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Registered Nurses Are Delaying Retirement, A Shift That Has Contributed To Recent Growth In The Nurse Workforce

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ABSTRACT The size of the registered nurse (RN) workforce has surpassed forecasts from a decade ago, growing to 2.7 million in 2012 instead of peaking at 2.2 million. Much of the difference is the result of a surge in new nursing graduates. However, the size of the RN workforce is particularly sensitive to changes in retirement age, given the large number of baby-boomer RNs now in the workforce. We found that in the period 1969–90, for a given number of RNs working at age fifty, 47 percent were still working at age sixty-two and 9 percent were working at age 69. In contrast, in the period 1991–2012 the proportions were 74 percent at age 62 and 24 percent at age 69. This trend, which largely predates the recent recession, extended nursing careers by 2.5 years after age fifty and increased the 2012 RN workforce by 136,000 people. Because many RNs tend to shift out of hospital settings as they age, employers seeking RNs for nonhospital roles may welcome (and seek to capitalize on) the growing numbers of experienced RNs potentially able to fill these positions.

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A decade ago, with stagnant enrollment in nursing schools and the imminent retirement of large baby-boomer cohorts of registered nurses (RNs), forecasters predicted large nurse shortages beginning in the middle to the end of the current decade.^{1,2} Projections that we made in 2000¹ suggested that the number of RNs in the workforce would grow until 2012, when it would peak at roughly 2.2 million, and that it would then begin shrinking as the baby-boomer RNs started to leave the workforce. The first baby-boomer RNs (those born in 1946) reached age sixty-five in 2011.

In fact, the nurse workforce has grown even more rapidly since 2000 than in the prior decade: From 2000 to 2012 it grew by 2.9 percent annually, surpassing its 2.6 percent annual growth from 1990 to 2000. By 2012 there were 2.7 million RNs—500,000 more than we projected twelve years ago.

It is difficult to assess current demand for RNs and thus to evaluate whether the current supply of RNs has erased previously forecast shortages. One such indicator, the ease with which new RNs are able to obtain jobs, suggests that there is not a national shortage—there are scattered reports of new RNs having difficulty finding employment.³ However, it is certainly possible that demand will grow in the near future because of the coverage expansions resulting from the Affordable Care Act (ACA), projected physician shortages, and population growth and aging. Should the demand for RNs increase, that could precipitate shortages of such skilled caregivers.

Three developments explain this dramatic departure from previous expectations. First, the annual output of US nursing education programs doubled over the past decade, increasing from roughly 74,000 in 2002 to 181,000 in 2012, as we have reported elsewhere.⁴ With this surge in new RNs, there are now 750,000 RNs under

age thirty-five in the nurse workforce, compared to 500,000 a decade ago.

Second, the lingering slow economic growth following the recession of 2007–09 has kept some RNs in the workforce who might have withdrawn in a more robust recovery, as we described in another recent article.⁵ In that analysis we reported that for each percentage-point increase in the national unemployment rate, the RN workforce was roughly 1 percent (or around 25,000 RNs) larger than it had been.

However, these two factors alone cannot fully explain the unexpectedly large RN workforce of today. In this article we report on a third development. Given the large contribution of baby boomers (RNs ages 49–67 account for more than 40 percent of the RN workforce today), the current size of the overall RN workforce is particularly sensitive to when those baby-boomer RNs choose to leave the workforce.⁶

The recession, and its lingering effects, may have temporarily delayed the retirement of older RNs because of income security reasons. However, we found there has been a large shift toward later retirements during the past four decades that was independent of any effects associated with the economic downturns that occurred in this period. Baby-boomer RNs will eventually retire. Nonetheless, this shift has lasting implications for workforce projections, hospitals and other settings that employ older RNs in particular, and policy makers are concerned with ensuring an adequate RN supply and protecting the quality and safety of patient care in the United States.

