Health Professional Recruitment and Retention

Recommendation 1A:

The Wyoming Healthcare Commission (WHC) recommends increased funding to the Wyoming Office of Rural Health created under W. S. 9-2-117 for expanded recruitment, retention and education of all healthcare providers.

Background:

- In November, 2002, participants at the Wyoming Visioning Summit on Health Care Access completed a survey to gather health professionals' perspectives on the "state of the state," with regard to healthcare access barriers. 53 percent indicated that the lack of providers in many rural communities create barriers to accessing health care.
- The actual recruitment and retention activities of the Office of Rural Health has been contracted out to a private nonprofit organization with public/private oversight.
- Wyoming Health Resources Network (WHRN) is a public-private partnership formed in 1995 by the Wyoming Department of Health, Wyoming Hospital Association, Wyoming Medical Society and Wyoming Nurses Association to improve and enhance rural health services and promote healthier individuals and communities in Wyoming.
- WHRN's primary focus is recruiting and works with health care providers in Wyoming (hospitals, clinics, medical practices), the University of Wyoming, the Wyoming Department of Health, the Wyoming Hospital Association, the Wyoming Medical Society, the Wyoming Primary Care Association, the Office of Rural Health and others to attract nurse practitioners, physicians, physician assistants and locum tenens physicians.
- Most areas of Wyoming have been federally declared a primary health care practitioner shortage area.
- Many communities lack the knowledge and resources to recruit individual practitioners, while facilities (hospitals, clinics) do not have the money to hire "headhunters" and advertise, screen and interview potential new medical staff. WHRN fees are a quarter of what national headhunting firms charge.
- WHRN has effectively matched communities and providers based on criteria provided and has a 76% retention rate for permanent placements.
- Since January of 1996 , WHRN has placed 73 permanent healthcare providers, including 43 physicians, 21 physician assistants, and 9 nurse practitioners, in 19 of the 23 Wyoming counties. Of the 43 physicians placed, only two have been sub specialist (general surgery and emergency medicine) with the remainder being primary care providers (family practice, internal medicine, obstetrics and gynecology, pediatrics and psychiatry). All midlevel placements have been in primary care. WHRN has also assisted facilities by providing 48 temporary, or locum tenens, providers.
- As of August 6, 2003, there were 52 total opening in 19 communities: 23 are subspecialty physicians (Cardiology, Anesthesiology, Hematology/Oncology, Gastroenterology, Neurology, Emergency Medicine, Orthopedics, Rheumatology, Endocrinology, Radiology, General Surgery, Pathology), 2 locum physicians (Emergency Medicine and Family Practice), 2 midlevel (Nurse Practitioner and Certified Registered Nurse Anesthetist), and 25 are primary care physicians (Obstetrics/Gynecology, Family Practice, Internal Medicine, Psychiatry and Pediatrics).

Conclusion:

WHRN employs three full time staff and presently lacks funding and staffing for "recruitment, retention, and education" of healthcare professionals other than physicians, physicians assistants, nurse practitioners and locum tenens. The shortages in the medical profession are beyond these limited areas. One of the first steps in providing statewide access of healthcare to Wyoming residents is to have competent medical professionals available to provide treatment in all communities. The Wyoming Office of Rural Health has demonstrated the ability to meet these goals with limited resources and could multiply their results with additional staffing.

Health Professional Recruitment and Retention

Recommendation 1B:

The Wyoming Healthcare Commission (WHC) recommends the funding of W. S. 9-2-118, the physician loan repayment program, W. S. 9-2-119, the allied health care provider loan repayment program.

Background:

- W. S. 9-2-118, the physician loan repayment program and W. S. 9-2-119, the allied health care provider loan repayment program were created by the legislature but not funded.
- One of the duties of the Office of Rural Health under W. S. 9-2-117, is to administer the loan repayment programs created by W. S. 9-2-118 and W. S. 9-2-119.
- W. S. 9-2-118 (a) (ii) provides for 100% repayment of the amount of outstanding educational loans, not to exceed thirty thousand dollars ($30,000) per year in exchange for practicing under the terms of the section. W. S. 9-2-118 (d) requires equally matched funds from any combination of county, city, school district or hospital.
- W. S. 9-2-119 (a) (ii) provides for 100% repayment of the amount of outstanding educational loans, not to exceed ten thousand dollars ($10,000) per year in exchange for practicing under the terms of the section, including a minimum of three (3) years under the agreement. W. S. 9-2-119 (d) requires equally matched funds from any combination of county, city, school district or hospital.
- The Wyoming Healthcare Commission (WHC) heard testimony from WHRN and the Wyoming Medical Society that Wyoming would be more competitive with other states in recruiting healthcare professionals with a loan repayment program. There are weekly inquiries to the Department of Health from healthcare providers in other states about Wyoming's loan repayment programs.
- In November, 2002, participants at the Wyoming Visioning Summit on Health Care Access completed a survey to gather health professionals' perspectives on the "state of the state," with regard to healthcare access barriers. Fifty-three percent (53%) indicated that the lack of providers in many rural communities create barriers to accessing health care.
- Most areas of Wyoming have been federally declared a primary health care practitioner shortage area.
- .As of August 6, 2003, there were 52 total opening in 19 communities listed with Wyoming Health Resources Network, Inc. (WHRN): 23 are subspecialty physicians (Cardiology, Anesthesiology, Hematology/Oncology, Gastroenterology, Neurology, Emergency Medicine, Orthopedics, Rheumatology, Endocrinology, Radiology, General Surgery, Pathology), 2 locum physicians (Emergency Medicine and Family Practice), 2 midlevel (Nurse Practitioners and Certified Registered Nurse Anesthetists), and 25 are primary care physicians (Obstetrics-Gynecology, Family Practice, Internal Medicine, Psychiatry and Pediatrics.

Conclusion:

One of the first steps in providing statewide access of healthcare to Wyoming residents is to have competent medical professionals available to provide treatment in all communities. Wyoming cannot be competitive with other states in recruiting healthcare professionals without a loan repayment program. These "tools" will help recruit Wyoming natives back to the State and will enable recruiters to cultivate and nurture Wyoming people that are in medical school or residency programs NOW, rather than later.

Health Professional Recruitment and Retention

Recommendation 1C:

The Wyoming Healthcare Commission (WHC) recommends continued funding for W. S. 9-2-123, the Wyoming Investment in Nursing Loan and Grant Program, WYIN Program. In addition provide funding to the Wyoming Commission on Nursing to continue study of nursing workforce shortage and retention issues. In addition, it is recommended the provisions in W. S. 21-17-107 for funding additional entry level faculty positions be reviewed and relaxed to accommodate faculty shortages.

Background:

- W. S. 9-2-123, the WYIN Program was funded with a one million dollar biennium appropriation by the legislature effective July 1, 2002. Applicants may apply for loans from the WYIN program if they are a Wyoming resident or a graduate of a Wyoming high school and meet the requirements outlined.
- The loans can be used for applicants accepted into Wyoming licensed practical nurse or registered nursing education programs, a baccalaureate degree program in nursing, master's degree in nursing or nursing education, or doctoral level degree in nursing.
- W. S. 9-2-123, outlines appropriate repayment of the loans including cash payments, qualified work, or teaching at a qualified Wyoming College or the University of Wyoming for master's and doctoral candidates. Qualified work reduces the loan balance on the basis of one year of full-time employment for one academic year of full-time enrollment, or twelve thousand dollars ($12,000) of the loan, whichever is less.
- Approximately 32 students were funded by the program, five were baccalaureate degree students and the remainder were associate degree students. The loans were fully subscribed for the 2003-2005 academic years.
- Most of the funding has gone to assist associate degree students, but some of the community colleges are having difficulty accommodating new students due to insufficient faculty and clinical placements.
- There is a need for baccalaureate degree and master's degree nurses to take faculty positions at the community colleges and to provide access to quality health care in general.
- W. S. 21-17-107 provides funding for an entry level faculty position if the university or a community college expands its nursing program capacity by not less than eight (8) or more students. There are six community colleges and the University offering nursing programs, it is unlikely at the current level of funding that the university or any community college would have more than eight students to qualify for the additional faculty funding.
- In November, 2002, participants at the Wyoming Visioning Summit on Health Care Access completed a survey to gather health professionals' perspectives on the "state of the state," with regard to healthcare access barriers. Fifty-three percent (53%) indicated that the lack of providers in many rural communities create barriers to accessing health care.
- Tony Glover, Senior Analyst from the Wyoming Department of Employment Research and Planning Department conducted a study of "Nursing, Supply Shortage or Retention Issue?" The shortage of nursing related health care practitioners is not exclusively limited to Registered Nurses, but also to support occupations.
- The Glover Study finds the demand for Registered Nurses in Wyoming will increase 13 percent from 1998 to 2008. All of Wyoming's border states have a greater projected demand. See Table 1 for documentation.
- The study also found all of Wyoming's border states pay higher wages than Wyoming, which was ranked as 49th of the 50 states in average hourly wage.

Background (continued):

- The Health Resources Services Administration (HRSA) report, "Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020, projects a 30% shortage of FTE Registered Nurses

by 2005 and 63% shortage in 2020, the worst in the nation. See www.bhpr.hrsa.gov/healthworkforce/reports/profiles/mproject.htm.

- The Glover study shows the number of graduates from Wyoming-based schools has declined 33.2 percent over the last decade. This coincides with the national finding of enrollments declining by 11 percent in associate degree programs and 19 percent in baccalaureate programs. See Table 2 for documentation.
- The Glover Study also details the number of new licenses issued has declined by 20 percent in Wyoming in the past ten years. Secondly, the proportion of those licenses issued to graduates of Wyoming schools has declined from 41.3 percent in 1992 to 25.3 percent in 2001. The decline is likely due to the increased demand for registered nurses elsewhere in the country. See Table 3 for documentation.
- The importance of the origin of education (i.e. Wyoming versus out-of-state) is demonstrated when 91.6 percent of those with a Wyoming-based education showed up with wages in the four quarters immediately following the license issue. In contrast, only 61.7 percent of those with an out-of-state education showed during the same period. Longevity was also deemed to be higher for those with Wyoming based education. See Table 4 for documentation
- The findings suggest that the current and impending nursing shortage is likely to grow. The decline in the number of graduates with RN degrees from Wyoming based institutions will increase the difficulty of attaining RN's in our state. The increased demand for nurses throughout the country will make it more difficult to retain nurses in Wyoming.

Conclusion:

One of the first steps in providing statewide access of healthcare to Wyoming residents is to have competent medical professionals available to provide treatment in all communities. The loan program has been popular and well received by Wyoming students. It has been a beginning in recruiting nursing healthcare professionals. The Glover study demonstrates the importance of Wyoming based education and the relationship to employment within Wyoming. Unfortunately, some the colleges in Wyoming are unable to accommodate the increased enrollments because of a shortage of faculty and clinical placement sites. The review of W. S. 21-17-107 and reducing the requirements for funding entry level faculty positions to more reasonably coincide with Wyoming's student population and the number of programs in the state will help alleviate the need for additional faculty.

A shortage of BSN and MS prepared nurses directly affects the ability to increase numbers of faculty and improve access to quality health care. The shortage is not just about entry level nurses.

Health Professional Recruitment and Retention

Recommendation 1D:

The Wyoming Healthcare Commission (WHC) recommends the review of present policies for health care professional licensing requirements. Wyoming's restrictions impede the recruiting of healthcare professionals and these restrictions should be identified.

Background:

- The Wyoming Healthcare Commission was given testimony as to the present difficulties/barriers for healthcare professionals making application for Wyoming licensure.
- One significant barrier described was the lack of Wyoming accepting reciprocity from other state licensing boards.
- Another significant barrier described was the difficulty for professionals to restore their licenses once they have left the workforce temporarily and wish to return to practice.

Conclusion:

One of the first steps in providing statewide access of healthcare to Wyoming residents is to have competent medical professionals available to give treatment in all communities. If Wyoming is more restrictive than other states, it will be more difficult to attract health care professionals.

Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020

July 2002
U.S. Department of Health and Human Services
Health Resources and Services Administration
Bureau of Health Professions
National Center For Health Workforce Analysis

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Introduction

The Health Resources and Service Administration, Bureau of Health Professions, National Center for Health Workforce Analysis ("National Center") is the primary Federal agency responsible for providing information and analysis relating to the supply and demand for health professionals. In support of this role, the National Center has recently assumed responsibility from the Bureau's Division of Nursing for conducting the quadrennial National Sample Survey of Registered Nurses and developing supply and demand projections for registered nurses. Supply and demand projections of registered nurses (RNs) for the period 2000 through 2020 are the subject of this report. [1] Using data on supply trends drawn from the 2000 National Sample Survey of Registered Nurses, these new projections show that a shortage of FTE registered nurses, previously projected to begin around 2007, was already evident in the year 2000.

This report consists of three sections. The first presents the National Center's projections of RN supply and

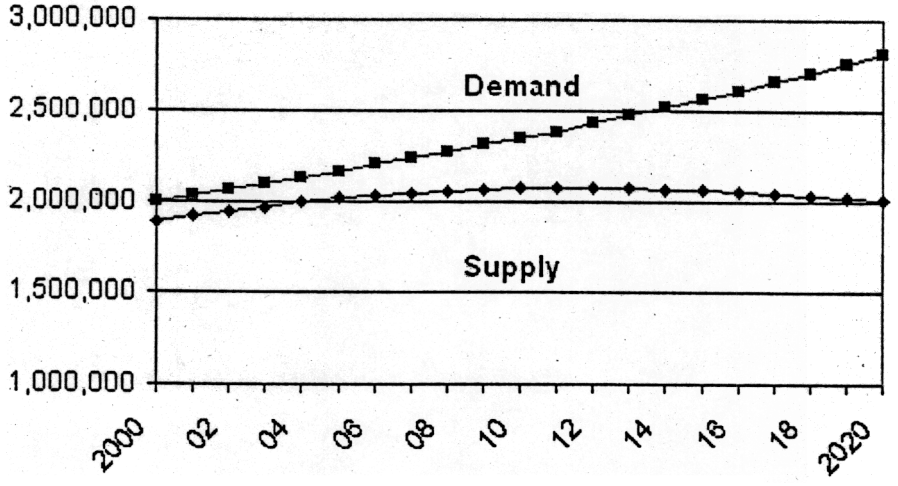
demand, both national and State-specific, for the years 2000 through 2020. The second identifies and discusses the driving forces and trends underlying the projected supply; the third does the same for the projected demand. Relevant charts, maps, and tables are presented both in the body of the report and in an Appendix.

National Supply and Demand Projections

In 2000, the National supply of FTE registered nurses was estimated at 1.89 million while the demand was estimated at 2 million, a shortage of 110,000 or 6 percent. Based on what is known about trends in the supply of RNs and their anticipated demand, the shortage is expected to grow relatively slowly until 2010, by which time it will have reached 12 percent. At that point demand will begin to exceed supply at an accelerated rate and by 2015 the shortage, a relatively modest 6 percent in the year 2000, will have almost quadrupled to 20 percent. If not addressed, and if current trends continue, the shortage is projected to grow to 29 percent by 2020. These numbers are shown in Table 1 of the Appendix.

The projected shortage in 2020 results from a projected 40 percent increase in demand between 2000 and 2020 compared to a projected 6 percent growth in supply. Demand will grow steadily at a rate of 1.7 percent annually, a relatively modest growth rate when compared to the 2.3 percent annual growth in demand projected by the Department of Labor's Bureau of Labor Statistics. Factors driving the growth in demand include an 18 percent increase in population, a larger proportion of elderly persons, and medical advances that heighten the need for nurses. In contrast, the projected growth in supply is expected to reach a peak of only 10 percent by 2011 and then begin to decline as the number of nurses leaving the profession exceeds the number that enter. *(See Chart 1)*

Chart 1: National Supply and Demand Projections for FTE Registered Nurses: 2000 to 2020



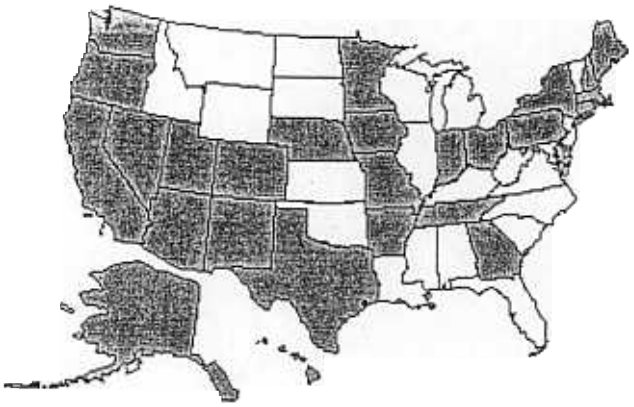
Source: Bureau of Health Professions, RN Supply and Demand Projections

[D]

Distribution of the RN Shortage:

The national shortage of RNs is not evenly distributed across States. In 2000, 30 States were estimated to have shortages. *(See Map 1)* Because of uncertainties in the estimation process, only States with shortages greater than 3 percent are identified as shortage States. Affecting the accuracy of State-specific supply and demand projections are situations where: (a) a State may have many local shortages yet overall have an adequate supply; (b) significant numbers of nurses commute across State boundaries to work; (c) jurisdictions like Washington, D.C. provide service to large populations from outside its boundaries; and (d) demand projection methodology inadequately accounts for the differences in nursing utilization patterns that may exist between States.

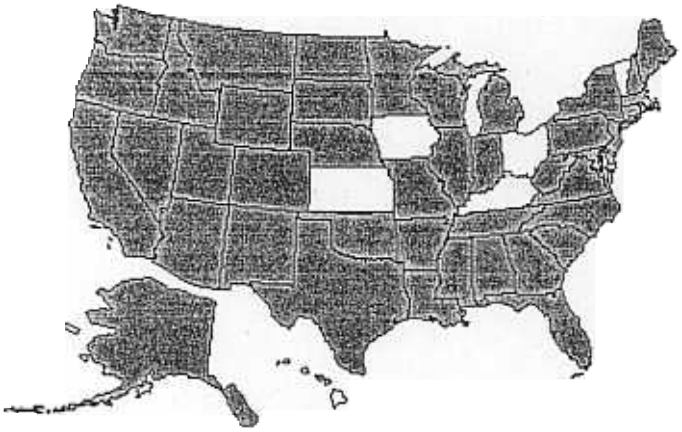
Map 1: States with Shortages of FTE Registered Nurses in 2000



States with shortages ☐ States without shortages [D]

By 2020, 44 States and the District of Columbia are projected to have shortages. *(See Map 2)* State-specific projections for the years 2000 through 2020 are found in Tables 2, 3, 4, 5 and 6 of the Appendix.

Map 2: States with Projected Shortages of FTE Registered Nurses in 2020



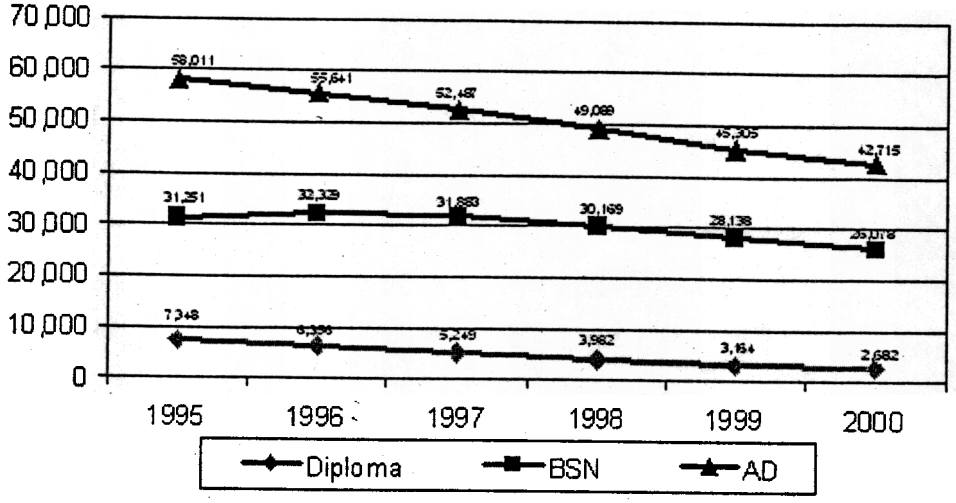
States with shortages ☐ States without shortages [D]

Projected Supply of RNs—Driving Forces and Trends

An examination of factors affecting the supply of RNs sheds light on what has caused the current shortage. These factors include the declining number of nursing school graduates, the aging of the RN workforce, declines in relative earnings, and the emergence of alternative job opportunities.

Declining numbers of nursing graduates:
Data on the growth in new RNs, as measured by those passing the RN licensing test (NCLEX), show that after growing steadily during the first half of the 1990s the number of new RN graduates fell annually in the last half of the decade, resulting in 26 percent fewer RN graduates in 2000 than in 1995. Declines were seen across all degree programs--diploma, associate degree, and baccalaureate. The decrease in diploma graduates continues a trend driven in the past few decades by the closing of hospital-based diploma programs. In contrast, the declines in associate degree and baccalaureate graduates are a more recent phenomenon, having occurred only since the mid-1990s. **(See Chart 2)** Further, due to declines in enrollments over the past 5 years, no increase in the number of graduates is expected in the short term. Although the American Association of Colleges of Nursing (AACN) did report a 4 percent increase in baccalaureate enrollment between 2000 and 2001, the relatively longer educational pipeline for baccalaureate students increases the length of time before licensed RNs will emerge.

Chart 2: Total Number of RN Graduates by Degree Program, 1995-2000

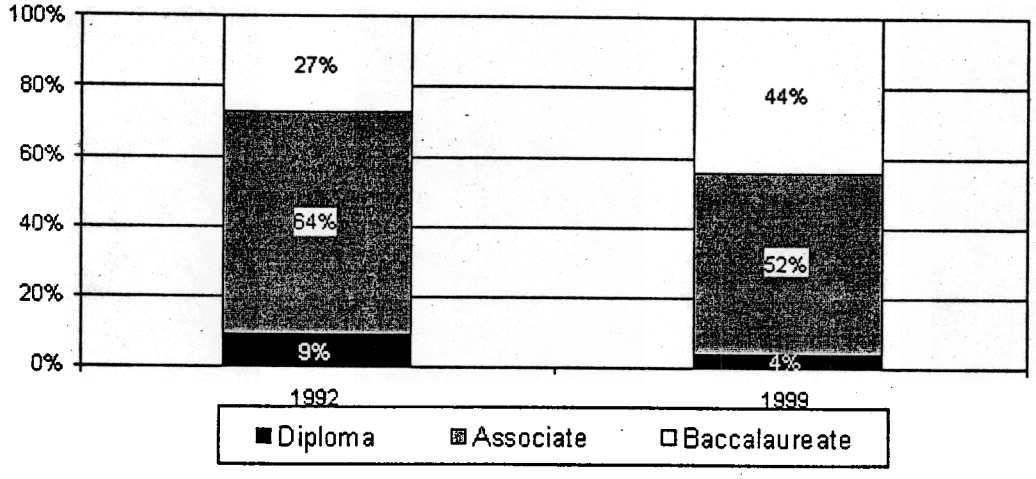


Source: National Council of State Boards of Nursing, NCLEX

[D]

Associate degree graduates are declining at a somewhat faster rate than baccalaureate graduates, with the net result that baccalaureate graduates now comprise an increasingly greater share of total graduates. *(See Chart 3)*

Chart 3: Distribution of RN Graduates by Educational Preparation: 1992 and 1999



Source: National Council of State Boards of Nursing, NCLEX exam

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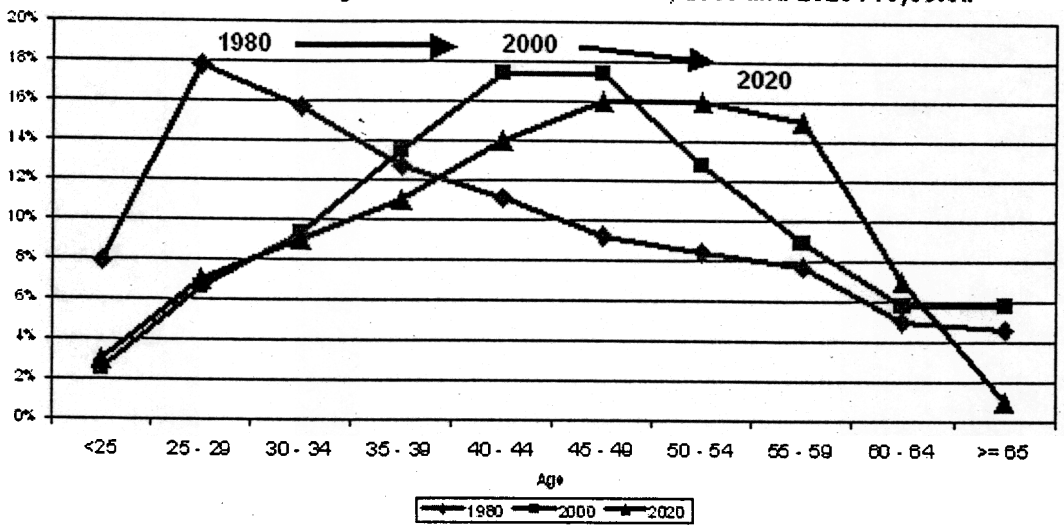
This evolving shift from associate degree to baccalaureate-prepared RNs has, as noted earlier, a constraining effect on growth in supply. Baccalaureate-prepared RNs may need twice as long to complete their education and enter the workforce as those graduating from associate degree programs, thereby increasing the length of time needed for the average RN student to enter the workforce, thus creating a temporary hiatus in the growth of supply.

