wages to a level where more RN's would be willing to work at that wage and higher wages, increasing recruitment possibly accompanied by enticements, lead to nurses' willingness to spend less leisure time and more active time in the work force. In addition to wages, Buerhaus (1993) points to other economic factors

such as the national unemployment rate and non-RN income in determining RN participation in the workforce. Comparisons of RN participation with these factors have been helpful in predicting employment trends. In 1980-1982 the increase in RN wages led to an increased participation in the work force. Wages leveled and actually fell (when adjusted for inflation) and another nursing shortage resulted around 1986 (Buerhaus, 1993). The most current published data from Buerhaus (1993, 1994) indicate inflation and unemployment or the potential for unemployment of RN spouses has a major impact on RN entry and retention in the workforce. Managed care penetration also impacts on the employment and distribution of RN's, LPN's and aides (Buerhaus & Staiger, 1996, 1997).

Nursing Faculty

The graying of faculty in higher education is of particular concern. In research addressing the graying of America, Dr. E. Percil Stanford (1992) acknowledges two factors affecting university settings: the increasing age of the student body and the retirement of faculty and staff. Planning of classes and curriculum changes have already been impacted and will continue to be impacted by these as well as other age related issues.

The American Association of Colleges of Nursing (AACN) gathers data about salary and characteristics of nursing faculty in baccalaureate nursing programs in the United States. The data have been collected and published for the past twenty years. For the academic year 1997-1998, 657 questionnaires were mailed and 551 were received for

an 83.9% return rate (AACN, 1998). The types of institutions reporting were predominately public (64.7%), private secular (13.2%), private religious (21.4%) and consortium (0.7%). (AACN, 1998, p. 4) The sample is divided into four large regions. Not all characteristics were reported by regions (age and gender) or by individual states. The State of Maryland is included in the southern region with fourteen other states, Puerto Rico, and the Virgin Islands. Eight schools of nursing in Maryland are included in the results. Statistical analysis for validity and reliability have not been performed on the AACN survey instrument. Standardization of definitions and respondent feedback over the past twenty years have led to the belief by the AACN that the survey measures what it is intended to measure. (Personal communication with Dr. Linda Berlin, April, 1999).

The 1997-1998 Salaries of Instructional and Administrative Nursing Faculty in Baccalaureate and Graduate Programs (AACN, 1998, p. 2) reports an increase in the mean age of full time nurse faculty from 48.1 years in the 1994-1995 profile to 49. 4 years in the 1997-1998 profile (median 48 to 49, and mode 47 to 50, 1994-1995 to 1997-1998 respectively). Mean age of 48 percent of the full time faculty who were doctoral prepared was 54.9 years for professors, 52.1 years for associate professors and 48.5 years for assistant professors. The gender of 96.7 percent of the fulltime faculty was female and 3.3 percent male. The majority of fulltime faculty were reported as white (91.4%), followed by black (5.6%), Hispanic (1.2%), American Indian or Alaskan Native (0.2%), Asian or Pacific Islander (1.5), and Unknown (0.1%). (p. 5) Teaching assignment was reported as clinical (4.3%), didactic (14.1%), both (80%), and no teaching (1.6%). (p. 5) Program responsibility of fulltime faculty were baccalaureate (54.7%), graduate (16.9%),

both (26.8%), and does not teach (1.6%), (AACN, 1998, p.4)

Research Questions

After reviewing the literature, gaps in information about nursing students and nursing faculty exist, specifically in data related to the State of Maryland. Using data collected in the CIC Nursing Education Survey (See Appendix B), a description of faculty and students was completed. In addition to a description of schools and comparisons among the five regions, the following questions were investigated:

1. What are the characteristics of the nursing faculty in Maryland?
2. What is the projected hiring pattern for faculty in schools of nursing in Maryland?
3. What are the characteristics of nursing students in Maryland?
4. What is projected student enrollment and how is it distributed between associate degree and baccalaureate degree programs in Maryland?
5. How do the projected student enrollments and hiring patterns of faculty compare?
6. How does the nursing faculty in Maryland compare to the National Sample Survey of Registered Nurses in the categories of age, gender, ethnicity and highest level of education?
7. How does the nursing student distribution in Maryland compare to the recommendations of the National Advisory Council on Nursing Education?

Chapter 3: Methodology

Design

This chapter describes the study design, the sample, the instrument, the data collection and the protection of human subjects. This descriptive research involved collecting information about registered nursing programs, nursing faculty and nursing students in the State of Maryland. Age, gender and ethnic group were collected for both nursing students and faculty. The total number of new nursing graduates was reported. Educational preparation, specialty and teaching responsibilities of faculty were also reported. Data were obtained from the Nursing Education Survey (See Appendix B) developed by the Maryland Colleagues in Caring. As a member of the Steering Task Force, this researcher was given the opportunity and permission to perform the data analysis. In addition to fulfilling partial requirements for the doctoral degree, results will be shared with the Maryland Colleagues in Caring group. The questions investigated were:

1. What are the characteristics of the nursing faculty in Maryland?
2. What is the projected hiring pattern for faculty in schools of nursing in Maryland?
3. What are the characteristics of nursing students in Maryland?
4. What is projected student enrollment and how is it distributed between

associate degree and baccalaureate degree programs in Maryland?

5. How do the projected student enrollments and hiring patterns of faculty compare?
6. How does the nursing faculty of Maryland compare to the National Sample in the categories of age, gender, ethnicity and highest level of education?
7. How does the nursing student distribution in Maryland compare to the recommendations of the National Advisory Council on Nursing Education?

Sample

The population for this study consisted of each school of nursing in the State of Maryland. (See Appendix C.) Twenty of the twenty-four surveys were returned for a return rate of 83% and a sample size of twenty schools. The sample consisted of those schools for which a Nursing Education Survey was returned to the Maryland Colleagues in Caring office. Surveys were received from one diploma, (three year program, now closed), twelve of the fourteen community or junior colleges (two year programs) and seven of the nine universities or colleges (four year programs). The diploma program information was reported with the two-year program data due to similarities in the programs. For those schools reporting, administrative control was reported as public for seventeen schools, private religious for two schools and private independent for one school. All five of the regions identified by the Maryland Health Resources Planning Commission were represented in the sample. Fourteen of the twenty-three counties in the state and Baltimore City were represented in the sample. (See Appendix D.)

Protection of Human Subjects

The surveys were completed voluntarily by a school representative and were faxed or mailed to the Maryland Colleagues in Caring office. All returned surveys were coded to protect confidentiality and anonymity. Results were reported as aggregates and individual schools were not identified. George Mason University (GMU) Human Subjects Review Guidelines were met and approval for this research was obtained from the GMU Human Subjects Review Board (See Appendix E.) This research was conducted on existing data collected by another group. There was neither coercion nor penalty for lack of participation nor a reward for choosing to participate.

Instrumentation

The Maryland Colleagues in Caring (CIC) Steering Task Force developed the Nursing Education Survey in 1996 (Appendix B) to collect data about nursing schools, nursing faculty, and nursing students. A panel of three faculty members representing both four-year and two-year programs prepared the survey. The twelve-member CIC steering task force approached the issue of content validity for the survey by reviewing and modifying the survey, making changes in questions as recommended by task force members. This task force was comprised of nurses across the State of Maryland representing a variety of educational levels and practice settings. The information requested by the survey provided a description of the types of programs available, projected faculty needs, a description of faculty, a description of student enrollment and graduations over a five- year period, and projected student enrollment for a two-year

period. Existing information about nursing schools, nursing faculty and nursing students was fragmented and, if available at all, was represented in multiple unrelated databases.

Reliability of the Nursing Education Survey (NES) was determined by the test/retest method using percent agreement. Percent agreement reflects the stability of the instrument by obtaining similar results from the same sample of schools. Four surveys were given to a convenience sample of the original respondents, (the person from the school identified as completing the original survey). Three retest surveys were returned. Two schools' retest surveys were 100% matches to the original test surveys. The third retest survey matched all student data and projection data but did not match faculty characteristics data. On further examination, this researcher was unable to match numbers and initials given for faculty on the third test/retest surveys however, responses were consistent with those previously reported. There were no instructions of the survey indicating which time frame was to be reported, so faculty data may have been reported for a different academic year on the retest. Reliability of the instrument and related measurement issues will be presented in more detail in the Discussion Section.

Procedure

In 1997, the Maryland CIC mailed the Nursing Education Survey to the administrators for all twenty-four Maryland schools of nursing (See Appendix C) which prepare students for a registered nurse license or higher nursing education. The mailing consisted of a cover letter and the survey (See Appendix B). The mailing was addressed to the last known director or dean of the nursing school. A second mailing consisting of

the same items was conducted four months later. Any known address corrections were made before the second mailing. Verbal requests for completion and return of surveys were given at CIC consortia meetings attended by health care professionals from across Maryland. Surveys were returned to the Maryland CIC office either by FAX or mail. The CIC Project Director transferred the completed surveys and granted permission for data analysis and reporting (See Appendix F) to this researcher. No other person or group performed additional data analysis. The surveys were coded to protect confidentiality and anonymity and were not grouped by size, location, program type or any other method. Results were reported as school data, faculty data and student data.

Limitations of the Study

Since the results of this study related specifically to the State of Maryland, interpretation and application to other regions should be made with caution. It is difficult to capture data at one point in time for a fluctuating educational environment. By the time data were gathered and analyzed for this study, the results were already somewhat dated. Care should be taken when applying these results to today's constantly changing environment. Issues with measurement may also limit interpretation of results.

Chapter 4: Results

Data analysis

Data from the Maryland Colleagues in Caring Nursing Education Survey (See Appendix B) were entered into SPSS 8.0 for data analysis. Twenty of the twenty-four mailed surveys were returned for a return rate of 83%. Surveys were received from twelve of the fourteen community colleges or two-year programs, one hospital diploma program and seven of the nine universities or colleges or four year programs. The diploma program information was reported with the two-year program data due to similarities in programs. The diploma program closed in 1998 and did not report faculty hiring or student enrollment projections. The survey requested information in three areas: schools and programs, faculty and students.

School and Program Information

Information about the schools and programs included administrative control (public, private or religious), type of program (university or four-year program, community or junior college, etc.) and location. This information is displayed in Appendix C, which includes the "Region" as assigned by the Maryland Health Resources Planning Commission. Twenty-four main local jurisdictions are found in Maryland. They include twenty-three counties and Baltimore City. The Maryland Health Resources

Planning Commission, a government agency, divided the jurisdictions into five regions to address health care needs in the community (See Appendix D.)

Characteristics of Faculty

Questions in the NES requested faculty characteristics (age, gender, ethnic background), part-time or full-time status, highest degree obtained, clinical specialty preparation, teaching responsibilities and one/three year projected faculty hiring needs. The faculty (n=505) is reported as predominantly female (97%, n=488) and white, non-Hispanic (82%, n=412). Black, non-Hispanic (14%, n=70) is the next largest ethnic group of faculty with the remaining 4 % as a combination of Asian or Pacific Islander (3.5%, n=18), Hispanic (<1%, n=4) and American Indian or Alaskan Native (<1%, n=1). (see Figure 1.)

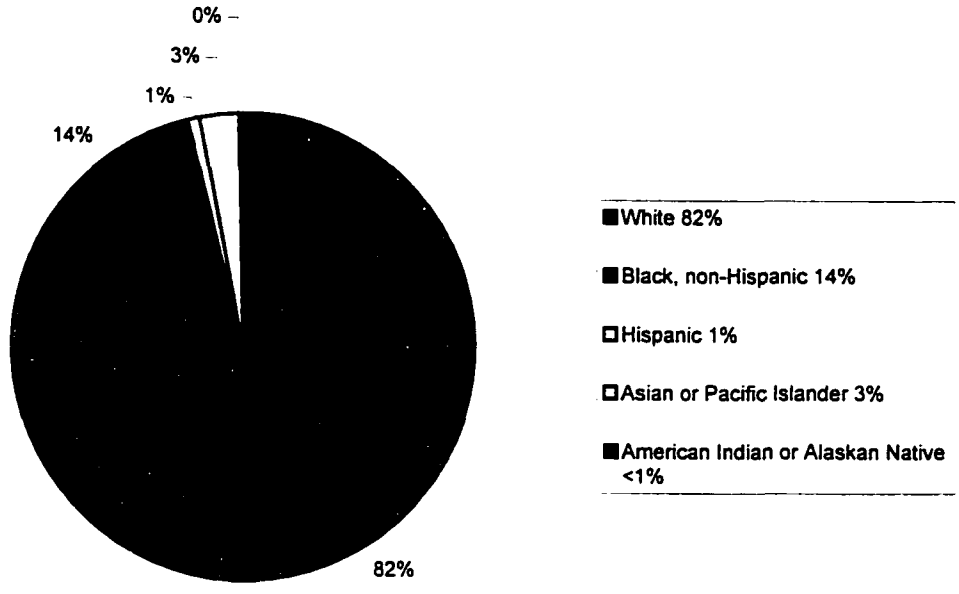

Figure 1. Faculty Ethnic Distribution

Of the 505 faculty listed, the actual birth year (n=277) or a potential decade such as 1940's or 1950's (n=121) was given or the birth year was not indicated at all (n=107). For each of the decade responses a substitution was performed using the midpoint of the reported birth decade, (e.g.1940's became 1945). For actual birth year given (n=277) the mean birth year was 1948.8 or 48.2 years of age in the reporting year, 1997. With the decade midpoint substitutions, the mean birth year for faculty (n=398) is 1949.8 or an average age of 47.2 years. Birth year (n=398) ranges from 1923 to 1975 with nearly 60% of the faculty (n=301) born between 1940 and 1959. (See Table 1 and Figure 2.)