Study Data And Methods

DATA Our analysis required information on RNs' ages, their employment status and hours worked, and the age and size of the US population. Data on the age and employment of RNs were obtained from the Current Population Survey (CPS) and the American Community Survey (ACS).

The CPS is a household-based nationally representative survey of over 100,000 people that is administered monthly by the Census Bureau.⁷ The CPS has asked detailed questions about employment, including occupation and hours worked, since 1973 and is used by the Department of Labor to estimate current trends in unemployment, employment, and earnings. When the monthly surveys are aggregated to a yearly basis, the CPS provides data on approximately 3,000–4,000 RNs per year.

The ACS, which began reporting data in 2001, is modeled after the long form of the decennial census.⁸ It contains fewer questions than the CPS

but has much larger sample sizes, including approximately 12,000 RNs in the period 2001–04 and roughly 30,000 RNs per year thereafter. These larger sample sizes enable workforce trends in nursing to be analyzed with greater accuracy. Consequently, our projection model used data from the ACS instead of the CPS, beginning with 2001.

The data we analyzed included all respondents ages 23–69 who reported being employed as an RN during the week of the relevant survey in the period 1969–2012 (there were 70,724 such respondents in the CPS and 307,187 in the ACS). To be consistent with previous projections,⁹ we counted RNs who reported working fewer than thirty hours in a typical week as 0.5 full-time equivalents (FTEs). We used these data to estimate the number of FTE RNs of each year of age who were working in each year of our data. To make estimates representative of the non-institutionalized US population, we weighted observations by the sampling weights provided by the CPS and ACS.

Additional data on the US population by year, state, and age in the period 1969–2012 were obtained from the Census Bureau.

STATISTICAL ANALYSIS CPS and ACS data were used to estimate the number of FTE RNs by age and year. Our model predicted the proportion of the population in a given birth cohort that would be working as RNs at each age as the product of a cohort effect (defined by birth year) and an age effect.

Cohort effects referred to the propensity of people born in any given year to work as RNs and captured changes across birth cohorts in the perceived attractiveness of a nursing career relative to other occupations. Age effects referred to the relative propensity of RNs to be working at different ages. They captured life-cycle patterns such as the timing of entry into nursing careers and of retirement and the tendency of female RNs to work less during their childbearing years. Thus, the proportion of any particular cohort working as RNs at a given age is the product of the propensity of that cohort to choose nursing as a career and the propensity of RNs to be working at that age.

ESTIMATION We used analysis of variation to estimate the age and cohort effects employed in the forecast. The dependent variable in the model was the logarithm of the number of FTE RNs of every age between twenty-three and sixty-nine for every year between 1969 and 2012 (forty-seven years of age times forty-four years produced 2,068 observations), divided by the total US population at the given age.

The model estimated main effects for cohort (birth year) and age. It included an interaction

term that reflected a shift in the 1990s toward later ages of entry into nursing school.¹⁰ All statistical analyses were performed using the statistical software Stata, version 13.

Study Results

In contrast to the 1980s and 1990s, the supply of RNs in the older age groups grew dramatically after 2000 (Exhibit 1). Steep growth began first for the group ages 55–59, starting around 2000. This was followed roughly five years later by growth in the group ages 60–64 and then by growth in the group ages 65–69.

This pattern reflects the aging of the large cohorts of baby boomers, the oldest of whom reached age fifty-five in 2001. Yet increased work effort among older RNs relative to earlier years could also play a role in the observed trends. Based on these data alone, it is difficult to distinguish changing life-cycle patterns from the aging of the baby boomers.

To explore the possibility of a trend toward later retirement among RNs, we constructed a simple measure of retirement that enumerated the first age at which FTE production for a given birth cohort fell below 25 percent of what it was at age fifty (the approximate peak age of productivity). Thus, this measure was an approximation of the age at which more than three-fourths of a given cohort had ceased working.

The data in Exhibit 2 suggest that for cohorts turning sixty in the 1980s, this retirement milestone was typically reached at age sixty-five or sixty-six. However, by 2000 it was being reached at age sixty-eight or sixty-nine—a difference of two to three years.

