DOCUMENT RESUME

ED 449 698 HE 033 697

TITLE	National Advisory Council on Nurse Education and Practice Report to the Secretary of the Department of Health and Human Services on the Basic Registered Nurse Workforce.
INSTITUTION	National Advisory Council on Nurse Education and Practice, Rockville, MD.
PUB DATE	2000-00-00
NOTE	53p.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Evaluative (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Government Role; Higher Education; Labor Needs; *Labor Supply; *Nurses; Nursing Education; Occupational Surveys

ABSTRACT

The National Advisory Council on Nurse Education and Practice (NACNEP) initiated an examination of basic registered nurse workforce issues in December 1994. NACNEP took into account the environment in which registered nurses (RNs) would practice, the appropriate educational qualifications needed, and the status of the registered nurse population in relation to future needs. NACNEP then identified the steps the federal government should take to ensure the availability of an appropriately qualified RN workforce to serve the future health care needs of the population. This report presents their findings and recommendations. Following a list of NACNEP members and an executive summary, the report's contents are: (1) background (introduction, roles for nurses in the future, implications for nursing education, implications for the registered nurse workforce, conclusion); and (2) policy issues, proposed goals, and options (restructure basic RN workforce, ensure an adequate supply of RNs, prepare existing RN workforce, enhance ability of RN workforce to meet challenges of cultural diversity, examine effect of functions of RNs in provision of quality health care to population). The report includes numerous figures and tables. Appendices include the charter of NACNEP and data on the future supply of and requirements for registered nurses. (EV)

National Advisory Council On Nurse Education and Practice

Report to the Secretary of the Department of Health and Human Services on the Basic Registered Nurse Workforce

U.S. Department of Health & Human Services

HRSA

Health Resources & Services Administration

Bureau of Health Professions

Division of Nursing

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National Advisory Council on Nurse Education and Practice

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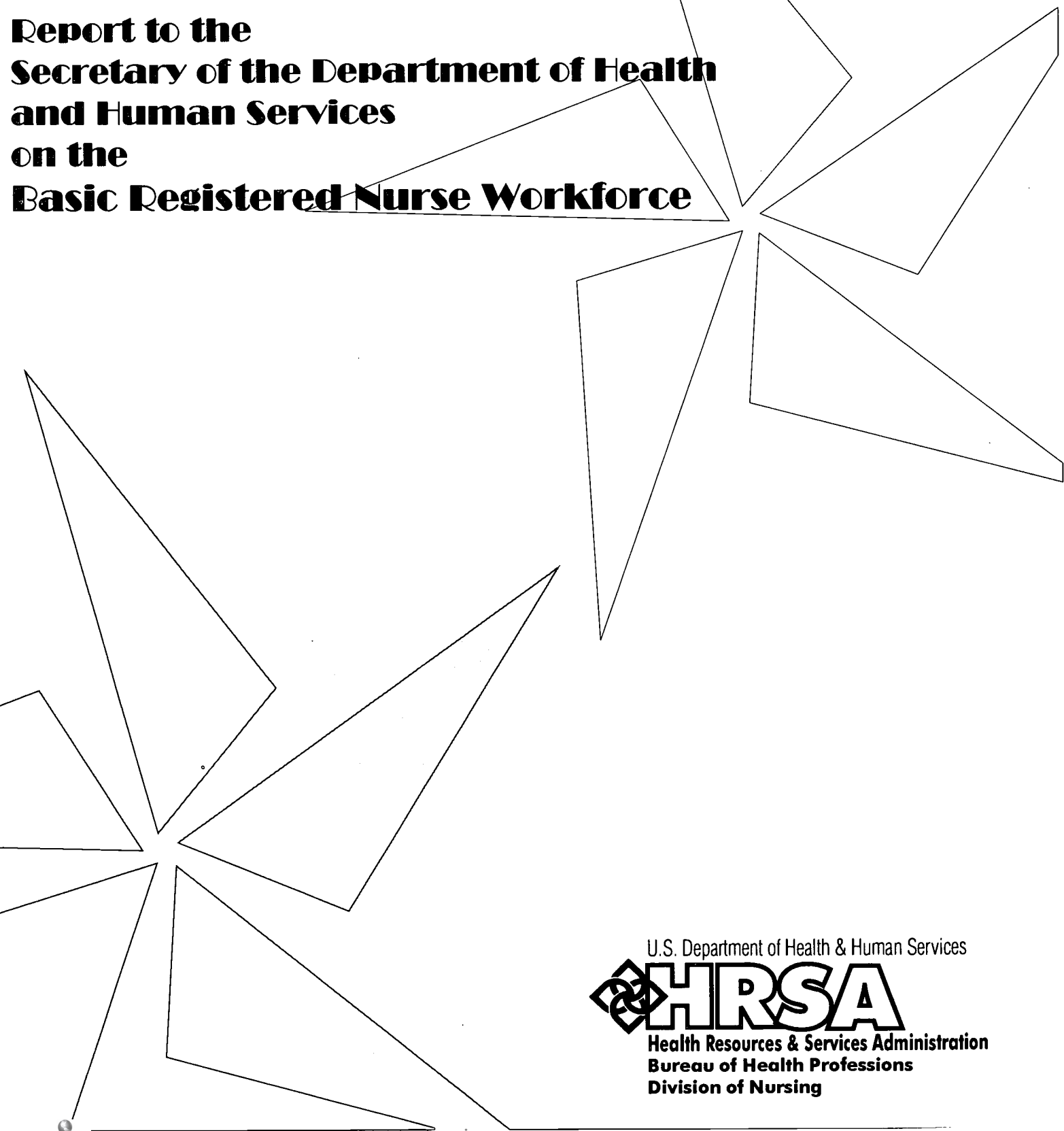

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EXECUTIVE SUMMARY

The National Advisory Council on Nurse Education and Practice (NACNEP) initiated an examination of basic registered nurse workforce issues in December 1994. NACNEP took into account the environment in which registered nurses(RNs) would practice; the appropropriate educational qualifications needed, and the status of the registered nurse population in relation to future needs. NACNEP then identified the steps the Federal government should take to ensure the availability of an appropriately-qualified RN workforce to serve the future health care needs of the population.

The examination of the environment in which registered nurses would practice made it clear that the focus of the health care delivery system is changing the nature of the practice and responsibilities of the RNs. Earlier emphases on acute care with substantial reliance on hospital-based care is shifting to a focus on disease prevention and modification of lifestyles. This shift promotes maintenance of individuals at home and treatment in ambulatory settings. At the same time significant therapeutic and technological advances have led to increased complexity in caring for and treating individuals with a variety of health conditions.

In looking toward the future, while it is anticipated that the hospital will remain the major employer of RNs, RN practice roles in hospitals are substantially changing. In the future health care delivery environment more nurses will be focusing on primary care and health promotion. The expansion of the country's older population will require more nurses to manage chronic conditions.

The nursing role of the future calls for registered nurses to manage care along a continuum; to work as peers in interdisciplinary teams; and to integrate clinical knowledge with knowledge of community resources. The increased complexity of the scope of practice for registered nurses requires a workforce that has the capacity to adapt to change. It requires critical thinking and problem solving skills; a sound foundation in a broad range of basic sciences; knowledge of behavioral, social and management sciences; and the ability to communicate and analyze data. Among the three primary types of entry level nursing education (diploma, associate degree, baccalaureate), the baccalaureate education with its broader, more scientific curriculum best fulfills these requirements and provides a sound foundation for the variety of nursing positions. Baccalaureate education provides a base from which nurses move into graduate education to fulfill the expanding needs for nurses in advanced practice and management of complex health care systems.

Only 25 percent of the existing registered nurse population received their initial preparation in a baccalaureate program. Even among the most recent graduates only 31 percent received their initial preparation in a baccalaureate program. Fifty-nine percent of these recent graduates came from associate degree programs and 10 percent, from diploma programs.

There was a 20 percent decrease in the number of employed RNs who were less than 30 years old between 1988 and 1992 despite the increase in the total number of employed nurses. The infusion of "second career" individuals into nursing is a factor in the aging of the nurse population. Significant numbers of those enrolled in associate degree programs do so after working in other fields or attending to life responsibilities. Generic baccalaureate program graduates tend to be younger than those from associate degree programs. However, the influence of the "second career" individuals is noticeable in the baccalaureate programs as well.

Basic nursing education is the stepping stone from which a substantial number of nurses advance their careers through further education. About 14 percent of graduates from associate degree programs have subsequently obtained a baccalaureate degree. The average age of the post-RN baccalaureate program graduate is nine years older than that of the generic baccalaureate graduate thus significantly decreasing their work life at that level.

The generic baccalaureate degree is the most direct route to the master's degree. Nurses with generic baccalaureate degrees are the major source of students for master's and doctoral programs. Fifty-two percent of the RNs whose nursing educational level was that of a master's or doctoral degree were generic baccalaureate nursing program graduates.

In looking toward the future, if graduations continue along current trends, it is anticipated that the supply of RNs will increase in the future. About midway in the first decade of the 21st century this increase will be at a slower pace than the increase in the country's population as a whole. Comparisons show that the number of nurses in the supply will be in substantial balance with requirements, at least through the first decade of the next century. However, if the present educational picture continues in the future, the majority of the nurse workforce will continue to have less than a baccalaureate degree.

About 9 percent of the 2.2 million registered nurses in March 1992 came from racial/ethnic minority backgrounds. This proportion is substantially less than the proportion of minorities in the country's population. Thus, minorities are underrepresented in nursing. If the current trends in the graduation of minorities from nursing educational programs continue in the future, it is highly unlikely that there will be a significant increase in the proportion of registered nurses from racial/ethnic minority backgrounds.

NACNEP believes that the Federal government has a significant role in planning and developing the basic RN workforce and specifically in assuring an adequate supply and distribution of qualified nursing personnel to meet the health care needs of the nation in the 21st century. In this regard NACNEP identified the issues involved in assuring the availability of the appropriate registered nurse supply. They suggested policy goals for the use of Federal government resources and identified policy options to be used in accomplishing these goals. The following goals were set by NACNEP:

Restructure the basic registered nurse workforce.
Federal resources should be targeted at increasing the overall number and overall percentage of baccalaureate-prepared nurses making up the basic nurse workforce. A policy target should be adopted to achieve a basic nurse workforce in which at least two-thirds hold baccalaureate or higher degrees in nursing by the year 2010.

Ensure an adequate supply of registered nurses.
Federal resources should be targeted to encouraging earlier entry into the profession, supporting full-time, rather than extended part-time study, and encouraging direct entry into generic baccalaureate programs.

Prepare the existing registered nurse workforce to meet current needs.
The Federal government should support the assessment of activities needed for upgrading the knowledge, skills, and abilities of the existing registered nurse workforce to match practice requirements of a reformed health care system.

Federal resources and strategies should be focused on areas of continuing education for nursing that are of national significance and extend beyond individual institutional or State boundaries.

The Federal government should support activities to increase the basic and continuing knowledge and skills of nurses in the area of environmental health.

Enhance the ability of the registered nurse workforce to meet the challenges of cultural diversity in delivery of health care.
Federal resources should be used to assure that the composition of the basic nurse workforce is reflective of the overall society as an important vehicle for enabling access to, and the delivery of, appropriate nursing services.

The Federal government should support educational activities to increase the cultural sensitivity and cultural competence in nursing students.

Examine the effect of functions of registered nurses in the provision of quality health care.
The Federal government should support efforts to increase knowledge about the relationship between the organization and delivery of nursing care and patient care outcomes.

SECTION I
BACKGROUND

Introduction

The National Advisory Council on Nurse Education and Practice (NACNEP) was established by Title VIII of the Public Health Service Act to advise the Secretary of Health and Human Services on the programs of the Nurse Training Act. As part of its review of the Nurse Training Act, NACNEP turned its attention to the shaping of the registered nurse(RN) workforce to meet the public's health care needs. NACNEP's purposes under its charter were broadened in 1994 to explicitly meet this responsibility for advising the Secretary on ways to enhance the health of the public through the development of the registered nurse workforce (See Appendix A).

Proposals for national health care reform in 1993 led NACNEP to examine the workforce needs for nurse practitioners and nurse-midwives to respond to the development of a health care system that focuses on primary care and is accessible to all the population.[1] Subsequently, a landmark study was undertaken jointly by NACNEP and the Council on Graduate Medical Education to review and make recommendations on integrated requirements for the delivery of primary care by primary care physicians, physician assistants, nurse practitioners and certified nurse-midwives.[2]

In December 1994, NACNEP initiated its examination of basic registered nurse workforce issues. NACNEP members divided into two working subgroups. One group looked at the underlying issues in the educational base for nursing practice and the other at issues pertaining to the practice of public and community health nursing. Both subgroups identified similar underlying issues regarding the preparation and composition of the registered nurse workforce. The examination of these issues led NACNEP, functioning as "a committee of the whole," to make an initial assessment of the status of nursing resources in the country today.

NACNEP took into account the environment in which the registered nurses would practice, the appropriate educational qualifications needed, and the status of the registered nurse population related to future needs. This assessment gave rise to a series of recommendations designed to encourage significant changes in the development of the future nurse workforce. NACNEP set forth the steps the Federal government should take to ensure the availability of an appropriately-qualified registered nurse workforce to serve the future health care needs of the population.

