

TRENDS

New Signs Of A Strengthening U.S. Nurse Labor Market?

Younger nurses and men entering nursing drove the rising numbers of hospital nurses in 2003, but the shortage is not necessarily a thing of the past.

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

ABSTRACT: Wage increases, relatively high national unemployment, and widespread private-sector initiatives aimed at increasing the number of people who become nurses has resulted in a second straight year of strong employment growth among registered nurses (RNs). In 2003, older women and, to a lesser extent, foreign-born RNs accounted for a large share of employment growth. We also observe unusually large employment growth from two new demographic groups: younger people, particularly women in their early thirties, and men. Yet, despite the increase in employment of nearly 185,000 hospital RNs since 2001, the evidence suggests that the current nurse shortage has not been eliminated.

IN A PAPER published in the November/December 2003 issue of this journal, we described trends in employment and earnings of registered nurses (RNs) from the mid-1990s through 2002; we focused on determining whether there was any evidence that the current shortage of RNs was coming to an end.¹ We estimated that total RN employment increased 5.1 percent, or roughly 100,000 RNs, from 2001 to 2002 and that all of this growth had occurred in hospitals. A number of factors contributed to this growth in RN employment: a hefty 4.9 percent increase in real (inflation-adjusted) RN earnings in 2002 following a decade of stagnant earnings, the development of private-sector initiatives aimed at calling positive attention to nursing, and a rise in unemployment rates

across the United States, which affected the job security and earnings of RNs' spouses.

Further analysis showed that most of the growth in employment in 2002 came from two sources: the reentry of older RNs into the workforce and the new entry of foreign-born RNs. Hospital employment of RNs older than age fifty rose 15.8 percent in 2002, and most of these RNs were married and lived in states where the unemployment rate had risen faster than the national average. We also found that employment of foreign-born RNs grew nearly as fast (13.8 percent) as the growth in employment of older RNs. Our data indicated that about half of these new foreign-born RNs had entered the United States since 1996. In sum, our estimates of the large growth in hospital RN employment from 2001 to 2002 supported

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anecdotal accounts that the national shortage of RNs, which had begun five years earlier in 1998, was possibly coming to an end.

In this paper we present results of our continuing analysis of the nurse labor market. Specifically, we seek to determine whether the increase in RN earnings and employment in 2002 were aberrations or the beginning of a new trend. We also address whether the recent growth in employment could erase the current shortage and mitigate the development of a longer-term shortage. Finally, we examine whether there are any emerging trends in the nurse workforce and whether initiatives begun a few years ago aimed at increasing the number of people becoming nurses are affecting the nurse labor market.

Data Sources And Methods

■ **Data source.** As before, 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, to examine changes in the nurse labor market in 2003. The CPS provides a large representative sample of nursing personnel across many years, and we have used these data in prior work to analyze trends in employment earnings and to forecast the future age composition of and supply in the RN workforce.²

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

on a timely basis (with a three-to-six-month lag) for all nursing personnel (RNs; licensed practical/vocational nurses; and nurse aides, orderlies, and assistants) employed in both hospital and nonhospital settings.

■ **Analysis.** We analyzed data on every person in the sample ages 21–64 who reported their occupation as registered nurse between January 1983 and December 2003 (N = 67,816). People older than age sixty-five are excluded for consistency with our earlier work; however, they constitute less than 3 percent of the RN workforce, so excluding them has no material effect on the analysis.

Hourly wages were calculated as usual weekly earnings divided by usual weekly hours. The CPS earnings question includes overtime pay but not bonuses, signing fees, or other nonwage benefits. Thus, although the wage does not capture all changes in compensation, it should be representative of overall trends. Wages were adjusted for inflation using the Consumer Price Index for all goods in urban areas (CPI-U) and are reported in constant 2003 dollars.

To be consistent with our earlier work, employment was measured as full-time equivalents (FTEs) (that is, the number of full-time employees plus half the number of part-time employees), where full-time employment is defined as working thirty or more hours per week. Using hours worked instead of FTEs leads to similar conclusions in aggregate and slightly higher estimates of employment growth among younger women (who have increased their working hours in recent years).³

To make estimates representative of the U.S. noninstitutionalized population, they were weighted by sampling weights provided by the CPS.⁴ Because of the large samples being used, all trends reported have standard errors of less than 2 percent.

