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April 30, 2007

The Honorable Edward M. Kennedy  
Chairman  
The Honorable Michael B. Enzi  
Ranking Member  
Committee on Health, Education, Labor and Pensions  
United States Senate

The Honorable John D. Dingell  
Chairman  
The Honorable Joe Barton  
Ranking Member  
Committee on Energy and Commerce  
House of Representatives

Subject: *Nursing Workforce: HHS Needs Methodology to Identify Facilities with a Critical Shortage of Nurses*

Registered nurses (RN) are the single largest group of health care providers in the United States, with more than 2.4 million people employed as RNs in 2004.<sup>1</sup> Basic RN training may be completed through a 2-year associate's degree, a 3-year diploma, or a 4-year bachelor's degree. RNs work in a wide variety of settings, including hospitals, nursing homes, physicians' offices, and public health clinics. Reports by government agencies and others have raised concerns about nurse shortages. In 2001, we reported on an emerging shortage of RNs to fill vacant positions across a range of health care settings.<sup>2</sup> The Health Resources and Services Administration (HRSA), an agency in the Department of Health and Human Services (HHS), estimated that the supply of RNs nationally fell approximately 111,000 short of demand in 2000 (5.5 percent) and projected the gap would widen in the ensuing years.<sup>3</sup>

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<sup>1</sup>This includes RNs employed both full-time and part-time. Data for 2004 were the most recent available on the overall RN workforce.

<sup>2</sup>GAO, *Nursing Workforce: Emerging Nurse Shortages Due to Multiple Factors*, [GAO-01-944](#) (Washington, D.C.: July 10, 2001).

<sup>3</sup>HRSA Bureau of Health Professions, *Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020* (Rockville, Md., 2002).

A shortage of RNs, like general workforce shortages, occurs when the demand for RNs exceeds supply.<sup>4</sup> The supply of RNs, or the number of RNs employed, is influenced by multiple factors, including the size of the overall labor force, the number of licensed RNs choosing to work in nursing, the number of new RNs graduating from nursing school, the capacity of nursing schools, and funding available for higher education. Demand, or the number of RNs that employers would like to hire, is also affected by multiple factors, including demographic characteristics and health status of the population, economic factors such as personal income and health insurance coverage, and characteristics of the health care system such as nurse wages and health care reimbursement rates. Having an adequate supply of RNs is important because reports have established a positive relationship between the quality of care and RN staffing levels in settings such as hospitals and nursing homes.<sup>5</sup>

To support the recruitment and retention of RNs in health care facilities with a critical shortage of nurses, Congress passed the Nurse Reinvestment Act of 2002 (NRA).<sup>6</sup> The NRA established the Nursing Scholarship Program (NSP) to provide scholarships for individuals to attend schools of nursing.<sup>7</sup> The NRA also modified an existing program, the Nursing Education Loan Repayment Program (NELRP), which was established by Congress in 1992 to help repay education loans for RNs. Under both programs, awardees must agree to work for at least 2 years in a health care facility with a critical shortage of nurses, with preference given to qualified applicants with the greatest financial need.<sup>8</sup> To implement this, HRSA, which administers both programs, designates several types of facilities as having a critical shortage of nurses for the purposes of the NSP and NELRP.<sup>9</sup> The Secretary of HHS is required

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<sup>4</sup>For a recent study of labor shortages, the Department of Labor defined a shortage as “a market disequilibrium between supply and demand in which the quantity of workers demanded exceeds the supply available and willing to work at a particular wage and working conditions at a particular place and point in time.” See The Urban Institute, *Skill Shortages and Mismatches in Nursing Related Health Care Employment* (Washington, D.C., April 2002).

<sup>5</sup>See J. Needleman et al., *Nurse Staffing and Patient Outcomes in Hospitals*, Final Report for HRSA, Contract No. 230-99-0021, Harvard School of Public Health (Boston, Mass., 2001). See also M.W. Stanton and M.K. Rutherford, *Hospital Nurse Staffing and Quality of Care*, Agency for Healthcare Research and Quality (Rockville, Md., 2004).

<sup>6</sup>Pub. L. No. 107-205, 116 Stat. 813 (2002).

<sup>7</sup>In this report, we consider any RN training program, including 2-year, 3-year, and 4-year programs, to be a school of nursing.

<sup>8</sup>According to program guidance, for the NELRP, applicants with the “greatest financial need” are those with nursing educational loans 40 percent or greater than their annualized salary. For the NSP, applicants with the greatest financial need were defined as those who had zero expected family contribution on their federal financial aid application. NSP awardees begin to fulfill their service obligation after graduation from nursing school. Because NELRP awardees have already completed nursing school, they begin to fulfill their obligation upon receipt of the award.

<sup>9</sup>For the NSP, the facility types are: (1) Indian Health Service health center; (2) rural health clinic; (3) Native Hawaiian health center; (4) nursing home; (5) home health agency; (6) federally-designated migrant health center; (7) hospice program; (8) federally-designated community health center; (9) state or local public health department including a clinic within the department; (10) federally-designated health care for the homeless health center; (11) skilled nursing facility; (12) federally-qualified look-alike health center (a migrant, community, or health care for the homeless health center meeting federal Public Health Service grant requirements but not currently receiving such funds); and (13) ambulatory surgical center; and (14) hospital. The NELRP includes these facility types but

to report annually to Congress on various aspects of the programs including the locations where award recipients are fulfilling their service obligation.<sup>10</sup>

The NRA directed us to conduct several studies related to the nationwide shortage of nurses.<sup>11</sup> As discussed with the committees of jurisdiction, in this report we are: (1) providing information on how the number of employed RNs and the shortage of RNs has changed since 2000, both nationally and across states; and (2) describing characteristics of NELRP and NSP awardees and examining whether these programs have improved the supply of RNs in facilities with critical shortages of nurses.

To determine how the employment of RNs changed since 2000 and how it varied across states, we analyzed data on RN employment from the 2000 and 2004 National Sample Survey of Registered Nurses (NSSRN). This survey has been conducted by HRSA approximately every 4 years since 1977.<sup>12</sup> We also analyzed data on newly licensed RNs from the National Council of State Boards of Nursing to identify the number of potential new RNs entering the workforce each year from 2000 through 2005. To determine whether the nursing shortage has changed since 2000, we conducted interviews of experts, researchers, HRSA officials, and provider and professional associations. We also reviewed current literature and research on the RN workforce. Further, we compared HRSA's most recent state-level shortage estimates from 2000 to the growth in RN employment from 2000 to 2004;<sup>13</sup> examined changes in state-level per capita RN employment from 2000 to 2004; analyzed annual Current Population Survey (CPS) data from 1999 through 2005 on RN earnings growth relative to the overall workforce;<sup>14</sup> and examined trends reported by the American Hospital Association (AHA) in hospital RN vacancy rates—that is, the number of unfilled employment positions at hospitals.

To describe the characteristics of NELRP and NSP awardees, we analyzed HRSA administrative data, reviewed published reports on the programs, and interviewed HRSA officials. We relied on data about the programs from fiscal year 2004 to make comparisons of the awardees to the overall RN workforce and RN student and recent graduate populations because data from 2004 were the most recent data on the RN workforce available. Data on employment location of the programs' awardees for the fiscal years 2003 through 2005 period were obtained from both published reports on the programs and HRSA officials. To examine whether these programs have improved the supply of RNs in facilities with a critical shortage of nurses we reviewed past and current program guidance, reviewed published reports on the programs, and interviewed HRSA officials and research contractors.

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separates hospitals into three subtypes: federal hospital; disproportionate share hospital (a hospital that receives supplemental payments through the Medicare or Medicaid programs to subsidize the costs of caring for a high proportion of low-income patients); and nonfederal, nondisproportionate share hospital.

<sup>10</sup>HRSA has prepared and provided these reports on behalf of the department.

<sup>11</sup>Pub. L. No. 107-205, § 204, 116 Stat. 811, 818-19.

<sup>12</sup>This survey was first conducted in 1977, again in 1980, and every 4 years thereafter. The most recent survey was conducted in 2004.

<sup>13</sup>In this report, we use the term "state" to refer to the 50 states and the District of Columbia.

<sup>14</sup>The Current Population Survey is a monthly survey of households conducted by the Bureau of the Census for the Bureau of Labor Statistics (BLS).

