Cah. Socio. Démo. Méd.

cahiers de sociologie et de démographie médicales

46ème Année, n°2, Avril-Juin 2006

L'Opération Conjointe

Il N'EST DE RICHESSE QUE D'HOMME

Ce Cahier est publié conjointement par le New York Center for Health Workforce Studies, University at Albany, United States of America et le Centre de Sociologie et de Démographie Médicales, Paris, France

The Joint Operation

THE SINGLE WEALTH IS MAN

This Cahier is jointly published by the New York Center for Health Workforce Studies, University at Albany, United States of America and the Centre de Sociologie et de Démographie Médicales, Paris, France

ISSN 0007-9995

CAHIERS DE SOCIOLOGIE ET DE DEMOGRAPHIE MEDICALES
A bi-lingual and multidisciplinary journal
on health services and systems research

FIVE ARTICLES

ON THE HEALTH WORKFORCE IN THE

UNITED STATES OF AMERICA

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U.S. Physician Workforce Forecasting: A Tale of Two States

By

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Abstract: Physician workforce forecasting in the U.S. has returned to pre-eminence in the recent past. With the publication of the federal Council on Graduate Medical Education's *Sixteenth Report: Physician Workforce Policy Guidelines for the United States, 2000-2020*, efforts have begun to examine specialty- and geography-specific forecasts to determine the extent to which the projected national shortage of physicians will affect particular specialties and populations in particular areas. This article begins with a brief history of physician workforce forecasting in the U.S. over the past 25 years and summarizes the findings of two state-specific attempts to forecast physician supply and demand in the coming years. Discussions of the findings from the two studies as well as a brief commentary on how particular model assumptions obfuscate interpretation of the forecasts are provided. Finally, a brief discussion of how the forecasts were used by stakeholders in each state is presented.

Background

Twenty-five years ago, the Graduate Medical Education National Advisory Committee (GMENAC) predicted the nation would possess a relatively large surplus of physicians by the turn of the century (GMENAC 1981). This prediction was made following a 20-year expansion in medical education capacity in the U.S., where the number of annual medical school graduates more than doubled. After the GMENAC report, allopathic medical schools around the country voluntarily capped the production of new physicians. Osteopathic medical schools, on the other hand, did not limit their production of new physicians, and grew by more than 100% between 1980 and 2000. Allopathic graduate medical education did not heed GMENAC's warning either. Between 1980 and 1990, the number of residents

training in the U.S. increased by close to 50%, from 62,000 to 92,000 residents (Salsberg and Forte 2002).

Concerns about producing too many physicians continued at the national level, and by the mid-1990s, a number of organizations had joined in a call to limit or reduce the number of physicians being produced in the country. The now-famous mantra, "110-50/50," a reference to the federal Council on Graduate Medical Education's (COGME) [1] suggested physician production schema, was first articulated in the COGME's *Third Report* (1992). The "110" referred to the total number of residency training slots available (110% of the medical school graduates in 1993); while the "50/50" referred to the suggested specialty mix of new physicians: 50% primary care and 50% specialty disciplines. In 1994, an influential report suggested that under certain managed care delivery systems, physicians were being used much more sparingly (Weiner 1994). Other recommendations from the American Medical Association (AMA), the American Osteopathic Association, the Association of American Medical Colleges, the American Associations of Colleges of Osteopathic Medicine, the Association of Academic Health Centers, and the National Medical Association (Consensus Statement 1997), and the Pew Health Commission (1995) reinforced the COGME suggestions. Finally, in 1997, the federal Balanced Budget Act placed a real cap (in the form of economic disincentives to train more than a certain number of physicians) on graduate medical education.

It was not long, however, before the appropriateness of these recommendations was questioned. Consumer and provider backlash against the cost-cutting limitations imposed by managed care halted staff model HMO penetration well shy of its predicted pervasiveness. Anecdotal evidence began to circulate suggesting primary care physicians were having a

[1] The COGME was authorized by the U.S. Congress in 1986 to provide an ongoing assessment of physician workforce trends, training issues, and financing policies, and to recommend appropriate federal and private sector efforts to address identified needs. Its authorization calls for the COGME to advise and make recommendations to the Secretary of the U.S. Department of Health and Human Services, the Senate Committee on Health, Education, Labor and Pensions, and the House of Representatives Committee on Commerce.

more difficult time finding satisfactory practice positions than their specialist counterparts. Reports of specialist shortages (particularly anesthesiologists, radiologists, urologists, child and adolescent psychiatrists) also became more common (Schubert et al., 2003; Miller and Lanier 2001; Schubert et al., 2001; Foot et al., 2000; Kim et al., 2001; Suneja et al., 2001; Neilson et al., 2001; Angus et al., 2000; Pronovost et al., 2002; Sunshine 2001; Organ 2002; Etzoni et al., 2003; Fleming et al., 2003). The concern raised by the rapid aging of the population played into the questioning as well. Ultimately, in 2002 the COGME commissioned a report to take another look at physician workforce projections.

In January 2005, the COGME released its sixteenth report, *Physician Workforce Policy Guidelines for the United States, 2000 – 2020*. The report detailed forecasts of national physician supply and demand that indicated a substantial shortage of physicians by 2020. The magnitude of the shortage was estimated at 85,000 to 96,000 physicians, or between 7.5 and 8.5 percent of the likely number of physicians required to provide services for the nation's population in 2020 (COGME 2005).

The COGME's report joined a growing number of voices that had arrived at the same troubling conclusion. In the late 1990s, prominent physician workforce researchers began to question the notion of a national physician surplus widely held earlier in the decade. With aging general and physician populations, a stagnant medical education and training effort, more than 4,000 designated primary care Health Professional Shortage Areas[2], a decline in the growth of managed care, a willingness of payors to continue supporting rising rates of physician utilization, and reports from a dozen medical specialties of current or impending physician shortages, it no longer made sense to think in terms of physician surpluses. The COGME's report attempted to bring all of these observations together.

[2] A Health Professional Shortage Area (HPSA) is a geographic area, a population group, or a facility determined by the U.S. Department of Health and Human Services, Division of Shortage Designation to have a shortage of health professionals. A HPSA may be designated for a shortage of primary care providers, dentists, or mental health providers.

One of the failings of the COGME's report, however, was its lack of attention to the specialty-specific and regional variations embedded in its forecasts. Thus, one of the ramifications of the report was movement by concerned stakeholders in a number of medical specialties to conduct examinations of their workforces. Studies revolving around the physician workforces in Cardiology, Endocrinology, Allergy and Immunology, Psychiatry, Neurosurgery, Pediatric Subspecialties, Dermatology, Medical Genetics, Radiology, Geriatric Medicine, and Critical Care workforces have yielded findings of current or future shortages of physicians. Stakeholders in a number of states have also begun to look more closely at how the projected national physician shortage would play out in their areas. Efforts in Wisconsin, Michigan, Kentucky, Arizona, California, Oregon, North Carolina, Mississippi, Texas, and Massachusetts have been or are being made that examine physician supply and demand.

Efforts in Two States

The remainder of this article is devoted to looking more closely at two of the recent state-level physician supply and demand assessments. Using similar methodologies as the national level COGME study, these studies sought to uncover what the national shortage held for them. These two studies also illustrate the complexities of physician workforce forecasting and the difficulties determining the appropriateness of assumptions necessary for the forecasting models.[3]

[3] In this article, we focus on the state-level physician supply and demand forecasts generated in these studies. The studies themselves go into far greater detail, providing specialty specific, local physician supply and demand forecasts, as well as comprehensive profiles of the populations in these states. Readers are encouraged to refer to the full reports from these studies: Forte GJ, S McGinnis, M Beaulieu, B Hernandez, and E Salsberg. *California Physician Workforce: Supply and Demand through 2015*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany. 2004; Forte GJ and DP Armstrong. *Michigan Physician Workforce: Supply and Demand through 2020*. Rensselaer, NY: Center for Health Workforce Studies, School of Public Health, SUNY Albany. Forthcoming.

California

In the spring of 2002, the University of California Office of the Vice President for Health Affairs released a request for proposals to assess the adequacy of the physician workforce in California over the next decade as part of its larger assessment of health professions education (including analysis of workforce needs in the fields of nursing, pharmacy, public health, dentistry, optometry, and veterinary medicine). The University of California has five public allopathic medical schools with an enrollment approaching 2,500 students. The remainder of the medical students in the state (approximately 2,900) is enrolled in private allopathic and osteopathic institutions (University of California Health Sciences Committee, 2004).

California had been particularly affected by the work done in the 1980s and 1990s due to its relatively high level of managed care penetration. Moreover, California was one of the only states that responded to the mid-1990s COGME recommendation of a 50% primary care and 50% specialty care mix for newly trained physicians. This response was formalized through a multi-year Memorandum of Understanding between the University of California and the state indicating that half of the system's residency slots would be set aside for primary care training, defined for this purpose as family physicians, general internists, general pediatricians, and general obstetricians and gynecologists. This agreement, which expired in July 2002, resulted in substantial increases in family practice and other primary care programs, and significant reductions in virtually all other training programs.

The resultant study of the physician workforce in California commissioned by the University of California compiled information on California's population and health status trends and developed state-level and specialty-specific regional physician supply and demand forecasts under multiple scenarios. The forecast period for the study was 2002 through 2015.

Michigan

In 2004, COGME members from Michigan and other state stakeholders began an effort to assess what the projected national physician shortage meant for the state. Coming together as the Blue Ribbon Committee on Physician Workforce, they sought out the same team who conducted the national study that had been summarized in the COGME's *Sixteenth Report* and charged them with replicating as closely as possible the previous study for the Michigan physician workforce.

Two additional complementary efforts were initiated in Michigan to understand the dynamics around their physician workforce. First, the Michigan Department of Community Health began a 3-year census survey of all physicians licensed to practice medicine in the state in 2005. The survey included a battery of items to collect information on physicians' employment characteristics, demographics, medical specialty, time spent providing patient care, practice capacity and acceptance of Medicaid, plans to continue practice, educational background, professional activities, use of technology, and foreign language proficiency. In the first year, approximately 55 percent of the licensed physicians responded to the survey. A report on the first-year responses was issued in January 2006.

Second, in 2004, the Michigan State Medical Society commissioned a compilation of information to develop physician supply and demand forecasts for the state through 2020. The resultant report was released in June 2005 (Public Policy Associates 2005). The medical society's report indicated Michigan could face a shortage of 6,000 physicians by 2020.

The Blue Ribbon Committee-commissioned study furthered the work of the Michigan State Medical Society project. It examined Michigan's physician workforce at a finer level of detail, compiled additional information on Michigan's population and health status trends, applied a more formal modeling approach to its forecast, developed state-level physician supply and demand forecasts under multiple scenarios, and developed specialty-specific

regional physician supply and demand forecasts under multiple scenarios. The forecast period for the study was 2005 through 2020.

Figure 1 Demographic Characteristics of California and Michigan

	California		Michigan	
	2000	2015	2005	2020
Population	34,653,395	42,370,899	10,207,421	10,695,993
% over age 65	10%	12%	12%	16%
% White, non-Hispanic	50%	N/A	78%	N/A
% African-American, non-Hispanic	7%	N/A	14%	N/A
% Hispanic	31%	N/A	4%	N/A
% Asian American	12%	N/A	2%	N/A
% Uninsured	19% (2002)	N/A	11% (2004)	N/A

Sources: Center for Health Workforce Studies, U.S. Census Bureau, California Department of Finance

Forecasting Methodologies

The general approaches to forecasting physician supply and demand applied in the two states were very similar. Both attempted to create simple, comprehensible forecasts using existing, tested models under multiple scenarios to understand the potential futures with regard to physician supply and demand in each state.

Physician Supply

Forecasts of the supply of physicians were based upon the methodology employed in the Physician Supply Model (PSM) developed and maintained by the Bureau of Health Professions in the Health Resources and Services Administration of the U.S. Department of Health and Human Services, and used to generate national forecasts for the COGME report referenced above. The PSM forecasts the future supply of physicians according to the following steps:

- Current counts of active physicians (allopathic and osteopathic) are tabulated by age, sex, year of graduation, and specialty.

- Numbers of newly trained physicians expected to enter graduate medical education (GME) each year (new entrants) are estimated by age and sex.
- Forecast counts of active physicians are generated by reducing current counts by the estimated numbers of deaths and retirements and then adding in new entrants.
- Forecast counts are converted to full-time-equivalents (FTEs) using information on hours worked by age, sex, and specialty.

In order to apply this national-level methodology to the state level, it was necessary to adjust the model inputs to account for state-specific physicians supply and production characteristics as well as interstate migration of active physicians.

The methodology described above was implemented for each state as follows:

- Counts of active physicians by age, sex, and specialty were tabulated from the year-end (2002 for California, 2004 for Michigan) AMA's Physician Masterfile.
- Numbers of new GME entrants were estimated from historical data on first-year-GME physicians in each state culled from the AMA's Graduate Medical Education Database archive.
- Specialty distributions were estimated for newly entering cohorts based upon historical trends in specialties of recent physician cohorts in each state.
- PSM parameters were used to forecast deaths and retirements and to convert counts into FTEs.
- The net migration adjustment was estimated based upon a study of historical trends in net migration.

Physician supply was forecast under four scenarios: a baseline forecast and three alternative futures.

Supply Scenario 1: Baseline Forecast.

In this scenario, it was assumed that all of the parameters and inputs of the supply model would remain constant over the forecast period. The baseline forecast did incorporate reductions in work hours due to the demographic changes occurring in the physician workforce over time, e.g., increasing percentage of female physicians and older physicians.

In addition to this baseline forecast of state-level physicians by specialty, a number of scenarios were generated with alternative assumptions.

Supply Scenario 2: Reduced Work Hours Forecast.

The purpose of this scenario was to examine the effect of an additional decline in work hours that affects all physicians. Under this scenario, work hours of all physicians were forecast to decline.

Supply Scenario 3: Increased Productivity Forecast.

The baseline forecast assumed no change in physician productivity. In this scenario, physician productivity was projected to grow by 10 percent during the forecast period. This could occur for a number of reasons including expanded automation of physician practices and greater use of non-physician staff. For modeling purposes, increases in productivity are the equivalent of increasing the supply of services that can be delivered by a given number of physician hours.

Supply Scenario 4: Reduced Work Hours and Increased Productivity Forecast.

This scenario brought together Supply Scenarios 2 and 3 by combining a reduction in work hours with an increase in productivity.