Study Findings

■ **RN earnings and employment, 2001–2003.** We estimate that in 2003, real (inflation-adjusted) RN earnings increased for a second straight year, although not as much as the increase in 2002. The increase in real earn-

ings was higher for hospital-employed RNs than for those working in nonhospital settings (1.8 percent versus 1.2 percent). A second consecutive year of real earnings growth would be expected to positively influence RNs' labor-supply decisions by inducing some who were not working to enter the workforce and others who were already working to increase the number of hours they worked. In addition, changes in job security and earnings of RNs' spouses also affected RNs' labor-market activity. In 2003 the unemployment rate averaged 6.0 percent across the United States, compared with 5.8 percent in 2002 and less than 5 percent between 1997 and 2001.⁵ Thus, because nearly three-quarters of RNs are married, the ongoing, relatively high unemployment rate during 2003, together with the rise in RNs' own earnings for a second straight year, offered powerful economic incentives to induce RNs into the nurse labor market.

In fact, based on the CPS data, we estimate that the U.S. nurse workforce added 119,000 FTE RNs in 2003 (Exhibit 1), from a base of just over two million FTEs in 2002. The total growth of 205,000 FTE RNs since 2001 represents the largest two-year growth in RN employment observed since 1983, when our CPS data began. Most of the growth occurred in hospitals, which expanded employment of RNs by 99,000 in 2003. Since 2001, hospitals have added 183,000 RNs to their workforce (Exhibit 1). Nonhospital settings (such as long-term care facilities, home health care agencies, physician offices, and public and school health clinics) account for roughly one-

third of all RNs participating in the workforce. During the 1990s these settings added RNs at a much faster pace than hospitals did. Yet since 2001, employment growth in the nonhospital sector has lagged far behind that of hospitals (Exhibit 1). Prior work suggests that the slowdown in employment growth in nonhospital settings was driven by ongoing efforts of managed care and other large insurers to control spending on home health care.⁶

■ **Sources of employment growth.** Earlier we noted that RNs older than age fifty and foreign-born RNs accounted for all of the growth in RN employment in hospitals in 2002. Older RNs continued to supply a major source of the growth in RN employment (Exhibit 2). Since 2001, the nurse workforce has added 130,000 RNs ages 50–64—63 percent of the total growth in RN employment over this period. However, employment of RNs ages 35–49, which had increased in 2002, declined in 2003, thus contributing only a fraction of the total increase in employment in 2003. In contrast, employment of young RNs exploded in 2003, raising the total employment growth of younger RNs by an estimated 66,000 since 2001. This entry of younger RNs into the workforce is consistent with reports of sizable gains in enrollments at nursing schools since 2001, and it may represent the first wave of two-year program graduates.⁷

Our analysis reveals that foreign-born RNs continued to contribute an important source of employment growth in the nurse workforce. Each year between 1994 and 2001, the growth of foreign-born RNs increased an

**EXHIBIT 1
Employment Growth Among Registered Nurses (RNs), By Sector of Employment, 2001–2003**

Employment	Growth, 2001–2002	Growth, 2002–2003	Total growth, 2001–2003	Average percent growth, 2001–2003
Hospital	87,715	98,764	183,479	7.4
Nonhospital	1,179	19,934	21,113	1.3
Total employment	85,894	118,698	204,592	5.0

SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983–2003.

EXHIBIT 2
Employment Growth Among Registered Nurses (RNs), By Age, U.S.-Born, And Foreign-Born Status, 2001–2003

Employment	Growth, 2001–2002	Growth, 2002–2003	Total growth, 2001–2003	Average percent growth, 2001–2003
RN age (years)				
50–64	63,911	65,839	129,750	19.9
35–49	43,152	-34,271	8,881	0.4
21–34	-21,170	87,131	65,961	6.4
U.S.-born	44,045	94,508	138,553	3.9
Foreign-born	41,849	24,190	66,039	12.5

SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983–2003.