Our review focused only on registered nurses (RN), and our results cannot be generalized to other types of nurses, such as licensed practical nurses (LPN). We also did not conduct assessments of projected shortages. We used the most recent data available, which were from 2004 for some sources and from 2005 for other sources, as we noted. We assessed the reliability of data used in our analyses and determined them to be sufficiently reliable for our purposes. We performed this work from March 2006 through March 2007 in accordance with generally accepted government auditing standards.

## **Results in Brief**

Between 2000 and 2004, the number of employed RNs in the United States grew by 10 percent, with a total of 2.4 million RNs employed in nursing in 2004. Most of the increase occurred in hospitals and ambulatory care settings, and the extent of employment growth varied widely among states. For example, among the 48 states where the number of employed RNs increased, the growth in employment ranged from 2 percent in Connecticut to 47 percent in New Hampshire. Despite evidence of growth in RN employment between 2000 and 2004, there are no data available for estimating the magnitude of changes in the shortage of RNs over this time period. Estimating changes in the RN shortage requires data on both the supply of and the demand for RNs in 2000 and 2004. Although there are data indicating that the supply or number of employed RNs increased, there are no data—either nationally or at the state level—on RN demand in 2004, because demand estimates have not been updated since 2000. However, several indirect measures suggest that the shortage of RNs has eased since 2000. For example, RN employment growth from 2000 to 2004 was generally strongest in those states that HRSA designated as having greater shortages in 2000. In addition, between 2000 and 2004 the number of employed RNs relative to the size of the general population increased from 782 per 100,000 people in 2000 to 825 per 100,000 people in 2004—reflecting an increase in RN supply relative to one measure of demand for RNs. Finally, the rate of unfilled RN positions in hospitals declined nationally from 13 percent in 2001 to 9 percent in 2005.

Recipients of NSP and NELRP awards are more likely to be from a minority group and are more likely to have received or be pursuing a 4-year bachelor's degree rather than a 2-year associate's degree when compared to the overall RN workforce. In both programs, an applicant's minority status is not used as a criterion in making awards. In 2004, 11 percent of the overall nursing workforce was minority while minorities made up 36 percent of NSP awardees and 21 percent of NELRP awardees. NSP and NELRP awardees are required to be employed in one of the types of facilities identified by HRSA as having a critical shortage of nurses. However, HRSA does not have a sound basis for determining the number of RNs needed for that facility to be considered as one experiencing a critical shortage of RNs. Consequently, we cannot identify which facilities fall into this category. Furthermore, awardees may not be serving in facilities actually experiencing a nursing shortage. HRSA is working to develop an approach for identifying facilities with critical shortages of RNs, and researchers contracted by HRSA have produced a report detailing an approach that uses available county-level data to determine facilities that could be identified as having critical shortages of RNs. This report is currently under review, so HRSA's efforts at developing an empirically-based approach for identifying facilities with critical shortages of RNs have not been completed.

In order to target funding effectively for the Nursing Education Loan Repayment Program (NELRP) and the Nursing Scholarship Program (NSP) to nurses working in health care facilities with a critical shortage of nurses, we recommend that the Secretary of HHS:

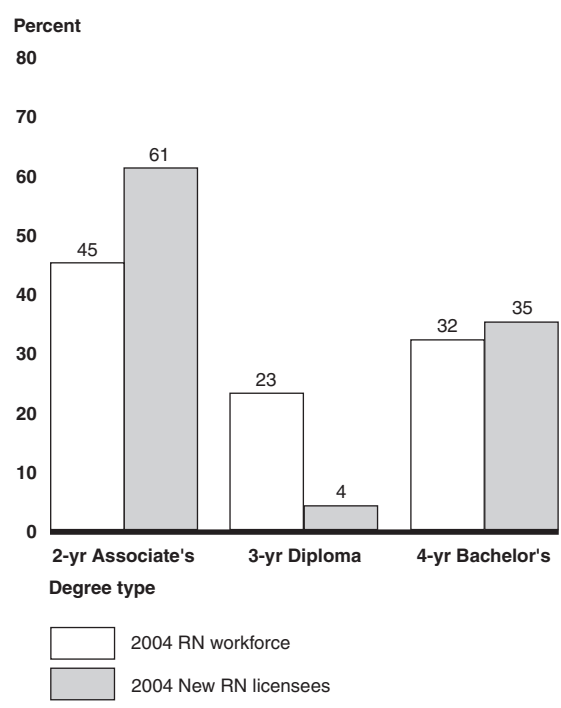
(1) identify the specific steps and a time frame for implementing an empirical methodology for identifying health care facilities with a critical shortage of nurses; and (2) direct the Administrator of HRSA to include a description of steps taken and progress on its time frame for implementing such methodology in HRSA’s annual report to Congress on these programs.

In commenting on a draft of this report, HHS provided technical comments, which we incorporated as appropriate.

**Background**

Hospitals employ the largest share of the RN workforce with 56 percent of RNs employed in hospital settings in 2004. After hospitals, 12 percent of RNs were employed in ambulatory care, 11 percent in public or community health settings, and 6 percent in nursing homes and extended care facilities. The remaining 15 percent were employed in a variety of other settings such as nursing education and insurance companies. Although basic RN education may be completed through a 2-year associate’s degree, a 3-year diploma program, or a 4-year bachelor’s degree, the largest proportion of RNs has an associate’s degree, with 44 percent of the current RN workforce and 61 percent of newly licensed RNs having an associate’s degree.<sup>15</sup> (See fig. 1.) Once they have completed their education, RNs must meet state licensing requirements and pass a national licensing examination.

**Figure 1: Percentage of Employed Registered Nurses by Initial Degree Type, 2004**



Source: HRSA and National Council of State Boards of Nursing.

Note: Data are from HRSA’s 2004 National Sample Survey of Registered Nurses and the National Council of State Boards of Nursing’s 2004 National Council Licensing Examination (NCLEX) statistics.

<sup>15</sup>RNs may also obtain graduate nursing degrees that may qualify them to teach in a university setting or work as a nurse practitioner or as other advanced nursing specialists.

Although numerous reports of an emerging nursing shortage have been published by researchers, provider associations, and government agencies, nurse shortages have historically been cyclical, with periods of shortage alternating with periods of equilibrium or surplus. There is often a time lag in the adjustment of RN supply to increased demand, in part due to the time it takes for a new RN to complete the educational requirements for licensure. Future demand for RNs is expected to increase dramatically as members of the baby boom generation reach their 70s, 80s and beyond—ages at which use of health care typically increases. While the population aged 65 and older is expected to double between 2000 and 2030, the number of women between 25 and 54 years of age, who have traditionally formed the core of the nurse workforce, is expected to remain relatively unchanged. The Bureau of Labor Statistics (BLS) projected that in order to accommodate growth in demand for RNs and to replace RNs leaving the workforce, 120,000 new nurses will be needed per year from 2004 through 2014.

To support the recruitment and retention of RNs, the NSP and NELRP programs provide awards to nursing students or working nurses, respectively, in exchange for a minimum of 2 years service at a health care facility with a critical shortage of nurses. The NELRP provides loan repayment awards of up to 85 percent of educational loans and the NSP provides scholarship awards to individuals attending an accredited school of nursing. From fiscal years 2003 through 2005, HRSA granted 2,262 loan repayment awards totaling \$51 million and 419 scholarship awards totaling \$18.9 million. (See table 1.) Total funding and the number of awards granted under both programs have increased since fiscal year 2003. In fiscal year 2005, HRSA provided NELRP awards to 803 individuals, or 18 percent of applicants, with a median award of \$20,925. For the NSP, HRSA provided awards to 212 individuals, or 6 percent of applicants, with a median award of \$38,078.

**Table 1: Nursing Education Loan Repayment Program and Nursing Scholarship Program Applicants, Awards, and Funding, Fiscal Years 2003–2005**

	2003	2004	2005	2003–2005 Total
<b>Nursing Education Loan Repayment Program (NELRP)</b>				
Applicants	8,231	4,873	4,465	<b>17,569</b>
Awards	602	857	803	<b>2,262</b>
Total Award Funding	\$14.4 million	\$17.6 million	\$19.0 million	<b>\$51.0 million</b>
Median Award Amount	\$20,911	\$17,379	\$20,925	
<b>Nursing Scholarship Program (NSP)</b>				
Applicants	4,408	3,476	3,482	<b>11,366</b>
Awards	81	126	212	<b>419</b>
Total Award Funding	\$3.3 million	\$5.9 million	\$9.7 million	<b>\$18.9 million</b>
Median Award Amount	\$34,920	\$38,387	\$38,078	

Source: HRSA.

