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The Rapid Growth of Graduates From Associate, Baccalaureate, And Graduate Programs in Nursing

Executive Summary

- Growth in the number of RN graduates from 2002-2012 has been dramatic and broad based, occurring between both associate and baccalaureate programs, and has included people from all racial and ethnic backgrounds.
- This growth has occurred in all types of public, private not-for-profit, and proprietary institutions.
- The growth of RNs with graduate degrees has also increased, particularly since 2004.
- Given the rapid production of nursing graduates, leaders in academic nursing education are urged to focus on the quality of nursing graduates, take steps to assure that graduates are well prepared for growth in nonhospital settings, ensure graduates are aware of the many challenges they will confront, and are well prepared to seize opportunities that will unfold during an era of health reform.

In 2000, a shortage of approximately 500,000 registered nurses (RNs) was forecasted by 2020 (Buerhaus, Staiger, & Auerbach, 2000). This forecast was driven largely by the expected retirement of roughly one million RNs who were born during the baby boom generation (1946-1964). At the time these projections were made, enrollment into nursing education programs had been declining for several years and there was no evidence that interest in nursing was likely to increase. To make matters worse, the demand for nurses was expected to increase due to the aging of roughly 80 million baby boomers between 2010 and 2030. Consequently, the nursing workforce would need to not only replace large numbers of retiring RNs, but expand the total size of the RN workforce to meet increasing demand.

This projection of a large shortage of RNs, and other projections that followed (Health Resources and Services Administration, 2004), stimulated myriad responses over the past decade aimed at increasing interest in the nursing profession. Chief among these was the Johnson & Johnson *Campaign for Nursing's Future,* which began in 2002 and continues today. The campaign has spent more than $50 million to spark interest in nursing and has raised more than $15 million in scholarship support for nurses. The J&J Campaign was bolstered by a Sigma Theta Tau International initiative and by a diverse

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portfolio of grants and programs developed by the Robert Wood Johnson Foundation. Additionally, hospital and health care professional organizations developed campaigns to recruit and retain nurses, Congress passed legislation aimed at strengthening the nursing profession, and many states developed workforce commissions that gathered and disseminated data on the nursing workforce.

Nursing education programs also participated in efforts to attract people into nursing and help mitigate the projected shortage of RNs. Although the accelerated nursing degree option had developed in the 1990s, education programs expanded this option rapidly during the 2000s. Nursing programs also established new pathways for RNs to advance their education, including options for RNs prepared at the associate degree level to obtain their baccalaureate degree in nursing. Programs also offered new postmaster's certificate options and developed the clinical nurse leader and doctor of nursing practice. And, in 2010, nursing academic leaders were charged to respond to a recommendation from the Institute of Medicine (IOM) report, *The Future of Nursing: Leading Change, Advancing Health,* to "work together to increase the proportion of nurses with a baccalaureate degree from 50 to 80 percent by 2020" (2010, p. 12).

Using data from the Integrated Postsecondary Education Data System (IPEDS), this article reports an assessment of trends in nursing education since the early 2000s. Specifically, the growth of nursing graduates is examined by level of education (associate, bachelor's, and graduate), type of nursing education program (public, private not-for-profit, and private for-profit), and by geography (the states where the production of nursing graduates have flourished). Finally, the implications of the growing production of RNs are discussed in the context of the current nurse labor market, the long-term growth of the RN workforce, and the development of health care reform.

Data

Data were obtained from IPEDS for the years 1984 through 2012, the last year data was publicly available. IPEDs is a system of interrelated surveys conducted annually by the U.S. Department of Education's National Center for Education Statistics. Information is gathered from every college, university, and technical and vocational institution that participates in the federal student financial aid programs.

The completion of all IPEDS surveys is mandatory for more than 7,500 institutions that participate in or are applicants for participation in any federal student financial aid program (such as Pell grants and federal student loans) authorized by Title IV of the Higher Education Act of 1965. Institutions include research universities, state colleges and universities, private religious and liberal arts colleges, for-profit institutions, community and technical colleges, nondegree-granting institutions such as beauty schools, and others. IPEDS collects data on postsecondary education in seven areas: institutional characteristics, institutional prices, enrollment, student financial aid, degrees and certificates conferred, student persistence and success, and institutional human and fiscal resources.