Roles for Nurses in the Future

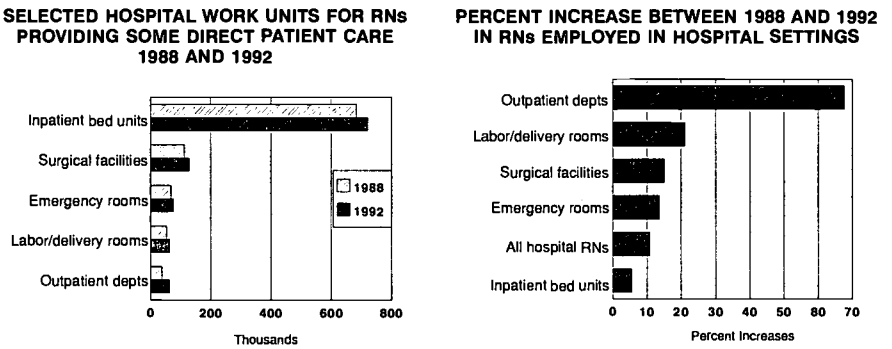
The health care delivery system in the United States today is undergoing a major transition. The earlier emphasis on acute care with substantial reliance on hospital-based care settings is shifting to a focus on disease prevention and modification of lifestyles. This shift promotes maintenance of individuals at home and treatment in ambulatory care settings. At the same time significant therapeutic and technological advances have led to increased complexity in caring for and treating individuals with a variety of health conditions.

The restructuring of the health care system is taking place within an environment in which the population itself is undergoing significant revisions. The United States Bureau of the Census projects that by the end of the first quarter of the 21st century, 38 percent of the population will come from racial/ethnic minorities. By the middle of the 21st century almost half the population will be from racial/ethnic minority groups. Dramatic increases have occurred during the 20th century in the number of elderly, especially those 85 years and older. Demographic projections show that the average age of the population will be older than it is today.[3] All these changes have a profound effect on the roles of registered nurses within the system.

Historically the vast majority of employed registered nurses provided nursing services in hospitals. Acuity levels of hospitalized patients are increasing and average length of stay is decreasing. Although the number of beds has decreased, hospital outpatient visits have substantially increased. Over the past decade hospital beds decreased 15 percent and outpatient visits increased 64 percent.[4] The overall number of registered nurses working in hospitals increased 11.6 percent between 1988 and 1992, but those working in inpatient bed units only increased 5.5 percent. Although the nurses providing care in inpatient units far outnumbered those in outpatient departments in hospitals, the number of registered nurses in outpatient departments increased 68 percent between 1988 and 1992. [5](See Figure 1)

Figure 1

WORK UNITS OF HOSPITAL REGISTERED NURSES

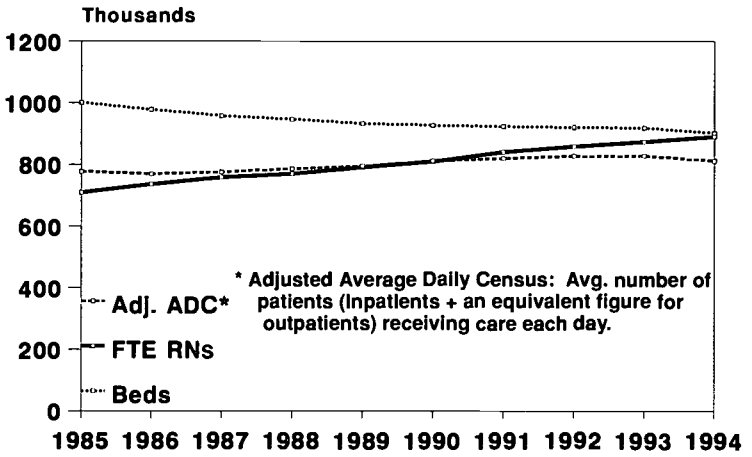


Source: Division of Nursing, National Sample Surveys of RNs.

The hospital setting is still the place of employment for about two-thirds of the registered nurse supply. Data from the American Hospital Association show that the overall number of full-time equivalent registered nurses in community hospitals continues to increase.[6] (See Figure 2) Furthermore, it is anticipated that hospitals will remain the major employer in the future.(See Figure 3) However, the nature of the practice and the responsibilities of registered nurses in hospitals are substantially changing.

Figure 2

FULL-TIME EQUIVALENT REGISTERED NURSES EMPLOYED IN COMMUNITY HOSPITALS, 1985-1994

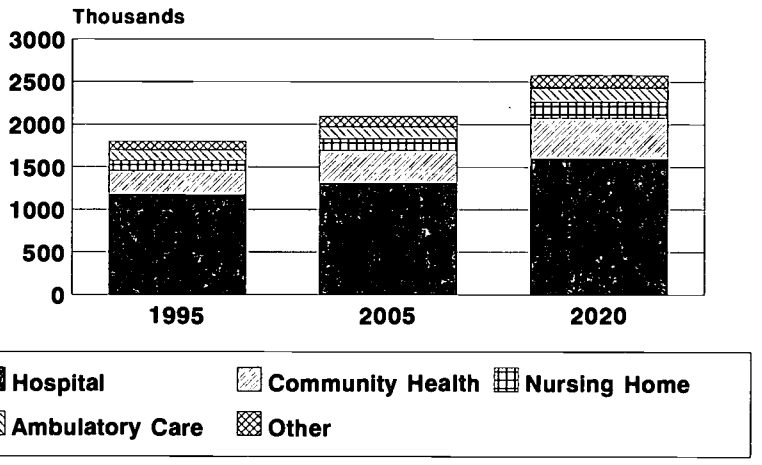


Source: AHA, Hospital Statistics.

In addition, in the institutional setting of nursing homes, the nature of the care requirements is also undergoing change. For example, the Health Care Financing Administration stated in a report on Medicare

Figure 3

PROJECTED REQUIREMENTS FOR FULL-TIME EQUIVALENT REGISTERED NURSES, 1995-2020



Source: Projections of Division of Nursing, 1996.

that a greater variety of more technically advanced services are being provided in nursing homes. The report indicates that the number of Medicare admissions requiring rehabilitative services increased 82 percent from 1990 to 1993.[7]

As an increasing amount of health care is provided outside the structured, institutional environment, more nursing care is given within the community. In particular, the number of registered nurses in home health care has shown rapid expansion. Between 1988 and 1992, the number increased 74 percent, from 53,709 to 93,271.[8] Additionally, more nurses will be focusing on primary care and health promotion as the country changes its health care priorities to those of early detection and disease prevention. At the same time, the expansion of the country's older age population will require more nurses to manage chronic conditions.

Implications for Nursing Education

The nursing role of the future calls for registered nurses to manage care along a continuum, to work as peers in interdisciplinary teams, and to integrate clinical knowledge with knowledge of community resources. All aspects of the role are directed toward cost-effective, good quality of care. In order to better serve the population of the future, more cultural sensitivity is required as the diversity of the population increases.

The basic education of registered nurses should establish a sound foundation for providing nursing services along the continuum of care needs. It must prepare nurses for clinical decision making and for management and leadership. It should be the base from which nurses move into graduate education to fulfill the expanding needs for nurses in advanced practice and in management of complex health care systems.[9, 10]

The increased complexity of the scope of practice for registered nurses requires a workforce that has the capacity to adapt to change. It requires the critical thinking and problem solving skills that are enhanced by a liberal arts education. Nursing clinical problem solving and differential diagnoses require a sound foundation in a broad range of basic sciences. Increasingly difficult social and economic circumstances require knowledge of behavioral, social and management sciences. Good oral and written skills are required to communicate observations, analyze data from a variety of sources (physical, behavioral, social and political), and to assist patients in identifying and choosing from care options. A broad perspective and understanding of health and factors affecting health are needed by registered nurses to fill their roles in this reconstituted health care delivery system.

Among the three primary types of entry level nursing education (diploma, associate degree, baccalaureate), the baccalaureate education with its broader, more scientific curriculum best fulfills these requirements and provides the sound foundation for the variety of nursing positions. An examination of research projects on differences in performance among the three types of graduates concluded that baccalaureate degree nurses performed better than other graduates on measures of communication, knowledge, problem-solving, and teaching ability.[11]

Baccalaureate programs are more likely than are diploma or associate degree programs to contain specific curriculum related to community

health nursing. According to a study made by the National League for Nursing(NLN) in 1994, three-quarters of the baccalaureate programs offered specific courses in community-based care. In contrast, although the majority of the associate degree and diploma programs indicated that their curriculum included community-based care, the concept was most often integrated into a general course.[12]

Generic baccalaureate nursing education programs were far more likely than the other two types of programs to provide their students with clinical experiences in non-institutional community settings. Although baccalaureate programs were only 34 percent of all the basic programs, they represented 51 percent of the programs providing clinical experiences in visiting nurse agencies; 43 percent in home care; 48 percent in schools, and 47 percent in hospices. More than half the programs providing experiences in such settings as nursing centers, senior citizen centers, and homeless shelters were baccalaureate programs. It needs to be pointed out, however, that even among the baccalaureate programs, clinical placements were not prevalent in such settings as health departments, school health, community health centers, and homeless shelters.[13] Although the 1994 NLN study did not examine the length or scope of the community-based courses or experiences, an earlier NLN study showed that both public health content and non-institutional clinical practice time were far more extensive in baccalaureate programs than in the other programs.[14]

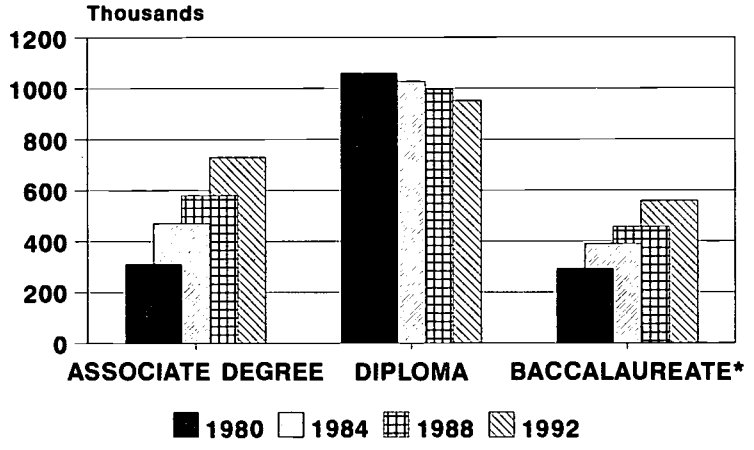
Implications for the Registered Nurse Workforce[15]

Basic Nursing Education

As of March 1992, there were an estimated 2,239,816 individuals with current licenses to practice as registered nurses in the United States. Only 25 percent of these RNs had received their basic nursing education in a baccalaureate program. About 42 percent of the 2.2 million nurses received their initial nursing education in a diploma program and 33 percent from an associate degree program.(See Figure 4) As might be expected, most of the registered nurse population had been in nursing for some time; 52 percent had graduated from their basic

Figure 4

BASIC NURSING EDUCATION OF REGISTERED NURSE POPULATION 1980-1992



* Includes some R.N.s whose basic nursing education was in a master's or doctoral program.

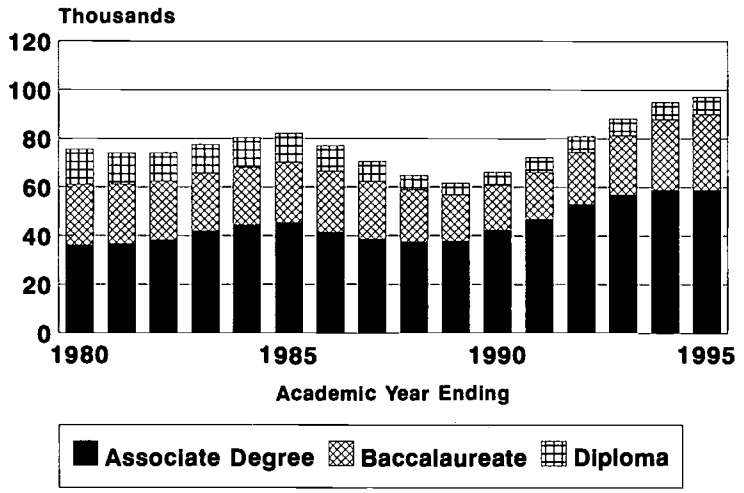
Source: Division of Nursing, National Sample Surveys.

nursing educational program prior to 1977. Diploma programs were far more prevalent in those earlier years and 82 percent of those who were initially educated in a diploma program graduated before 1977.

Rapid expansion of the number of associate degree programs led to a substantial number of nurses in the total nurse population who received their basic nursing education in an associate degree program.(See Figure 5) Fifty-nine percent of the 305,830 in the March 1992 registered nurse population who graduated from a basic nursing program within the five years preceding the study came from associate degree programs. In comparison, 31 percent graduated from baccalaureate programs and 10 percent from diploma programs.

