

# Report for Congress

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## **A Shortage of Registered Nurses: Is It on the Horizon or Already Here?**

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# A Shortage of Registered Nurses: Is It on the Horizon or Already Here?

## Summary

Labor shortages in various occupations and industries were reported during the late stages of the nation's longest economic expansion, which ended in early 2001. The unemployment rate in some fields (e.g., nursing) has remained virtually unchanged despite the advent of the recession, which suggests that there are factors unrelated to the business cycle affecting them. For example, the increasing longevity and wealth of the population combined with a growing share of elderly persons are putting added pressure on the health care delivery system, and these trends are expected to continue. Moreover, although women continue to account for the majority of workers in many health care occupations, their career opportunities have widened over time. And, among women who already are licensed RNs, many are expected to retire in the not-too-distant future while others have chosen to work in non-nursing occupations.

Thus, health care providers who previously might have thought their supply of labor was fairly well assured must now compete for the interest of students based on nursing's attractiveness vis-a-vis other occupations. They also could become more concerned about retaining their aging RN workforce and about appealing to licensed RNs who are otherwise employed. During the mid-1990s, however, earnings growth among RNs slowed compared to earlier in the decade, and their wage increases were smaller than those of all professional workers. This could partly explain the drop in nursing program graduates that began in the 1995-1996 academic year and the greater share of RNs not employed in nursing in 2000 as compared to 1992 and 1996.

Trends such as these underlie the supply and demand projections for RNs released by the U.S. Health Resources and Services Administration (HRSA). While the agency's own 1996 projections and those of analysts based in part on them strongly suggested the likelihood of a shortage of RNs beginning in 2007 or shortly thereafter, HRSA's July 2002 projections push forward the *overall* RN shortage to 2000. If current trends continue and ameliorative actions are not taken, HRSA projects that the aggregate shortfall could worsen at an accelerating rate — from 6% in 2000 to 12% by 2010; then rising to 20% by 2015; and climbing to 29% by 2020.

Not all states currently are sharing in the RN shortage, nor are those with shortages sharing equally, according to HRSA's latest projections. Thirty states were estimated to have a shortfall of full-time equivalent (FTE) RNs in 2000, and the severity of shortages varied widely — from under 4% in Iowa, Minnesota, and Oregon to at least 13% in Arizona, New Jersey, and Tennessee. By 2005, perhaps seven states (Alabama, Florida, Idaho, Maryland, North Dakota, Oklahoma, and Wyoming) could experience a shortage as well. Another three states by 2010 (Illinois, Michigan, and South Carolina) and seven more by 2015 (Louisiana, Minnesota, Montana, North Carolina, South Dakota, West Virginia, and Wisconsin) could have an inadequate supply. If Mississippi moves into a shortage situation by 2020, just six states might remain with more FTE RNs than are demanded (Hawaii, Iowa, Kansas, Kentucky, Ohio, and Vermont).

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# A Shortage of Registered Nurses: Is It on the Horizon or Already Here?

Shortages of workers in various occupations (e.g., computer systems analysts) and in various industries (e.g., construction) were reported a few years before a recession began in March 2001. It is not unusual for employers to have difficulty hiring and retaining employees after the economy has been expanding for quite some time, and the nation experienced the longest period without a recession in U.S. history from March 1991 to March 2001. What makes the current situation different, however, is that the unemployment rate at the peak of the latest economic expansion was lower than at many of the prior cyclical peaks, and the rate since the recession began remains low compared to many other recessions.<sup>1</sup>

In other words, the labor market was and continues to be tight by historical standards in certain occupations and industries. For example, the unemployment rate in 2001 among workers who had been employed as registered nurses (RNs) was 1.0%, compared to the average for all professional workers of 2.2%.<sup>2</sup> Perhaps not surprisingly, then, reports have continued to appear about hospitals and nursing homes in various areas of the country having difficulty hiring enough RNs to fill their numerous vacant positions.

There thus appear to be factors unrelated to the business cycle that are affecting the labor markets of certain industries and occupations. The increasing longevity of the population combined with a growing share of elderly persons have been putting added pressure on the nation's health care delivery system.<sup>3</sup> And, the implications of inadequate staffing among health care workers differ from those of other workers in many industries. For example, a dearth of blue-collar assemblers and fabricators might mean that consumers have fewer cars to choose from while a scarcity of health

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<sup>1</sup>In March 2001, the unemployment rate was 4.3%. The unemployment rate at five of the prior nine post-war peaks in the business cycle was higher: 5.4% (July 1990), 7.2% (July 1981), 6.3% (January 1980), 4.8% (November 1973), 3.5% (December 1969), 5.2% (April 1960), 4.1% (August 1957), 2.6% (July 1953), and 3.8% (November 1948). Since the 2001 recession began, the highest unemployment rate attained thus far has been 6.0%. In contrast, the highest unemployment rates of the prior recessions were: 6.8% (1990-1991 recession), 10.8% (1981-1982), 7.8% (1980), 8.6% (197-1975), 5.9% (1969-1970), 6.9% (1960-1961), 7.4% (1957-1958), 5.9% (1953-1954), and 7.9% (1948-1949 recession).

<sup>2</sup>U.S. Bureau of Labor Statistics. Unpublished data from the Current Population Survey (CPS). (Hereafter cited as BLS, *unpublished CPS data*.)