The IPEDs reports completed degrees (in total and by race, ethnicity, and gender) at each institution by type of education program and award level each year. The IPEDs does not distinguish a bachelor of nursing science (BSN) that was earned as the nurse's initial nursing degree from a BSN that was completed as part of an RN-to-BSN program – the latter program is one in which a RN initially educated at the associate's degree (ADN) level obtains a BSN in a shortened period of time. Data from other sources suggest that in recent years, roughly 20% of awarded nursing BSN degrees are from RN-to-BSN programs. Thus, the trends reported here do not represent the mix of initial nursing degrees obtained, but rather the type of degree obtained in a given year (Bates & Spetz, 2012).

Analysis

To determine the number of degrees completed each year, all degrees were combined at the associate, bachelor's, or master's and higher level that were awarded in a general or specialty nursing program. In addition to the overall number of awards granted each year for each award level, estimates were calculated by gender, race/ethnicity (White, Black, Hispanic, and all other), and by whether the degree was awarded by a 2-year or 4-year institution or by a public, private not-for-profit, or private for-profit institution. These data were used to plot the annual numbers of degrees awarded by award level from 1984 through 2012, and to report changes in the number of degrees awarded from 2002 to 2012 broken down by award level, student demographics, and characteristics of the institutions awarding degrees. The IPEDs data were also analyzed to identify how many unique nursing programs were in existence each year and report the growth in the number of programs from 2002 to 2012. Because the IPEDs is a census of all graduates, rather than a sample, sampling errors for the number of graduates are not reported.

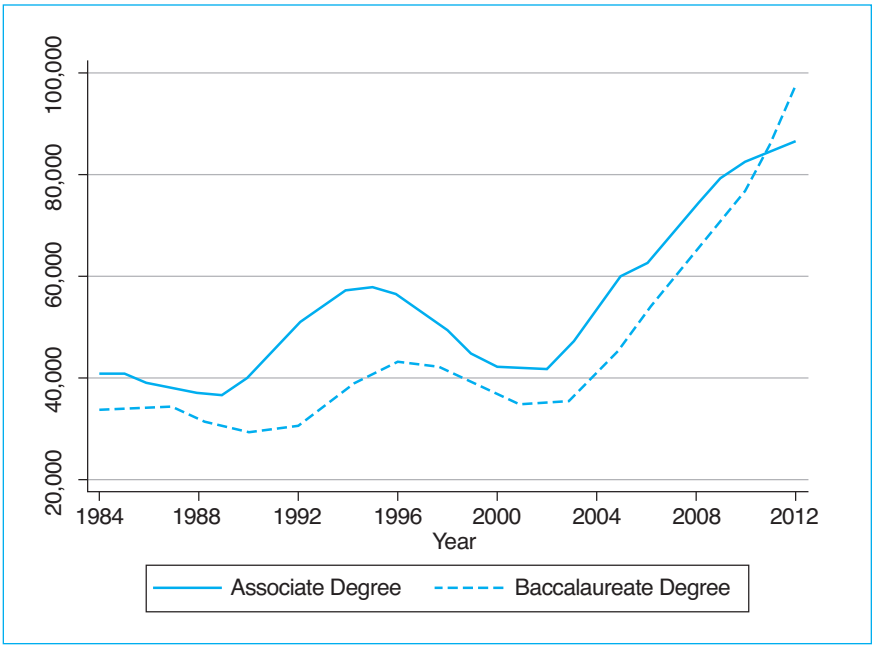
Finally, various characteristics of states with high growth in the number of nursing graduates per capita were compared to those with low growth, splitting the states so that each group accounted for roughly half the U.S. population. State data on population characteristics came from the 2000 U.S. Census, data on state

unemployment rate in 2010 came from the Bureau of Labor Statistics, and data on the presence of a state nursing workforce center came from The Forum of State Nursing Workforce Centers. Statistical significance of the differences between states with high and low growth in nursing graduates per capita was based on a simple two-sided *t*-test with a 5% significance level.