Figure 5

GRADUATIONS FROM BASIC PROGRAMS PREPARING FOR RN LICENSURE, ACADEMIC YEARS 1979-80 THROUGH 1994-95



Source: National League for Nursing.

Individuals come into nursing through a variety of paths. About 17 percent of the 2.2 million registered nurse population of March 1992 either were licensed practical nurses or had prior nonnursing academic degrees before attending a basic nursing program to prepare for RN licensure.

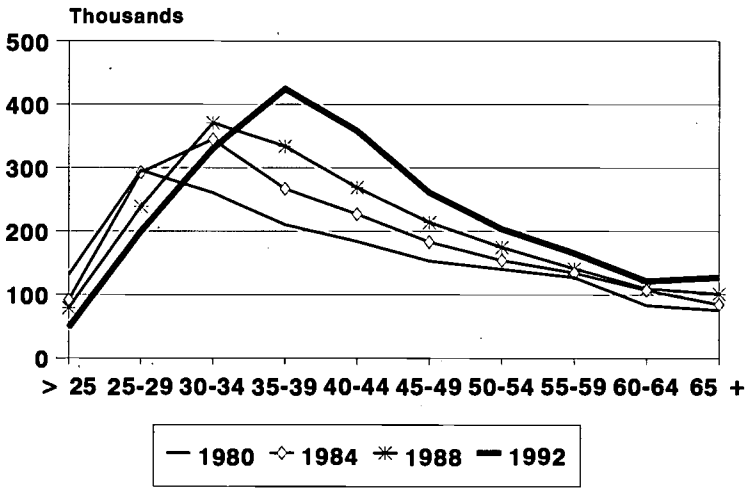
Here, too, the most recent graduates in the nurse population look different from those entering nursing earlier. Among the 305,830 most recent graduates, 32 percent were originally licensed practical nurses or had prior nonnursing academic degrees. About 84 percent of the nurses who had been licensed practical nurses attended associate degree programs to obtain the education needed for the RN license. However, while 58 percent of those with prior nonnursing degrees attended associate degree programs, a substantial proportion, about 32 percent, chose baccalaureate programs.

An important concern of nursing is the aging of the nurse population. The average age of all those with licenses to practice as registered nurses increased from 40.3 in 1980 to 43.1 in 1992. Despite the continuing increase in the total number of RNs during that 12-year

period, there was a substantial decrease in the number of nurses under the age of 30.(See Figure 6)

Figure 6

AGE DISTRIBUTION OF REGISTERED NURSE POPULATION, 1980-1992



Source: Division of Nursing, National Sample Surveys of R.N.s.

Today, those employed in all fields tend to be older than they were in prior times. The average ages of all employed workers in professional occupations and those of employed registered nurses were about the same in 1988 and 1992. The average age in 1988 for both all employed professional workers and employed registered nurses was 39.4 years. In 1992, professional workers averaged 40.7 years and registered nurses, 41 years.[16] Of consequence though, is the change in the number of employed workers who were under the age of 30. Among all employed professionals, the number less than 30 years old only decreased 8 percent between 1988 and 1992. The number of employed RNs in that age group decreased 20 percent between 1988 and 1992.

Another example can be seen in the changes in the age distribution of employed elementary and secondary school teachers, a group to which RNs are often compared. For 1988 and 1992, the average ages of the teachers were about the same as those of the employed RNs. However, the number of teachers under the age of 30 decreased only 3 percent in that period[17] compared to the 20 percent decrease for RNs. The infusion of "second career" individuals into nursing contributes to this change in the age distribution of RNs.

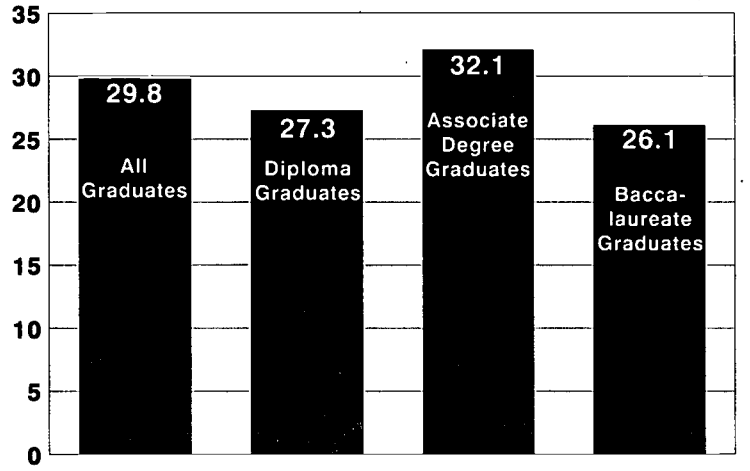
Significant numbers of those enrolled in associate degree programs do so after working in other fields or attending to other life responsibilities. Among the most recent graduates in the registered nurse population of March 1992, the average age at graduation from associate degree programs was 32.1 years.

Generic baccalaureate program graduates tend to be younger than those from associate degree programs. The baccalaureate graduates among the most recent graduates in the nurse population averaged 26.1

years at graduation.(See Figure 7) However, the influence of the "second career" individuals is noticeable in the baccalaureate programs as well. Among recent graduates, the average age at graduation of those who had prior academic degrees before attending the baccalaureate program was 31.2 years.

Figure 7

AVERAGE AGE AT GRADUATION FROM BASIC NURSING EDUCATIONAL PROGRAMS
(GRADUATIONS BETWEEN 1987 AND 1992)



Source: Division of Nursing, National Sample Survey of Registered Nurses, 1992

Post-RN Education

Basic nursing education is a stepping stone from which a substantial number of nurses advance their careers through further nursing education. About 18 percent of the 2.2 million nurse population in March 1992 achieved such academic degrees after becoming registered nurses.

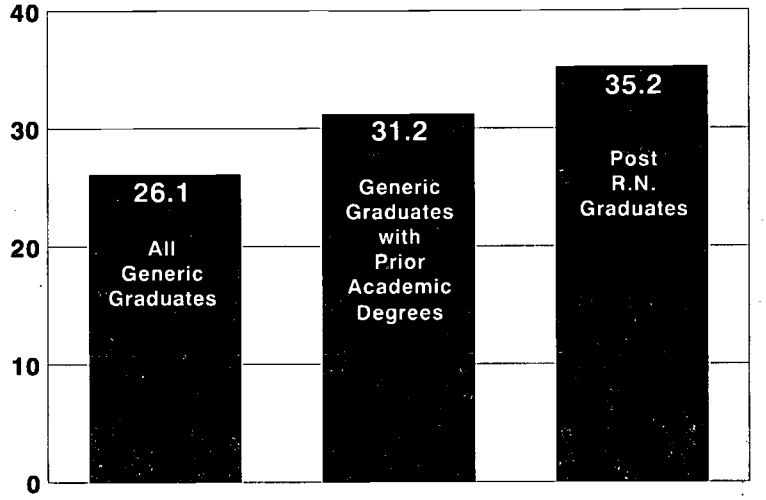
About 14 percent of the graduates from associate degree basic nursing education programs later obtained at least a baccalaureate degree. About 21 percent of RNs initially educated in diploma programs later achieved at least a baccalaureate degree. However, as one might expect, nurses who receive their initial education in an associate degree or diploma program and advance to a post-RN baccalaureate program are older on average at graduation than the generic baccalaureate degree graduates. Those who graduated from a post-RN baccalaureate program within the five-year period immediately preceding the March 1992 survey averaged 35.2 years at graduation. This is nine years older than the average graduation age of all generic baccalaureate graduates.(See Figure 8)

Generic baccalaureate graduates were more likely than associate degree graduates to go on for additional degrees after obtaining an RN. About 17 percent of them had done so. Since the next level to which these nurses might aspire is a master's degree, the generic baccalaureate is the most direct route to the master's degree. Indeed, nurses with generic baccalaureate degrees are the major source of students for

Figure 8

AVERAGE AGE AT GRADUATION FROM BACCALAUREATE NURSING PROGRAMS

(GRADUATIONS BETWEEN 1987 AND 1992)



Source: Division of Nursing, National Sample Survey of Registered Nurses, 1992

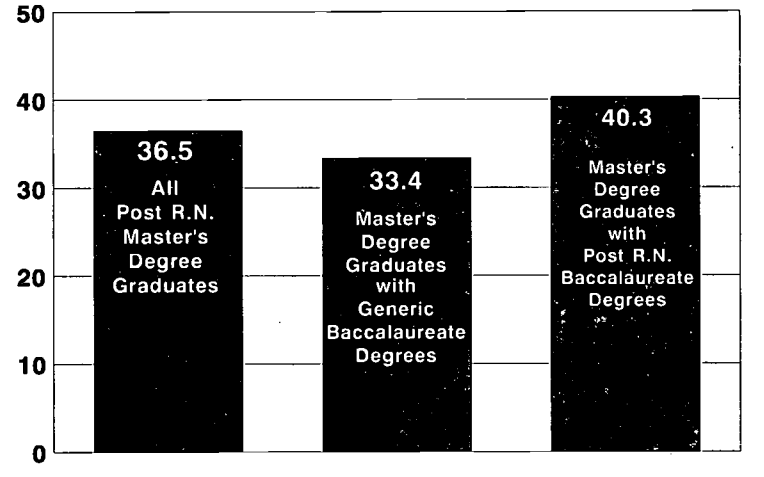
master's and doctoral programs. Although the generic baccalaureate educational program graduates were only 25 percent of the 2.2 million in the registered nurse population, they were 52 percent of those whose highest nursing educational level was that of a master's or doctoral degree.

Furthermore, the effect of having a generic baccalaureate degree on the advanced degree nurse's working life is very apparent. Those who graduated from a master's program within the five-year period immediately preceding the March 1992 survey had an average age of 33.4 years at graduation if they came from generic baccalaureate programs. On the other hand, those who started in nursing from an associate degree or diploma program averaged 40.3 years at graduation from a master's degree program. (See Figure 9).

Figure 9

AVERAGE AGE AT GRADUATION FROM POST R.N. MASTER'S DEGREE PROGRAMS

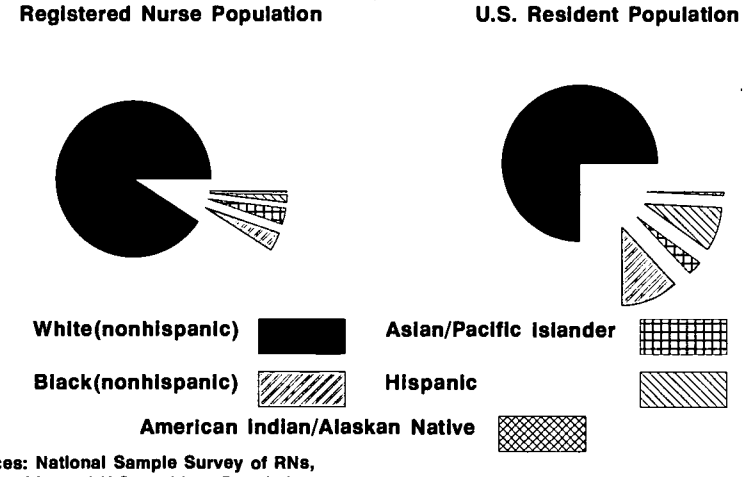
(GRADUATIONS BETWEEN 1987 AND 1992)



Source: Division of Nursing, National Sample Survey of Registered Nurses, 1992

Figure10

DISTRIBUTION BY RACIAL/ETHNIC GROUP



Sources: National Sample Survey of RNs, March 1992 and U.S Resident Population as of July 1, 1991.

Racial/Ethnic Background of Registered Nurses

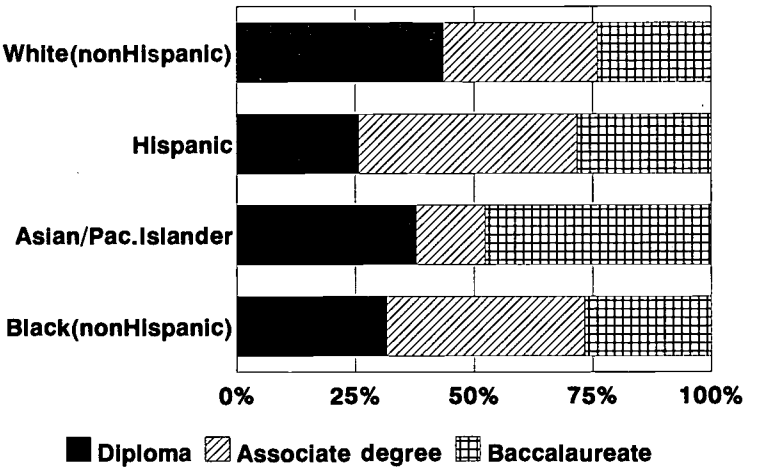
About 9 percent, or an estimated 206,835, of the 2.2 million registered nurses in March 1992 came from racial/ethnic minority backgrounds. Of these, 90,611 were black, nonHispanic; 75,785 were Asian/Pacific Islanders; 39,441, Hispanic, and 9,988, American Indian/Alaskan Native.