## **Number of Employed RNs Increased since 2000, Although Gains Varied among States, and Indirect Evidence Suggests Shortage Has Eased**

Between 2000 and 2004, the number of employed RNs in the United States grew by 10 percent. Most of the increase occurred in hospitals and ambulatory care settings, and the extent of employment growth varied widely among states. Despite evidence of growth in RN employment between 2000 and 2004, we are unable to estimate the magnitude of changes in the shortage of RNs over this time period. Estimating changes in the RN shortage requires data on both the supply of and the demand for RNs in 2000 and 2004. While HRSA's National Sample Survey of Registered Nurses provides data on the number of employed RNs in 2000 and 2004, HRSA's estimates of demand for RNs have not been updated since 2000. However, indirect evidence suggests that the shortage of RNs has eased since 2000. This evidence includes strong growth in RN employment in the states HRSA designated as having a shortage in 2000 and increases in the number of employed RNs relative to the size of the general population. In addition, after several years of strong relative earnings growth for RNs following reports of an emerging shortage around 2000, RN earnings have grown at a rate comparable to the overall workforce in recent years.

### Number of Employed RNs Increased between 2000 and 2004, and Gains Varied by Facility Type and among States

According to data from HRSA's 2000 and 2004 National Sample Survey of Registered Nurses, the number of employed RNs, either full-time or part-time, increased 10 percent between 2000 and 2004, with a total of 2.4 million RNs employed in nursing in 2004.<sup>16</sup> The number of RNs employed full-time grew by 8 percent from 2000 to 2004, while those employed part-time, representing approximately 30 percent of all employed RNs in 2004, grew by 15 percent. In addition, of all licensed RNs, the percentage who were employed in nursing, either full-time or part-time, increased from 81.7 percent in 2000 to 83.2 percent in 2004; this compares to 82.7 percent in 1992 and 1996, and to rates at or below 80 percent throughout the 1980s. Nationally, between 2000 and 2004, the extent of increases in the number of RNs employed varied by facility type or setting, with the greatest gains occurring in hospitals and ambulatory care settings such as physicians' offices, clinics, and ambulatory surgical centers. (See table 2.) These settings accounted for most of the change in the number of employed RNs over the 4 years. Employment gains also occurred in teaching positions associated with nursing education, while the number of RNs employed in public and community health settings declined. Between 2000 and 2004, the number of RNs employed in long-term care facilities remained essentially unchanged.

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<sup>16</sup>This represents a sizable increase compared to the previous 4 years when RN employment grew by about 4 percent from 1996 to 2000.

**Table 2: Changes in RN Employment by Facility Type or Setting, 2000–2004**

Facility type or setting	2000 Employment	2004 Employment	Change 2000–2004
All facility types or settings	2,201,813	2,421,351	219,538
Hospitals	1,300,323	1,360,847	60,524
Ambulatory care	209,324	277,774	68,450
Public/community health	282,618	259,911	-22,707
Long-term care facility	152,894	153,172	278
School/student health	83,269	78,022	-5,247
Nursing education	46,655	63,444	16,789
Occupational health	36,395	22,447	-13,948
Other and unknown	90,335	205,736	115,401

Source: HRSA.

Note: Data are from the 2000 and 2004 National Sample Survey of Registered Nurses. Numbers represent RNs employed both full-time and part-time. Estimated numbers may not equal totals due to rounding.

While the number of employed RNs increased nationally from 2000 to 2004, the growth varied widely among states. According to data from HRSA’s 2000 and 2004 National Sample Survey of Registered Nurses, all but three states—Louisiana, Massachusetts, and Rhode Island—posted gains in RN employment between 2000 and 2004 (see enc. D). Among the 48 states where the number of employed RNs increased, the growth in employment ranged from 2 percent in Connecticut to 47 percent in New Hampshire. Growth exceeded 15 percent in 11 states, and ranged from 10 to 15 percent in 15 other states.

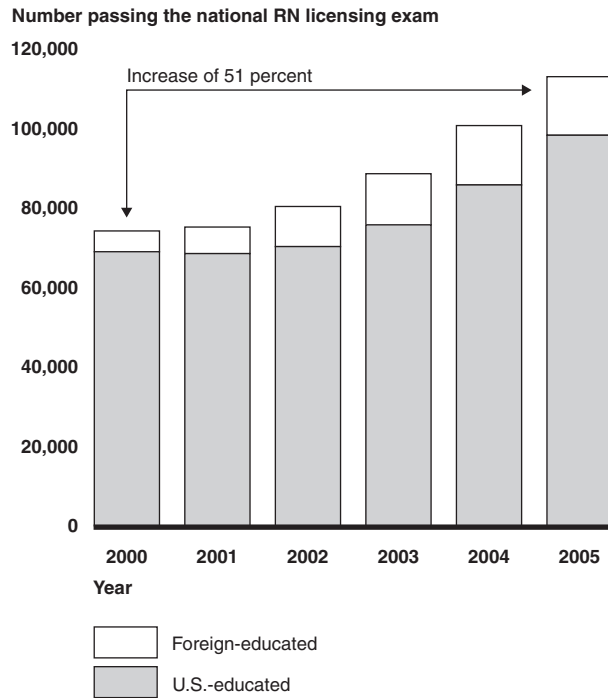
The growth in the number of employed RNs is due in part to an increase in the number of newly licensed nursing school graduates entering the workforce.<sup>17</sup> The number of newly licensed RNs available to enter the workforce, as reflected in the annual number of RNs passing the national licensing examination, grew from approximately 75,000 in 2000 to 101,000 in 2004 and 113,000 in 2005, an increase of 51 percent from 2000 to 2005 (see fig. 2).<sup>18</sup> From 2000 to 2005, the number of newly licensed RNs educated in the United States increased 41 percent from 69,569 to 98,363, and the number of newly licensed RNs who were educated outside the United States grew by 182 percent from 5,231 to 14,750.

<sup>17</sup>To be licensed as an RN in a state, a nurse must graduate from an approved nursing program and pass a national licensing exam developed by the National Council of State Boards of Nursing.

<sup>18</sup>We use the number of nurses passing the national RN licensing exam to approximate the number of newly licensed RNs. Some states may impose additional requirements prior to issuing a license.



**Figure 2: Number of RNs Passing the National Licensing Exam, by Year, U.S.- and Foreign-Educated, 2000–2005**



Source: GAO analysis of National Council of State Boards of Nursing data.

### Indirect Evidence Suggests Shortage of RNs Has Eased since 2000

Although there are data indicating that the supply of RNs—that is, the number employed—increased between 2000 and 2004, we are unable to estimate changes in the shortage of RNs over this time period. Estimating changes in the RN shortage requires data on both the supply of and the demand for RNs in 2000 and 2004. While HRSA’s National Sample Survey of Registered Nurses provides data on the number of employed RNs in 2000 and 2004, HRSA’s estimates of demand for RNs have not been updated since 2000.<sup>19</sup> Furthermore, HRSA’s estimates of RN supply and demand are at the state level and cannot provide information on whether there is a shortage within states, in rural or urban areas, or among facilities or other settings.<sup>20</sup>

Despite the absence of data to assess directly the magnitude of changes in the RN shortage between 2000 and 2004, indirect evidence suggests that the overall shortage of RNs has eased since 2000. This evidence consists of (1) relatively strong growth in the number of employed RNs in the states designated by HRSA as having shortages in 2000, (2) growth in the number of employed RNs relative to the size of the general population, (3) growth in the earnings of RNs that is consistent with the earnings growth for the overall U.S. workforce in recent years, and (4) reported decreases in the number of unfilled employment positions for hospital RNs.

<sup>19</sup>HRSA has a contract to update its model for estimating demand, but the update is not expected to be available until 2008.

<sup>20</sup>In our 2001 report, we noted that available national data were not adequate to describe the nature and extent of nurse shortages across states or provider types.