Figure 2 Supply Model Parameters and Scenario Assumptions

	California	Michigan
Annual Entrants	1900	923
Annual Net Migration	900	-430
Separation Rate	1.1% in 2002 increasing to 1.7% in 2015	1.5% in 2005 increasing to 1.6% in 2020

Supply Scenario 1	Historical trends remain constant over period	
Supply Scenario 2	10% reduction in work hours over period	5% reduction in work hours over period
Supply Scenario 3	5% increase in physician productivity over period	10% increase in physician productivity over period
Supply Scenario 4	10% reduction in work hours and 5% increase in physician productivity over period	5% reduction in work hours and 10% increase in physician productivity over period

Physician Demand

Forecasts of the demand for physicians were based upon the methodology employed in the Physician Demand Model (PDM) which forecasts the future demand for physicians according to the following steps:

- Populations are projected by age, sex, urban or rural location, and source of health insurance.
- Physician staffing models that specify per capita physician demand by specialty, age, sex, location, and insurance are applied to the various age, sex, location, and insurance combinations to produce total requirements.

PDM staffing models were updated at the national level in 2003 to incorporate the most recent age, sex, insurance, and location-specific per capita physician demand by specialty. The PDM contains an automated tool to adjust the national staffing ratios to match a particular state or sub-state location at a point in time. This procedure was followed to generate staffing ratios appropriate to each state in the base year.[4]

[4] These adjusted staffing models preserve the differences in per capita demand for the various age, sex, location, and insurance categories found nationally. They were scaled up or down so that total demand in the state matched actual demand at the given point in time.

Two future demand environments were constructed to show the breadth of potential futures for physician demand in each state.

Insurance Environments

In the current health care delivery system, lack of health insurance reduces the demand for physician services. Thus, extending insurance coverage would lead to higher demand for physician services. Making use of the PDM parameters which specify the sensitivity of demand to insurance, two insurance environments were modeled.

Constant Insurance Environment

The first insurance environment assumed that the current insurance environment remains intact over the forecast period. In the constant insurance environment forecasts, demand in the base year was benchmarked to supply in the base year.

Expanded Insurance Environment

The second insurance environment assumed that the health care system changes in such a way that the entire population has insurance[5]. The expanded insurance environment was created in a slightly different manner for the two states. For Michigan, the entire change was modeled to occur in the base year of the forecast period. Thus, in the expanded insurance environment forecasts for Michigan, demand in the base year was greater than the supply of physicians. For California, the change was modeled to occur in the year subsequent to the base year.

Demand Forecast Scenarios

For each of the constructed insurance environments, a number of scenarios were developed to present the future physician requirements under a number of sets of assumptions. The demand scenarios were as follows:

Demand Scenario 1: Baseline Scenario.

[5] For Michigan, 11.4 percent of the population was without health insurance (DeNavas-Walt et al., 2005) in the base year. For California, the level of uninsurance was 18.7 percent in 2002 (U.S. Census Bureau, Current Population Survey, 2001, 2002, and 2003 Annual Social and Economic Supplements, 2004).

The baseline scenario incorporated the effect of population growth and aging on the demand for physician services.

Demand Scenario 2: Trend Scenario.

The Trend Scenario added the effect of economic growth to the demographic only baseline. Over time, the demand for physician services has increased dramatically over and above what would be suggested by population growth and aging. This has generally been attributed to the effect of economic growth – as people have more disposable resources they consume more of most things including physician services. Following the algorithm used in COGME's *Sixteenth Report*, this scenario assumed a 0.75 percent increase per year in the demand for physician services for each 1 percent increase in gross state product. The demand for specialty care has been shown to be much more sensitive to income than the demand for primary care. In the trend scenario, the economic effect on demand for specialists was set at twice the effect on primary care demand, with the combined increase limited to 0.75 percent per year.

Demand Scenarios 3 and 4: Reduction of Unnecessary Services Scenarios.

In these scenarios, it is assumed that unnecessary services are steadily reduced over the forecast period. It is implemented by decreasing demand by an estimate of the unnecessary services occurring in each state.[6] The decrease in demand was applied separately to both the baseline scenario and the trend scenario forecasts. The reduction of unnecessary services was applied in a slightly different manner for the two states. For Michigan, the reduction was modeled to begin in 2010, with 13.75% reduction by 2015 and 27.50% reduction by 2020. For California, the reduction was modeled to begin in the base year.

[6] For Michigan, the national average of 27.5 percent unnecessary services was used (Fisher et al., 2003a; 2003b; Weiner 2004) as it fell close to the middle of all states in terms of managed care penetration. For California, due to the high level of managed care penetration in the state, a value of 5 percent was employed. Managed care penetration was used as a proxy for level of unnecessary services as they have been shown to be inversely related (for more information, see Forte et al., 2004).

Figure 3 – Demand Forecasting Assumptions

	California	Michigan
Demand Scenario 1	Historical trends remain constant over period	
Demand Scenario 2	Additional 0.75% increase in physician demand for every 1% increase in gross state product; assumes 1% gross state product increase annually	
Demand Scenario 3	Unnecessary services eliminated from baseline demand projection over the course of the forecast period; assumes 5% of services provided are unnecessary	Unnecessary services eliminated from baseline demand projection, starting in 2010, with 13.75% by 2015 increasing to 27.5% by 2020; assumes 27.5% of services provided are unnecessary
Demand Scenario 4	Unnecessary services eliminated from demand scenario 2 projection over the course of the forecast period; assumes 5% of services provided are unnecessary	Unnecessary services eliminated from demand scenario 2 projection, starting in 2010, with 13.75% by 2015 increasing to 27.5% by 2020; assumes 27.5% of services provided are unnecessary

Physician Supply and Demand Forecasting Results

Below, the forecasts for each scenario in each state are presented. Also included are several summary matrices comparing forecast levels of physician supply and demand in each state in the final forecast year.

California Summary

Comparing the various forecast scenarios of physician supply and demand in California, the evidence suggests that California is headed for a shortage of physicians in the relatively near future. In only four combinations of scenarios was the physician supply forecast to be large enough to meet the demand for their services. Considering all forecasts, the shortage ranged from about 1% to more than 20% of the number of physicians required to meet demand in 2015.

Figure 4 California Physician Workforce Forecast, 2015 Constant Insurance Environment

		FTE Physician Demand per 100,000 Population			
		Demand Scenarios			
		1	2	3	4
		258.3	282.8	245.4	268.7
Supply Scenarios	FTE Physician Supply per 100,000 Population	Comparison of supply and demand [(Supply – Demand)/Demand] * 100 *Negative values denote shortages.*			
1	253.6	-1.8%	-10.3%	3.3%	-5.6%
2	238.4	-7.7%	-15.7%	-2.9%	-11.3%
3	266.7	3.2%	-5.7%	8.7%	-0.7%
4	249.9	-3.2%	-11.6%	1.8%	-7.0%

Figure 5 California Physician Workforce Forecast, 2015: Expanded Insurance Environment

		FTE Physician Demand per 100,000 Population			
		Demand Scenarios			
		1	2	3	4
		282.9	309.6	268.7	294.2
Supply Scenarios	FTE Physician Supply per 100,000 Population	Comparison of supply and demand [(Supply – Demand)/Demand] * 100 *Negative values denote shortages.*			
1	253.6	-10.3%	-18.1%	-5.6%	-13.8%
2	238.4	-15.7%	-23.0%	-11.3%	-19.0%
3	266.7	-5.7%	-13.9%	-0.7%	-9.3%
4	249.9	-11.6%	-19.3%	-7.0%	-15.0%

Michigan Summary

Comparing the various forecasts of physician supply and demand in Michigan, at first glance the evidence is not clear whether Michigan is headed for a shortage or surplus of physicians over the next 15 years. In some combinations of scenarios, declining physician demand in the state eases any pressure that the national shortage might cause. However, on closer inspection, it is apparent that the reduction of unnecessary services scenarios is skewing the interpretation of Michigan's physician workforce future.

The assumption of the elimination of all unnecessary services and the resultant forecasts lead to a questioning of the appropriateness of this assumption. Unlike California, Michigan's health care delivery system is not characterized by pervasive managed care. Thus, it is unlikely that the efficiencies and utilization review mechanisms that are able to filter

unnecessary services enjoyed by the health care deliver system in California are likely to occur in Michigan anytime in the near future. Ejecting demand scenarios 3 and 4, then, the future of Michigan's physician workforce becomes clearer: a likely shortage.

Figure 6 Michigan Physician Workforce Forecast, 2020 Constant Insurance Environment

		FTE Physician Demand per 100,000 Population			
		Demand Scenarios			
		1	2	3	4
		316.8	354.4	229.7	256.9
Supply Scenarios	FTE Physician Supply per 100,000 Population	Comparison of supply and demand [(Supply – Demand)/Demand] * 100 *Negative values denote shortages.*			
1	312.8	-1.3%	-11.7%	36.2%	21.8%
2	297.2	-6.2%	-16.1%	29.4%	15.7%
3	344.1	8.6%	-2.9%	49.8%	33.9%
4	328.5	3.7%	-7.3%	43.0%	27.9%

Figure 7 Michigan Physician Workforce Forecast, 2020 Expanded Insurance Environment

		FTE Physician Demand per 100,000 Population			
		Demand Scenarios			
		1	2	3	4
		332.1	371.6	240.8	269.4
Supply Scenarios	FTE Physician Supply per 100,000 Population	Comparison of supply and demand [(Supply – Demand)/Demand] * 100 *Negative values denote shortages.*			
1	312.8	-5.8%	-15.8%	29.9%	16.1%
2	297.2	-10.5%	-20.0%	23.4%	10.3%
3	344.1	3.6%	-7.4%	42.9%	27.7%
4	328.5	-1.1%	-11.6%	36.4%	21.9%

Discussion

The forecast national shortage of physicians in the U.S. is likely to affect different parts of the nation in different ways. We have shown how the shortage has been forecast to play out in two states. The main drivers of these differences are the characteristics of the population and the health care delivery system in the states. The overall physician supply and demand situation appears to be more dire for California than Michigan, however, that evaluation is clouded by one particular set of assumptions around the quantity of unnecessary services provided and the implementation of an effective policy to reduce such services. In

any case, California is very likely to experience a substantial shortage of physicians in the near future. Moreover, unless an effective mechanism to reduce the quantity of unnecessary services is developed and implemented in the state, Michigan is also likely to experience a substantial shortage of physicians within the next 15 years.

As such, the forecasts raise questions about the appropriateness of assumptions in forecasting future physician supply and demand. In particular, the work that demonstrates the existence of unnecessary services (e.g., Fisher et al., 2003a, Fisher et al., 2003b) may not be as useful in forecasting physician demand, especially in states (or other jurisdictions) where managed care penetration is relatively low, unless an effective mechanism can be developed for reducing or eliminating those services. The juxtaposition of the California and Michigan forecasts shows this quite clearly. Similarly, work that employs a benchmarking approach (e.g., Weiner 1994; 2004) is also problematic as the characteristics of the benchmarking delivery systems seldom share characteristics with the system(s) under investigation. Moreover, this critique of the assumptions used in these physician workforce forecasts points to the necessity of state-level physician workforce studies to account for the idiosyncrasies characterizing the health care delivery systems existing in each state.

Epilogue

Concern with how the forecast national shortage of physicians would affect different populations drove a good number of states into thinking about how the shortage might affect them and how they might respond to their unique challenges.

The physician workforce forecasts for California were joined with workforce forecasts of nurses, dentists, pharmacists, public health practitioners, optometrists, and veterinarians in a comprehensive assessment of public health sciences education in the state. In terms of the education of physicians, the resulting report, in recognition of the forecast shortage of physicians, recommended that University of California medical schools increase

enrollment by 10 percent by no later than 2008; increase enrollment by at least 15 to 20 percent as soon as possible; assess the feasibility of developing at least one comprehensive new medical student education program (i.e., a new medical school) before 2020 (University of California Health Sciences Committee 2005). The recommendations recognized the state's historical reliance on importing physicians from other places (other states and other countries) which will become a riskier strategy as the national market for physicians becomes tighter with the coming shortage.

In Michigan, the physician workforce forecasts are just now being reviewed by stakeholders. Preliminary forecasts, however, have led to a number of high-level meetings between representatives of the Blue Ribbon Committee and the state's representatives in the U.S. Congress, as well as officials in the state government. The Blue Ribbon Committee's working recommendations include the expansion of graduate medical education opportunities and funding in the state. Finally, the forecasts have led to the recognition that strategies to retain physicians trained in the state need to be developed and strengthened. With the impending physician shortage and resultant increasing competition among states to import physicians, states, like Michigan, that are historical physician exporters (i.e., produce more than they require) will be under pressure to develop strategies to retain the physicians they train.

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Trends in Foreign-Trained Registered Nurses in the United States

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Background

Registered nursing is one of the largest health professions in the United States. There were over 2.4 million active registered nurses (RNs) in 2004 [HRSA, 2004a]. RNs play many critical roles in the delivery of health care services in the U.S. including planning, delivering and supervising patient care; carrying out medical and nursing treatments; monitoring patient progress; and teaching and counseling patients and their families. RNs provide nursing services in a variety of settings including hospitals, nursing homes, clinics, and patients' homes.

Both the supply of and demand for RNs has risen over the last few decades, but recently supply has not been able to keep pace with demand. Health care providers in the U.S. currently report difficulties recruiting and retaining RNs [AHA, 2002]. Demand for RNs is expected to continue to grow in the near future as an aging U.S. population seeks more health services. At the same time, many health professions are aging rapidly which will likely result in a decline in the overall supply of health workers, including RNs [Center for Health Workforce Studies, 2005]. The current shortage of RNs in the U.S. is estimated at 10%, and by 2020, the supply of RNs is expected to fall 36% below predicted demand [HRSA, 2004b].

The health industry has employed a variety of strategies in response to shortages of RNs in the past few decades including increasing the supply of RNs though the recruitment of foreign-trained RNs [Buchard & Sochalski, 2004]. Consequently, the prediction of persistent RN shortages will likely lead to increased efforts to attract foreign-trained RNs to the U.S.

Recruitment of foreign-trained RNs has been facilitated by the growing number of international recruitment agencies that assist in the process of locating qualified candidates and helping them transition to RN jobs in the U.S. [Brush et al., 2004, Buerhaus et al., 2004]. Even though foreign-trained RNs are becoming an increasingly important part of the health workforce in the U.S., only limited information about them is readily available, making it difficult to enumerate them or to clearly understand their contributions to health care in the U.S.

Data from five National Sample Surveys of RNs (NSSRN), a federally-sponsored survey of RNs conducted every four years, were used to analyze trends in the foreign-trained RN workforce in the U.S. The analysis considered data from the survey years 1988, 1992, 1996, 2000 and 2004. This study examined the demographic, educational, and employment characteristics of foreign-trained RNs in the U.S. and assessed changes over time.