<sup>3</sup>Wunderlich, Gooloo, with Frank A. Sloan and Carolyn K. Davis (eds.). *Nursing Staff in Hospitals and Nursing Homes*. Washington, D.C., National Academy Press, 1996.

care personnel might jeopardize the quality of patients' care.<sup>4</sup> Moreover, although women continue to account for the majority of staff in many health care jobs,<sup>5</sup> their career opportunities have widened over the years. Thus, health care providers who previously might have thought their supply of labor was fairly well assured must now compete with other fields for the interest of students.

The largest traditionally female-dominated health care occupation is registered nurses (RNs). It has been asserted that there is an ongoing nationwide shortage of RNs of various kinds (ranging from new nursing program graduates to already employed RNs with general skills, to nurses with experience working in hospital specialty care units) and in various sectors of the health care services industry (including hospitals, home health, and nursing homes). Before the latest (mid-2002) release of supply-demand projections from the U.S. Health Resources and Services Administration (HRSA), it was estimated, based in whole or part on 1996 HRSA projections, that there would likely be a shortage of RNs in 2007 or shortly thereafter. This report first will analyze recent trends in the RN labor market and then examine HRSA's new projections, which moved up the date of an RN shortage to 2000.

## Who Are We Talking About?

The exact nature of RNs' daily duties usually depends on the setting in which they work.<sup>6</sup>

- ! In hospitals, staff RNs typically "provide bedside nursing care and carry out medical regimens." They often supervise licensed practical nurses (LPNs) and aides.
- ! Nurses who work in physicians' offices usually prepare patients for exams and help doctors perform them, give injections, apply dressings and sometimes keep the offices' records.
- ! Nursing home RNs largely perform administrative and supervisory functions. They also may evaluate the health of residents and work up treatment plans as well as "perform difficult procedures."
- ! Home health nurses provide services in the homes of patients. They often work independently but also supervise home health aides.
- ! Government and private agencies, schools, senior citizen centers and other community-based organizations employ public health nurses. They provide

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<sup>4</sup>Joint Commission on Accreditation of Healthcare Organizations. *Health Care at the Crossroads: Strategies for Addressing the Evolving Nursing Crisis*. August 2002. Available at [<http://www.jcaho.org>].

<sup>5</sup>In 2001, women accounted for 94.3% of licensed practical nurses; 93.1% of registered nurses; and 90.1% of nursing aides, orderlies and attendants. U.S. Bureau of Labor Statistics. *Employment and Earnings*, January 2002.

<sup>6</sup>All information in this section is drawn from U.S. Bureau of Labor Statistics. *Occupational Outlook Handbook 2002-03 Edition*, unless otherwise noted. Available at [<http://stats.bls.gov/oco/pdf/ocos083.pdf>]. (Hereafter cited as BLS, *Occupational Outlook Handbook*.)

instruction about such things as disease prevention and nutrition as well as arrange for various health screenings.

- ! Occupational health or industrial nurses work at firms that engage them to provide limited medical care. In addition to providing emergency assistance and writing up accident reports, these RNs offer health counseling, help with injections, and assess work environments for potential health/safety problems.
- ! Head nurses or nurse supervisors perform such administrative and supervisory functions as creating work schedules for and assigning duties to nurses and aides, “provid[ing] or arrang[ing] for training, and visit[ing] patients to observe nurses and to ensure the proper delivery of care.”
- ! Nurse practitioners provide primary health care (i.e., prescribe medication and otherwise diagnose and treat common acute illnesses and injuries). Other advanced practice nurses include clinical nurse specialists, certified registered nurse anesthetists, and certified nurse-midwives. They all must fulfill higher educational and clinical experience requirements than those established for the aforementioned groups.

A basic nursing education in all states consists of graduation from a nursing program and passing a national licensing exam. Hospitals offer diploma programs, which take 2-3 years to complete. Although 60% of RNs in 1980 graduated from diploma programs, the share who received their basic nursing education from this source was halved, to 30%, by 2000.<sup>7</sup> Community colleges offer associate degrees in nursing (ADNs), which take about 2 years to complete. In 2000, they accounted for 40% of registered nurses — about twice their share of 19% in 1980. Colleges and universities offer bachelors degrees in nursing (BSNs), which take 4 or 5 years to complete. The share of RNs who initially earned BSNs also rose considerably, from 17% in 1980 to 29% in 2000. In addition to classroom instruction, nursing students must have supervised clinical experience in hospitals, nursing homes, home health agencies or other health care facilities.

## **Trends in the RN Labor Market**

No direct measure of occupational labor shortage exists. Analysts therefore use a variety of indicators to assess supply-demand conditions. The unemployment rate is perhaps the “best-known example of such an indicator,” but relying on just one indicator “can still lead to an incorrect conclusion” about the existence of a labor shortage.<sup>8</sup> Other often used indicators that the government has regularly collected

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<sup>7</sup>U.S. Department of Health and Human Services. Health Resources and Services Administration. *The Registered Nurse Population: Findings from the National Sample Survey of Registered Nurses — March 2000*. July 2002. Available at [<http://www.bhpr.hrsa.gov/healthworkforce/rnsurvey>]. (Hereafter cited as HRSA, *The Registered Nurse Population*.)