First, RN employment growth from 2000 to 2004 was generally strongest in those states that HRSA designated as having greater shortages in 2000.<sup>21</sup> (See fig. 3.) HRSA estimates of RN shortages in 2000 show that 30 states were estimated to have a shortage; 9 states were estimated to have a surplus, and 12 states had no clear shortage or surplus in 2000.<sup>22</sup> In the states HRSA estimated as having shortages in 2000, growth in employed RNs averaged about 14 percent from 2000 to 2004, while states that HRSA designated as having surpluses in 2000 averaged about 5-percent growth.<sup>23</sup> Arizona, the state with the largest estimated shortage in 2000, had almost a 23 percent growth in RN employment from 2000 to 2004. Montana, the state with the largest estimated surplus in 2000, experienced a 3 percent growth in employment between 2000 and 2004. (See enc. II.)

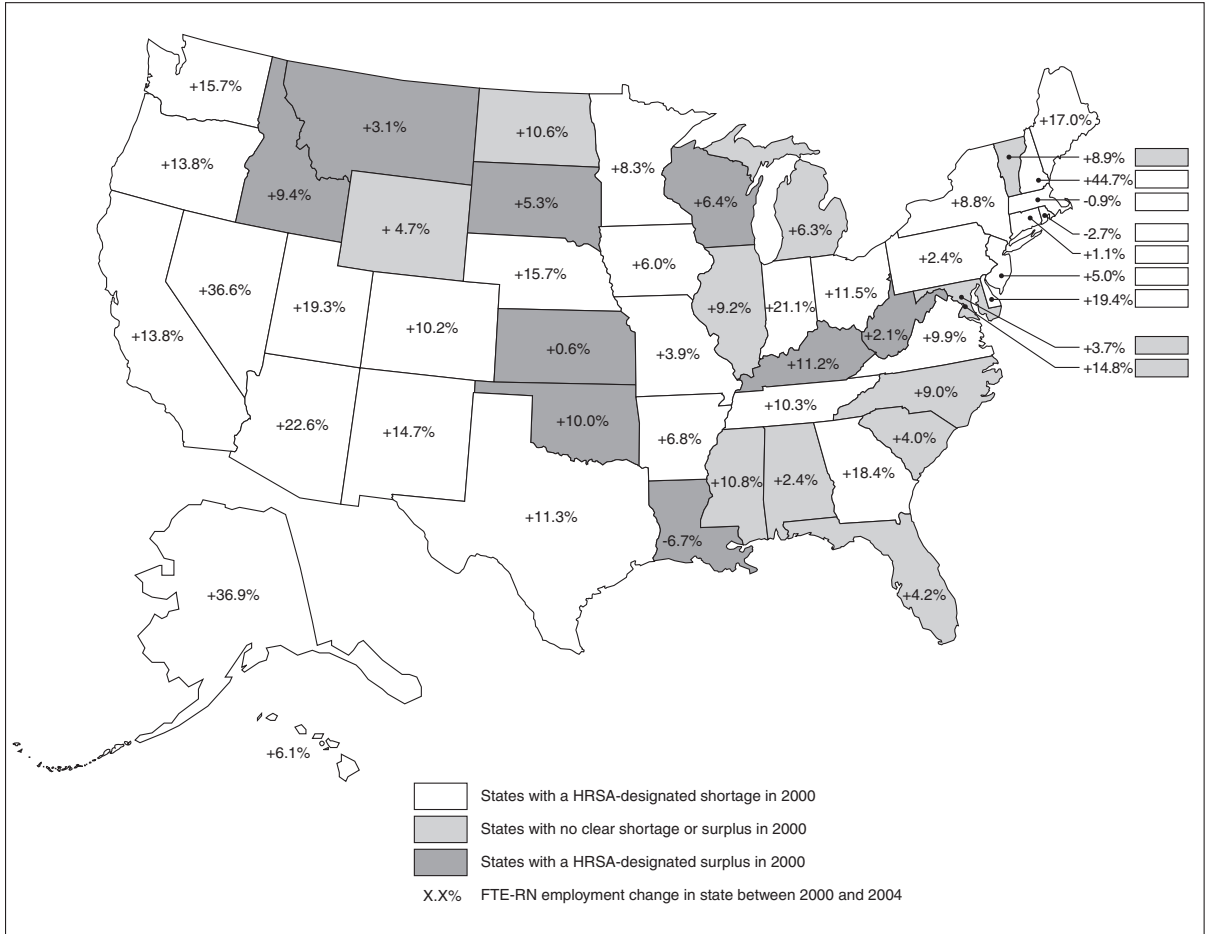
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<sup>21</sup>See HRSA Bureau of Health Professions, *Projected Supply*.

<sup>22</sup>Due to uncertainties in the estimation process, only states with a difference between supply and demand of greater than 3 percent were considered to have a shortage or surplus.

<sup>23</sup>Because HRSA calculated state RN shortage estimates based on full-time equivalents (FTE), we calculated state-level RN employment change in terms of FTEs for this comparison. An FTE is the percentage of time a staff member works, represented as a decimal. A full-time person is 1.00, a half-time person is .50 and a quarter-time person is .25.

**Figure 3: Full-time equivalent (FTE) RN Employment Growth by State, 2000–2004**

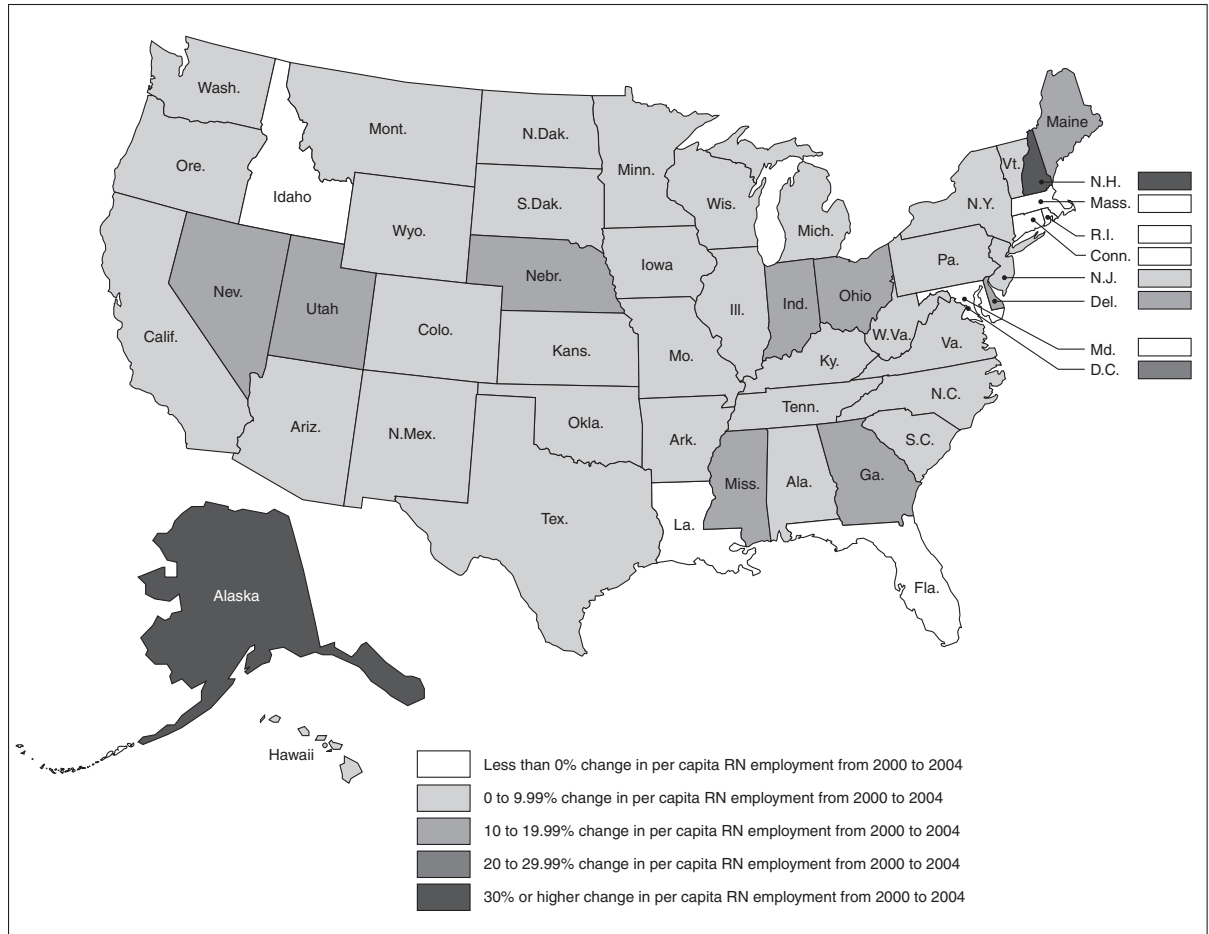


Source: HRSA and GAO analysis of HRSA data. Copyright © Corel Corp. All rights reserved (map).