Aging of the RN Workforce:

The average age for RNs has climbed steadily in recent years resulting in a greater proportion of nurses in the

older age brackets who are approaching retirement age. Three factors contribute to this aging of the RN workforce: (1) the decline in number of nursing school graduates, (2) the higher average age of recent graduating classes, and (3) the aging of the existing pool of licensed nurses. Graduates of associate degree programs, the largest source of new RNs, are on average 33 years old when they graduate, considerably older than in 1980 when the average age of a new associate degree graduate was 28. The result has been a significant decline in the proportion of RNs under the age of 30. Between 1980 and 2000, that proportion declined from 25 percent to 9 percent. *(See Chart 4)* This slowing of new, young entrants coupled with an accelerating retirement rate for older RNs will produce a national supply of nurses that in 2020 will not only be older but no larger than the supply projected for 2005. The number of new licenses in nursing is projected to be 17 percent lower in 2020 than in 2002, while the loss from the RN license pool due to death and retirement is projected to be 128 percent higher.

Chart 4: Age Distribution of RNs: 1980, 2000 and 2020 Projected

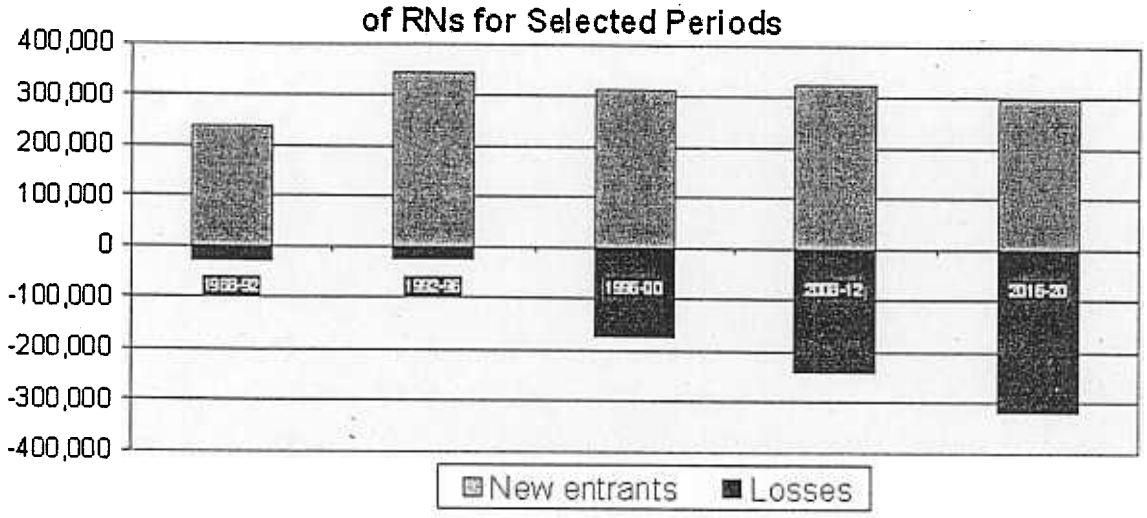


Source: Bureau of Health Professions, RN Sample Survey and Supply Projections.

[D]

In addition to the slower rate at which RNs were added to the workforce in the last half of the 1990s, they now appear to be leaving the RN license pool, through death or retirement, at a faster rate than ever. Over the four-year periods between the 1988 and 1992 surveys and the 1992 and 1996 surveys, the number of RNs leaving the license pool actually declined, from roughly 30,000 in the first four-year period to 23,000 in the second. Balancing these losses with the number of new graduates in each of these periods raised the RN license pool in those periods by 10 percent and 14 percent respectively. However, between the 1996 and 2000 surveys, the loss of RNs from the license pool increased six- to seven-fold, to nearly 175,000. *(See Chart 5)* Balancing this most recent set of losses with new graduates resulted in an increase in the RN license pool of only 5 percent, one-third to one-half the increase seen in the earlier surveys. If current projections hold, the situation will worsen as the number of losses approaches and then exceeds the number of new entrants. After balancing projected losses against projected new entrants, the RN supply is projected to grow 1.3 percent between 2008 and 2012, and by the end of the projection period, to decline by 1.9 percent between 2016 and 2020.

Chart 5: New Entrants and Losses From the Licensed Pool of RNs for Selected Periods

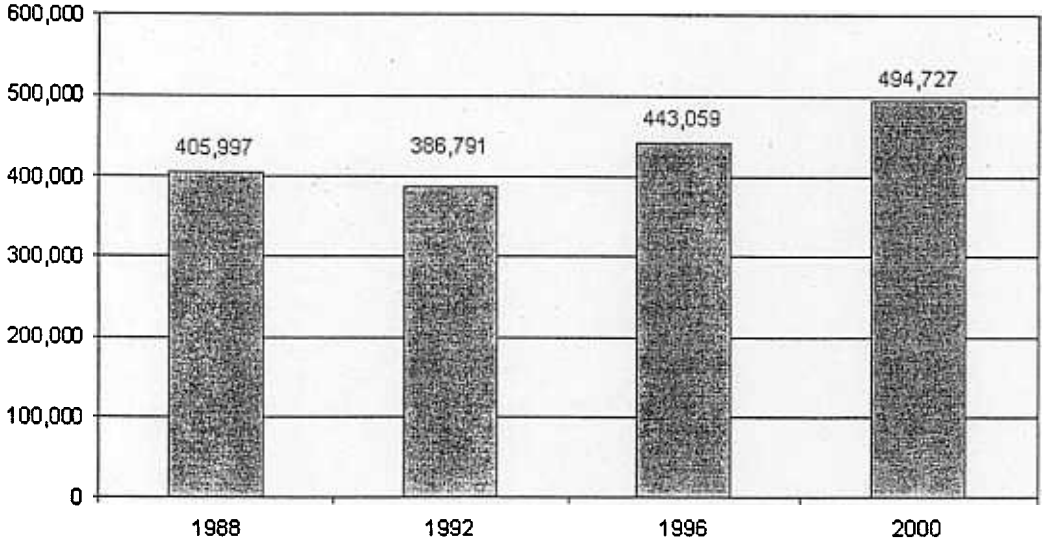


Source: Bureau of Health Professions, RN Sample Surveys and supply projections.

[D]

In addition to the number of RNs who give up their license, there are currently almost half-a-million licensed nurses not employed in nursing. Between the 1996 and 2000 surveys, the number of licensed RNs not employed in nursing grew by 52,000 to over 490,000 *(See Chart 6)*. Unfortunately, little is known about this population. However, what is known is that 69 percent, or 338,000, of the 490,000 licensed RNs not employed in nursing in 2000 were 50 years or older. Further, analysis of data from the 2000 RN Sample Survey shows that only 7 percent of the licensed RNs not employed in nursing were actively seeking employment in nursing.

Chart 6: Licensed Registered Nurses Not Employed in Nursing



Source: Bureau of Health Professions, RN Sample Surveys, various years.

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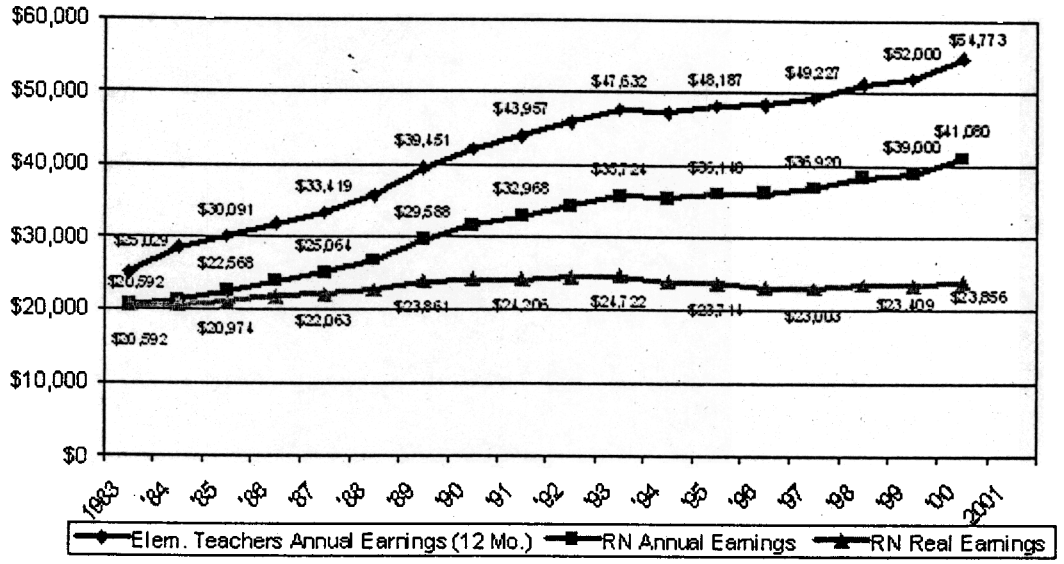
Declines in Relative Earnings:

Salaries are likely playing a role in the declining supply of RNs. While actual earnings for RNs increased steadily from 1983 through 2000, "real" earnings -- the amount available after adjusting for inflation -- have been relatively flat since 1991. Thus, on average, RNs have seen no increase in purchasing power over the last 9 years. *(See*

Chart 7) In contrast, the average salary for elementary school teachers has always been greater than that for RNs and is growing at a faster pace. [2] In 1983, the average elementary school teacher earned about $4,400 more than the average RN; by 2000 this had grown to the point where elementary school teachers earned about $13,600 more. [3]

Furthermore, a good portion of the wage growth for these nurses appears to occur early in their careers, then taper off with time. In 2000, staff RNs employed full-time in nursing, who graduated 5 years earlier, typically earned wages 15 to17 percent higher than those newly entering the field, depending on basic nursing preparation, but only 1 to 3 percent less than nurses who graduated 15 to 20 years earlier. As their potential for increased earnings diminishes over time, staff nurses may be motivated to leave patient care for additional education and/or other careers in nursing or outside the profession.

Chart 7: Actual Annual Earnings for RNs and Elementary School Teachers and "Real" Earnings for RNs: 1983-2000



Source: Bureau of Labor Statistics, Current Population Survey

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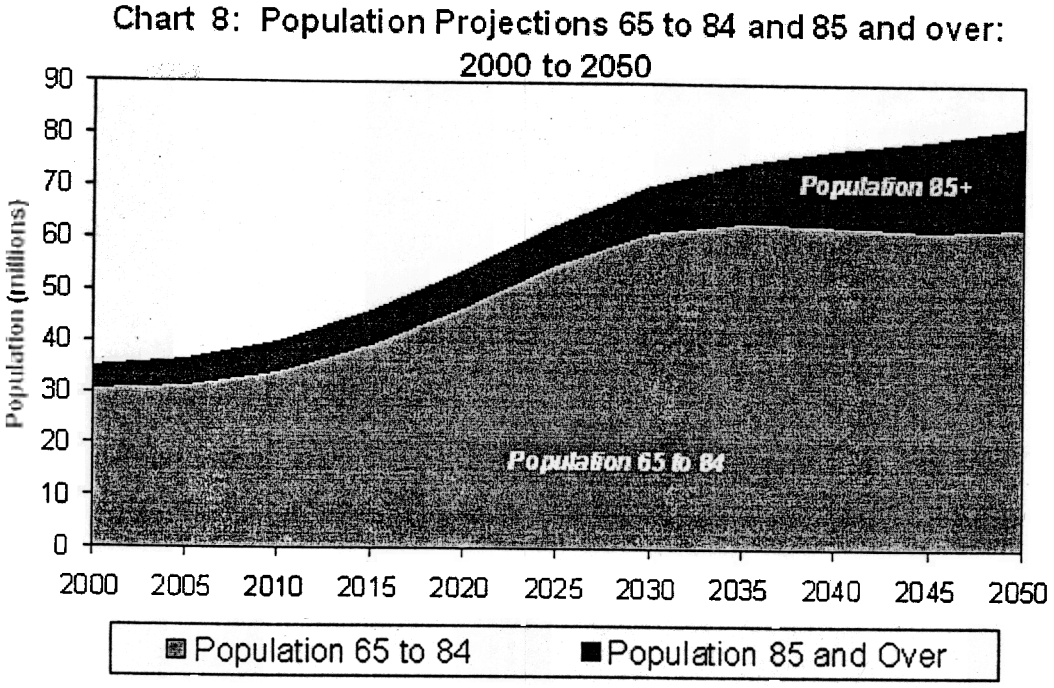
Projected Demand for Registered Nurses: Driving Forces and Trends

The major factors and trends behind the growth in RN demand include: population growth, aging of the population, increased per capita demand for health care, and trends in health care financing.

Population Growth and Aging:
The changing demographic nature of the population is a critical factor affecting demand for RNs. Recent projections show the Nation's population will grow 18 percent between 2000 and 2020, resulting in an additional 50 million people who will require health care. Much of this population growth can be attributed to advances in science and medicine that have increased life expectancy and resulted in a higher proportion of the population being over the age of 65, a significant source of demand for RNs.

In contrast to the 18 percent growth in overall population, the subgroup 65 years old and older is projected to grow 54 percent between 2000 and 2020, adding 19 million people to the 65-and-over age group. *(See Chart 8)* While this amount is less than the 31 million added to those under 65, individuals in the upper age brackets contribute disproportionately to health care spending, spending over 3 times as much on average as those under 65. Individuals 65 and over have a high incidence of chronic conditions such as: arthritis (50 percent), hypertension (36 percent), and heart disease (32 percent). Many also have multiple conditions requiring more regular care. The result is a population that currently has twice as many contacts with a physician as those under 65, accounts for 13 percent of the population but 38 percent of hospital discharges, and has annual per capita health care expenditures of $5,400 compared to $1,500 for those under 65. [4] The greatest per capita demand for health care, and thus the services of RNs, will quite naturally come from the very old, those 85 and over. This is the fastest growing segment of the population and a major user of long-term care facilities, home health care,

and other employers of RNs.

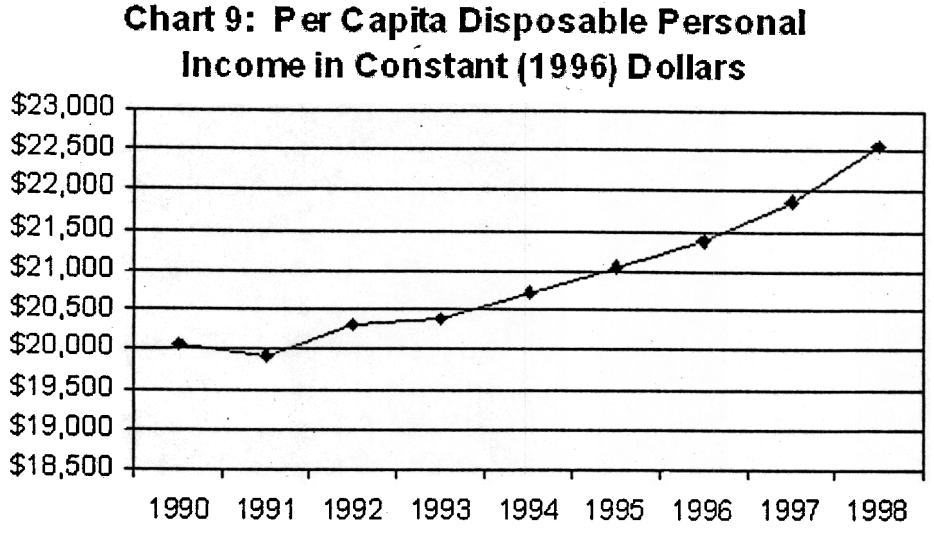


Source: U.S. Department of Commerce, Census Bureau.

[D]

Trends in Health Care Financing:

Demand for health care services, and by extension for registered nurses, is also driven by the ability to pay for health care, either with insurance or through out-of-pocket expenditures. Since 1990, an average of 85 percent of the population has been covered by some form of health insurance, making health care available to the vast majority of the population. [5] At the same time, real per capita disposable income has increased steadily, growing 16 percent between 1990 and 1999, making it easier to pay for non-covered health care with out-of-pocket resources, thereby increasing the demand for such care. [6] *(See Chart 9)*



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis

[D]

Distribution of Demand by Setting:
Between 2000 and 2020 the demand for RNs will continue to grow in all employment settings, but some will grow more rapidly than others, resulting in changes in the distribution of demand by setting. Hospitals have been and will continue to be the major source of demand for RNs but while the total number of nurses in hospitals will continue to grow, the hospital sector's share of total RN employment will remain stable at about 62 percent. *(See Appendix Table 7)* Employment settings closely associated with service to the elderly are projected to increase their share of the total demand for RNs. For example, the demand for RNs in nursing homes is projected to increase from 8 percent of total demand in 2000 to 10 percent in 2020. Similarly, growth in the home health care sector will result in an increase in demand for RNs from 6.5 percent to 9 percent of total RN demand. These increases will naturally be offset by a corresponding decline in the proportion of demand in ambulatory and "other" settings. [7]

APPENDIX

Table 1: National Supply and Demand Projections for FTE Registered Nurses; 2000 through 2020

Year	Supply	Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
2000	1,889,243	1,999,950	-110,707	-6%
2001	1,912,667	2,030,971	-118,304	-6%
2002	1,937,336	2,062,556	-125,220	-6%
2003	1,959,192	2,095,514	-136,322	-7%
2004	1,989,329	2,128,142	-138,813	-7%
2005	2,012,444	2,161,831	-149,387	-7%
2006	2,028,548	2,196,904	-168,356	-8%
2007	2,039,772	2,232,516	-192,744	-9%
2008	2,047,729	2,270,890	-223,161	-10%
2009	2,059,099	2,307,236	-248,137	-11%
2010	2,069,369	2,344,584	-275,215	-12%
2011	2,075,891	2,379,719	-303,828	-13%
2012	2,075,218	2,426,741	-351,523	-14%
2013	2,068,256	2,472,072	-403,816	-16%
2014	2,061,348	2,516,827	-455,479	-18%
2015	2,055,491	2,562,554	-507,063	-20%
2016	2,049,318	2,609,081	-559,763	-21%
2017	2,041,321	2,656,886	-615,565	-23%
2018	2,032,230	2,708,241	-676,011	-25%
2019	2,017,100	2,758,089	-740,989	-27%
2020	2,001,998	2,810,414	-808,416	-29%

Limitations of Supply, Demand, and Shortage Projections:

Supply and demand projections at the State level should be carefully assessed. Estimates of supply and demand by State are to some extent biased by national averages and arbitrary State boundaries. In particular, demand may be underestimated for States that are rural and mountainous, have higher than average elderly populations, and utilize more RNs than the national average in their health care systems. Because the model averages the nurse staffing across 50 States, the projected demand increases for those States may be underestimated. Conversely, for States that utilize lower RN staffing ratios than the national average, demand estimates may be overestimated.

Also, State boundaries, especially for small States may bias the demand and supply estimates. Hospitals in the District of Columbia (DC), for example, serve Maryland and Virginia. Thus, estimating demand for RNs, based on

current population in DC alone may underestimate the demand for RNs there. On the supply side, the same bias exists.

Table 2: Supply versus Demand Projections for FTE Registered Nurses by State--2000

State	2000 Supply	2000 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	30,987	31,902	-915	
Alaska	4,264	4,465	-201	-5%
Arizona	28,575	34,559	-5,984	-17%
Arkansas	17,147	18,574	-1,427	-8%
California	154,002	166,665	-12,663	-8%
Colorado	26,556	29,735	-3,179	-11%
Connecticut	26,407	30,137	-3,730	-12%
Delaware	6,024	6,773	-749	-11%
District of Columbia	8,877	9,096	-219	
Florida	112,735	115,928	-3,193	
Georgia	49,746	53,357	-3,611	-7%
Hawaii	7,516	8,278	-762	-9%
Idaho	6,765	6,235	530	
Illinois	87,457	86,097	1,360	
Indiana	38,780	42,893	-4,113	-10%
Iowa	25,897	26,839	-942	-3.5%
Kansas	21,204	19,448	1,756	*
Kentucky	30,064	28,399	1,665	
Louisiana	34,510	31,667	2,843	
Maine	10,936	12,383	-1,447	-12%
Maryland	38,291	38,836	-545	*
Massachusetts	59,884	66,919	-7,035	-11%
Michigan	66,452	67,295	-843	*
Minnesota	37,357	38,704	-1,347	-3.5%
Mississippi	19,652	19,650	2	*
Missouri	47,337	51,418	-4,081	-8%
Montana	6,327	5,527	800	*
Nebraska	13,826	14,590	-764	-5%
Nevada	9,320	10,461	-1,141	-11%
New Hampshire	9,446	10,456	-1,010	-10%
New Jersey	56,868	65,260	-8,392	-13%
New Mexico	10,295	11,115	-820	-7%
New York	136,663	153,388	-16,725	-11%
North Carolina	62,427	61,798	629	*
North Dakota	5,779	5,769	10	

Ohio	84,188	88,957	-4,769	-5%
Oklahoma	19,684	18,822	862	*
Oregon	21,498	22,347	-849	-3.8%
Pennsylvania	104,392	109,815	-5,423	-5%
Rhode Island	9,389	10,449	-1,060	-10%
South Carolina	25,877	25,981	-104	
South Dakota	7,463	6,905	558	
Tennessee	43,757	50,555	-6,798	-13%
Texas	116,252	127,661	-11,409	-9%
Utah	10,940	11,900	-960	-8%
Vermont	4,596	4,618	-22	*
Virginia	43,602	48,338	-4,736	-10%
Washington	33,486	36,862	-3,376	-9%
West Virginia	13,831	12,535	1,296	
Wisconsin	38,498	36,241	2,257	
Wyoming	3,417	3,349	68	
TOTAL U.S.	1,889,243	1,999,950	-110,707	-6%

* No definitive shortage. Estimate is -3% or above.

Table 3: Supply versus Demand Projections for FTE Registered Nurses by State--2005

State	2005 Supply	2005 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	32,606	34,422	-1,816	-5%
Alaska	3,645	5,023	-1,378	-27%
Arizona	31,395	39,507	-8,112	-21%
Arkansas	18,092	20,086	-1,994	-10%
California	162,645	181,054	-18,409	-10%
Colorado	29,676	33,911	-4,235	-12%
Connecticut	24,175	31,919	-7,744	-24%
Delaware	5,272	7,398	-2,126	-29%
District of Columbia	7,855	9,160	-1,305	-14%
Florida	120,285	128,983	-8,698	-7%
Georgia	50,374	59,199	-8,825	-15%
Hawaii	10,348	9,168	1,180	*
Idaho	5,772	7,246	-1,474	-20%
Illinois	89,830	90,521	-691	*
Indiana	40,741	46,036	-5,295	-12%
Iowa	29,489	28,406	1,083	*
Kansas	24,758	20,692	4,066	*
Kentucky	37,224	30,359	6,865	*
Louisiana	35,664	34,004	1,660	*
Maine	12,002	13,169	-1,167	-9%
Maryland	38,472	41,771	-3,299	-8%
Massachusetts	65,801	70,621	-4,820	-7%

Michigan	69,259	70,718	-1,459	
Minnesota	44,200	42,247	1,953	
Mississippi	21,667	21,205	462	*
Missouri	50,086	54,663	-4,577	-8%
Montana	6,795	6,258	537	*
Nebraska	14,316	15,723	-1,407	-9%
Nevada	10,424	12,275	-1,851	-15%
New Hampshire	10,684	11,504	-820	-7%
New Jersey	56,609	69,570	-12,961	-19%
New Mexico	9,509	12,595	-3,086	-25%
New York	146,211	158,851	-12,640	-8%
North Carolina	69,509	68,578	931	*
North Dakota	6,061	6,260	-199	-3.2%
Ohio	96,213	94,204	2,009	*
Oklahoma	19,163	20,411	-1,248	-6%
Oregon	22,433	25,116	-2,683	-11%
Pennsylvania	104,368	115,201	-10,833	-9%
Rhode Island	9,247	10,977	-1,730	-16%
South Carolina	27,739	28,388	-649	*
South Dakota	7,934	7,500	434	*
Tennessee	43,232	55,687	-12,455	-22%
Texas	131,897	142,102	-10,205	-7%
Utah	12,088	13,766	-1,678	-12%
Vermont	5,704	4,991	713	
Virginia	45,079	52,777	-7,698	-15%
Washington	35,676	41,471	-5,795	-14%
West Virginia	13,862	13,124	738	*
Wisconsin	43,659	39,152	4,507	
Wyoming	2,699	3,860	-1,161	-30%
TOTAL U.S.	2,012,444	2,161,831	-149,387	-7%

* No definitive shortage. Estimate is -3% or above

Table 4: Supply versus Demand Projections for FTE Registered Nurses by State--2010

State	2010 Supply	2010 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	34,986	37,257	-2,271	-6%
Alaska	3,275	5,602	-2,327	-42%
Arizona	33,030	44,054	-11,024	-25%
Arkansas	18,700	21,803	-3,103	-14%
California	161,337	203,511	-42,174	-21%
Colorado	31,432	37,860	-6,428	-17%
Connecticut	22,422	34,158	-11,736	-34%
Delaware	4,886	7,922	-3,036	-38%
District of Columbia	7,635	9,720	-2,085	-21%

Florida	126,075	143,873	-17,798	-12%
Georgia	50,239	65,316	-15,077	-23%
Hawaii	12,110	10,189	1,921	*
Idaho	5,168	8,140	-2,972	-37%
Illinois	91,419	95,684	-4,265	-4%
Indiana	40,879	49,090	-8,211	-17%
Iowa	32,044	29,764	2,280	
Kansas	27,248	22,087	5,161	
Kentucky	42,297	32,516	9,781	
Louisiana	37,534	36,831	703	
Maine	12,440	14,204	-1,764	-12%
Maryland	37,287	45,059	-7,772	-17%
Massachusetts	65,937	75,033	-9,096	-12%
Michigan	68,797	74,285	-5,488	-7%
Minnesota	47,003	45,943	1,060	
Mississippi	23,809	22,849	960	
Missouri	51,634	58,309	-6,675	-11%
Montana	6,838	6,943	-105	*
Nebraska	14,561	16,912	-2,351	-14%
Nevada	10,931	13,493	-2,562	-19%
New Hampshire	11,312	12,588	-1,276	-10%
New Jersey	55,794	74,527	-18,733	-25%
New Mexico	9,037	14,144	-5,107	-36%
New York	149,487	166,690	-17,203	-10%
North Carolina	73,428	75,474	-2,046	*
North Dakota	6,139	6,755	-616	-9%
Ohio	105,255	99,405	5,850	
Oklahoma	19,501	22,385	-2,884	-13%
Oregon	21,872	28,071	-6,199	-22%
Pennsylvania	103,426	120,492	-17,066	-14%
Rhode Island	8,552	11,608	-3,056	-26%
South Carolina	29,565	31,120	-1,555	-5%
South Dakota	8,117	8,049	68	
Tennessee	42,033	61,083	-19,050	-31%
Texas	141,581	158,372	-16,791	-11%
Utah	12,617	15,508	-2,891	-19%
Vermont	6,265	5,367	898	
Virginia	45,716	57,643	-11,927	-21%
Washington	35,998	46,691	-10,693	-23%
West Virginia	13,927	13,744	183	*
Wisconsin	45,373	42,060	3,313	
Wyoming	2,421	4,402	-1,981	-45%
TOTAL U.S.	2,069,369	2,344,584	-275,215	-12%

* No definitive shortage. Estimate is -3% or above.