Key Findings

Between 1998 and 2004, foreign-trained RNs in the U.S.:

- comprised about 4% of the active RN workforce in the U.S.;
- emigrated primarily from four source countries -- the Philippines, Canada, the United Kingdom, and India; and
- practiced mainly in five states - California, Florida, New Jersey, New York, and Texas.

Over the same time period, foreign-trained RNs when compared to U.S.-trained RNs were more likely:

- to have their initial nursing education at the baccalaureate level;
- to have completed their initial nursing education at a younger age;
- to be ethnically diverse;

- to be actively employed in nursing and working full-time;
- to work in hospitals and nursing homes;
- to work as staff nurses; and
- to remain actively employed in nursing later in life.

Methodology

Trend data on foreign-trained RNs were drawn from the 1988 through 2004 National Nurse Sample Surveys. This survey, which has been conducted every four years since 1980, draws a 1-2% sample RNs nationally in each survey year. Unless otherwise stated, analyses presented in this article were limited to RNs who reported they were actively working as RNs in the U.S.

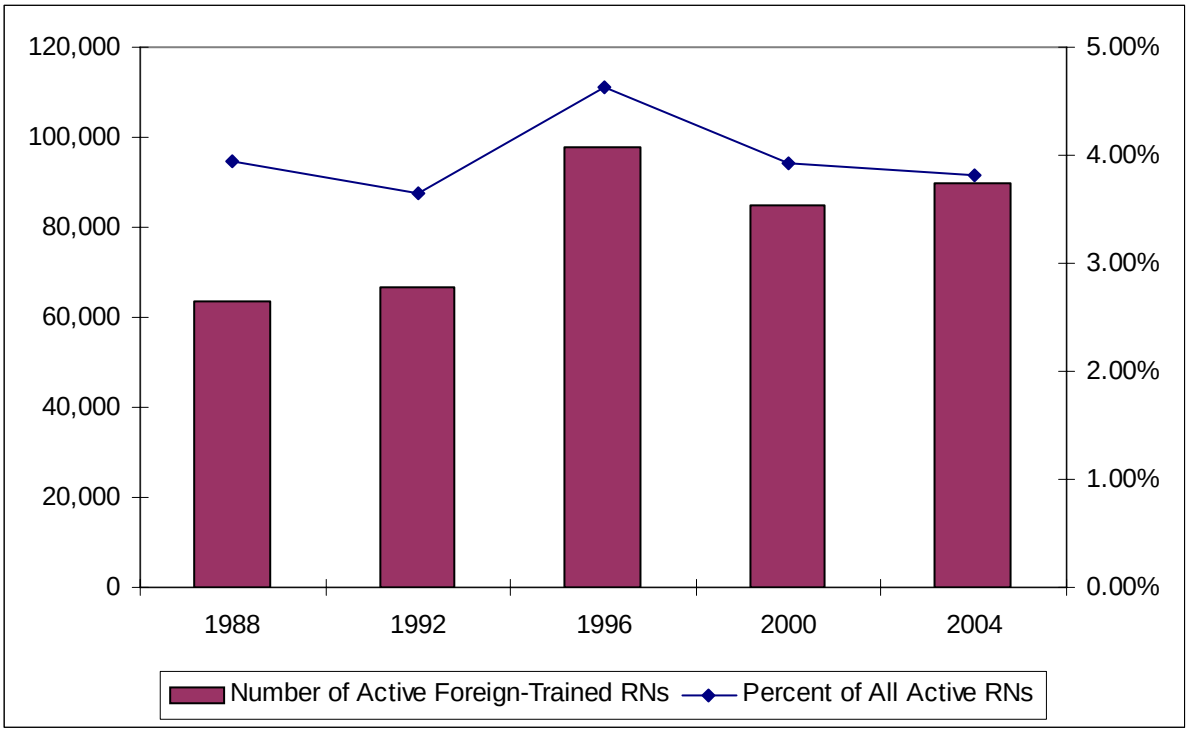
The percent of NSSRN survey respondents who did not report the location of their nursing education ranged from 0.4% in 1996 to 2.9% in 2004. There is concern about the potential for systematic bias in those not reporting location of initial nursing education program, i.e., foreign-trained RNs might be less likely to answer this question, resulting in an underestimate of the number of foreign-trained RNs. An imputation procedure [Pampel and Williams, 2000] was used to determine the percentage of foreign- and U.S.-trained RNs among the missing cases. The combination of the small percentage of missing cases overall coupled with only slight differences between the imputed percentages and the known percentages indicate that the missing cases were not contributing to any systematic error that would underestimate the survey response rate for foreign-trained RNs.

Study Findings

Foreign-trained RNs have comprised around 4% of the active RNs in the U.S. between 1988 and 2004.

The number of foreign-trained RNs increased by more than 26,000, or 41%, between 1988 and 2004. Despite this increase, foreign-trained RNs as a percent of all active RNs have remained relatively stable at about 4% (Figure 1).

Figure 1
The Number and Percent of Active Foreign-Trained RNs in the U.S., 1988 – 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

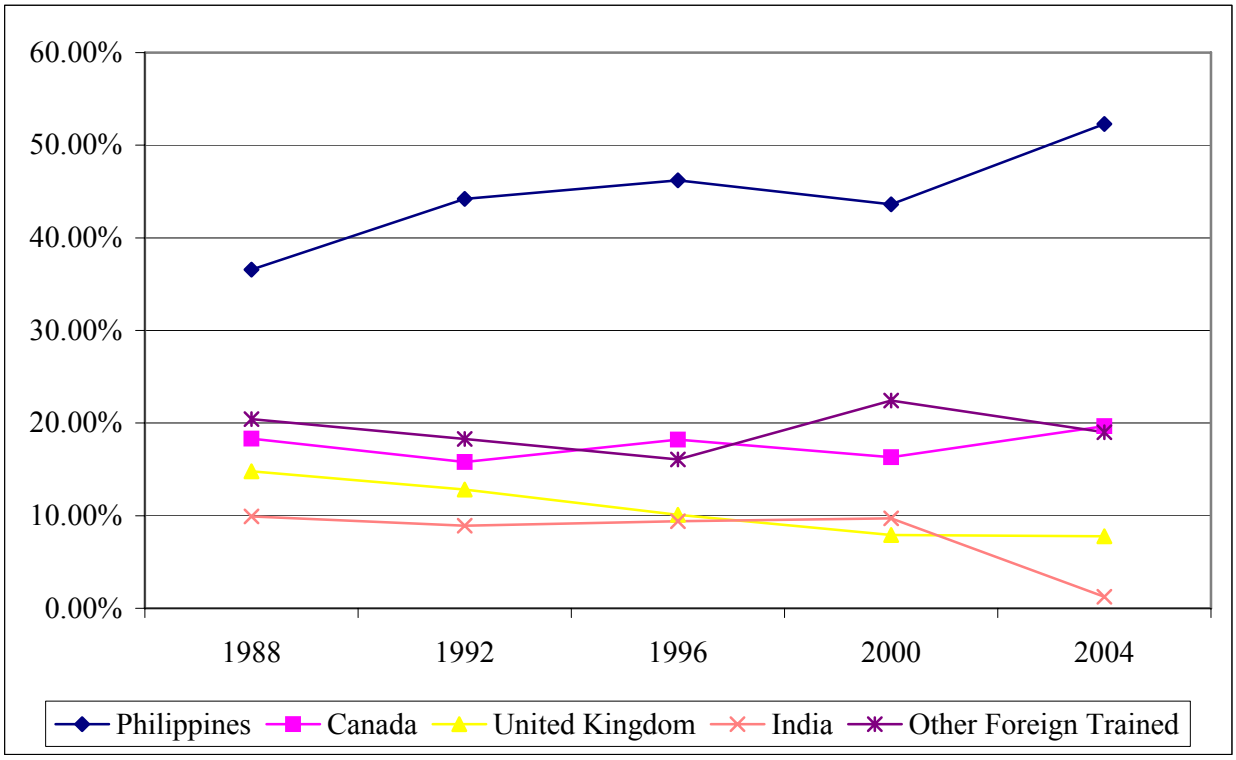
The Philippines has been the primary source country for foreign-trained RNs in the U.S.

In addition to the Philippines, three other countries -- Canada, the United Kingdom, and India -- were the source of the majority of foreign-trained RNs. At least 75% of all foreign-trained RNs have come from these four countries (Figure 2). The Philippines accounted for between 37% and 52% of foreign-trained RNs between 1988 and 2004, and Canada accounted for

between 16% and 20% of them. The proportion of foreign-trained RNs from the United Kingdom has steadily declined between 1988 and 2004, representing slightly less than 8% of foreign-trained RNs in 2004.

In 2004, compared to earlier survey years, an increasing number of new source countries emerged, with foreign-trained RNs emigrating from, among others, Nigeria, Ireland, and South Korea.

Figure 2
Percent of Active Foreign-Trained RNs in the U.S. by Country of Origin, 1988 – 2004



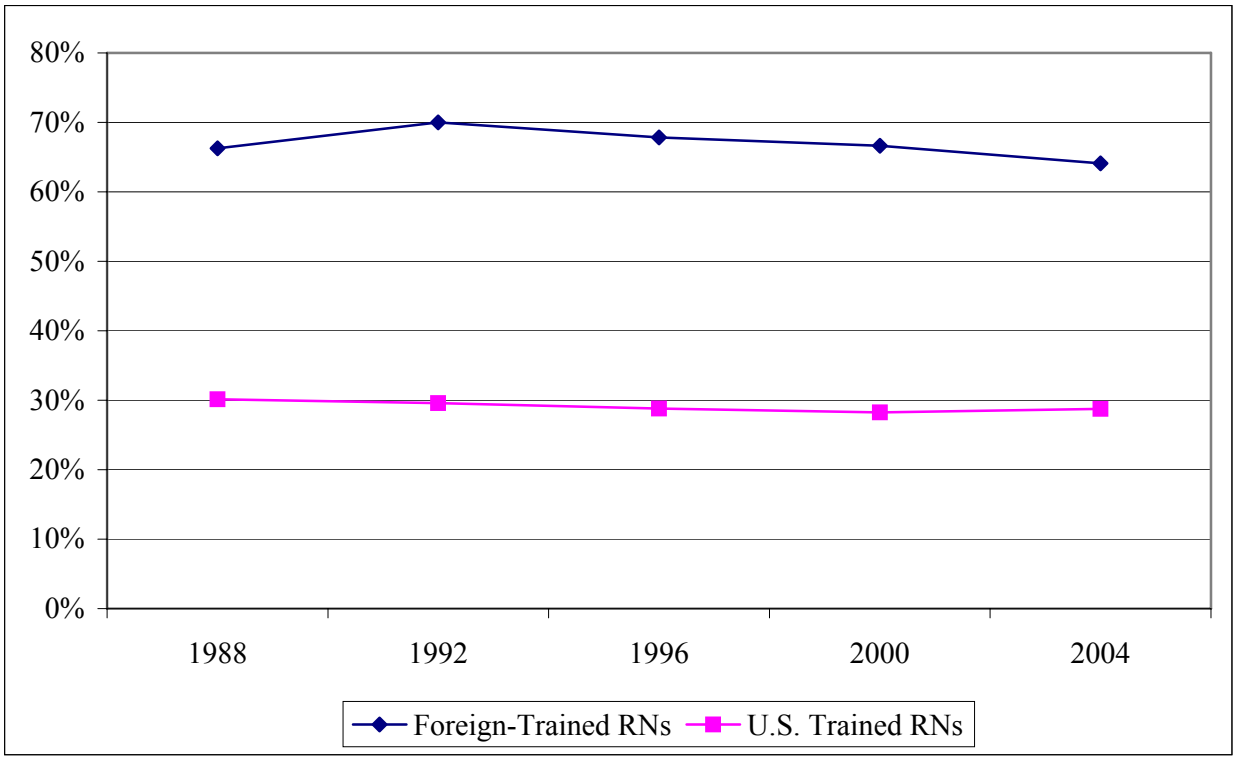
Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004.

The majority of foreign-trained RNs worked in five U.S. states.

Between 1988 and 2004, more than 64% of foreign-trained RNs worked in five U.S. states: California, Florida, New Jersey, New York, and Texas. These states are among the most populous in the country and they all have large metropolitan areas. In contrast, slightly less

than 30% of U.S.-trained RNs worked in these same states over that time period. Since 1992, there has been a slight but steady decline in the percent of foreign-trained RNs working in these five states, with more foreign-trained RNs working in other states (Figure 3).

Figure 3
Percent of Active Foreign-Trained RNs compared to U.S-Trained RNs Practicing in California, Florida, New Jersey, New York, and Texas, 1988 - 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

A higher percent of foreign-trained RNs worked past age 54.

Since 1988, the mean age of both actively working foreign-trained and actively working U.S.-trained RNs has steadily increased. By 2004, there was not a significant difference in mean ages between foreign-trained and U.S-trained RNs (Figure 4).

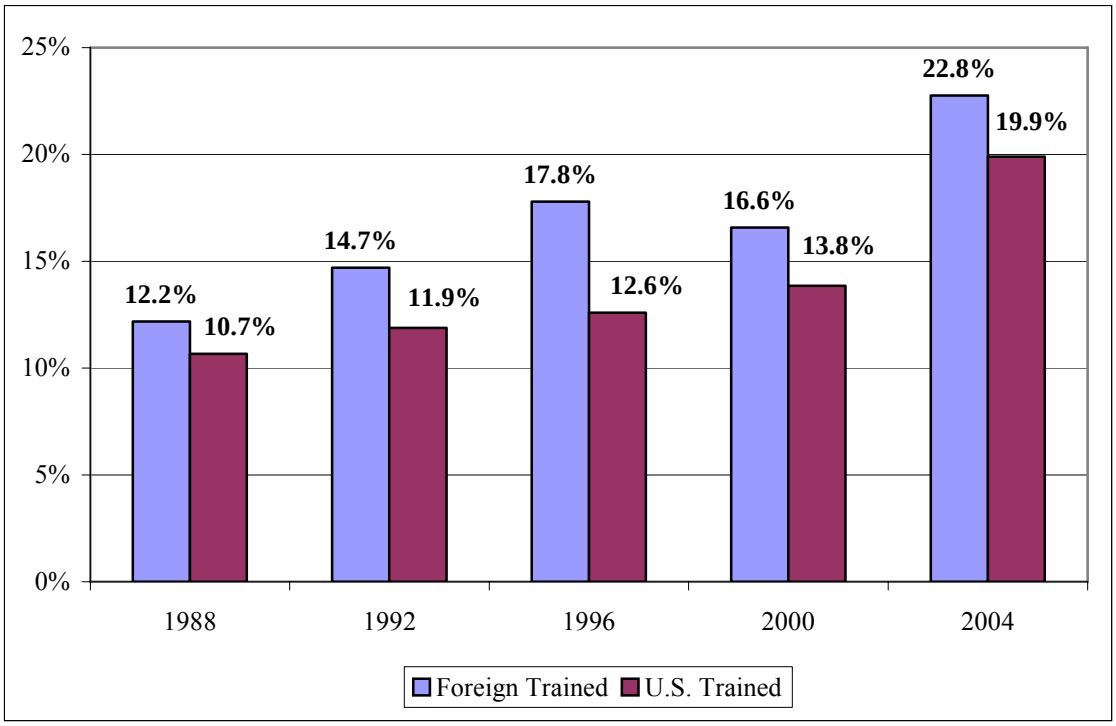
Figure 4
Mean Age of Active Foreign-Trained RNs compared to U.S.-Trained RNs in the U.S., 1988 - 2004

	1988	1992	1996	2000	2004
Foreign-Trained RNs	41.61	42.78	42.31	43.04	45.32
U.S Trained RNs	39.19	40.64	42.05	42.83	45.03

Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

Increasingly, however, a higher percent of active foreign-trained RNs were 55 years of age or older compared to U.S-trained RNs (Figure 5).