Note: RN employment based on FTEs.

Second, between 2000 and 2004 the number of employed RNs relative to the size of the general population increased, reflecting an increase in RN supply relative to one measure of demand. According to HRSA’s National Sample Survey of Registered Nurses, nationally there were 825 employed RNs per 100,000 people in 2004, compared with 782 per 100,000 in 2000 and 798 per 100,000 in 1996. Between 2000 and 2004, on a per capita basis, the number of employed RNs increased by 5.5 percent. This followed a 2 percent decline in per capita RN employment between 1996 and 2000. (See enc. III.) Changes in the per capita RN employment varied across states between 2000 and 2004. (See fig. 4.)

**Figure 4: Change in State Per Capita RN Employment, 2000–2004**

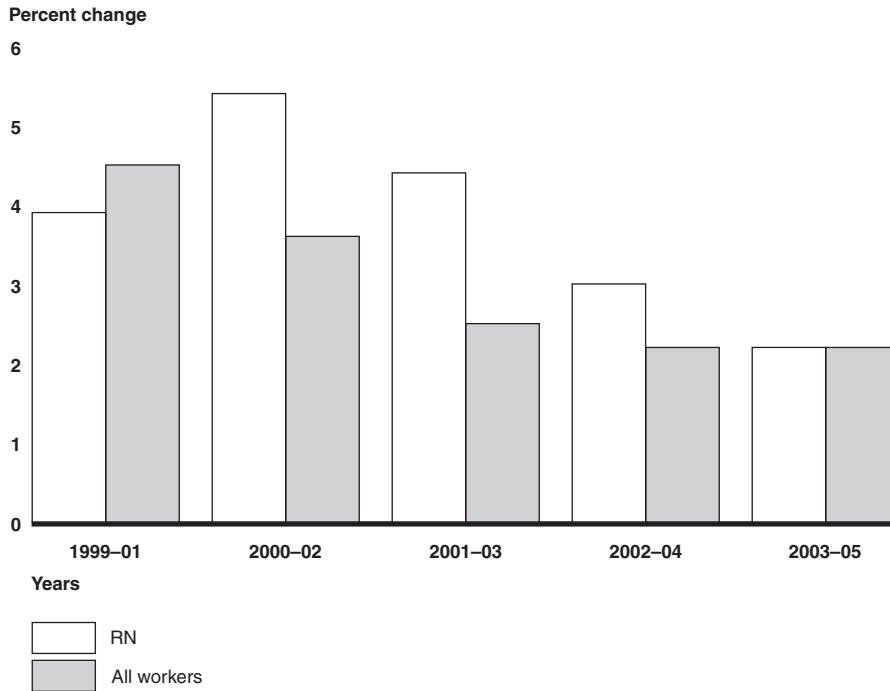


Source: GAO analysis of HRSA data. Copyright © Corel Corp. All rights reserved (map).

Third, after several years of strong relative earnings growth for RNs following reports of an emerging shortage around 2000, RN earnings have grown at a rate comparable to the overall workforce during the most recent period from 2003 through 2005.<sup>24</sup> (See fig. 5.) In a period of shortage, wage or earnings growth for RNs would be expected to exceed the earnings growth for all workers as employers raise wages to attract more RNs. Growth in RN earnings lagged behind earnings growth for all workers through most of the 1990s, and in particular in the mid-1990s period. During the 2001 through 2003 period, earnings growth for RNs averaged 4.4 percent per year while earnings for all workers grew by an average of 2.5 percent per year. During the most recent period, however, from 2003 through 2005, RN earnings rose at an average annual rate of 2.2 percent, the same as for all workers.

<sup>24</sup>According to labor economists, in a condition of shortage, where demand exceeds the supply of workers, labor market data will generally show strong employment and wage growth for an occupation relative to the workforce overall. See C. Veneri, “Can occupational labor shortages be identified using available data?” *Monthly Labor Review*, March 1999.

**Figure 5: Earnings Growth for Registered Nurses and All Workers, 1999–2005**



Source: GAO analysis of Bureau of Labor Statistics data.

Note: Data are from the Current Population Survey (CPS) monthly household survey and represent 3-year annual averages.

Fourth, reports of declines in the percentage of unfilled employment positions at some facilities that employ RNs are also evidence of an easing of the RN shortage because they indicate less unmet employer demand for RNs. Although no comprehensive data exist on how many of these positions go unfilled each year, some trade associations gather information on such employment vacancies from member surveys. For example, the AHA reported a national decline in the rate of unfilled RN positions in hospitals, from 13 percent in 2001 to 9 percent in 2005. The extent of the decline varied across regions of the country. For example, AHA reported that from 2001 through 2005 the greatest decline in the rate of employment vacancies occurred among hospitals in the West, where the average rate of RN vacancies fell from 15 to 9 percent. In contrast, the smallest decline occurred among hospitals in the South, where during the same time period, the average rate of RN vacancies fell from 13 to 10 percent.

### **Characteristics of NELRP and NSP Awardees Differ from the Overall RN Workforce, and GAO Cannot Assess Programs' Effect on Nursing Supply**

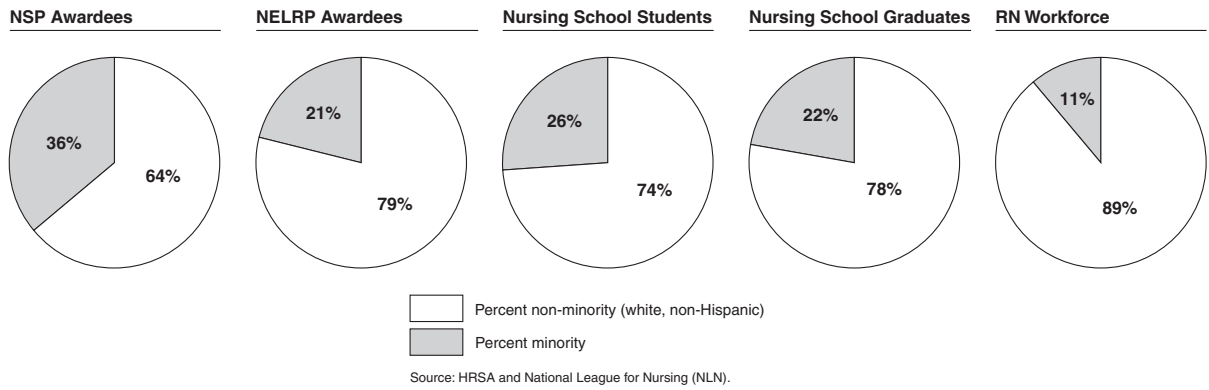
As a group, NSP and NELRP awardees have a higher percentage of minorities and are more likely to have received or be pursuing 4-year bachelor's degrees rather than 2-year associate's degrees than the overall RN workforce. Although NSP and NELRP awardees are required to be employed in one of the types of facilities identified by HRSA in order to meet the NRA requirement intended to address critical nursing shortages, we cannot assess whether the two programs have improved the supply of RNs in facilities with critical shortages of RNs. HRSA does not have a sound basis for identifying critical shortage facilities, and as a result, awardees of the programs may not be serving in facilities actually experiencing such

shortages. HRSA is working to develop an empirically-based approach for identifying facilities with critical shortages of RNs, but these efforts have not yet been completed.