Table 5: Supply versus Demand Projections for FTE Registered Nurses by State--2015

State	2015 Supply	2015 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	36,127	40,689	-4,562	-11%
Alaska	3,005	6,197	-3,192	-52%
Arizona	33,792	49,348	-15,556	-32%
Arkansas	18,285	23,912	-5,627	-24%
California	153,654	231,711	-78,057	-34%
Colorado	32,135	42,159	-10,024	-24%
Connecticut	19,841	36,786	-16,945	-46%
Delaware	4,669	8,465	-3,796	-45%
District of Columbia	7,546	10,450	-2,904	-28%
Florida	126,257	162,616	-36,359	-22%
Georgia	49,183	72,248	-23,065	-32%
Hawaii	13,128	11,402	1,726	*
Idaho	4,599	9,139	-4,540	-50%
Illinois	91,032	101,944	-10,912	-11%
Indiana	40,206	52,358	-12,152	-23%
Iowa	33,642	31,468	2,174	
Kansas	27,704	23,759	3,945	
Kentucky	44,479	35,215	9,264	
Louisiana	37,594	40,177	-2,583	-6%
Maine	12,114	15,486	-3,372	-22%
Maryland	35,738	48,782	-13,044	-27%
Massachusetts	63,816	80,595	-16,779	-21%
Michigan	67,186	78,433	-11,247	-14%
Minnesota	47,837	50,229	-2,392	-5%
Mississippi	25,192	24,930	262	*
Missouri	51,341	62,654	-11,313	-18%
Montana	6,713	7,756	-1,043	-13%
Nebraska	14,312	18,308	-3,996	-22%
Nevada	11,426	14,798	-3,372	-23%
New Hampshire	11,240	13,825	-2,585	-19%
New Jersey	53,241	80,398	-27,157	-34%
New Mexico	8,387	15,946	-7,559	-47%
New York	147,852	176,911	-29,059	-16%
North Carolina	74,546	83,414	-8,868	-11%
North Dakota	6,110	7,341	-1,231	-17%
Ohio	109,588	105,593	3,995	
Oklahoma	19,722	24,681	-4,959	-20%

Oregon	20,536	31,576	-11,040	-35%
Pennsylvania	99,517	127,301	-27,784	-22%
Rhode Island	7,676	12,360	-4,684	-38%
South Carolina	30,688	34,259	-3,571	-10%
South Dakota	7,860	8,683	-823	-9%
Tennessee	40,263	67,373	-27,110	-40%
Texas	146,573	176,815	-30,242	-17%
Utah	12,679	17,312	-4,633	-27%
Vermont	6,589	5,813	776	*
Virginia	44,711	63,157	-18,446	-29%
Washington	35,150	52,722	-17,572	-33%
West Virginia	13,849	14,574	-725	-5%
Wisconsin	43,956	45,492	-1,536	-3.4%
Wyoming	2,205	4,995	-2,790	-56%
TOTAL U.S.	2,055,491	2,562,554	-507,063	-20%

* No definitive shortage. Estimate is -3% or above.

Table 6: Supply versus Demand Projections for FTE Registered Nurses by State--2020

	2020 Supply	2020 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	36,309	44,662	-8,353	-18.7%
Alaska	2,859	6,822	-3,963	-58.1%
Arizona	33,780	55,519	-21,739	-39.2%
Arkansas	17,414	26,450	-9,036	-34.2%
California	142,978	263,673	-120,695	-45.8%
Colorado	32,310	47,028	-14,718	-31.3%
Connecticut	17,870	39,661	-21,791	-54.9%
Delaware	4,408	9,090	-4,682	-51.5%
District of Columbia	7,387	11,238	-3,851	-34.3%
Florida	123,904	185,050	-61,146	-33.0%
Georgia	47,939	79,982	-32,043	-40.1%
Hawaii	13,858	12,832	1,026	*
Idaho	4,219	10,325	-6,106	-59.1%
Illinois	87,975	109,334	-21,359	-19.5%
Indiana	38,326	55,912	-17,586	-31.5%
	34,385	33,615	770	*
Kansas	27,075	25,617	1,458	
Kentucky	44,623	38,114	6,509	
Louisiana	36,624	44,034	-7,410	-16.8%
Maine	11,719	16,930	-5,211	-30.8%

Maryland	33,892	52,846	-18,954	-35.9%
Massachusetts	60,983	86,365	-25,382	-29.4%
Michigan	64,426	82,729	-18,303	-22.1%
Minnesota	47,213	55,309	-8,096	-14.6%
Mississippi	25,972	27,414	-1,442	-5.3%
Missouri	50,523	67,547	-17,024	-25.2%
Montana	6,543	8,731	-2,188	-25.1%
Nebraska	13,917	19,952	-6,035	-30.2%
Nevada	11,847	16,333	-4,486	-27.5%
New Hampshire	11,007	15,073	-4,066	-27.0%
New Jersey	49,760	87,279	-37,519	-43.0%
New Mexico	7,792	18,056	-10,264	-56.8%
New York	144,129	188,740	-44,611	-23.6%
North Carolina	74,396	92,320	-17,924	-19.4%
North Dakota	6,132	8,053	-1,921	-23.9%
Ohio	108,559	111,693	-3,134	*
Oklahoma	19,615	27,359	-7,744	-28.3%
Oregon	19,124	35,653	-16,529	-46.4%
Pennsylvania	94,759	135,140	-40,381	-29.9%
Rhode Island	6,967	13,266	-6,299	-47.5%
South Carolina	31,034	37,775	-6,741	-17.8%
South Dakota	7,346	9,507	-2,161	-22.7%
Tennessee	38,391	74,596	-36,205	-48.5%
Texas	145,861	197,937	-52,076	-26.3%
Utah	12,407	19,332	-6,925	-35.8%
Vermont	6,792	6,313	479	
Virginia	43,834	68,945	-25,111	-36.4%
Washington	34,295	59,746	-25,451	-42.6%
West Virginia	13,649	15,525	-1,876	-12.1%
Wisconsin	42,799	49,350	-6,551	-13.3%
Wyoming	2,072	5,640	-3,568	-63.3%
TOTAL U.S.	2,001,998	2,810,414	-808,416	-28.8%

* No definitive shortage. Estimate is -3% or above.

Demand for Full-Time Equivalent RNs by Employment Setting for Select Years 2000-2020

Table 7: Employment Distribution by Setting

Year	Total	Hospitals	Nursing Homes	Public Health	Ambulatory Care	Home Health	Occupationa Health
2000	1,999,950	1,242,831	168,529	95,360	160,911	130,288	20,04
2005	2,161,831	1,339,493	194,219	94,328	169,329	152,622	20,98
2010	2,344,584	1,451,083	223,193	93,226	178,272	177,583	21,82

2015	2,562,554	1,588,828	254,718	92,297	187,348	209,192	22,24
2020	2,810,414	1,741,639	291,513	91,360	196,399	248,848	22,39

Percentage Distribution by Setting

Year	Total	Hospitals	Nursing Homes	Public Health	Ambulatory Care	Home Health	Occupationa Health
2000	100%	62.1%	8.4%	4.8%	8.0%	6.5%	1.0%
2005	100%	62.0%	9.0%	4.4%	7.8%	7.1%	1.0%
2010	100%	61.9%	9.5%	4.0%	7.6%	7.6%	0.9%
2015	100%	62.0%	9.9%	3.6%	7.3%	8.2%	0.9%
2020	100%	62.0%	10.4%	3.3%	7.0%	8.9%	0.8%

Registered Nurse Demand Model (NDM)

The model used to project the demand for registered nurses is the Nursing Demand Model (NDM). The NDM combines empirical analysis with input from healthcare experts regarding how the health care system operates and the role of nurses in the delivery of care.

The NDM forecasts future demand for healthcare services in six settings: inpatient, outpatient, and emergency departments in general and short-term hospitals; non-general and long-term hospitals; nursing facilities; and home health.

The workload measures used to model demand for healthcare services are inpatient days (for inpatient settings in short-term hospitals and for long-term hospitals); visits (for short-term hospital outpatient and emergency department settings, and for home health); and nursing facility residents. Data limitations prevented the modeling of State-level estimates of the demand for ambulatory care in physician offices, occupational settings, at schools, and in public health clinics.

To forecast future healthcare demands of the population and where patients are likely to receive services, the NDM first divides the population into 32 subgroups based on age, sex, and urban or rural location. For each subgroup, the current national per capita use of health care services was estimated for each of the six delivery settings. The NDM then applies these national rates to each State's population to obtain initial estimates of demand for healthcare services at the State level. Then, the NDM multiplies this initial extrapolation of healthcare utilization with a scalar that inflates or deflates the initial extrapolation to incorporate the projected impact on utilization of trends in the healthcare operating environment, economic conditions, and the overall health of the population.

To forecast the level of nursing services that patients will require and the mix of nurses to provide those services, the NDM forecasts future nurse staffing intensity. Staffing intensity is defined in terms of FTE nurses per unit of healthcare services provided for the six delivery settings where future healthcare use is estimated (e.g., FTE RNS per 1,000 inpatient days at short-term hospitals). Staffing intensity is defined in terms of FTE nurses per population in the delivery settings where future healthcare use is not estimated (e.g., FTE RNs in public health per 10,000 population.) Forecasts of future nurse staffing intensity are based on extrapolations of current staffing intensity and take into account projected trends in the healthcare operating environment, in acuity, and in economic conditions that affect staffing intensity.

Twenty-four equations in the NDM quantify the relationship between healthcare utilization and its determinants and between nurse staffing intensity and its determinants. Twenty of these equations were estimated using multiple regression analysis with State-level data from 1996 through 2000, although most regression equations were estimated using a subset of these years based on data availability. Six equations describe the relationship between healthcare utilization and its determinants for the six healthcare settings modeled. Eighteen equations describe the relationship between nurse requirements and its determinants for each nurse type in each setting modeled. In four settings, poor data or poor regression results led to the decision to model future requirements

using an alternative approach. RN and LPN requirements in the "all other" category are modeled as a fixed ratio of FTE nurses per population. RN requirements in the "school health" category are modeled as a fixed ratio of FTE RNs per population age 5-17. RN requirements in nurse education are modeled as fixed percentages of total RN requirements in the other 11 settings.

Nursing Supply Model

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.

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 – diploma, associate degree, 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.

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.

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 re-licensed after having dropped all their licenses.

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 derivation of the full-time equivalent RN supply was dependent upon data in the March 2000 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.

[1] Both supply and demand are defined in this report in full-time equivalent (FTE) terms. Full-time equivalency provides an unequivocal measure of the number of nurses that would be needed (in the case of demand) or available (in the case of supply) if everyone worked full-time. There were 2.2 million employed nurses in the United States in 2000, some of whom worked part-time. In FTE terms, that would be the equivalent of approximately 1.9 million full-time RNs.

[2] BHPr adjusted the normal 9-month salary of elementary school teachers to its 12-month equivalent.

[3] Elementary school teacher is an alternative career choice normally available to baccalaureate-prepared RNs.

[4] Agency for Healthcare Research and Quality, "Data from the 1996 Medical Expenditure Panel Survey, (MEPS) Projected to 1999-2008: Medical Expenditures by Type of Service and Source of Payment for Age, Race and Sex", January 2002.

[5] 2000 Statistical Abstract p. 118, table No. 177.

[6] Disposable income is essentially the after-tax income available to persons for spending or saving.

[7] "Other" settings include occupational nursing, nursing education, and school nurses.

Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020

July 2002
U.S. Department of Health and Human Services
Health Resources and Services Administration
Bureau of Health Professions
National Center For Health Workforce Analysis

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Introduction

The Health Resources and Service Administration, Bureau of Health Professions, National Center for Health Workforce Analysis ("National Center") is the primary Federal agency responsible for providing information and analysis relating to the supply and demand for health professionals. In support of this role, the National Center has recently assumed responsibility from the Bureau's Division of Nursing for conducting the quadrennial National Sample Survey of Registered Nurses and developing supply and demand projections for registered nurses. Supply and demand projections of registered nurses (RNs) for the period 2000 through 2020 are the subject of this report. [1] Using data on supply trends drawn from the 2000 National Sample Survey of Registered Nurses, these new projections show that a shortage of FTE registered nurses, previously projected to begin around 2007, was already evident in the year 2000.

This report consists of three sections. The first presents the National Center's projections of RN supply and

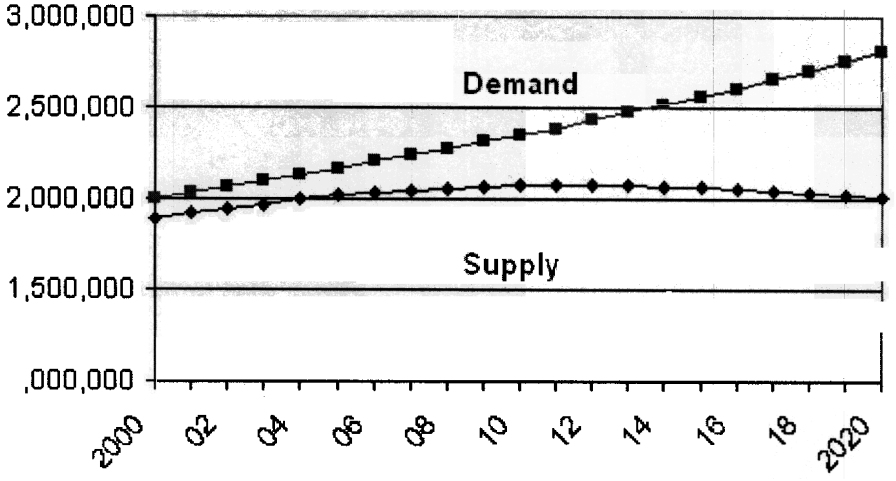
demand, both national and State-specific, for the years 2000 through 2020. The second identifies and discusses the driving forces and trends underlying the projected supply; the third does the same for the projected demand. Relevant charts, maps, and tables are presented both in the body of the report and in an Appendix.

National Supply and Demand Projections

In 2000, the National supply of FTE registered nurses was estimated at 1.89 million while the demand was estimated at 2 million, a shortage of 110,000 or 6 percent. Based on what is known about trends in the supply of RNs and their anticipated demand, the shortage is expected to grow relatively slowly until 2010, by which time it will have reached 12 percent. At that point demand will begin to exceed supply at an accelerated rate and by 2015 the shortage, a relatively modest 6 percent in the year 2000, will have almost quadrupled to 20 percent. If not addressed, and if current trends continue, the shortage is projected to grow to 29 percent by 2020. These numbers are shown in Table 1 of the Appendix.

The projected shortage in 2020 results from a projected 40 percent increase in demand between 2000 and 2020 compared to a projected 6 percent growth in supply. Demand will grow steadily at a rate of 1.7 percent annually, a relatively modest growth rate when compared to the 2.3 percent annual growth in demand projected by the Department of Labor's Bureau of Labor Statistics. Factors driving the growth in demand include an 18 percent increase in population, a larger proportion of elderly persons, and medical advances that heighten the need for nurses. In contrast, the projected growth in supply is expected to reach a peak of only 10 percent by 2011 and then begin to decline as the number of nurses leaving the profession exceeds the number that enter. *(See Chart 1)*

Chart 1: National Supply and Demand Projections for FTE Registered Nurses: 2000 to 2020



Source: Bureau of Health Professions, RN Supply and Demand Projections

[D]

Distribution of the RN Shortage:

The national shortage of RNs is not evenly distributed across States. In 2000, 30 States were estimated to have shortages. *(See Map 1)* Because of uncertainties in the estimation process, only States with shortages greater than 3 percent are identified as shortage States. Affecting the accuracy of State-specific supply and demand projections are situations where: (a) a State may have many local shortages yet overall have an adequate supply; (b) significant numbers of nurses commute across State boundaries to work; (c) jurisdictions like Washington, D.C. provide service to large populations from outside its boundaries; and (d) demand projection methodology inadequately accounts for the differences in nursing utilization patterns that may exist between States.

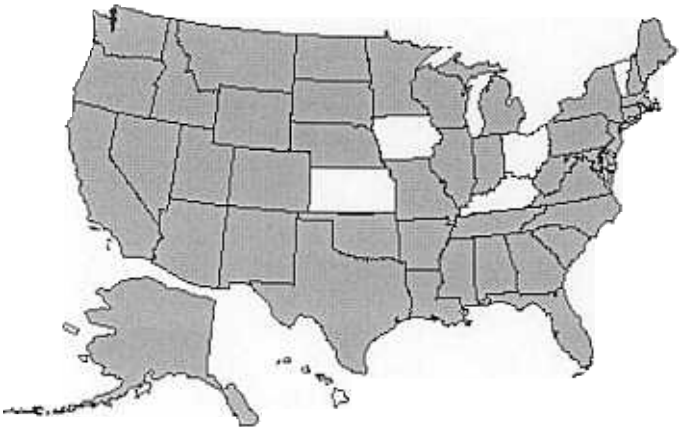
Map 1: States with Shortages of FTE Registered Nurses in 2000



States with shortages ☐ States without shortages [D}

By 2020, 44 States and the District of Columbia are projected to have shortages. *(See Map 2)* State-specific projections for the years 2000 through 2020 are found in Tables 2, 3, 4, 5 and 6 of the Appendix.

Map 2: States with Projected Shortages of FTE Registered Nurses in 2020



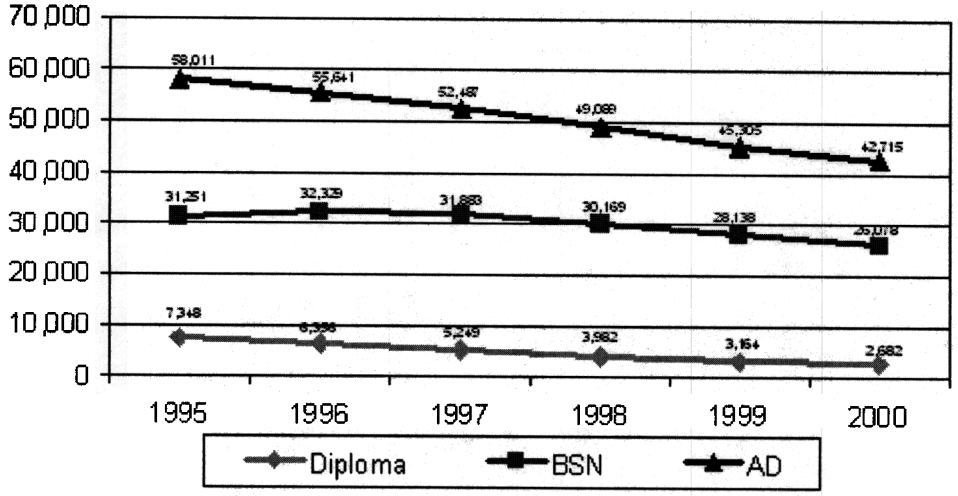
States with shortages ☐ States without shortages [D]

Projected Supply of RNs—Driving Forces and Trends

An examination of factors affecting the supply of RNs sheds light on what has caused the current shortage. These factors include the declining number of nursing school graduates, the aging of the RN workforce, declines in relative earnings, and the emergence of alternative job opportunities.

Declining numbers of nursing graduates:
Data on the growth in new RNs, as measured by those passing the RN licensing test (NCLEX), show that after growing steadily during the first half of the 1990s the number of new RN graduates fell annually in the last half of the decade, resulting in 26 percent fewer RN graduates in 2000 than in 1995. Declines were seen across all degree programs--diploma, associate degree, and baccalaureate. The decrease in diploma graduates continues a trend driven in the past few decades by the closing of hospital-based diploma programs. In contrast, the declines in associate degree and baccalaureate graduates are a more recent phenomenon, having occurred only since the mid-1990s. **(See Chart 2)** Further, due to declines in enrollments over the past 5 years, no increase in the number of graduates is expected in the short term. Although the American Association of Colleges of Nursing (AACN) did report a 4 percent increase in baccalaureate enrollment between 2000 and 2001, the relatively longer educational pipeline for baccalaureate students increases the length of time before licensed RNs will emerge.

Chart 2: Total Number of RN Graduates by Degree Program, 1995-2000

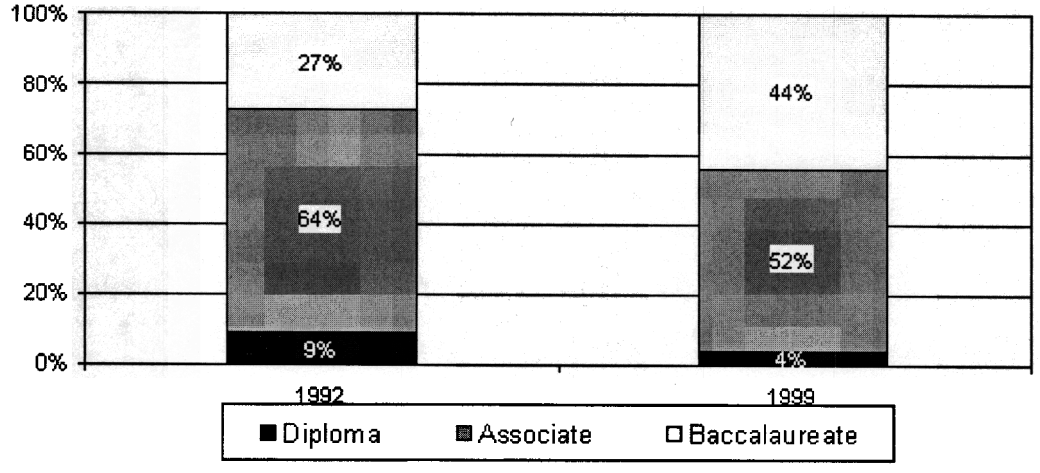


Source: National Council of State Boards of Nursing, NCLEX

[D]

Associate degree graduates are declining at a somewhat faster rate than baccalaureate graduates, with the net result that baccalaureate graduates now comprise an increasingly greater share of total graduates. *(See Chart 3)*

Chart 3: Distribution of RN Graduates by Educational Preparation: 1992 and 1999



Source: National Council of State Boards of Nursing, NCLEX exam

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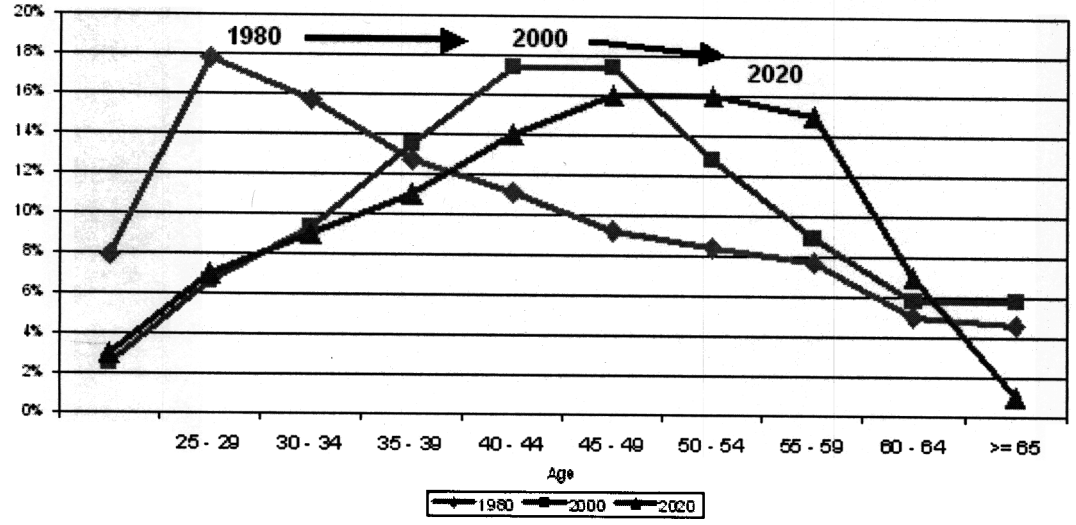
This evolving shift from associate degree to baccalaureate-prepared RNs has, as noted earlier, a constraining effect on growth in supply. Baccalaureate-prepared RNs may need twice as long to complete their education and enter the workforce as those graduating from associate degree programs, thereby increasing the length of time needed for the average RN student to enter the workforce, thus creating a temporary hiatus in the growth of supply.

Aging of the RN Workforce:

The average age for RNs has climbed steadily in recent years resulting in a greater proportion of nurses in the

older age brackets who are approaching retirement age. Three factors contribute to this aging of the RN workforce: (1) the decline in number of nursing school graduates, (2) the higher average age of recent graduating classes, and (3) the aging of the existing pool of licensed nurses. Graduates of associate degree programs, the largest source of new RNs, are on average 33 years old when they graduate, considerably older than in 1980 when the average age of a new associate degree graduate was 28. The result has been a significant decline in the proportion of RNs under the age of 30. Between 1980 and 2000, that proportion declined from 25 percent to 9 percent. *(See Chart 4)* This slowing of new, young entrants coupled with an accelerating retirement rate for older RNs will produce a national supply of nurses that in 2020 will not only be older but no larger than the supply projected for 2005. The number of new licenses in nursing is projected to be 17 percent lower in 2020 than in 2002, while the loss from the RN license pool due to death and retirement is projected to be 128 percent higher.