According to the data in the series of Sample Surveys of Registered Nurses, the growth in the number of registered nurses who come from racial/ethnic minority backgrounds has probably kept pace with the growth of the total number of nurses. However, the proportion of minorities among registered nurses is substantially less than the proportion of minorities in the country's population. About 25 percent of the resident population in the United States is from minority backgrounds.[18] (See Figure 10) Only in the case of those with Asian or Pacific Island backgrounds are there similar proportions in the RN population and the total U.S. population. It should be noted that in contrast to the other groups of nurses, the majority of the Asian and Pacific Islanders among registered nurses are foreign-trained rather than graduates of U.S. basic nursing education programs.

Based on data from the March 1992 National Sample Survey of Registered Nurses, the proportions of black, Hispanic, and American Indian/Alaskan Native registered nurses who graduated from generic baccalaureate programs were not very different from the proportion of white, nonHispanic, nurses. Asian/Pacific Island nurses, however, were most likely to have received their initial nursing education in a baccalaureate program. (See Figure 11) About 10 percent of the black nurses in March 1992 had master's or doctoral degrees as their highest nursing education level compared to about 8 percent of the white, nonHispanic, nurses and approximately 6 percent in each of the other racial/ethnic groups.

Figure11

DISTRIBUTION OF R.N.s IN EACH RACIAL/ETHNIC GROUP BY BASIC NURSING EDUCATION PREPARATION,MARCH 1992



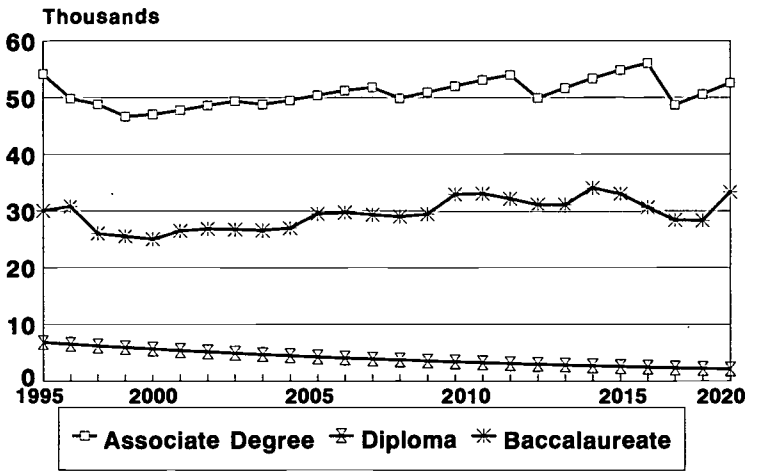
Source: National Sample Survey of R.N.s.

The Registered Nurse Population in the Future

If graduations from basic educational programs continue along current trends, it is anticipated that the supply of registered nurses will increase somewhat in the future.(See Figure 12) However, from about midway into the next decade, this increase will be at a slower pace than the increases in the country's population as a whole. Comparisons between the projections of the overall supply and the requirements for registered nurses show that the supply of registered nurses will be in substantial balance with requirements, at least through the first decade of the next century.(See Figure 13)

Figure12

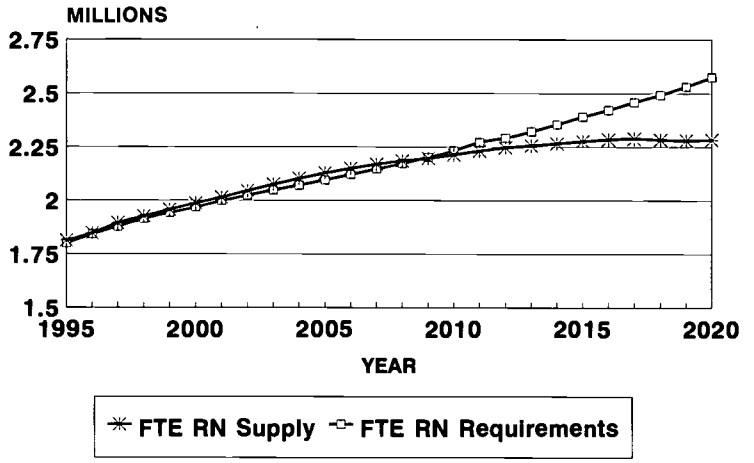
PROJECTED NUMBER OF GRADUATES FROM BASIC NURSING EDUCATION PROGRAMS, FOR ACADEMIC YEARS, 1994-95 TO 2019-20



Source:Projections by Division of Nursing, BHPr, HRSA, USDHHS,1996

Figure 13

PROJECTIONS OF SUPPLY AND REQUIREMENTS FOR FULL-TIME EQUIVALENT R.N.s, AS OF DECEMBER 31, 1995-2020



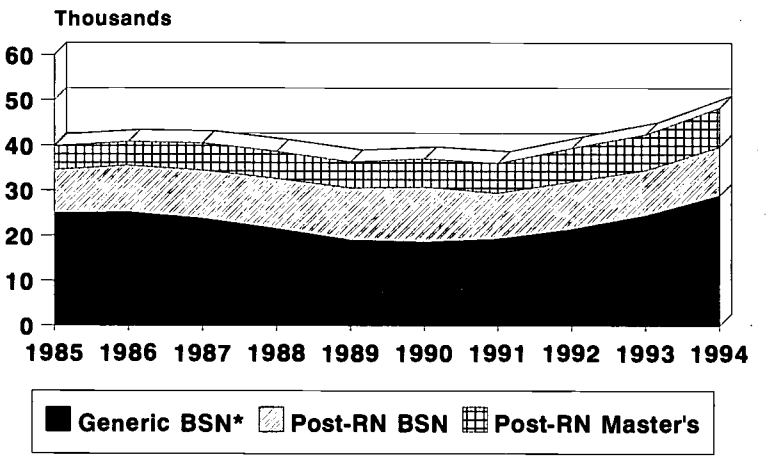
Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, 1996.

If baccalaureate and post-RN master's graduations continue along current trends (see Figure 14) the majority of the registered nurse workforce will continue to have less than a baccalaureate degree. In looking at the highest nursing education of the future supply, the Division estimates that by 2020, while there will be an increase in the proportion of the supply with a baccalaureate or higher degree, more than half of the supply, an estimated 51.4 percent, will have only a diploma or associate degree.(See Figure 15)

No estimates have been made of the number of registered nurses in the future supply that might come from racial/ethnic minority groups. However, an examination of recent data shows there has been no

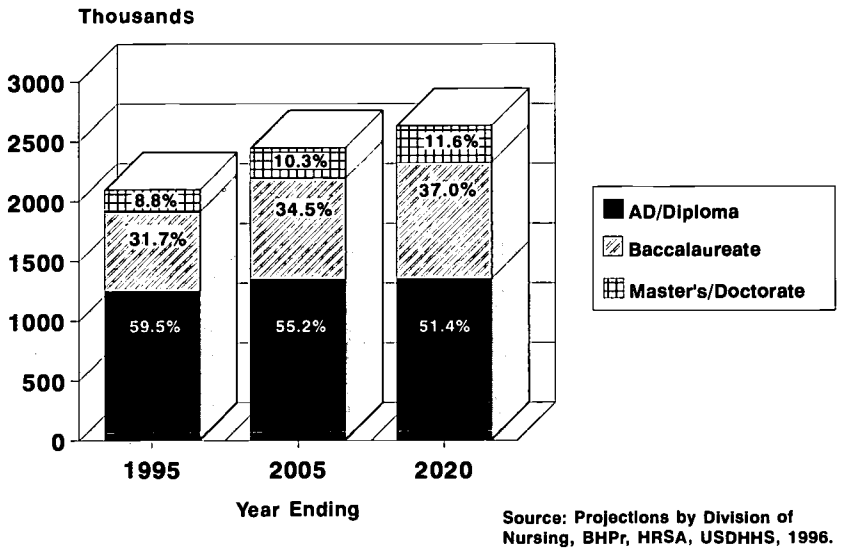
Figure 14

COLLEGIATE NURSING PROGRAM GRADUATES, BY TYPE OF GRADUATE, 1984-85 TO 1993-94



Source: National League for Nursing
*Includes generic master's and doctoral programs.

Figure 15



substantial increase in the proportion of annual basic nursing educational program graduates who come from minority groups.[19] Therefore, if the current graduation trends continue in the future, it will be highly unlikely that there will be a significant increase in the proportion of the registered nurse supply from racial/ethnic minority backgrounds.

Conclusion

The health care system in this country is undergoing rapid change that has major implications for nursing practice and the registered nurse workforce. The shift from the emphasis on hospital-based care to community-based care coupled with the increased complexity of acute care requires a paradigm shift in the focus of nursing education. The changing health care environment also impacts on the essential knowledge and skills needed by the current basic nurse workforce to provide appropriate care to the population. As a result, the educational mix of today's registered nurse workforce needs to be altered.

The Federal government has a significant role in planning and developing the basic RN workforce and specifically in assuring an adequate supply and distribution of qualified nursing personnel to meet the health needs of the nation in the 21st century.

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SECTION II
POLICY ISSUES, PROPOSED GOALS AND OPTIONS

Restructure Basic Registered Nurse Workforce to Meet Future Health Care Needs of the Population

Issue: The current and emerging health care system requires a basic registered nurse workforce whose education prepares it to function across sectors and systems in managing and providing nursing services to individuals, families, groups and populations. The majority of the basic registered nurse workforce today was not educated for this breadth and depth of roles. The mismatch between basic educational preparation and demands has been associated with the historic direction of some Federal resources toward support of more technical, hospital-focused diploma and associate degree education. Reshaping the educational mix of the basic registered nurse workforce will require changes in how Federal resources are targeted.

Policy Goal: Federal resources should be targeted at increasing the overall number and overall percentage of baccalaureate-prepared nurses making up the basic nurse workforce. A policy target should be adopted to achieve a basic registered nurse workforce with at least two-thirds holding baccalaureate or higher degrees by the year 2010.

Policy Options:

- Provide funding to baccalaureate programs to expand their generic undergraduate enrollments.
- Provide funds for curricula innovations in existing baccalaureate programs to prepare graduates for the rapidly changing health care environment.
- Provide targeted funds to diploma and baccalaureate programs to phase out the diploma programs and affiliate with an existing baccalaureate program.
- Fund demonstrations to establish collaborative arrangements between community colleges and baccalaureate programs that would convert associate degree program efforts to providing retraining[1] opportunities for the registered nurse community and specialty courses (e.g. computer technology) for the baccalaureate students.
- Fund demonstrations of partnerships for clinical experiences between baccalaureate programs and HMOs, Community Health Centers, Public Health departments, Home Health Services, VNAs, etc.

[1] Retraining programs are generally designed to bring about a role change and are more intensive than traditional short-term continuing education programs

- Provide funds, if needed, for the development of innovative curricula for established RN to BSN programs.

- Fund State-level nursing education consortia aimed at assuring widespread access to generic BSN programs, RN-to-BSN programs for *existing* potential students, and RN retraining programs.

- Provide funds to existing baccalaureate programs to develop outreach efforts to communities without baccalaureate programs.

- Provide support for research on new nursing education models.

Ensure an Adequate Supply of Registered Nurses to Meet Future Health Care Needs of the Population

Issue: The long term ability of the basic registered nurse workforce to meet the requirements for nursing services is significantly challenged by the "aging" of that workforce. The average age of nurses, like all other comparable occupational groups, is increasing. However, in significantly larger proportion than in other occupational groups, new members of nursing are entering each year at later ages. Unless addressed, it is likely that this country will experience a serious, intractable shortage at a time when the greatest numbers ever of people in the older age groups will require nursing care.

Policy Goal: Federal resources should be targeted to encouraging earlier entry into the profession, supporting full-time, rather than extended part-time study, and encouraging direct entry into generic baccalaureate programs.

Policy Options:

- Target Federal funding at increasing numbers of generic, baccalaureate students through both recruitment and student support activities.

- Target Federal funding for RN to BSN programs to provide full-time student support to RNs who graduated from associate degree or diploma programs prior to 1996, thus enabling these students to complete the program within a two year period. (Time limited authority to accommodate existing associate degree and diploma graduates).

- Eliminate Federal funding for baccalaureate and master's degree programs designed specifically for second degree students from non-nursing backgrounds.

Prepare Existing Registered Nurse Workforce to Meet Current Health Care Needs of the Population

Issue: A large percentage of the existing registered nurse workforce is not adequately prepared to meet the health needs of clients in a rapidly changing health care environment. The Federal government has a responsibility for assuring the match between the nursing workforce and the health care needs of the population.

Policy Goal: The Federal government should support the assessment of activities needed for upgrading the knowledge, skills, and abilities of the existing registered nurse workforce to match practice requirements of a reformed health care system.

***Policy Options*:**

- Use Federal resources to determine the nature and extent of Federal involvement in workforce retraining.

- Use Federal resources to assess the national need for retraining of registered nurses and to propose strategies (including financial) for addressing these needs at State, regional and national levels.

***Issue*:** The rapidly changing and highly complex nature of health care today calls for the career-long acquisition of new knowledge and skills by the existing basic registered nurse workforce. Institutional and other resources for continuing education are diminishing.