**NSP and NELRP Awardees Have a Higher Percentage of Minorities and Obtain Higher Degrees than Overall RN Workforce**

In our comparison of minority status, we found that as a group, awardees of the NSP and NELRP have a higher percentage of minorities than the overall nursing workforce, but are similar to current nursing school students and recent graduates.<sup>25</sup> (See fig. 6.) In both programs, an applicant’s minority status is not used as a criterion in making awards. While minorities made up 11 percent of the overall RN workforce in 2004, they constituted 36 percent of NSP awardees, 21 percent of NELRP awardees and 26 and 22 percent of nursing school students and graduates, respectively.<sup>26</sup> (See enc. IV for more detailed data on NELRP and NSP awardees.)

**Figure 6: Percentage of Minorities among Awardees in the NSP and NELRP, RN Students and RN Graduates, and the Overall RN Workforce, 2004**



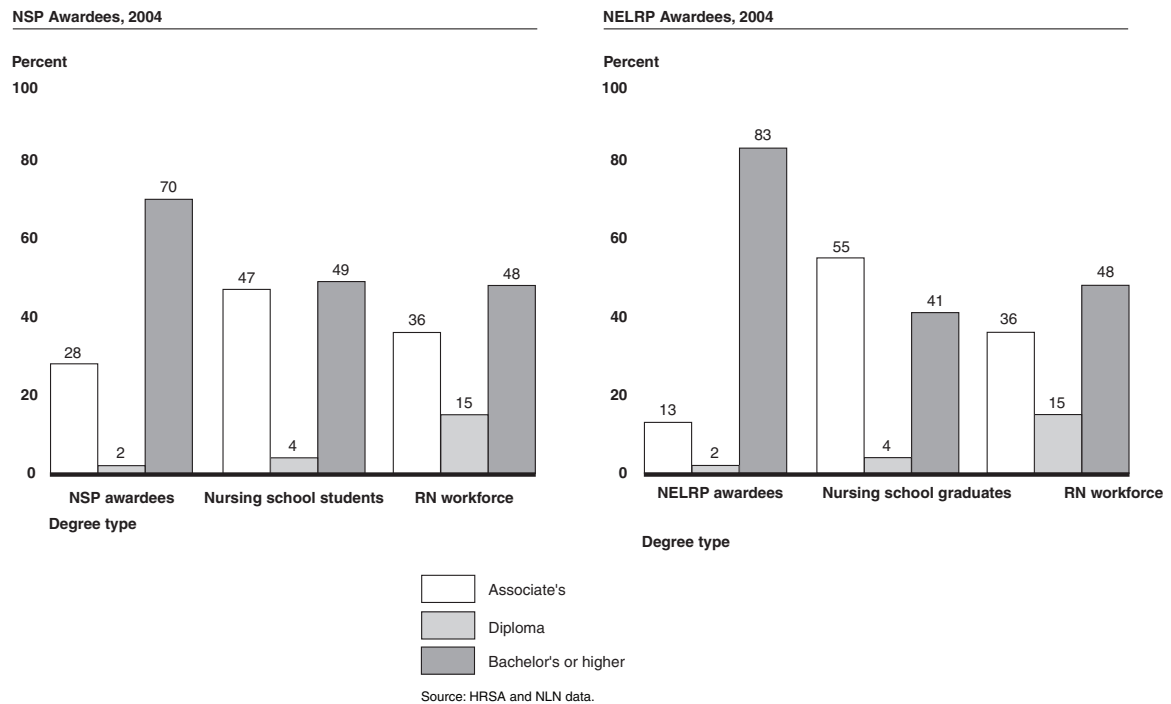
Note: Minorities include African Americans, Hispanics, American Indians, Native Hawaiians, Native Alaskans, Asians, and Pacific Islanders. NSP and NELRP awardee data are for fiscal year 2004.

<sup>25</sup>Because the NELRP provides awards to RNs with student loan debt, we use nursing school graduates as the closest comparison group for NELRP awardees. Similarly, because the NSP provides awards to individuals entering nursing school, we use nursing school students as the best comparison for NSP awardees.

<sup>26</sup>While race and ethnicity are not criteria for awards for the NSP or NELRP, the Institute of Medicine and the National Advisory Council on Nurse Education and Practice (NACNEP), an advisory body for HRSA on nurse workforce issues, have identified the need to increase racial and ethnic diversity among RNs and other health professionals.

Awardees of the NSP and NELRP programs are also more likely to be pursuing or have received higher degrees than the overall RN workforce or current nursing student population. In fiscal year 2004, the percentage of NSP awardees pursuing a bachelor's degree was higher than it was among the nursing student population.<sup>27</sup> While 49 percent of the nursing student population was pursuing a bachelor's or graduate degree in 2004, 70 percent of NSP awardees were pursuing this degree. (See fig. 7.) Similarly, in the NELRP, the majority of awards in fiscal year 2004 were given to applicants with bachelor's or higher degrees. This is largely due to the way in which awards are funded, with preference given to those with greatest financial need. Applicants who obtain higher level degrees (bachelor's or graduate degrees) are likely to have higher levels of debt than those with an associate's degree.

**Figure 7: Degree Types of NSP and NELRP Awardees Compared to Nursing School Students, Graduates, and the RN Workforce, 2004**



Note: NSP and NELRP awardee data are for fiscal year 2004.

Other characteristics of NSP and NELRP awardees include the type of facility in which the awardees work. As of fiscal year 2005, 78 of 419 NSP awardees had completed their education and had begun their service in a critical shortage facility. Of these, 71 were serving in hospitals, 3 in Indian Health Service Health Centers, and 1 each in a home health agency, hospice, nursing home, and skilled nursing facility. As shown in table 3, the majority of NELRP awardees were completing their service requirement in disproportionate share hospitals and public health departments as of fiscal year 2005. In addition, most NELRP

<sup>27</sup>While the educational degree type is not a criterion for NSP awards, the NACNEP and the American Association of Colleges of Nursing have called for increasing the proportion of bachelor's-prepared RNs in the workforce. As of 2004, 53 percent of the RN workforce held a bachelor's or higher degree.

awardees were working in not-for-profit facilities and in facilities located in the South and West.<sup>28</sup>

**Table 3: Work Locations of Nursing Education Loan Repayment Program Awardees, Fiscal Years 2003–2005**

		Year		
		2003	2004	2005
<b>Total Awardees</b>		602	857	803
<b>Facility type</b>	Disproportionate share hospital <sup>a</sup>	473	531	663
	Public health department	91	128	85
	Nursing home	38	66	32
	Federally-designated community health center	0	3	19
	Hospital	0	52	0
	Rural health clinic	0	4	4
	Indian Health Service health center	0	1	0
	Other not-for-profit health facility	0	72	0
<b>Facility ownership status</b>	Not-for-profit	425	411	510
	For-profit	177	446	293
<b>Region of facility<sup>b</sup></b>	Northeast	88	103	111
	Midwest	107	246	160
	South	243	270	299
	West	164	238	233
	Urban	566	770	713
	Rural	36	87	90

Source: HRSA.

<sup>a</sup>Disproportionate share hospitals receive supplemental payments through the Medicare or Medicaid programs to subsidize the costs associated with providing care to a high proportion of low-income patients.

<sup>b</sup>Regions consist of the following: Northeast—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania; Midwest—Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas; South—Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas; and West—Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii.

**Effect of NELRP and NSP Cannot Be Assessed Because HRSA Lacks a Sound Basis for Identifying Facilities with a Critical Shortage of RNs**

We cannot assess whether the NELRP and NSP have improved the supply of RNs at facilities that actually have critical shortages of RNs because HRSA does not have a sound basis for identifying facilities with critical shortages of RNs. To meet the requirement established by NRA designed to help facilities with critical shortages, HRSA uses its list of critical shortage facility types. HRSA created the list based on the assumption that the facility types on the list target the underserved and are generally believed to be facing nursing shortages. In addition,

<sup>28</sup>HRSA established preference categories to target certain facility types on the list. For example, priority for NELRP awards in fiscal year 2005 was given to RNs working in disproportionate share hospitals, nursing homes, state or local public health departments, federally-designated community health centers, federally-designated migrant health centers, or rural health clinics.



the Secretary of HHS determined that the NELRP should emphasize serving the underserved, improving the public health infrastructure, and addressing needs at nursing homes, so the agency currently gives preference to loan repayment applicants working in disproportionate share hospitals, community health centers, rural health clinics, Indian Health Service health centers, public health departments or clinics, and nursing homes. Some awardees of the NELRP must submit a letter or other documentation from their employer that provides support that the awardee is employed at one of the critical shortage facility types. Although HRSA uses the list of facility types in making awards to NELRP and NSP applicants, HRSA does not determine the number of RNs needed for a facility to be considered as one experiencing a critical shortage of RNs. As a result, HRSA does not know the extent to which specific facilities served by NELRP and NSP awardees are actually experiencing critical nursing shortages. Therefore, we cannot assess whether the two programs have increased the supply of RNs at facilities with critical shortages.