Chart 4: Age Distribution of RNs: 1980, 2000 and 2020 Projected

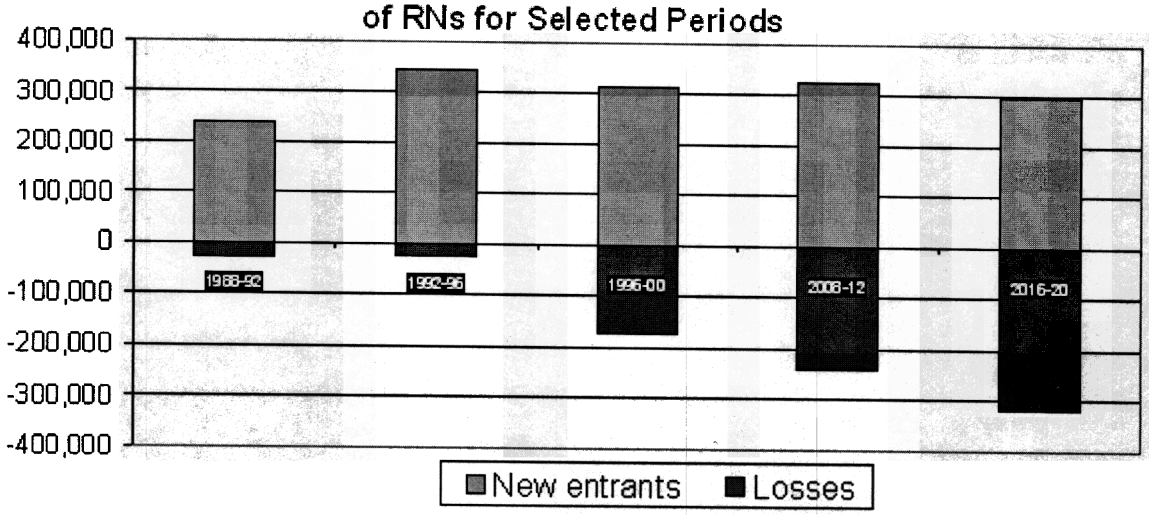


Source: Bureau of Health Professions, RN Sample Survey and Supply Projections.

[D]

In addition to the slower rate at which RNs were added to the workforce in the last half of the 1990s, they now appear to be leaving the RN license pool, through death or retirement, at a faster rate than ever. Over the four-year periods between the 1988 and 1992 surveys and the 1992 and 1996 surveys, the number of RNs leaving the license pool actually declined, from roughly 30,000 in the first four-year period to 23,000 in the second. Balancing these losses with the number of new graduates in each of these periods raised the RN license pool in those periods by 10 percent and 14 percent respectively. However, between the 1996 and 2000 surveys, the loss of RNs from the license pool increased six- to seven-fold, to nearly 175,000. *(See Chart 5)* Balancing this most recent set of losses with new graduates resulted in an increase in the RN license pool of only 5 percent, one-third to one-half the increase seen in the earlier surveys. If current projections hold, the situation will worsen as the number of losses approaches and then exceeds the number of new entrants. After balancing projected losses against projected new entrants, the RN supply is projected to grow 1.3 percent between 2008 and 2012, and by the end of the projection period, to decline by 1.9 percent between 2016 and 2020.

Chart 5: New Entrants and Losses From the Licensed Pool of RNs for Selected Periods

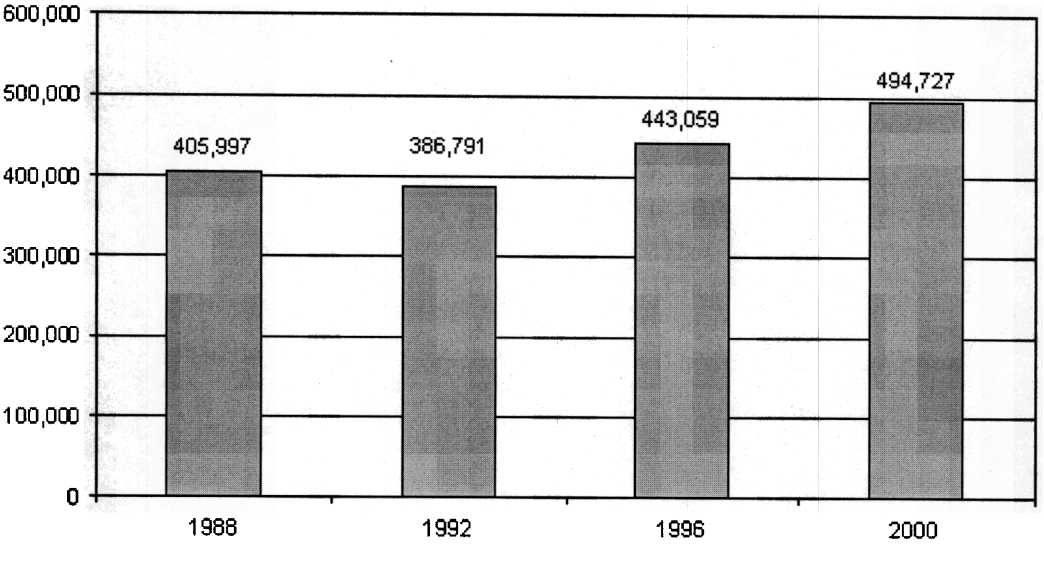


Source: Bureau of Health Professions, RN Sample Surveys and supply projections.

[D]

In addition to the number of RNs who give up their license, there are currently almost half-a-million licensed nurses not employed in nursing. Between the 1996 and 2000 surveys, the number of licensed RNs not employed in nursing grew by 52,000 to over 490,000 *(See Chart 6)*. Unfortunately, little is known about this population. However, what is known is that 69 percent, or 338,000, of the 490,000 licensed RNs not employed in nursing in 2000 were 50 years or older. Further, analysis of data from the 2000 RN Sample Survey shows that only 7 percent of the licensed RNs not employed in nursing were actively seeking employment in nursing.

Chart 6: Licensed Registered Nurses Not Employed in Nursing



Source: Bureau of Health Professions, RN Sample Surveys, various years.

[D]

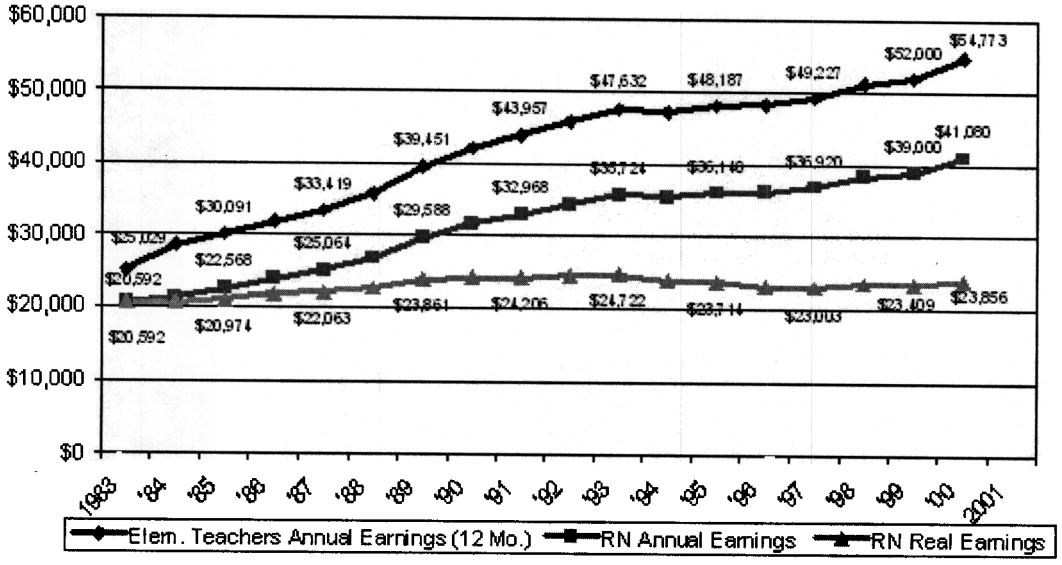
Declines in Relative Earnings:

Salaries are likely playing a role in the declining supply of RNs. While actual earnings for RNs increased steadily from 1983 through 2000, "real" earnings -- the amount available after adjusting for inflation -- have been relatively flat since 1991. Thus, on average, RNs have seen no increase in purchasing power over the last 9 years. *(See*

Chart 7) In contrast, the average salary for elementary school teachers has always been greater than that for RNs and is growing at a faster pace. [2] In 1983, the average elementary school teacher earned about $4,400 more than the average RN; by 2000 this had grown to the point where elementary school teachers earned about $13,600 more. [3]

Furthermore, a good portion of the wage growth for these nurses appears to occur early in their careers, then taper off with time. In 2000, staff RNs employed full-time in nursing, who graduated 5 years earlier, typically earned wages 15 to17 percent higher than those newly entering the field, depending on basic nursing preparation, but only 1 to 3 percent less than nurses who graduated 15 to 20 years earlier. As their potential for increased earnings diminishes over time, staff nurses may be motivated to leave patient care for additional education and/or other careers in nursing or outside the profession.

Chart 7: Actual Annual Earnings for RNs and Elementary School Teachers and "Real" Earnings for RNs: 1983-2000



Source: Bureau of Labor Statistics, Current Population Survey

[D]

Projected Demand for Registered Nurses: Driving Forces and Trends

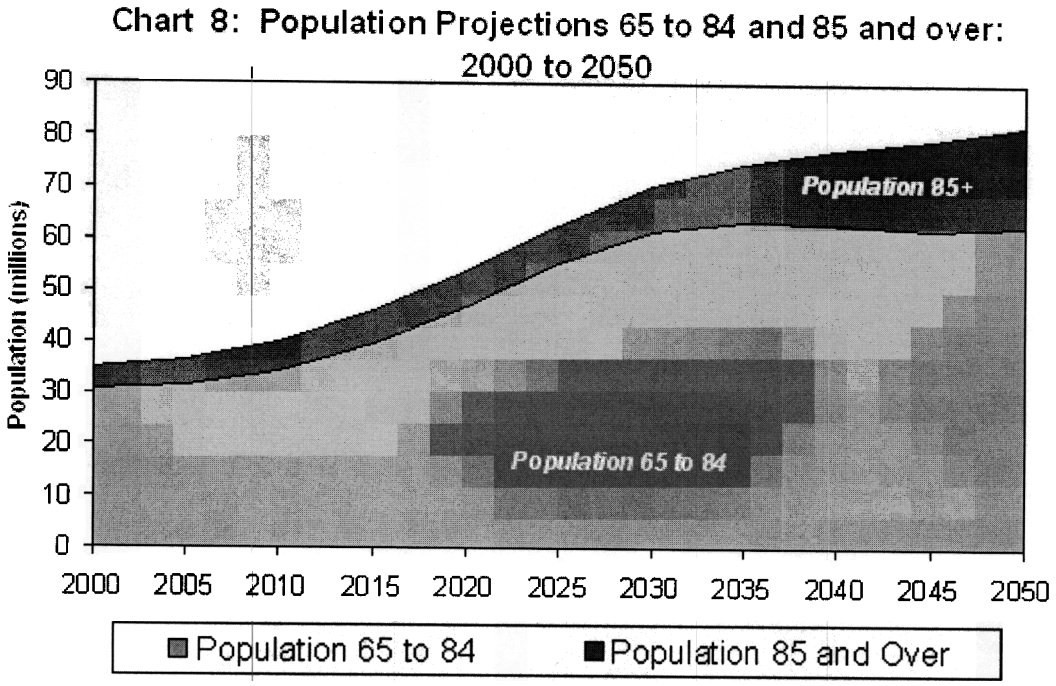
The major factors and trends behind the growth in RN demand include: population growth, aging of the population, increased per capita demand for health care, and trends in health care financing.

Population Growth and Aging:

The changing demographic nature of the population is a critical factor affecting demand for RNs. Recent projections show the Nation's population will grow 18 percent between 2000 and 2020, resulting in an additional 50 million people who will require health care. Much of this population growth can be attributed to advances in science and medicine that have increased life expectancy and resulted in a higher proportion of the population being over the age of 65, a significant source of demand for RNs.

In contrast to the 18 percent growth in overall population, the subgroup 65 years old and older is projected to grow 54 percent between 2000 and 2020, adding 19 million people to the 65-and-over age group. *(See Chart 8)* While this amount is less than the 31 million added to those under 65, individuals in the upper age brackets contribute disproportionately to health care spending, spending over 3 times as much on average as those under 65. Individuals 65 and over have a high incidence of chronic conditions such as: arthritis (50 percent), hypertension (36 percent), and heart disease (32 percent). Many also have multiple conditions requiring more regular care. The result is a population that currently has twice as many contacts with a physician as those under 65, accounts for 13 percent of the population but 38 percent of hospital discharges, and has annual per capita health care expenditures of $5,400 compared to $1,500 for those under 65. [4] The greatest per capita demand for health care, and thus the services of RNs, will quite naturally come from the very old, those 85 and over. This is the fastest growing segment of the population and a major user of long-term care facilities, home health care,

and other employers of RNs.

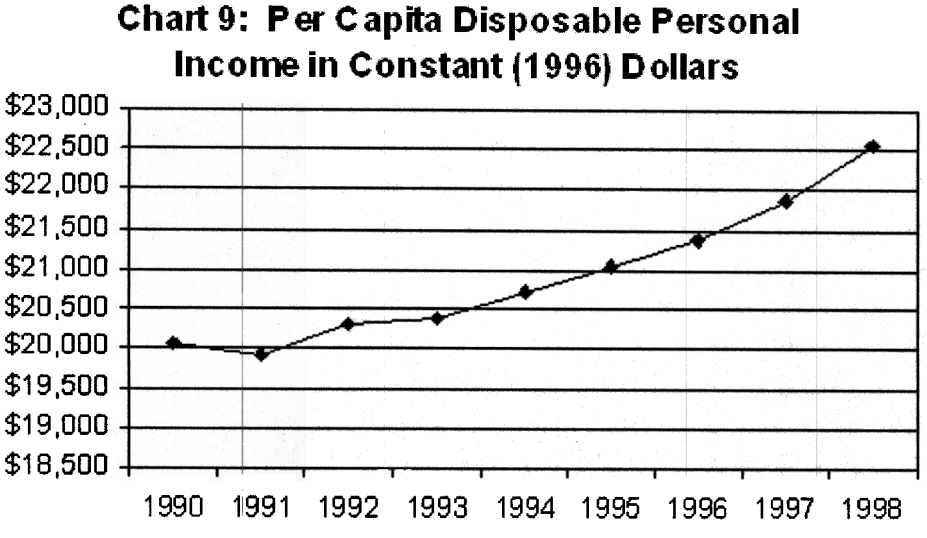


Source: U.S. Department of Commerce, Census Bureau.

[D]

Trends in Health Care Financing:

Demand for health care services, and by extension for registered nurses, is also driven by the ability to pay for health care, either with insurance or through out-of-pocket expenditures. Since 1990, an average of 85 percent of the population has been covered by some form of health insurance, making health care available to the vast majority of the population. [5] At the same time, real per capita disposable income has increased steadily, growing 16 percent between 1990 and 1999, making it easier to pay for non-covered health care with out-of-pocket resources, thereby increasing the demand for such care. [6] *(See Chart 9)*



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis

[D]

Distribution of Demand by Setting:
Between 2000 and 2020 the demand for RNs will continue to grow in all employment settings, but some will grow more rapidly than others, resulting in changes in the distribution of demand by setting. Hospitals have been and will continue to be the major source of demand for RNs but while the total number of nurses in hospitals will continue to grow, the hospital sector's share of total RN employment will remain stable at about 62 percent. *(See Appendix Table 7)* Employment settings closely associated with service to the elderly are projected to increase their share of the total demand for RNs. For example, the demand for RNs in nursing homes is projected to increase from 8 percent of total demand in 2000 to 10 percent in 2020. Similarly, growth in the home health care sector will result in an increase in demand for RNs from 6.5 percent to 9 percent of total RN demand. These increases will naturally be offset by a corresponding decline in the proportion of demand in ambulatory and "other" settings. [7]

APPENDIX

Table 1: National Supply and Demand Projections for FTE Registered Nurses; 2000 through 2020

Year	Supply	Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
2000	1,889,243	1,999,950	-110,707	-6%
2001	1,912,667	2,030,971	-118,304	-6%
2002	1,937,336	2,062,556	-125,220	-6%
2003	1,959,192	2,095,514	-136,322	-7%
2004	1,989,329	2,128,142	-138,813	-7%
2005	2,012,444	2,161,831	-149,387	-7%
2006	2,028,548	2,196,904	-168,356	-8%
2007	2,039,772	2,232,516	-192,744	-9%
2008	2,047,729	2,270,890	-223,161	-10%
2009	2,059,099	2,307,236	-248,137	-11%
2010	2,069,369	2,344,584	-275,215	-12%
2011	2,075,891	2,379,719	-303,828	-13%
2012	2,075,218	2,426,741	-351,523	-14%
2013	2,068,256	2,472,072	-403,816	-16%
2014	2,061,348	2,516,827	-455,479	-18%
2015	2,055,491	2,562,554	-507,063	-20%
2016	2,049,318	2,609,081	-559,763	-21%
2017	2,041,321	2,656,886	-615,565	-23%
2018	2,032,230	2,708,241	-676,011	-25%
2019	2,017,100	2,758,089	-740,989	-27%
2020	2,001,998	2,810,414	-808,416	-29%

Limitations of Supply, Demand, and Shortage Projections:

Supply and demand projections at the State level should be carefully assessed. Estimates of supply and demand by State are to some extent biased by national averages and arbitrary State boundaries. In particular, demand may be underestimated for States that are rural and mountainous, have higher than average elderly populations, and utilize more RNs than the national average in their health care systems. Because the model averages the nurse staffing across 50 States, the projected demand increases for those States may be underestimated. Conversely, for States that utilize lower RN staffing ratios than the national average, demand estimates may be overestimated.

Also, State boundaries, especially for small States may bias the demand and supply estimates. Hospitals in the District of Columbia (DC), for example, serve Maryland and Virginia. Thus, estimating demand for RNs, based on

current population in DC alone may underestimate the demand for RNs there. On the supply side, the same bias exists.

Table 2: Supply versus Demand Projections for FTE Registered Nurses by State--2000

State	2000 Supply	2000 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	30,987	31,902	-915	
Alaska	4,264	4,465	-201	-5%
Arizona	28,575	34,559	-5,984	-17%
Arkansas	17,147	18,574	-1,427	-8%
California	154,002	166,665	-12,663	-8%
Colorado	26,556	29,735	-3,179	-11%
Connecticut	26,407	30,137	-3,730	-12%
Delaware	6,024	6,773	-749	-11%
District of Columbia	8,877	9,096	-219	*
Florida	112,735	115,928	-3,193	
Georgia	49,746	53,357	-3,611	-7%
Hawaii	7,516	8,278	-762	-9%
Idaho	6,765	6,235	530	*
Illinois	87,457	86,097	1,360	
Indiana	38,780	42,893	-4,113	-10%
Iowa	25,897	26,839	-942	-3.5%
Kansas	21,204	19,448	1,756	
Kentucky	30,064	28,399	1,665	
Louisiana	34,510	31,667	2,843	
Maine	10,936	12,383	-1,447	-12%
Maryland	38,291	38,836	-545	
Massachusetts	59,884	66,919	-7,035	-11%
Michigan	66,452	67,295	-843	
Minnesota	37,357	38,704	-1,347	-3.5%
Mississippi	19,652	19,650	2	*
Missouri	47,337	51,418	-4,081	-8%
Montana	6,327	5,527	800	
Nebraska	13,826	14,590	-764	-5%
Nevada	9,320	10,461	-1,141	-11%
New Hampshire	9,446	10,456	-1,010	-10%
New Jersey	56,868	65,260	-8,392	-13%
New Mexico	10,295	11,115	-820	-7%
New York	136,663	153,388	-16,725	-11%
North Carolina	62,427	61,798	629	
North Dakota	5,779	5,769	10	

Ohio	84,188	88,957	-4,769	-5%
Oklahoma	19,684	18,822	862	
Oregon	21,498	22,347	-849	-3.8%
Pennsylvania	104,392	109,815	-5,423	-5%
Rhode Island	9,389	10,449	-1,060	-10%
South Carolina	25,877	25,981	-104	*
South Dakota	7,463	6,905	558	
Tennessee	43,757	50,555	-6,798	-13%
Texas	116,252	127,661	-11,409	-9%
Utah	10,940	11,900	-960	-8%
Vermont	4,596	4,618	-22	*
Virginia	43,602	48,338	-4,736	-10%
Washington	33,486	36,862	-3,376	-9%
West Virginia	13,831	12,535	1,296	*
Wisconsin	38,498	36,241	2,257	
Wyoming	3,417	3,349	68	
TOTAL U.S.	1,889,243	1,999,950	-110,707	-6%

* No definitive shortage. Estimate is -3% or above.

Table 3: Supply versus Demand Projections for FTE Registered Nurses by State--2005

State	2005 Supply	2005 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	32,606	34,422	-1,816	-5%
Alaska	3,645	5,023	-1,378	-27%
Arizona	31,395	39,507	-8,112	-21%
Arkansas	18,092	20,086	-1,994	-10%
California	162,645	181,054	-18,409	-10%
Colorado	29,676	33,911	-4,235	-12%
Connecticut	24,175	31,919	-7,744	-24%
Delaware	5,272	7,398	-2,126	-29%
District of Columbia	7,855	9,160	-1,305	-14%
Florida	120,285	128,983	-8,698	-7%
Georgia	50,374	59,199	-8,825	-15%
Hawaii	10,348	9,168	1,180	*
Idaho	5,772	7,246	-1,474	-20%
Illinois	89,830	90,521	-691	*
Indiana	40,741	46,036	-5,295	-12%
Iowa	29,489	28,406	1,083	*
Kansas	24,758	20,692	4,066	*
Kentucky	37,224	30,359	6,865	*
Louisiana	35,664	34,004	1,660	*
Maine	12,002	13,169	-1,167	-9%
Maryland	38,472	41,771	-3,299	-8%
Massachusetts	65,801	70,621	-4,820	-7%

Michigan	69,259	70,718	-1,459	
Minnesota	44,200	42,247	1,953	
Mississippi	21,667	21,205	462	
Missouri	50,086	54,663	-4,577	-8%
Montana	6,795	6,258	537	
Nebraska	14,316	15,723	-1,407	-9%
Nevada	10,424	12,275	-1,851	-15%
New Hampshire	10,684	11,504	-820	-7%
New Jersey	56,609	69,570	-12,961	-19%
New Mexico	9,509	12,595	-3,086	-25%
New York	146,211	158,851	-12,640	-8%
North Carolina	69,509	68,578	931	*
North Dakota	6,061	6,260	-199	-3.2%
Ohio	96,213	94,204	2,009	*
Oklahoma	19,163	20,411	-1,248	-6%
Oregon	22,433	25,116	-2,683	-11%
Pennsylvania	104,368	115,201	-10,833	-9%
Rhode Island	9,247	10,977	-1,730	-16%
South Carolina	27,739	28,388	-649	*
South Dakota	7,934	7,500	434	*
Tennessee	43,232	55,687	-12,455	-22%
Texas	131,897	142,102	-10,205	-7%
Utah	12,088	13,766	-1,678	-12%
Vermont	5,704	4,991	713	*
Virginia	45,079	52,777	-7,698	-15%
Washington	35,676	41,471	-5,795	-14%
West Virginia	13,862	13,124	738	*
Wisconsin	43,659	39,152	4,507	*
Wyoming	2,699	3,860	-1,161	-30%
TOTAL U.S.	2,012,444	2,161,831	-149,387	-7%

* No definitive shortage. Estimate is -3% or above.

Table 4: Supply versus Demand Projections for FTE Registered Nurses by State--2010

State	2010 Supply	2010 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	34,986	37,257	-2,271	-6%
Alaska	3,275	5,602	-2,327	-42%
Arizona	33,030	44,054	-11,024	-25%
Arkansas	18,700	21,803	-3,103	-14%
California	161,337	203,511	-42,174	-21%
Colorado	31,432	37,860	-6,428	-17%
Connecticut	22,422	34,158	-11,736	-34%
Delaware	4,886	7,922	-3,036	-38%
District of Columbia	7,635	9,720	-2,085	-21%

Florida	126,075	143,873	-17,798	-12%
Georgia	50,239	65,316	-15,077	-23%
Hawaii	12,110	10,189	1,921	
Idaho	5,168	8,140	-2,972	-37%
Illinois	91,419	95,684	-4,265	-4%
Indiana	40,879	49,090	-8,211	-17%
Iowa	32,044	29,764	2,280	*
Kansas	27,248	22,087	5,161	
Kentucky	42,297	32,516	9,781	
Louisiana	37,534	36,831	703	
Maine	12,440	14,204	-1,764	-12%
Maryland	37,287	45,059	-7,772	-17%
Massachusetts	65,937	75,033	-9,096	-12%
Michigan	68,797	74,285	-5,488	-7%
Minnesota	47,003	45,943	1,060	
Mississippi	23,809	22,849	960	
Missouri	51,634	58,309	-6,675	
Montana	6,838	6,943	-105	
Nebraska	14,561	16,912	-2,351	-14%
Nevada	10,931	13,493	-2,562	-19%
New Hampshire	11,312	12,588	-1,276	-10%
New Jersey	55,794	74,527	-18,733	-25%
New Mexico	9,037	14,144	-5,107	-36%
New York	149,487	166,690	-17,203	-10%
North Carolina	73,428	75,474	-2,046	
North Dakota	6,139	6,755	-616	-9%
Ohio	105,255	99,405	5,850	
Oklahoma	19,501	22,385	-2,884	-13%
Oregon	21,872	28,071	-6,199	-22%
Pennsylvania	103,426	120,492	-17,066	-14%
Rhode Island	8,552	11,608	-3,056	-26%
South Carolina	29,565	31,120	-1,555	-5%
South Dakota	8,117	8,049	68	
Tennessee	42,033	61,083	-19,050	-31%
Texas	141,581	158,372	-16,791	-11%
Utah	12,617	15,508	-2,891	-19%
Vermont	6,265	5,367	898	*
Virginia	45,716	57,643	-11,927	-21%
Washington	35,998	46,691	-10,693	-23%
West Virginia	13,927	13,744	183	
Wisconsin	45,373	42,060	3,313	
Wyoming	2,421	4,402	-1,981	
TOTAL U.S.	2,069,369	2,344,584	-275,215	

* No definitive shortage. Estimate is -3% or above.