Results

Growth of graduates. Yearly data on the number of BSN and ADN graduates beginning in 1984 and through 2012 is shown in Figure 1. Over this 3 decade period, the number of graduates from both programs generally moved in the same direction, with the number of graduates remaining relatively stable until 2002 (with a modest rise and fall in the 1990s), and then increasing rapidly from 2002 through 2012. Over this

Figure 1.
Changes in the Number of Baccalaureate and Associate Degree Graduates, 1984-2012



SOURCE: Integrated Postsecondary Education Data System

Table 1.
Growth in the Number of Undergraduates by Degree and Type of Education Program, 2002-2012

Characteristics of Graduates and Programs	2002	Percent of All Undergraduates	2012	Percent of All Undergraduates	Absolute Growth (2002-2012)	Percentage Growth (2002-2012)
Total Number of Undergraduates	76,621	100%	184,330	100%	107,709	141%
Degree Type						
Baccalaureate	34,808	45%	97,629	53%	62,821	180%
Associate	41,813	55%	86,701	47%	44,888	107%
Demographic Characteristics						
Men	7,537	10%	24,236	13%	16,699	222%
Women	69,084	90%	160,094	87%	91,010	132%
White	56,298	73%	121,629	66%	65,331	116%
Black	8,569	11%	18,518	10%	9,949	116%
Hispanic	5,183	7%	18,003	10%	12,820	247%
Type of Program						
Public	58,902	77%	119,018	65%	60,116	102%
Private not-for-profit	16,610	22%	45,697	25%	29,087	175%
Private for-profit	1,109	1%	19,615	11%	18,506	1,669%

SOURCE: Integrated Postsecondary Education Data System

Table 2.
Growth in the Number and Type of Nursing Education Programs, 2002-2012

Type of Nursing Education program	2002	Percent of All Programs	2012	Percent of All Programs	Absolute Growth (2002-2012)	Percentage Growth (2002-2012)
Total Number of Programs	1,611	100%	2,270	100%	659	41%
2-Year College or Below	729	45%	857	38%	128	18%
4-Year College or Above	882	55%	1,413	62%	531	60%
Public	1,121	70%	1,343	59%	222	20%
Private Not-for-Profit	456	28%	635	28%	179	39%
Private for-Profit	34	2%	292	13%	258	759%

SOURCE: Integrated Postsecondary Education Data System

entire period, the number of ADN graduates exceeded the number of BSN graduates until 2011 when BSN graduates exceeded ADN graduates for the first time.

The total number of graduates from BSN and ADN programs more than doubled from roughly 77,000 in 2002 to 184,000 in 2012 (see Table 1). Although the number of graduates from both types of programs increased during this period, the percentage of degrees awarded at the bachelor's level increased from 45% in 2002 to 53% in 2012.

Although the vast majority of BSN and ADN graduates continued to be females, during this 10-year period the proportion of male graduates increased 3% to 13% in 2012 (see Table 1). While the relative proportion of Whites becoming RNs decreased to 66% in 2012, they still accounted for approximately 121,000 graduates of bachelor's and associate degree programs. The proportion of all graduates who were Hispanics increased, as did graduates grouped into "all other;" the percent of Black graduates, 10% in 2012, changed little over the 10-year period.

The number of nursing undergraduates from public, private not-for-profit, and private for-profit education programs all increased substantially during the study period (see Table 1). However, as a proportion of all graduates over the 10-year period, those from public nursing education programs decreased from 77% in 2002 to 65% in 2012, whereas the proportion of private not-for profit graduates increased from 22% to 25%, respectively. By far the largest change involved private for-profit programs, which increased from 1% of all graduates in 2002 to 11% in 2012.