Figure 5
Percent of Active Foreign-Trained RNs compared to U.S.-Trained RNs in the U.S., Age 55 and Older, 1988 - 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

Foreign-trained RNs completed their initial nursing education at younger ages than U.S.-trained RNs.

The mean age at graduation for foreign-trained RNs was younger than for U.S.-trained RNs. Between 1988 and 2004, the mean age of foreign-trained RNs stayed relatively constant -- between 22.3 and 23.0 years of age. Over the same time period, the mean age at graduation for U.S.-trained RNs steadily rose from 24.6 in 1988 to 27.2 in 2004 (Figure 6). Since RN programs in the U.S. have increasingly attracted adults seeking second careers, the mean age

of U.S.-trained RNs at graduation should continue to be comparatively higher than of foreign-trained RNs.

Figure 6
Mean Age of Active Foreign-Trained RNs compared to U.S.-Trained RNs in the U.S. At Year of Graduation from Initial Nursing Program, 1988 - 2004

	1988	1992	1996	2000	2004
Foreign-Trained RNs	22.7	22.9	22.5	22.3	23.0
U.S Trained RNs	24.6	25.1	26.3	26.6	27.2

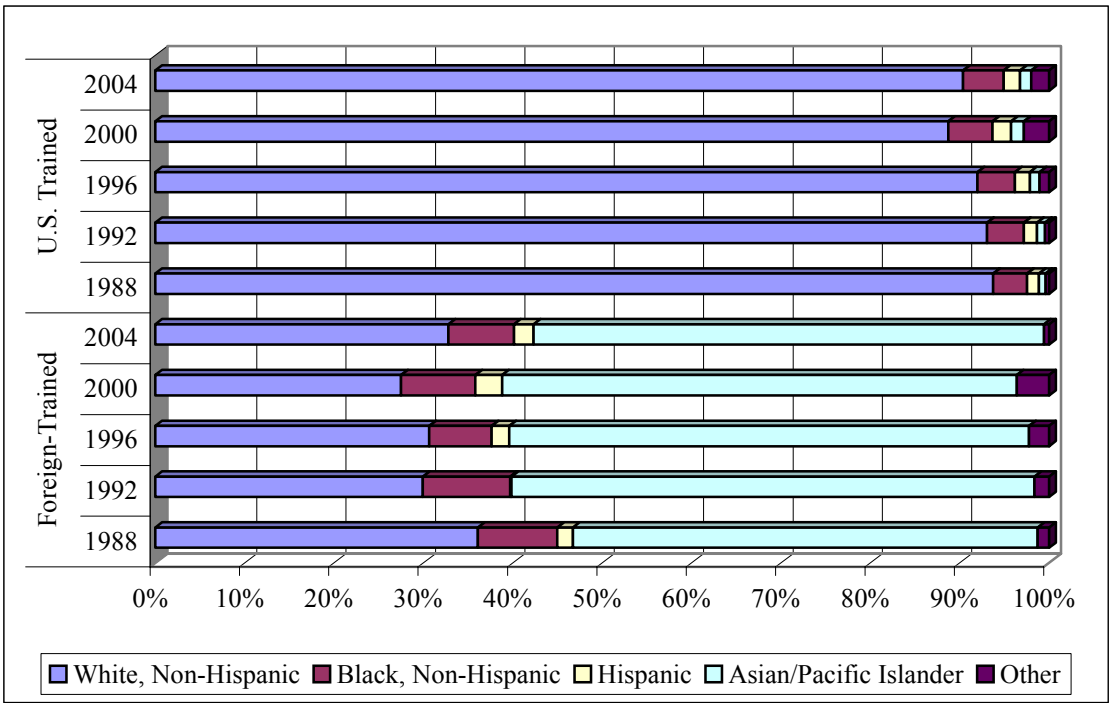
Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

Foreign-trained RNs were more racially and ethnically diverse than U.S.-trained RNs.

Between 1988 and 2004, more than 60% of active foreign-trained RNs were racial/ethnic minorities[1]. In contrast, the percent of U.S.-trained RNs who were racial/ethnic minorities was less than 12% over the same time period (Figure 8).

[1] Racial/ethnic minorities are defined as individuals who are Hispanic of any race, Latino, American Indian or Alaska Native, Asian or Pacific Islander, and Black/African-American.

Figure 8
Race/Ethnicity of Active Foreign-Trained RNs Compared to U.S.-Trained RNs, 1988 - 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

As the figure above indicates, the majority of U.S.-trained RNs were predominantly non-Hispanic White, while the majority of foreign-trained RNs were Asian/Pacific Islander. Attention to the importance of diversity – especially racial/ethnic diversity – within the health workforce has increased. There is concern that lack of minority representation in health professions, such as medicine and nursing, may affect the quality of health care provided to the minority populations in the U.S. [Sullivan Commission, 2004]. Some racial/ethnic groups are considered underrepresented[2] in health professions, meaning there is a smaller percent of them in the profession than there is in the population. Underrepresented minorities comprised between 10% and 15% of foreign-trained RNs, and between 6% and 10% of U.S.-trained RNs (Figure 9). In 2004, about 9% of active RNs in the U.S. were underrepresented minorities, compared to 28% of the U.S. population [U.S. Census, 2006].

[2] Underrepresented minorities include Hispanics of any race, Latinos, American Indians or Alaska Natives, and Blacks/African-Americans.

Figure 9
The Percent of Underrepresented Minorities, Active Foreign-Trained RNs compared to U.S.-Trained RNs, in the U.S., 1988 - 2004

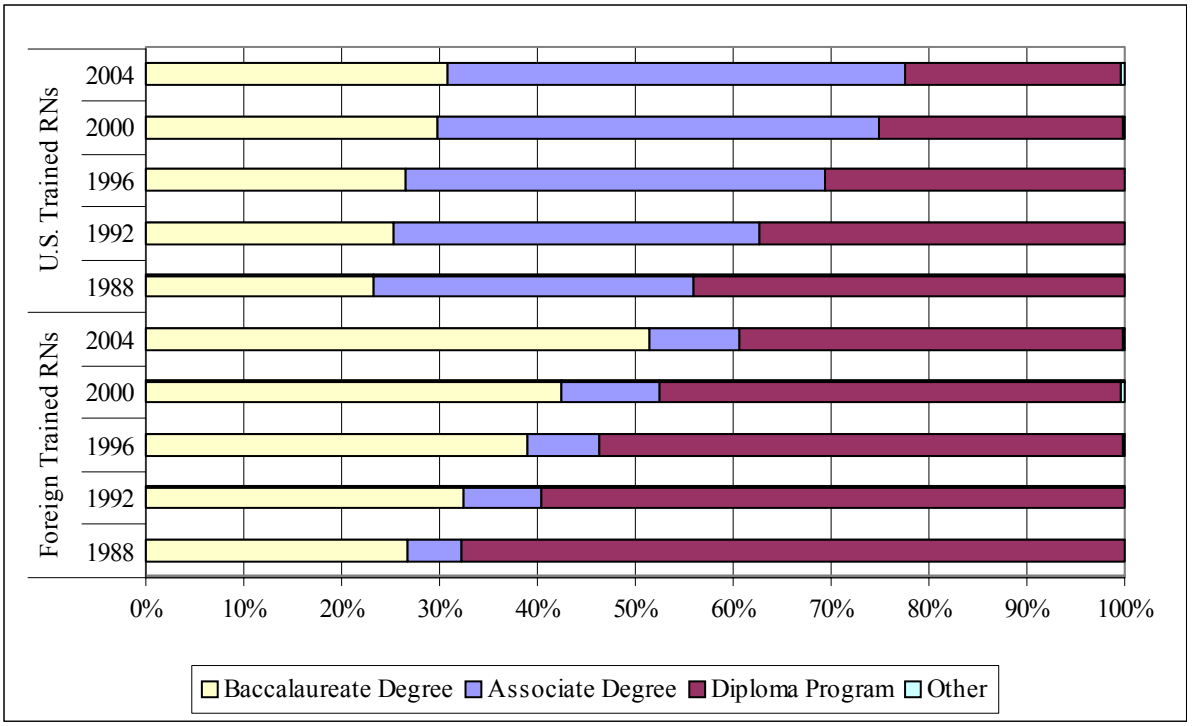
	1988	1992	1996	2000	2004
Foreign-Trained RNs	11.9%	11.5%	11.2%	14.9%	10.1%
U.S Trained RNs	5.5%	6.0%	6.9%	9.8%	7.8%

Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

A higher percent of foreign-trained RNs reported baccalaureate level education as their initial nursing degree.

Between 1988 and 2004, a higher percent of active foreign-trained RNs received initial nursing preparation at the baccalaureate level, compared to active U.S.-trained RNs. U.S-trained RNs were more likely to report an associate degree as the initial nursing preparation (Figure 10).

Figure 10
Initial Nursing Degree of Active Foreign-Trained RNs compared to U.S.-Trained RNs, in the U.S., 1988 – 2004

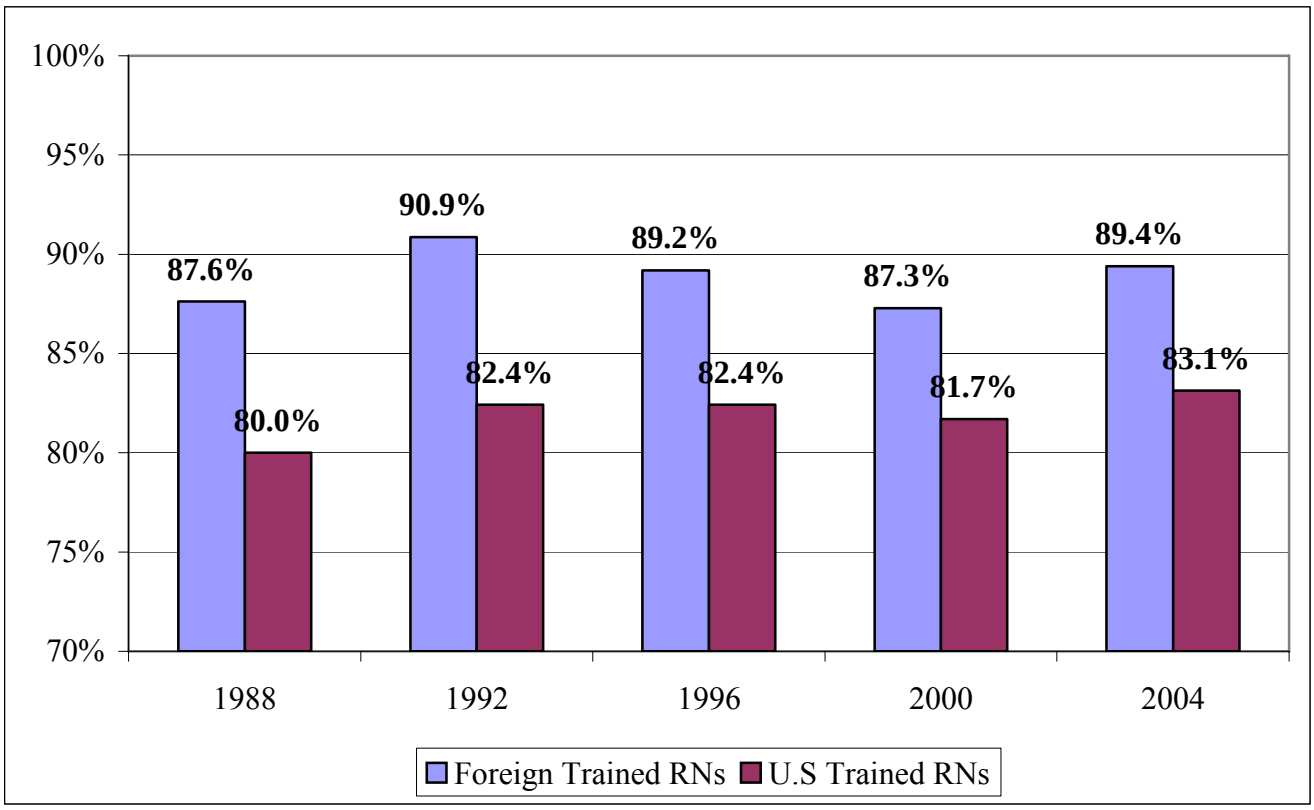


Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

A higher percent of foreign-trained RNs were actively employed in nursing.

Foreign-trained RNs were consistently more likely to be employed in nursing, compared to U.S.-trained RNs. In 2004, the gap between the two groups narrowed to less than 6%, with over 89% foreign-trained RNs actively employed in nursing compared to just over 83% of U.S.-trained RNs (Figure 11).