Table 5: Supply versus Demand Projections for FTE Registered Nurses by State--2015

State	2015 Supply	2015 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	36,127	40,689	-4,562	-11%
Alaska	3,005	6,197	-3,192	-52%
Arizona	33,792	49,348	-15,556	-32%
Arkansas	18,285	23,912	-5,627	-24%
California	153,654	231,711	-78,057	-34%
Colorado	32,135	42,159	-10,024	-24%
Connecticut	19,841	36,786	-16,945	-46%
Delaware	4,669	8,465	-3,796	-45%
District of Columbia	7,546	10,450	-2,904	-28%
Florida	126,257	162,616	-36,359	-22%
Georgia	49,183	72,248	-23,065	-32%
Hawaii	13,128	11,402	1,726	*
Idaho	4,599	9,139	-4,540	-50%
Illinois	91,032	101,944	-10,912	-11%
Indiana	40,206	52,358	-12,152	-23%
Iowa	33,642	31,468	2,174	*
Kansas	27,704	23,759	3,945	
Kentucky	44,479	35,215	9,264	
Louisiana	37,594	40,177	-2,583	-6%
Maine	12,114	15,486	-3,372	-22%
Maryland	35,738	48,782	-13,044	-27%
Massachusetts	63,816	80,595	-16,779	-21%
Michigan	67,186	78,433	-11,247	-14%
Minnesota	47,837	50,229	-2,392	-5%
Mississippi	25,192	24,930	262	*
Missouri	51,341	62,654	-11,313	-18%
Montana	6,713	7,756	-1,043	-13%
Nebraska	14,312	18,308	-3,996	-22%
Nevada	11,426	14,798	-3,372	-23%
New Hampshire	11,240	13,825	-2,585	-19%
New Jersey	53,241	80,398	-27,157	-34%
New Mexico	8,387	15,946	-7,559	-47%
New York	147,852	176,911	-29,059	-16%
North Carolina	74,546	83,414	-8,868	-11%
North Dakota	6,110	7,341	-1,231	-17%
Ohio	109,588	105,593	3,995	*
Oklahoma	19,722	24,681	-4,959	-20%

Oregon	20,536	31,576	-11,040	-35%
Pennsylvania	99,517	127,301	-27,784	-22%
Rhode Island	7,676	12,360	-4,684	-38%
South Carolina	30,688	34,259	-3,571	-10%
South Dakota	7,860	8,683	-823	-9%
Tennessee	40,263	67,373	-27,110	-40%
Texas	146,573	176,815	-30,242	-17%
Utah	12,679	17,312	-4,633	-27%
Vermont	6,589	5,813	776	
Virginia	44,711	63,157	-18,446	-29%
Washington	35,150	52,722	-17,572	-33%
West Virginia	13,849	14,574	-725	-5%
Wisconsin	43,956	45,492	-1,536	-3.4%
Wyoming	2,205	4,995	-2,790	-56%
TOTAL U.S.	2,055,491	2,562,554	-507,063	-20%

* No definitive shortage. Estimate is -3% or above.

Table 6: Supply versus Demand Projections for FTE Registered Nurses by State--2020

State	2020 Supply	2020 Demand	Excess or Shortage (Supply Less Demand) (- = Shortage)	Percent Shortage
Alabama	36,309	44,662	-8,353	-18.7%
Alaska	2,859	6,822	-3,963	-58.1%
Arizona	33,780	55,519	-21,739	-39.2%
Arkansas	17,414	26,450	-9,036	-34.2%
California	142,978	263,673	-120,695	-45.8%
Colorado	32,310	47,028	-14,718	-31.3%
Connecticut	17,870	39,661	-21,791	-54.9%
Delaware	4,408	9,090	-4,682	-51.5%
District of Columbia	7,387	11,238	-3,851	-34.3%
Florida	123,904	185,050	-61,146	-33.0%
Georgia	47,939	79,982	-32,043	-40.1%
Hawaii	13,858	12,832	1,026	*
Idaho	4,219	10,325	-6,106	-59.1%
Illinois	87,975	109,334	-21,359	-19.5%
Indiana	38,326	55,912	-17,586	-31.5%
Iowa	34,385	33,615	770	*
Kansas	27,075	25,617	1,458	
Kentucky	44,623	38,114	6,509	
Louisiana	36,624	44,034	-7,410	-16.8%
Maine	11,719	16,930	-5,211	-30.8%

Maryland	33,892	52,846	-18,954	-35.9%
Massachusetts	60,983	86,365	-25,382	-29.4%
Michigan	64,426	82,729	-18,303	-22.1%
Minnesota	47,213	55,309	-8,096	-14.6%
Mississippi	25,972	27,414	-1,442	-5.3%
Missouri	50,523	67,547	-17,024	-25.2%
Montana	6,543	8,731	-2,188	-25.1%
Nebraska	13,917	19,952	-6,035	-30.2%
Nevada	11,847	16,333	-4,486	-27.5%
New Hampshire	11,007	15,073	-4,066	-27.0%
New Jersey	49,760	87,279	-37,519	-43.0%
New Mexico	7,792	18,056	-10,264	-56.8%
New York	144,129	188,740	-44,611	-23.6%
North Carolina	74,396	92,320	-17,924	-19.4%
North Dakota	6,132	8,053	-1,921	-23.9%
Ohio	108,559	111,693	-3,134	*
Oklahoma	19,615	27,359	-7,744	-28.3%
Oregon	19,124	35,653	-16,529	-46.4%
Pennsylvania	94,759	135,140	-40,381	-29.9%
Rhode Island	6,967	13,266	-6,299	-47.5%
South Carolina	31,034	37,775	-6,741	-17.8%
South Dakota	7,346	9,507	-2,161	-22.7%
Tennessee	38,391	74,596	-36,205	-48.5%
Texas	145,861	197,937	-52,076	-26.3%
Utah	12,407	19,332	-6,925	-35.8%
Vermont	6,792	6,313	479	*
Virginia	43,834	68,945	-25,111	-36.4%
Washington	34,295	59,746	-25,451	-42.6%
West Virginia	13,649	15,525	-1,876	-12.1%
Wisconsin	42,799	49,350	-6,551	-13.3%
Wyoming	2,072	5,640	-3,568	-63.3%
TOTAL U.S.	2,001,998	2,810,414	-808,416	-28.8%

* No definitive shortage. Estimate is -3% or above.

Demand for Full-Time Equivalent RNs by Employment Setting for Select Years 2000-2020

Table 7: Employment Distribution by Setting

Year	Total	Hospitals	Nursing Homes	Public Health	Ambulatory Care	Home Health	Occupationa Health
2000	1,999,950	1,242,831	168,529	95,360	160,911	130,288	20,04
2005	2,161,831	1,339,493	194,219	94,328	169,329	152,622	20,98
2010	2,344,584	1,451,083	223,193	93,226	178,272	177,583	21,82

2015	2,562,554	1,588,828	254,718	92,297	187,348	209,192	22,24
2020	2,810,414	1,741,639	291,513	91,360	196,399	248,848	22,39

Percentage Distribution by Setting

Year	Total	Hospitals	Nursing Homes	Public Health	Ambulatory Care	Home Health	Occupationa Health
2000	100%	62.1%	8.4%	4.8%	8.0%	6.5%	1.0%
2005	100%	62.0%	9.0%	4.4%	7.8%	7.1%	1.0%
2010	100%	61.9%	9.5%	4.0%	7.6%	7.6%	0.9%
2015	100%	62.0%	9.9%	3.6%	7.3%	8.2%	0.9%
2020	100%	62.0%	10.4%	3.3%	7.0%	8.9%	0.8%

Registered Nurse Demand Model (NDM)

The model used to project the demand for registered nurses is the Nursing Demand Model (NDM). The NDM combines empirical analysis with input from healthcare experts regarding how the health care system operates and the role of nurses in the delivery of care.

The NDM forecasts future demand for healthcare services in six settings: inpatient, outpatient, and emergency departments in general and short-term hospitals; non-general and long-term hospitals; nursing facilities; and home health.

The workload measures used to model demand for healthcare services are inpatient days (for inpatient settings in short-term hospitals and for long-term hospitals); visits (for short-term hospital outpatient and emergency department settings, and for home health); and nursing facility residents. Data limitations prevented the modeling of State-level estimates of the demand for ambulatory care in physician offices, occupational settings, at schools, and in public health clinics.

To forecast future healthcare demands of the population and where patients are likely to receive services, the NDM first divides the population into 32 subgroups based on age, sex, and urban or rural location. For each subgroup, the current national per capita use of health care services was estimated for each of the six delivery settings. The NDM then applies these national rates to each State's population to obtain initial estimates of demand for healthcare services at the State level. Then, the NDM multiplies this initial extrapolation of healthcare utilization with a scalar that inflates or deflates the initial extrapolation to incorporate the projected impact on utilization of trends in the healthcare operating environment, economic conditions, and the overall health of the population.

To forecast the level of nursing services that patients will require and the mix of nurses to provide those services, the NDM forecasts future nurse staffing intensity. Staffing intensity is defined in terms of FTE nurses per unit of healthcare services provided for the six delivery settings where future healthcare use is estimated (e.g., FTE RNS per 1,000 inpatient days at short-term hospitals). Staffing intensity is defined in terms of FTE nurses per population in the delivery settings where future healthcare use is not estimated (e.g., FTE RNs in public health per 10,000 population.) Forecasts of future nurse staffing intensity are based on extrapolations of current staffing intensity and take into account projected trends in the healthcare operating environment, in acuity, and in economic conditions that affect staffing intensity.

Twenty-four equations in the NDM quantify the relationship between healthcare utilization and its determinants and between nurse staffing intensity and its determinants. Twenty of these equations were estimated using multiple regression analysis with State-level data from 1996 through 2000, although most regression equations were estimated using a subset of these years based on data availability. Six equations describe the relationship between healthcare utilization and its determinants for the six healthcare settings modeled. Eighteen equations describe the relationship between nurse requirements and its determinants for each nurse type in each setting modeled. In four settings, poor data or poor regression results led to the decision to model future requirements

using an alternative approach. RN and LPN requirements in the "all other" category are modeled as a fixed ratio of FTE nurses per population. RN requirements in the "school health" category are modeled as a fixed ratio of FTE RNs per population age 5-17. RN requirements in nurse education are modeled as fixed percentages of total RN requirements in the other 11 settings.

Nursing Supply Model

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.

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 – diploma, associate degree, 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.

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.

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 re-licensed after having dropped all their licenses.

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 derivation of the full-time equivalent RN supply was dependent upon data in the March 2000 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.

[1] Both supply and demand are defined in this report in full-time equivalent (FTE) terms. Full-time equivalency provides an unequivocal measure of the number of nurses that would be needed (in the case of demand) or available (in the case of supply) if everyone worked full-time. There were 2.2 million employed nurses in the United States in 2000, some of whom worked part-time. In FTE terms, that would be the equivalent of approximately 1.9 million full-time RNs.

[2] BHPr adjusted the normal 9-month salary of elementary school teachers to its 12-month equivalent.

[3] Elementary school teacher is an alternative career choice normally available to baccalaureate-prepared RNs.

[4] Agency for Healthcare Research and Quality, "Data from the 1996 Medical Expenditure Panel Survey, (MEPS) Projected to 1999-2008: Medical Expenditures by Type of Service and Source of Payment for Age, Race and Sex", January 2002.

[5] 2000 Statistical Abstract p. 118, table No. 177.

[6] Disposable income is essentially the after-tax income available to persons for spending or saving.

[7] "Other" settings include occupational nursing, nursing education, and school nurses.

From: <cjenks@trib.com>
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Subject: Kaisernetwork.org: Undertrained, Overworked Nurses Can Lead to Medical Errors, IOM Report Says

This story was sent to you by cjenks@trib.com from kaisernetwork.org Daily Reports. http://www.kaisernetwork.org/daily_reports/rep_index.cfm?DR_ID=20711 Should we include this in our supporting documentation for the nurse loan program? COVERAGE & ACCESS

Undertrained, Overworked Nurses Can Lead to Medical Errors, IOM Report Says

Nurses' long hours, insufficient training and overload of paperwork often contribute to medical errors that cause preventable deaths and injuries, according to a report released Tuesday by the Institute of Medicine of the National Academies, the Baltimore Sun reports. The 327-page report, "Keeping Patients Safe: Transforming the Work Environment of Nurses," examines nursing staffing at hospitals, nursing homes and other environments amid a nationwide nursing shortage, according to the Sun (Bell, Baltimore Sun, 11/5). It is the latest of three studies issued by the institute since 1999 as part of an effort to reduce patient deaths that result from medical errors (Anstett, Detroit Free Press, 11/5). The report offers 18 recommendations for nursing reform (Baltimore Sun, 11/5). Summaries of some of the report's recommendations appear below.Panelists recommended that state officials prohibit nurses from working more than 12 hours during a 24-hour period or more than 60 hours a week.The panel recommended that intensive care units should be required to have one licensed nurse on duty for every two patients and that nursing homes should be required to have one registered nurse for every 32 patients and one nursing assistant for every 8.5 patients (Pear, New York Times, 11/5). The panel recommended that nurses be relieved of duties such as transferring patients so they have more time to monitor patients. It also suggested time-saving measures, such as storing supplies in rooms where work is performed to reduce the time nurses spend collecting necessary items (Baltimore Sun, 11/5).The report suggested limiting the number of temporary nurses allowed on staff because some studies found that temporary workers contribute to higher rates of medical errors (Detroit Free Press, 11/5).The panel urged hospitals and nursing homes to offer more training opportunities for nurses throughout their careers (MacDonald, Hartford Courant, 11/5).The report suggested that nurses should be allowed to halt admissions when they believe staffing levels are too low (Lasalandra, Boston Herald, 11/5).In addition, the report found that some nursing departments have been cut and chief nursing officers' power has been reduced. "The situation hampers nurses' ability to fix problems in their work environments that threaten patient safety," the report stated. Panelists suggested that nurses should participate in decision-making at all levels (Baltimore Sun, 11/5).An abstract of the report is available online.

Reaction

Sen. Charles Grassley (R-Iowa), who has been investigating nursing homes since 1997, said he opposes setting requirements for nursing home staff, adding, "If we mandate minimum staffing levels, the nursing home industry will want more money." However, Dr. William Rupp, a panel member and president of a Mayo Health System hospital in Mankato, Minn., said that measures should be taken to relieve overworked workers. "Virtually every other industry in the country pays more attention to fatigue than we do," he said (New York Times, 11/5). "There was nothing new here, but it was great to have the research behind it," Patricia Duclos-Miller, president of the Connecticut Nurses' Association, said (Hartford Courant, 11/5).

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Nursing; Supply Shortage or Retention Issue?

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8/13/2002

Federal research suggests our country is currently in the middle of a nursing shortage and shows this shortage will increase substantially over the next decade. The General Accounting Office (GAO) report entitled "Emerging Nurse Shortages Due to Multiple Factors,"[1] states that, "national data are not adequate to describe the nature and extent of nurse workforce shortages, nor are the data sufficiently sensitive or current to compare nurse workforce availability across states, specialties, or provider types." Research and Planning's (R&P) conclusions support many of the findings offered by the GAO report, and other avenues of research exploring this current labor market issue using state maintained databases.

The shortage of nursing related health care practitioners is not exclusively limited to Registered Nurses (RN's), but also includes many of the support occupations such as Licensed Practical Nurses (LPN's) and Certified Nursing Assistants (CNA's). However, due to time constraints and difficulties associated with this level of analysis, we focus on RN's that were issued a license in the State of Wyoming during the past decade. Eighty-four percent of the RN's in this country work in the Health Care Services Industry and are often cited as the backbone of the same. The majority of the remaining RN's are

employed in Government (6.3 %), Educational Services (3.3 %), Business Services (3.3 %), and Social Services (1.5 %).[2]

Projected Demand

In Wyoming, the Health Care Services Industries (SIC 80) have grown 25 percent from 1992 to 2000. Within Wyoming's Health Care Services Industry there is variation in growth with 39.2 percent of jobs created during the eight year period in Offices and Clinics of Doctors and 7.1 percent of jobs created in Nursing and Personal Care Facilities. During the same period average employment for all industries in Wyoming has grown 16.6 percent. Industry employment trends are the foundations for occupational projections, and as RN's comprise the largest proportion of the health care industry, it is not surprising that the demand for RN's over the next decade is great. Table 1 is the projected demand from 1998 to 2008 and the 1999 average hourly wage of RN's for all 50 states.[3]

Insert Table 1

Table 1 shows that while nationally the number of RN's is projected to grow 22 percent from 1998 to 2008, during this same time period Wyoming should experience 13 percent growth. However, all of Wyoming's border states have a greater projected demand; Montana (19 %), South Dakota (22 %), Nebraska (25 %), Colorado (27 %), Idaho (29 %) and Utah (46 %). Further, all of Wyoming's border states pay higher wages (1999) than Wyoming, which is ranked as 49th of the 50 states in average hourly wage. Subsequent data in this article will demonstrate that while Health Care Services, and in particular

RN's, have relatively low turnover rates compared to other industries in Wyoming, the turnover rates are increasing. Based on the occupational projections and wages in Table , turnover is likely to continue to increase.

Wyoming Specific Data

The Wyoming State Board of Nursing (WSBN) provided an exhaustive database of all Registered Nurse licenses active in the State of Wyoming from 1992 to 2001 Some of the variables included with this database are Social Security Number, Date of License Issue, Date of License Expiration, Date of Birth, Gender, School of Training and Year of Graduation. This database was merged with R&Ps Wage Records (WR) database which has the employer and wages by SSN for all quarters (i.e., January to March is the first quarter) from 1992 to 2001Q3. When combining these two data sets it becomes possible to track RN's across time through the labor force. Wyoming's WR is further supplemented toward the end of the analysis period with WR data provided by several other states (CO, UT, ID, NE, SD, TX and NM), which provides the basis for the detailed analysis of RN's working in Hospitals in 1999.

Supply

Insert Table 2

The supply of RN's in Wyoming is divided in two parts. The first is the supply of RN's with degrees from Wyoming's community colleges or the University of Wyoming. The second is the number of RN's that actually become licensed in the State, of which graduates from Wyoming-based nursing programs are a subset. Table 2 lists the number

of graduates with nursing degrees from six of Wyoming's Community Colleges and the University of Wyoming.[4] A review of Table 2 shows that the number of graduates from Wyoming-based schools has declined 33.2 percent over the last decade (using the first and last three-year average). This coincides with the findings of the GAO report which states that nationally, enrollments in RN associate degree programs have declined 11 percent and baccalaureate programs19 percent from 1995 to 1998.

Insert Table 3

Table 3 lists the number of new licenses issued to RN's in the State by school and year from 1992 to 2001. The first thing that should be noted is, overall, the number of new licenses issued has declined from 1992-1994 to 1999-2001 by 20 percent. Secondly, the proportion of those licenses issued to graduates of Wyoming schools has declined from 41.3 percent to 25.3 percent, state employers relying more heavily on graduates from institutions outside Wyoming. Contrasting Table 2 and Table 3, it is apparent that the decline in the proportion of licenses issued to graduates from Wyoming schools is not entirely explained by the decline in the number of Wyoming graduates. In 1992-1994, 83.0 percent of Wyoming graduates were licensed in the State; by 1999-2001, only 69.8 percent were. The decline is likely due to the increased demand for RN's elsewhere in the country.

The importance of the origin of education (i.e., Wyoming versus Out of State) is demonstrated by Table 4. Table 4 was created using the merged WSBN and WR database and shows the number of individuals issued new licenses by their appearance in

Wyoming's Unemployment Insurance covered employment. For example, of the 227 individuals with a Wyoming-based education who were issued a license in 1993 (1992Q4 to 1993Q3),[5] 91.6 percent (N=208) showed up in Wyoming with wages in the four quarters immediately following the license issue. In contrast, of those with an Out-of-State education, 211 of the 342 (61.7 %) issued a Wyoming license appeared in the same time period. There are many reasons suggested by the WSBN[6] for individuals to obtain a Wyoming license, although they do not intend to reside in Wyoming. For example, some may be circuit nurses who come to work in Wyoming on a temporary basis, or insurance company representatives employed in other states who review health insurance claims of clients residing in Wyoming.

Insert Table 4

Table 4 also presents data related to attrition, defined as the number of those who start working in the first year following the license issue who still appear three years later. Once again using the 1993 data, of the 208 individuals with a Wyoming-based education who appeared in the first year of license issue, 183 (88.0 %) were still working for employers in Wyoming three years later. In contrast, of the 211 with an Out-of-State based education appearing in the year of issue, only 135 (64.0 %) remained three years later.

Descriptive Data

Up to this point we have focused on graduates and new licenses issued. The analysis now shifts to all licensed RN's. Table 5 shows the number working, the average

quarterly wage, average quarters worked in the year, and average age of the RN's working in Wyoming's labor force by industry from 1992 to 2001. The industry groupings were defined by the quantity of RN's working in the selected industries. We did this to insure nondisclosure of confidential data and present the most complete picture possible.

Insert Table 5

The average age of RN's working in Wyoming has increased over the past decade from 40.2 years to 44.5. This further coincides with the data collected by the GAO, which states that "the nurse workforce will continue to age, and, by 2010, approximately 40 percent will likely be older than 50." As with the national trend the aging of Wyoming's nursing workforce will increase the demand for RN's over the next decade due to retirements.

Another factor discussed by the GAO report is the diversification of the health care industry as a result of technological advances. This factor creates demand for RN's, because patients who used to be cared for in hospital settings are more often accommodated in outpatient clinics and doctor's offices. While this would appear to be simply a redistribution of the available RN's, this is not necessarily the case. As technology increases, patients treated in hospitals having conditions or ailments that are generally more acute require more intensive services and a larger, more specialized staff. The data in Table 5 further support the diversification of the health care industries by

showing that while all have experienced growth, this growth is varied. For example, while the number of RN's working in Hospital settings has increased 64.9 percent (1,349 to 2,224) from 1992 to 2000, the number of RN's working in Offices and Clinics has increased 137.6 percent (186 to 442).

Table 5 also shows that the highest paid RN's in Wyoming's labor force work in Hospitals earning an average quarterly wage of $10,073 in 2000, and the lowest paid work in Offices and Clinics at $7,298 per quarter. One of the factors related to the decline in enrollments discussed in the GAO report is the appeal of the nursing profession to potential students. Fifty-seven percent of the nurses working in Wyoming are employed by hospitals, where the working conditions often involve forced overtime, shift work, and little recognition by the professional staff, hence the higher wages.

Transitions

The generally accepted definition of turnover is the number of people who exit divided by the total number of jobs. R&P has been working with three other states (NE, SD, and NM) to come to a consensus on common turnover definitions. This project has led to the development of comparable data across these states, using the administrative databases collected for Unemployment Insurance tax purposes. The methodology, beyond the scope of this document, is discussed in "Turnover Analyses; Definitions, Process, and Quantification."[7] Table 6 presents the annual turnover rates by industry from 1992 to 2000. Turnover is defined as the number of transactions involving exiting behavior (whereby an individual separates from an employer) divided by the total number of

transactions that occurred. The rows in bold use the same methodology applied to RN's with active licenses.

Insert Table 6

Referring to Table 6, the first thing to note is that, contrary to popular opinion, the health care related industries have a low turnover rate when compared to the overall turnover rate in Wyoming. The exception is Nursing Care Facilities. Further, Table 6 demonstrates that within the specific health care industries, RN's generally have an even lower turnover rate.

Insert Tables 7 and 8

Turnover rates offer one way to look at the underlying currents of labor market activity; Table 7, RN's exiting from their primary industry, and Table 8, RN's entering a primary industry, provides another. Tables 7 and 8 are extensions of Table 5. There were 2,152 RN's employed in Hospitals as their primary industry in 1999 (Table 5). Based on Table 7, we know that 283 (13.2 %) of these individuals left this industry by 2000. Further, we know that 375 of the 2,152 (17.4 %) RN's employed in Hospitals in 1999 came from some other industry or State in 1998 (Table 8). We can also note that the average age of both the nurses leaving and those entering in 1999 was lower than the overall average age of all employed. If we consider our State as a closed system, Tables 7 and 8 give insight into the churning of RN's occurring within Wyoming. It does not, however, provide information as to the net gains and losses of RN's to our system.

Transitions: Where did they come from? Where did they go?

Table 9 takes this process to the next logical step and attempts to answer the questions, Where did they come from? and Where did they go? The data presented in Table 9 focuses on 1999 and for the first time in this article presents data using our Interstate Wage Records database. The year 1999 is chosen as we have complete annual data for seven other states from 1998 to 2000. The Hospital Industry is used because of its relatively large number of individuals. To provide a frame of reference refer to the row (number 51) with entries All (Origin and Destination States), All (RN's Status 1999), and Less Wyoming Hospitals (Origin and Destination Industry). Under the In Flow column of this row note the number 375, corresponding to the individuals entering Hospitals as their primary industry from 1998 to 1999 from Table 8. To the right of this, under the column entitled Out Flow in the same row, the number 283 corresponds to those exiting the primary industry of Hospitals from 1999 to 2000 (Table 7).