Table 1. Faculty Birth Year

Year	Frequency	Percent	Valid Percent	Cumulative Percent
1923	1	.2	.3	.3
1924	1	.2	.3	.5
1925	2	.4	.5	1.0
1927	1	.2	.3	1.3
1930	1	.2	.3	1.5
1932	3	.6	.8	2.3
1933	2	.4	.5	2.8
1934	2	.4	.5	3.3
1935	9	1.8	2.3	5.5
1936	5	1.0	1.3	6.8
1937	4	.8	1.0	7.8
1938	9	1.8	2.3	10.1
1939	4	.8	1.0	11.1
1940	6	1.2	1.5	12.6
1941	12	2.4	3.0	15.6
1942	13	2.6	3.3	18.8
1943	10	2.0	2.5	21.4
1944	6	1.2	1.5	22.9
1945	69	13.7	17.3	40.2
1946	13	2.6	3.3	43.5
1947	12	2.4	3.0	46.5
1948	11	2.2	2.8	49.2
1949	10	2.0	2.5	51.8
1950	7	1.4	1.8	53.5
1951	11	2.2	2.8	56.3
1952	13	2.6	3.3	59.5
1953	17	3.4	4.3	63.8
1954	15	3.0	3.8	67.6
1955	45	8.9	11.3	78.9
1956	7	1.4	1.8	80.7
1957	12	2.4	3.0	83.7
1958	4	.8	1.0	84.7
1959	8	1.6	2.0	86.7
1960	5	1.0	1.3	87.9
1961	8	1.6	2.0	89.9
1962	4	.8	1.0	91.0
1963	4	.8	1.0	92.0
1965	13	2.6	3.3	95.2
1966	2	.4	.5	95.7
1967	1	.2	.3	96.0
1968	1	.2	.3	96.2
1969	1	.2	.3	96.5
1970	3	.6	.8	97.2
1972	2	.4	.5	97.7
1975	9	1.8	2.3	100.0
Total Reported	398	78.8	100.0	
Missing	107	21.2		
Total	505	100.0		

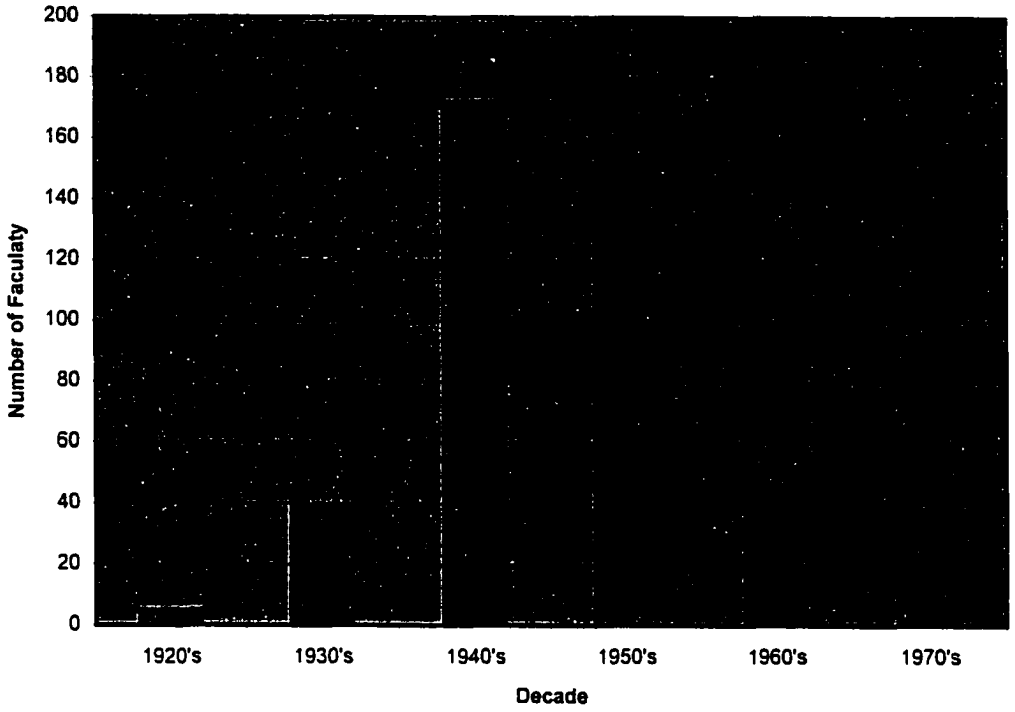

Figure 2. Faculty Age by Decade

Of the nursing faculty (n=505) employed in twenty schools, 332 (66%) are employed full-time and 173 (34%) are employed part-time. (See Figure 3.) The university or four year college programs employed 244 (48%) of the faculty and community colleges employed 261(52%). The only hospital program (last class graduated in 1999) employed eight faculty (<1%). Of the university faculty (n=194), 80% are reported as full-time faculty compared to 53% (n=138) full-time faculty for the community college programs.

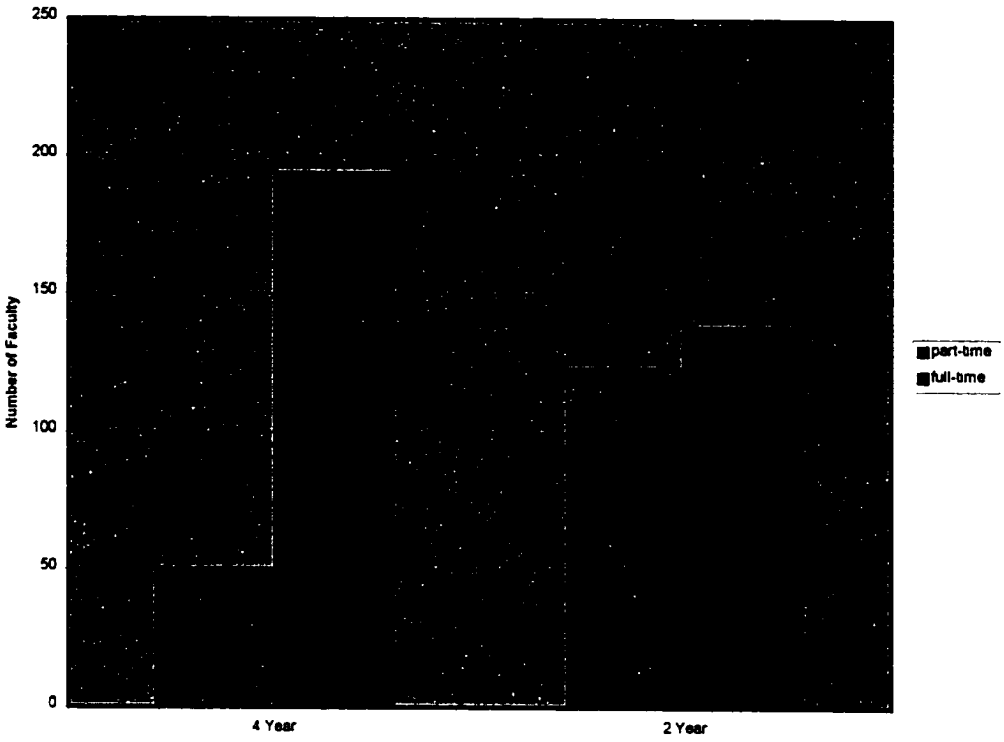

Figure 3. Employment Status

The highest level of education for faculty (n=505) was reported as Doctorate in Nursing, 6% (n=28), Doctorate in other field, 23% (n=116), Masters In Nursing, 51% (n=258), Masters in other field, 8% (n=40), and Baccalaureate in Nursing, 12% (=62). (See Figure 4.) The majority of doctoral prepared faculty, (combined doctorates in Nursing and other fields, 92%, n=144) are employed in the university programs. Of the 8% (n=11) employed in the community college settings, all are reported to have a doctorate in a field other than nursing. Of the faculty with a Masters in Nursing or another field, (n=298), 72% are employed in the community and hospital programs. The Baccalaureate prepared faculty (n=62), teach predominately in the community college setting (92%, n=56).

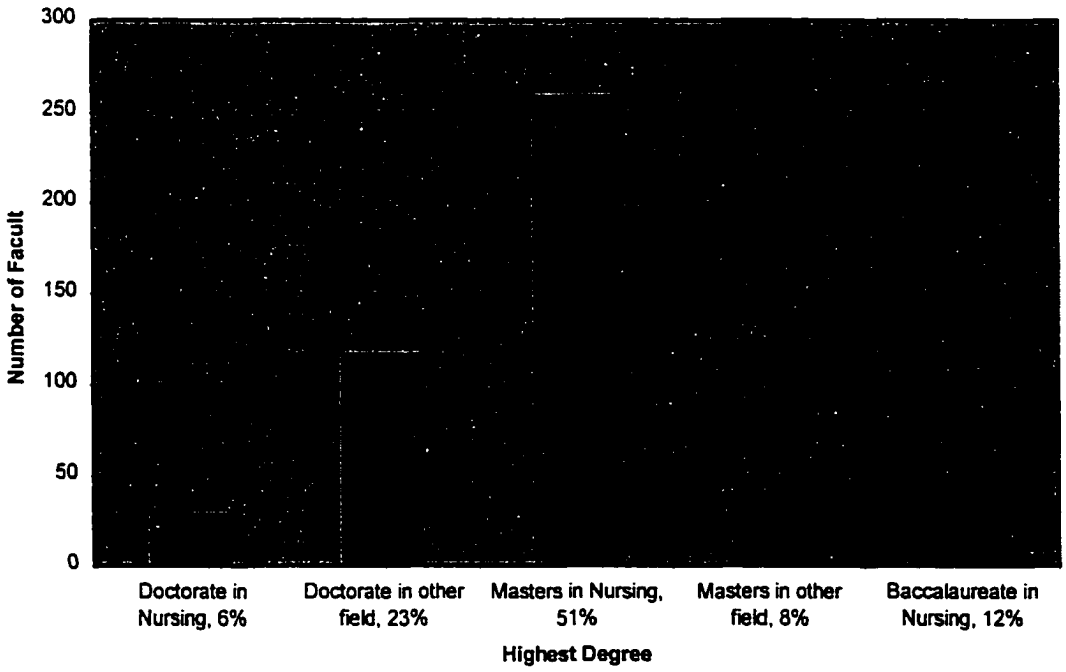

Figure 4. Highest Degree - Faculty

The most frequently reported area of specialization for faculty (n=497, 8 not reported) is Adult Nursing, 48% (n=238), followed by Obstetrical-Gynecological (12%, n=60), Psychiatric/Mental Health (11%, n=54), Other and Community Health (9% each), Pediatrics (8%, n=41) and Administrative/Management (less than 1%, n=15). (See Figure 5.)

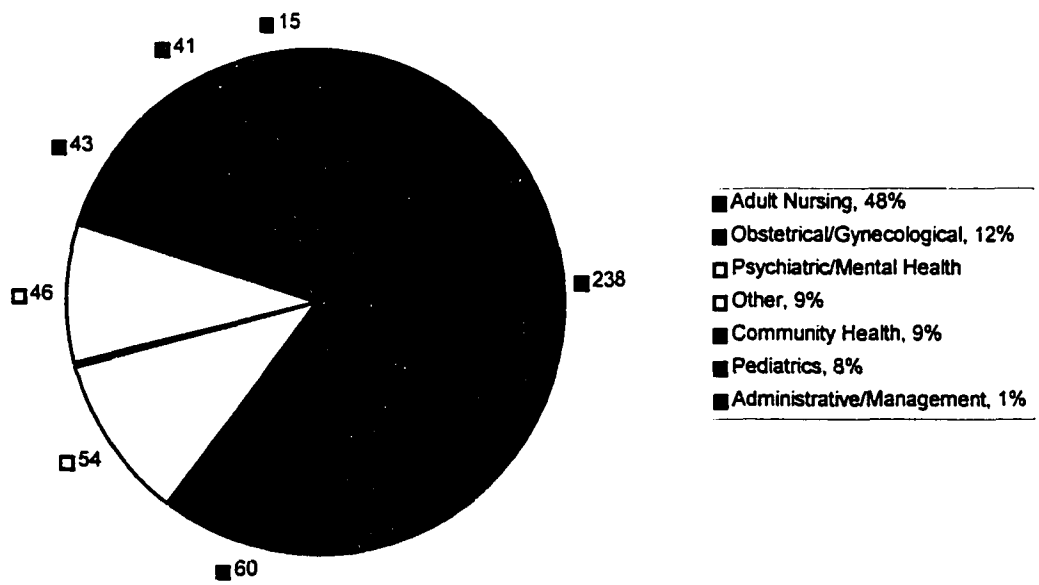

Figure 5. Area of Nursing Specialization

Approximately 47% (n=235) of the faculty (n=504. 1 not reported) has teaching responsibility in both classroom (didactic) and clinical areas, while 20% (n=104) have "only didactic"(classroom) and 33% (n=165) have "only clinical" responsibility.

Most faculty members (n=505) teach at the undergraduate level only (76%, n=382), 9% (n=47) teach at the graduate level only, and the remaining 15% (n=76) teach at both levels.

Approximately 98% (n=495) of the faculty are nurses and the remaining 2% (n=10) are non-nursing faculty. The roles of the non-nursing faculty are unreported.

One school, a four-year program, employed 19% (n=98) of the faculty reported. In that school, of the variables reported, age, highest educational level, nursing specialty and full- or part-time status differed from the remaining 19 schools. The variable "age" was reported as "decade" by this school. The decade midpoint substitution provided the average birth year of 1951.4 or 45.6 years (n=98) of age in 1997 compared to 1948.8 or 48.2 (n=277) in the remaining 19 schools. Seventy-four percent (n=73) of this school's faculty is prepared at the doctoral level, 64% (n=63) with a doctorate in a field other than nursing. In the specialty area, 30% (n=29) are reported as "adult nursing" compared to 51% for this specialty in the other 19 schools and 14% (n=14) in community health compared to 7% in the nineteen other schools. The full-time faculty for this school was reported as 88% (n=86) compared to 60% (n=246) for the remaining schools. The impact of a school, which employs nearly one fifth of the faculty, may or may not be important but warrants a level of awareness.

The findings were further analyzed according to the five regions identified by the Maryland Health Resources Planning Commission. Ten of the twenty respondents to the NES were from schools located in the central region, (Baltimore metropolitan area), four schools were in the southern region, three schools were in the eastern region, two schools were in the western region and one school was from Montgomery County, which stands alone as a region. The data are now presented according to region represented (Appendix D).

The central region (five university and five community college programs) employs nearly 61% of the faculty (n=307 of 505 responses) and 83% of the doctoral prepared faculty (n=119 of 144). The youngest faculty members teach in this region with the mean birth year of 1950.3 or age of 46.7 years, however, of the 307 faculty from this region, 121 subjects (39%) had decade midpoint substitution for the birth year and 51 subjects had no birth year reported (17%). The central region is the setting for two of the four graduate nursing programs, including post-Masters, and the only two doctoral programs. The central region displays ethnic diversity in it's 307 faculty with 78% White, non-Hispanic (n=240), 16% Black, non-Hispanic (n=50), 4% Asian or Pacific Islander (n=13) and 1% Hispanic (n=4). This region also employs nearly 45% of the full-time faculty (n=225 of 332 total) and 16 % of the part-time faculty (n=82 of 173 total) for the entire state.

The eastern region (one university, one community college and one hospital program which is now closed) employs nearly 10% (n=49) of faculty overall and is the median birth year of the five regions at 1948.7, age of 48.3 in 1997. The State's third

graduate school for Master's and Post-Master's programs is in the eastern region. Six percent (n=9) of the State's doctoral prepared faculty teaches in the eastern region, (eight faculty at the same school). Most faculty members (65%, n=32) are employed full-time.

The southern region (one university and three community colleges) employs 16% (n=80) of the total faculty with 54% (n=43) of the faculty employed full-time. The State's fourth Master's degree program is located in this region. The mean birth year for faculty is 1947.5 or age of 49.5 in 1997. The faculty in this region displays slightly more ethnic diversity than the State overall with a faculty of 74% White, non-Hispanic (n=59), 21% Black, non-Hispanic (n=17), 4% Asian or Pacific Islander (n=3) and 1% Hispanic (n=1).

Montgomery County had only one community college response and employs 6% (n=30) of the State's faculty. Of this faculty, 90% (n=27) are Masters prepared and 7% (n=2) are prepared at the Doctoral level. The faculty is predominantly White, non-Hispanic (83%, n=25). The mean birth year of 1947.2 or age of 49.8 in 1997, gives this region the oldest faculty in the State, however, 57%, or 17, of the faculty did not have birth years given. Less than half of the faculty (43%, n=13) is employed full-time.