Growth of education programs. The number of nursing education programs also increased from 1,611 in 2002 to 2,240 in 2012 (see Table 2). This growth came from the addition of 222 public programs, 179 private not-for-profit programs, and 258 private for-profit programs. As a proportion of all nursing education programs, private for-profit programs grew at the fastest rate, increasing from only 2% of all programs to 13% of all BSN and ADN programs.

The number of RN graduates of master's and doctoral programs also increased dramatically since 2002 (see Figure 2). During the 1980s and 1990s, the number of graduates of these programs grew slowly, from just over 5,000 in 1984 to just below 10,000 in 2003. Beginning in 2004, however, the number of graduates more than tripled to over 30,000 in 2012.

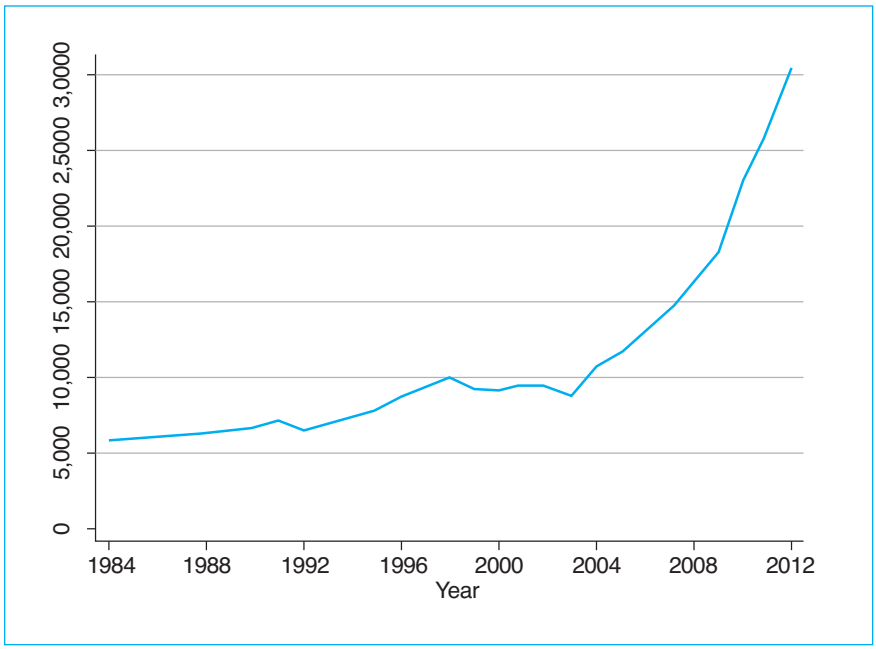
Location of programs. The increased production of nursing graduates over the past decade has occurred throughout the country, but it has been particularly strong in the Midwest and some western states (see Figure 3). Arizona, Utah, Missouri, South Dakota, and Ohio had the greatest growth per capita in associate and bachelor's nursing degrees awarded between 2002 and 2012, while Alaska, Oregon, Hawaii, California, and Maine had the lowest growth.

The growth in the number of nursing graduates per capita in the states was examined to determine if there was any association with various state characteristics. The 30 states with the highest growth in RN graduates per capita from 2002 to 2012 (accounting for roughly half the U.S. population) differed significantly from the 21 slow-growth states on only a few characteristics, with high-growth states having lower average household income and lower percentage of college graduates. The difference in the high and slow-growth states was not associated with race, percent of the state's population over 65 or rural, unemployment rate, or presence of a state nursing workforce center (analysis available from authors upon request).

Discussion

The growth in the production of RNs over the past 10 years has been substantial and broad based, occurring among both associate

Figure 2.
Changes in the Number of Master's and Doctoral Graduates in Nursing, 1984-2012



SOURCE: Integrated Postsecondary Education Data System

and baccalaureate programs and has included people from all racial and ethnic backgrounds. This growth has occurred in all types of public, private not-for-profit, and proprietary institutions. In just the last few years, the number of students graduating with a baccalaureate degree in nursing exceeded those graduating with an associate degree, which suggests that output of the nursing education system has moved in step with the IOM recommendation for a RN workforce comprised mostly of nurses prepared in baccalaureate nursing education programs by 2020. The growth of RNs with graduate degrees has also increased, particularly since 2004 (Minnick, Norman, & Donaghey, 2013).