***Policy Goal*:** Federal resources and strategies should be focused on areas of continuing education for nurses that are of national significance and extend beyond individual institutional or State boundaries.

***Policy Options*:**

- Provide targeted support for continuing education activities relating to national public health problems, such as emerging diseases, environmental hazards, etc.

- Fund targeted activities in areas such as distance learning technologies, informatics, and faculty development to enable educational institutions and faculty to provide continuing education.

***Issue*:** The rapidity of change in the field of environmental health sciences and the relationship between human health and the environment pose serious challenges to nurses in their health-enhancing roles. Increasingly, the environment is being seen as one of the most significant determinants of global human health. Historically, most basic nurse education programs preparing for registered nurse licensure do not adequately address this important influence on health. The nursing practice arena also suffers from a lack of emphasis in this area. As a result, the basic nurse workforce is ill-equipped to effectively intervene in the area of environmentally related mortality and morbidity.

***Policy Goal*:** The Federal government should support activities to increase the basic and continuing knowledge and skills of nurses in the area of environmental health.

***Policy Options*:**

- Target Federal resources at supporting demonstration projects that develop and test replicable models for integrating environmental health content into basic and continuing nursing education programs.

- Target Federal resources at supporting demonstration projects in the practice arena that pilot and evaluate nursing strategies based on the incorporation of environmental health sciences into basic nursing practice.

- Use existing grant program mechanisms to encourage the incorporation of environmental health sciences into basic and advanced nursing curricula grant applications.

- Foster strategies to disseminate the outcomes of these Federally-supported projects.

Enhance the Ability of the Registered Nurse Workforce to Meet Challenges of Cultural Diversity in Delivery of Health Care to the Population

Issue: As our society becomes increasingly more ethnically and racially diverse, the underrepresentation of people from racial/ethnic minority groups in the overall basic registered nurse workforce becomes more problematic in the delivery of culturally appropriate and sensitive nursing services. The proportion of minority registered nurses is significantly smaller than the representation of those groups in the overall US population.

Policy Goal: Federal resources should be used to assure that the composition of the basic nurse workforce is reflective of the overall society as an important vehicle for enabling access to, and the delivery of, appropriate nursing services.

Policy Options:

- Target grant program technical assistance to those areas of the country where there are "pockets" of underrepresented groups and significant barriers to accessing nursing school opportunities.

- Encourage exemplary schools (schools with established track records in nursing education, practice and research) to serve in a mentor relationship with those schools who are developing academic programs for students from underrepresented groups.

- Offer fellowships to faculty (or graduate students) to obtain a doctorate with service payback in those schools of nursing that are developing programs for students from underrepresented groups.

- Establish a funding preference for applicant schools of nursing who have demonstrated success in the recruitment, retention, and graduation of students from underrepresented groups.

- Support several contracts to develop models of effective recruitment, retention, and graduation strategies for students from underrepresented groups. These models could also provide the framework for collecting data that could be compared and contrasted with other programs without this focus.

Issue: Health care in this country is not culturally sensitive for many individuals.

Policy Goal: The Federal government should support educational activities to increase cultural sensitivity and cultural competence in nursing students.

Policy Options:

- Support contracts for the development and evaluation of effective curricula models to increase cultural sensitivity and cultural competence.
- Support four regional approaches that focus on the development of a disciplinary knowledge base and expertise in culturally competent care.
- Provide resources to disseminate effective models and approaches to achieving culturally sensitive nursing care.

Examine the Effect of Functions of Registered Nurses in the Provision of Quality Health Care to the Population

Issue: The impact of changes in the health care system on the delivery of nursing services has not been well documented. To assure the quality of nursing care during these times of major organizational restructuring, additional health services research in this area is needed.

Policy Goal: The Federal government should support efforts to increase knowledge about the relationship between the organization and delivery of nursing care and patient care outcomes.

Policy Options:

- Direct Federal resources to studies that determine the relationship between the organization of nursing care and patient outcomes.
- Direct Federal resources toward specific studies that follow up on the Institute of Medicine's report on the Adequacy of Nurse Staffing.
- Direct Federal resources to research on new models of nursing education responsive to the changing health care environment.
- Support graduate-level training efforts to prepare nurses to conduct interdisciplinary health services research.

APPENDIX A
National Advisory Council on Nurse Education and Practice Charter

THE SECRETARY OF HEALTH AND HUMAN SERVICES
WASHINGTON, D.C. 20201

C H A R T E R

NATIONAL ADVISORY COUNCIL ON NURSE EDUCATION AND PRACTICE

Purpose

The Secretary and by delegation of the Administrator, Health Resources and Services Administration, are charged under the Title VIII of the Public Health Service Act, as amended, with responsibility for a wide range of activities in support of nursing education and practice, which include: enhancement of the composition of the nursing workforce, improvement of the distribution and utilization of nurses to meet the health needs of the nation, expansion of the knowledge, skills and capabilities of nurses to enhance the quality of nursing practice, development and dissemination of improved models of organization, financing and delivery of nursing services, and promotion of interdisciplinary approaches to the delivery of health services, particularly in the context of public health and primary care.

Authority

42 USC 298; section 851 of the Public Health Service Act, as amended. The Council is governed by provisions of Public Law 92-463 which sets forth standards for the formation and use of advisory committees.

Function

The Council advises the Secretary on all matters relating to nursing education and practice as described in its purpose. The Council may make specific recommendations to the Secretary and Administrator, regarding programs administered by the Division of Nursing, particularly within the context of the enabling legislation and the Division's mission and strategic directions, as a means for enhancing the health of the public through the development of the nursing workforce.

Additionally, the Council will provide review and recommendations regarding grant applications for certain programs that provide Federal assistance for nursing education, as directed by Congress.

Structure

The Council shall consist of the Secretary, or designee, as Chair and an ex-officio member, and twenty-one members selected by the Secretary. Three of the appointed members shall be selected from full-time students representing the various levels of education in schools of nursing, four of the appointed members shall be selected from the general public and twelve shall be selected from among leading authorities in the various fields of nursing, higher and secondary education, and from representatives of hospitals and other institutions and organizations which provide nursing services. One member shall be selected from practicing nurses and one member from among representatives of associate degree schools of nursing.

Members shall be invited to serve for overlapping four-year terms; terms of more than two years are contingent upon the renewal of the Council by appropriate action. The student-members of the Council shall be appointed for terms of one year and shall be eligible for reappointment to the Council. Members appointed to fill vacancies occurring prior to the expiration of the term for which their predecessors were appointed shall be appointed only for the remainder of such terms. Members of the Council may serve up to one year after the expiration of their term until their successors have taken office. The Secretary may use the services of any member or members of the Council, in connection with matters related to the administration of Title VIII for such periods, in addition to regular meeting periods, as he/she may determine.

Subcommittees composed of members of the Parent Committee shall be established to perform specific functions within the Committee's jurisdiction. The Department Committee Management Officer will be notified upon establishment of each of the subcommittees, and will be provided information on it's name, membership, function and established frequency of meetings.

Management and support services shall be provided by the Division of Nursing, Bureau of Health Professions, Health Resources and Services Administration.

Meetings

Meetings shall be held at least two times a year at the call of the Chair, who shall also approve the agenda.

Meetings shall be open to the public except as determined otherwise by the Secretary; notice of all meetings shall be given to the public.

Meetings shall be conducted, and records of the proceedings kept, as required by applicable laws and Departmental regulations.

Compensation

Members who are not full-time Federal employees shall be paid at the rate of $250 per day, plus per diem and travel expenses in accordance with Standard Government Travel Regulations.

Annual Cost Estimate

Estimated annual cost for operating the Council including compensation and travel expenses for members but excluding staff support, is $61,749. Estimate of staff-years of support required is 1.4 at an estimated annual cost of $78,416.

Reports

An annual report shall be submitted to the Secretary through the Assistant Secretary for Health not later than November 15 of each year, which shall contain as a minimum a list of members and their business addresses, the committee's functions, dates and places of meetings, and a summary of committee activities and recommendations made during the fiscal year. A copy of the report shall be provided to the Department Committee Management Officer.

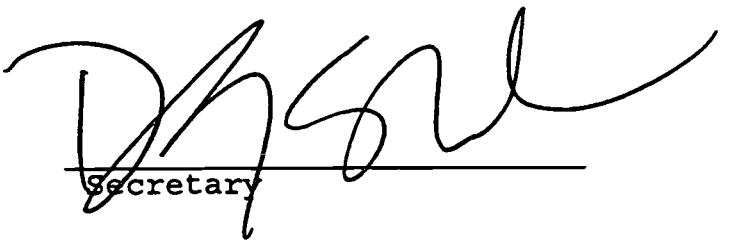
Termination Date

The duration of the National Advisory Council on Nurse Education and Practice is continuing. Unless renewed by appropriate action prior to its expiration, the Charter for the National Advisory Council on Nurse Education and Practice will expire on November 30, 1996.

APPROVED:

NOV 30 1994

Date



Secretary

APPENDIX B
FUTURE SUPPLY OF AND REQUIREMENTS FOR REGISTERED NURSES

The Division of Nursing carries out modeling activities that examine and project the future supply of and requirements for registered nurses. Each of these activities was developed in response to the Congressional requirement in P.L. 94-63, Part D, Section 951 to determine the current and projected supply and distribution of and requirements for registered nurses, including registered nurses with advanced degrees, in the United States and within each State.

Projections of the Future Supply of Registered Nurses

The model used to project the supply of registered nurses captures the age-specific dynamics of the flow of nurses in and out of licensure and the work force, their progression from one educational level to another, and their State-to-State migration. Data are developed for each State on: (1) the population of nurses - all those with licenses to practice on a given date; (2) the supply - all those employed or available for employment (if sufficient positions are not available at the time being considered); and (3) the full-time equivalent supply that expresses employment independently of full- or part-time status. The United States summary is an aggregation of the State data. The model base is derived from the National Sample Survey of Registered Nurses; the most recent one used is the March 1992 survey.

Projecting First-time Licensees

Projections of first-time licensees from United States schools are derived from projections of graduates. For these current projections of graduates from each of the three main types of basic nursing programs - associate degree, diploma, and baccalaureate - statistical regression models were used to determine those factors most likely to predict the numbers of graduates. Historical data on graduations, from the National League for Nursing annual surveys of schools of nursing, provided the trend information on the number of graduates from each type of program. Independent variables representing the availability and attractiveness of nursing as a career were considered for each of the models. These included measures of job availability, salaries and health care expenditures. Also considered were data on the female population within the age groups found among nursing students and on the proportion of female high school graduates enrolling in higher educational institutions.

The final projections also took into account the likelihood of a considerable decrease in diploma programs based on the assumptions that there might be a substantial decline in the availability of Medicare dollars to provide support for these programs and the future movement of RN positions from the hospital in-patient sector to ambulatory

sectors. It was assumed that those who might have attended diploma programs would choose instead to go to baccalaureate programs. Projections of graduations from generic nursing education programs are shown in Table B-1.

An additional step converts the graduations into first-time licensees. Estimates, based on licensure data from the National Council of State Boards of Nursing, are made of the proportion of these graduates who might become licensed for the stated year. The National Council of State Boards of Nursing data is also the source for data used to determine the foreign graduate first-time licensees.

Projecting RN Educational Changes

In order to capture the changes brought about by registered nurses taking additional education after their initial entry into nursing, statistical regression models were developed to project annual graduations from post-RN baccalaureate and master's degree programs. National League for Nursing annual survey data provided the historical data on graduations used in the models. Projections of graduations from post-RN baccalaureate programs were based on graduations from basic AD and diploma programs and data from the National Sample Survey of Registered Nurses on the length of time between when nurses graduated from the generic program and the baccalaureate program. Similar variables on prior education graduations and intervening time were used in projecting post-RN master's degree graduates. Table B-2 reports the resulting projections.

Projecting Losses from the RN Population

New licensees represent additions to the nurse population. Of critical importance to determining the overall nurse population in any one year is a measure of those who no longer have licenses as registered nurses. Most of the population consists of those who have entered nursing over a period of years and have continued their licensure. Losses to the RN population occur through death, failure to renew licenses, or in some instances, disciplinary action that would revoke all licenses. The model accounts for deaths by using measures derived from the life tables of white females developed by the National Center for Health Statistics. However, there is no direct measure of nurses who failed to renew their licenses. Therefore, "net losses" are derived. They measure the net change in the RN population that is caused by those who drop all licenses minus those RNs who become relicensed after having dropped all their licenses. Estimates of net losses for this projection were based on analyzing the comparison between expected distributions of the nurse population by age group to actual distributions, using the 1988 and 1992 National Sample Surveys of Registered Nurses, and trends in the retirement behavior of all types of workers.

Projecting the RN Supply

To identify the supply of registered nurses, "activity rates" are developed using data from the National Sample Surveys of Registered Nurses on the proportion of the nurse population within a specific age group that is employed in nursing. The surveys also provide information on the proportion of nurses who are not employed but are actively seeking nursing employment. These data have not been taken into account because they have consistently been at a very low rate over the

survey years, primarily reflecting short-term turnover rather than inability to obtain employment. The model used to project future "activity rates" incorporated economic and social forces that might affect nurse employment. These forces were measured by changes in the employment rate for all women, in the activity rate of registered nurses themselves, in the consumer price index, and in registered nurse salaries.