The western region of Maryland has two community college programs and employs approximately 8% (n=39) of the State's total faculty (n=505). 72% (n=37) of the region's faculty is Masters prepared while 21% (n=8) of the faculty has a Baccalaureate degree and 5% (n=2) has a doctorate as the highest degree earned. The mean birth year is 1949.8 or age of 48.2 in 1997, the second youngest among the State's regions.

Projected Hiring Patterns of Faculty

Respondents were asked to project full-time and part-time nursing and non-nursing faculty needs for one and three year periods using a range of 1 (fewer) to 5 (more). For analysis, responses were grouped as 1 and 2=fewer, 3=no change, and 4 and 5=more. Eighteen schools projected no change or a need for fewer non-nursing faculty for one year and 17 schools projected no change or fewer non-nursing faculty for the three-year period. Only two schools projected an increased need for non-nurse faculty at one year. Three schools projected an increased need at three years. Six schools projected a need for increased full-time nursing faculty, nine schools projected "no change", four schools projected a need for fewer full-time faculty in one year, and one school did not respond. For three-year projections, eight schools reported an increased need for full-time faculty, six schools were "unchanged", three schools reported a need for fewer full-time faculty, and three schools did not respond. (See Figure 6.)

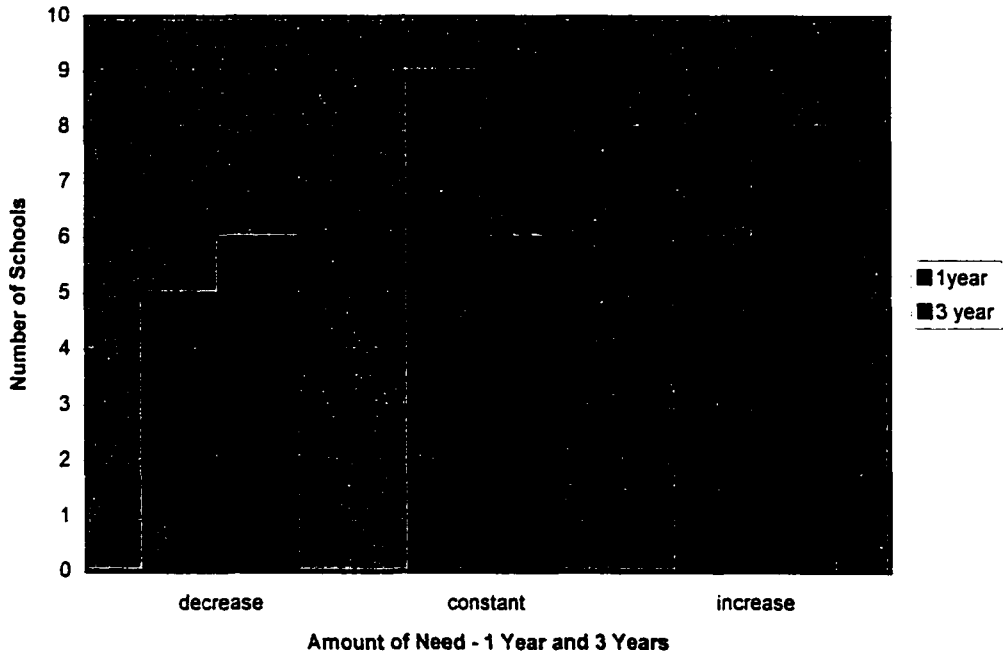

Figure 6. Fulltime Faculty Projected Needs – All Programs

For part-time nursing faculty one year projections, five schools reported a need for more part-time nursing faculty, eight schools were "unchanged" four schools reported a need for fewer part-time nursing faculty, and three schools did not report. At three years projection for part-time nursing faculty, six schools projected an increase in need, seven schools projected "no change", one school projected a decrease in need and four schools did not report.

Only two of nine community colleges or two-year programs (22%) projected a need for more full-time and part-time nursing faculty in one year. Three schools (33%) projected an increase in need in three years. In contrast to the two year programs, four of seven university or four year college programs (57%) projected an increased need for

full-time nursing faculty in one and three years and three of seven programs (43%) projected an increased need in one year for part-time nursing faculty and two (28%) projected an increased need in three years. (See Figures 7 and 8.)

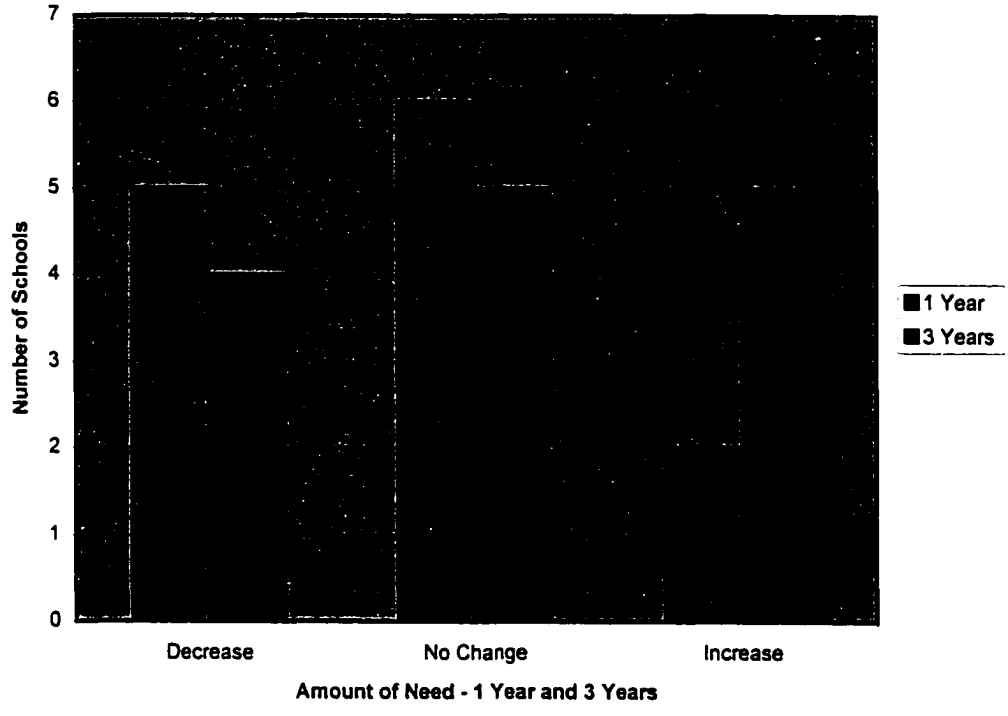

Figure 7. Fulltime Projected Faculty Needs – 2 Year Schools

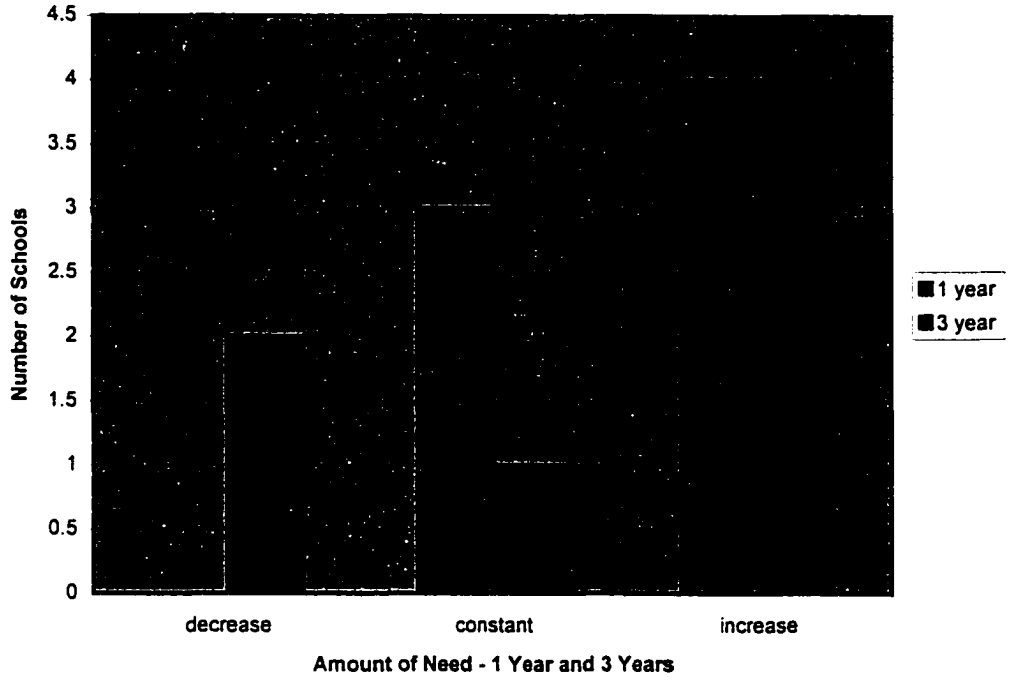

Figure 8. Fulltime Faculty Projected Needs – Four Year Schools

Characteristics of Students

Information was requested on first year students enrolled in the program, total number of graduates, and total number of students for each type of nursing curricula (LPN, RN to BSN, AD, Diploma, BSN, Masters, Post-masters and Doctoral). Ethnic background and gender of the student groupings were also requested. The data were reported for a five-year academic period beginning with 1992-1993 and ending with 1996-1997. Of the twenty schools reporting, nineteen had programs that provided entry level graduates (new registered nurses) for the nursing workforce. Twelve programs were associate degree, six programs were BSN and one program, now closed, offered a

diploma in nursing. Remaining data included four LPN programs, two RN to BSN programs, four masters programs, two post-masters certificate programs and two doctoral programs. Data from the LPN programs will not be presented in this study on registered nurses. All survey responses for "first year students" and "total number of students" were so inconsistently reported that interpretation of the results will not be presented. Responses for ethnic background, gender and total graduates were more consistently reported and will be presented. Areas of missing data in these responses yielded challenges in interpretation.

Of the nineteen programs providing new graduates for the nursing work-force, the total number of graduates reported for 1992-1993 was 1,122 graduates. This was followed by a gradual increase in total graduates over the next three academic years to a high of 1,413 graduates and a decrease in the last reported academic year, 1996-1997, to 1,318 graduates. The diploma and associate degree programs (n = 13) combined provided new graduates ranging from 729 graduates in 1992-1993 to a high of 833 graduates in 1995-1996, followed by a decrease to 716 graduates in 1996-1997. The BSN programs (n = 6) reported a steady increase with 393 graduates in 1992-1993 to 602 graduates in 1996-1997. (See Figures 9, 10 and 11.)