Figure 11
Percent of Foreign-Trained RNs compared to U.S.-Trained RNs in the U.S. Employed in Nursing, 1988 - 2004



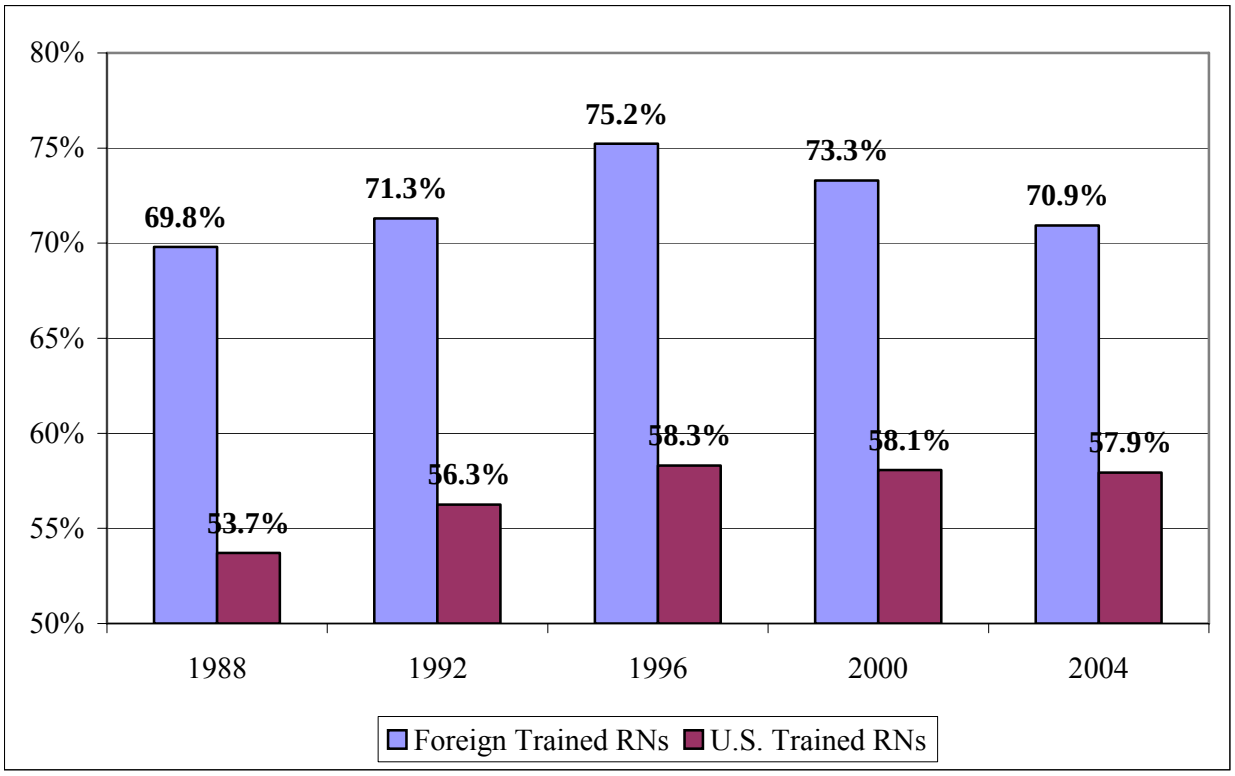
Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004.

A higher percent of foreign-trained RNs worked full-time in nursing.

Between 1988 and 2004, a higher percent of foreign-trained RNs were employed full-time in nursing, compared to U.S.-trained RNs. The percent of foreign-trained RNs who worked full-time was 70% or higher, compared to the percent of U.S.-trained RNs, which consistently fell below 60% (Figure 12).

Figure 12

Percent of Foreign-Trained RNs compared to U.S.-Trained RNs Who Worked Full-Time in Nursing in the U.S., 1988 – 2004

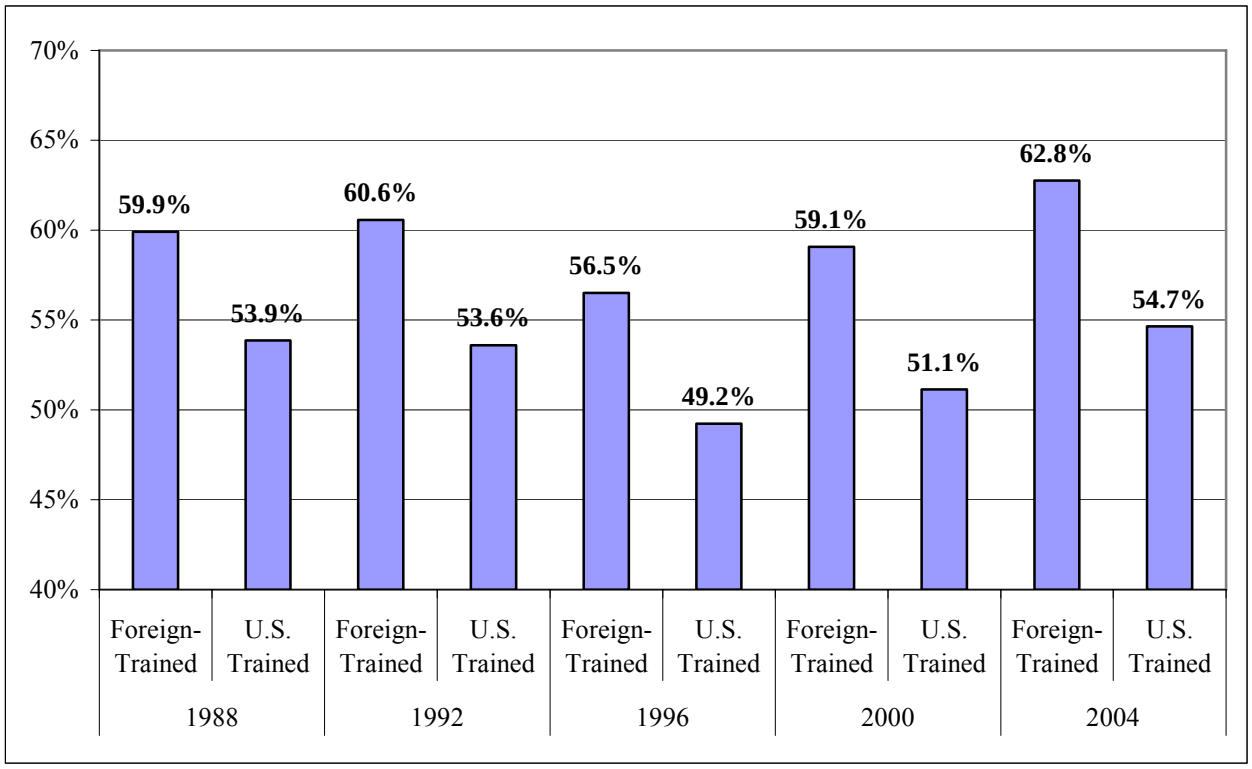


Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004.

A higher percent of foreign-trained RNs were staff nurses.

Foreign-trained RNs were consistently more likely to work as staff nurses than U.S.-trained RNs. Between 1988 and 2004, 59% to 62% of foreign trained RNs worked as staff nurses, compared to 49% to 55% of U.S.-trained RNs. In 2004, the gap between the two groups widened to 8.1% (Figure 13).

Figure 13
Percent of Foreign-Trained RNs compared to U.S.-Trained RNs in the U.S. Who Were Staff Nurses, 1988 - 2004

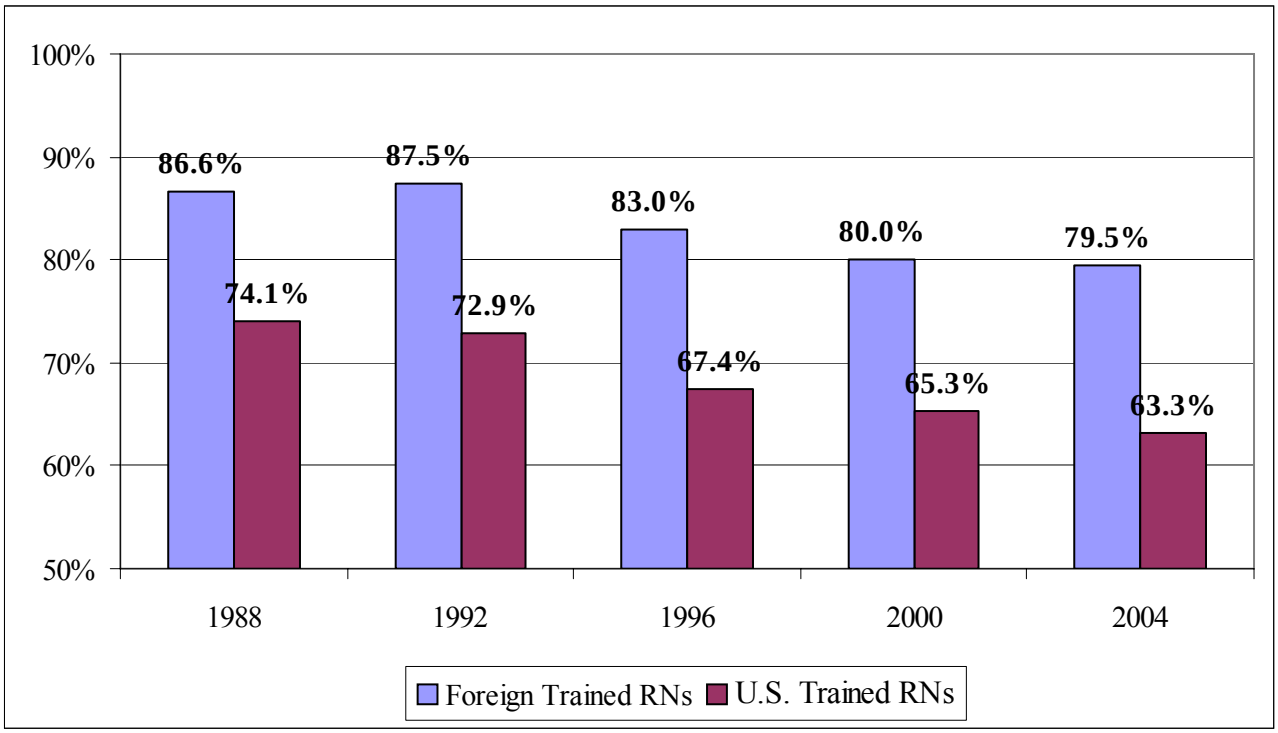


Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

A higher percent of foreign-trained RNs worked in hospitals and nursing homes.

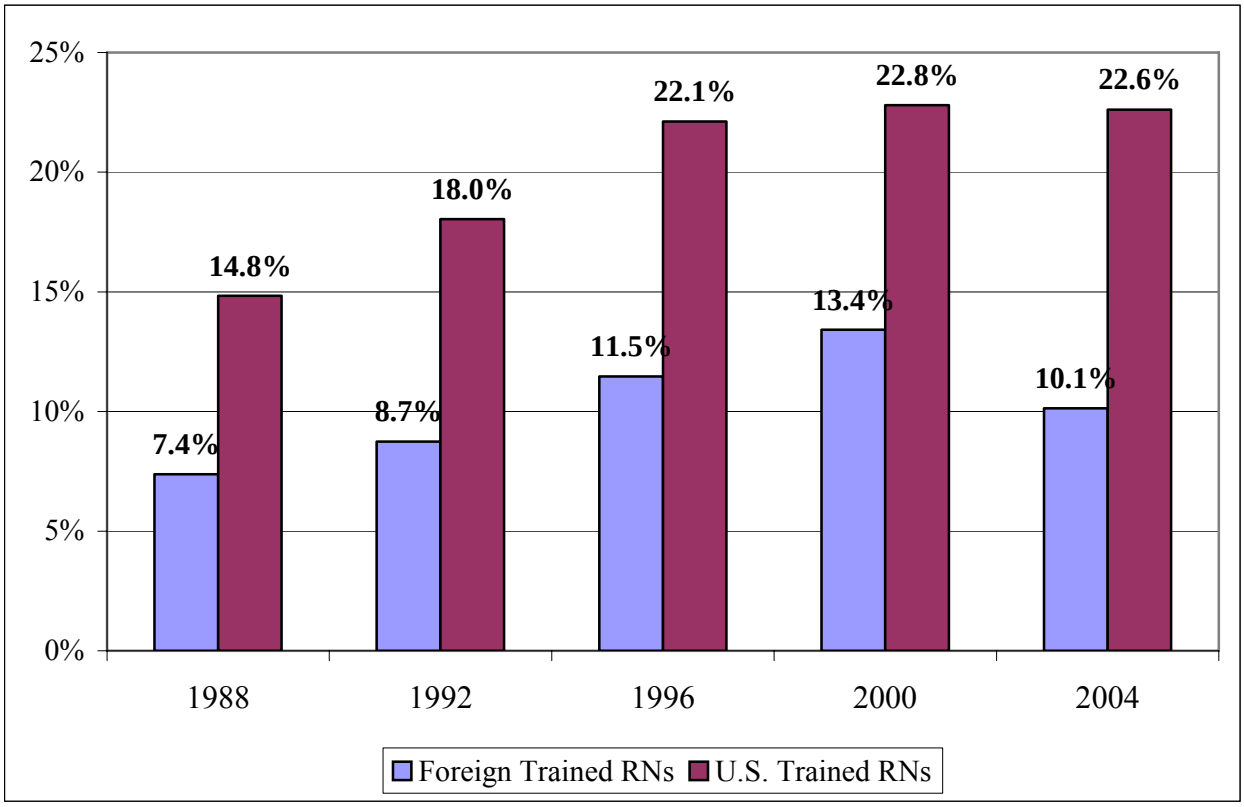
Between 1988 and 2004, active foreign-trained RNs were more likely to work in hospitals, nursing homes, and other long-term care facilities than active U.S.-trained RNs. (Figure 14). The overall proportion of RNs in the U.S. who work in hospitals, nursing homes, and other long-term care facilities has been declining since 1988. This is attributed to changes in the health care delivery system with an increasing emphasis on provision of health services in community settings (e.g., clinics, physician offices, patients' homes). While the number of foreign-trained RNs and U.S.-trained RNs working in community settings has increased since 1988, a higher percent of U.S.-trained RNs worked in community settings compared to foreign-trained RNs between 1988 and 2004 (Figure 15).

Figure 14
Percent of Foreign-Trained RNs compared to U.S.-Trained RNs Working in Hospitals and Nursing Homes, 1988 - 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

Figure 15
Percent of Foreign-Trained RNs compared to U.S.-Trained RNs Working in Community Settings in the U.S., 1988 - 2004



Source: National Sample Survey of Registered Nurses, 1988, 1992, 1996, 2000, and 2004

Discussion

This article provides a basic description of foreign-trained RNs in the U.S. using the best available data. However, there are a number of limitations to the current analysis. The NSSRN is designed to provide national- and state-level data about the RN workforce in the U.S. The sampling methodology for the NSSRN, designed to assure a sufficient state-level sample to produce state-level estimates of RNs, oversamples smaller states and undersamples larger states. Since foreign-trained RNs are most commonly found in populous states, the NSSRN sampling methodology may underestimate their presence in the U.S. nursing workforce. Consequently, data analysis using the NSSRN provides, at best, general trends on the characteristics of foreign-trained RN in the U.S.