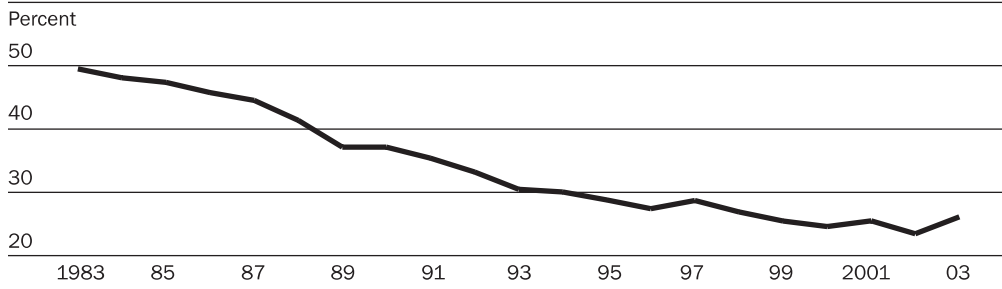
average 6.0 percent, compared with 1.5 percent among all RNs. However, growth of foreign-born RNs doubled to an average 12.5 percent in each of the past two years (Exhibit 2). In fact, the rapid growth in employment of foreign-born RNs accounts for nearly one-third of the total growth of RN employment in the U.S. nurse labor market during the past two years, which means that the trend toward increased reliance on foreign-born RNs has accelerated. Because the CPS data do not allow the identification of a subset of foreign-born RNs who received their nurse education outside the United States, employment growth in this group does not solely reflect growth in the number of nurses immigrating to the United States. Finally, employment rose more than 14 percent among married RNs between 2001 and 2003, compared with 4.8 percent among unmarried RNs (data not shown). This evidence suggests that continued job insecurity among RNs' spouses may have contributed to these RNs' increased presence in the workforce.

■ **Emerging trends.** The increase in total employment growth of more than 200,000 RNs since 2001 has undoubtedly brought a good measure of relief to many hospitals and other organizations. This two-year growth is perhaps the largest increase in RN employment since just before the Medicare program began, in 1965, when hospitals were provided with new financial resources to help them resolve a severe nurse shortage reflected by a na-

tional average vacancy rate of nearly 20 percent in hospital RN positions.⁸ While RNs older than age fifty have provided much of the expansion of hospital employment since 2001, it is striking that in 2003, employment of younger RNs grew by nearly 90,000, reaching the highest level observed for younger RNs since 1987. The percentage of the RN workforce under age thirty-five has been declining steadily over the past twenty years (Exhibit 3). In 1983, half of the workforce was composed of younger RNs, whereas in 2002 younger RNs accounted for only 22 percent. Given forecasts of a large reduction in the future supply of RNs in the workforce, the growth in employment of younger RNs in 2003 represents a potentially important development.⁹ We also found that the proportion of the RN workforce who are men has been growing at an appreciable and steady rate during the past two decades (Exhibit 4). Closer inspection of the data indicates that this growth was somewhat bimodal: 47 percent were in their 30s, particularly ages 35–39, and 39 percent were older than age 50.

Who are these younger nurses? Our analysis shows that 72 percent of the total growth of younger RNs in the workforce in 2003 was accounted for by nurses born in the United States (Exhibit 5). All of the growth in employment of foreign-born RNs occurred among younger people (the vast majority were employed in hospitals). However, the growth of both younger domestic and foreign-born

EXHIBIT 3
Percentage Of The Registered Nurse (RN) Workforce Under Age 35, 1983–2003



SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983–2003.

RNs was far greater among those ages 30–34 than among those under age 30. In addition, 71 percent of younger RNs graduated from associate-degree programs, particularly those ages 30–34 (Exhibit 5). However, the men who entered the nurse workforce last year were not disproportionately graduates of associate-degree programs (data not shown).