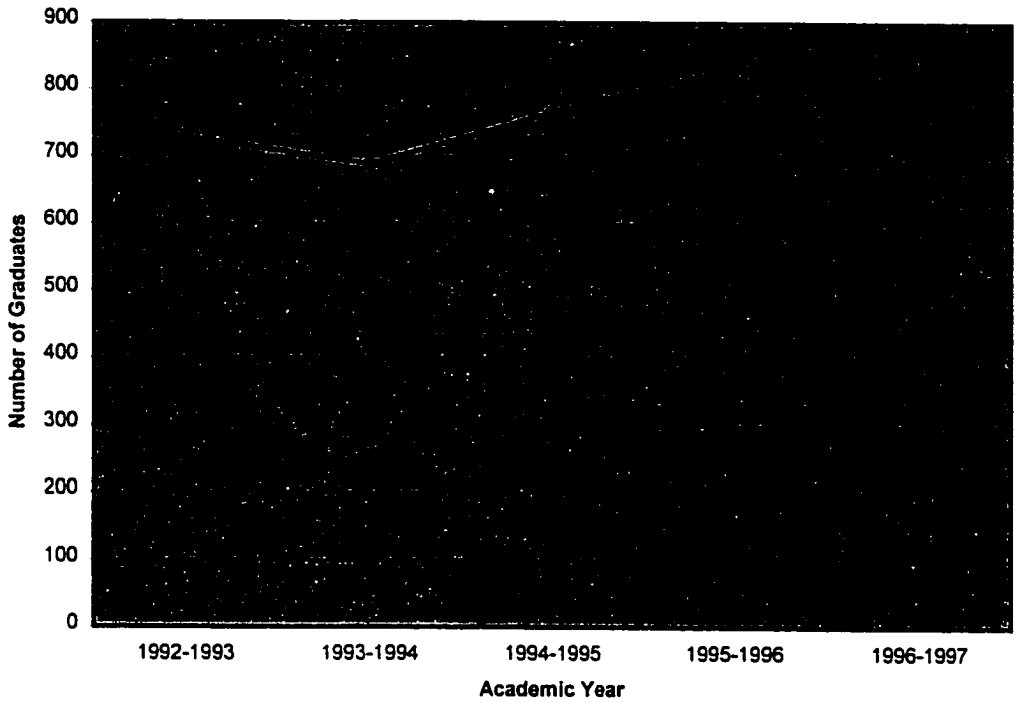

Figure 9. Total Graduates – 2 Year Programs

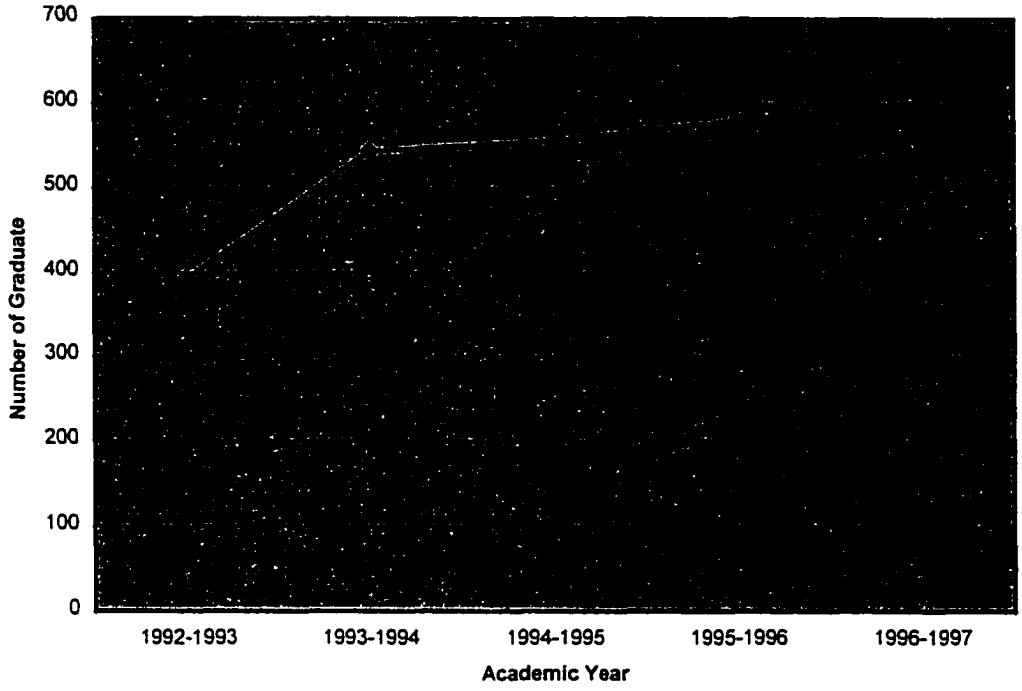

Figure 10. Total Graduates – 4 Year Programs

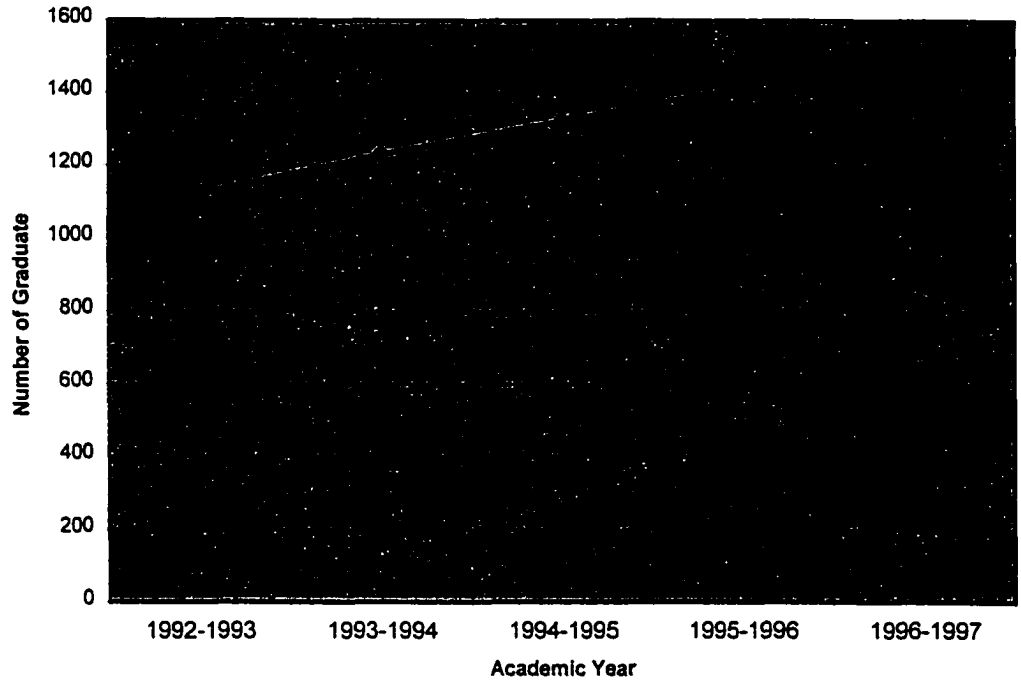

Figure 11. Total Graduates – All Programs

Requested ethnic background information for all schools (n = 19) included the categories of:

American Indian or Alaskan Native

Asian or Pacific Islander

Black, non-Hispanic

Hispanic

White, other than Hispanic

A "blank" response was counted as missing data since it seemed unclear whether there were no students matching the variable or the information was simply not reported. One school with a large student body failed to report any ethnic background information for

1992-1993, leading to inability to analyze their data for that academic year.

Less than one percent of the total graduates from all programs (n = 19) were represented by the American Indian or Alaskan Native ethnic group over the five academic years. No student of this ethnic background was reported for 1992-1993 while seven graduates of American Indian or Alaskan Native were reported in 1994-1995. There was little difference in the number of graduates with this ethnic background between associate degree/ diploma programs and BSN programs.

The Asian or Pacific Islander group reported a steady increase in total graduates from all programs (n = 19) beginning with 18 graduates (2%) in 1992-1993 and ending with 66 graduates (5%) in 1996-1997. Associate degree and diploma programs (n = 7) reported a steady increase in this ethnic group from ten graduates (1%) in 1992-1993 to 27 graduates (4%) in 1996-1997. The six BSN programs also reported steady increases in Asian or Pacific Islander graduates with eight graduates (2%) in 1992-1993 and 39 graduates (6%) in 1996-1997. (See Figure 12.)

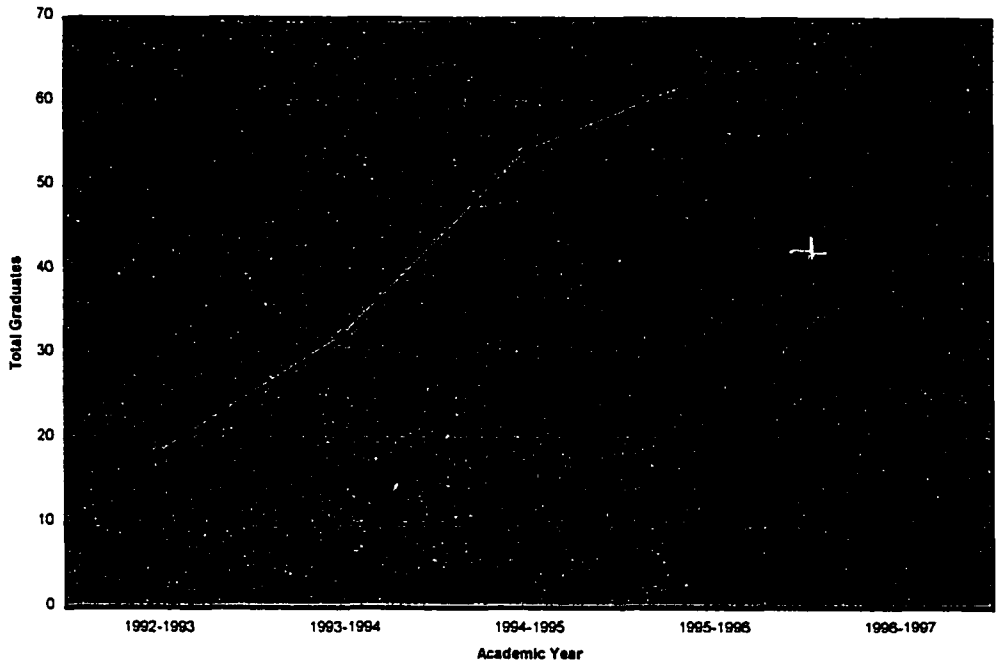

Figure 12.Asian or Pacific Islander Graduates – All Programs

Combined associate degree programs, diploma and BSN programs (n = 19) reported eight graduates (<1%) of Hispanic ethnic background in 1992-1993 and an increase to 28 graduates (2%) in 1995-1996 followed by a decrease to 15 graduates (1%) in 1996-1997. (See Figure 13.) The associate degree and diploma programs (n = 7) reported three, six and nine graduates (<1%) with Hispanic ethnic background in three of the academic years with an increase to 10 and 15 graduates (2%) in 1994-1995 and 1995-1996, respectively. The six BSN programs reported gradual increases in Hispanic ethnic background graduates with three graduates (<1%) in 1992-1993 to 15 graduates (3%) in 1995-1996. The academic year 1996-1997 revealed a decrease in Hispanic ethnic background graduates to nine graduates (1%).

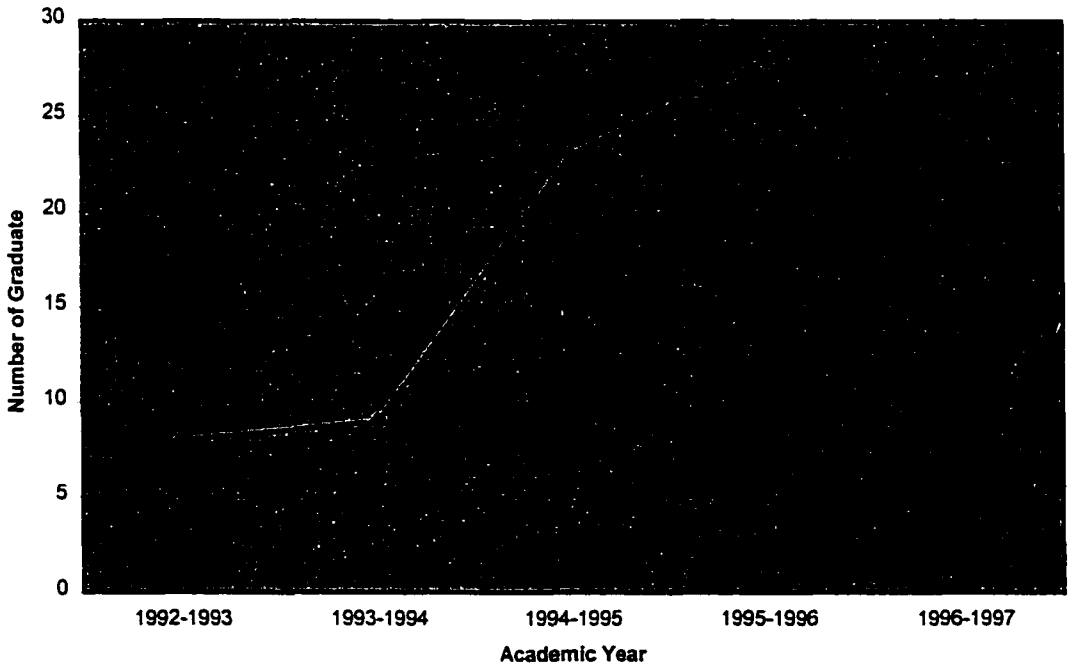

Figure 13. Hispanic Graduates – All Programs

The second largest ethnic group reported by all programs (n = 19) was Black, non-Hispanic. Total graduates for 1992-1993 was 95 (8%). An increase to 166 graduates (13%) was reported for 1993-1994, followed by 228 graduates (17%) in 1994-1995. The 1995-1996 academic year revealed a slight decrease in Black, non-Hispanic graduates to 200 graduates (14%), with an increase to 273 graduates (20%) in 1996-1997. (See Figure 14.) The associate degree and diploma programs (n = 7) reported Black, non-Hispanic graduates as 92 graduates (14%) in 1992-1993 and an increase to 161 graduates (22%) in 1996-1997. The six BSN programs reported a low of 60 Black, non-Hispanic graduates (11%) in 1993-1994 and a high of 375 and 435 graduates (19%) in 1994-1995 and 1996-1997, respectively.

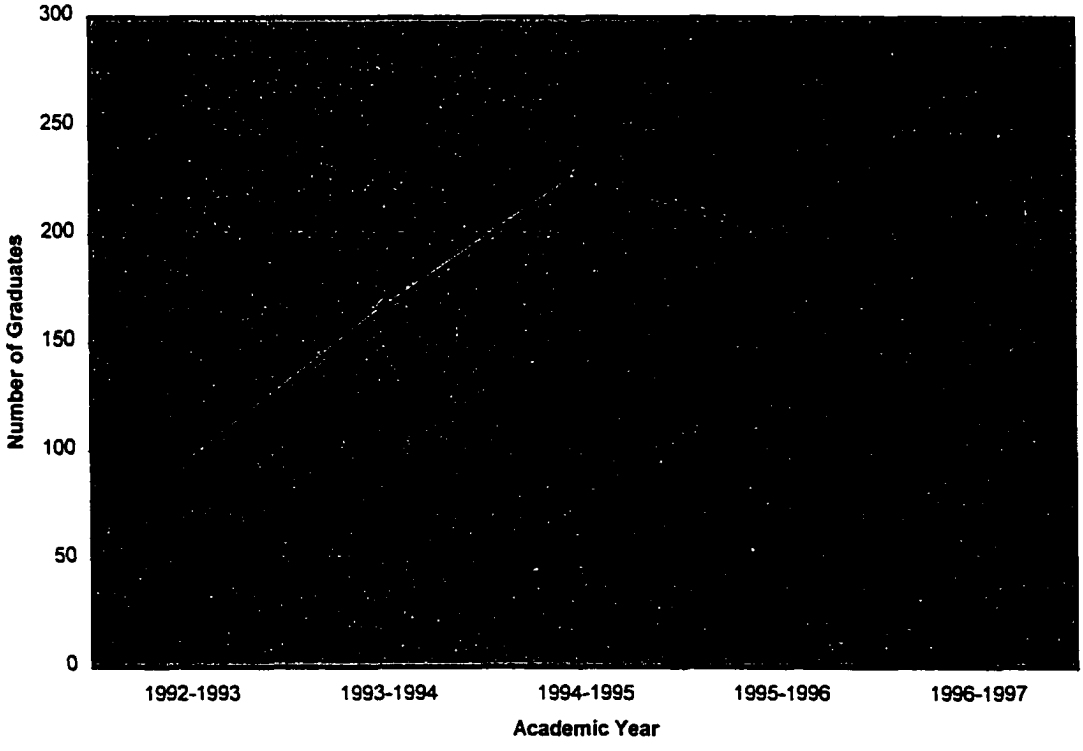

Figure 14. Black, Non-Hispanic Graduates – All Programs

The largest group of graduates reported in these data was White, other than Hispanic. The combined associate degree, diploma and BSN programs (n = 19) reported 724 graduates and 806 graduates (65%) in 1992-1993 and 1993-1994, respectively. The number of White, other than Hispanic, graduates peaked in 1995-1996 at 1,099 graduates (78%) and decreased to 951 graduates (72%) in 1996-1997. (See Figure 15.) Associate degree and diploma programs (n = 7) reported 729 White, other than Hispanic, graduates (72%) in 1992-1993 and a high of 833 graduates (84%) in 1995-1996. The 1996-1997 academic year revealed a decrease to 716 graduates (72%). The six BSN programs reported a low of 393 White, other than Hispanic, graduates (49%) in 1992-1993 to a high of 580 graduates (74%) in 1995-1996.

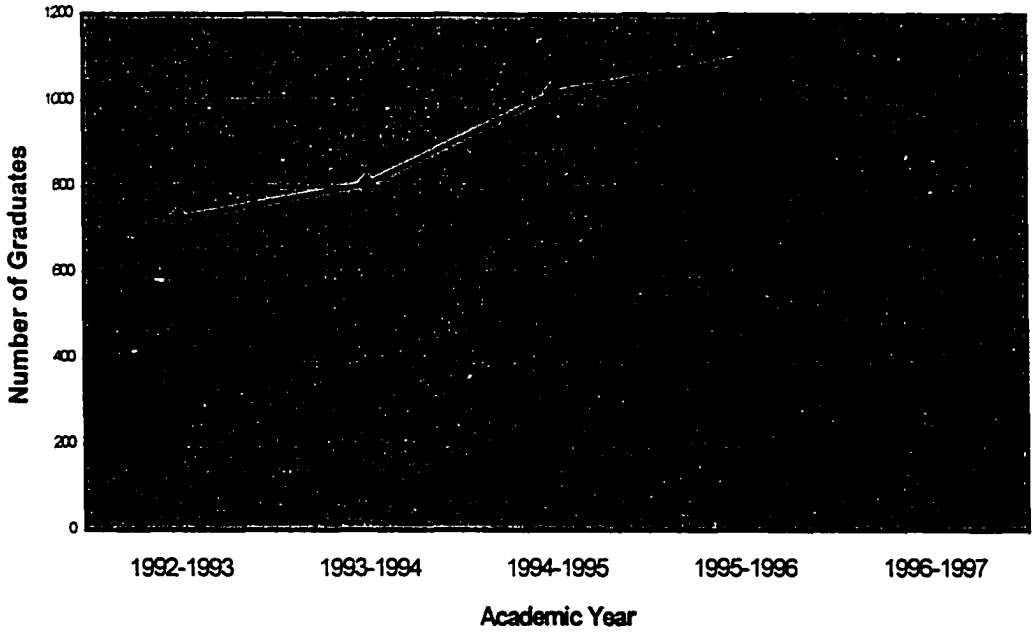

Figure 15. White, Other Than Hispanic – All Programs

The ethnic distribution of all graduates for all types of programs is displayed in Table 2. The nursing student mix is predominantly White, other than Hispanic. Representation of minorities was as high as 35% in 1992-1993 and as low as 22% in 1994-1995. American Indian or Alaskan Natives continue to be the smallest number of students.