The derivation of the full-time equivalent RN supply was dependent upon data in the March 1992 National Sample Survey of Registered Nurses that identified the nurses working full-time and those working part-time and the number of scheduled hours for each nurse. A ratio was developed of the number of nurses within each age group cohort who were working on a full-time basis plus the full-time equivalent of those working on a part-time basis to the total number of working nurses. The full-time equivalent for part-time nurses was determined by the ratio of average scheduled hours of part-timers to average scheduled hours of full-timers.

Projections of the registered nurse supply and full-time equivalent supply for the United States from December 31, 1995 through 2020 are shown in Table B-3. Tables B-4 and B-5 show projections of the supply and full-time equivalent supply, respectively, for each State. The distribution of the projected supply of nurses in each State by highest educational preparation for 1995, 2005, and 2020 appears in Table B-6.

Projections of the Future Requirements for Registered Nurses

As was the case with the projections of the future supply, future requirements were also needed on a State-by-State basis to fulfill the Congressional requirements. The model used to project future requirements for all types of nursing personnel has evolved over the years from work that began in the early 1970s with the implementation of the Historical-Trend Based Model.[1] The availability and quality of the consistent time series data for each State necessary for this model declined to the point that this approach was no longer viable. Also, concerns were raised that the Historical-Trend Based Model did not explicitly take account of economic demand for nurses.

To develop a new approach that would be consistent with available data and would examine requirements from an economic perspective, a contract was let to Vector Research, Inc.. The Nurse-Demand Model defined the demand for nursing personnel as the number of full-time equivalent nurses that employers would actually hire given the prevailing market conditions, if not constrained by the availability of nurses.[2] The Nurse-Demand Model became available in early 1992 and relied on data gathered principally in 1988-89.

Nursing Demand-Based Requirements Model

Both of the aforementioned models addressed requirements by forecasting the future demands for health care services and the workforce utilization per provided service. The increasing influence of managed care and the expanding scope of the health care delivery system led the Bureau of Health Professions to the development of a model that focused solely on the future demand for health care services that could be applicable to determining future requirements for a variety of health

care occupations. The General Services Demand Model was developed under contract by Vector Research, Inc.. It expanded the individual health care delivery sectors for which the demand for services would be determined beyond those that were captured in the two earlier nursing models.[3] This model became available in late 1995 and relied on data collected in 1991-92.

The Nursing Demand-Based Requirements Model(NDBR) is the latest modelling effort to determine the future requirements for nursing personnel. It was developed by the Division of Nursing to build upon the General Services Demand Model and incorporate the nurse utilization per provided services. In its present iteration it forecasts solely the requirements for full-time equivalent registered nurses. Future work will extend the model to the total nursing personnel workforce covered by the earlier nursing requirements models.

Developing the Requirements Forecasts

Forecasts are developed on a State-by-State basis and aggregated to the United States as a whole. A great number of data sources are melded to form the analytical data base for the model. The March 1992 National Sample Survey of Registered Nurses provided the baseline data and set of control values for all the full-time equivalent registered nurse estimates used for the end of 1991 base year.

The health care system is partitioned into a variety of health care sectors. The number of sectors included in the forecasting model is determined by the availability of data systems that measure the levels of provided services and the personnel resources used to provide them, and the consistency among the systems collecting the data.

A set of socio-economic and health status variables are considered when measuring the growth behavior of each of the health care system sectors and the changes in per service utilization rates of registered nurses. Health status variables include measures such as the numbers or levels of disabilities, death rates, and changes in morbidity/mortality rates. The economic well-being of the population or subgroups of the population is measured through such variables as per capita income, cost of living indices, changes in rates or in total earnings. Variables such as the proportion of the population uninsured or under Medicaid, Medicare, and welfare coverage as well as the degree of HMO/PPO penetration, are considered for measures of economic access to the health care system. Demographic characteristics of the population measured by trends in distributions by gender, race, age groups, and residence in rural or urban areas are also considered as possible factors influencing trends.

Each sector of the health care system is described by an analytical relationship (i.e. equation) that connects the performance of that sector to its pertinent driving or influencing factors. The values for each of the factors used in the regression analyses that statistically specify each sector's analytical form are data essentially reflecting the on-going behavior of these factors in each State of the United States. Thus, the data for each State at a given time is used to specify an analytical relationship as opposed to relying on time series data. It is assumed that when the data for State-specific factors for a particular time in the future are used in the sector's equation, the result will forecast that particular State sector's performance at that future time.

Determining Full-Time Equivalent Registered Nurse Requirements

Registered nurse utilization is measured by the number of hours of work performed in a given health care sector. The hours include all normal and overtime hours worked by regular employees and the hours worked by consultants, contract and per-diem nurses, per diem nurses as well as those on-call. Full-time equivalent RNs are derived by relating the total number of RN hours worked in the health care sector to the average number of scheduled hours, without regard to leave, of an RN employed full-time in that sector.

The projected requirements for full-time equivalent RNs in the country as a whole by major employment setting from December 31, 1995 through 2020 appear in Table B-7. Projected requirements for each State can be found in Table B-8.

References

1. U.S. Department of Health and Human Services, Bureau of Health Professions, *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*, March 1990, DHHS Publication No. HRS-P-OD-90-1, pages VIII-31-34.

2. Vector Research, Inc., *Final Report on the Nursing Demand Model*, National Technical Information Service, Accession No. PB94-504370GEI, 1991.

3. Vector Research, Inc., *General Services Demand Model: Technical Summary of Model Development*, National Technical Information Service, Accession No. PB96-500863, 1995.

Table B-1

Projected Number of Graduates from Basic Nursing Education Programs by Type of Program, Academic Years 1995-1996 to 2019-2020

Academic Year	Total	Diploma	Associate Degree	Bacca-laureate
1995-1996	87,146	6,487	49,855	30,804
1996-1997	81,026	6,193	48,825	26,008
1997-1998	78,132	5,912	46,683	25,537
1998-1999	77,702	5,643	47,037	25,022
1999-2000	79,664	5,387	47,785	26,492
2000-2001	80,622	5,143	48,624	26,855
2001-2002	81,009	4,909	49,371	26,729
2002-2003	80,067	4,686	48,800	26,581
2003-2004	80,950	4,474	49,496	26,980
2004-2005	84,160	4,271	50,408	29,481
2005-2006	85,005	4,077	51,216	29,712
2006-2007	85,051	3,892	51,826	29,333
2007-2008	82,589	3,715	49,882	28,992
2008-2009	83,951	3,546	50,962	29,443
2009-2010	88,304	3,385	52,014	32,905
2010-2011	89,372	3,232	53,089	33,051
2011-2012	89,183	3,085	53,969	32,129
2012-2013	83,957	2,945	49,918	31,094
2013-2014	85,510	2,811	51,654	31,045
2014-2015	90,042	2,684	53,351	34,007
2015-2016	90,395	2,562	54,842	32,991
2016-2017	89,126	2,446	56,061	30,619
2017-2018	79,413	2,334	48,686	28,393
2018-2019	81,133	2,229	50,574	28,330
2019-2020	88,065	2,127	52,586	33,352

Note: Individual numbers may not add to total because of rounding.
Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, March 1996.

Table B-2

Projected Number of Graduates from Collegiate Nursing Education Programs by Type of Program, Academic Years 1995-1996 to 2019-2020

Academic Year	Generic[1]	Post RN Baccalaureate	Post RN Master's
1995-1996	30,804	12,246	10,179
1996-1997	26,008	12,537	10,744
1997-1998	25,537	12,827	10,560
1998-1999	25,022	13,053	10,411
1999-2000	26,492	13,175	9,946
2000-2001	26,855	13,203	9,588
2001-2002	26,729	13,098	9,048
2002-2003	26,581	12,912	8,361
2003-2004	26,980	12,658	7,772
2004-2005	29,481	12,542	7,415
2005-2006	29,712	12,561	7,433
2006-2007	29,333	12,628	7,884
2007-2008	28,992	12,765	8,557
2008-2009	29,443	12,843	9,188
2009-2010	32,905	12,929	9,681
2010-2011	33,051	13,020	9,962
2011-2012	32,129	13,120	10,111
2012-2013	31,094	13,257	10,183
2013-2014	31,045	13,271	10,214
2014-2015	34,007	13,306	10,202
2015-2016	32,991	13,365	10,220
2016-2017	30,619	13,446	10,265
2017-2018	28,393	13,608	10,315
2018-2019	28,330	13,552	10,378
2019-2020	33,352	13,518	10,373

[1]Includes master's and doctoral degree program graduates.
Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, 1996.

Table B-3

Projected Supply of Registered Nurses by Highest Educational Preparation, 1995-2020

As of Dec. 31	Total RNs in Supply: Total RNs	Associate Degree/ Diploma	Bacca-laureate	Master's/ Doctoral	RNs per 100,000 pop.[1]	Full-Time Equivalent: Total FTE RNs	Associate Degree/ Diploma	Bacca-laureate	Master's/ Doctoral	RNs per 100,000 pop[1]
1995	2,096,000	1,247,700	664,500	184,200	804	1,813,000	1,072,200	575,000	165,800	695
1996	2,144,000	1,263,900	685,900	194,100	814	1,847,000	1,087,100	591,500	168,500	701
1997	2,186,000	1,277,700	703,200	204,700	821	1,894,000	1,105,300	610,100	178,500	712
1998	2,221,000	1,286,500	720,000	214,500	827	1,926,000	1,113,800	625,400	187,000	717
1999	2,256,000	1,296,300	736,600	222,800	832	1,957,000	1,123,100	640,000	194,200	722
2000	2,290,000	1,305,400	753,700	230,500	836	1,987,000	1,131,400	655,000	200,500	726
2001	2,321,000	1,313,300	771,500	236,500	840	2,014,000	1,137,900	670,700	205,400	729
2002	2,354,000	1,322,300	789,400	241,800	844	2,045,000	1,147,500	687,000	210,300	734
2003	2,386,000	1,330,700	808,100	247,000	849	2,075,000	1,156,000	704,000	214,900	738
2004	2,417,000	1,340,700	826,500	249,900	852	2,103,000	1,165,200	720,100	217,300	742
2005	2,448,000	1,349,400	845,300	252,900	856	2,128,000	1,171,900	736,100	219,800	744
2006	2,473,000	1,355,200	863,100	255,200	858	2,150,000	1,176,900	751,100	221,900	746
2007	2,496,000	1,360,000	877,600	258,100	859	2,169,000	1,180,900	763,700	224,400	746
2008	2,514,000	1,362,100	890,600	261,700	858	2,185,000	1,182,500	774,600	227,500	745
2009	2,531,000	1,364,600	901,100	265,800	857	2,197,000	1,183,700	782,600	230,800	743
2010	2,551,000	1,366,400	914,100	270,700	856	2,214,000	1,185,100	793,800	235,100	743
2011	2,573,000	1,370,200	927,200	275,500	856	2,232,000	1,188,100	805,000	239,100	743
2012	2,591,000	1,374,100	936,800	280,200	855	2,247,000	1,191,500	812,800	243,200	742
2013	2,600,000	1,371,600	944,300	284,300	851	2,256,000	1,190,000	819,300	246,700	739
2014	2,609,000	1,370,000	950,200	288,400	847	2,266,000	1,189,900	825,400	250,600	736
2015	2,620,000	1,368,700	958,700	292,300	844	2,277,000	1,189,800	833,300	254,100	733
2016	2,628,000	1,367,400	965,000	295,300	839	2,285,000	1,189,800	838,500	257,000	730
2017	2,634,000	1,367,800	967,500	298,400	834	2,290,000	1,190,000	840,400	259,600	726
2018	2,629,000	1,360,400	968,100	301,000	826	2,284,000	1,182,700	839,900	261,600	718
2019	2,627,000	1,355,200	968,400	303,700	819	2,281,000	1,177,500	839,300	263,900	711
2020	2,631,000	1,352,100	972,900	306,100	814	2,284,000	1,174,800	842,900	265,900	706

Note: Projected numbers may not add to totals because of rounding.

[1] U.S. Population Projections from Day, Jennifer Cheeseman, *Population Projections of the United States, by Age, Sex, Race and Hispanic Origin: 1993-2050, U.S. Bureau of the Census, Current Population Reports*, P-25-11104, U.S. Government Printing Office, Washington, D.C. 1993.

Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, March 1996.