<sup>8</sup>Cohen, Malcolm S. *Labor Shortages as America Approaches the Twenty-first Century*. Ann Arbor, MI, University of Michigan Press, 1995. p. 25.

and that have used consistent definitions over time include earnings and employment.<sup>9</sup>

## The Experienced Unemployment Rate

As shown in **Table 1**, the share of experienced RNs without jobs has been very low for quite some time and has remained below the rate for professional workers in general, the larger occupational group in which RNs are classified. In the late stages of the economic expansion, however, the unemployment rate of RNs dropped to levels last seen in the 1989-1992 period — when there last was concern about a nursing shortage.

At that time, the situation

prompted passage of the Nursing Shortage Reduction and Education Extension Act and implementation of the Immigration Nursing Relief Act of 1989. Soon after reports of shortages, however, the overall economic picture began to change. The hospital industry responded by increasing overtime work, retention and recruitment efforts, and nursing wages [as well as restructuring work to utilize nursing aides and licensed practical nurses, among others, in lieu of RNs].<sup>10</sup>

These measures succeeded in increasing the supply of RNs by, among other things, enticing more students to enter the field. The number of graduates from nursing degree programs climbed sharply — by 57.4% or 35,392 graduates — from the 1989-1990 academic year to the 1994-1995 academic year.<sup>11</sup> In addition, the share of RNs who maintained their licenses but were not employed in nursing dropped from 20.0% in 1988 to 17.3% in 1992 and remained at that level in 1996, which suggests that

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<sup>9</sup>The government does not have a data series on occupational vacancies, and like the other indicators, vacancies in themselves are an insufficient measure of labor shortage. An occupation could have both a high unemployment rate (which suggests excess supply) and a high vacancy rate (which suggests excess demand) if employers and workers find it difficult to make matches due to the different locations of job openings and of workers. The same situation also could indicate a skill mismatch rather than a shortage *per se* if, for example, hospitals want to fill vacancies with RNs having experience in specialty care units rather than with new RN graduates. A high vacancy rate would be more suggestive of a supply problem if employers could not fill openings quickly, but surveys do not appear to always ask about the duration of openings. A high vacancy rate also would be more suggestive of a shortage if information were provided showing that the unfilled jobs offered salaries that were sufficiently competitive to attract any available workers (e.g., licensed RNs employed in other occupations). In addition, as the U.S. General Accounting Office (*Nursing Workforce: Emerging Nurse Shortages Due to Multiple Factors*, GAO-01-944, July 2001) noted, one should be cautious when comparing different studies' vacancy rates because they may not all calculate rates in the same way.

<sup>10</sup>Veneri, Carolyn M. Can Occupational Labor Market Shortages be Identified Using Available Data? *Monthly Labor Review*, March 1999. p. 17 and 20.

<sup>11</sup>HRSA. *United States Health Workforce Personnel Factbook*. Available at [<http://www.bhpr.hrsa.gov/healthworkforce/factbook.htm>]. (Hereafter cited as HRSA, *United States Health Workforce Personnel Factbook*.)

these measures prompted some RNs to return to the occupation.<sup>12</sup> Consequently, reports of a nursing shortage petered out early in the 1990s.

Unlike the earlier episode of a seeming shortage, health care providers already have increased their use of overtime to the point where it has drawn the ire of many RNs and their representatives. Some states have introduced or passed legislation to curb its use.<sup>13</sup> In addition, the change in economic conditions between 2000 and 2001 does not appear to have improved the availability of RNs relative to demand: despite the advent of the latest recession in March 2001, the experienced unemployment rate among RNs remained virtually unchanged from its 2000 level. However, employers seemingly have not raised RN earnings in the last few years to the same extent they did during the late 1980s/early 1990s (see below).

## Wage Increases

Between 1989 and 1993, full-time RNs' median weekly wages increased more than those of all professional employees (20.7% and 16.0%, respectively, as shown in **Table 1**). HRSA estimated that full-time RNs increased their average annual earnings to an even greater degree, namely, by one-third (from \$28,383 in 1988 to \$37,738 in 1992).<sup>14</sup>

The pattern reversed through 1997, as can be seen in the BLS data contained in **Table 1**. HRSA's data also reveal a slowdown in RN average earnings growth, to 11.5%, between 1992 (\$37,738) and 1996 (\$42,071). The reversal has been partly ascribed to the development and spread of managed care (an arrangement used to control the use, and hence, the cost of health services provided to enrollees in many health plans).<sup>15</sup>

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<sup>12</sup>HRSA. *Preliminary Findings from the National Sample Survey of Registered Nurses — March 2000*. February 2001.

<sup>13</sup>Urban Institute. *Skill Shortages and Mismatches in Nursing Related Health Care Employment*. Prepared for the U.S. Department of Labor. April 2002.

<sup>14</sup>HRSA, *The Registered Nurse Population*. **Note:** The size of reported wage increases can vary greatly depending on such things as the definition of the occupation, how well the sample reflects the population from which it was drawn, the relative size of the sample, and the rate of response to the survey. In the case of the BLS and HRSA wage data, the former calculates a median and the latter, a mean wage, which can be pulled up by a few large observations. Because BLS classifies workers according to their principal activity, such comparatively high-paid RNs as administrators and managers are omitted from the BLS' RN wage calculation. They are captured in HRSA's database which includes all individuals with RN licenses.