Table 2. Total Graduates by Ethnic Background – All Programs

Academic Year	White, other than Hispanic	Black, non-Hispanic	Hispanic	Asian or Pacific Islander	American Indian Alaskan Native
1992-1993	724	95	8	18	0
1993-1994	806	166	9	32	2
1994-1995	1018	228	23	54	7
1995-1996	1099	200	28	63	4
1996-1997	951	273	15	66	5

The survey requested the number of males represented in the "total graduate" response. For the combined associate degree, diploma and BSN programs, the number of male graduates in 1992-1993 was 49 (4%) followed by an increase in 1994-1995 and 1995-1996 to 131 and 143 graduates (10%), respectively. (See Figure 16.) Associate degree and diploma programs (n = 7) reported a progressive increase in male graduates with a low of 35 graduates (5%) in 1992-1993 and a high of 64 (9%) in 1996-1997. The six BSN programs ranged from a total of 14 and 24 male graduates (4%) in 1992-1993 and 1993-1994, respectively, to 77 male graduates (14%) in 1994-1995. The total male graduate s decreased to 49 graduates (8%) in 1996-1997.

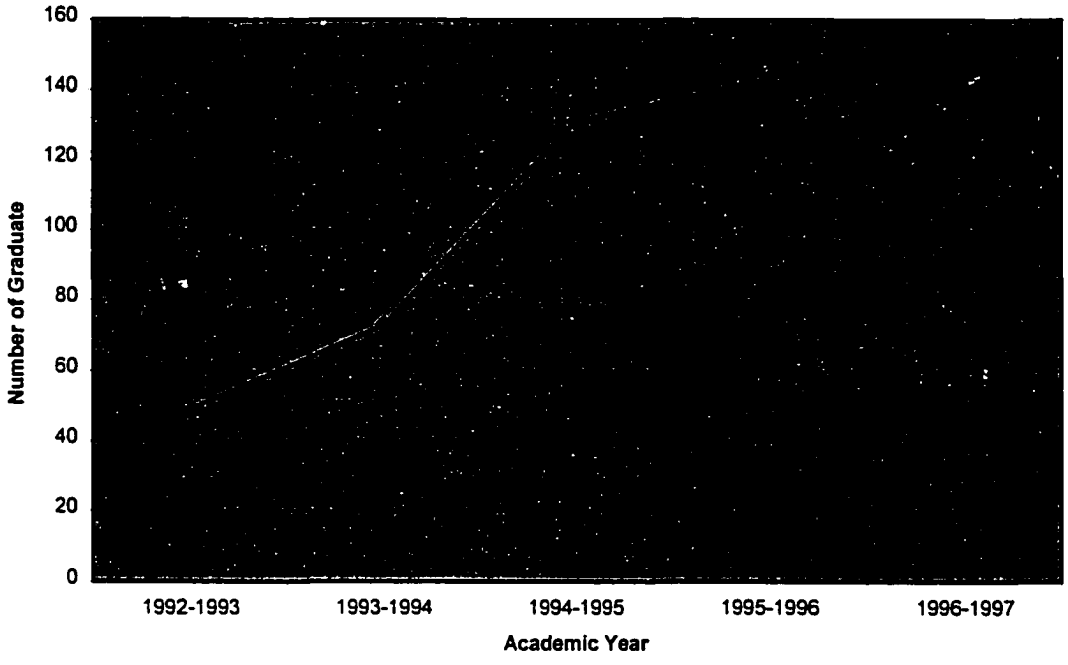

Figure 16. Number of Male Graduates – All Programs

Data were also reported for the two RN-BSN programs (n=2) in the State. Over the five-year data collection period, enrollment was at the lowest in 1994-1995 (n=126) and the highest in 1996-1997 (n=184). As with the previously reported data, White, other than Hispanic, is the largest group represented in this academic setting with a high of 90% (n=147) in the1992-1993 academic year to a low of 71% (n=126) in the1994-1995 academic year. A rebound to 88% (n=133) in 1995-1996 and 87% (n=160) in 1996-1997 followed. Black, non-Hispanic, was the second largest group represented in the RN-BSN programs with around 7% (n=10, 13 an 12) for three of the academic years and a high of 19% (n=24) in 1994-1995 and a low of 3% (n=5) in 1996-1997. Asian or Pacific Islander students were the next largest group represented with a high enrollment of 5% (n=6) in

1994-1995 and a low of 2% (n=3) in 1992-1993. Enrollment leveled at 4% (n=6 and 7) for 1995-1996 and 1996-1997 respectively. The American Indian or Alaskan Native and Hispanic groups represented less than 5% of the total for any of the academic years reported. There were no trends identified in enrollment activity for these groups. The number of male students enrolled in the RN-BSN programs ranged between a low of 2% (n=3) in 1994-1995 to a high of 7% (n=10) the following year, 1995-1996.

The number of students enrolled in the four graduate programs in nursing increased over a four-year period with a low of 170 in 1993-1994 to a high of 259 in 1996-1997. Although one of the schools did not report ethnic or gender data, in the schools reporting this information (n=3), once again, the largest ethnic group was reported to be White, other than Hispanic, from a reported low of 56% (n=102) in1992-1993 to a high of 92% (n=156) in 1993-1994. Black, non-Hispanic, was the next largest group with a low of 6% (n=13,15) in 1995-1996 and 1996-1997, respectively, to a high of 20% (n=37) in 1992-1993. Asian or Pacific Islander students were not enrolled at all in 1993-1994 after a high of 16% (n=29) in 1992-1993. In 1994-1995, 8% (n=13) of the students were Asian or Pacific Islander. This number decreased to 3% (n=80 in 1996-1997. Hispanic and American Indian or Alaskan Natives students were less than 4% of the total students in any of the five years reported. After a high of 20% (n=37) in 1992-1993, the number of male student represented in the totals was around 6% (n=10,11,13,14) in the remaining consecutive years.

Data for the two Post-Masters programs were inconsistently documented and will not be reported.

Data from one of the two doctoral programs reveal an increase in the total graduates from 6 in 1992-1993 to 16 in 1996-1997. There were no Hispanic, no American Indian or Alaskan Native and no males in this group for any of the five academic years. White, other than Hispanic, was the leading ethnic group with a high of 91% (n=10) in 1994-1995 to a low of 56% (n=9) in 1996-1997. Asian or Pacific Islander doctoral graduates were not present in 1994-1995 but increased to 31% (n=5) in 1996-1997. This ethnic group presented the highest percentages in the doctoral program compared to representation in all other nursing programs. Black, non-Hispanic, graduates were not represented in the doctoral program in 1992-1993 but rose to a high of 14% (n=2) in 1995-1996.

The final question from the NES requested projected student enrollments in each nursing program for the academic years 1997-1998 and 1998-1999. Community or junior colleges projected an enrollment of 973 students in 1997 and an increase to 1003 students in 1998 (4%). University or four- year colleges projected an enrollment of 604 students in 1997 with an increase to 614 students in 1998 (less than 2%). The combined university and community college settings are projecting a total of 1577 students in 1997 and 1617 students in 1998, (an increase of 40 students, less than 3%). The RN-BSN programs project an enrollment of 325 in 1997 and 353 in 1998, (an increase of 28 students, less than 9%). The graduate programs project an enrollment of 367 in1997 and 374 in 1998, (an increase of 7 students, 2%). The Post-Master's programs project an enrollment of 66 in1997 and 73 in 1998, (an increase of 7 students, 11%). The Doctoral programs project an enrollment of 29 students for both 1997 and 1998 or no change.

Comparison of Student Enrollment to Faculty Hiring Projections

Student enrollment for all programs is projected to increase by less than 3% overall for the academic years 1997-1998 and 1998-1999. Without the data to compare student enrollment from prior academic years, the projections are difficult to interpret. The term "student enrollment" was not clearly defined, so it is unclear what is actually represented by these projections. Faculty hiring projections were for one year and three year periods, which were different time frames than the student enrollment projections. The projected hiring for faculty was not reported as actual numbers of needed faculty or by program type, such as undergraduate or graduate. The meaning of these student and faculty projections is unclear and will not be further discussed.

Comparison of Faculty to National RN Sample

Characteristics of Maryland nursing faculty were compared to the registered nurse population as identified in the National Sample Survey (USDHHS, 1997) and the nursing faculty reported by the AACN (1998). These samples included registered nurses (n = 29,766) surveyed in 1996 by the Division of Nursing, Department of Health and Human Services and faculty (n = 9,965) employed by colleges of nursing surveyed by the American Association of Colleges of Nursing for the 1997-1998 academic year. It is probable that some faculty members are represented in all three samples. The four characteristics of age, gender, ethic group and educational background were compared.

With an average age of nursing faculty in Maryland of 47.2 years and an average

age of the national RN sample of 44.3 years, the Maryland faculty is 2.9 years older. Compared to the Full-Time Nurse faculty reported by the AACN (1998), the Maryland nursing faculty is 2.2 years younger than the 49.4 mean age. The AACN sample was only full-time faculty at baccalaureate and graduate programs in nursing and included 8 schools from Maryland.

The Maryland faculty is 97% female and 3% male. The National Sample reports 3.4% males and the AACN sample reports 3.3 % males.

White, other than Hispanic, is the largest ethnic group in Maryland faculty (82%), the National Sample (89.7%) and the AACN sample (91.4). Black, other than Hispanic, is the second largest group, with Maryland faculty reporting 14%, the National Sample reporting 4.2% and the AACN sample reporting 5.6%. Hispanic faculty were represented as less than 1% in the Maryland faculty, 1.6% in the National Sample and at 1.2% in the AACN sample. Asian or Pacific Islander faculty represented 3.5% of the Maryland faculty, 3.4% of the National Sample and 1.5% of the AACN sample. The American Indian or Alaskan Native ethnic group is represented by .002% of the faculty in Maryland, 0.9% in the National Sample and 0.2% in the AACN faculty sample.

Compared to the National Sample of which 26% of the registered nurses are baccalaureate prepared, only 12% of the Maryland nursing faculty has a baccalaureate degree as the highest educational level attained. Masters prepared faculty (59%) and doctoral prepared faculty (29%) were reported in the Maryland Nursing Education Survey data. The National Sample reported that 9.8% of the sample had obtained a Masters or Doctoral degree as the highest educational level. The AACN faculty sample

reported the highest educational level as doctoral (48%) or non-doctoral (52%).

Comparison of Nursing Student Distribution to National Council Recommendations

Over the five years of data reported, the Maryland Schools of Nursing graduated more associate degree nurses (60%, n=3732) than baccalaureate degree nurses (40%, n=2674). Even with the RN to BSN graduates added in, the percentage of associate degree to baccalaureate degree nurses does not approach the mix of 66% baccalaureate nurses recommended by the National Advisory Council on Nursing Education for the year 2010. The projected enrollments will continue to provide this mismatched mix of nurses. The pass/fail results of the nursing licensure exam were not requested in the survey. The actual number on new graduates licensed to practice nursing and available to enter the work force may therefore be less than the actual number of graduates.

Chapter 5: Discussion

Purpose

The purpose of this study was to identify potential surpluses or deficiencies of registered nurses and nurse educators by identifying identify nursing programs, the enrollment and hiring projections for these programs, and determining the characteristics of nursing faculty and students in the State of Maryland. From this information, potential surpluses or deficiencies of registered nurses and nursing educators in the future could be projected. The Maryland CIC Steering Task Force developed a survey to obtain this information and made the surveys available for analysis and interpretation. From these surveys, the existing registered nursing education programs in the State of Maryland were described. Information about student and faculty characteristics, projected enrollment and faculty hiring was collected. Regional differences in the projected student enrollment and hiring of faculty, as well as characteristics of students and faculty were also compared and identified.

The results of this research have provided new information about the nursing programs, faculty and students in the State of Maryland. The State of Maryland is experiencing a nursing shortage with evidence of unfilled nursing positions in employment sections of area newspapers (Subramanya, 2000). Hospitals in Maryland report a 14.7% nursing vacancy rate in 2000, an increase of 3.3% from 1997. Hiring

bonuses, retention bonuses and other strategies are headlining employer attempts to entice nursing personnel. A state commission has been formed in Maryland to investigate reasons for the shortage and to recommend possible solutions. Nationally, and even internationally, the nursing shortage is real and is a threat to the health care needs of society (Wall Street Journal, 2001).

Not only are the numbers of nurses decreasing, the educational preparation of those nurses in practice may not be what society needs (Buerhaus, Staiger & Auerbach, 2000c; Staiger, Auerbach & Buerhaus, 2000). The ability of the current educational system to recruit, educate and graduate nurses is also in question. Predicted increases in the demands for nursing care delivery, critical thinking skills and the ability to supervise and coordinate multiple levels of care are not likely to be met by the current mix of nurses or by the nursing students currently in the pipeline. Availability of qualified faculty is also an issue (AACN Issue Bulletin, 2000). As the overall population ages so does the nursing workforce. The number of nurses planning for retirement over the next few years may not match the number of nurses entering the profession (Auerbach, Buerhaus & Staiger, 2000; Buerhaus, Staiger & Auerbach, 2000a). The average age of working nurses increased 4.5 years over a 15-year period, more than twice the rate of all other occupations in the U.S. workforce (Buerhaus, 2001). Less than 10% of the current nursing workforce is 30 years or younger. Between 1983 and 1998, the number of under-30 registered nurses in the workforce fell by 41% compared to only 1% in the rest of the U.S. workforce (Buerhaus, Staiger & Auerbach, 2000b).

The nursing workforce does not mirror the general population of the U.S by

gender or ethnic distribution. Still a predominately female profession, the choice of nursing is challenged by other professional career opportunities for women. Not only are fewer women choosing nursing, males and ethnic minorities appear to be making other career choices. Although comprising 48.8% of the U.S. population, males represent less than 5% of the national RN workforce. The choice of nursing as a profession for men and for ethnic minorities has not changed much over the past decade and appears to be unlikely to do so (AACN Issue Bulletin, 2000; USDHHS, 1996).

This research describes the schools of nursing in Maryland and answers the following questions:

1. What are the characteristics of the nursing faculty in Maryland?
2. What is the projected hiring pattern for faculty in schools of nursing in Maryland?
3. What are the characteristics of nursing students in Maryland?
4. What is projected student enrollment and how is it distributed between associate degree and baccalaureate degree programs in Maryland?
5. How do the projected student enrollments and hiring patterns of faculty compare?
6. How does the nursing faculty of Maryland compare to the National Sample Survey of Registered Nurses in the categories of age, gender, ethnicity and highest level of education?
7. How does the nursing student distribution in Maryland compare to the recommendations of the National Advisory Council on Nursing

Education?

