

# TRENDS

## Is The Current Shortage Of Hospital Nurses Ending?

Trends in the employment and earnings of registered nurses in U.S. hospitals suggest that the crisis may be over—but only temporarily.

by Peter I. Buerhaus, Douglas O. Staiger, and David I. Auerbach

**ABSTRACT:** Although hospitals have experienced many shortages of registered nurses (RNs), most have not lasted as long as the current shortage, which began in 1998. However, hospital RNs' employment and earnings increased sharply in 2002, which suggests that the shortage may be easing. Two-thirds of the increase in employment came from older RNs, with the remainder supplied by RNs born in other countries. The employment response of older and foreign-born RNs indicates how the labor market is likely to respond to future shortages, and it emphasizes the challenges confronting policymakers as the RN workforce ages and eventually shrinks in size.

**A**NECDOTAL REPORTS ABOUND of new nursing school graduates unable to find employment in hospitals, falling hospital registered nurse (RN) vacancy rates, and accounts of a slowdown in hospitals' demand for RNs supplied by temporary staffing agencies.<sup>1</sup> Together these reports suggest that the current shortage of hospital RNs might be ending. Does this anecdotal information provide the first clue of important changes in the nurse labor market? Prior work has documented important changes in the nurse labor market by analyzing employment and earnings trends of nursing personnel.<sup>2</sup> Using new data from the U.S. Bureau of the Census, we find that, in fact, hospital RNs' employment and earnings rose dramatically in 2002. Moreover, the upsurge in employment was provided by older, married,

and foreign-born RNs. Previous work has laid out the background for hospital nursing over the past two decades.<sup>3</sup> In this paper we examine recent trends in RN employment and earnings, and we discuss what these trends mean in the context of the current RN shortage and their implications for the future.

■ **Brief background.** In 1998 hospitals began to experience the second nurse shortage of the decade. However, unlike the shortage that occurred in the early 1990s, this shortage did not resolve quickly; rather, it has lingered and by 2002 was entering its fifth year. The current shortage developed as a result of economic, workplace, social, and demographic forces that came together in the mid- to late 1990s; these trends are described elsewhere.<sup>4</sup>

Just as there was no single cause of the shortage, there is no single solution to resolve

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it. Hospitals and other interested parties have developed a variety of initiatives in response to the forces driving the nurse shortage. Hospitals have started recruitment and retention programs, used more temporary and traveling RNs to raise staffing levels, increased their use of float pools, forged relationships with local nursing education programs to recruit more people into nursing, offered sign-on and other types of hiring bonuses, and begun to take meaningful steps to improve the work environment of nurses.<sup>5</sup>

Nursing education programs have developed accelerated degree programs, raised funds for student grants and scholarships, focused on attracting more men and minorities (5.4 percent and 12 percent of the current RN workforce, respectively), and attempted to fill faculty vacancies.<sup>6</sup>

The public sector has also been active. By the end of 2002 twenty-four states had developed nurse workforce commissions, twenty-four had established education loan repayment programs, seventeen had considered legislation on nurse staffing plans and ratios in 2002 (California is the only state that has passed minimum staffing ratios in hospitals), and eight had considered legislation prohibiting mandatory overtime.<sup>7</sup> During 2001 and 2002 the federal government, acting through the secretary of health and human services, targeted already budgeted federal dollars to increase the number of people pursuing a nursing career.<sup>8</sup> At the time of this writing, Congress had expanded and revised Title VIII of the Public Health Service Act by adding provisions to develop career ladders, nurse internships, and residencies and to retain the workforce by encouraging hospitals to implement best practices that characterize “magnet” hospitals. Congress also added loan repayments and scholarships program, support for geriatric nursing education, and a fast-track faculty loan program.<sup>9</sup> Finally, health care associations and other organizations have developed important initiatives aimed more broadly at reducing current and potential future nursing shortages.<sup>10</sup>

## Recent Trends In Hospital RNs’ Employment And Earnings

To determine whether any important trends have emerged in the past few years to suggest that the shortage truly is abating, we used data from the Current Population Survey (CPS) Outgoing Rotation Group Annual Merged Files to construct and analyze national estimates of annual RN employment and earnings. The CPS provides a large representative sample of nursing personnel across many years and has been used in prior work to analyze nurse employment and earnings.<sup>11</sup>