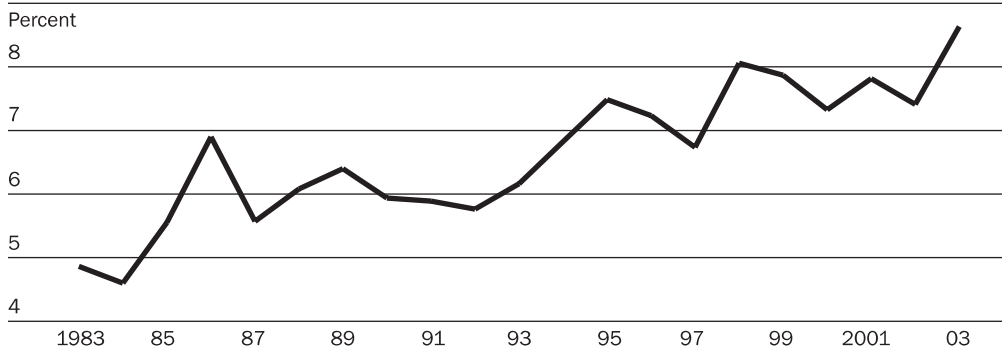
Discussion And Policy Implications

It is not surprising that the combination of a second consecutive year of wage increases, relatively high national unemployment, and the continuance of private-sector initiatives aimed at increasing interest in nursing resulted in another year of strong RN employment growth. What is surprising is that despite the increase in employment of nearly 185,000 hospital RNs since 2001, there is no

empirical evidence that the nurse shortage has ended. To the contrary, national surveys of RNs and physicians conducted in 2004 found that a clear majority of RNs (82 percent) and doctors (81 percent) perceived shortages of RNs in the hospitals where they worked or admitted most of their patients.¹⁰

Our analysis reveals that older and, to a lesser extent, foreign-born women continue to account for a large share of FTE employment growth among RNs. In addition, unusually large employment growth from 2002 to 2003 occurred among two new demographic groups: younger people, particularly women in their early thirties, and men. Both of these groups are probably responding to higher wages and opportunities in nursing driven by publicity about the nurse shortage, and many have just graduated from associate-degree

EXHIBIT 4
Percentage Of Men In The Registered Nurse (RN) Workforce, 1983–2003



SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983–2003.

EXHIBIT 5
Employment Growth Among Registered Nurses Ages 21–34, By Foreign-Born And U.S.-Born Status And By Degree Obtained, 2003

Age	Foreign-born	U.S.-born	Total	Associate degree ^a	Baccalaureate degree	Total
21–24	2,694	6,196	8,890	5,442	3,448	8,890
25–29	6,867	5,190	12,057	8,438	3,620	12,058
30–34	14,753	51,430	66,183	47,599	18,585	66,184
Total	24,314	62,816	87,130	61,479	25,653	87,132

SOURCE: U.S. Bureau of the Census, Current Population Survey, Outgoing Rotation Group Annual Merged Files, 1983–2003.

NOTE: Totals do not match because of rounding.

^a Includes a small number of graduates of hospital-based, three-year diploma programs.

nursing education programs.

■ **Older nurses.** The growth in employment of older RNs reflects a fundamental, structural shift in the RN workforce that has been taking place during the past three decades: the aging of the large baby-boom cohorts who became RNs in unprecedented numbers in the 1970s and 1980s. The average age of the RN workforce (42.1 years in 2002) has been rising steadily since the mid 1980s, and by 2010 it is projected to rise another three years (to 45.4). Consequently, the employment of RNs older than age fifty is growing faster than among any other age group.¹¹ It appears that these older RNs are sensitive to economic incentives, particularly to changes affecting their spouses' incomes and job security.¹² Thus, as long as unemployment rates remain high and hospitals continue to raise RN wages, older RNs will likely remain in the workforce. However, should unemployment rates decrease, it is unclear whether RN wage increases alone will be enough to retain all of those older RNs who recently became employed. Moreover, it will not be many years before these RNs will retire and leave the workforce altogether.

■ **Foreign-born nurses.** Along with older RNs, employment of foreign-born RNs continues to expand. Even if only half of these foreign-born RNs immigrated to the United States in the past few years, their growth (66,000 since 2001) dwarfs the usual yearly immigration of 3,000–4,000 RNs during previous shortages. As the demand for RNs continues to

grow and the RN workforce in the United States ages and eventually shrinks in size, hospitals and other providers will increasingly rely on foreign-educated RNs. Because the United States is one of the countries dominating the global nurse labor market, U.S. policymakers can anticipate facing vexing political, ethical, economic, and regulatory issues, in addition to questions about the technical and cultural competence of foreign nurses.¹³