Insert Table 9

Each record used to generate Table 9 included the following variables: SSN, Year, Primary Industry of the Year, Primary State of Wages, Total Wages, Total Quarters Worked and the Age of the Individual in the Year for all licensed RN's. The additional variable RN Status reflects the following definitions: RNY1 are RN's that have only been licensed in the State for a period up to one year, RNY2 have been licensed two years, and RNY3+ have been licensed three or more years.

From Table 9 we see that 19.7 percent (N=74 of the 375) of the individuals entering the Hospital Industry in Wyoming in 1999 had an origin in one of the seven states (other states OS) with which Wyoming has a Memorandum of Understanding for data sharing. Of those entering from OS, 45 worked in Hospitals in their origin states, and all increased their wages by coming to Wyoming. Conversely, 18.4 percent of the individuals Out Flowing (N=52 of the 283) from Wyoming from 1999 to 2000 had a destination of one of our MOU states and increased their wages from 1999 to 2000.

Those entering and exiting to Unknown Origin and Destination states remain an enigma that may be cleared up with cooperation of additional states. However, the first impression is that these individuals belong to the circuit nurse group mentioned earlier. The problem with this conclusion is that we would expect to see a large correspondence between those entering from an unknown origin from 1998 and exiting to an unknown destination in 2000. This is not true, as only 11 of the 105 entering and the 118 exiting were both entries and exits during 1999. It is more likely that those entering have an origin state not collected by R&P. The low average quarters worked in 1999 would suggest that they are most likely recent graduates (i.e., May 1999) from another state. Those leaving, on the other hand, tend to have more experience as specified by their RN's status, and are taking this experience and exiting Wyoming for an as yet unknown destination state.

The largest group (52.3 %) of RN's entering Hospitals as their primary industry of employment had an origin of another industry in Wyoming in 1998. This group is

dominated by RN's with three or more years of experience that have transitioned from other health care industries, particularly Nursing Care Facilities and Offices and Clinics. Furthermore, a good proportion (39.9 %) of those exiting from Hospitals had a destination of another industry within Wyoming in 2000.

Applying the concepts of Table 9 and considering only those who enter or exit Wyoming across the aggregate of all industries, we can ascertain the net flow of RN's in Wyoming during the last decade. The variables in Table 10 have the following definitions.

RN's with Wages in WR – The total number of RN's who worked in Wyoming in the given year and quarter.

Raw First Entry – Licensed RN's that appeared for the first time in the given year and quarter (i.e., either relocated to Wyoming or an individual that was already in Wyoming but completed their education and became licensed).

Raw Permanent Exits – Licensed RN's who exited Wyoming's labor force and subsequently never appeared in Wyoming's WR.

Raw Net Flow – Raw First Entry minus Raw Permanent Exit.

Moving 4 Quarter Average – The average of the current and three quarters prior, used to smooth the peaks in the Raw First Entry occurring in the third quarter of each year due to graduation and make the Entry and Exit data comparable.

Insert Table 10

Table 10 and Figure 1 demonstrate that the number of first entry RN's becoming licensed in the State from 1992q2 to 2000q4 has gradually declined, while the number of RN's leaving the state has steadily increased. While the Moving 4 Quarter Net Flow still

shows more RN's entering than leaving, it appears that within the next few years Wyoming will converge with the number of entries equaling the number of exits. As discussed in the projected demand section, over the period 1998 to 2008 the number of RN's is expected to increase 13 percent, requiring an average of 48 new RN positions per year. The current and impending national RN's shortage will continue to impact Wyoming, due to the discontinuity between the supply (declining) and the projected demand.

Conclusions

While this paper only begins to touch the proverbial tip of the iceberg, its intention is to demonstrate the power of using administrative databases to explore a current labor market issue. In sum, the findings support many of the conclusions of the earlier GAO report and extend the analysis using several methods developed by Wyoming's Research and Planning.

The findings suggest that the current and impending nursing shortage is likely to grow due to multiple factors. Declining enrollments nationwide and, specifically, the decline in the number of graduates with RN degrees from Wyoming based institutions will increase the difficulty of attaining RN's in our state. Meanwhile, the increased demand for RN's throughout the country and vacancies created by retirements will make it more difficult to retain RN's in Wyoming. These trends were further supported by the Transitions section of this paper which showed the decline in the number of RN's coming

in and an increase in the number leaving the state over the last decade. It is quite likely these two trends will converge in the next few years.

Currently Proposed Solutions

Two articles of legislation were introduced to address the impending nursing shortage. The first is the "Nurse Reinvestment Act", federal legislation, which passed 8/1/2002 (Public Law No: 107-205). The second is the "Nursing Education Bill" (SF0038, Appendix B) which was Wyoming State Legislation that failed to earlier this year, but is likely to be re-introduced. Both articles of legislation address issues surrounding the recruitment and retention of nursing professionals and can be found in the appendix of this paper.

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[1] Government Accounting Office. Emerging Nurse Shortage Due to Multiple Factors. Washington DC: GAO 2001

[2] Wyoming Department of Employment, Research and Planning. Customized Staffing Patterns and Wages. (http://lmi.state.wy.us).

[3] Bureau of Labor Statistics. Wages by Area and Occupation. (http://stats.bls.gov/bls/blswage.htm) and State Occupational Projections 1998-2008. (http://almis.dws.state.ut.us/occ/projhome.asp).

[4] Graduate data supplied by the Wyoming State Board of Nursing 8/6/2002. Initially the draft of this paper used data on the number of graduates, provided by the Directors of Institutional Research for the corresponding Community Colleges and the University of Wyoming. Using the WSBN data, however, did not materially affect the conclusions or observations in this final report.

[5] Tables 1 to 4 are based on a calendar school year.

[6] Wyoming State Board of Nursing. Meeting 2/26/2002.

[7] Glover, Tony. "Turnover Analyses; Definitions, Process, and Quantification." Working paper distributed to multi-state turnover group. December 2001, Wyoming Department of Employment, Research & Planning, Casper, WY.

Table 1: Projected Demand for Registered Nurses 1998 to 2008 and Average Hourly Wage 1999.

State	Base Employment 1998	Projected Employment 2008	Annual Jobs Created	Percent Change	Mean Hourly Wage (1999)	Wage Rank
Alabama	30,000	37,300	1,230	24	18.65	41
Alaska	3,900	5,450	220	40	23.29	10
Arizona	28,400	38,000	1,430	34	20.84	18
Arkansas	20,200	28,050	1,120	39	18.40	43
California	172,100	221,200	8,160	29	26.00	2
Colorado	*27,450*	*34,750*	*1,180*	*27*	*21.01*	*15*
Connecticut	30,000	34,500	950	15	23.79	5
Delaware	6,250	7,800	260	25	20.88	17
Florida	118,650	151,200	5,220	27	20.36	22
Georgia	51,700	67,200	2,410	30	19.56	30
Hawaii	8,600	10,000	280	16	27.37	1
Idaho	*9,750*	*12,550*	*440*	*29*	*19.43*	*32*
Illinois	100,150	116,250	3,260	16	20.15	24
Indiana	46,300	57,250	1,860	24	18.98	36
Iowa	24,900	29,000	820	16	16.76	50
Kansas	23,000	29,450	1,020	28	18.44	42
Kentucky	31,600	38,650	1,230	22	19.32	34
Louisiana	32,700	38,500	1,120	18	20.27	23
Maine	11,750	14,400	460	23	19.46	31
Maryland	40,650	49,700	1,580	22	23.54	7
Massachusetts	73,950	84,400	2,270	14	23.66	6
Michigan	74,300	81,100	1,910	9	21.88	14
Minnesota	39,800	46,850	1,360	18	23.39	9
Mississippi	21,000	24,750	720	18	19.20	35
Missouri	49,350	57,200	1,600	16	18.92	37
Montana	*6,850*	*8,150*	*240*	*19*	*17.61*	*48*
Nebraska	*15,250*	*19,100*	*640*	*25*	*18.07*	*44*
Nevada	9,650	14,400	640	49	23.05	12
New Hampshire	10,700	13,800	490	29	18.89	38
New Jersey	72,150	84,800	2,460	18	24.46	3
New Mexico	10,700	13,900	500	30	19.34	33
New York	154,550	171,750	4,270	11	24.27	4
North Carolina	60,000	82,800	3,270	38	19.57	29
North Dakota	6,750	7,900	230	17	18.07	45
Ohio	100,350	119,850	3,610	19	19.69	28
Oklahoma	24,150	30,850	1,070	28	18.76	40
Oregon	22,850	25,250	560	10	22.45	13
Pennsylvania	106,100	130,250	4,170	23	20.92	16
Rhode Island	9,850	11,150	290	13	23.10	11
South Carolina	31,400	39,350	1,310	25	20.41	20
South Dakota	*7,900*	*9,650*	*310*	*22*	*17.89*	*47*
Tennessee	44,500	52,750	1,560	19	18.78	39
Texas	127,400	155,700	4,930	22	20.49	19
Utah	*14,450*	*21,100*	*900*	*46*	*20.41*	*21*
Vermont	5,250	6,350	200	21	19.81	26
Virginia	45,550	57,850	1,980	27	19.86	25
Washington	41,250	53,400	1,900	29	23.43	8
West Virginia	13,550	15,850	450	17	17.92	46
Wisconsin	42,400	50,950	1,560	20	19.74	27
Wyoming	**3,758**	**4,234**	**48**	**13**	**17.06**	**49**
United States	2,073,000	2,523,250	79,240	22	21.38	

Italicized rows represent States bordering Wyoming.

Source - Bureau of Labor Statistics. Wages by Area and Occupation. (http://stats.bls.gov/bls/blswage.htm) and State Occupational Projections 1998-2008. (http://almis.dws.state.ut.us/occ/projhome.asp).

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 2: Graduates of Registered Nurse Programs from Wyoming's Community Colleges and University from 1992 to 2001.

	Casper College (Casper)	Central Wyoming (Riverton)	Laramie County (Cheyenne)	Northwest (Powell)	Northwest (Sheridan and Gillette)	Western Wyoming (Rock Springs)	University of Wyoming (Laramie)	Total Wyoming Education
1992	48	23	49	24	26	20	51	241
1993	43	29	71	24	45	21	54	287
1994	38	31	53	18	23	23	56	242
1995	45	16	38	23	39	19	52	232
1996	43	22	24	17	17	23	56	202
1997	32	24	27	22	26	16	50	197
1998	49	14	24	21	24	19	42	193
1999	43	13	17	22	23	16	39	173
2000	40	17	22	16	13	19	40	167
2001	38	10	38	23	22	13	30	174
Percent Change	-6.2%	-51.8%	-55.5%	-7.6%	-38.3%	-25.0%	-32.3%	-33.2%

* Percent Change is change in the first (1992-1994) and last three (1999-2001) year averages.
Source - Data provided by the Wyoming State Board of Nursing 8/6/2002.

Table 3: Registered Nurse Licenses Issued by School of Training and Year.

	Wyoming Community College and University Graduates									Out of State Education		
	Casper College (Casper)	Central Wyoming (Riverton)	Laramie County (Cheyenne)	Northwest (Powell)	Northwest (Sheridan and Gillette)	Western Wyoming (Rock Springs)	University of Wyoming (Laramie)	Total Wyoming Education	Percent Wyoming Education	Total Out of State Education	Percent Out of State Education	Grand Total
1992	41	20	36	14	35	21	35	202	41.3	287	58.7	489
1993	46	29	56	15	28	16	37	227	39.9	342	60.1	569
1994	38	22	44	9	41	23	33	210	35.2	386	64.8	596
1995	40	23	29	17	15	19	45	188	33.0	382	67.0	570
1996	33	21	23	14	29	17	39	176	39.6	268	60.4	444
1997	26	18	18	12	13	15	38	140	32.6	289	67.4	429
1998	42	10	27	16	25	18	28	166	36.4	290	63.6	456
1999	37	11	18	16	12	10	20	124	29.7	293	70.3	417
2000	35	12	13	9	17	15	22	123	26.5	341	73.5	464
2001	40	10	21	10	6	12	13	112	25.3	331	74.7	443
Percent Change	-10.4%	-53.5%	-61.8%	-7.9%	-66.3%	-38.3%	-47.6%	-43.8%	-30.0%	-4.9%	19.0%	-20.0%

* Percent Change is change in the first and last three year averages.
Source - Wyoming State Board of Nursing database.

Table 4: New Licenses Issued and Three Year Attrition by Origin of Education.

Education Origin	License Year	New Licenses Issued	N Appearing in Year One Wyoming's Wage Records	Percent Appearing in Year One	N Appearing in Year Three Wyoming's Wage Records	Percent of Licensees Appearing in Year 1 That Appear in Year 3
Wyoming Based Education	1993	227	208	91.6	183	88.0
	1994	210	194	92.4	153	78.9
	1995	188	174	92.6	145	83.3
	1996	176	154	87.5	127	82.5
	1997	140	126	90.0	101	80.2
	1998	166	155	93.4	132	85.2
	1999	124	116	93.5	87	N/A
	2000	123	114	92.7	N/A	N/A
Based ucation	1993	342	211	61.7	135	64.0
	1994	386	258	66.8	169	65.5
	1995	382	255	66.8	141	55.3
	1996	268	183	68.3	100	54.6
	1997	269	207	77.0	119	57.5
	1998	290	211	72.8	114	54.0
	1999	293	206	70.3	103	N/A
	2000	341	221	64.8	N/A	N/A

N/A - Incomplete data for three year follow-up
Source - Wyoming State Board of Nursing database combined with Wyoming's Wage Records.

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 5: Registered Nurses Licensed in the State by Primary Industry, Average Quarterly Wage, Average Quarters Worked and Average Age 1992 to 2001.

Industry	Variable	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001*
01 Hospitals	N	1,349	1,608	1,742	1,833	1,867	1,942	2,003	2,152	2,224	2,191
	Average Quarterly Wage	7,264	7,596	7,825	8,097	8,408	8,581	9,426	9,554	10,073	10,414
	Average Quarters Worked	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.8	2.7
	Average Age	39.0	39.4	39.7	40.3	40.9	41.3	41.5	41.9	42.4	43.2
02 Nursing Care Facilities	N	164	199	302	352	349	358	348	326	292	275
	Average Quarterly Wage	6,361	6,284	6,678	6,670	7,056	7,365	7,554	8,006	8,606	9,419
	Average Quarters Worked	3.5	3.4	3.5	3.5	3.6	3.8	3.6	3.5	3.5	2.6
	Average Age	41.0	39.8	39.4	39.5	40.8	41.0	41.6	43.3	44.5	45.7
03 Offices and Clinics	N	186	193	221	283	286	308	366	417	442	471
	Average Quarterly Wage	5,237	5,107	5,356	5,878	6,328	6,551	6,597	6,782	7,298	7,579
	Average Quarters Worked	3.4	3.6	3.6	3.5	3.6	3.6	3.5	3.4	3.6	2.6
	Average Age	41.7	41.7	41.8	43.1	42.6	42.9	43.4	43.9	44.4	44.6
04 Balance Health Services	N	45	70	98	117	145	185	183	133	117	119
	Average Quarterly Wage	7,400	8,176	8,038	7,755	8,508	8,048	7,762	7,599	8,091	8,337
	Average Quarters Worked	3.6	3.5	3.6	3.6	3.7	3.7	3.7	3.6	3.6	2.7
	Average Age	41.4	42.2	41.4	41.2	41.1	41.8	41.3	41.7	42.7	43.8
05 Educational Services	N	199	211	215	220	226	237	252	258	271	261
	Average Quarterly Wage	6,107	6,035	6,368	6,662	6,832	6,924	7,228	7,565	7,620	7,651
	Average Quarters Worked	3.7	3.8	3.7	3.7	3.7	3.8	3.7	3.6	3.6	2.6
	Average Age	44.0	44.5	44.7	45.6	46.5	46.9	47.6	48.1	48.4	49.3
06 Social Services	N	32	39	50	52	70	73	76	79	77	85
	Average Quarterly Wage	4,823	5,883	5,489	6,369	6,056	6,048	6,265	6,875	6,985	7,576
	Average Quarters Worked	3.6	3.6	3.5	3.4	3.5	3.6	3.6	3.6	3.6	2.6
	Average Age	44.7	45.0	44.4	43.2	42.8	45.3	45.6	46.7	47.1	46.5
07 Public Administration	N	177	197	220	251	261	260	271	268	284	302
	Average Quarterly Wage	6,688	6,867	7,071	7,175	7,343	7,571	7,739	8,493	8,769	9,023
	Average Quarters Worked	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.7	2.9
	Average Age	42.3	42.7	43.7	43.7	44.5	45.1	46.0	46.4	47.5	48.0
08 Balance All Other Industries	N	69	87	98	101	100	106	126	143	166	191
	Average Quarterly Wage	5,687	5,250	5,952	7,266	5,943	6,177	6,785	6,830	7,602	8,073
	Average Quarters Worked	3.1	2.9	3.1	3.4	3.3	3.2	3.3	3.1	3.2	2.4
	Average Age	38.9	39.5	43.0	43.0	41.3	44.2	44.1	45.0	46.0	45.9
Total	N	2,221	2,604	2,946	3,209	3,304	3,469	3,625	3,776	3,873	3,895
	Average Quarterly Wage	6,817	7,059	7,277	7,527	7,793	7,946	8,458	8,717	9,183	9,476
	Average Quarters Worked	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.6	3.7	2.6
	Average Age	40.2	40.4	40.7	41.2	41.7	42.2	42.6	43.2	43.8	44.5

* 2001 data only includes the first three quarters
Primary Industry - The industry which paid the individual the most wages in the year.
Source - Wyoming State Board of Nursing database combined with Wyoming's Wage Records.

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 6: Turnover Rates by Year and Industry 1992 to 2000.

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agriculture Total	32.1	32.4	31.4	32.1	31.3	31.8	32.1	32.8	31.2
Metal Mining	12.5	9.4	10.3	11.7	11.5	12.1	16.1	19.2	29.9
Coal Mining	4.1	5.6	7.0	6.6	10.4	13.6	10.3	10.1	8.1
Oil & Gas Extraction	22.4	24.5	23.4	23.1	24.2	25.6	24.8	23.3	24.3
Nonmetallic Minerals Mining	10.0	5.1	5.9	13.4	8.9	8.3	10.7	14.8	9.1
Mining Total	17.5	18.3	18.1	19.0	20.0	21.5	20.9	21.1	20.8
General Building Contractors	34.9	34.7	34.8	34.5	35.1	33.1	35.7	33.4	31.5
Heavy Construction	33.3	30.7	30.9	32.5	32.5	31.8	31.1	34.2	34.1
Special Trade Construction	34.3	34.1	34.7	35.4	32.6	34.1	34.6	34.6	32.1
Construction Total	34.0	32.9	33.3	34.2	33.1	33.0	33.6	34.2	32.7
Manufacturing - Nondurable Goods	18.4	17.2	16.2	16.6	16.1	15.2	16.0	18.8	18.0
Manufacturing - Durable Goods	18.7	17.6	19.3	18.6	18.3	18.8	19.1	19.5	22.3
Manufacturing Total	18.6	17.4	17.6	17.6	17.0	16.7	17.4	19.1	19.9
Transportation	19.5	19.6	21.3	22.0	21.3	21.2	22.6	22.9	21.9
Communications & Public Utilities	14.7	7.3	8.0	8.2	10.2	11.4	11.0	11.4	9.3
TCPU Total	17.3	13.9	15.3	15.8	16.3	16.8	17.6	18.0	16.5
Wholesale - Durable Goods	13.5	12.1	14.0	14.2	14.5	15.3	16.0	16.4	15.1
Wholesale - Nondurable Goods	17.3	17.9	18.1	20.0	17.5	19.6	20.5	20.4	19.4
Wholesale Trade Total	15.3	14.9	16.0	16.9	15.9	17.3	18.1	18.2	17.0
Building Materials & Garden Supplies	19.5	20.0	20.3	19.6	19.7	20.7	23.0	23.1	22.3
General Merchandise Stores	21.7	21.5	22.6	21.1	23.8	25.1	28.0	28.7	24.2
Food Stores	19.3	19.4	20.4	21.3	24.1	22.5	32.1	28.4	24.1
Auto Dealers & Service Stations	22.8	22.6	23.3	24.2	24.4	23.8	26.5	27.2	27.2
Apparels & Accessory Stores	26.8	26.1	26.7	27.9	29.4	32.1	32.2	36.4	31.4
Furniture & Home Furnishings	22.3	22.5	23.7	23.0	23.9	25.1	24.4	26.1	25.2
Eating & Drinking Places	33.9	34.0	33.8	35.3	35.4	35.2	36.5	36.9	37.1
Miscellaneous Retail	24.5	24.5	24.3	25.9	25.6	25.1	28.1	26.9	26.1
Retail Trade Total	26.8	26.9	27.2	28.1	28.9	28.7	31.4	31.4	30.1
Finance	10.9	10.5	10.4	11.0	11.4	11.5	13.0	13.7	15.4
Insurance	12.0	12.0	11.3	11.4	11.5	11.6	12.4	13.7	12.2
Real Estate	23.3	23.3	24.0	24.3	23.9	25.3	27.3	25.6	23.1
FIRE Total	13.9	13.7	13.8	14.3	14.4	14.9	16.3	16.6	16.5
Hotels & Other Lodging Places	37.8	37.7	38.3	38.0	38.0	38.2	39.1	38.6	40.1
Personal Services	28.3	27.7	26.1	26.4	24.9	25.4	25.8	27.6	27.2
Business Services	39.7	39.4	40.2	39.8	42.4	39.6	42.2	40.7	40.8
Auto Repair, Services & Parking	24.4	24.1	25.7	25.7	24.1	22.7	25.9	26.5	24.3
Miscellaneous Repair Service	20.1	20.1	20.0	21.8	20.7	20.3	23.3	22.4	22.4
Motion Pictures	27.5	24.3	27.9	29.0	26.0	26.4	28.5	31.6	26.1
Amusement & Recreation Services	37.5	38.0	37.5	38.8	40.6	37.5	39.1	37.3	37.3
Health Services	14.6	16.0	16.5	17.0	15.2	17.0	18.3	23.7	17.6
Offices and Clinics	14.5	13.8	14.0	21.8	15.9	14.8	17.5	19.6	17.0
Offices and Clinics	**17.8**	**16.4**	**13.9**	**17.4**	**17.2**	**17.1**	**18.9**	**19.1**	**17.1**
Nursing Care Facilities	19.8	21.8	19.2	19.6	22.6	18.1	25.8	23.6	28.4
Nursing Care Facilities	**11.5**	**13.4**	**11.9**	**14.2**	**14.9**	**11.4**	**18.4**	**16.1**	**21.2**
Hospitals	12.3	9.0	9.1	9.5	10.1	9.1	9.8	12.5	10.5
Hospitals	**7.8**	**5.1**	**4.9**	**5.5**	**5.8**	**5.4**	**6.6**	**8.6**	**6.6**
Balance of Health Services	**15.6**	**16.3**	**15.1**	**14.2**	**13.1**	**14.7**	**20.2**	**23.5**	**18.3**
Legal Services	13.8	14.4	15.4	16.4	16.0	15.3	16.3	16.6	17.3
Educational Services	13.8	12.2	12.3	14.1	13.0	13.2	15.2	15.0	15.0
Educational Services	**13.2**	**10.4**	**11.8**	**14.3**	**12.5**	**13.0**	**14.7**	**16.4**	**14.3**
Social Services	19.8	19.7	19.1	20.6	20.4	20.0	20.8	22.1	22.4
Social Services	**12.5**	**14.3**	**16.6**	**16.8**	**15.4**	**15.2**	**16.2**	**14.7**	**14.5**
Museums & Botanical Gardens	28.5	24.3	21.1	25.7	24.0	34.3	24.2	22.8	22.0
Membership Organizations	24.8	24.3	24.5	25.7	26.5	27.0	25.8	26.0	26.7
Engineering & Management Services	21.2	18.5	18.2	19.6	19.5	19.1	20.8	25.2	23.0
Private Households	25.9	24.6	24.1	24.0	23.3	23.3	23.7	25.3	25.0
Services, NEC	15.5	15.4	16.7	15.7	17.6	17.0	17.8	16.1	18.8
Services Total	22.4	21.6	21.7	23.0	22.8	22.1	24.2	24.8	24.5
Public Administration Total	15.1	12.1	14.5	12.2	13.6	11.5	13.7	12.9	14.1
Public Administration	**9.4**	**6.4**	**7.9**	**8.2**	**10.3**	**8.9**	**8.8**	**8.0**	**10.0**
Balance of Other Industries	**31.1**	**29.4**	**28.8**	**25.5**	**28.0**	**28.6**	**31.7**	**31.2**	**28.8**
ALL Total	22.4	21.7	22.1	23.0	23.1	23.0	24.5	25.0	24.5
RN Total	**11.0**	**8.9**	**8.9**	**9.9**	**10.2**	**9.8**	**12.1**	**12.9**	**11.6**

Rows in bold type represent Registered Nurses only.

Turnover is defined as the number of transactions involving exiting behavior (whereby an individual separates from an employer) divided by the total number of transactions that occurred.

Source - Wyoming's Wage Records.

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 7: Gross Exits Registered Nurses Licensed in the State by Primary Industry, Average Quarterly Wage, Average Quarters Worked and Average Age 1992 to 2000.