<sup>15</sup>Buerhaus, Peter I., and Douglas O. Staiger. Trouble in the Nurse Labor Market? Recent Trends and Future Outlook. *Health Affairs*, January/February 1999, v. 18, no. 1. (Hereafter cited as Buerhaus and Staiger, *Trouble in the Nurse Labor Market?*); and Schumacher, Edward J. The Earnings and Employment of Nurses in an Era of Cost Containment. *Industrial and Labor Relations Review*, October 2001, v. 55, no. 1. (Hereafter cited as Schumacher, *The Earnings and Employment of Nurses*.)



**Table 1. The Unemployment Rate, Median Weekly Earnings, and Employment of RNs and of All Professionals, 1989-2001**

Year	Experienced unemployment rate <sup>a</sup>		Median weekly earnings <sup>b</sup>		Total employment (in thousands)	
	RNs	All professionals	RNs	All professionals	RNs	All professionals
1989	1.3	1.7	569	586	1,599	15,550
1990	1.1	2.0	608	610	1,667	15,800
1991	1.2	2.4	635	633	1,704	16,030
1992	1.1	2.6	662	658	1,799	16,370
1993	1.3	2.6	687	680	1,855	16,893
1994	1.5	2.5	682	705	1,956	17,536
1995	1.5	2.5	695	718	1,977	18,132
1996	1.4	2.3	697	730	1,986	18,752
1997	1.5	2.1	710	750	2,065	19,245
1998	1.3	1.9	739	763	2,032	19,883
1999	1.1	1.9	750	800	2,128	20,883
2000	1.0	1.7	790	832	2,111	21,113
2001	1.2	2.2	829	854	2,162	21,556

**Source:** U.S. Bureau of Labor Statistics. *Employment and Earnings*, January issues of various years, and unpublished data from the Current Population Survey.

<sup>a</sup> The experienced unemployment rate covers persons who had jobs as RNs immediately before their spell of unemployment (i.e., it excludes new entrants and re-entrants to the RN labor force). The employment and unemployment rate series cover all employed persons.

<sup>b</sup> Median weekly earnings cover wage and salary workers employed full-time.

The relatively slower wage growth among RNs in the mid-1990s could partly explain the drop in graduations from nursing degree programs that began in the 1995-1996 academic year.<sup>16</sup> It also could account for the increased share of RNs not employed in nursing: RNs who were not employed in nursing rose from 17.3% in 1992 and 1996, to 18.3% in 2000.<sup>17</sup>

The median weekly earnings of RNs since 1997 have been rising more rapidly compared to those of all professionals (16.8% and 13.9%, respectively), and

<sup>16</sup>HRSA, *United States Health Workforce Personnel Factbook*.

<sup>17</sup>HRSA, *National Sample Survey of Registered Nurses*.

compared to their own rate of increase during the 1993-1997 period (3.3%). Unlike the BLS wage series shown in **Table 1**, HRSA's data do not show a similar acceleration in wage growth from the mid-1990s: the average annual pay of full-time RNs increased by 11.2% between 1996 (\$42,071) and 2000 (\$46,782), or by virtually the same rate (11.5%) as between 1992 and 1996.

Both wage series show a smaller earnings increase in recent years compared to the last time there was a tight labor market for RNs. As shown in **Table 1**, employers raised RNs' wages in the 1997-2001 period (16.8%) by less than they did in the 1989-1993 period (20.7%). Similarly, HRSA's surveys provide estimates of relatively smaller earnings growth between 1996 and 2000 (11.2%) than between 1988 and 1992 (32.9%). However, some assert that as a result of the introduction and spread of cost containment measures in the health care industry, providers are less financially able today than they were in the past to deal with a labor shortage by raising the wages of RNs or by hiring more RNs directly or through temporary agencies.<sup>18</sup>

The efficacy of higher wages at increasing the supply of already employed RNs relative to demand, as measured by their number of work hours, is open to question. According to a survey that was administered to nurses who became licensed in New York State in 1999, 40% said they would be willing to work more hours if offered a higher salary. Another 44% indicated that there were factors other than higher salaries that would motivate them to put in longer hours (i.e., flexible hours, speciality of choice, different shift or hours and other conditions), while 16.0% stated that they would not be willing to do so under any conditions.<sup>19</sup> The objection of nurse advocates to hospitals' current use of mandatory overtime to cope with a dearth of staff may reflect the unwillingness of arguably overburdened RNs to work more hours or to continue in nursing under the present state of working conditions, in part because fatigue might compromise the quality of care being rendered.<sup>20</sup>

## Employment Growth

Between 1989 and 1994, job growth among RNs occurred much more rapidly than across all professionals (22.3% and 12.8%, respectively; see **Table 1**). Between

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<sup>18</sup>Jacklevic, Mary Chris and Ed Lovern. A Nursing Code Blue. *Modern Healthcare*, December 11, 2000.

<sup>19</sup>Salsberg, Edward S. *State Nursing Shortage Issues: New York*. Presentation at conference, Hard Numbers, Hard Choices: A Report on the Nation's Nursing Workforce, held February 14, 2001 in Washington, D.C.