We next employed the full resources of our workforce model to identify this effect more precisely, bringing to bear the full set of forty-four years of data for RNs ages 23–69. We used the techniques described in the Study Data and Methods section to identify changes in life-cycle patterns that were independent of cohort effects.

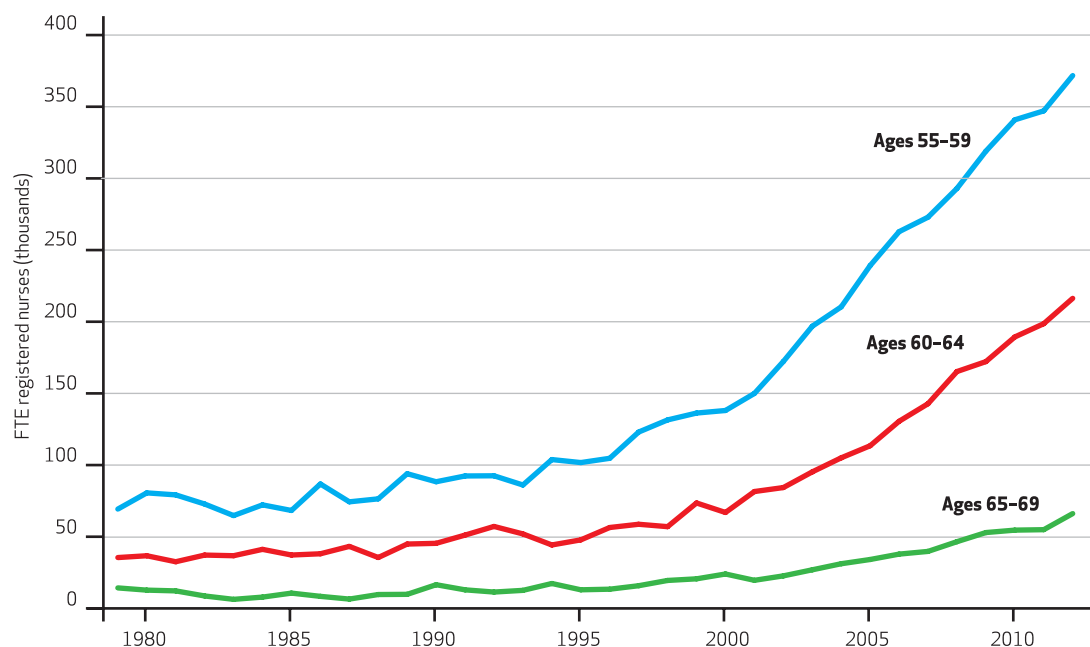
The differences between the two periods in Exhibit 3 are large and significant. Generally, in the earlier period workforce activity surged strongly from age thirty-five to age fifty and then fell away quickly by age sixty-two. In the later period, workforce activity after age fifty did not drop off nearly as dramatically: Three-fourths of RNs were still working by age sixty-two, compared to fewer than half in the earlier period.

The pattern observed in Exhibit 3 could be merely an outgrowth of the recent economic recession. For example, we showed in earlier work that RNs are more likely to stay in the workforce or work longer hours during recessions.⁵

Exhibit 4 shows the data for the two periods in Exhibit 3 and for the period 1991–2007 only, before the recent recession occurred. The patterns for that period are quite similar to those