■ **Data source.** The CPS, a household-based survey administered monthly by the Bureau of the Census, is widely used by researchers and by the Department of Labor to estimate current trends in employment and earnings. The survey covers a nationally representative sample of more than 100,000 people; every month one-quarter of the sample is asked detailed questions about current employment status, hours worked, earnings, occupation, and industry. These data offer several advantages over other data commonly used to analyze the nursing workforce (such as the American Hospital Association [AHA] Personnel Surveys and the federal government’s National Sample Surveys of the Population of Registered Nurses). Specifically, the CPS is the only timely source of annual data available for all nursing personnel employed both in hospitals and elsewhere.

The data we analyzed included all people ages 21–64 in the CPS sample who reported their occupation as RNs between January 1994 and December 2002 (N = 28,561). Hourly wages were calculated as usual weekly earnings divided by usual weekly hours. Wages were adjusted for inflation using the Consumer Price Index for all goods in urban areas (CPI-U) and are reported in constant 2002 dollars. Employment was measured as full-time equivalents (the number of full-time employees plus one-half the number of part-time employees), where full-time employment is defined as working at least thirty hours per week. To make estimates representative of the U.S. noninstitutionalized population, they

were weighted by sampling weights provided by the CPS. Because of the large samples being used, all estimates reported have standard errors of less than 2 percent.

■ **RN employment and earnings.** Total employment of RNs between 1994 and 2002 rose by an estimated 17 percent (Exhibit 1). The growth rate, although positive, was about half what it was over the preceding decade, and RN employment was estimated by the Bureau of Health Professions (BHP) to be 6 percent below requirements by the year 2000.<sup>12</sup> Thus, reports of a shortage in the late 1990s were consistent with this slowdown in employment growth relative to a continuing growth in the demand for RNs. In contrast, the growth in real (inflation-adjusted) RN wages was essentially flat through 2001. In 2002, however, real earnings increased nearly 5 percent.

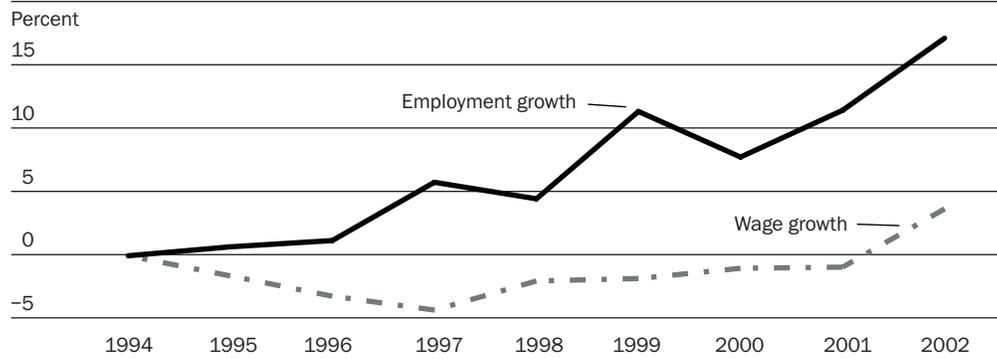
The recent sharp increase in wages reflects the acceleration in the demand for RNs that occurred in 2001 and 2002, along with increasing collective bargaining activity and several labor strikes.<sup>13</sup> Moreover, between 2001 and 2002 wages of RNs in hospitals grew (4.9 percent) at twice the rate of RN wages in nonhospital settings (2.4 percent), which suggests that the rise in demand was particularly strong in hospitals. There are a number of reasons for this. Although no national statistics on utilization are yet available, hospital spending surged in 2001 and 2002, which suggests that the demand for hospital services might have risen.<sup>14</sup>

Hospitals also might have hired additional RNs in response to media attention over studies showing a relationship between low nurse staffing and adverse patient outcomes.<sup>15</sup> Similarly, hospitals might have perceived rising costs associated with low RN staffing, in terms of both dollars and public image, in the form of long waiting times, postponed or cancelled surgery, emergency room diversions, delays in discharges, and the inability to staff key programs and services.<sup>16</sup>

The rise in hospitals' demand for RNs in 2002 is apparent when overall trends in RN employment are decomposed into hospital and nonhospital settings (Exhibit 2). In every year between 1994 and 2001 RN employment in nonhospital settings grew at a much faster pace than in hospitals; however, in 2002 this trend reversed, as all of the growth in RN employment from 2001 to 2002 took place in hospitals, which added more than 100,000 RNs (an increase of 9.0 percent from 2001). RN employment in nonhospital settings actually fell nearly 1 percent in 2002.