Table B-4

Projected Supply of Registered Nurses by Geographic Area as of December 31, 1995-2020

Geographic Area	1995	2000	2005	2010	2015	2020
United States	2,096,000	2,290,000	2,448,000	2,551,000	2,620,000	2,631,000
New England	141,000	142,000	144,000	141,000	135,000	129,000
Connecticut	31,000	28,000	26,000	24,000	21,000	19,000
Maine	12,000	13,000	14,000	14,000	14,000	14,000
Massachusetts	71,000	74,000	76,000	75,000	73,000	70,000
New Hampshire	11,000	11,000	12,000	12,000	11,000	11,000
Rhode Island	10,000	10,000	10,000	10,000	10,000	10,000
Vermont	6,000	6,000	6,000	6,000	6,000	5,000
Middle Atlantic	373,000	394,000	412,000	420,000	422,000	418,000
New Jersey	72,000	72,000	72,000	70,000	67,000	64,000
New York	73,000	182,000	190,000	194,000	196,000	195,000
Pennsylvania	128,000	140,000	150,000	156,000	159,000	159,000
South Atlantic	360,000	400,000	433,000	461,000	481,000	488,000
Delaware	6,000	6,000	6,000	6,000	5,000	5,000
District of Columbia	8,000	6,000	5,000	4,000	4,000	4,000
Florida	108,000	121,000	133,000	142,000	149,000	152,000
Georgia	50,000	56,000	60,000	64,000	66,000	66,000
Maryland	43,000	49,000	53,000	56,000	58,000	59,000
North Carolina	59,000	70,000	79,000	87,000	94,000	98,000
South Carolina	23,000	26,000	28,000	30,000	31,000	31,000
Virginia	49,000	50,000	51,000	52,000	53,000	52,000
West Virginia	14,000	16,000	18,000	20,000	21,000	21,000
East South Central	128,000	156,000	179,000	197,000	211,000	219,000
Alabama	35,000	43,000	50,000	55,000	60,000	63,000
Kentucky	33,000	42,000	49,000	55,000	60,000	63,000
Mississippi	17,000	21,000	25,000	28,000	30,000	31,000
Tennessee	43,000	50,000	55,000	59,000	61,000	62,000
West South Central	172,000	191,000	207,000	217,000	224,000	228,000
Arkansas	20,000	24,000	28,000	30,000	32,000	33,000
Louisiana	29,000	34,000	38,000	41,000	44,000	45,000
Oklahoma	19,000	20,000	21,000	22,000	22,000	23,000
Texas	104,000	113,000	120,000	124,000	126,000	127,000

Table B-4 (continued)

Projected Supply of Registered Nurses by Geographic Area as of December 31, 1995-2020

Geographic Area	1995	2000	2005	2010	2015	2020
East North Central	369,000	403,000	434,000	452,000	466,000	469,000
Illinois	101,000	110,000	118,000	123,000	126,000	127,000
Indiana	45,000	49,000	53,000	55,000	57,000	58,000
Michigan	74,000	77,000	81,000	82,000	83,000	82,000
Ohio	103,000	115,000	125,000	132,000	137,000	139,000
Wisconsin	46,000	52,000	57,000	60,000	63,000	63,000
West North Central	170,000	188,000	202,000	211,000	217,000	218,000
Iowa	30,000	35,000	38,000	41,000	42,000	42,000
Kansas	22,000	25,000	27,000	28,000	29,000	30,000
Minnesota	46,000	52,000	58,000	61,000	64,000	65,000
Missouri	43,000	44,000	44,000	44,000	44,000	42,000
Nebraska	15,000	18,000	20,000	21,000	22,000	23,000
North Dakota	7,000	7,000	8,000	9,000	9,000	9,000
South Dakota	7,000	7,000	7,000	7,000	7,000	7,000
Mountain	115,000	132,000	146,000	156,000	168,000	171,000
Arizona	32,000	36,000	40,000	43,000	46,000	47,000
Colorado	32,000	37,000	41,000	44,000	46,000	47,000
Idaho	7,000	8,000	8,000	8,000	9,000	9,000
Montana	6,000	7,000	7,000	7,000	8,000	8,000
Nevada	9,000	11,000	13,000	14,000	15,000	15,000
New Mexico	13,000	16,000	19,000	21,000	23,000	24,000
Utah	12,000	13,000	14,000	15,000	16,000	16,000
Wyoming	4,000	4,000	4,000	4,000	5,000	5,000
Pacific	268,000	282,000	293,000	297,000	298,000	292,000
Alaska	4,000	4,000	4,000	4,000	4,000	4,000
California	183,000	186,000	188,000	186,000	181,000	174,000
Hawaii	10,000	12,000	13,000	14,000	15,000	15,000
Oregon	25,000	25,000	26,000	25,000	25,000	24,000
Washington	46,000	55,000	62,000	68,000	73,000	75,000

Note: Individual numbers may not add to sub-total or total because of rounding.
Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, March 1996.

Table B-5

Projected Full-Time Equivalent Supply of Registered Nurses by Geographic Area as of December 31, 1995-2020

Geographic Area	1995	2000	2005	2010	2015	2020
United States	1,813,000	1,987,000	2,128,000	2,214,000	2,277,000	2,284,000
New England	117,000	120,000	121,000	118,000	114,000	109,000
Connecticut	26,000	24,000	22,000	20,000	18,000	16,000
Maine	10,000	11,000	12,000	12,000	12,000	12,000
Massachusetts	59,000	62,000	64,000	63,000	61,000	59,000
New Hampshire	10,000	10,000	10,000	10,000	10,000	10,000
Rhode Island	8,000	8,000	8,000	8,000	8,000	8,000
Vermont	4,000	5,000	5,000	5,000	5,000	4,000
Middle Atlantic	321,000	341,000	357,000	365,000	368,000	364,000
New Jersey	61,000	61,000	61,000	60,000	57,000	54,000
New York	151,000	160,000	167,000	171,000	173,000	172,000
Pennsylvania	109,000	120,000	129,000	134,000	138,000	138,000
South Atlantic	319,000	354,000	383,000	407,000	425,000	431,000
Delaware	5,000	5,000	5,000	5,000	5,000	5,000
District of Columbia	7,000	5,000	4,000	4,000	3,000	3,000
Florida	96,000	107,000	118,000	126,000	132,000	134,000
Georgia	45,000	51,000	55,000	57,000	59,000	60,000
Maryland	37,000	41,000	45,000	48,000	50,000	50,000
North Carolina	53,000	64,000	72,000	79,000	86,000	89,000
South Carolina	21,000	23,000	25,000	27,000	28,000	28,000
Virginia	42,000	43,000	43,000	44,000	44,000	44,000
West Virginia	13,000	15,000	16,000	17,000	18,000	18,000
East South Central	116,000	141,000	161,000	177,000	189,000	195,000
Alabama	32,000	39,000	45,000	50,000	54,000	56,000
Kentucky	29,000	37,000	43,000	49,000	53,000	56,000
Mississippi	16,000	20,000	23,000	25,000	27,000	28,000
Tennessee	39,000	45,000	50,000	53,000	55,000	55,000
West South Central	157,000	175,000	188,000	197,000	204,000	206,000
Arkansas	18,000	22,000	25,000	27,000	28,000	29,000
Louisiana	27,000	31,000	34,000	37,000	39,000	40,000
Oklahoma	17,000	18,000	19,000	20,000	21,000	21,000
Texas	95,000	104,000	110,000	113,000	116,000	116,000

Table B-5 (continued)

Projected Full-Time Equivalent Supply of Registered Nurses by Geographic Area as of December 31, 1995-2020

Geographic Area	1995	2000	2005	2010	2015	2020
East North Central	309,000	341,000	364,000	380,000	392,000	393,000
Illinois	85,000	94,000	101,000	105,000	108,000	108,000
Indiana	39,000	43,000	46,000	48,000	50,000	50,000
Michigan	61,000	65,000	68,000	69,000	69,000	68,000
Ohio	86,000	96,000	103,000	109,000	114,000	115,000
Wisconsin	38,000	43,000	46,000	49,000	51,000	52,000
West North Central	147,000	161,000	174,000	181,000	186,000	188,000
Iowa	26,000	30,000	33,000	35,000	36,000	36,000
Kansas	19,000	21,000	23,000	24,000	25,000	26,000
Minnesota	39,000	44,000	48,000	51,000	53,000	54,000
Missouri	38,000	39,000	40,000	40,000	39,000	38,000
Nebraska	13,000	15,000	17,000	18,000	19,000	20,000
North Dakota	6,000	6,000	7,000	7,000	8,000	8,000
South Dakota	6,000	6,000	6,000	6,000	6,000	6,000
Mountain	100,000	115,000	129,000	138,000	144,000	148,000
Arizona	28,000	33,000	36,000	39,000	41,000	42,000
Colorado	27,000	32,000	35,000	38,000	40,000	41,000
Idaho	6,000	6,000	7,000	7,000	7,000	7,000
Montana	5,000	6,000	6,000	6,000	6,000	6,000
Nevada	9,000	10,000	12,000	13,000	13,000	14,000
New Mexico	12,000	14,000	17,000	19,000	20,000	21,000
Utah	10,000	11,000	12,000	12,000	13,000	13,000
Wyoming	3,000	3,000	4,000	4,000	4,000	4,000
Pacific	227,000	241,000	250,000	253,000	254,000	250,000
Alaska	3,000	3,000	3,000	3,000	3,000	3,000
California	158,000	161,000	163,000	160,000	157,000	151,000
Hawaii	9,000	11,000	12,000	13,000	14,000	14,000
Oregon	20,000	21,000	21,000	21,000	20,000	20,000
Washington	37,000	45,000	51,000	56,000	60,000	62,000

Note: Individual numbers may not add to sub-total or total because of rounding.
Source: Projections by Division of Nursing, BHPr, USDHHS, March 1996.

Table B-6

Distribution of Projected Supply of Registered Nurses in Each State by Highest Educational Preparation as of December 31, 1995-2020

Geographic Area	Year 1995 Total RNs	Year 1995 Percent of RN Supply AD/ Diploma	Year 1995 Bacca- laureate	Year 1995 Master/ Doct.	Year 2005 Total RNs	Year 2005 Percent of RN Supply AD/ Diploma	Year 2005 Bacca- laureate	Year 2005 Master/ Doct.	Year 2020 Total RNs	Year 2020 Percent of RN Supply AD/ Diploma	Year 2020 Bacca- laureate	Year 2020 Master/ Doct.
United States	2,096,000	59.5	31.7	8.8	2,448,000	55.1	34.5	10.3	2,631,000	51.4	37.0	11.6
New England	141,000	57.0	31.6	10.8	144,000	48.3	37.8	12.8	129,000	38.2	46.3	15.5
Connecticut	31,000	64.5	27.1	8.1	26,000	58.8	32.7	7.7	19,000	45.8	41.1	11.1
Maine	12,000	64.2	27.5	7.5	14,000	60.7	26.4	11.4	14,000	60.0	27.1	14.3
Massachusetts	71,000	52.8	33.9	13.1	76,000	43.7	40.3	15.7	70,000	32.9	49.1	18.1
New Hampshire	11,000	61.8	32.7	8.2	12,000	51.7	36.7	9.2	11,000	46.4	43.6	10.9
Rhode Island	10,000	51.0	35.0	10.0	10,000	34.0	52.0	12.0	10,000	15.0	69.0	12.0
Vermont	6,000	53.3	28.3	10.0	6,000	50.0	33.3	11.7	5,000	52.0	40.0	16.0
Middle Atlantic	373,000	60.9	30.2	9.0	412,000	56.8	33.0	10.1	418,000	52.9	35.5	11.5
New Jersey	72,000	62.1	33.1	4.9	72,000	61.0	34.4	4.3	64,000	59.5	34.5	5.3
New York	173,000	58.3	30.6	11.2	190,000	54.8	33.1	11.8	195,000	52.4	34.6	13.0
Pennsylvania	128,000	63.8	28.1	8.3	150,000	57.3	32.1	10.7	159,000	50.9	37.0	12.1
South Atlantic	360,000	61.1	29.4	9.7	433,000	57.2	31.0	12.1	488,000	54.7	31.9	13.4
Delaware	6,000	58.3	35.0	10.0	6,000	36.7	51.7	8.3	5,000	24.0	76.0	8.0
District of Columbia	8,000	46.3	41.3	6.3	5,000	58.0	34.0	6.0	4,000	67.5	15.0	7.5
Florida	108,000	65.6	27.1	7.3	133,000	63.6	27.4	9.3	152,000	62.7	26.8	10.4
Georgia	50,000	60.4	29.8	9.6	60,000	54.0	35.8	10.8	66,000	46.4	42.4	11.7
Maryland	43,000	48.4	33.5	19.3	53,000	39.6	32.6	27.7	59,000	33.9	32.2	33.4
North Carolina	59,000	62.2	29.7	7.8	79,000	61.5	30.8	8.2	98,000	61.0	30.9	8.0
South Carolina	23,000	60.9	28.3	13.0	28,000	52.1	29.3	18.6	31,000	48.7	30.3	21.9
Virginia	49,000	61.8	28.4	9.0	51,000	60.2	29.8	10.6	52,000	60.6	28.1	11.7
West Virginia	14,000	69.3	29.3	5.0	18,000	60.0	35.6	4.4	21,000	51.0	43.3	4.8
East South Central	128,000	62.7	28.8	8.9	179,000	61.1	28.3	10.8	219,000	59.7	28.3	11.4
Alabama	35,000	58.0	32.3	10.6	50,000	55.0	31.2	13.8	63,000	53.8	30.6	14.8
Kentucky	33,000	66.1	29.1	5.2	49,000	67.1	28.6	4.5	63,000	67.6	28.1	4.0
Mississippi	17,000	61.8	29.4	10.6	25,000	58.4	28.4	13.2	31,000	57.4	27.7	14.2
Tennessee	43,000	64.2	25.3	9.8	55,000	62.4	25.5	12.5	62,000	58.9	26.5	14.2
West South Central	172,000	58.5	34.1	7.3	207,000	56.9	35.0	8.1	228,000	55.0	35.9	8.9
Arkansas	20,000	65.5	24.5	8.5	28,000	55.4	29.3	13.6	33,000	47.3	35.2	17.9
Louisiana	29,000	54.1	41.7	4.8	38,000	43.4	51.3	5.5	45,000	35.3	59.3	5.3
Oklahoma	19,000	64.7	28.4	5.3	21,000	68.1	27.1	6.2	23,000	67.4	24.8	6.5
Texas	104,000	57.3	34.8	8.2	120,000	59.5	32.5	8.0	127,000	61.7	29.8	8.3