HRSA began using the current list of facility types after passage of the NRA. Prior to the NRA, the law required that preference be given to qualified applicants who agreed to work in certain health facilities located in geographic areas with a shortage of and need for nurses.<sup>29</sup> To implement this, HRSA considered whether the facility was located in what was known as a nurse shortage county or in a Health Professional Shortage Area (HPSA).<sup>30</sup> However, HRSA recognized limitations in both the county and the HPSA definitions. According to HRSA officials, the nurse shortage county designation was not sufficiently reflective of the entire nursing workforce because it was based only on hospital data. Similarly, according to HRSA officials, HPSAs are designed for the placement of primary care physicians, and RN work settings are both more diverse and more complex than those of physicians.<sup>31</sup> As a result of these limitations to both the nurse shortage counties and HPSAs, and because the NRA deleted the requirement that preference be given to applicants serving in certain facilities located in geographic areas with a shortage of and need for nurses, HRSA discontinued the use of geographic areas in favor of using only the list of critical shortage facility types. At the same time, HRSA officials acknowledged that this new approach did not represent a scientific or empirical method for identifying actual shortage facilities and was only intended as an interim approach to meet the short-term needs of the program.

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<sup>29</sup>These facilities included an Indian Health Service health center, native Hawaiian health center, public hospital, migrant health center, community health center, rural health clinic, or public or nonprofit private health facility determined by the Secretary to have a critical shortage of nurses. The law also required preference be given to qualified applicants with the greatest financial need.

<sup>30</sup>The nurse shortage county designation was developed using AHA hospital survey data. It was based on the number of full-time equivalent nursing staff relative to the average daily census among hospitals in a county. HRSA designates HPSAs based on the ratio of the number of primary care physicians relative to the population, among other factors. A HPSA can be a distinct geographic area such as a county, a specific population group within an area, or a specific health care facility.

<sup>31</sup>HPSAs are used by HRSA for primary care physicians. See GAO, *Health Professional Shortage Areas: Problems Remain with Primary Care Shortage Area Designation System*, [GAO-07-84](#) (Washington, D.C.: Oct. 24, 2006).

HRSA has efforts underway to develop a new approach for identifying facilities experiencing critical shortages of RNs, though these efforts have not been completed. In 2004 HRSA contracted with researchers at the Center for Health Workforce Studies at the State University of New York (SUNY) at Albany to develop an empirical, data-driven method for identifying “health care facilities with a critical shortage of RNs.” According to the SUNY researchers, among the contract’s guiding principles were that the approach had to (1) be practical, that is, not overly burdensome on facilities or HRSA; (2) be applicable to all facility types; (3) use data that were easy to access and available over time; and (4) be easy to update.

The first approach the SUNY researchers developed and tested was a facility-based model using data from North Carolina and North Dakota, two states that are recognized as having good facility-level data on RN staffing, vacancy rates, and turnover. However, the researchers found that these data were not sufficiently reliable predictors of whether a facility had an RN shortage. Also, the analysis required data that are not collected and reported by health care facilities in most states. The SUNY researchers concluded that the burden and cost of gathering facility/provider-level data from every health facility or provider in every state rendered this approach impractical. As a result, the researchers began work on an approach that could use available county-level data to determine which geographic areas could be defined as having critical shortages of RNs, so that the facilities in such areas could be identified as having critical shortages of RNs.<sup>32</sup> HRSA received the final report on the results of this work from the SUNY researchers in February 2007. The report contains a recommended method for estimating the extent of nursing shortages in all counties in the United States. The advisory committee for this study recommended that before any method is adopted by HRSA it be validated in a number of states, facilities, and settings. As of March 2007, the report and its recommendations were under review, and HRSA officials said they plan to publish the results sometime in 2007.

## **Conclusions**

HRSA is in its fifth year granting awards under the Nursing Education Loan Repayment Program (NELRP) and the Nursing Scholarship Program (NSP) since passage of the Nurse Reinvestment Act. While these two programs are aimed at encouraging graduating and employed nurses to work in facilities with a critical shortage of nurses, they may not always be achieving their intended goals. Because HRSA does not have a sound basis for identifying facilities with a critical shortage of RNs, HRSA’s awardees may be working in facilities that may not be actually experiencing such shortages. HRSA received a report from its contractors that identifies available data and an approach to identify such facilities, and, as of March 2007, the report and its recommendations were under review. Because these two HRSA programs are able to support relatively few nurses, it is important that HRSA ensure that its work to develop a methodology for identifying facilities with a critical shortage of nurses is completed so that the resources of these programs can be targeted effectively to meet their intended purpose.

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<sup>32</sup>In contrast to the facility-based methodology initially developed by the SUNY researchers, this approach considered other sources of data, including the decennial Census, the American Community Survey, the National Sample Survey of Registered Nurses, and the Area Resource File.

## Recommendations for Executive Action

In order to target funding effectively for the Nursing Education Loan Repayment Program (NELRP) and the Nursing Scholarship Program (NSP) to nurses working in health care facilities with a critical shortage of nurses, we recommend that the Secretary of HHS take the following steps:

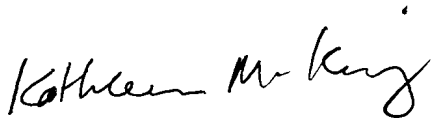
1. identify the specific steps and a time frame for implementing an empirical methodology for identifying health care facilities with a critical shortage of nurses; and
2. direct the Administrator of HRSA to include a description of steps taken and progress on its time frame for implementing such methodology in HRSA's annual report to Congress on these programs.

## Agency Comments

In commenting on a draft of this report, HHS provided technical comments, which we incorporated as appropriate.

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We are sending copies of this report to the Secretary of HHS, the Administrator of HRSA, and other interested parties. We will also make copies available to others on request. In addition, the report is available at no charge on the GAO Web site at <http://www.gao.gov>. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. If you or your staff members have any questions about this report, please contact Kathleen King at (202) 512-7119 or [kingk@gao.gov](mailto:kingk@gao.gov). Major contributors to this report are listed in enclosure V.



Kathleen King  
Director, Health Care

Enclosures – 5

**Change in Number of Registered Nurses (RN) Employed in Nursing,  
by State, 2000–2004**

State	2000 RN employment	2004 RN employment	Percent change in RN employment 2000–2004
Alaska	4,914	6,777	37.9
Alabama	34,073	36,538	7.2
Arkansas	18,752	20,115	7.3
Arizona	32,222	39,136	21.5
California	184,329	211,531	14.8
Colorado	31,695	34,654	9.3
Connecticut	32,073	32,718	2.0
Dist. of Col.	9,583	11,583	20.9
Delaware	7,337	8,633	17.7
Florida	125,439	132,758	5.8
Georgia	55,881	66,512	19.0
Hawaii	8,518	9,335	9.6
Idaho	8,230	8,753	6.4
Illinois	101,660	113,779	11.9
Indiana	46,244	54,624	18.1
Iowa	31,020	32,664	5.3
Kansas	23,779	24,869	4.6
Kentucky	33,655	37,631	11.8
Louisiana	37,275	35,369	-5.1
Maine	13,072	15,077	15.3
Maryland	45,323	47,124	4.0
Massachusetts	75,795	75,398	-0.5
Michigan	79,353	84,967	7.1
Minnesota	47,102	51,914	10.2
Mississippi	21,338	24,009	12.5
Missouri	53,730	57,365	6.8
Montana	7,327	7,914	8.0
North Carolina	69,057	76,761	11.2
North Dakota	7,039	7,484	6.3
Nebraska	16,399	18,532	13.0
New Hampshire	11,321	16,670	47.2
New Jersey	67,280	72,980	8.5
New Mexico	11,932	13,570	13.7
Nevada	10,384	14,095	35.7
New York	160,009	174,208	8.9
Ohio	100,144	112,806	12.6
Oklahoma	21,905	24,433	11.5
Oregon	27,121	30,850	13.7

<b>State</b>	<b>2000 RN employment</b>	<b>2004 RN employment</b>	<b>Percent change in RN employment 2000–2004</b>
Pennsylvania	123,997	127,013	2.4
Rhode Island	11,542	11,368	-1.5
South Carolina	29,226	30,711	5.1
South Dakota	8,511	9,278	9.0
Tennessee	49,626	54,338	9.5
Texas	126,436	145,336	14.9
Utah	13,229	15,778	19.3
Vermont	5,829	6,444	10.6
Virginia	50,359	56,726	12.6
Washington	43,482	48,421	11.4
West Virginia	15,523	16,042	3.3
Wisconsin	47,895	51,679	7.9
Wyoming	3,849	4,079	6.0
United States	2,201,813	2,421,351	10.0

Source: GAO analysis of Health Resources and Services Administration (HRSA) data.