<sup>20</sup>See, for example: Aiken, Linda H., with Sean P. Clarke, Douglas M. Sloane, Julie A. Sochalski, Reinhard Busse, Heather Clark, Phyllis Giovannetti, Jennifer Hunt, Anne Marie Rafferty and Judith Shamian. Nurses' Reports on Hospital Care in Five Countries. *Health Affairs*, May/June 2001; American Nurses Association. *Nurses Concerned Over Working Conditions, Decline in Quality of Care, ANA Survey Reveals*. Press Release, February 6, 2001. Copy of the press release and survey are available at: [<http://www.nursingworld.org>]; and Federation of Nurses and Health Professionals. *The Nurse Shortage: Perspectives from Current Direct Care Nurses and Former Direct Care Nurses*. April 2001.

1995 and 2001, however, relative employment growth among RNs (9.4%) lagged employment growth among all professionals (18.9%).

The slowdown in RN job growth in the last several years appears to be at least partly related to the spread of managed care across the nation.<sup>21</sup> The diminished rate of growth has been concentrated in hospitals, although there are indications that the RN job creation rate in the home health industry has decreased as well. “Medicare’s implementation of a prospective payment system for the home health care industry ... place[s] new economic pressure on providers and reinforces the slowing effect of managed care.”<sup>22</sup>

The nature of the demand for RNs by work setting and by geographic area also could have tempered the occupation’s aggregate rate of employment growth. Accounts of an undersupply of RNs often have related to particular settings (e.g., hospital emergency rooms) and to particular parts of the country. In addition, certain health care facilities (e.g., nursing homes) may be experiencing more difficulty than others in attracting adequate staff in part resulting from differences in the salaries offered to RNs.<sup>23</sup> The labor market indicators just discussed do not conclusively support the existence of an across-the-board shortage of RNs in the past few years; however, national data are not sufficiently sensitive to identify a maldistribution of RNs across geographic areas and by kinds of RNs and health care workplaces (e.g., new nursing school graduates versus nurses with experience in hospital emergency rooms or neonatal care units) as opposed to a shortage of labor *per se*.

## Projected Demand for RNs

The demand for labor can increase for two reasons. When consumers want more of an industry’s goods or services, firms may add employees to their payrolls. This is the job creation discussed immediately below. Hiring also may increase if a firm’s employees leave to take positions at other employers, or exit the labor force to return to school, or due to retirement, disability or death. “Replacement needs,” discussed shortly, may increase the demand for labor well beyond that induced by employment growth.

## Future RN Job Growth

Hospitals are likely to continue to employ the majority of RNs in future years, albeit a decreasing share. As HRSA reported in 2002, the number of full-time equivalent (FTE) RNs estimated to have worked in hospitals in 2000 was 1,242,831;

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<sup>21</sup>Schumacher, *The Earnings and Employment of Nurses*.

<sup>22</sup>Buerhaus and Staiger, *Trouble in the Nurse Labor Market?* p. 221.

<sup>23</sup>For more information see: American Health Care Association. *Staffing of Nursing Services in Long Term Care: Present Issues and Prospects for the Future*. February 2001. Available at: [<http://www.acha.org/news/staff-02-2001.htm>].

the projection for 2010 is 1,451,083.<sup>24</sup> According to the BLS, the number of RNs employed part-time and full-time in hospitals in 2000 was 1,274,031; the projection for 2010 is 1,465,831.<sup>25</sup> (See **Table 2**.)

RN employment in hospitals is projected to grow slowly (between 15.0% and 16.8%) compared to RN employment in other settings because activities once performed on an inpatient basis increasingly are being performed on an outpatient basis, either in hospitals or elsewhere, and because patients are being discharged earlier. Despite the assumption that the number of inpatients will not grow much, “the intensity of nursing care is likely to increase, requiring more nurses per patient.”<sup>26</sup>

The ranks of RNs already employed in large numbers at other work settings are expected to expand substantially. This appears to be particularly the case for RNs employed in workplaces that largely serve the elderly. For example, employment of nurses in the home health sector is projected to increase by 36.3% between 2000 and 2010, from 130,288 to 177,583 FTEs. Similarly, RNs employed at nursing homes are projected to increase by 32.4%, from 168,529 to 223,193 FTEs.<sup>27</sup> The preference of people to be cared for in their homes, new technologies that permit complex treatments to be performed at home, the “growing number of older persons with functional disabilities, ... many of whom will require long-term care,” and “the financial pressure on hospitals to [quickly] discharge patients” who may require further care in nursing homes or other treatment facilities contribute to these disparate projected trends in RN employment by work setting.<sup>28</sup>

Across the entire health care industry, the rate of employment growth between 2000 and 2010 that BLS projects among RNs (25.6%) is even greater than that of HRSA (17.2%). (See **Table 2**.) Demand for RNs through 2010 could be above the average across all occupations (15.2%), and nursing is among the occupations expected to add the most new jobs over the 10-year period (561,000 part-time and

<sup>24</sup>HRSA. *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020*. July 2002. Available at [<http://www.bhpr.hrsa.gov/healthworkforce/rnproject/default.htm>]. (Hereafter cited as HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*.)

<sup>25</sup>BLS. *Industry-Occupation Employment Matrix*. (Hereafter cited as BLS, *Industry-Occupation Employment Matrix*.) **Note:** In addition to the obvious difference that HRSA’s figures are expressed as FTEs while BLS’ are a count of persons employed regardless of part-time/full-time status, the two differ in other respects including: BLS categorizes individuals by their principal work activity rather than by credential as does HRSA so, for example, BLS classifies RNs who largely teach or manage in non-nursing occupations; HRSA’s base-year employment is derived from a survey of licensed nurses while BLS’ base-year employment is derived from a survey of employers; and they utilize different projection methodologies.