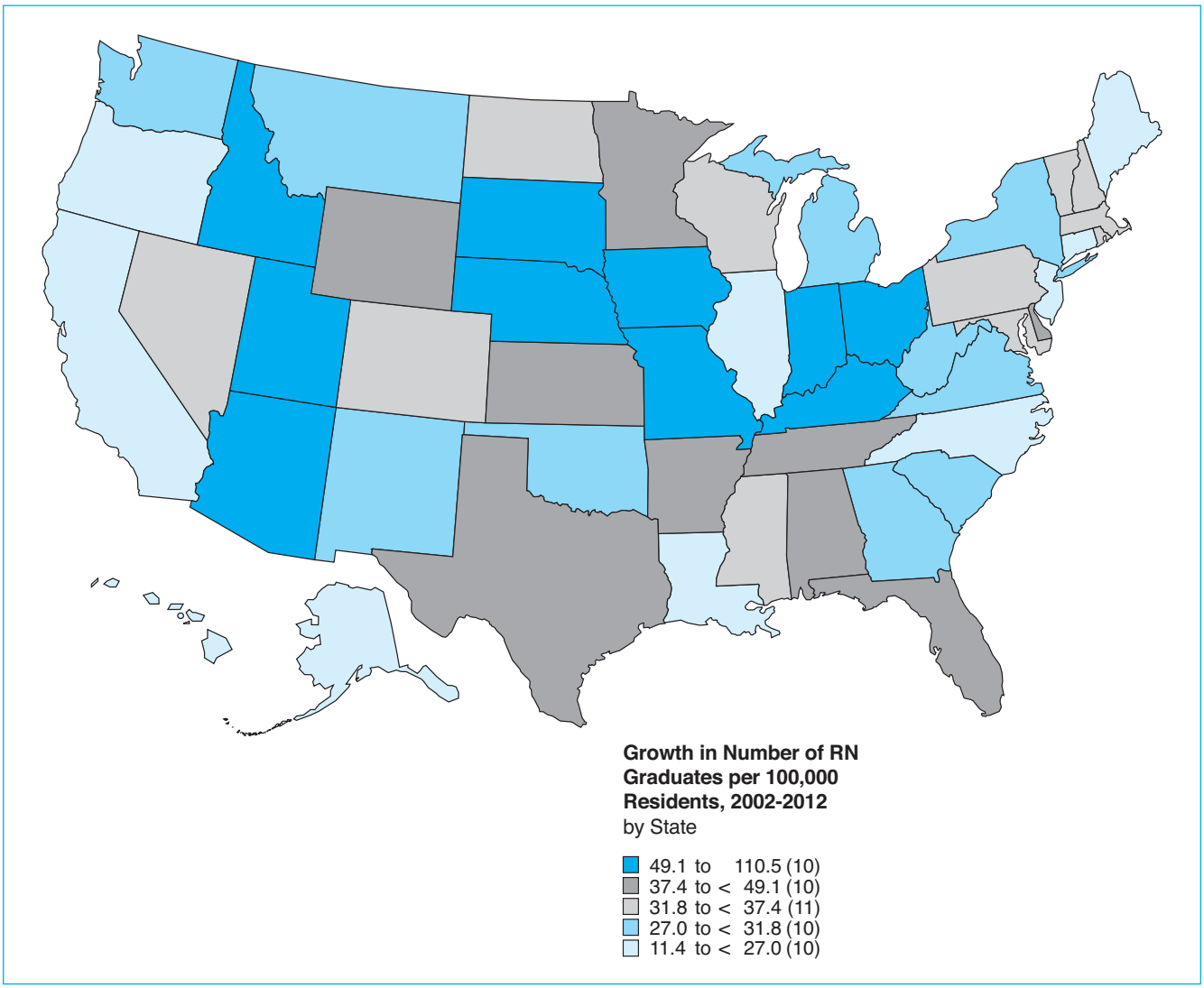
Implications. The rapid growth in the number of nursing graduates is encouraging given the long-term expected increase in the demand for nurses. This demand will come from population growth; the aging of the baby boom generation; increasing numbers of people with chronic diseases, such as diabetes, heart disease, strokes, obesity, and cancer; and insurance expansions under the Affordable Care Act. Unfortunately, there are no estimates of how much the demand for RNs will increase due to these factors, or how future demand may be affected by delivery reforms (e.g., accountable care organizations, medical homes, nurse-managed clinics) and the transition away from a fee-for-service payment system that can result in overutilization of health care services to a value-based purchasing system intended to moderate utilization. However, without estimates of the demand for RNs, it is impossible to gauge whether and when a new RN shortage may develop and the potential magnitude of the shortage. Therefore, despite the recent and substantial growth in the number of RN graduates, it is difficult to determine if enough RNs are being produced to replace retiring RNs, let alone add enough RNs to the workforce to adequately meet the future demand for nurses.