Undoubtedly, the increase in wages in 2002 offered an economic incentive for some RNs to rejoin the labor market and for others to switch from part- to full-time hours or work overtime. Other important economic changes apart from wage increases affected many RNs in 2002 and contributed to the impressive gain in employment. In mid-2001 growth in the national economy had begun to stall even before

### EXHIBIT 1 Cumulative Wage And Employment Growth Among Registered Nurses, 1994–2002



SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1994–2002.

## EXHIBIT 2 Employment Growth Among Registered Nurses, By Sector Of Employment, 1994–2002

Year	Total employment		Hospital employment		Nonhospital employment	
	FTEs	Growth since 1994 (%)	FTEs	Growth since 1994 (%)	FTEs	Growth since 1994 (%)
1994	1,735,229	–	1,181,898	–	553,331	–
1995	1,746,800	0.7	1,156,032	–2.2	590,768	6.8
1996	1,755,597	1.2	1,144,094	–3.2	611,503	10.5
1997	1,836,374	5.8	1,184,292	0.2	652,082	17.8
1998	1,812,502	4.5	1,183,749	0.2	628,754	13.6
1999	1,932,430	11.4	1,226,487	3.8	705,943	27.6
2000	1,871,219	7.8	1,176,944	–0.4	694,275	25.5
2001	1,935,121	11.5	1,163,898	–1.5	771,223	39.4
2002	2,033,893	17.2	1,268,323	7.3	765,570	38.4
Annual growth						
1994–2001		1.6		–0.2		4.9
2001–2002		5.1		9.0		–0.7

**SOURCE:** U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1994–2002.

**NOTE:** FTE is full-time equivalent.

the terrorist attacks on September 11. Thereafter, the stock market declined abruptly, unemployment rose and reached 6 percent by the end of 2002, consumer confidence dropped, and fears of an impending war with Iraq resulted in a general sense of uncertainty about the future.<sup>17</sup> These changes more than likely affected the economic position of many RNs' spouses, who had benefited from the economic boom of the 1990s, and, in turn, induced some married RNs to increase their workforce participation. In fact, RN employment increased by more than 10 percent from 2001 to 2002 in the eighteen states where unemployment rose by more than the national average between 2000 and 2002.

### ■ Sources of RN employment growth.

Overall employment of RNs increased by approximately 100,000 between 2001 and 2002. In Exhibit 3 the overall trends in RN employment are decomposed by RNs' age and foreign-born status. The clear message is that RNs over age fifty and foreign-born RNs account for practically all of the increase in RN employment in hospitals in 2002.

Women ages 35–49 constitute the largest number of RNs in the workforce. RN employment in this age group grew 1 percent each

year from 1994 to 2001. In 2002, however, it increased 4.5 percent (39,072 RNs). RNs under age thirty-five constitute the smallest age group of employed RNs. Between 1984 and 2001 employment of younger RNs actually declined 1.4 percent annually, and from 2001 to 2002 the decline (–8.3 percent) was especially noticeable, as 35,744 fewer RNs under age thirty-five were employed. This decline nearly offsets the increase in employment of RNs ages 35–49, so that the total number of RNs under age fifty was nearly unchanged in 2002.

In 1994 there were fewer RNs age fifty and older than ages thirty-five to forty-nine or under age thirty-five. Yet by 2001 the number of employed RNs age fifty and older had risen the fastest (4.7 percent per year) of all age groups. In 2002 the growth in employment from these older RNs rose 15.8 percent, or by 63,111 full-time-equivalent (FTE) RNs. Of the total estimated increase in hospital RN employment in 2002 (104,425), roughly two-thirds came from this fastest-growing segment of the RN workforce. In fact, the one-year surge in employment among this age group raised the average age of the hospital RN workforce by nearly a full year, from 41.9 years to 42.7 years.