<sup>26</sup>BLS, *Occupational Outlook Handbook*.

<sup>27</sup>HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*.

<sup>28</sup>BLS, *Occupational Outlook Handbook*.

full-time workers).<sup>29</sup> An aging population that is more likely to need medical care, a population that also is wealthier and therefore can afford better care, and technological advances that allow more medical problems to be treated more aggressively underlie the considerable increase in demand for RNs anticipated in the next several years.

**Table 2. Projected Employment of RNs in Hospitals and Across All Industries, Selected Years**

Registered nurses by industry	Employment (full-time equivalents)		Employment (part-time and full-time workers)	
	Number	Percent change	Number	Percent change
<i>Hospitals</i>				
2000	1,242,831 <sup>a</sup>	—	1,274,031	—
2010	1,451,083	16.8	1,465,831	15.0
2020	1,741,639	20.0	n.a.	—
<i>All industries</i>				
2000	1,999,950 <sup>b</sup>	—	2,194,224	—
2010	2,344,584	17.2	2,755,325	25.6
2020	2,810,414	19.9	n.a.	—

**Source:** Full-time equivalent employment figures from HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020*. Part-time and full-time employment figures from BLS, *Industry-Occupation Employment Matrix*.

**Note:** HRSA classifies all persons with RN licenses as registered nurses while BLS classifies individuals by their principal work activity so, for example, BLS does not include those RNs who largely work as teachers and managers in its count of nurses.

<sup>a</sup> In March 2000, according to HRSA's *Findings from the National Sample Survey of Registered Nurses*, the number of RNs employed part-time and full-time in hospitals was 1,300,323. Some 28.2% (or 366,962) worked part-time.

<sup>b</sup> In March 2000, according to HRSA's *Findings from the National Sample Survey of Registered Nurses*, the total number of RNs employed part-time and full-time in nursing was 2,201,813. Approximately 28.4% (or 625,139) worked part-time.

## Future RN Job Openings

The need to replace workers across all industries will accelerate as more members of the baby-boom generation (the large group born between 1946 and 1964) retire. Health care providers generally, and hospitals particularly (as the largest

<sup>29</sup>Hecker, Daniel. Occupational Employment Projections to 2010. *Monthly Labor Review*, November 2001. (Hereafter cited as Hecker, *Occupational Employment Projections*.)

employer of RNs), could be among the industries most affected by this demographic phenomenon because the proportion of nurses at least 45 years old is greater than the average proportion across all occupations.<sup>30</sup> The average age of RNs employed in nursing in 2000 was 43.3 years, with 45.5% age 45 and older.<sup>31</sup>

Of the one million total job openings projected for RNs through 2010, 44% could arise through the need to replace workers who exit the occupation rather than through employment growth.<sup>32</sup> Not all job openings are created by individuals who leave an occupation for retirement, however. RNs, for example, most frequently indicated in a HRSA survey that they were employed in occupations other than nursing because the positions provided more convenient hours (45.7%), were more rewarding professionally (44.9%), or currently offered better salaries (35.4%).<sup>33</sup>

## Projected Supply of RNs

It usually is more difficult to estimate occupational labor supply than demand. The supply of new workers to nursing can be estimated more easily than the supply to many other occupations where college major is less determinative of the field into which the student will go or where no formal education or training beyond high school typically is required. By focusing just on graduations from programs that offer nursing degrees, the supply of new RNs could well be understated because the availability of nurses from abroad — who can enter the country permanently or as temporary workers<sup>34</sup> — would be omitted. In order to develop the best possible estimate of the prospective total supply of labor to RN jobs, “leavers” (i.e., RNs who take jobs in other occupations or who exit the labor force for such reasons as retirement or disability) also must be taken into account.

In addition to the previously described demand projections released in 2002, HRSA developed new supply projections. They are the basis for much of the following discussion.

## The Trend in Nursing Graduates and Enrollments

The number of graduates from programs that prepare students for RN licensure (i.e., diploma, associate and baccalaureate) has waxed and waned in recent decades.

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<sup>30</sup>Dohm, Arlene. Gauging the Labor Force Effects of Retiring Baby-Boomers. *Monthly Labor Review*, July 2000.

<sup>31</sup>HRSA, *The Registered Nurse Population*.

<sup>32</sup>Hecker, *Occupational Employment Projections*.

<sup>33</sup>HRSA, *The Registered Nurse Population*.

<sup>34</sup>Foreign nurse graduates can enter the country on a permanent basis either as relatives of U.S. citizens or legal permanent residents, or as employment-based immigrants. They also can enter as temporary workers by obtaining an H-1C visa (CRS Report RS20164, *Immigration: Temporary Admission of Nurses for Health Shortage Areas (P.L. 106-95)*, by Joyce Violet) or an H-1B visa if they have a bachelor’s degree, or if they are from Mexico or Canada, by applying for Trade NAFTA (North American Free Trade Agreement) status.