The theoretical framework and instrumentation will also be discussed.

Maryland, the State

The State of Maryland is described as "America in miniature" (Maryland Nurses Foundation, 1995; Hall & Veise-Berry, 1998) due to the multiple distinct regions. Maryland presents metropolitan communities, farming and rural communities, industrial communities and waterway commerce communities. Geographically, Maryland terrain varies from the mountainous land of Western Maryland to the sand and water of the Eastern Shore and Atlantic beaches with fertile farmland and waterways between.

The population of Maryland closely reflects the gender and ethnic distribution in the United States and Region III (Pennsylvania, Maryland, Delaware, West Virginia and Virginia, as defined by the US Department of Health and Human Services, Bureau of Health Professionals, 2000). Females comprise 51.4% of Maryland's population, 51.5% of Region III and 51% of the U.S. population. White, other than Hispanic, makes up 64% of Maryland residents, 77% of Region III and 72% of the U.S. Black, non-Hispanic, comprises 28% of Marylanders, 16% of Region III and 12 % of the U.S. population. Asian or Pacific Islander, represents 4% of the Maryland population, 3% of Region III and 4% of the U.S. The Hispanic group represents 4% of the Maryland population, 3% of Region III and 11% of the U.S., while American Indians or Alaskan Natives represent 1% or less in all three areas (US Department of Commerce, 2000). Table 3. shows the comparison of the US population (US Department of Commerce, 1996), the National

Sample Survey of Registered Nurses, USDHHS, 1997), the fulltime faculty represented by the American Association of Colleges of Nursing (1997) , Maryland Registered Nurses (MBON, 2001) and Maryland nursing faculty (Nursing Education Survey, 1997).

Table 3. Comparison of US Population and Selected Registered Nurse Characteristics

Characteristic	US Population*	National Sample *	AACN Sample*	Maryland RN*	Maryland Faculty*
Gender (Male)	48.8%	<5%	3.3%	5%	3%
Age in years	36.1	44.3	49.4	46	47.2
White, other than Hispanic	72.3%	89.7%	91.4%	79%	82%
Black, other than Hispanic	12.5%	4.2%	5.6%	------	14%
Hispanic	10.6%	1.6%	1.2%	-----	0.008%
Asian or Pacific Islander	3.7%	3.4%	1.5%	-----	3.5%
American Indian or Alaskan Native	.9%	0.5%	0.2%	-----	0.002%
Total % Minority	17.7%	10.3%	8.6%	21%	18.5%

* US Census, Department of Commerce, 1996; National Sample Survey of Registered Nurses, USDHHS, 1997; American Association of Colleges of Nursing, 1997; Maryland Board of Nursing, 2001; Nursing Education Survey, Maryland Colleagues in Caring, 1997.

Schools and Programs

The State of Maryland has twenty-four schools of nursing located in thirteen of the 24 local jurisdictions. Nine of these schools of nursing offer a degree at the baccalaureate level (basic preparation or RN-BSN), while the remaining schools prepare graduates with an associate degree or diploma. The concentration of university or four-year colleges in the metropolitan areas may affect the mix of associate degree and

baccalaureate degree nurses, particularly in the less metropolitan areas of the state. Additional programs via satellite and long distance learning, as well as branch campuses increase the availability of nursing education programs. Several Maryland schools have already implemented extended learning programs. The Maryland Colleagues in Caring is currently pursuing an investigation into perceived barriers to completing a nursing education program in Maryland. When completed, this investigation should provide information about potential concerns of program availability.

Nursing School Faculty

The demographics of the nursing faculty in Maryland align closely with the National Sample Survey of Registered Nurses (USDHHS, 1997) and the AACN (AACN, 1998) samples. (See Table 2.) The Maryland nursing faculty is mainly white (82%), female (97%) and educated at the Master's level or greater (88%). Males and ethnic minorities are under-represented in the nursing faculty at both the state and national levels. The average age of Maryland nursing faculty in 1997 was 47.2 years compared to an average age of nurses nationally at 44.3 years in 1996 (USDHHS, 1997). In the State of Maryland, nearly 21% of the population falls into the baby boomer range, 45-64 years of age (Maryland Office of Planning, 1995). Nearly 60% of the faculty was born between 1940 and 1959, leading to some concerns about the impact of retirement and the potential for a decrease in the number of hours worked by this age group. Buerhaus, Staiger and Auerbach (2000a) report that nearly 60% of the national nursing workforce is over the age of 40. Entry into faculty positions by new graduates and current nurses, who are older

on average than in the past, could add to the problems of faculty shortages created by part-time employment and retirement choices for this age group (Buerhaus, Staiger & Auerbach, 2000c). In an attempt by one state to avoid this situation, a pilot program directed at increasing the number of nurse educators by focusing on the recruitment and retraining of qualified students with mentors and financial support, has been developed in Arkansas (Bell, 2000).

The ability to attract nurses, particularly younger nurses, into the field of nursing education is an additional concern (AACN Issue Bulletin, 2000). Less than 10 % (n=48) of the faculty reported in the NES were born in 1960 or later. As nurses pursue higher education, graduates have more options for advanced practice and private industry positions (Buerhaus, Staiger & Auerbach, 2000 a). As advanced practice curricula become more popular, fewer graduates seem to be choosing an education tract. A formal program preparing nurses to teach should include not only nursing practice but also curriculum development, instruction techniques, test construction and evaluation, adult learning principles and other topics in the educational arena. With the larger percentage of new graduates coming from the associate degrees programs, those desiring to become faculty members would need to continue formal education for a minimum of three years to obtain a Masters degree. Auerbach, Buerhaus and Staiger (2000) report that over 70% of the associate degree graduates in 1996 were 41 years of age or older. This group would add to the "aging" problem as they become able to enter faculty positions.

Specialization in nursing for faculty reported on the NES was predominantly adult medical-surgical practice (47%, n=238). With the current focus on health care in the

community setting, faculty may need additional education to prepare them to teach the concepts, skills and critical thinking required to meet the health care needs of the community and specialty areas in acute care where knowledge shortages exist. As there was no question on the survey related to continuing education, faculty members might have received additional education in nursing, current health care needs, specializations and practices.

An additional problem with aging of faculty would become more severe as both existing faculty and potentially older, new faculty make choices about part-time employment and retirement. Potential retirement of nursing faculty without replacement by younger faculty is a real concern. As the faculty ages, there may be a desire to change employment status from fulltime to part-time (Buerhaus, Staiger & Auerbach, 2000c). Most of the faculty (80%) in the university and four-year colleges is full-time. Over half of the faculty (53%) in the community or junior college setting is full-time. A change to part-time status for either or both groups could result in a more serious shortage of nursing faculty for all nursing programs.

Most of the doctoral prepared faculty in Maryland have doctorates in fields other than nursing (78%). Doctoral programs in nursing are a relatively recent development and may not have been present when these nurses were pursuing higher education. The doctoral prepared faculty is also concentrated in the university and four-year college settings (92%, n=144), leaving predominantly master's prepared faculty in the community or junior college setting.

Faculty Hiring Projections

The faculty hiring projections for both university or four-year colleges and community or junior colleges indicated very little change overall in the faculty needed. University or four-year colleges projected more need for faculty than community or junior colleges even though associate degree programs planned to slightly increase enrollment. Since the question on the survey did not ask for actual numbers of faculty or the program area needs, the real meaning of these projections is unclear. Anecdotally, Colleagues in Caring consortia members discussed the need for hiring more part-time faculty to fill fulltime vacancies. As a strategy to fill nursing faculty positions, employment of non-nursing faculty to teach less nursing-based courses was also mentioned by the consortia members. These observations were not reflected on the survey in the projected part-time faculty and non-nurse faculty hiring needs. If the supply/demand framework is successful in attaining equilibrium, the enrollment of nursing students may increase well beyond the levels projected in this survey. If equilibrium in the market is achieved, the need for more faculty would also likely increase as more students are enrolled.

Nursing Students

Nursing students in the State of Maryland do not consistently reflect the ethnic or gender distribution of either the US population (US Department of Commerce, 2000) or the National Sample of Registered Nurses (USDHHS, 1997). Black, non-Hispanic, represent 12 % of the US population, 4.2% of the national RN sample and greater than

13% in the Maryland nursing students group. The Hispanic ethnic group is represented by 11% in the US, 1.6% in the national RN sample and 2% in the student group. Asian or Pacific Islanders represent 3.5% of the US population, 3.4% of the national RN sample and as high as 5% in the student group. American Indian or Alaskan Natives represent 0.7% of the US population, 0.5% of the national RN sample and less than 1% of the student group (USDHHS, 1997; US Department of Commerce, 2000). In Maryland, there have been minimal increases in the number of Black, non-Hispanic and Asian or Pacific Islander nursing graduates over the five-years reported. Since there was missing information in the student ethnic variable, the results may not completely reflect the nursing student group.

Males make up slightly less than half (48.8%) of the US population but represent less than 5% of the national RN sample and closer to 9% of the Maryland nursing student group (USDHHS, 1997; US Department of Commerce, 1996). Males are definitely underrepresented in nursing compare to the general population.

The age of students was not asked on the survey. The US Census (1996) reported the average age of the population as 35.9 years. Nationally, the age at graduation of new RN's has increased over the last two decades from 24.3 years in 1985 to 30.5 years in 1995 (Auerbach, Buerhaus &Staiger, 2000; USDHHS, 2001). The average age at graduation from the basic nursing programs for the 1995-2000 time period was 30.8 years for diploma graduates, 33.2 years for associate degree graduates and 27.5 years for baccalaureate graduates (USDHHS, 2001). Less than 10% (9.1%) of the national nursing sample was younger than 30 years of age in the 1996 survey and the average age of the

RN sample was 44.3 years (USDHHS, 1997).

Maryland Nursing Enrollment and the National Advisory Council Recommendations

The projected student enrollments on the Nursing Education Survey show that the numbers or types of nurses needed in Maryland will not be attained over the next few years. The lack of consistently reported data by schools in this study on first-year enrollment and total enrollment was disappointing as these data would have been useful in projecting future workforce availability. A projected increase of only 40 students (primarily, associate degree) over the two-year period is not likely to fill the vacancies in the existing nursing workforce due to retirement and change in work status. The demand for nurses as a result of changes in health care and needs of the aging population is projected to increase as much as 23% by 2006 (Buerhaus, Staiger & Auerbach, 2000b; Zimmerman, 2000). This demand is unlikely to be met by the current nursing education system. Continuation of the current mix of associate degree and baccalaureate prepared nurses will put further strain on the suitability of the nursing supply. Typical market adjustments related to salary and benefits have had little noticeable impact on the shortage. Aging of the nursing workforce, declining interest in nursing as a career choice, and the projected increase in demand for nursing services do not fit well in the typical supply/demand framework (Buerhaus, Staiger & Auerbach, 2000b). Resolution of this nursing shortage challenges the supply and demand theory response with the ability of the market to increase wages to levels that would be required to stimulate an interest

on nursing as a career choice. Most federal and state legislatures tend to direct activity toward utilization and demand rather than supply (AONE, 2000). With regulating organizations, third party payors, health maintenance organizations and health care consumers influencing the amount a provider of services may charge, limitations in funds available for wage increases, becomes an even greater problem.

Instrumentation

The Nursing Education Survey was developed by the Steering Committee of the Maryland Colleagues in Caring with the intent of gathering information on nursing faculty and nursing students in the State of Maryland. Reliability was established by test/retest and content validity was established by an educational panel. The survey was intended to supplement information from the Maryland Health Resources Planning Commission, the Maryland Board of Nursing and the CIC Employer Survey. Though the survey was loosely modeled after existing surveys required by agencies overseeing some of the schools, some variables were incompletely reported or not reported at all.

Anecdotally, those responsible for completing the surveys reported that completion was cumbersome and time consuming. Some data requested were unavailable, not readily accessible or resided in multiple databases. Incomplete or missing data were problematic for this researcher and limited the interpretation of results. Definition of terms in the CIC survey was not provided and might have resulted in confusing or incomplete reports on some survey items. The questions related to schools and types of programs were straight-forward and were answered consistently. Questions

related to characteristics of faculty contained missing, estimated rather than actual data, or incomplete data leading to problems with interpretation of the results. Age of faculty was the most incompletely reported question on faculty characteristics in the survey. The CIC Steering Task Force had eagerly anticipated the results of this specific question and was disappointed in the problems with the reported data. Verbal feedback from the respondents indicated that "age" was the most difficult data to obtain and was essentially unavailable. Difficulty in obtaining actual age may have resulted in the respondents providing an estimated age of faculty members based on decade rather than actual birth year. The estimated age and the decade midpoint substitution for age from the estimates, may have affected the results.

Student data were inconsistently reported, with either blank spaces, hyphens or zeros recorded. Where areas were left blank, it was unclear whether the data were not available or there were no students fitting that particular category. Reporting of data was also inconsistent within particular schools with some data reported but not for all opportunities.

The lack of consistent time intervals for projection of faculty hiring needs (one and three years) and projection of student enrollment (one and two years) made comparison difficult. Combined with the previously mentioned poor response for enrollment data, what could have been valuable information became limited for analysis.

Pilot testing and consultation with a psychometrician in development of the survey might have led to revision of the instrument and elimination of the difficulty in obtaining appropriate responses.

Theoretical Framework

From a supply and demand economic theory perspective, the current nursing shortage is not resolving in the same fashion as demonstrated historically (Buerhaus, Staiger & Auerbach, 2000c; McKibben, 1990). By definition, the supply, the number of nurses health care settings want to employ, should match the number of nurses available for employment. A mismatch in supply and demand will result in either a shortage or a surplus (Baumol & Blinder, 1998). In the past, nursing shortages and surpluses were alleviated by employer and market responses to competition, wages, and recruitment efforts, usually within 3 years (Buerhaus, Staiger &Auerbach, 2000c). The current nursing shortage, which has been identified as starting in 1986, is the longest and most persistent shortage in history (Buerhaus, Staiger & Auerbach, 2000a, c; Subramanya, 2000).

From the supply side of the workforce equation, the nursing supply is shrinking from both ends of the age spectrum with fewer young people entering the field while a growing number of current nurses begin retirement or decrease the hours worked. On the demand side, an aging population with more complex health care needs, advances in technology, increased acuity in the sick and an increase in long term care needs results in new job opportunities and demand for nurses. In addition to the usual strategies of increasing wages and non-wage benefits, other strategies must be initiated to attract new nurses and to keep current RN's in the workforce. In Montgomery County and Baltimore County, Maryland, six hospitals recently announced that they are offering $2,500 in financial aid to advance nursing students in return for one to two year commitments after

graduation. The scholarships are an attempt to fill close to 2000 vacancies reported by the six hospitals (Montgomery Journal, 2001).