EXHIBIT 1

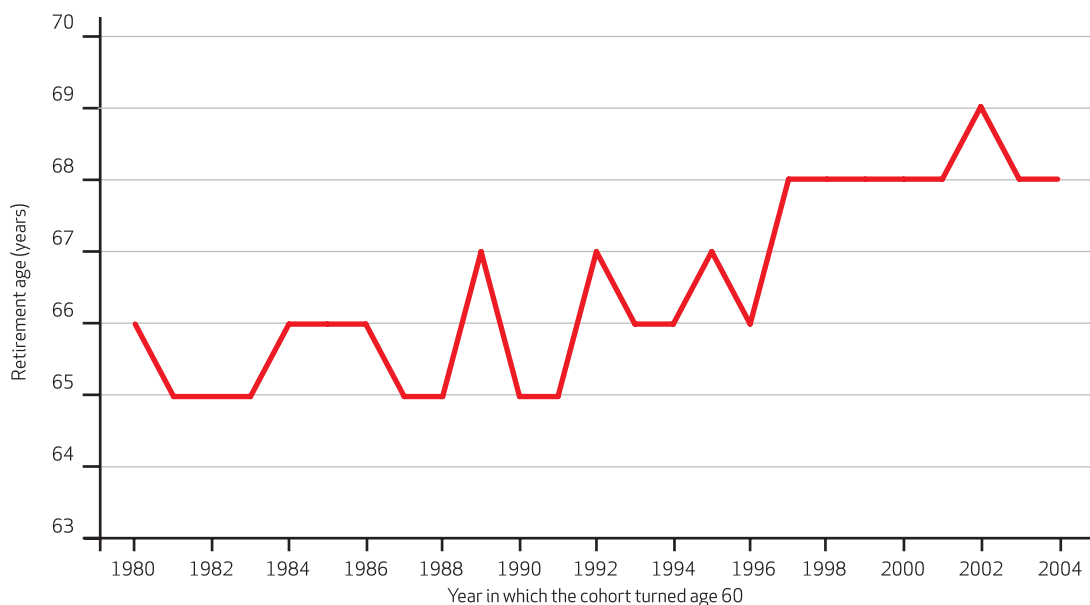
Numbers Of Full-Time-Equivalent (FTE) Registered Nurses In Selected Age Groups, 1979–2012



SOURCE Authors' analysis of data from the Current Population Survey and the American Community Survey.

EXHIBIT 2

Retirement Age For Registered Nurses, By Year In Which The Birth Cohort Turned Age 60



SOURCE Authors' analysis of data from the Current Population Survey and the American Community Survey. **NOTES** Data on retirement age are through 2012. *Retirement age* was defined as the year of age at which total full-time-equivalent output fell below 25 percent of the output at age fifty (which we defined as the average of the output at ages 49–51, for data smoothing purposes). The 1944 birth cohort, whose members turned sixty in 2004, is the last cohort shown.

for the period 1991–2012 and in stark contrast to those for 1969–90. This suggests that the pattern of increased RN longevity in the workforce was in place before the recession.

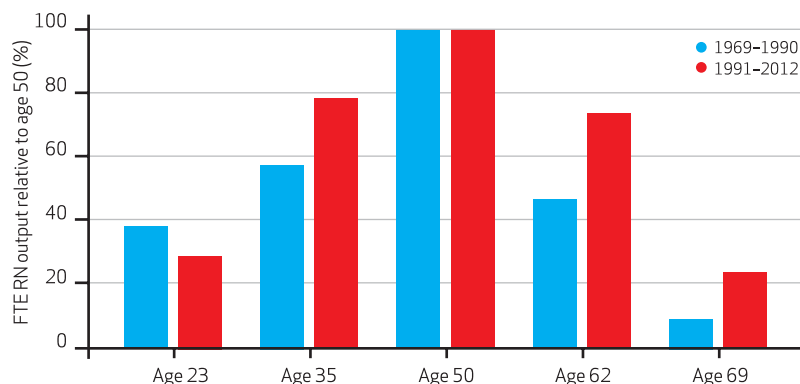
The increase in RNs' time in the workforce has implications for the settings where RNs work.