Between 1995 and 2000, the number of new RN graduates (based on individuals passing the licensing test) dropped by 26.0%, from 96,610 to 71,475.<sup>35</sup>

The recent trend in enrollments — down over the past 5 years — does not bode well for the supply of new entrants to the RN workforce in the short-run. Baccalaureate enrollment did increase between 2000 and 2001; however, it takes longer for these students to become licensed RNs compared to those in diploma and associate degree programs. If BSN graduates continue to account for a growing share of all nursing graduates, their lengthier preparation time effectively could dampen growth in the supply of RNs.<sup>36</sup>

## The Total Supply of RNs

HRSA projected the supply of graduates from basic nursing education programs by taking into account such factors as job availability and the attractiveness of nursing as a career, both of which would likely influence students' decisions about their choice of occupations in the future. Other variables included were the female population of nursing students by age and the share of female high school graduates enrolling in college. In addition, estimates of leavers were derived by taking into consideration such things as deaths among white women and nurses who fail to renew their licenses. Then, to estimate the total supply of RNs, "activity rates" were developed based on the proportion of RNs by age group that was employed in nursing in March 2000, according to the *National Sample of Registered Nurses*. Finally, the count of individuals was transformed into FTEs based on data from the same source about the pattern of full-time and part-time employment and the number of scheduled hours per nurse.

As shown in **Table 3**, the total supply of FTE RNs is projected to increase between 2000 and 2011. The rate of growth is expected to fall off during this period, with the decline particularly steep after 2005, when an especially large number of baby-boom RNs will start reaching 55 years of age — an age "at which RNs have historically begun to reduce their labor participation."<sup>37</sup> The 3.6% projected decrease in the supply of RNs from its peak in 2011 to 2020 might bring the total below its 2005 level.

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<sup>35</sup>HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*.

<sup>36</sup>*Ibid.*

<sup>37</sup>Minnick, Ann F. Retirement, the Nursing Workforce, and the Year 2005. *Nursing Outlook*, September/October 2000. p. 211.

**Table 3. Projected Supply of RNs, Selected Years**

Year	Supply (in full-time equivalents)	Change	
		Number	Percent
2000	1,889,243	—	—
2005	2,012,444	123,201	6.5
2011	2,075,891	63,447	3.1
2020	2,001,998	-73,893	-3.6

Source: HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020*.

## A Shortage of Registered Nurses?

As discussed below in more detail, the latest projections from HRSA of supply and demand conditions in the labor market for RNs pushed forward the time of a shortage to 2000.<sup>38</sup> The 1996 supply-demand projections of HRSA had shown a national shortage in 2007. And, an alternative projection of the supply of RNs, when compared with HRSA's 1996 demand projection, revealed a shortage emerging around 2012.<sup>39</sup>

Not all states are sharing in the present-day shortage of RNs, as determined by HRSA's latest estimates, nor are those with shortages sharing equally. If current trends continue, and no mitigating actions are taken, the number of states experiencing shortages is projected to increase and leave just a few without an RN shortage by 2020.

### National Projections

As shown in **Table 4**, nationwide demand for RNs was estimated to have exceeded supply in 2000. The 5.5% shortfall is projected to worsen at an accelerating rate through 2020, by which time there might be 28.8% fewer FTE RNs than demanded by employers. This scenario assumes that policymakers and the industry, among others, do not undertake ameliorative actions during the period.<sup>40</sup>

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<sup>38</sup>HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*.

<sup>39</sup>Buerhaus, Peter I. with Douglas O. Staiger and David I. Auerbach. Implications of an Aging Registered Nurse Workforce. *Journal of the American Medical Association*, June 14, 2000, v. 283, no. 22.

<sup>40</sup>For information on legislative activity see: CRS Report RL31090. *Long-Term Care: Nursing and Paraprofessional Workforce Issues*, by Julie Stone and Rachel Kelly.



**Table 4. Projected Shortages of RNs, Selected Years**

Year	Supply (in full-time equivalents)	Demand (in full-time equivalents)	Shortage	
			Number <sup>a</sup>	Percent <sup>b</sup>
2000	1,889,243	1,999,950	-110,707	-5.5
2001	1,912,667	2,030,971	-118,304	-5.8
2002	1,937,336	2,062,556	-125,220	-6.1
2003	1,959,192	2,095,514	-136,322	-6.5
2004	1,989,329	2,128,142	-138,813	-6.5
2005	2,012,444	2,161,831	-149,387	-6.9
2006	2,028,548	2,196,904	-168,356	-7.7
2007	2,039,772	2,232,516	-192,744	-8.6
2008	2,047,729	2,270,890	-223,161	-9.8
2009	2,059,099	2,307,236	-248,137	-10.7
2010	2,069,369	2,344,584	-275,215	-11.7
2011	2,075,891	2,379,719	-303,828	-12.8
2012	2,075,218	2,426,741	-351,523	-14.5
2013	2,068,256	2,472,072	-403,816	-16.3
2014	2,061,348	2,516,827	-455,479	-18.1
2015	2,055,491	2,562,554	-507,063	-19.8
2016	2,049,318	2,609,081	-559,763	-21.4
2017	2,041,321	2,656,886	-615,565	-23.2
2018	2,032,230	2,708,241	-676,011	-24.9
2019	2,017,100	2,758,089	-740,989	-26.9
2020	2,001,998	2,810,414	-808,416	-28.8

**Source:** HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020*.

<sup>a</sup> The number by which demand exceeds supply.

<sup>b</sup> The number by which demand exceeds supply divided by demand.