Exhibit 3 also shows changes in RN em-

**EXHIBIT 3**  
**Employment Growth Among Registered Nurses, By Age And Foreign-Born Status, 1994-2002**

Year	U.S.-born						Foreign-born	
	Age 50+		Age 35-49		Age <35		FTEs	Growth since 1994 (%)
	FTEs	Growth since 1994 (%)	FTEs	Growth since 1994 (%)	FTEs	Growth since 1994 (%)		
1994	288,917	-	814,692	-	476,824	-	154,771	-
1995	293,343	1.5	830,482	1.9	447,861	-6.1	175,082	13.1
1996	269,708	-6.6	865,203	6.2	425,967	-10.7	194,680	25.8
1997	311,988	8.0	855,602	5.0	473,334	-0.7	195,406	26.3
1998	336,733	16.5	824,419	1.2	432,860	-9.2	218,453	41.1
1999	388,383	34.4	879,002	7.9	430,801	-9.7	234,193	51.3
2000	387,065	34.0	872,033	7.0	396,729	-16.8	215,340	39.1
2001	398,417	37.9	873,120	7.2	431,072	-9.6	232,443	50.2
2002	461,528	59.7	912,192	12.0	395,298	-17.1	264,815	71.1
Annual growth								
1994-2001		4.7		1.0		-1.4		6.0
2001-2002		15.8		4.5		-8.3		13.9

**SOURCE:** U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1994-2002.

**NOTE:** FTE is full-time equivalent.

ployment among RNs born in foreign countries. Unfortunately, the CPS data do not allow us to identify the subset of foreign-born RNs who received their nursing education outside the United States. The estimated number of foreign-born RNs derived from the CPS is about three times as large as the estimated number of foreign nurse graduates working in the United States derived from the National Sample Survey of Registered Nurses; therefore, employment growth in this group does not solely reflect growth in the number of foreign nurse graduates working in the United States.<sup>18</sup> From the mid-1990s through 2001 employment among foreign-born RNs increased 6 percent annually, faster than for domestic RNs as a whole and faster than for any of the three age groups examined. In 2002 employment of foreign-born RNs increased 13.8 percent (or 32,372 RNs), nearly as fast as the rate of growth of domestic RNs over age fifty. Further analysis reveals that 42 percent of this increase in foreign-born RNs occurred among RNs who entered the United States after 1996. Together, RNs over age fifty and foreign-born RNs account for practically all of the increase

in RN employment in hospitals in 2002.

Further breakdown of RN employment growth by marital status reveals that nearly all of the increase in RN employment between 2001 and 2002 occurred among married RNs. Between 1994 and 2001 annual employment growth was slightly lower among married RNs (1.2 percent) than among unmarried RNs (2.2 percent). Between 2001 and 2002, however, employment among married RNs rose more than 7 percent, while employment among unmarried RNs rose less than 1 percent. In fact, although married RNs account for about two-thirds of the workforce, they accounted for 94 percent of the increase in employment between 2001 and 2002.

### Discussion And Policy Implications

■ **Implications for the future.** The recent nurse shortage and the market response have important implications for the future. While the persistence of the current shortage may depend on whether the economy improves or whether there are unforeseen shocks to the health care system, the recent trends in RNs' employment and earnings reflect important underlying forces that are likely to dominate

the RN workforce for years to come.

On the demand side, the recent increase in demand for RNs, particularly in hospitals, is likely to continue in the longer term. Population growth, the rising proportion of people over age sixty-five, economic growth, and advances in technology are expected to greatly accelerate the future demand for hospital-related services and thus for RNs. The most recent estimates from the BHP<sub>r</sub> predict that the demand for RNs will increase 40 percent over the next two decades, with the majority of this employment growth occurring in hospitals.<sup>19</sup> Thus, in the absence of a corresponding increase in the supply of RNs, further shortages and upward pressure on RN wages are likely in the future.

On the supply side, the increased reliance on older and foreign-born RNs in 2002 also reflects a long-run trend. Between 1983 and 1998 the average age of working RNs increased 4.5 years (from just under thirty-eight to forty-two years), a rate of increase more than twice that of all other occupations. Moreover, the RN workforce will continue to age, as nearly half of RNs are projected to be over age fifty by 2010 and the average age rises above forty-five years.<sup>20</sup> Finally, these trends have continued throughout the recent shortage, with employment of foreign-born RNs and RNs over age fifty growing at a rate five to six times faster than that of RNs ages 35–49 since 1994, and employment of RNs under age thirty-five continuing to drop sharply.