In the near term, changes in the nurse labor market present challenges to the increasing numbers of new RN graduates. First, RN employers are changing their operations to thrive in a reformed delivery system. In the face of uncertainty over how their revenue may be affected by the unfolding of health reform, some hospitals have slowed their hiring of RNs, which has stymied employment opportunities for new RN graduates. In addition, since the latter part of the 2000s, hospitals have favored hiring bachelor's-prepared RNs over graduates of associate degree programs (Auerbach, Buerhaus, & Staiger, 2014a).

Beyond near-term hiring uncertainty, a second headwind facing the RN labor market is the difficulty some newly educated RNs have experienced in finding the jobs they expected after graduation. The number of RNs over age 50 working in hospital settings increased by more than 100,000 during 2007 and 2008, and because many have remained in the workforce into their 60s, some of these RNs are occupying jobs that would have otherwise been filled by the increasing numbers of new graduates. While a recent analysis suggests movement of these older RNs out of the hospital and into other settings, potentially freeing up positions for new graduates, it is unclear if this movement will be sustained in the future or large enough to change perceptions of an unfavorable job market for new RNs (Auerbach, Buerhaus, & Staiger, 2014b).

Another implication of the increase in the number of nursing graduates over the past 10 years involves a concern over the quality of their nursing education and whether nurses are being prepared

Figure 3.
Growth in the Number of Bachelor's and Associate Degree Graduates per 100,000 Residents, by State, 2002 to 2012



adequately for rapidly changing health care delivery systems. Although concerns about private for-profit education programs have been raised (American Journal of Nursing, 2011), worries about the quality of RN graduates extend across all program types, including doctor of nursing practice and traditional doctoral programs (Minnick et al., 2013). The growing emphasis on prevention, health education and population health, payment reforms, and increases in the number of people with chronic conditions, combined with the rapid shift of care delivery into nonhospital settings, all present formidable challenges to nurses. However, despite these well-known changes, today most nursing curricula still emphasize caring for patients in acute care settings. Additionally, other reforms emphasize greater care coordination and teamwork among professionals and nonprofessionals. While it is encouraging that interprofessional education is increasing throughout the country, it will take many years, if not decades, before most of the nation's health care workforce is educated together in ways that are meaningful and authentic and in clinical environments where coordination and teamwork are the norm (Buerhaus, 2014).

Given these challenges, those in nursing academic leadership positions should not shy away from assessing the quality of nursing education in their region and

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state and, regardless of degree or type of institution, not hesitate to take needed actions to ensure RNs are well prepared to meet the many challenges that lie ahead. Much of the success of health reform initiatives will depend on the contributions of nurses regardless of their education preparation. Opportunities for nurses to advance professionally and to help shape the direction of health reform will increase as well. Having enough RNs to meet these challenges is important, but perhaps more important is to have a high-quality nursing workforce so nurses are able to act upon the opportunities that will unfold in an era of health reform. **$**

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