The shortage is the outcome of increasing demand for RNs throughout the 20-year projection period and decreasing supply during its latter half. The estimated decline in RN supply distinguishes the current shortage from the tight RN labor

market of the late 1980s/early 1990s, which was demand-based.<sup>41</sup> Working women recently have had a wider range of job opportunities open to them and consequently, have been less prone to choose a career in nursing. For example, women who graduated from high school in the 1990s were estimated to be 30%-40% less likely to enter the nursing profession than those who graduated 20 years earlier. Conversely, women have shown an increased interest in traditionally male-dominated occupations (e.g., doctors or dentists).<sup>42</sup>

Because the supply side of the equation appears to be largely driving the shortage, it may not be easily or quickly undone. Employers can be expected to try to correct the supply-demand imbalance by further increasing nurses' wages, assigning some duties now performed by RNs to paraprofessional nursing personnel and utilizing additional productivity-enhancing technology. These remedies were used successfully in the past when RNs were scarce relative to demand, but the earlier situations were not marked by an aging RN labor force with the attendant need to replace many retiring nurses at about the same time older baby-boomers will make greater demands on the nation's health care delivery system.<sup>43</sup> While raising relative wages, improving working conditions, upgrading the occupation's image and lowering education costs to promote recruitment may encourage more students to become RNs, these changes could take some time to make themselves felt and their effects could be dampened by the alternative career paths now open to women. Another means of bringing more workers into the field is through immigration. However, "eliminating the shortage would require immigration on an unprecedented scale,"<sup>44</sup> and as happened when the 105<sup>th</sup> and 106<sup>th</sup> Congresses increased the number of H-1B visas for professional/specialty workers, the policy could prove to be a controversial one.

## State Projections

Not all states may now be experiencing a shortage of RNs, according to HRSA's latest projections. The following 21 areas were projected to have a sufficient supply relative to demand in 2000:

Alabama, District of Columbia, Florida, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maryland, Michigan, Mississippi, Montana, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Vermont, West Virginia, Wisconsin, and Wyoming.

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<sup>41</sup>Aiken, Linda H. The Hospital Nursing Shortage: A Paradox of Increasing Supply and Increasing Vacancy Rates. *The Western Journal of Medicine*, July 1989, v. 151, no. 1.

<sup>42</sup>Stager, Douglas O., with David I. Auerbach and Peter I. Buerhaus. Expanding Career Opportunities for Women and the Declining Interest in Nursing as a Career. *Nursing Economics*, September-October 2000, v. 18, no. 5.

<sup>43</sup>American Organization of Nurse Executives. *Perspectives on the Nursing Shortage: A Blueprint for Action*. October 2000. Available at: [<http://www.aone.org>].

<sup>44</sup>Buerhaus, Staiger and Auerbach, *Implications of an Aging Registered Nurse Workforce*, p. 2953. The authors noted in Policy Responses to an Aging Registered Nurse Workforce, *Nursing Economics*, November/December 2000, v. 18, no. 6, that by 2020 the supply of full-time equivalent RNs could be 400,000 fewer than needed to meet employer demand.

Thirty states likely had a shortage of FTE RNs in 2000, with shortage defined as demand surpassing supply by at least 3% in light of “uncertainties in the estimation process.”<sup>45</sup> The extent of the shortfall could have varied widely — from under 4% in Iowa (942 FTEs), Minnesota (1,347 FTEs), and Oregon (849 FTEs), to 13% or more in Arizona (5,984 FTEs), New Jersey (8,392 FTEs), and Tennessee (6,798 FTEs).

Perhaps seven states (Alabama, Florida, Idaho, Maryland, North Dakota, Oklahoma, and Wyoming) and the District of Columbia could be added in 2005 to those with an RN shortage in 2000. Conversely, a few states (Hawaii, Iowa, Minnesota, and Ohio) could move out of a shortage situation over the same 5-year period.<sup>46</sup>

After 2005, HRSA estimates that no states are likely to move out of a shortage situation. Instead, between 2005 and 2010, three states (Illinois, Michigan, and South Carolina) might join those already projected to be experiencing a shortfall of RNs. Seven states (Louisiana, Minnesota, Montana, North Carolina, South Dakota, West Virginia, and Wisconsin) might be added in 2015. Between 2015 and 2020, Mississippi could join the ranks of states with too few FTE RNs relative to projected demand.

The RN shortage is estimated to be almost universal by 2020, when HRSA projects it could affect 44 states and the District of Columbia. The severity of the shortfall also is estimated to worsen over the 20-year projection period, ranging up to highs of over 40% in Alaska, California, Connecticut, Delaware, Georgia, Idaho, New Jersey, New Mexico, Oregon, Rhode Island, Tennessee, Washington, and Wyoming by 2020.

Only Hawaii, Iowa, Kansas, Kentucky, Ohio, and Vermont might have an adequate RN supply compared to demand in 2020, according to HRSA’s latest projections. Three of these six states — Kansas, Kentucky, and Vermont — might have an adequate supply of FTE RNs throughout the projection period.

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<sup>45</sup>HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*, p. 3. **Note:** The following situations affect the accuracy of state-specific projections: “(a) a State may have many local shortages yet overall have an adequate supply; (b) a significant number 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.”

<sup>46</sup>HRSA, *Projected Supply, Demand, and Shortages of Registered Nurses*.