According to the 2008 National Sample Survey of Registered Nurses, RNs shift from acute care inpatient settings to nonhospital settings during the course of their careers (possibly in part because of the heavy physical demands associated with hospital employment).¹⁰ That survey showed that among RNs under age thirty, 85 percent are employed in hospitals. Yet by age fifty, the percentage employed in hospitals dropped to roughly 50 percent, and it fell to 35 percent by age sixty-five. Of the remainder at age sixty-five, more than 10 percent worked in each of several other settings—nursing homes, academic education, home health care, community health settings such as schools, and ambulatory care—and roughly 7 percent worked elsewhere, including in administrative roles. This shift is also supported in longitudinal data from California.¹¹

An increase in the career longevity of nurses thus implies a boost to RN employment in the nonhospital settings that older RNs tend to shift toward as they grow older.

EXHIBIT 3

Percent Of Full-Time-Equivalent (FTE) Registered Nurses (RNs) Employed At Selected Ages, 1969–90 And 1991–2012



SOURCE Authors' analysis of data from the Current Population Survey and the American Community Survey. **NOTES** The exhibit shows the supply of FTE RNs at selected ages relative to age fifty, which is defined as 100 percent. For example, if a typical birth cohort such as people born in 1950 produced 100,000 FTE RNs at age fifty but only 80,000 FTE RNs at age sixty, the birth cohort would be plotted at 80 percent in the exhibit. The exhibit separates our forty-four-year study period into two periods for comparison: 1969–90 and 1991–2012.

Discussion

To our knowledge, the trend of RNs' remaining in the workforce until they reach older ages has not previously been reported. It is a finding of significant importance. To place our results in a larger context, we recalculated the overall size of

the RN workforce in 2012 as if the retirement and workforce patterns of RNs ages fifty or older during the earlier period in our study (1969–1990) had continued during the later period (1991–2012).

For example, in 2012 there were 42,000 RNs working at age sixty-two. However, if retirement patterns observed before 1990 had remained in place, that number would have been much smaller—roughly 26,000. When we considered all RNs ages 50–69 in 2012, we found that the FTE RN workforce was 5 percent (136,000 RNs) larger in 2012 than it would have been had pre-1990 retirement patterns continued through 2012.

Therefore, this effect can explain perhaps one-fourth of the 500,000 excess RNs in the labor force beyond the 2000 forecast. However, that forecast would have built in a small portion of this effect because it was based on data through 1998, and the delayed retirement effect appears to have begun soon after 1990. As noted above, more than half of the 500,000 excess RNs were the result of the surge in new nurse graduates since 2000, which was not anticipated at that time.

To add further context, we used our results to estimate the remaining years that an RN reaching age fifty could be expected to work. On average, in the period 1969–90, an RN worked an additional 11.5 FTE years after age fifty. In the period 1991–2012, however, an average RN worked 14.0 years after age fifty, an increase of 2.5 years. This is consistent with the apparent delay in the retirement age of roughly 2–3 years shown in Exhibit 2.

NONHOSPITAL SETTINGS As noted above, many RNs shift their workplace settings during their careers, particularly from hospital to nonhospital settings. Beginning with age 50, approximately half of all RNs are employed outside of hospitals. The trend toward increasing workforce longevity can explain some of the relatively larger rate of increase of RN employment in nonhospital settings. According to our analysis of the data from the Current Population Survey, RNs' employment since 1991 has grown 140 percent in nonhospital settings, compared to 54 percent in the hospital.

Having more RNs working in ambulatory or other nonhospital settings could be a welcome change as some health care delivery systems seek to reduce hospital-based care, prodded in this direction by the ACA.¹² For example, accountable care organizations seek to coordinate care and reduce costly care to meet spending benchmarks. New penalties for rehospitalization introduced by the ACA also emphasize care coordination, care management, and home

EXHIBIT 4

Percent Of Full-Time Equivalent (FTE) Registered Nurses (RNs) Employed In Selected Time Periods And At Selected Ages, 1969–2012

Age (years)	1969–90	1991–2012	1991–2007
23	38%	29%	34%
35	58	78	82
50	100	100	100
62	47	74	71
69	9	24	23

SOURCE Authors' analysis of data from the Current Population Survey and the American Community Survey. **NOTES** The exhibit shows the supply of FTE RNs at selected ages and times relative to the supply at age fifty, as explained in the notes to Exhibit 3.