Distribution of Projected Supply of Registered Nurses in Each State by Highest Educational Preparation as of December 31, 1995-2020

Geographic Area	Year 1995 Total RNs	Year 1995 Percent of RN Supply AD/ Diploma	Year 1995 Bacca- laureate	Year 1995 Master/ Doct.	Year 2005 Total RNs	Year 2005 Percent of RN Supply AD/ Diploma	Year 2005 Bacca- laureate	Year 2005 Master/ Doct.	Year 2020 Total RNs	Year 2020 Percent of RN Supply AD/ Diploma	Year 2020 Bacca- laureate	Year 2020 Master/ Doct.
East North Central	369,000	61.4	31.2	7.6	434,000	55.4	36.4	7.9	469,000	50.2	41.5	8.3
Illinois	101,000	60.2	32.0	8.0	118,000	59.0	34.5	6.4	127,000	56.9	37.0	5.9
Indiana	45,000	66.2	28.7	5.8	53,000	60.8	34.0	4.5	58,000	56.6	39.3	3.8
Michigan	74,000	60.4	32.4	6.6	81,000	52.2	42.1	5.6	82,000	44.0	51.3	4.9
Ohio	103,000	65.4	26.5	8.1	125,000	56.7	32.1	10.8	139,000	49.7	37.7	12.5
Wisconsin	46,000	51.5	40.2	9.3	57,000	44.4	43.9	11.1	63,000	40.2	48.1	12.4
West North Central	170,000	59.5	32.8	8.0	202,000	50.1	39.1	10.7	218,000	42.6	45.1	12.8
Iowa	30,000	74.3	22.7	4.0	38,000	71.3	24.7	5.0	42,000	67.6	27.6	6.0
Kansas	22,000	59.1	32.3	9.5	27,000	48.9	35.2	15.2	30,000	43.7	37.7	18.7
Minnesota	46,000	55.4	36.3	9.1	58,000	43.6	43.8	11.7	65,000	33.8	52.0	13.5
Missouri	43,000	58.1	33.0	7.9	44,000	47.3	43.0	10.2	42,000	37.1	51.7	12.1
Nebraska	15,000	54.7	37.3	10.7	20,000	41.0	44.0	13.5	23,000	32.6	52.6	14.8
North Dakota	7,000	35.7	48.6	8.6	8,000	22.5	61.3	16.3	9,000	14.4	66.7	21.1
South Dakota	7,000	67.1	28.6	7.1	7,000	70.0	30.0	5.7	7,000	71.4	27.1	7.1
Mountain	115,000	50.2	39.8	9.6	146,000	41.4	47.1	12.1	171,000	35.6	50.9	12.9
Arizona	32,000	50.0	38.8	11.3	40,000	37.3	49.0	15.0	47,000	28.9	54.3	16.2
Colorado	32,000	41.9	43.8	13.4	41,000	32.0	49.8	17.8	47,000	26.8	54.0	19.8
Idaho	7,000	55.7	38.6	4.3	8,000	45.0	52.5	3.8	9,000	35.6	58.9	3.3
Montana	6,000	60.0	40.0	5.0	7,000	60.0	38.6	5.7	8,000	57.5	33.8	5.0
Nevada	9,000	53.3	41.1	7.8	13,000	41.5	48.5	7.7	15,000	35.3	57.3	8.0
New Mexico	13,000	53.8	40.0	6.9	19,000	48.4	44.7	6.8	24,000	46.3	47.1	6.3
Utah	12,000	56.7	34.2	6.7	14,000	52.9	40.0	9.3	16,000	46.3	41.3	10.6
Wyoming	4,000	55.0	32.5	2.5	4,000	65.0	37.5	2.5	5,000	60.0	32.0	2.0
Pacific	268,000	57.7	33.2	8.8	293,000	57.7	31.5	10.6	292,000	58.0	29.2	13.1
Alaska	4,000	52.5	32.5	7.5	4,000	60.0	27.5	7.5	4,000	62.5	25.0	7.5
California	183,000	58.8	32.6	8.7	188,000	60.3	29.9	9.9	174,000	62.0	25.7	12.5
Hawaii	10,000	43.0	48.0	7.0	13,000	34.6	57.7	6.2	15,000	32.7	63.3	6.7
Oregon	25,000	56.4	35.6	7.2	26,000	50.8	39.6	8.1	24,000	43.8	47.5	9.6
Washington	46,000	57.8	31.5	10.9	62,000	57.6	27.9	14.7	75,000	58.4	24.8	17.2

Note: Individual numbers may not add to sub-total or total because of rounding.
Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, March 1996.

Table B-7

Projected Requirements for Full-Time Equivalent Registered Nurses by Employment Setting 1995 through 2020

As of Dec. 31	Total	Hospitals	Nursing Homes	Ambu-latory Care	Public/ Community Health	Nursing Education	All Other
1995	1,800,000	1,171,500	117,900	126,500	285,300	39,200	60,100
1996	1,843,000	1,184,100	120,100	128,100	307,600	40,000	63,000
1997	1,878,000	1,196,800	122,300	129,600	325,700	38,100	65,700
1998	1,915,000	1,208,500	124,300	131,200	345,400	37,400	68,000
1999	1,943,000	1,218,900	126,300	132,600	357,600	37,200	70,500
2000	1,969,000	1,231,800	128,200	134,200	364,300	37,800	72,500
2001	1,999,000	1,247,800	130,100	135,800	369,600	41,000	74,200
2002	2,024,000	1,262,900	132,100	137,500	374,700	40,800	75,700
2003	2,048,000	1,277,500	134,100	139,300	379,300	40,200	77,200
2004	2,071,000	1,291,300	136,100	141,000	383,600	40,300	78,700
2005	2,095,000	1,305,200	138,000	142,600	387,700	41,500	80,200
2006	2,122,000	1,319,800	140,500	144,200	391,700	43,700	81,700
2007	2,148,000	1,335,100	143,200	145,900	396,600	43,700	83,100
2008	2,174,000	1,351,100	146,100	147,500	401,300	43,100	84,600
2009	2,202,000	1,367,700	149,200	149,100	406,200	43,700	86,000
2010	2,232,000	1,385,100	152,400	150,700	411,000	45,500	87,400
2011	2,262,000	1,402,400	155,500	152,300	415,200	48,100	88,700
2012	2,292,000	1,420,500	158,700	153,900	420,800	47,700	90,100
2013	2,322,000	1,439,400	162,100	155,600	427,000	46,100	91,400
2014	2,355,000	1,459,600	165,600	157,300	433,400	46,300	92,500
2015	2,391,000	1,480,600	169,300	159,100	440,200	48,000	93,300
2016	2,423,000	1,501,900	172,500	161,000	446,200	47,700	94,000
2017	2,459,000	1,524,100	175,900	162,900	454,300	46,600	94,800
2018	2,493,000	1,547,100	179,200	164,800	463,000	43,500	95,500
2019	2,532,000	1,570,900	182,500	166,700	472,200	43,700	96,300
2020	2,575,000	1,595,600	185,800	168,700	481,900	46,300	97,100

Note: Individual numbers may not add to total because of rounding.

Source: Projections by Division of Nursing, BHPr, HRSA, USDHHS, March 1996.

Table B-8

Projected Requirements for Full-Time Equivalent Registered Nurses for 1995 Through 2020, by 5 Year Intervals

Geographic Area	1995	2000	2005	2010	2015	2020
United States	1,800,000	1,969,000	2,095,000	2,232,000	2,391,000	2,575,000
New England	120,900	129,000	133,300	140,100	148,900	159,100
Connecitcut	28,100	30,100	31,000	32,500	34,400	36,600
Maine	10,300	11,100	11,500	12,000	12,800	13,800
Massachusetts	58,900	62,500	64,600	67,800	71,600	76,100
New Hampshire	10,100	11,200	11,900	12,700	14,000	15,500
Rhode Island	8,900	9,200	9,300	9,800	10,300	11,000
Vermont	4,600	4,900	5,100	5,400	5,800	6,200
Middle Atlantic	319,400	341,300	352,200	364,600	380,800	399,500
New Jersey	60,600	65,300	67,600	69,600	73,500	78,100
New York	154,700	164,600	169,700	176,600	184,200	192,700
Pennsylvania	104,200	111,400	114,800	118,400	123,000	128,700
South Atlantic	324,000	364,800	395,500	427,800	464,900	508,700
Delaware	6,000	6,700	7,100	7,400	7,800	8,400
District of Columbia	10,800	10,700	11,000	11,800	12,500	13,300
Florida	101,500	117,600	131,400	146,100	161,900	180,300
Georgia	46,200	53,000	57,200	61,300	66,500	73,500
Maryland	36,900	40,500	43,600	47,200	51,000	55,300
North Carolina	49,300	55,700	59,300	62,900	67,800	74,000
South Carolina	20,700	22,800	24,000	25,200	27,000	29,300
Virginia	41,400	46,200	50,000	53,900	58,000	62,100
West Virginia	11,200	11,600	11,800	12,000	12,200	12,500
East South Central	102,300	113,400	120,400	127,300	135,000	143,400
Alabama	27,900	30,700	32,500	34,300	36,300	38,300
Kentucky	24,000	26,000	27,300	28,700	30,300	32,000
Mississippi	13,900	15,500	16,400	17,400	18,500	19,700
Tennessee	36,400	41,200	44,100	46,900	50,000	53,400
West South Central	45,200	160,700	174,600	189,500	205,500	223,800
Arkansas	14,100	15,300	16,200	17,200	18,400	19,700
Louisiana	24,000	25,400	26,700	28,000	29,600	31,300
Oklahoma	16,600	17,600	18,500	19,400	20,400	21,800
Texas	90,500	102,500	113,300	124,900	137,100	151,100

Table B-8 (continued)

Projected Requirements for Full-Time Equivalent Registered Nurses for 1995 Through 2020, by 5 Year Intervals

Geographic Area	1995	2000	2005	2010	2015	2020
East North Central	304,800	326,600	337,900	347,900	360,900	377,700
Illinois	85,100	90,600	93,300	95,700	99,300	104,400
Indiana	38,900	42,300	44,400	46,300	48,500	51,000
Michigan	61,400	65,800	68,000	70,000	72,400	75,500
Ohio	82,200	87,200	89,500	91,200	93,600	96,700
Wisconsin	37,300	40,600	42,800	44,800	47,100	50,000
West North Central	44,100	154,400	161,900	169,800	178,700	189,400
Iowa	23,700	25,100	25,900	26,600	27,400	28,400
Kansas	18,800	20,500	21,700	23,000	24,400	25,900
Minnesota	36,300	39,300	41,500	43,800	46,500	50,300
Missouri	41,100	43,800	46,000	48,400	51,000	54,000
Nebraska	12,300	13,100	13,700	14,200	14,900	15,500
North Dakota	5,600	5,900	6,100	6,300	6,700	7,100
South Dakota	6,400	6,700	7,100	7,400	7,800	8,200
Mountain	97,000	110,100	121,100	132,200	144,700	159,100
Arizona	28,700	32,700	36,900	41,200	45,900	51,200
Colorado	26,600	30,000	32,700	35,100	37,700	40,800
Idaho	5,700	6,500	7,200	7,900	8,600	9,400
Montana	5,500	6,000	6,400	6,800	7,300	7,800
Nevada	8,800	10,400	11,300	12,600	14,200	16,200
New Mexico	9,400	10,500	11,400	12,400	13,400	14,500
Utah	9,500	10,900	11,900	12,700	13,700	15,100
Wyoming	2,900	3,100	3,300	3,600	3,800	4,100
Pacific	242,700	268,500	298,300	332,900	371,400	414,700
Alaska	3,500	3,900	4,200	4,400	4,600	4,900
California	171,900	189,400	211,400	237,800	267,000	299,900
Hawaii	8,000	9,000	10,000	11,000	12,200	13,600
Oregon	22,600	24,800	27,000	29,600	32,600	36,000
Washington	36,700	41,400	45,700	50,100	54,900	60,300

Note: Individual numbers may not add to sub-total or total because of rounding.
Source: Projections by the Division of Nursing, BHPr, HRSA, USDHHS, 1996

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