Increasing wages and non-wage benefits may lead to existing RN's increasing the hours worked through changing from a part-time status, working overtime or by entry into the workforce. More students may choose nursing as a career and foreign nurses may enter the US nursing workforce as a result of wages and benefits. The flipside of this market adjustment, however, will lead to an increase in labor costs in a time when budgets are being reduced. The increased labor costs may lead to a decrease in the demand for RN's with positions being filled by less skilled and less expensive personnel. As the costs associated with health care increase, issues of access to care, increases in waiting times for care and a decrease in the quality of care and positive patient outcomes are likely to result (Buerhaus, Staiger & Auerbach, 2000c). With these added complexities, this imbalance in supply and demand for the nursing workforce is not predicted to resolve in the near future.

Limitation

The researcher acknowledges that due to her own experiences as a nurse in an acute care setting in Maryland, the discussion, implications for nursing practice and recommendations may reflect some bias.

Implications for Nursing Practice

The existence of a nursing shortage is very real. With the aging population, including a large portion of the nursing work force, a decreasing nursing student enrollment and increasing demand for nurses, this shortage will not only persist but will worsen over the next few years. Nursing will compete with other professions in attracting students. Employers will be competing with each other for the precious commodity of nurses. Nurses will be presented with many opportunities as health care evolves to meet the changing needs of society. Even with the increases in opportunities, nurses may or may not choose to continue employment in the workforce. Strategies for retention, recruitment, and full employment of the nursing pool will become extremely important. More flexibility in scheduling, increased awareness of the work environment for the aging worker, mentoring rolls and elder care (in addition to child care) may become tools for encouraging continued employment in nursing positions. Targeting males and ethnic groups currently under-represented in nursing may be a useful strategy to increase nursing school enrollments.

Buerhaus, Staiger and Auerbach (2000c) recommend that society accept the inevitability of the decrease in the supply of registered nurses. Resolution of the shortage does not appear to be imminent. Short-term and long-term strategies must be implemented to meet the health care needs of a growing, aging population. Employers should now focus on preparing for the older RN in the work setting. Work environments must be user friendly for the older worker and utilization in actual practice may need to be 'retooled'. The older RN has much to offer in roles as preceptors or mentors or in the

consulting capacity. Maryland Board of Nursing (2001) data indicate that only 13% of the RN's maintain an active license after the age of 57. Keeping the older RN in the workforce will require creative solutions. Flexible work schedules and shorter hours might need to be implemented. Continuing education offerings for the older nurse will be needed to help in the adjustment to new roles and to meet the care needs of the more complex patient. These types of work place adjustments may be more appealing and more realistic for the older RN.

Increasing the incoming supply of new nurses is also a major challenge. Improving the image of nursing through individual effort and organized efforts in concert with increasing salaries should result in more students choosing nursing as a career. Focused recruitment of males and ethnic minorities should lead to an increase number of nurses and a more diverse, culturally balanced workforce. The number of nursing students currently in the pipeline to enter the workforce will neither meet the predicted needs of the community nor fill the vacancies resulting from decreasing work time and retirement of the current nursing workforce in Maryland. Increasing nursing school enrollments is a priority. Increasing the awareness of nursing as a career opportunity, improving the image of nursing, recruiting males and ethnic minorities and financial aid packages are all strategies leading to more nurses for the future. The current practice entry level of new nurses requires an associate degree, diploma or a baccalaureate degree. Re-examination of the abilities and responsibilities of each level of nurse practice may result in different requirements than recommended by the National Advisory Council on Nursing Education.

The use of foreign nurses to supplement the decreasing nursing workforce is also a strategy to be considered. Recruitment of RNs outside the US will result in increases in the US workforce but will add to the shortages in other countries. The moral and ethical implications of such actions should be strongly considered. Cultural and workplace orientation and adjustments may require considerable effort and expense. Quality of care and positive patient outcomes will continue to be extremely important as the foreign nurses become acquainted with the US standard of care and practice.

Increased public awareness of an existing and worsening nursing shortage has resulted in private and governmental interest in arriving at solutions. The body of inquiry and knowledge regarding the nursing shortage has grown significantly since this research presentation was begun. From a health policy perspective, research on the nursing workforce must continue with a focus on nursings' impact on the quality of care and positive patient outcomes. Existing Federal and local funding for nursing programs should be reviewed and coordinated to help provide nursing programs to meet society's needs, to improve access to these programs and to insure available and competent faculty to educate nursing students. Additional funding to result in an increase in the supply of new nurses should be coordinated with funding directed at retention of current nurses. Economic incentives, tax breaks and additional retirement benefits are strategies that might also be considered.

Mandated staffing levels are a strategy being considered in an attempt to provide adequate patient care with quality outcomes. A required RN/ patient ratio is not likely to resolve care issues especially if the supply of nurses does not match the required number

on the demand side. A potential loss of flexibility in assignments and variability in patient conditions makes mandated staffing particularly difficult to implement. Enforcement of mandated levels is also a concern. This strategy is being discouraged as a solution for the nursing shortage and the issues of quality of care (Buerhaus, Staiger & Auerbach, 2000b).

The Robert Wood Johnson funded Colleagues in Caring project has become a national resource on nursing workforce development. With twenty funded sites and ten non-funded sites, strategies and solutions addressing issues with the nursing workforce are surfacing. Nationally, the CIC project sites are collecting data, reviewing nursing program articulation, studying nursing practice and recruitment issues and addressing policy related to the nursing workforce. The CIC national program office is coordinating the findings of these task forces, facilitating the sharing of results and implementing networking among the participants and other interested parties. Four major goals have been identified for the CIC project:

1. to align the nursing supply with the market demand.
2. to strengthen the practice of nursing based on education and experience of the nurses.
3. to improve the education of nurses to meet the changes in health care systems.
4. to establish efficient, flexible and accessible education systems.

Strategies to address these goals have resulted from data collection at various CIC sites. From these snapshots of local supply and demand, state data are compared with national

data and forecasting models are emerging. Elements for minimum data sets for supply and demand have been identified and are in various stages of implementation by state boards of nursing. Coordination of these efforts with the US Department of Health and Human Services, Division of Nursing is also underway.

In the educational arena, the CIC project sites are attacking issues of educational mobility and articulation, competencies and skill sets for educational levels with reduction in duplication and recruitment of students, faculty and clinical placement sites. Online and distance education, articulation models and competency levels are now in place or in progress in many states.

Through CIC collaboratives, education and practice partnerships are resulting in regional solutions to the nursing supply and demand problem. The CIC national program office is active in regional, political and professional organization fronts to help provide information, to help establish policy and to avoid duplication of efforts (Rapson, 2001).

For the Maryland CIC project site, in addition to the data from the Nursing Education Survey, data were collected for 3 consecutive years on employer-projected needs. The existing articulation model is being reviewed and barriers to nursing education for both 2-year and 4-year programs are being identified. Data on the utilization of nurses in practice settings is also being evaluated. This information will be tested in the Maryland CIC forecasting model. The Maryland CIC has become a resource and a leader in providing nurse supply and demand data to the public, policy makers, employers and educators.

Implications for Further Research

Nursing workforce issues will not be resolved in the immediate future. Researchers should continue to gather data on the current status of the workforce and project future needs. Armed with solid research, employers, government agencies and concerned citizens can band together to recommend and implement solutions to the nursing shortage.

Tracking the employment trends of the aging nurse workforce will be needed to provide additional information related to the nursing shortage. The predominantly female nursing workforce has been employed primarily in the acute care settings of hospitals. Until recently, retirement benefits have not been a major concern of most employers of nurses. As more nurses reach the traditional age of retirement, it may not be desirable or possible to retire because of limited incomes. The manner in which retirement-age nurses respond to retirement should be interesting to follow.

As recommendations and solutions are implemented, evaluation of the effectiveness of interventions must be accomplished. Measurement of outcomes, specifically related to patients, must continue. Continued collection of data similar to the data in this study should occur. State Boards of Nursing and accrediting agencies are likely clearinghouses for obtain this information. Replication of this study, with an instrument more targeted toward gathering information and with specific instructions previously suggested for documenting the data, would produce additional valuable information regarding the nursing workforce.

Conclusions

The State of Maryland faces the same nursing workforce issues as nearly every other state. The Maryland nursing workforce is similar to the national nursing workforce, allowing generalizability and applicability of this research to other states with similar characteristics. Results of data in this research project have confirmed the existence of an aging faculty and a student enrollment that is not likely to meet the demand in both actual number and educational mix.

The amount of information available on nursing workforce has increased significantly over the span of this research project. New information, nationally and internationally, is presented almost daily as public awareness and government involvement has increased. Keeping in line with the nursing process, assessment, through continuing data collection and research, should continue. Solutions based on the current information need to be planned, implemented and evaluated. The time for action is now. To ensure an adequate supply of nurses for current and future demand, new strategies supplementing existing strategies must be developed. In an environment that has been, and will continue to be, significantly impacted by health maintenance organizations, managed care and governmental regulations and funding, nurses have the responsibility and opportunity to influence the health care environment. Armed with solid research, nurses can make a difference by collaborating with other health care providers, employers and policy makers to address the nursing shortage and to develop solutions for health care needs of the future.

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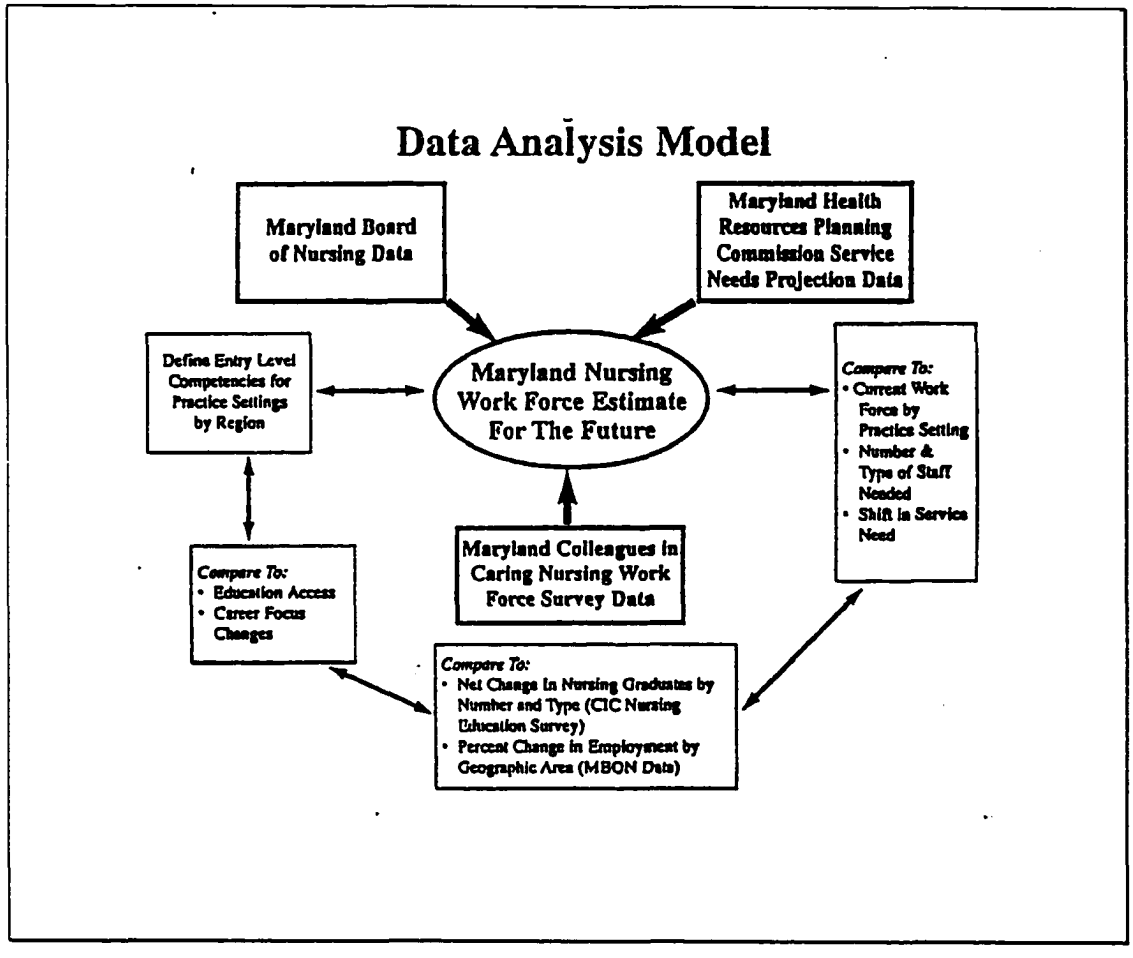
Appendix A



Appendix B

Maryland Colleagues In Caring:
Regional Collaboratives For Nursing Work Force Development

Kathryn V. Hall, RN, MS
Project Director

Susan Veise-Berry, RN, MS
Project Assistant

Maryland Nurses Foundation

849 International Drive
Suite 255
Linthicum, MD 21090

Phone: 410 / 859-3000
Fax: 410 / 859-3001

Dear Colleagues in Caring:

Enclosed is a ***Nursing Education Survey*** that we are requesting you to complete and return by **December 22, 1997.** The purpose for the survey is to gather consistent data on the status and plans of nursing education programs across Maryland.

Most of the data requested in this CIC *Nursing Education Survey* is also collected either by the National League for Nursing or the American Association of Colleges of Nursing. We are asking you to provide it again here to ensure consistency among all programs in the state.
All data will be reported in the aggregate and individual programs will not be identified.

The Maryland Colleagues in Caring Project will use this data in conjunction with information from the *Nursing Employer Survey* done several months ago. Results will be combined with other data from the Health Resources Planning Commission and the Board of Nursing to project nursing workforce needs and the ability of the state's educational infrastructure to meet education and training requirements.

If you have any questions about [redacted]

Thank you for your support to the Colleagues in Caring Project.

Sincerely,

[redacted]
Kathryn V. Hall, MS,RN,CNAA
Project Director

Colleagues in Caring: Regional Collaboratives For Nursing Work Force Development is a program supported by The Robert Wood Johnson Foundation and administered by the American Association of Colleges of Nursing.

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

1. PLEASE CHECK THE ONE ITEM THAT BEST DESCRIBES THE ADMINISTRATIVE CONTROL OF PROGRAM FOR WHICH YOU ARE REPORTING

   University or Four Year College _____
   Community or Junior College _____
   Tech or Specialized Institution _____
   Single Purpose Institution _____
   Hospital _____
   Other (Please Specify) _____
   _____

2. PLEASE INDICATE COUNTY WHERE PROGRAM IS LOCATED _____

3. PLEASE CHECK THE BEST DESCRIPTION OF YOUR PROGRAM

   Public _____
   Private (Independent) _____
   Private (Religious) _____

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

4. FACULTY PROJECTIONS

Projecting one and three years into the future, to what extent do you anticipate that your needs will require (circle one level for each category)

	1 YEAR PROJECTION Fewer More	3 YEAR PROJECTION Fewer More
Full-Time Nurse Faculty	1 2 3 4 5	1 2 3 4 5
Full-Time Non-Nurse Faculty	1 2 3 4 5	1 2 3 4 5
Part-Time Nurse Faculty	1 2 3 4 5	1 2 3 4 5
Part-Time Non-Nurse Faculty	1 2 3 4 5	1 2 3 4 5

5. CURRENT FACULTY

Please indicate your answers by using the following codes to complete full-time and part-time faculty charts

Ethnicity
1. American Indian or Alaskan Native
2. Asian or Pacific Islander
3. Black, Non-Hispanic
4. Hispanic
5. White, other than Hispanic

Highest Level of Education
1. Associate Degree
2. Diploma
3. Bacc. In Nursing
4. Bacc. In Other Field
5. Master's in Nursing
6. Master's in Other Field
7. Doctorate in Nursing
8. Doctorate in (Other)

Area of Specialty
1. Adult
2. Community Health
3. Peds
4. OB/GYN
5. Psych/Mental Health
6. Administration/Mangement
7. Other

Teaching Responsibility
1. Didactic
2. Clinical
3. Both

Program Level
1. Undergraduate
2. Graduate
3. Both

Status
1. Nurse
2. Non-Nurse

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

5a. FULL-TIME FACULTY

Please indicate your answers by using the codes shown on the previous page.
Copy this sheet as needed to provide information for all full-time faculty.