Industry	Variable	1992	1993	1994	1995	1996	1997	1998	1999	2000
01 Hospitals	N	106	204	200	211	221	256	257	283	287
	Average Quarterly Wage	4,964	6,259	5,960	6,604	6,777	6,851	7,280	7,529	8,270
	Average Quarters Worked	3.3	3.1	3.0	3.0	3.2	3.2	3.0	3.1	3.2
	Average Age	37.4	38.7	37.8	38.2	38.7	40.3	39.6	39.2	40.8
02 Nursing Care Facilities	N	48	51	68	91	75	95	127	114	75
	Average Quarterly Wage	6,093	5,263	5,770	5,347	6,037	6,585	7,281	7,748	7,532
	Average Quarters Worked	3.5	2.9	3.2	3.1	3.3	3.4	3.2	3.4	3.2
	Average Age	41.5	39.6	35.3	36.4	39.0	39.6	38.3	42.8	42.1
03 Offices and Clinics	N	50	38	49	72	62	63	85	104	107
	Average Quarterly Wage	4,883	4,737	4,938	4,600	5,404	6,035	7,112	6,216	6,344
	Average Quarters Worked	2.7	2.8	2.9	2.8	2.9	3.0	3.1	3.0	3.0
	Average Age	39.0	38.9	38.9	43.1	40.6	39.6	42.0	42.5	44.1
04 Balance Health Services	N	21	14	22	39	36	56	99	56	38
	Average Quarterly Wage	8,713	6,281	7,622	6,180	7,196	7,468	7,516	6,639	6,430
	Average Quarters Worked	3.8	2.9	3.4	3.3	3.5	3.4	3.5	3.4	3.1
	Average Age	39.7	41.0	40.1	40.9	39.4	42.8	41.3	41.9	40.9
05 Educational Services	N	23	27	26	21	24	28	35	33	48
	Average Quarterly Wage	4,324	3,855	3,542	4,087	4,011	3,819	5,471	6,388	5,675
	Average Quarters Worked	3.2	3.1	2.8	2.7	2.5	3.2	3.0	2.6	2.8
	Average Age	39.8	44.0	39.8	41.0	46.8	44.0	46.5	46.9	45.7
06 Social Services	N	7	11	21	15	24	24	16	21	18
	Average Quarterly Wage	3,641	5,515	4,985	5,292	5,036	5,627	4,857	6,424	7,202
	Average Quarters Worked	3.1	3.4	3.6	2.7	2.9	3.0	3.4	3.1	3.3
	Average Age	41.0	42.6	44.9	39.4	40.2	42.7	43.8	45.9	44.7
07 Public Administration	N	28	17	26	38	46	44	40	32	33
	Average Quarterly Wage	6,174	5,752	4,958	5,329	5,957	6,083	7,058	6,811	7,905
	Average Quarters Worked	3.7	3.2	3.3	3.1	2.8	3.0	3.5	3.2	2.8
	Average Age	41.9	39.2	41.0	42.1	42.4	41.6	46.2	41.4	47.2
08 Balance All Other Industries	N	34	40	35	47	37	35	46	52	71
	Average Quarterly Wage	4,725	3,427	3,331	7,409	3,688	4,428	5,884	5,974	6,398
	Average Quarters Worked	2.6	2.3	2.7	3.1	2.9	2.5	3.1	2.5	2.7
	Average Age	36.6	36.5	39.6	41.2	35.2	39.6	40.5	44.0	44.1
Total Exits	N	317	402	447	534	525	601	705	695	677
	Average Quarterly Wage	5,459	5,562	5,482	5,959	6,096	6,434	7,051	7,089	7,393
	Average Quarters Worked	3.2	3.0	3.0	3.0	3.1	3.2	3.2	3.1	3.1
	Average Age	39.0	39.2	38.4	39.4	39.5	40.7	40.7	41.5	42.6

Source - Wyoming State Board of Nursing database combined with Wyoming's Wage Records.

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 8: Gross Entries Registered Nurses Licensed in the State by Primary Industry, Average Quarterly Wage, Average Quarters Worked and Average Age 1993 to 2001.

Industry	Variable	1993	1994	1995	1996	1997	1998	1999	2000	2001
01 Hospitals	N	288	279	230	206	266	266	375	310	224
	Average Quarterly Wage	6,102	5,697	6,078	5,724	6,516	6,855	8,426	8,257	7,854
	Average Quarters Worked	2.8	2.7	3.0	3.1	3.0	3.0	3.3	3.2	2.4
	Average Age	37.3	36.5	37.4	36.8	36.6	37.4	38.4	38.3	40.5
02 Nursing Care Facilities	N	67	129	100	73	69	66	90	74	54
	Average Quarterly Wage	4,916	6,333	5,028	5,628	6,255	6,122	7,274	7,780	7,993
	Average Quarters Worked	2.8	3.2	3.0	3.2	3.4	3.4	3.2	3.3	2.3
	Average Age	37.6	38.9	35.5	39.2	37.0	40.2	42.3	45.3	44.4
03 Offices and Clinics	N	49	61	105	75	83	118	134	125	132
	Average Quarterly Wage	4,274	5,430	4,866	5,335	6,156	5,766	6,662	7,123	7,283
	Average Quarters Worked	3.2	3.1	2.9	3.0	3.1	3.2	3.0	3.2	2.4
	Average Age	36.9	38.5	42.1	38.2	39.8	40.9	42.3	42.3	42.4
04 Balance Health Services	N	46	41	40	65	75	51	49	37	39
	Average Quarterly Wage	8,567	7,320	6,141	7,703	6,570	5,943	6,388	7,018	6,660
	Average Quarters Worked	3.4	3.4	3.4	3.7	3.5	3.4	3.5	3.4	2.4
	Average Age	41.3	38.4	38.6	39.7	40.6	39.5	40.4	44.1	42.5
05 Educational Services	N	35	31	31	25	35	43	41	46	38
	Average Quarterly Wage	3,735	4,514	4,013	4,140	3,558	4,840	5,046	4,946	4,791
	Average Quarters Worked	3.3	2.8	2.6	2.8	2.9	3.2	3.0	3.2	2.3
	Average Age	39.0	39.9	40.6	42.4	43.3	44.7	44.6	43.7	45.5
06 Social Services	N	14	22	23	32	25	27	19	18	24
	Average Quarterly Wage	5,631	5,139	6,168	4,877	5,008	6,115	5,908	6,760	8,133
	Average Quarters Worked	3.3	3.2	2.8	3.2	3.1	3.4	3.4	3.3	2.4
	Average Age	42.0	41.1	40.8	39.8	45.2	42.0	45.5	45.4	41.0
07 Public Administration	N	35	34	53	44	40	54	36	46	50
	Average Quarterly Wage	5,168	5,762	5,874	5,944	6,412	6,486	7,592	7,199	7,097
	Average Quarters Worked	3.0	3.1	3.3	3.1	3.4	3.6	3.3	3.4	2.6
	Average Age	41.5	42.9	39.1	42.1	41.5	42.9	43.1	44.5	45.1
08 Balance All Other Industries	N	45	46	34	37	38	48	58	73	93
	Average Quarterly Wage	3,873	4,598	6,524	4,442	5,203	6,451	5,121	7,387	7,161
	Average Quarters Worked	2.4	2.5	2.8	2.7	2.7	3.0	2.8	2.7	2.2
	Average Age	38.8	43.6	38.4	38.8	43.8	41.7	43.2	45.6	43.7
Total Entries	N	579	643	616	557	631	673	802	729	654
	Average Quarterly Wage	5,655	5,790	5,626	5,764	6,156	6,292	7,404	7,551	7,360
	Average Quarters Worked	2.9	2.9	3.0	3.1	3.1	3.2	3.2	3.2	2.4
	Average Age	38.2	38.5	38.4	38.6	39.0	39.8	40.7	41.6	42.4

* 2001 data only includes the first three quarters
Source - Wyoming State Board of Nursing database combined with Wyoming's Wage Records.

Tony Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 9: Detailed Flow of Registered Nurses Working in Wyoming Hospitals in 1999.

Row Number	Origin and Destination State	RN Status 1999	Origin and Destination Industry	Average Quarterly Wage 1998	Average Quarters Worked 1998	In Flow	Average Age	Average Quarterly Wage 1999	Average Quarters Worked 1999	Out Flow	Average Age	Average Quarterly Wage 1999	Average Quarters Worked 1999	Average Quarterly Wage 2000	Average Quarters Worked 2000
1	OS	RNY1	01 Hospitals	7,909	3.7	15	39.5	8,239	3.7	11	37.7	7,160	3.5	9,035	3.1
2	OS	RNY1	02 Nursing Care Facilities	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
3	OS	RNY1	03 Offices and Clinics	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4	OS	RNY1	04 Balance Health Services	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5	OS	RNY1	06 Social Services	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
6	OS	RNY1	08 Balance All Other Industries	8,217	3.1	11	38.9	9,096	3.6	0	0.0	0	0.0	0	0.0
7	OS	RNY1	All	7,198	3.5	31	39.3	8,261	3.6	15	39.4	8,119	3.2	9,057	3.1
8	OS	RNY2	01 Hospitals	7,519	3.5	17	37.2	8,023	3.5	6	39.3	9,421	3.0	12,719	2.8
9	OS	RNY2	02 Nursing Care Facilities	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
	OS	RNY2	03 Offices and Clinics	0	0.0	0	0.0	0	0.0	ND	ND	ND	ND	ND	ND
	OS	RNY2	04 Balance Health Services	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	OS	RNY2	05 Educational Services	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
13	OS	RNY2	08 Balance All Other Industries	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
14	OS	RNY2	All	8,063	3.5	24	36.8	8,612	3.6					10,777	3.2
15	OS	RNY3+	01 Hospitals	8,362	3.9	13	40.1	9,197	3.3					9,679	3.6
16	OS	RNY3+	02 Nursing Care Facilities	ND	ND	ND	ND	ND	ND					ND	ND
17	OS	RNY3+	03 Offices and Clinics	ND	ND	ND	ND	ND	ND					ND	ND
18	OS	RNY3+	04 Balance Health Services	ND	ND	ND	ND	ND	ND					0	0.0
19	OS	RNY3+	05 Educational Services	0	0.0	0	0.0	0	0.0					ND	ND
20	OS	RNY3+	08 Balance All Other Industries	ND	ND	ND	ND	ND	ND	4	43.3	9,635	4.0	12,981	3.3
21	OS	RNY3+	All	8,126	3.8	19	40.7	8,669	3.4	26	37.1	9,017	3.7	9,829	3.6
22	OS	All	All	7,729	3.6	74	36.6	8,476	3.6	52	36.1	8,686	3.5	9,815	3.3
23	Un	RNY1	Unknown	0	0.0	93	37.0	7,291	2.2	19	37.7	5,064	2.6	0	0.0
24	Un	RNY2	Unknown	0	0.0	0	0.0	0	0.0	27	34.7	7,613	2.3	0	0.0
25	Un	RNY3+	Unknown	0	0.0	12	41.0	5,068	2.4	72	40.7	6,938	2.4	0	0.0
26	Un	All	All	0	0.0	105	37.4	7,017	2.2	118	38.8	6,759	2.4	0	0.0
27	WY	RNY1	02 Nursing Care Facilities	7,177	2.4	5	32.0	9,157	4.0	ND	ND	ND	ND	ND	ND
28	WY	RNY1	03 Offices and Clinics	2,993	2.8	4	29.3	4,959	3.0	4	41.3	3,399	2.3	5,680	3.5
29	WY	RNY1	04 Balance Health Services	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30	WY	RNY1	05 Educational Services	458	1.8	4	36.8	4,967	2.8	ND	ND	ND	ND	ND	ND
31	WY	RNY1	06 Social Services	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
32	WY	RNY1	07 Public Administration	0	0.0	0	0.0	0	0.0	ND	ND	ND	ND	ND	ND
33	WY	RNY1	08 Balance All Other Industries	2,188	3.3	26	29.1	6,134	3.4	3	44.3	5,143	3.0	8,503	3.3
34	WY	RNY1	All	2,581	2.9	43	31.1	6,283	3.3	13	39.0	4,853	2.8	7,413	3.3
35	WY	RNY2	02 Nursing Care Facilities	5,095	3.3	14	32.8	8,970	4.0	ND	ND	ND	ND	ND	ND
36	WY	RNY2	03 Offices and Clinics	5,729	3.5	4	32.8	7,032	4.0	8	36.1	8,247	3.8	7,600	3.9
37	WY	RNY2	04 Balance Health Services	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
38	WY	RNY2	05 Educational Services	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
39	WY	RNY2	07 Public Administration	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
40	WY	RNY2	08 Balance All Other Industries	5,580	4.0	3	31.3	7,957	3.0	ND	ND	ND	ND	ND	ND
41	WY	RNY2	All	5,078	3.2	26	33.2	7,916	3.8	15	37.2	7,271	3.9	7,369	3.9
42	WY	RNY3+	02 Nursing Care Facilities	8,224	3.3	58	41.1	10,963	3.9	9	42.9	7,389	3.6	7,762	3.8
43	WY	RNY3+	03 Offices and Clinics	8,875	3.4	18	43.2	8,698	3.4	28	38.0	8,003	3.3	7,981	3.8
44	WY	RNY3+	04 Balance Health Services	8,340	3.8	32	42.9	8,656	3.8	7	41.1	8,186	4.0	7,868	3.9
45	WY	RNY3+	05 Educational Services	ND	ND	ND	ND	ND	ND	15	42.1	7,561	3.7	6,294	3.5
46	WY	RNY3+	06 Social Services	ND	ND	ND	ND	ND	ND	0	0.0	0	0.0	0	0.0
47	WY	RNY3+	07 Public Administration	8,679	4.0	8	45.9	9,732	4.0	11	40.8	8,824	4.0	8,584	4.0
48	WY	RNY3+	08 Balance All Other Industries	8,320	3.7	6	47.5	10,372	3.3	15	43.1	7,684	3.9	8,389	3.1
49	WY	RNY3+	All	8,297	3.5	127	42.6	9,823	3.8	85	40.8	7,935	3.6	7,810	3.6
50	WY	All	Less Wyoming Hospitals	6,794	3.4	196	38.8	8,865	3.7	113	40.1	7,558	3.6	7,706	3.6
51	All	All	Less Wyoming Hospitals	7,063	3.4	375	38.4	8,426	3.3	283	39.2	7,529	3.1	8,334	3.5
52	WY	RNY1	01 Hospitals	3,238	3.6	31	32.3	5,225	3.7	151	34.3	7,039	2.9	9,350	3.8
53	WY	RNY2	01 Hospitals	5,736	3.0	159	35.2	8,091	3.6	156	34.7	8,239	3.9	8,986	3.8
54	WY	RNY3+	01 Hospitals	9,985	3.9	1,587	43.6	9,998	3.9	1,562	43.8	10,153	3.9	10,639	3.9
55	WY	All	Wyoming Hospitals	9,572	3.8	1,777	42.6	9,756	3.8		42.3	9,800	3.8	10,400	3.9
56	All	All	All	9,272	3.8	2,152	41.9	9,554	3.7		41.9	9,554	3.7	10,246	3.8

ND - Data is non-disclosable due to R&P confidentiality rules

OS - CO, ID, NE, NM, SD, TX, UT

nflow - An individual that transitioned from another Industry or State in 1998 to the Hospitals Industry in 1999.

Outflow - An individual that was in the Hospital Industry in 1999 and Transitioned to a different Industry or State in 2000.

nflows and Outflows represent distinct groups. For example (Row 51) the 283 outflows are not necessarily members of the 375 inflows, some are but most are not.

Source - Wyoming State Board of Nursing database combined with Wyoming's and Interstate Wage Records.

ıny Glover, Wyoming Department of Employment, Research and Planning. 4/23/2002

Table 10: Registered Nurses Entering and Exiting the State by Year, Quarter and Net Flow.

Year & Qtr	RN's with Wages in WR	Raw First Entry	Raw Permanent Exit	Raw Net Flow	Moving 4 Qtr Average First Entry	Moving 4 Qtr Average Permanent Exit	Moving 4 Qtr Net Flow
1992q2	1,824	77	7	70			
1992q3	2,065	269	30	239			
1992q4	2,115	87	18	69			
1993q1	2,148	78	21	57	128	19	109
1993q2	2,174	62	24	38	124	23	101
1993q3	2,387	250	36	214	119	25	95
1993q4	2,439	93	28	65	121	27	94
1994q1	2,468	81	26	55	122	29	93
1994q2	2,488	43	29	14	117	30	87
1994q3	2,713	286	28	258	126	28	98
1994q4	2,779	98	42	56	127	31	96
1995q1	2,778	59	34	25	122	33	88
1995q2	2,885	125	49	76	142	38	104
1995q3	2,982	182	66	116	116	48	68
1995q4	2,988	76	59	17	111	52	59
1996q1	2,959	65	44	21	112	55	58
1996q2	2,993	96	59	37	105	57	48
1996q3	3,039	143	53	90	95	54	41
1996q4	3,067	68	49	19	93	51	42
1997q1	3,082	72	32	40	95	48	47
1997q2	3,160	90	54	36	93	47	46
1997q3	3,261	140	73	67	93	52	41
1997q4	3,259	66	38	28	92	49	43
1998q1	3,265	76	50	26	93	54	39
1998q2	3,288	85	88	-3	92	62	30
1998q3	3,321	172	70	102	100	62	38
1998q4	3,378	84	65	19	104	68	36
1999q1	3,295	51	54	-3	98	69	29
1999q2	3,387	77	90	-13	96	70	26
1999q3	3,451	173	85	88	96	74	23
1999q4	3,485	78	81	-3	95	78	17
2000q1	3,498	74	68	6	101	81	20
2000q2	3,477	58	89	-31	96	81	15
2000q3	3,596	174	99	75	96	84	12
2000q4	3,580	65	81	-16	93	84	9

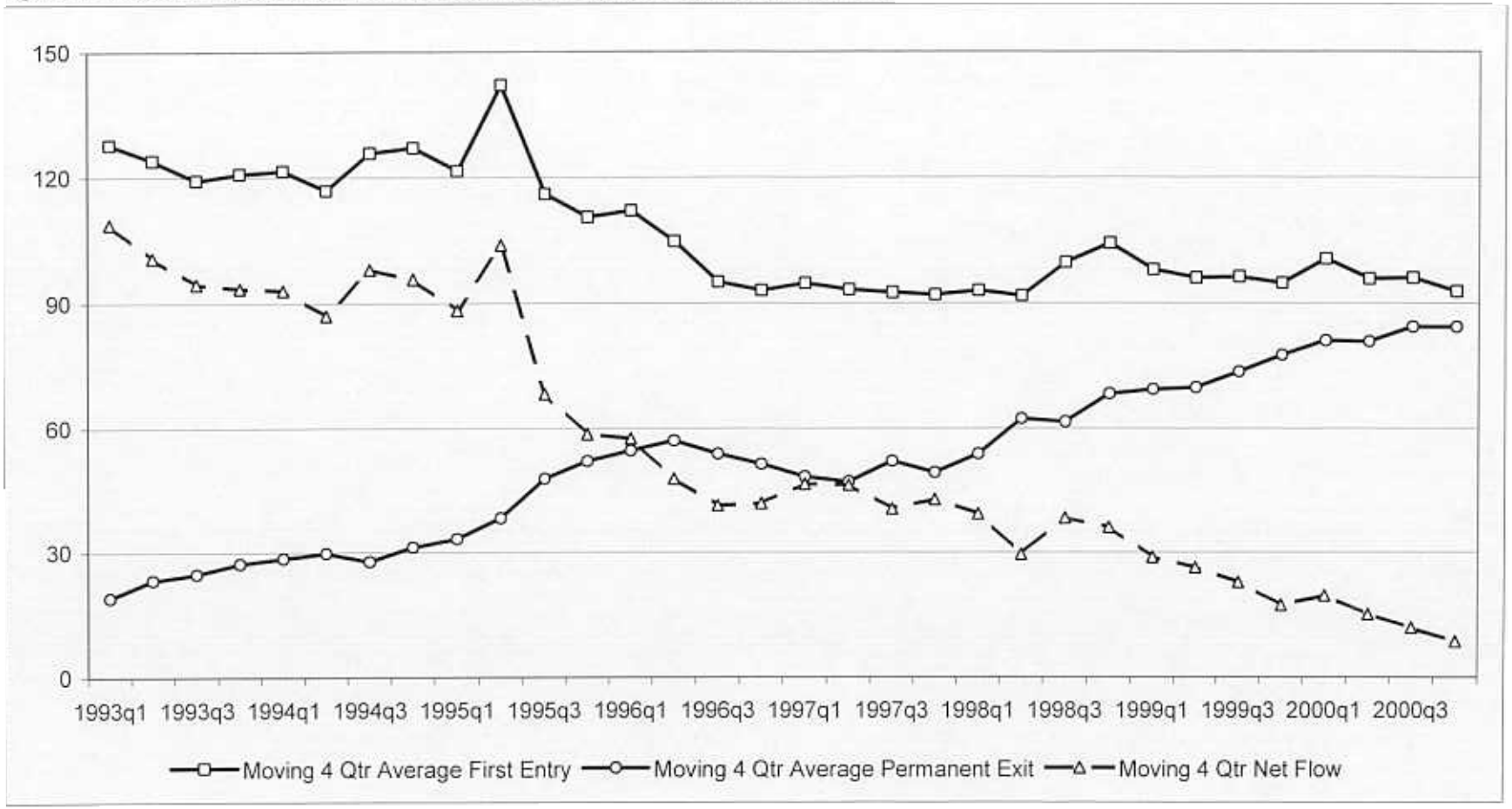
Raw First Entry - Licensed RN's that appeared for the first time as RN's in WR (ie came to State and licensed or worked in Wyoming prior, Graduated and became licensed).

Raw Permanent Exit - Licensed RN's that had wages in Wyoming as licensed RN's that never appeared in Wyoming's WR again.

Net Flow - Entry minus Exits

Moving 4 Qtr Averages - The average of the current and three quarters prior, used to smooth the peaks in the raw data due to numerous First Entries occuring in the third quarter of each year due to graduation.

Figure 1: Registered Nurses Entering and Exiting the State by Year, Quarter and Net Flow.



Tony Glover, Wyoming Department of Employment, Research and Planning. 5/29/2002

Appendix A
Nurse Reinvestment Act

107TH CONGRESS
2D SESSION

H. R.

IN THE HOUSE OF REPRESENTATIVES

M introduced the following bill; which was referred to the Committee on _____

A BILL

To amend the Public Health Service Act to recruit and retain nurses, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Nurse Reinvestment Act"

SEC. 2. TABLE OF CONTENTS.

The table of contents for this Act is as follows:

Sec. 1. Short title.
Sec. 2. Table of contents.

TITLE I—NURSE RECRUITMENT

Sec. 101. Definitions.
Sec. 102. Public service announcements regarding the nursing profession.
Sec. 103. National Nurse Service Corps.

TITLE II—NURSE RETENTION

Sec. 201. Building career ladders and retaining quality nurses.
Sec. 202. Comprehensive geriatric education.
Sec. 203. Nurse faculty loan program.
Sec. 204. Reports by General Accounting Office.

TITLE I—NURSE RECRUITMENT

SEC. 101. DEFINITIONS.

Section 801 of the Public Health Service Act (42 U.S.C. 296) is amended by adding at the end the following:

"(9) AMBULATORY SURGICAL CENTER.—The term 'ambulatory surgical center' has the meaning applicable to such term under title XVIII of the Social Security Act.

"(10) FEDERALLY QUALIFIED HEALTH CENTER.—The term 'Federally qualified health center' has the meaning given such term under section 1861(aa)(4) of the Social Security Act.

"(11) HEALTH CARE FACILITY.—The term 'health care facility' means an Indian Health Service health center, a Native Hawaiian health center, a hospital, a Federally qualified health center, a rural health clinic, a nursing home, a home health agency, a hospice program, a public health clinic, a State or local department of public health, a skilled nursing

facility, an ambulatory surgical center, or any other facility designated by the Secretary.

"(12) HOME HEALTH AGENCY.—The term 'home health agency' has the meaning given such term in section 1861(o) of the Social Security

"(13) HOSPICE PROGRAM.—The term 'hospice program' has the meaning given such term in section 1861(dd)(2) of the Social Security Act.

"(14) RURAL HEALTH CLINIC.—The 'rural health clinic' has the meaning given such term in section 1861(aa)(2) of the Social Security Act.

"(15) SKILLED NURSING FACILITY. The term 'skilled nursing facility' has the meaning given such term in section 1819(a) of the Social Security Act."

SEC. 102. PUBLIC SERVICE ANNOUNCEMENTS REGARDING THE NURSING PROFESSION.

Title VIII of the Public Health Service Act U.S.C. 296 et seq.) is amended by adding at the end the following:

"PART H—PUBLIC SERVICE ANNOUNCEMENTS

"SEC. 851. PUBLIC SERVICE ANNOUNCEMENTS.

"(a) IN GENERAL.—The Secretary shall develop and issue public service announcements that advertise and promote the nursing profession, highlight the advantages and

rewards of nursing, and encourage individuals to enter the nursing profession.

"(b) METHOD.—The public service announcements described in subsection (a) shall be broadcast through appropriate media outlets, including television or radio, in a manner intended to reach as wide and diverse an audience as possible.

"(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as may be necessary for each of fiscal years 2003 through 2007.

"SEC. 852. STATE AND LOCAL PUBLIC SERVICE ANNOUNCEMENTS.

"(a) IN GENERAL.—The Secretary may award grants to eligible entities to support State and local advertising campaigns through appropriate media outlets to promote the nursing profession, highlight the advantages and rewards of nursing, and encourage individuals from disadvantaged backgrounds to enter the nursing profession.

"(b) USE OF FUNDS.—An eligible entity that receives a grant under subsection (a) shall use funds received through such grant to acquire local television and radio time, place advertisements in local newspapers, or post information on billboards or on the Internet in a manner

intended to reach as wide and diverse an audience as possible, in order to—

"(1) advertise and promote the nursing profession;

"(2) promote nursing education programs;

"(3) inform the public of financial assistance regarding such education programs;

"(4) highlight individuals in the community who are practicing nursing in order to recruit nurses; or

"(5) provide any other information to recruit individuals for the nursing profession.