monitoring.¹³

One recent analysis suggests that all of the net increase in demand and jobs for RNs in the coming decade will be outside of the hospital sector.¹⁴ These changes may be affecting hospital employment already, although they cannot be definitely attributed to the ACA. For example, hospitals shed 4,500 jobs in January 2014, compared to an average monthly gain of 1,100 jobs during the previous twenty-four months.¹⁵

LATER RETIREMENT IN OTHER PROFESSIONS

The trend toward later retirement is not unique to the nursing profession. A recent study found that older women substantially increased their participation in the labor force between around 1990 and 2010, approaching the activity level of men, which remained mostly unchanged.¹⁶ For example, on average women ages 55–61 went from roughly 0.4 FTE to 0.55 FTE, while men remained at around 0.7 FTE. And on average women ages 62–64 increased their activity from 0.2 FTE to nearly 0.4, while men remained at roughly 0.4. This increased contribution could not be fully explained. However, the investigators attributed some of this trend to a shift away from defined-benefit retirement plans and toward defined-contribution plans.

Another recent study reported trends in delayed retirement among all workers—although among women more than men—since the 1990s.¹⁷ The researchers noted that workers in households with cuts in employment and compensation and declines in home prices were more likely to delay retirement. They also described other factors associated with delayed retirement, such as longer life expectancy, reduced likelihood of health benefits if workers retired before being eligible for Medicare, being married, and being in managerial and professional occupations.

RNs may be particularly affected by these factors. For example, many older adults work beyond the normal retirement age because of finan-

14.0
Years
 In 2012 an employed fifty-year-old RN would be likely to work an average of 14.0 more years. Before 1990, a comparable RN would have been likely to work another 11.5 years.

cial necessity. However, others may continue working because of the satisfaction they derive from their current positions and the contributions they make to employers and society more generally.¹⁸ These factors may especially apply to RNs, who have been found to remain working as a result of the satisfaction they derive from socializing with coworkers, caring for patients, keeping busy, and continuing their professional commitment.^{19–21}

These factors have likely always been a part of nursing. Nonetheless, they may compound or accelerate social and economic trends that push toward later retirement.

Conclusion

We found that RNs have extended their working careers over time. In 2012 an employed fifty-year-old RN would be likely to work an average of 14.0 more years, whereas a comparable RN before 1990 would have been likely to work another 11.5 years. This increase has been partly responsible for a continued growth in the RN workforce, particularly since it occurred at the same time as the number of baby-boomer RNs was expanding rapidly. The increase has also boosted RN employment in nonhospital settings, where older RNs tend to predominate. In addition, it may have contributed to some of the difficulty that the recent surge of new RNs have had in finding the jobs they expected.³

The effects of the most recent recession will likely continue to recede, and the baby boomers will eventually retire. These changes may lead to a return of RN shortages in some areas of the country in the near term. However, the continued growth in the number of new RNs would help offset these forces.

It is difficult to project the potential for shortages or surpluses of RNs, given the considerable uncertainty involved in anticipating the future

ACA-induced changes in care delivery suggest that there will be an increase in the demand for RNs in care coordination, management, and ambulatory care.

demand for RNs. That demand will be driven by many changes beyond those associated with the ACA, as noted above.

Nevertheless, ACA-induced changes in care delivery, combined with the Medicaid and Marketplace insurance expansions that have begun, suggest that there will be an increase in the demand for RNs in care coordination, management, and ambulatory care positions. Older RNs are far more likely to work outside of the hospital than younger RNs are—and thus the large number of older RNs seeking nonhospital employment could be a welcome development for nonhospital organizations that are seeking RNs. Hospital-based RNs are often well versed in competencies involving patient transitions and care coordination. However, enhanced efforts on the part of nursing schools and other stakeholders could help prepare RNs for roles in the increasingly complex ambulatory care delivery systems of the future.¹³ ■

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