INITIALS	YEAR OF BIRTH	GENDER	ETHNICITY (CODE)	HIGHEST LEVEL OF EDUCATION (CODE)	AREA OF SPECIALIZATION (CODE)	TEACHING RESPONSIBILITY (CODE)	PROGRAM LEVEL (CODE)	STATUS (CODE)

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

5b. PART-TIME FACULTY

Please indicate your answers by using the codes shown on the previous page.
Copy this sheet as needed to provide information for all part-time faculty.

INITIALS	YEAR OF BIRTH	GENDER	ETHNICITY (CODE)	HIGHEST LEVEL OF EDUCATION (CODE)	AREA OF SPECIALIZATION (CODE)	TEACHING RESPONSIBILITY (CODE)	PROGRAM LEVEL (CODE)	STATUS (CODE)

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

6. **STUDENT DATA FOR THE LAST 5 YEARS**

Please complete the following information for each type of program that your institution offers. Use the following list to identify your program. Please make copies and complete this section separately for each program type.

LPN	MASTERS
ADN	POST MASTERS CERTIFICATE
BSN	DOCTORAL
RN-BSN	

7. TYPE OF PROGRAM: _____

RACIAL BACKGROUND	1ST YEAR ENROLLMENTS 8/1/92-7/31/93	TOTAL GRADUATES 8/1/92-7/31/93	TOTAL ENROLLMENTS 10/15/93
American Indian or Alaskan Native			
Asian or Pacific Islander			
Black, Non-Hispanic			
Hispanic			
White, other than Hispanic			
TOTAL			
Number of Male Students (from above totals)			

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

TYPE OF PROGRAM: _____

RACIAL BACKGROUND	1ST YEAR ENROLLMENTS 8/1/93-7/31/94	TOTAL GRADUATES 8/1/93-7/31/94	TOTAL ENROLLMENTS 10/15/94
American Indian or Alaskan Native			
Asian or Pacific Islander			
Black, Non-Hispanic			
Hispanic			
White, other than Hispanic			
TOTAL			
Number of Male Students (from above totals)			

TYPE OF PROGRAM: _____

RACIAL BACKGROUND	1ST YEAR ENROLLMENTS 8/1/94-7/31/95	TOTAL GRADUATES 8/1/94-7/31/95	TOTAL ENROLLMENTS 10/15/95
American Indian or Alaskan Native			
Asian or Pacific Islander			
Black, Non-Hispanic			
Hispanic			
White, other than Hispanic			
TOTAL			
Number of Male Students (from above totals)			

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

TYPE OF PROGRAM: _____

RACIAL BACKGROUND	1ST YEAR ENROLLMENTS 8/1/95-7/31/96	TOTAL GRADUATES 8/1/95-7/31/96	TOTAL ENROLLMENTS 10/15/96
American Indian or Alaskan Native			
Asian or Pacific Islander			
Black, Non-Hispanic			
Hispanic			
White, other than Hispanic			
TOTAL			
Number of Male Students (from above totals)			

TYPE OF PROGRAM: _____

RACIAL BACKGROUND	1ST YEAR ENROLLMENTS 8/1/96-7/31/97	TOTAL GRADUATES 8/1/96-7/31/97	TOTAL ENROLLMENTS 10/15/97
American Indian or Alaskan Native			
Asian or Pacific Islander			
Black, Non-Hispanic			
Hispanic			
White, other than Hispanic			
TOTAL			
Number of Male Students (from above totals)			

COLLEAGUES IN CARING
NURSING EDUCATION SURVEY

8. PROJECTED NUMBER OF NEW STUDENTS TO ENROLL BY PROGRAM

	ACADEMIC YEAR 1998	1999
LPN		
ADN		
RN		
RN-BSN		
MASTERS		
POST MASTERS CERTIFICATE		
DOCTORAL		

9. OPTIONAL

NAME OF PERSON COMPLETING SURVEY _____
TITLE _____
NAME OF SERVICE SETTING _____
EMPLOYMENT ADDRESS _____
_____
PHONE NUMBER _____

PLEASE RETURN THIS SURVEY BY *FRIDAY, NOVEMBER 19, 1997* TO:
Colleagues in Caring–Maryland Project
c/o Maryland Nurses Foundation
849 International Drive, Suite 255
Linthicum, MD 21090
or [redacted]

Appendix C

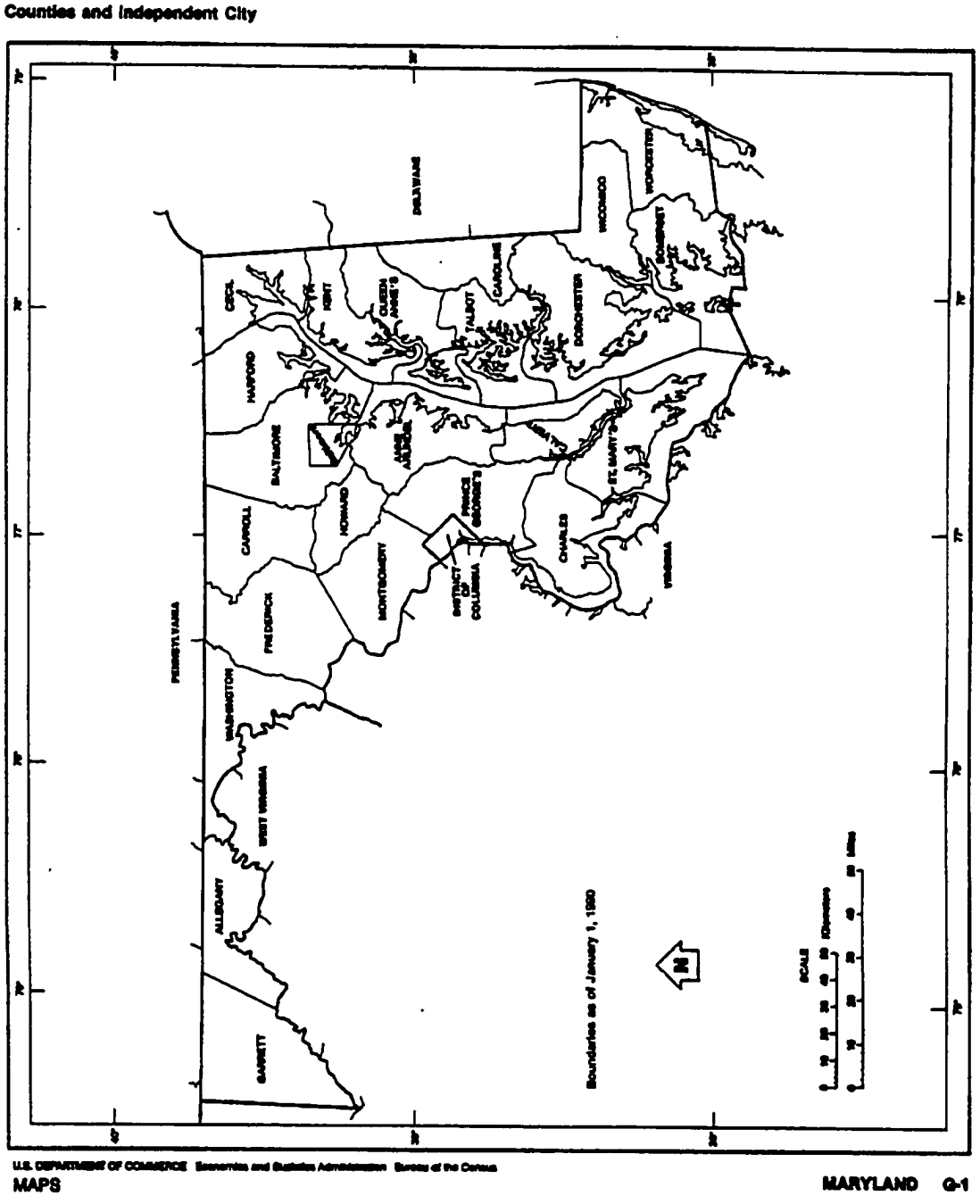
MARYLAND SCHOOLS OF NURSING

Name and Address	County	Region	Program Type	Administrative
Allegany College 12401 Willowbrook Cumberland, Maryland 21502	Allegany	Western Maryland	Community or Junior College	Public
Frederick Community College 7932 Opossumtown Pike Frederick, MD 20701	Frederick	Western Maryland	Community or Junior College	Public
Hagerstown Junior College 751 Robinwood Drive Hagerstown, MD 21740	Washington	Western Maryland	Community or Junior College	Public
Baltimore City Community College 2901 Liberty Heights Avenue Baltimore, MD 21215	Baltimore City	Central Maryland	Community or Junior College	Public
Catonsville Community College 800 S. Rolling Road Baltimore, MD 21228	Baltimore	Central Maryland	Community or Junior College	Public
College of Notre Dame 4701 North Charles St. Baltimore, Maryland 21210	Baltimore City	Central Maryland	University or Four Year College	Private Religious
Coppin State College 2500 W. North Ave. Baltimore, MD 21216	Baltimore City	Central Maryland	University or Four Year College	Public
Essex Community College Essex, Maryland 21237	Baltimore	Central Maryland	Community or Junior College	Public
Harford Community College 401 Thomas Run Road Bel Air, MD 21015	Harford	Central Maryland	Community or Junior College	Public
Howard Community College 10901 Little Patuxent Parkway Columbia, MD 21044	Howard	Central	Community or Junior College	Public
Johns Hopkins University 525 N. Wolfe St. Baltimore, MD 21205	Baltimore City	Central Maryland	University or Four Year College	Private Independent
Towson University 8000 York Rd. Towson, Maryland 21201	Baltimore	Central Maryland	University or Four Year College	Public
University of Maryland 655 West Lombard Street Baltimore, MD 21201	Baltimore City	Central	University or Four Year College	Public
Villa Julie College Green Spring Valley Road Stevenson, MD 21153	Baltimore	Central	University or Four Year College	Private Religious
Cecil Community College 1000 North East Road North East, MD 21901	Cecil	Eastern Shore	Community or Junior College	Public

McQueen Gibbs Willis 219 S. Washington St. Easton, MD 21601	Talbot	Eastern Shore	Hospital	Private Independent
Salisbury State University 1101 Camden Ave. Salisbury, Maryland 21801	Wicomico	Eastern Shore	University or Four Year College	Public
Wor-Wic Community College PO Box 800 Cambridge, MD 21613	Dorchester	Eastern Shore	Community or Junior College	Public
Anne Arundel Community College 101 College Parkway Arnold, MD 21012	Anne Arundel	Southern Maryland	Community or Junior College	Public
Bowie State University 14000 Jericho Park Road Bowie, MD 20755	Prince Georges	Southern Maryland	University or Four Year College	Public
Charles County Community College	Charles	Southern Maryland	Community or Junior College	Public
Prince Georges Community College 301 Largo Road Largo, MD 20774	Prince Georges	Southern Maryland	Community or Junior College	Public
Columbia Union College Takoma Park, MD 20912	Montgomery	Montgomery	University or Four Year College	Private Religious
Montgomery College Takoma & Fenton St. Takoma Park, MD 20012	Montgomery	Montgomery	Community or Junior College	Public

Note: Satellite and Distance Learning Programs are not listed separately.

Appendix D



U.S. DEPARTMENT OF COMMERCE Economics and Statistics Administration Bureau of the Census

MAPS

MARYLAND G-1

Appendix E

George Mason University

Fairfax, Virginia 22030-4444
[redacted]

July 24, 2000

MEMORANDUM

TO: Virginia S. Pichler
College of Nursing and Health Sciences

FROM: Margaret Hanson
Institutional Review Board Coordinator

SUBJECT: Nursing Workforce Issues: Nursing Student Enrollment and Faculty Trends in the State of Maryland

LOG NO: 2966

Under George Mason University (GM) procedures, the above cited research project is exempt from review by the GM Human Subjects Review Board (HRSB) since it falls under the DHHS Exempt Category 4. Please note that any further modification in your protocol requires review by this office.

Please note that any adverse effects on participants or data confidentiality and/or any modification in your protocol must be reported to the GM Office of Sponsored Programs. GM is bound by the ethical principles and guidelines for the protection of human subjects in research contained in The Belmont Report. Even though your data collection procedures are exempt from review by the GM HRSB, GM expects you to conduct your research according to the professional standards in your discipline and the ethical guidelines mandated by federal regulations.

Thank you for cooperating with the University by submitting your research project for review. Please call me at [redacted] if you have any questions.

cc: Dr. Jean Moore

Appendix F

Maryland Colleagues In Caring:
Regional Collaboratives Nursing Work Force Development

Kathryn V. Hall, RN, MS
Project Director

Susan Veine-Berry, RN, MS
Project Assistant

Maryland Nurses Foundation

849 International Drive
Suite 255
Linthicum, MD 21090

Phone: 410 / 859-3000
Fax: 410 / 859-3001

June 25, 1999

Ginny Pichler, RN
[redacted]

Dear Ms. Pichler:

This letter authorizes your use of data collected as part of the Maryland Colleagues in Caring Nursing Education Survey for purposes of your doctoral studies at George Mason University College of Nursing and Health Science. You also have permission to use the results generated from analysis of this data that you were directly involved in as a member of the Project Steering Committee. You will need to cite the Robert Wood Johnson Foundation, Maryland Colleagues in Caring project in using this material and provide the Maryland project office with any findings or recommendations from your analysis.

Should you need any additional documentation of release, please do not hesitate to contact me.

[redacted]
Kathryn V. Hall
Project Director

Colleagues in Caring: Regional Collaboratives For Nursing Work Force Development is a program supported by The Robert Wood Johnson Foundation and administered by the American Association of Colleges of Nursing.

Curriculum Vitae

Virginia Howells Pichler received a diploma in Nursing from Grant Hospital School of Nursing in Columbus, Ohio. She later received a Bachelor of Science in Nursing from Ohio University, Athens, Ohio and a Master of Arts with a Nurse Educator Specialization from Hood College, Frederick, Maryland. Mrs. Pichler's clinical nursing experience focuses on critical care and emergency nursing in both the acute care and academic environments.