As a group, foreign-trained RNs are well-educated and likely to be found in institutional settings providing direct patient care. Compared to U.S.-trained RNs, foreign-trained RNs are more likely to practice in institutional settings, work in a small number of populous states, and contribute to the racial and ethnic diversity of the nursing profession in the U.S.

In addition, since foreign-trained RNs graduate from nursing education programs at a younger age and tend to remain actively employed in nursing at an older age than U.S.-trained RNs, it appears that foreign-trained RNs are likely to have longer clinical careers in nursing than their U.S.-trained counterparts.

Foreign-trained RNs clearly contribute to the delivery of health services in the U.S. Future studies of foreign-trained RNs could better inform policy makers, providers, educators, and

the profession as a whole on this group of RNs and the strategies that could be used to strengthen their ability to provide safe, effective, and culturally-competent health care.

As health care providers in the U.S. continue the practice of recruiting foreign-trained RNs to address domestic nursing shortages, it is clear that more detailed studies of this cohort of RNs are needed to better understand their important contributions to health care in the U.S.

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Characteristics and Employment Patterns of Licensed Social Workers in the United States

By

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Social work is the largest social service profession in the U.S., with between 150,000 and 800,000 practicing professionals, depending on the definition used. Social workers help people function better in their environments, improve their relationships with others, and solve personal and family problems [Bureau of Labor Statistics (BLS), 2001], through individual, social, and psychological counseling [Volland et al., 2000]. Social workers may provide counseling, education, psychotherapy, and/or other services in a wide range of settings, including public agencies, private organizations, and private practice arrangements. Some function as members of interdisciplinary teams that evaluate and manage the care of patients in health care settings like hospitals and long-term care facilities [BLS, 2001].

Despite their importance in the U.S. health workforce, few details are available to describe the characteristics and employment patterns of these professionals. This lack of information contributes to confusion about the status and roles of social workers in the larger health workforce.

In 2004, there were approximately 300,000 *licensed* social workers in the U.S., about half of all social workers in the U.S. labor force as estimated by the BLS. A stratified random sample survey of about 10,000 of these licensed social workers was conducted in the autumn of 2004. The approximately 4,500 responses to this survey comprise one of the few sources of recent data about these professionals.

This article summarizes some of the key findings from this survey and creates a profile of licensed social workers in the U.S., with highlights of employment patterns that have strategic relevance for the profession. Additional information about the survey process and detailed findings based on the survey responses can be found in several study reports [Whitaker, Weismiller, and Clark, 2006a; Whitaker, Weismiller, and Clark, 2006b; Whitaker, Weismiller, and Clark, 2006c; CHWS, 2005; Wing et al., 2006; CHWS and CWS, 2006a; CHWS and CWS, 2006b; CHWS and CWS, 2006c; CHWS and CWS, 2006d].

The findings presented below cover several themes and topics including numbers and geographic distribution of licensed social workers, demographic characteristics, employment sector, employment setting, practice specialty, client characteristics, salaries, entrants into practice, career plans, and future demand for social workers. Charts and tables based on the survey responses highlight differences and similarities in employment patterns for different subsets of licensed social workers, especially groups defined by age and gender. Where appropriate, statements about the policy relevance of these finding are included.

Numbers and Geographic Distribution of Licensed Social Workers in the U.S.

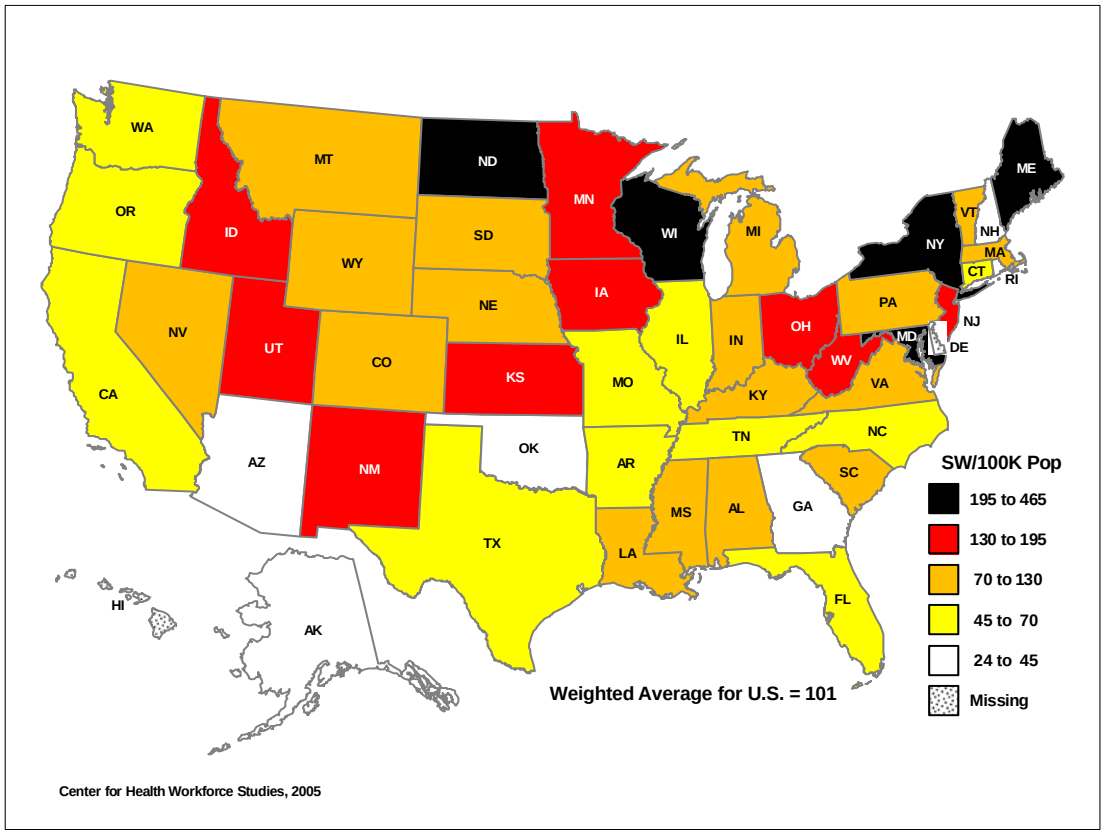
There were approximately 101 licensed social workers per 100,000 population across the entire U.S. in 2004. As is true for most professions, licensed social workers were not uniformly distributed across the 50 states. The ratio of active licensed social workers per 100,000 population varied dramatically across the states in 2004, from lows of 23.7 in New Hampshire and 30.2 in Alaska, to highs of 408 in Maryland and 366 in Maine. The data presented in Figure 1 show that, with the exception of New York, most of the states with large populations had relatively low numbers of licensed social workers per capita.

This variation across the states in the ratio of practitioners to population is large compared to many other health professions. It reflects:

- a lack of standardization in the practices of licensed social workers;
- significant variation in licensure requirements (e.g., education required); and
- a lack of standardization of skills and competencies required for practice.

This variability raises questions about what essential protections should be offered to clients of social workers by licensure so the public can be assured of consistent, safe, and effective service.

Figure 1. Licensed Social Workers per 100,000 Population for the Fifty States and the District of Columbia, 2004

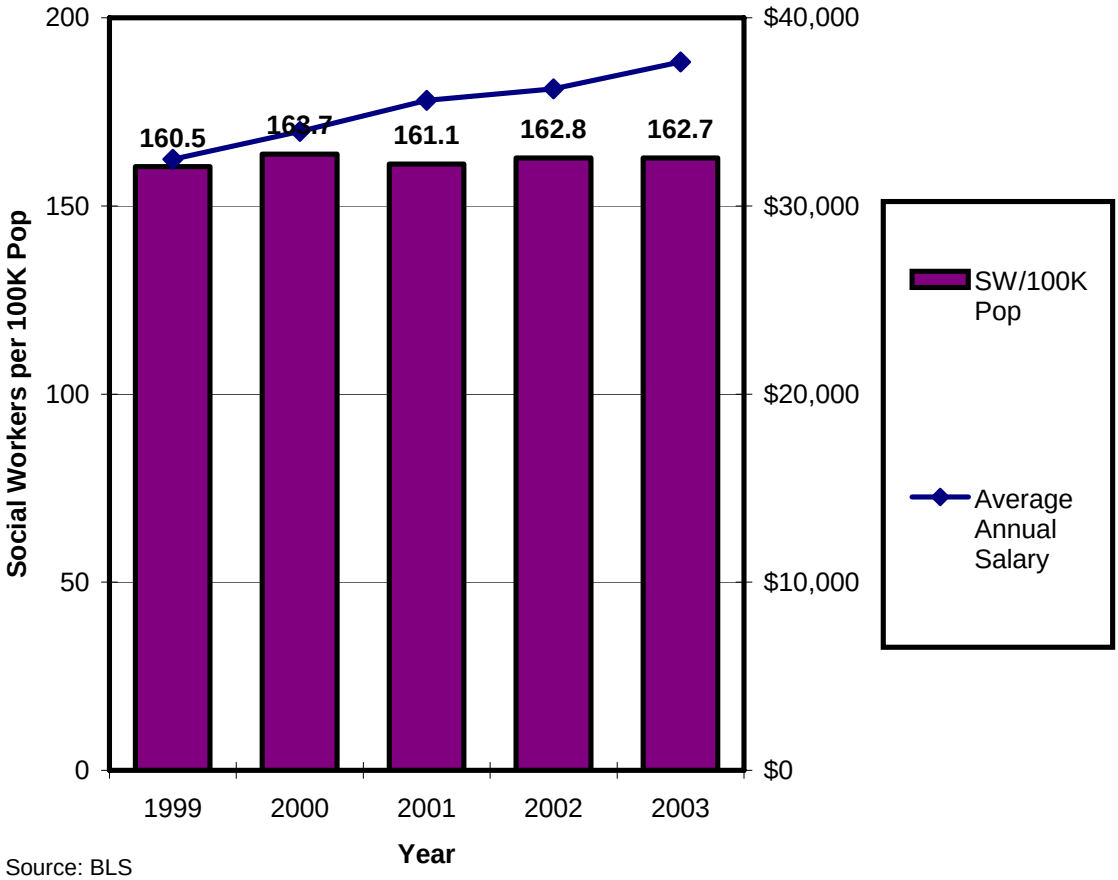


Note: Counts of licensees for Hawaii and Delaware were not available for inclusion in this analysis.

To provide additional perspective on the numbers of licensed social workers in the U.S., estimates by BLS of the numbers of employed social workers were compiled for recent years. As expected, the numbers were about double those based on counts of licensed social workers used as the basis for the 2004 licensed social worker survey. Figure 2 shows that on

a per capita basis the numbers of these employed social workers were relatively constant between 1999 and 2003 at about 162 employed social workers per 100,000 population. Average annual salaries of these employed social workers increased from $32,480 to $37,650 (15.9%) over the same period.

Figure 2. Social Workers per 100,000 Population and Average Annual Salary of Social Workers in the U.S., 1999 to 2003



Source: BLS

Demographic Characteristics of Licensed Social Workers

Responses to the 2004 survey showed that licensed social workers were disproportionately women (81% compared to 51% of the U.S. population). Table 1 shows that this percentage was roughly comparable to the 78% of self-reported social workers in the 2004 Current Population Survey who were women.[1] It was also comparable to the 79% of

[1] Current Population Survey, 2004

NASW members who were women in a 1995 survey.[2] It was significantly lower than the percentage for RNs in 2000 (95%).

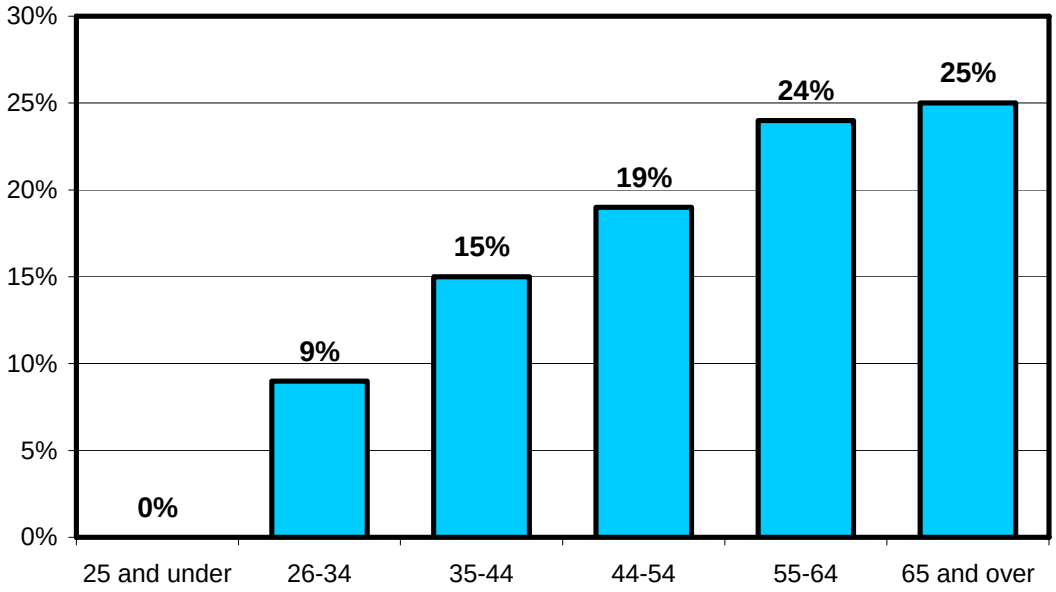
Table 1. Percentage of Selected Professions Who Were Female in Selected Years

Profession	Percentage Female
Licensed Social Workers (2004)	81%
Self-Reported Social Workers (2004)	78%
NASW Members (1995)	79%
Registered Nurses (2000)	95%
Civilian Labor Force (2004)	51%

The survey responses showed that licensed social work has not attracted many young male entrants. Figure 3 shows that the percentage of licensed social workers who were male was progressively smaller for younger age cohorts, declining from 25% of those age 65 and older to fewer than 10 percent of respondents who were younger than age 35. In addition, a larger percentage of male licensed social workers (8%) than females (5%) were planning to retire in 2004. If this pattern continues, social work will become even more female-dominated as older men age out of the workforce.