Note: Data are from the 2000 and 2004 National Sample Survey of Registered Nurses, HRSA.

**Change from 2000 to 2004 in Full-time equivalent (FTE) Registered Nurse (RN)  
Employment by Degree of State Shortage in 2000 as Estimated by the Health  
Resources and Services Administration (HRSA)**

State	Percent FTE RN shortage estimated by HRSA, 2000	Percent change in FTE RN employment 2000–2004
<b>States with a shortage in 2000</b>		
Arizona	-17.3	22.6
Tennessee	-13.4	10.3
New Jersey	-12.9	5.0
Connecticut	-12.4	1.1
Maine	-11.7	17.0
Delaware	-11.1	19.4
Nevada	-10.9	36.6
New York	-10.9	8.8
Colorado	-10.7	10.2
Massachusetts	-10.5	-0.9
Rhode Island	-10.1	-2.7
Virginia	-9.8	9.9
New Hampshire	-9.7	44.7
Indiana	-9.6	20.4
Hawaii	-9.2	6.1
Washington	-9.2	15.7
Texas	-8.9	11.3
Utah	-8.1	19.3
Missouri	-7.9	3.9
Arkansas	-7.7	6.8
California	-7.6	13.8
New Mexico	-7.4	14.7
Georgia	-6.8	18.4
Ohio	-5.4	11.5
Nebraska	-5.2	15.7
Pennsylvania	-4.9	2.4
Alaska	-4.5	36.9
Oregon	-3.8	13.8
Iowa	-3.5	6.0
Minnesota	-3.5	8.3
<b>States with no clear RN shortage or surplus in 2000<sup>a</sup></b>		
Alabama	-2.9	2.4
Florida	-2.8	4.2
Dist. of Col.	-2.4	14.8
Maryland	-1.4	3.7
Michigan	-1.3	6.3

<b>State</b>	<b>Percent FTE RN shortage estimated by HRSA, 2000</b>	<b>Percent change in FTE RN employment 2000–2004</b>
Vermont	-0.5	8.9
South Carolina	-0.4	4.0
Mississippi	0.0	10.8
North Dakota	0.2	10.6
North Carolina	1.0	9.0
Illinois	1.6	9.2
Wyoming	2.0	4.7
<b>States with a surplus in 2000</b>		
Oklahoma	4.6	10.0
Kentucky	5.9	11.2
Wisconsin	6.2	6.4
South Dakota	8.1	5.3
Idaho	8.5	9.4
Louisiana	9.0	-6.7
Kansas	9.0	0.6
West Virginia	10.3	2.1
Montana	14.5	3.1
<b>United States</b>	<b>-5.5</b>	<b>8.9</b>

Source: HRSA and GAO analysis of HRSA data.

Notes: HRSA's shortage estimates are for 2000. GAO analysis is of data from the 2000 and 2004 National Sample Survey of Registered Nurses, HRSA.

<sup>a</sup>Due to uncertainties in the estimation process, only states with a difference between supply and demand of greater than 3 percent were considered to have a shortage or surplus.

**Change in Registered Nurse (RN) Employment per 100,000 Population,  
by State, 2000–2004**

State	Employed RNs per 100,000 persons		Percent change 2000–2004
	2000	2004	
Alaska	784	1034	31.9
Alabama	766	807	5.4
Arizona	628	681	8.4
Arkansas	701	731	4.3
California	544	589	8.3
Colorado	737	753	2.2
Connecticut	942	934	-0.8
Delaware	936	1040	11.1
Dist. of Col.	1675	2093	25.0
Florida	785	763	-2.8
Georgia	683	753	10.2
Hawaii	703	739	5.1
Idaho	636	628	-1.3
Illinois	819	895	9.3
Indiana	761	876	15.1
Iowa	1060	1106	4.3
Kansas	885	909	2.7
Kentucky	833	908	9.0
Louisiana	834	783	-6.1
Maine	1025	1145	11.7
Maryland	856	848	-0.9
Massachusetts	1194	1175	-1.6
Michigan	798	840	5.3
Minnesota	957	1018	6.4
Mississippi	750	827	10.3
Missouri	960	997	3.9
Montana	812	854	5.2
Nebraska	958	1061	10.8
Nevada	520	604	16.2
New Hampshire	916	1283	40.1
New Jersey	800	839	4.9
New Mexico	656	713	8.7
New York	843	906	7.5
North Carolina	858	899	4.8
North Dakota	1096	1180	7.7
Ohio	882	984	11.6
Oklahoma	635	693	9.1
Oregon	793	858	8.2



State	Employed RNs per 100,000 persons		Percent change 2000–2004
	2000	2004	
Pennsylvania	1010	1024	1.4
Rhode Island	1101	1052	-4.5
South Carolina	728	732	0.5
South Dakota	1128	1204	6.7
Tennessee	872	921	5.6
Texas	606	646	6.6
Utah	592	660	11.5
Vermont	957	1037	8.4
Virginia	711	760	6.9
Washington	738	781	5.8
West Virginia	858	884	3.0
Wisconsin	893	938	5.0
Wyoming	780	805	3.2
<b>United States</b>	<b>782</b>	<b>825</b>	<b>5.5</b>

Source: Source: GAO analysis of Health Resources and Services Administration (HRSA) data.

Note: Data are from the 2000 and 2004 National Sample Survey of Registered Nurses, HRSA.

**Characteristics of Nursing Education Loan Repayment Program (NELRP) and  
Nursing Scholarship Program (NSP) Awardees**

**Table 4: Race and Ethnicity of Registered Nurse (RN) Workforce, Nursing School Graduates, and NELRP Awardees, 2004**

<b>Race and ethnicity</b>	<b>2004 RN workforce (percent)</b>	<b>2004 Nursing school graduates (percent)</b>	<b>2004 NELRP awardees (percent)</b>
White (non-Hispanic)	81.2	73.6	70.1
Black (non-Hispanic)	4.4	10.4	9.7
Asian/Pacific Islander <sup>a</sup>	3.3	3.6	3.0
American Indian/Alaska Native	0.3	0.9	0.7
Hispanic (any race)	1.7	6.0	5.7
Other/unknown <sup>b</sup>	9.0	5.5	10.7

Source: Health Resources and Services Administration (HRSA), National League for Nursing, and GAO analysis of HRSA administrative data.

<sup>a</sup>Includes Native Hawaiians among the RN workforce and NELRP awardees.

<sup>b</sup>Includes 1.5 percent identified as two or more races among the 2004 RN workforce.

**Table 5: Race and Ethnicity of RN Workforce, Nursing School Students, and NSP Awardees, 2004**

<b>Race and ethnicity</b>	<b>2004 RN workforce (percent)</b>	<b>2004 Nursing school students (percent)</b>	<b>2004 NSP awardees (percent)</b>
White (non-Hispanic)	81.2	69.2	61.9
Black (non-Hispanic)	4.4	13.0	29.4
Asian/Pacific Islander <sup>a</sup>	3.3	5.4	2.4
American Indian/Alaska Native	0.3	0.8	0.8
Hispanic (any race)	1.7	5.7	1.6
Other/unknown <sup>b</sup>	9.0	5.9	4.0

Source: HRSA, National League for Nursing, and GAO analysis of HRSA administrative data.

<sup>a</sup>Includes Native Hawaiians among the RN workforce and NSP awardees.

<sup>b</sup>Includes 1.5 percent identified as two or more races among the 2004 RN workforce.

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