"(c) LIMITATION.—An eligible entity that receives a grant under subsection (a) shall not use funds received through such grant to advertise particular employment opportunities.

"(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as may be necessary for each of fiscal years 2003 through 2007."

SEC. 103. NATIONAL NURSE SERVICE CORPS.

(a) LOAN REPAYMENT PROGRAM.—Section 846(a) of the Public Health Service Act (42 U.S.C. 297n(a)) is amended—

(1) in paragraph (3), by striking "in an Indian Health Service health center" and all that follows to the semicolon and inserting "at a health care facility with a critical shortage of nurses"; and

(2) by adding at the end the following: "After fiscal year 2007, the Secretary may not, pursuant to any agreement entered into under this subsection, assign a nurse to any private entity unless that entity is nonprofit."

(b) ESTABLISHMENT OF SCHOLARSHIP PROGRAM Section 846 of the Public Health Service Act (42 U.S.C. 297n) is amended

(1) in the heading for the section, by striking "LOAN REPAYMENT PROGRAM" and inserting "LOAN REPAYMENT AND SCHOLARSHIP PROGRAMS";

(2) by redesignating subsections (d), (f), (g), and (h) as subsections (f), (h), (i), and (g), respectively;

(3) by transferring subsections (f) and (g) (as so redesignated) from their current placements, by inserting subsection (f) after subsection (e), and by inserting subsection (g) after subsection (f) (as so inserted); and

(4) by inserting after subsection (c) the following subsection:

"(d) SCHOLARSHIP PROGRAM.

"(1) IN GENERAL.—The Secretary shall (for fiscal years 2003 and 2004) and may (for years thereafter) carry out a program of entering into contracts with eligible individuals under which such individuals agree to serve as nurses for riod of not less than 2 years at a health care facility with a critical shortage of nurses, in consideration of the Federal Government agreeing to provide to the individuals scholarships for attendance at schools of nursing.

"(2) ELIGIBLE INDIVIDUALS.—In this section, the term 'eligible individual' means an individual who is enrolled or accepted for enrollment as a full-time or part-time student in a school of nursing.

"(3) SERVICE REQUIREMENT.

"(A) IN GENERAL.—The Secretary may not enter into a contract with an eligible individual under this subsection unless the individual agrees to serve as a nurse at a health care facility with a critical shortage of nurses for a period of full-time service of not less than 2 years, or for a period of part-time service in accordance with subparagraph (B).

"(B) PART-TIME SERVICE.—An individual may complete the period of service described in subparagraph (A) on a part-time basis if the individual has a written agreement that—

"(i) is entered into by the facility and the individual and is approved by the Secretary; and

"(ii) provides that the period of obligated service will be extended so that the aggregate amount of service performed will equal the amount of service that would be performed through a period of full-time service of not less than 2 years.

"(4) APPLICABILITY OF CERTAIN PROVISIONS.—The provisions of subpart III of part D of title III shall, except as inconsistent with this section, apply to the program established in paragraph (1) in the same manner and to the same extent as such provisions apply to the National Health Service Corps Scholarship Program established in such sub-

(c) PREFERENCE.—Section 846(e) of the Public Health Service Act (42 U.S.C. 297n(e)) is amended by striking "under subsection (a)" and all that follows through the period and inserting "under subsection (a) or

(d), the Secretary shall give preference to qualified applicants with the greatest financial need.".

(d) REPORTS.—Subsection (h) of section 846 of the Public Health Service Act (42 U.S.C. 297n) (as redesignated by subsection (b)(2)) is amended to read as follows:

"(h) REPORTS.—Not later than 18 months after the date of enactment of the Nurse Reinvestment Act, and annually thereafter, the Secretary shall prepare and submit to the Congress a report describing the programs carried out under this section—

"(1) the number of enrollees, scholarships, loan repayments, and grant recipients;

"(2) the number of graduates;

"(3) the amount of scholarship payments and loan repayments made;

"(4) which educational institution the recipients attended;

"(5) the number and placement location of the scholarship and loan repayment recipients at health care facilities with a critical shortage of nurses;

"(6) the default rate and actions required;

"(7) the amount of outstanding default funds of both the scholarship and loan repayment programs;

"(8) to the extent that it can be determined, the reason for the default;

"(9) the demographics of the individuals participating in the scholarship and loan repayment programs;

"(10) justification for the allocation of funds between the scholarship and loan repayment programs; and

"(11 an evaluation of the overall costs and benefits of the program."

(e) FUNDING.—Subsection (i) of section 846 of the Public Health Service Act (42 U.S.C. 297n) (as redesignated by subsection (b)(2)) is amended to read as follows:

"(i) FUNDING

"(1) AUTHORIZATION OF APPROPRIATIONS.—For the purpose of payments under agreements entered into under subsection (a) or (d), there are authorized to be appropriated such sums as may be necessary for each of fiscal years 2003 through 2007.

"(2) ALLOCATIONS.—Of the amounts appropriated under paragraph (1), the Secretary may, as determined appropriate by the Secretary, allocate amounts between the program under subsection (a) and the program under subsection (d).".

TITLE II—NURSE RETENTION

SEC. 201. BUILDING CAREER LADDERS AND RETAINING QUALITY NURSES.

Section 831 of the Public Health Service Act (42 U.S.C. 296p) is amended to read as follows:

"SEC. 831. NURSE EDUCATION, PRACTICE, AND RETENTION GRANTS.

"(a) EDUCATION PRIORITY AREAS. The Secretary may award grants to or enter into contracts with eligible entities for—

"(1) expanding the enrollment in baccalaureate nursing programs;

"(2) developing and implementing internship and residency programs to encourage mentoring and the development of specialties; or

"(3) providing education in new technologies, including distance learning methodologies.

"(b) PRACTICE PRIORITY AREAS. The Secretary may award grants to or enter into contracts with eligible entities for—

"(1) establishing or expanding nursing practice arrangements in noninstitutional settings to demonstrate methods to improve access to primary health care in medically underserved communities;

"(2) providing care for underserved populations and other high-risk groups such as the elderly, individuals with HIV–AIDS, substance abusers, the homeless, and victims of domestic violence;

"(3) providing managed care, quality improvement, and other skills needed to practice in existing and emerging organized health care systems; or

"(4) developing cultural competencies among nurses.

"(c) RETENTION PRIORITY AREAS. The Secretary may award grants to and enter into contracts with eligible entities to enhance the nursing workforce by initiating and maintaining nurse retention programs pursuant to paragraph (1) or (2).

"(1) GRANTS FOR CAREER LADDER PROGRAMS.—The Secretary may award grants to and enter into contracts with eligible entities for programs—

"(A) to promote career advancement for nursing personnel in a variety of training settings, cross training or specialty training among diverse population groups, and the advancement of individuals including to become professional nurses, advanced education nurses, licensed

practical nurses, certified nurse assistants, and home health aides; and

"(B) to assist individuals in obtaining cation and training required to enter the ing profession and advance within such profession, such as by providing career counseling and mentoring.

"(2) ENHANCING PATIENT CARE DELIVERY SYSTEMS.—

"(A) GRANTS.—The Secretary may award grants to eligible entities to improve the retention of nurses and enhance patient care that is directly related to nursing activities by enhancing collaboration and communication among nurses and other health care professionals, and by promoting nurse involvement in the organizational and clinical decisionmaking processes of a health care facility.

"(B) PREFERENCE.—In making awards of grants under this paragraph, the Secretary shall give a preference to applicants that have not previously received an award under this paragraph.

"(C) CONTINUATION OF AN AWARD.—The Secretary shall make continuation of any award

under this paragraph beyond the second year of such award contingent on the recipient of such award having demonstrated to the Secretary measurable and substantive improvement in nurse retention or patient care.

"(d) OTHER PRIORITY AREAS.—The Secretary may award grants to or enter into contracts with eligible entities to address other areas that are of high priority to nurse education, practice, and retention, as determined by the Secretary.

"(e) PREFERENCE.—For purposes of any amount of funds appropriated to carry out this section for fiscal year 2003, 2004, or 2005 that are in excess of the amount of funds appropriated to carry out this section for fiscal year 2002, the Secretary shall give preference to awarding grants or entering into contracts under subsections (a)(2) and (c)

"(f) REPORT.—The Secretary shall submit to the Congress before the end of each fiscal year a report on the grants awarded and the contracts entered into under this section. Each such report shall identify the overall number of such grants and contracts and provide an explanation of why each such grant or contract will meet the priority need of the nursing workforce.

"(g) ELIGIBLE ENTITY.—For purposes of this section, the term 'eligible entity' includes a school of nursing, a health care facility, or a partnership of such a school and facility.

"(h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as may be necessary for each of fiscal years 2003 through 2007."

SEC. 202. COMPREHENSIVE GERIATRIC EDUCATION.

(a) COMPREHENSIVE GERIATRIC EDUCATION.—Title VIII of the Public Health Service Act (42 U.S.C. 296 et seq.) (as amended by section 102) is amended by adding at the end the following:

"PART I—COMPREHENSIVE GERIATRIC EDUCATION

"SEC. 855. COMPREHENSIVE GERIATRIC EDUCATION.

"(a) PROGRAM AUTHORIZED.—The Secretary shall award grants to eligible entities to develop and implement, in coordination with programs under section 753, programs and initiatives to train and educate individuals in providing geriatric care for the elderly.

"(b) USE OF FUNDS.—An eligible entity that receives a grant under subsection (a) shall use funds under such grant to—

"(1) provide training to individuals who will provide geriatric care for the elderly;

"(2) develop and disseminate curricula relating to the treatment of the health problems of elderly individuals;

"(3) train faculty members in geriatrics; or

"(4) provide continuing education to individuals who provide geriatric care.

"(c) APPLICATION.- An eligible entity desiring a grant under subsection (a) shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may reasonably require.

"(d) ELIGIBLE ENTITY.—For purposes of this section, the term 'eligible entity' includes a school of nursing, a health care facility, a program leading to certification as a certified nurse assistant, a partnership of such a school and facility, or a partnership of such a program and facility.

"(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as may be necessary for each of fiscal years 2003 through 2007."

(b) TECHNICAL AMENDMENT.—Section 753(a)(1) of the Public Health Service Act (42 U.S.C. 294c) is amend-

ed by striking ", and section 853(2)," and inserting " and section 801(2),".

SEC. 203. NURSE FACULTY LOAN PROGRAM.

Part E of title VIII of the Public Health Service Act (42 U.S.C. 297a et seq.) is amended by adding at the end the following:

"SEC. 846A. NURSE FACULTY LOAN PROGRAM.

"(a) ESTABLISHMENT.—The Secretary, acting through the Administrator of the Health Resources and Services Administration, may enter into an agreement with any school of nursing for the establishment and operation of a student loan fund in accordance with this section, to increase the number of qualified nursing faculty.

"(b) AGREEMENTS.—Each agreement entered into under this section shall—

"(1) provide for the establishment of a student loan fund by the school involved;

(2) provide for deposit in the fund of—

(A) the Federal capital contributions to the fund;

(B) an amount equal to not less than one-ninth of such Federal capital contributions, contributed by such school;

(C) collections of principal and interest on loans made from the fund; and

(D) any other earnings of the fund;

"(3) provide that the fund will be used only for loans to students of the school in accordance with subsection (c) and for costs of collection of such loans and interest thereon;

"(4) provide that loans may be made from such fund only to students pursuing a full-time course of study or, at the discretion of the Secretary, a part-time course of study in an advanced degree program described in section 811(b); and

"(5) contain such other provisions as are necessary to protect the financial interests of the United States.

"(c) LOAN PROVISIONS.—Loans from any student loan fund established by a school pursuant to an agreement under this section shall be made to an individual on such terms and conditions as the school may determine, except that—

"(1) such terms and conditions are subject to any conditions, limitations, and requirements prescribed by Secretary;

"(2) in the case of any individual, the total of the loans for any academic year made by schools of nursing from loan funds established pursuant to agreements under this section may not exceed

$30,000, plus any amount determined by the Secretary on an annual basis to reflect inflation;

"(3) an amount up to 85 percent of any such loan (plus interest thereon) shall be canceled by the school as follows:

"(A) upon completion by the individual of each of the first, second, and third year of full-time employment, required by the agreement entered into under this subsection, as a faculty member in a school of nursing, the school shall cancel 20 percent of the principle of, and the interest on, the amount of such loan unpaid on the first day of such employment; and

"(B) upon completion by the individual of the fourth year of full-time employment, required by the agreement entered into under this subsection, as a faculty member in a school of nursing, the school shall cancel 25 percent of the principle of, and the interest on, the amount of such loan unpaid on the first day of such employment;

"(4) such a loan may be used to pay the cost of tuition, fees, books, laboratory expenses, and other reasonable education expenses;

"(5) such a loan shall be repayable in equal or graduated periodic installments (with the right of the borrower to accelerate repayment) over the 10-year period that begins 9 months after the individual ceases to pursue a course of study at a school of nursing; and

"(6) such a loan shall-

"(A) beginning on the date that is 3 months after the individual ceases to pursue a course of study at a school of nursing, bear interest on the unpaid balance of the loan at the rate of 3 percent per annum; or

"(B) if the school of nursing determines that the individual will not complete such course of study or serve as a faculty member as required under the agreement under this subsection, bear interest on the unpaid balance of the loan at the prevailing market rate.

"(d) PAYMENT OF PROPORTIONATE SHARE.—Where all or any part of a loan, or interest, is canceled under this section, the Secretary shall pay to the school an amount equal to the school's proportionate share of the canceled portion, as determined by the Secretary.

"(e) REVIEW BY SECRETARY. -At the request of the individual involved, the Secretary may review any deter-

mination by a school of nursing under subsection (c)(6)(B).

"(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section such sums as may be necessary for each of fiscal years 2003 through 2007."

SEC. 204. REPORTS BY GENERAL ACCOUNTING OFFICE.

(a) NATIONAL VARIATIONS.—Not later than 4 years after the date of the enactment of this Act, the Comptroller General of the United States shall conduct a survey to determine national variations in the nursing shortage at hospitals, nursing homes, and other health care providers, and submit a report, including recommendations, to the Congress on Federal remedies to ease nursing shortages. The Comptroller General shall submit to the Congress this report describing the findings relating to ownership status and associated remedies.

(b) HIRING DIFFERENCES AMONG CERTAIN PRIVATE ENTITIES.—The Comptroller General of the United States shall conduct a study to determine differences in the hiring of nurses by nonprofit private entities as compared to the hiring of nurses by private entities that are not nonprofit. In carrying out the study, the Comptroller General shall determine the effect of the inclusion of private entities that are not nonprofit in the program under section

846 of the Public Health Service Act. Not later than 4 years after the date of the enactment of this Act, the Comptroller General shall submit to the Congress a report describing the findings of the study.

(c) NURSING SCHOLARSHIPS.—The Comptroller General of the United States shall conduct an evaluation of whether the program carried out under section 846(d) of the Public Health Service Act has demonstrably increased the number of applicants to schools of nursing and, not later than 4 years after the date of the enactment of this Act, submit a report to the Congress on the results of such evaluation.

Appendix B
Nursing Education

SENATE FILE NO. **SF0038**

Nursing education.

Sponsored by: Joint Labor, Health and Social Services Interim Committee

A BILL

for

AN ACT relating to nursing education programs; establishing a Wyoming investment in nursing program as specified; specifying eligibility criteria; providing procedures for application, administration and repayment of loans under the Wyoming investment in nursing program as specified; providing for appeals; requiring the Wyoming community college commission to coordinate the development and implementation of a mobile nurse education program as specified; requiring the commission to coordinate internet or similar proprietary or common carrier electronic system courses to meet prerequisites for entry into nursing programs as specified; specifying conditions under which the Wyoming community college commission and the University of Wyoming shall fund additional teaching positions in nursing education programs; providing an appropriation; and providing for an effective date

Be It Enacted by the Legislature of the State of Wyoming:

Section 1. W.S. 9-2-123 is created to read:

9-2-123. Wyoming investment in nursing loan and grant program; eligibility criteria; procedures

(a There is created the Wyoming investment in nursing program administered by the Wyoming higher education assistance authority created under W.S. 21-16-703. The program shall be known as the WYIN program. Applicants may apply for grants or loans from the WYIN program in accordance with this section.

(b) To qualify for a loan or grant under the WYIN program, the applicant shall first

i Be accepted into a nursing education program at a Wyoming community college, the University of Wyoming, or, in the case of a candidate for a doctoral degree, an institution providing the required nursing education courses under contract with the western interstate commission for higher education; and

(ii Apply for federal financial assistance. Wyoming community colleges shall allow students who apply for admission into an approved nurse aide training or nursing education program, and who will enroll in fewer than six (6) academic credit hours, to apply for federal financial assistance

(c) Subject to the availability of funds appropriated for this program, loans under the WYIN program may be granted to applicants enrolled or planning to enroll in nursing education programs as follows:

i An applicant who is accepted into a Wyoming licensed practical nurse or registered nursing education program may be eligible for a loan to pay the costs of attendance at the licensed practical nursing education program or the registered nursing education program. Students who complete a licensed practical nursing education program at a Wyoming community college shall be deemed to have completed all first year nursing education program requirements for a registered nursing education program leading to an associate's degree offered at the

Wyoming community college which awarded the license practical nurse certificate;

ii) A registered nurse with a baccalaureate degree who holds an unencumbered license with the Wyoming board of nursing, has the equivalent of at least two (2 years of full-time, continuous service teaching in a nursing program in Wyoming as a registered nurse with a baccalaureate degree and is accepted into a Wyoming nursing education program at the University of Wyoming leading to a master's degree in nursing may be eligible for a loan to pay the costs of attendance at the nursing education program leading to a master's degree in nursing provided that in order to receive a loan for a master's degree program, the applicant shall agree to repay the loan by teaching at a Wyoming college or the University of Wyoming;

iii A registered nurse with a master's degree in nursing who holds an unencumbered license with the Wyoming board of nursing, has the equivalent of at least two (2 years of full-time, continuous service teaching in a nursing program in Wyoming as a registered nurse with a master's degree in nursing and is accepted into a nursing education program at an institution providing the required

nursing education courses under contract with the western interstate commission for higher education leading to a doctorate level degree in nursing may be eligible for a loan to pay the costs of attendance at the nursing education program leading to a doctorate level degree in nursing. In order to receive a loan for a Ph.D. program, the applicant shall agree to repay the loan by teaching at the University of Wyoming.

(d) A nurse educator at a Wyoming community college or the University of Wyoming who is required to pursue an advanced degree for the purpose of satisfying accreditation requirements, may be eligible for both a loan and a salary replacement grant not to exceed the actual salary of the nurse educator at the time of entry into the advanced degree program

(e) Except for a salary replacement grant under subsection (d) of this section, a grant or loan provided under this section shall not exceed the cost of attendance for the approved program, reduced by the amount of any Pell or other federal grant received by the applicant.

f) A recipient of a WYIN loan under this section may repay the loan without cash payment by working in Wyoming as a nurse or nurse educator as provided in subsection (g) of this section. To qualify as repayment under this subsection, work shall be performed within the following time periods which begin with the calendar month following the month in which the student completed the academic program

(i If the loan can be repaid with work of two (2) years or less, within four 4) years;

ii If the loan can be repaid with work of greater than two (2) years, but no more than four (4) years, within six (6) years;

iii If the loan can be repaid with work of greater than four 4) years, within the amount of time the loan could be repaid, plus two (2) years

(g) Qualified work under subsection (f of this section shall be credited so that the student's loan balance is reduced on the basis of one 1 year of full-time employment repaying the loan balance for one (1

academic year. Qualified work shall be credited on a proportional basis

(h) Notwithstanding subsection (g) of this section, for a recipient of both a WYIN loan and a salary replacement grant, qualified work under subsection f) of this section shall be credited so that the student's loan balance is reduced on the basis of two (2 years of full-time employment repaying the loan balance for one (1) academic year. Qualified work shall be credited on a proportional basis.

(j Any recipient of a WYIN loan who fails:

i) To complete the academic program for which the loan was provided shall commence repayment of the loan no later than forty-five 45) days after the recipient leaves the academic program;

(ii To obtain employment in the targeted occupation for which the person received the education within ninety (90) days after successfully passing the appropriate certification examination shall commence repayment of the loan within one hundred twenty (120) days

after successfully passing the appropriate certification examination;

iii The appropriate certification examination on the first attempt may retake the appropriate certification examination at the next available opportunity before commencing repayment of the loan. The recipient shall notify the Wyoming higher education assistance authority or its contractor of the intent to retake the examination and the date the examination will be taken. Any recipient of a WYIN loan who fails the appropriate certification examination after the second attempt shall commence repayment of the loan within forty-five 45) days after receipt of notification of the second failure by the board of nursing. If the recipient of a WYIN loan who fails the appropriate certification examination on the first attempt does not retake the examination at the next available opportunity, repayment shall commence within forty-five (45) days after the next available examination is conducted.

(k) Loan repayment options under this section may be deferred for a period not to exceed six 6) years while a

loan recipient is serving on full-time active duty with any branch of the military services of the United States.

(m) The Wyoming higher education assistance authority shall have the powers and duties specified in 21-16-705 to implement this section and shall establish terms and conditions of loans issued under this section, including:

i Interest rates and loan terms;

ii) The form and process for loan application, review and award;

(iii Criteria under which students may be relieved from having to repay loans and interest thereon, in whole or in part, where the requirement to repay would cause undue hardship.

(n) Funding of the targeted loan program established under this section shall be by appropriation of legislature. The authority shall transfer approved loan amounts to the university of Wyoming and to Wyoming community colleges at which loan recipients are enrolled.

In consultation with the university and affected community colleges, the authority shall establish procedures for transferring loan amounts and for reporting requirements on the expenditure of transferred loan amounts

(o) Repayment of loans and interest thereon shall be credited to the general fund.

(p) The authority shall annually review the targeted loan program established under this section and report to the governor and the legislature in accordance with W.S. 9-2-1014, regarding program results, funds received and loans issued during the preceding academic year, together with the status of all outstanding loan commitments and repayments under the program.

(q) Any person beginning a nursing education program as authorized by this section shall continue to receive funding for the program so long as the person remains eligible as required by this section

Section 2. W.S. 21-17-107, 21-18-202(b) by creating new paragraphs v) and (vi and (c) by creating a new paragraph (vii and 21-18-317 are amended to read:

21-17-107. Legislature to make appropriations

(a) The legislature shall appropriate monies intended for the support and maintenance of the University of Wyoming. The appropriations shall specify the purposes for which the monies are intended and may be used. The appropriations shall apply to and include all monies received by the university from the United States for the endowment and support of colleges for the benefit of agriculture and mechanic arts. No expenditure shall be made in excess of an appropriation, and no monies so appropriated shall be used for any purpose other than that for which they are appropriated.

(b) The board of trustees shall fund an entry level teaching faculty position when the university expands its nursing program capacity by not less than eight (8) students. The university shall expend the funding under this paragraph only if enrollment in the nursing program of the university was not less than ninety-five percent (95%) of the total nursing program capacity at the beginning of the most recent fall academic semester. Funding available for expenditure under this paragraph for the specific

purpose of expanding a nursing program capacity shall be reduced by an amount equal to that provided to fund one (1) entry level teaching position for every reduction of eight (8) full-time equivalent students in the nursing program, as determined by comparing the beginning enrollments of the two (2) most recent fall academic semesters. Any appropriation made for purposes of this subsection shall be accounted for and distributed separately from appropriations made pursuant to subsection (a) of this section.

21-18-202. Powers and duties of the commission.

(b) The commission shall perform the following coordination functions. In performing these coordination functions all affected colleges and the commission shall be involved:

(v) Coordinate the development and implementation of a mobile nurse education program which shall provide appropriate educational services to students enrolled in a nurse education program who are unable to attend classes at a community college campus, including:

(A) Reviewing applications for access by communities to the program;

(B) Establishing by rule and regulation the application, review and decision process by which communities will be served and the order in which they will be served;

(C) Contracting with a Wyoming community college to provide the program established under this paragraph, giving due consideration to the community college with responsibility for the service area in which the community selected to host the program is located.

(vi) Coordinate the provision by means of electronic internet or similar proprietary or common carrier electronic system technology, by a community college or several community colleges, of all prerequisite courses necessary for entry into an educational program in the field of nursing at a community college or a baccalaureate degree program in nursing at the University of Wyoming.

(vii) The commission shall fully fund an entry level teaching faculty position when a community college expands its nursing program capacity by not less than eight (8) student

apply for the funding under this paragraph only if enrollment in the nursing program of the applicant institution was not less than ninety-five percent (95%) of the to. nursing prog am capacity at he beginnin f the most recent fall academic semester. Funding provided under this paragraph for the specific purpose of expanding a nursing program capacity shall be reduced by an amount equal to that provided to fund one (1) entry level teaching position for every reduction of eight (8) full-time equivalent students in the nursing program, as determined by comparing the beginning enrollments of the two (2) most recent fall academic semesters. Funding reductions shall not exceed total amount of fund provided to a community college under this paragraph. Any appropriation made for purposes of this paragraph shall, in accordance with W.S. 21-18-205(e), be accounted for and distributed

separately from the funding allocation model for community colleges.

21-18-317. Authority to provide educational program; scope and approval of program.

The community college district board of any community college in this state may provide ~~the~~ an educational program ~~education~~ in the field of nursing. The educational program shall be of ~~such~~ the duration and intensity as may be deemed appropriate by the community college district board and the Wyoming state board of nursing and shall lead to an associate degree in nursing and prepare each student for licensure as provided by law. Approval of the Wyoming state board of nursing is required prior to the establishment of ~~any such~~ the nursing education

Section 3. There is appropriated one million dollars ($1,000,000.00) to the Wyoming higher education assistance authority from the general fund for the biennium beginning July 1, 2002 to implement the provisions of W.S. 9-2-123 Any funds appropriated under this subsection that are not expended, encumbered or obligated at the end of the

biennium shall revert to the general fund as provided by W.S. 9-4-207

Section 4. This act is effective July 1, 2002

(END)