[2] Gibelman and Schervish, 1997

Figure 3. Percentage of Licensed Social Workers Who Were Male, by Age Group, 2004



Social work, like most health care professions, is less ethnically diverse than the U.S. population. Table 2 shows that in 2004 licensed social workers were predominantly non-Hispanic White (85%). New entrants (i.e., those 30 or younger) were somewhat less likely to be Non-Hispanic White (83% compared to 86%) and more likely to be Other (3% compared to 1%).

Table 2. Racial-Ethnic Composition of Selected Groups Social Workers and the U.S. Population

Race-Ethnic Category	Licensed Social Workers. 2004	Social Workers (Self-Report), 2001	U.S. Pop, 2001
Non-Hispanic White	84.5%	64.6%	71.0%
African-American	6.8%	23.2%	12.2%
American Indian	0.5%	1.3%	0.7%
Asian American	1.4%	2.6%	4.0%
Hispanic	4.3%	8.3%	12.1%
Other	1.4%	-	-

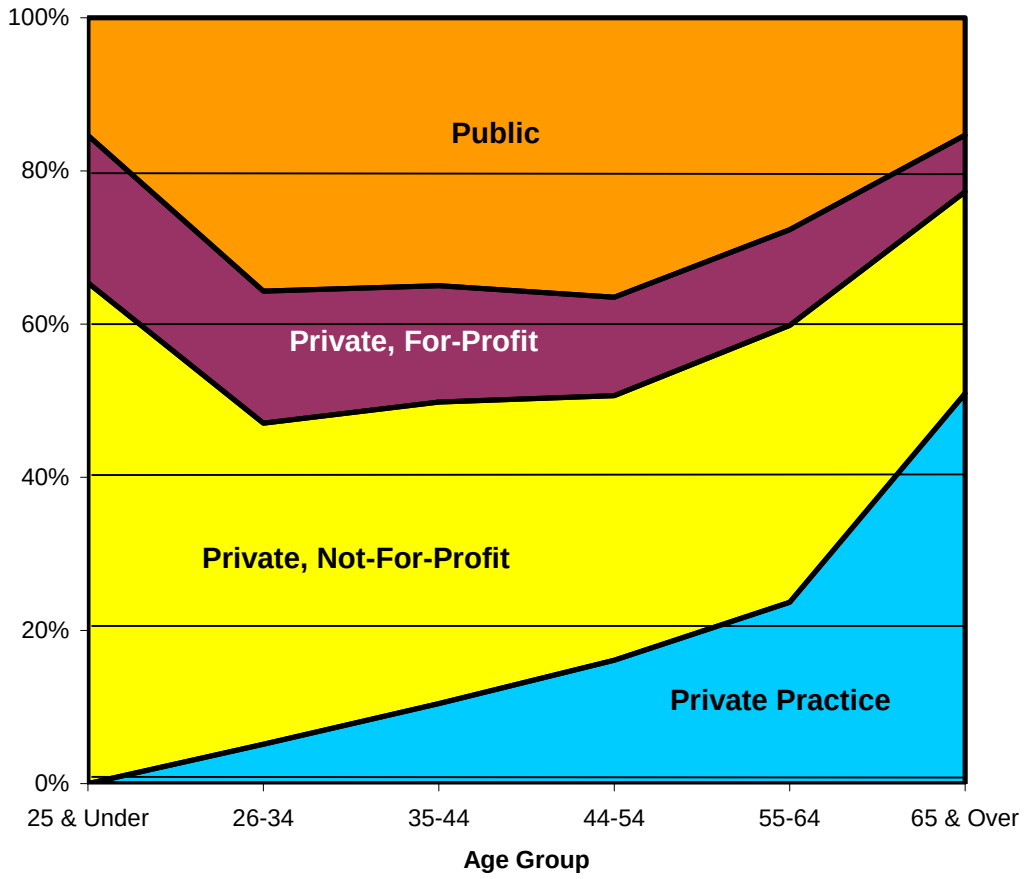
Sector of Primary Employment of Licensed Social Workers

The sector of the economy in which licensed social workers were employed varied as the practitioners move along their career paths. Figure 4 below shows the percentages of practitioners whose primary employment was in each of four employment sectors: public organization (federal government, state government, local government, or military), private for-profit organization, private not-for-profit organization, and private practice.

Particularly noteworthy in the figure is the apparent shift of licensed social workers into private practice as they grow older, at the expense of employment in the other three sectors. Although it is not possible to identify the root cause of this shift, the fact that average salaries for private practice were higher than for the other three sectors suggests that this was likely an important factor.

As practitioners shift into private practice, they remove disproportionate numbers of more seasoned and experienced practitioners from the other three sectors, leaving behind a less experienced workforce. A determination of the extent to which this pattern is detrimental to clients and patients must await further research.

Figure 4. Sector of Primary Employment of Licensed Social Workers in the U.S., by Age Group, 2004



The public sector in the chart includes four sub-sectors. The percentages of respondents in each of the sub-sectors are shown in Table 3 below. The figures show that state government organizations employ about half of all licensed social workers in public agencies in all age groups.

Table 3. Sub-Sector of Primary Employment of Licensed Social Workers in the Public Sector, By Age Group, 2004

Public Sub-Sector	Age Group						
	25 & Under	26 - 34	35 - 44	45 - 54	55 - 64	65 & Over	**Total**
Federal Government	0.0%	5.0%	8.7%	7.8%	9.6%	0.0%	**7.6%**
State Government	75.0%	53.7%	50.9%	54.1%	48.7%	48.0%	**52.1%**
Local Government	0.0%	39.3%	37.7%	36.7%	41.2%	48.0%	**38.4%**
Military	25.0%	2.0%	2.6%	1.4%	0.4%	4.0%	**1.8%**
Public n	**4**	**201**	**265**	**425**	**228**	**25**	**1,148**

Primary Employment Setting of Licensed Social Workers

As we consider the composition of the licensed social worker workforce, it is interesting to know the percentages of active practitioners who work in different employment settings. Table 4 shows the primary employment by setting for different age groups based on the 2004 survey responses. It shows that, except for the 65 and older age group, health care organizations were the primary employment setting for the largest percentage of active licensed social workers (31.8% overall) in 2004. Private practice and social service organizations were each the primary employment setting for another 17.5% of social workers.

The table also reveals the same apparent shift into private practice shown earlier for sector of primary employment. The percent of active licensed social workers in private practice increased steadily by age group until the 65 and older group where it reached nearly 54%. This increase appears to have been primarily at the expense of social service organizations and organizations that serve children. It cannot be determined from the survey data the extent to which the new private practitioners may continue to serve these client groups.

Table 4. Primary Employment Setting of Active Licensed Social Workers in the U.S., 2004

Primary Employment Setting Category	Age Group						
	25 & Under	26 - 34	35 - 44	45 - 54	55 - 64	65 & Over	**Total**
Private Practice	0.0%	5.6%	11.0%	17.2%	25.3%	53.9%	**17.5%**
Health Care Organization	33.3%	34.8%	34.5%	31.4%	30.2%	20.1%	**31.8%**
Social Service Organization	25.0%	22.8%	18.0%	16.2%	16.7%	10.4%	**17.5%**
Long Term Care Org	4.2%	8.0%	5.3%	6.2%	5.8%	2.6%	**6.0%**
Child Organization	16.7%	11.9%	15.5%	11.2%	8.0%	3.2%	**11.2%**
Public Agency	4.2%	7.0%	5.6%	6.9%	5.3%	2.6%	**6.0%**
Other	16.7%	9.9%	9.9%	11.0%	8.6%	7.1%	**9.9%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
n	**24**	**514**	**715**	**1,093**	**771**	**154**	**3,271**

Specialty Area of Licensed Social Workers

Another perspective on active licensed social workers is the specialty area that is the focus of their primary employment. Table 5 shows that mental health was the largest specialty area for active licensed social workers in all four of the employment sectors in 2004, representing nearly 37% of all practitioners. Child welfare/family and medical health were next on the list, representing just greater than 13% and just less than 13% of all social workers, respectively.

The specialty area varied across the four employment sectors. For example, the figures indicate that private practice was predominantly mental health, while child welfare/family and developmental disabilities were disproportionately in the government sector, and medical health was more likely to be in the private sector. When the age of the practitioners is considered, these figures may have important implications for the supply of social workers available to serve different clients.

Table 5. Practice Area of Primary Employment of Active Licensed Social Workers in the U.S., By Sector of Primary Employment, 2004

Practice Area of Primary Employment	Sector of Primary Employment				
	Private Practice	Private, Not-for-Profit	Private, For-Profit	Gov't	Total
Addictions	1.7%	3.3%	4.7%	2.1%	28%
Adolescents	4.5%	6.8%	4.7%	6.0%	5.9%
Aging	1.9%	10.4%	18.8%	6.6%	8.8%
Child Welfare/Family	6.6%	12.0%	5.6%	21.5%	13.3%
Community Development	0.2%	0.5%	0.0%	0.5%	0.4%
Criminal Justice	0.6%	0.4%	0.7%	3.1%	1.3%
Developmental Disabilities	0.4%	2.9%	3.1%	4.5%	3.0%
Higher Education	0.0%	1.2%	0.7%	3.0%	1.5%
Homeless/Displaced Persons	0.0%	1.5%	0.0%	0.8%	0.8%
Income Assistance	0.0%	0.2%	0.0%	0.4%	0.2%
Medical Health	0.4%	19.7%	22.8%	7.5%	12.9%
Mental Health	80.5%	31.8%	30.5%	22.8%	36.8%
Occupational Social Work	0.2%	0.3%	2.1%	0.9%	0.7%
School Social Work	0.2%	3.8%	1.6%	17.0%	7.2%
Other	3.0%	5.3%	4.7%	3.5%	4.2%
Total Count	534	1,195	426	1,048	3,203
Percent of Total Count	16.7%	37.3%	13.3%	32.7%	100%

Characteristics of Social Work Clients

Figure 5 shows that 62% of licensed social worker saw at least some clients age 12 and younger, and 15% saw a caseload predominantly (50% or more) composed of this age group. Seventy-eight percent saw at least some adolescent clients age 13 to 21, and 15% saw a predominantly adolescent caseload. Seventy-eight percent saw at least some clients age 55 and older, and 25% saw a predominantly older adult caseload.

Table 6 shows that the percentages of 2004 survey respondents reporting different frequencies of selected conditions among their clients varied considerably. Few respondents reported that they had no clients with any of the conditions included on the questionnaire. The table reinforces the finding that licensed social workers deal with clients with a wide range of medical and mental health problems. The variations in these patterns were even

greater across different employment settings and practice areas, although it is difficult to summarize the results succinctly in tables and charts.

Figure 5. Percent of Caseload of Licensed Social Workers, by Client Age Group, 2004

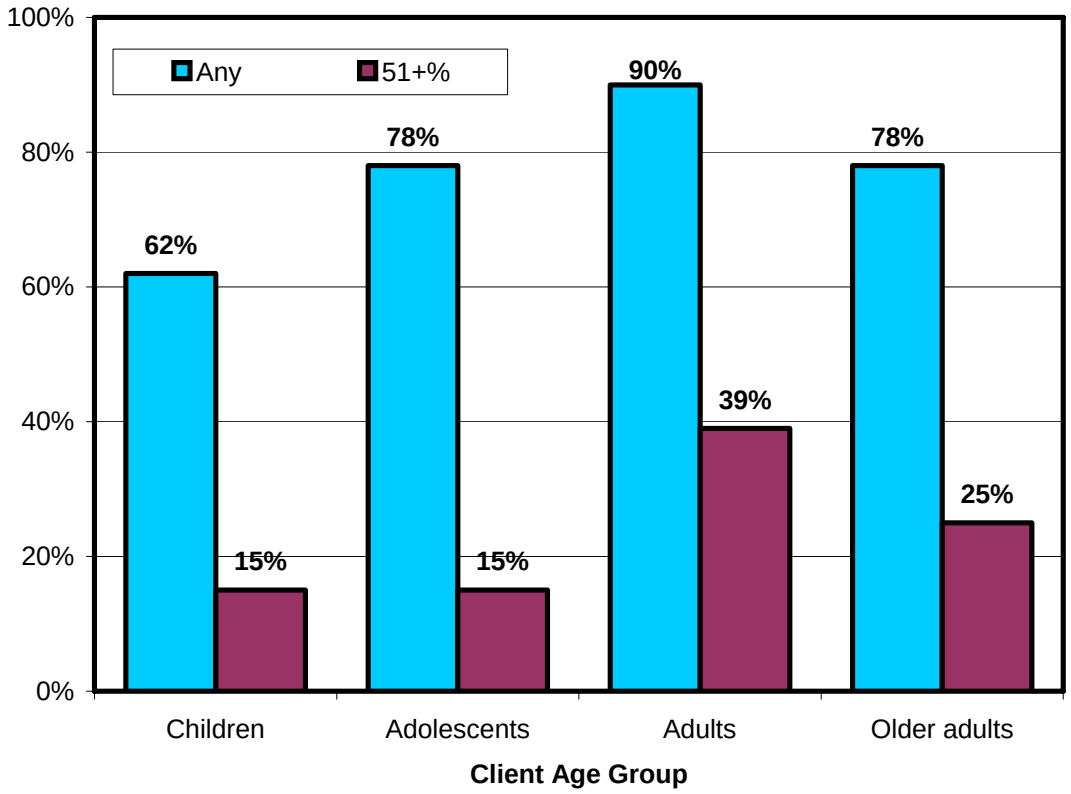


Table 6. Percentage of Clients with Selected Health Conditions

Client Condition	None	Few	Some	Many	n
Mental Illness	4.3%	25.5%	**30.9%**	39.2%	3,246
Affective Conditions	10.2%	26.3%	30.6%	32.9%	3,113
Neurological Conditions	19.9%	**47.0%**	26.3%	**6.9%**	3,035
Developmental Disabilities	**25.2%**	43.8%	20.6%	10.4%	3,088
Physical Disabilities	20.6%	41.8%	18.9%	18.7%	3,088
Substance Abuse Conditions	13.3%	30.5%	29.3%	26.8%	3,136
Acute Medical Conditions	21.1%	38.6%	19.9%	20.4%	3,045
Psychosocial stressors	**1.9%**	**5.8%**	**16.0%**	**76.3%**	3,229
Chronic Medical Conditions	12.0%	33.6%	26.1%	28.3%	3,124
Co-Occurring Conditions	4.3%	25.5%	**30.9%**	39.2%	3,246

Notes: Lightly shaded cells are largest, and darkly shaded cells are smallest percentages in each column.

Salaries of Licensed Social Workers

On average, the salaries of licensed social workers (working full time in social work at one employer in 2004) exceeded those of social workers in general, as reported by BLS (for 2003). The difference in median annual salaries was between approximately $7,500 and $13,000, depending on the class of social worker.