The aging of the RN workforce and the rising importance of foreign-born RNs are the result of a fundamental shift occurring in the RN workforce: the decline in younger women choosing nursing as a career during the past two decades. Older and foreign-born RNs have so far taken up the slack, particularly in times of shortage, when higher wages encouraged this large existing supply of RNs to increase their labor-force activity. However, the number of older RNs is expected to peak around

2010 and decline thereafter, as the largest cohorts of RNs begin to retire. Thus, older nurses will become increasingly scarce after 2010. Unless there is a rapid increase in foreign-born RNs or in younger cohorts' interest in nursing as a career, future shortages are likely to be much more severe. However, because the number of young RNs has fallen so dramatically over the past two decades, enrollments of young people in nursing programs would have to increase at least 40 percent annually to provide enough new RNs to replace those expected to leave the workforce through retirement.<sup>21</sup> If such a dramatic turnaround in interest in nursing careers does not occur, foreign-born RNs will likely become an increasingly important part of the future nursing workforce and of hospitals' ability to respond

to future RN shortages.

■ **Implications for policy.** In light of this assessment of the future nursing workforce, three broad types of policy responses might be considered: increasing the flow of RNs into the workforce; retaining older RNs; and preparing for a greater reliance on foreign-born RNs.

*More RNs in the workforce.* Rapidly increasing the flow of new RNs into the workforce is essential if we are to replace the large number soon to be retiring. Despite the range of efforts that are under way to encourage entry into the nursing profession, recent reports indicate that due to shortages of faculty and budget constraints, many schools of nursing could not accept all qualified applicants during the 2002–2003 academic year. In fact, the American Association of Colleges of Nursing reported that schools turned away more than 5,000 qualified applicants because of shortages of faculty and space in 2002.<sup>22</sup> Schools need more money to raise faculty salaries, expand classroom space, and develop clinical sites for students. Given current state budget cutbacks, the federal government may have to play a more important role in helping schools

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of nursing increase their capacity to educate new RNs.

*Retaining older RNs.* Because of their years of experience, older RNs possess a wealth of clinical expertise, nursing knowledge, interpersonal skills, and judgment. However, older RNs' ability to keep up with the physical demands of nursing is questionable, particularly as increasing numbers enter their fifties. Years of walking floors, bending, reaching, and lifting are taking their toll on RNs' bodies. Thus, efforts are needed to improve the clinical ergonomic environment of hospitals to minimize the physical strain. In addition, altering schedules (working fewer hours), developing new roles (becoming mentors to younger RNs), and offering economic incentives can help to retain older RNs. Both private and public payers need to assess payment policies to be sure that hospitals have the resources needed to improve the ergonomic environment.

*Foreign-born RNs.* The time has come to recognize that RNs from other countries are likely to play an increasingly large role in providing nursing care in the United States. Ethical, economic, and other issues related to using foreign-born RNs to supply the nursing demands of the U.S. health care system must be acknowledged and debated. On the one hand, a policy to increase the use of foreign-born RNs in the United States may be opposed by many groups: unions because of their likely negative impact on wages; patient advocates because of a concern about quality of care; and foreign governments because such a policy may exacerbate shortages in their countries. On the other hand, provider and payer groups might support such a policy if it reduces labor costs, while foreign-born RNs themselves might benefit from the opportunity to come to the United States to live and work, send money home, and acquire new nursing knowledge and skills. It will do little good to ignore this emerging trend, as that will only fuel the development of entrenched positions among providers, nurses, and the public. Health workforce planners and policymakers need to encourage an explicit debate about what the guiding principles should be in using for-

eign-born RNs, and develop legislative and regulatory actions accordingly.

THE CURRENT SHORTAGE of hospital RNs provides a preview of the forces that will affect the future nurse workforce if nothing is done to address these challenges in the short term. The same forces that led to higher wages and an increased reliance on older and foreign-born RNs in 2002 are likely to be with us for the next two decades at least. Should the current shortage ease, hospitals and nurses can take a much-needed "deep breath." It would also give workforce planners, policymakers, and all concerned with the future of the nursing profession a brief period to develop and implement fresh actions to address the challenges that lie ahead.<sup>23</sup>

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#### NOTES

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