■ **Younger nurses.** Importantly, our analysis reveals new trends involving the growth of younger RNs and men. The sudden burst in employment of nearly 90,000 RNs under age thirty-five occurred primarily among U.S.-born nurses. This development may signal the end of a two-decade decline in younger cohorts entering the RN workforce. However, it is unlikely that this recent increase in the propensity to become an RN among younger cohorts will provide enough new nurses to solve the projected long-run shortage. When we use these new data to update our previously published forecasts of RN supply, assuming that future cohorts will have a higher propensity to become RNs as the most recent data suggest, the workforce is projected to peak at a size of 2.3 million in 2012 and shrink to 2.2 million by 2020—a modest increase of roughly 60,000 RNs over forecasts without the new data.¹⁴ This total pales in comparison to the latest government forecast of 2.8 million FTE RNs that will be required in 2020.¹⁵ This is partly because half of the total increase in younger RNs came from the cohort ages 30–34; these

RNs will provide fewer years in the nursing workforce than younger graduates will. Should the growth in younger RNs continue for several years, however, then there would be good reason for adopting a more optimistic view of the future supply of RNs.

■ **Associate versus baccalaureate degrees.** Our analysis also reveals that the cohort of younger RNs is particularly attracted to nursing education programs that take the least amount of time to complete; three-fourths of the growth of younger RNs are recent graduates of two-year associate-degree programs. However, recent research by Linda Aiken and colleagues shows a reduction in inpatient mortality in hospitals with higher proportions of nurses educated at the baccalaureate level or higher.¹⁶ Although this study provides correlation, not causation, and measures education as the highest education received by the nurse (not entry-level education), it raises questions about the impact of these new entrants into the nurse workforce on certain patient outcomes; these questions require further investigation.

Replacing the large cohorts of RNs born in the baby-boom generation who will retire between 2010 and 2020 will require a rapid expansion in output from both two-year programs and baccalaureate programs, whose graduates are typically younger (in their twenties) and thus likely to contribute more years in the workforce. Yet nurse education programs continue to report turning away thousands of qualified applicants because of shortages of faculty, classroom space, and clinical sites for students.¹⁷ Overcoming these capacity constraints calls for decisive action and resources, and we believe that Congress should fund a study to investigate the prevalence and severity of capacity constraints and determine the best ways to quickly resolve them.

■ **Men in the nurse workforce.** Another new development is the rising numbers of men

in the nurse workforce between 2002 and 2003. We observe that a considerable proportion are not young men but rather older men, perhaps looking for better employment options and economic security as traditional jobs for people with high school or some college education have disappeared.¹⁸ Thus, policymakers should focus on assessing the likelihood of offering mid-career retraining programs and conducting studies to determine the reasons why older men are entering nursing. We have observed this development with only one year of data, but if men began to enter the nursing profession at the same rate as women, this could quite possibly prevent the anticipated long-term shortage of RNs.

■ **Private-sector initiatives.** Finally, the two-year growth in overall RN employment coincides with the

development of private-sector initiatives aimed at calling positive attention to nursing. Many hospitals have seriously begun addressing problems in the workplace environment; corporations and civic groups have provided scholarships to nursing students; and Johnson and Johnson launched a multimillion dollar Campaign for Nursing's Future focused on bolstering the image of nurses, educating the public on the opportunities offered by a career in nursing, improving retention of nurses in clinical positions, raising funds for scholarships and grants, and addressing nurse education programs' capacity problems.¹⁹ The recent surge in RN employment also is related to these initiatives, and those involved in orchestrating them should be encouraged by the recent trends in the nurse labor market.²⁰ The early success of these initiatives suggests that they should continue so that overall employment growth, as well as the emerging trends of increased employment of younger RNs and men, can be sustained and expanded in the years ahead.

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 The views expressed in this paper are those of the authors and should not be interpreted as those of the Congressional Budget Office, Johnson and Johnson, the Robert Wood Johnson Foundation, or the National Bureau of Economic Research. The authors appreciate the suggestions provided by reviewers who commented on an earlier draft.

NOTES

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4. Because of revisions made by the CPS in 2003 involving occupation codes, estimates of RN employment in 2002 differ slightly from those reported in our earlier work (Buerhaus et al., "Is the Current Shortage of Hospital Nurses Ending?"). The new coding, based on the Standard Occupational Codes used in the 2000 Census, resulted in approximately 5 percent of those identifying as RNs under the previous coding not identifying as RNs under the new coding.
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