The difference in salaries for licensed social workers varied by highest social work degree (Table 7). Median salaries in 2004 for active licensed social workers with Bachelors in Social Work (BSW), Masters in Social Work (MSW), and Doctorate in Social Work (DSW) degrees were $33,540, $49,570, and $65,700, respectively. These salary levels compared favorably with those for other professions often compared with social workers (e.g., counselors, clergy, educators, librarians, and RNs).

These figures suggest that, on average, the licensure process and earning an advanced degree resulted in increased salaries for social workers. They also suggest, because the BLS estimates include many of the higher paid licensed social workers, that unlicensed social workers earned less than the BLS estimates would suggest.

As is true in most professions, the survey responses revealed a gender gap in salaries for licensed social workers in 2004. The raw difference in average salaries for men and women working full time in a single social work job was $12,045, with 389 men reporting an average annual salary of $61,040 and 1,744 women reporting $48,995.

Table 7. Comparative Wages for Licensed Social Workers and Selected Other Professions, 2003

BLS Code	Profession	2003 Workers (,000)	Annual Wage (US$ 000)			
			25%ile	Mean	Median	75%ile
21-1011	Substance Abuse & Behavioral Disorder Counselor	65	$25.3	$33.6	$31.5	$39.5
21-1014	Mental Health Counselor	87	$25.3	$35.1	$32.0	$42.2
	Licensed Social Worker, BSW	**35**	**$29.4**	**$36.2**	**$33.5**	**$40.3**
21-1023	*Social Worker, Mental Health & Substance Abuse*	*102*	*$26.8*	*$35.9*	*$33.6*	*$43.0*
21-1021	*Social Worker, Child, Family, and School*	*253*	*$27.4*	*$37.2*	*$34.3*	*$44.5*
21-2011	Clergy	38	$25.4	$38.4	$34.9	$47.2
21-1022	*Social Worker, Medical & Public Health*	*103*	*$30.9*	*$40.5*	*$39.2*	*$49.0*
43-1011	First-Line Supervisors/Manager of Office Workers	1,402	$30.9	$43.0	$39.9	$51.9
25-4021	Librarian	152	$35.5	$46.1	$44.7	$55.9
21-1012	Educational, Vocational, & School Counselor	218	$34.1	$46.8	$45.0	$57.6
25-2031	Secondary School Teacher, Except Social & Voc Ed	1,033	$36.0	$47.8	$45.2	$57.2
	Licensed Social Worker, Any Degree	**300**	**$36.9**	**$50.0**	**$46.7**	**$58.8**
	Licensed Social Worker, MSW	**234**	**$35.5**	**$52.9**	**$49.6**	**$60.2**
29-1111	Registered Nurse	2,280	$42.3	$52.8	$51.0	$61.2
25-1067	Sociology Teacher, Postsecondary	14	$40.3	$58.7	$53.9	$71.2
25-1066	Psychology Teacher, Postsecondary	28	$41.3	$59.8	$54.5	$72.0
25-1052	Chemistry Teacher, Postsecondary	18	$43.1	$63.0	$56.2	$75.6
25-1011	Business Teacher, Postsecondary	68	$39.5	$64.4	$56.6	$81.1
	Licensed Social Worker, DSW	**6**	**$53.1**	**$73.3**	**$65.7**	**$98.0**

Notes: Bold figures are based on Wing et al, 2006;
Italic figures are for social workers categories used by BLS
Sources: OES statistics from BLS, from http://www.bls.gov/oes/current/oes210000.htm

Using analysis of covariance techniques to control for other factors (age, race, geographic area, highest social work degree, rural/urban setting, license required, size of caseload, vacancy patterns, practice area, employment sector, employment role, and years of experience), the average gender salary gap dropped to $7,052. Since the mean salary for these individuals was about $51,192, the percentage gap was about 14%. Table 8 summarizes the nature of the relationship of the other variables to the estimated salary levels of the respondents.

Table 8. Variables with a Statistically Significant* Relationship with Estimated Salaries of Licensed Social Workers Working Full Time in a Single Social Work Job

Variable	General Nature of the Relation to Salary Level
Gender	Males had higher salaries
Census Division	Pacific region had the highest salaries; South Central had the lowest
Highest SW Degree	DSWs had highest salaries; MSWs had second highest
Rural/Urban Location	Metropolitan areas had the highest salaries; rural areas had the lowest
Size of Primary Caseload	No caseload had the highest salaries; 11-15 and 26-50 clients had lowest
Sector of Employment	Private practice had highest salaries; Private not-for-profit had lowest
# of SW Certifications	Two certifications had highest salaries; 6, 4, and 5 had the lowest
Years of Experience	Each year of experience was associated with about $419 more salary

* $p \leq 0.05$

Entrants into Licensed Social Work Practice

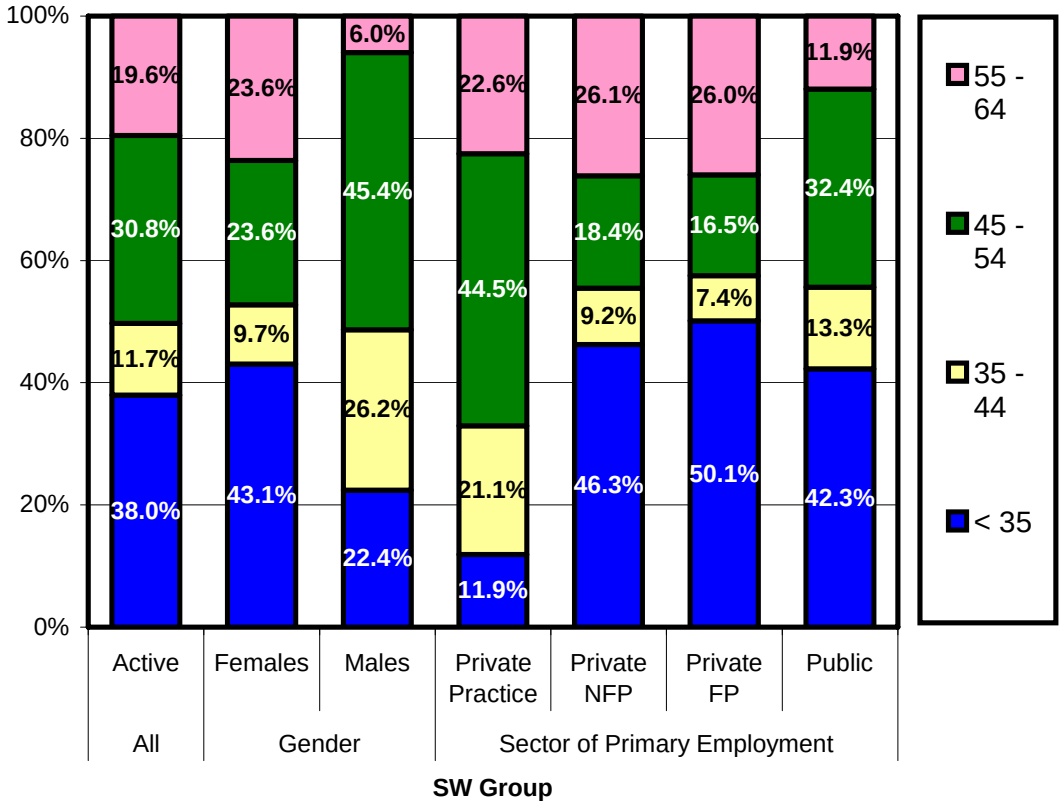
The pattern of older entrants into the profession described elsewhere in this report was confirmed by a set of simple supply forecasting models for licensed social workers in the U.S. The baseline model, a simple age-cohort survival model which includes all active licensed social workers, showed that if one assumes that licensed social workers represent a stable class of workers, approximately 11,000 new licensed social workers would be needed each year to assure a constant supply of practitioners across all employment sectors in the future.

Additional simulations were used to estimate that approximately 2,300 *additional* new social workers would be needed each year to increase the supply of licensed social workers enough to match the growth of the general population. Thus, between 2004 and 2014 approximately 13,300 additional new licensed social workers would be needed to keep up with population growth as projected by the U.S. Census Bureau. Between 2014 and 2024 this number would increase to approximately 14,260; and between 2024 and 2034 the number would increase to approximately 15,400. These estimates do not reflect the possible impact

on demand for social worker services due to such factors as the general aging of the population which is widely believed will increase demand for health services in the future.

Figure 6 shows the relatively old age of entry into private practice that was revealed earlier in this discussion of employment. The figure also shows a somewhat older entry pattern for social workers in the public sector, than in the two private employer sectors.

Figure 6
Percentage of New Entrants into SW Practice in Different Age Groups, by Gender and Sector of Primary Employment



The models also reveal, again assuming that the supply of licensed social workers is stable over time, that slightly more than 4% of licensed social workers leave practice every year. This figure is somewhat higher than for many licensed health professions, which have departure rates closer to 3% per year. This is consistent with the fact (revealed elsewhere based on an analysis of the 2004 survey data) that licensed social workers tend to be active

for some 25 years, whereas most health professions work closer to 40 years. This is also consistent with the fact that many licensed social workers enter the profession at an older age, which inevitably shortens their careers.

The survey responses revealed that the numbers of men entering the ranks of licensed social work—especially younger men—have declined in recent years. The reason(s) for this pattern were not revealed in the survey data, but it could reflect a larger issue related to the attractiveness of licensed social work, even for women.

Career Plans of Licensed Social Workers

Career plans are an important aspect of the supply of any profession. These help to clarify future outflows of practitioners from the workforce, which generate a need for new professionals to maintain the supply of practitioners and services. Table 9 below summarizes the responses to a question in the 2004 survey about "career plans in the next two years." The figures show that nearly 70% of respondents planned to remain in their current position. They also show that some 7.4% indicated they would either retire or stop working, and another 4.7% indicated they would leave social work, but continue working. The percentages of those planning to leave were higher than the departure rates estimated in the forecasting models used in the previous point, but experience with other professions suggests that respondents typically exaggerate their likelihood of leaving employment or retiring when responding to these kinds of questions.

Table 9. Career Plans of Active Licensed Social Workers in the U.S., by Age Group, 2004

Career Plans Next Two Years	Age Group of Social Worker						
	25 & Under	26 - 34	35 - 44	45 - 54	55 - 64	65 & Over	**Total**
Remain in current position	53.8%	58.7%	69.4%	72.6%	75.4%	64.9%	**69.8%**
Seek new opportunity in SW	50.0%	39.1%	31.1%	26.2%	16.5%	4.6%	**26.1%**
Increase SW hours	3.8%	7.3%	9.6%	8.7%	7.1%	3.4%	**8.0%**
Decrease SW hours	3.8%	11.6%	8.7%	7.8%	13.2%	16.7%	**10.3%**
Re-Enter SW	0.0%	0.0%	0.1%	0.2%	0.2%	0.6%	**0.2%**
Leave SW but continue to work	3.8%	4.7%	5.7%	4.9%	3.5%	4.0%	**4.7%**
Retire	0.0%	0.0%	0.5%	2.9%	13.7%	33.3%	**5.9%**
Stop working	0.0%	2.4%	1.8%	0.7%	0.9%	5.2%	**1.5%**
Pursue additional SW degree	30.8%	13.5%	7.3%	5.5%	1.6%	2.3%	**6.3%**
Pursue additional non-SW degree	19.2%	10.6%	9.1%	6.8%	3.1%	1.1%	**6.8%**
Pursue non-degree SW training	23.1%	17.3%	14.2%	15.0%	11.9%	9.2%	**14.2%**
Other	0.0%	7.1%	7.5%	6.6%	5.4%	2.3%	**6.3%**
n	**26**	**578**	**790**	**1,200**	**863**	**174**	**3,631**

Future Demand for Social Workers

The 2004 survey responses revealed a number of patterns that suggested that the demand for licensed social workers may increase in the future. Many respondents reported larger caseloads in the past two years. There were also reports of greater use of non-social workers to fill vacant social work positions, and more outsourcing of social work tasks. Depending on how employers of social workers decide to respond to growing demands for services, all of these findings could result in significant increases in the demand for social workers and their services.

Indications from a number of sources outside the 2004 survey also suggest that demand for licensed social workers in the aggregate may grow in the coming decade and beyond. The 2006-07 BLS Occupational Handbook projects that the demand for new social workers will increase between 18% and 26% by the year 2014 [BLS, 2006], mostly due to the aging of the population which carries with it greater need for social work services.

The likely increase in demand for social work services due to the aging of the population was also highlighted in a report by the Center for Health Workforce Studies [2005]. The Center pointed out that the projected 54% growth in the number of older adults in the U.S. between 2000 and 2020 is likely to be a primary driver of growing demand for social work services in coming decades.

Another potential source of increased demand was suggested in an article by Dohm [2000]. She reported that social work is one of 20 professions that will be most affected by baby boomer retirements. She estimated there will be a need for 54,000 more social workers just to offset retirements of current social workers between 2003 and 2008. She warned further that the effect of baby boomer retirements would be even more dramatic in the decade following 2008.

The bottom line conclusion based on all of these findings is that even though there exists in the U.S. a well-developed infrastructure of social work education that produces more than 30,000 MSWs and BSWs per year, one cannot be certain this educational pipeline will continue to meet the future demands for new licensed social workers. Even if the education system continues to fill the need for new licensed social workers in the aggregate, some employment sectors and geographic areas may experience difficulties recruiting and retaining social workers to provide frontline services. This may be a particular issue for some not-for-profit agencies which may already be experiencing a precarious balance between supply and demand for licensed social workers.

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The Impact of the Aging Population on the Health Workforce in the United States: Summary of Key Findings*

By

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I. Goals/Objectives of the Report

The expected growth of the older adult population[1] in the U.S. over the next 50 years will have an unprecedented impact on the U.S. health care system. A major effect will be on the supply of and demand for health care workers. The supply of health care providers may decrease as large numbers of workers retire and/or reduce their working hours. At the same time, older Americans consume a disproportionate share of health care services, so that demand will grow. The aging of the population will also affect the nature of the skills and services that the health care workforce must be equipped to provide, and the settings in which this care is provided.

The aging of the population, including the so-called baby boom generation (people born between 1946 and 1964) is already beginning to impact the health care system. Because the number of Americans age 65 and older (35 million in 2000) will rise by more than 19 million by 2020, this impact will continue to grow as the century progresses.

II. Implications of Population Aging for the Health Workforce: Key Findings

A. Greater Numbers of Older Adults

The U.S. and many developed and developing countries worldwide are preparing for a dramatic increase in the population of older adults, both in raw numbers and as a percentage

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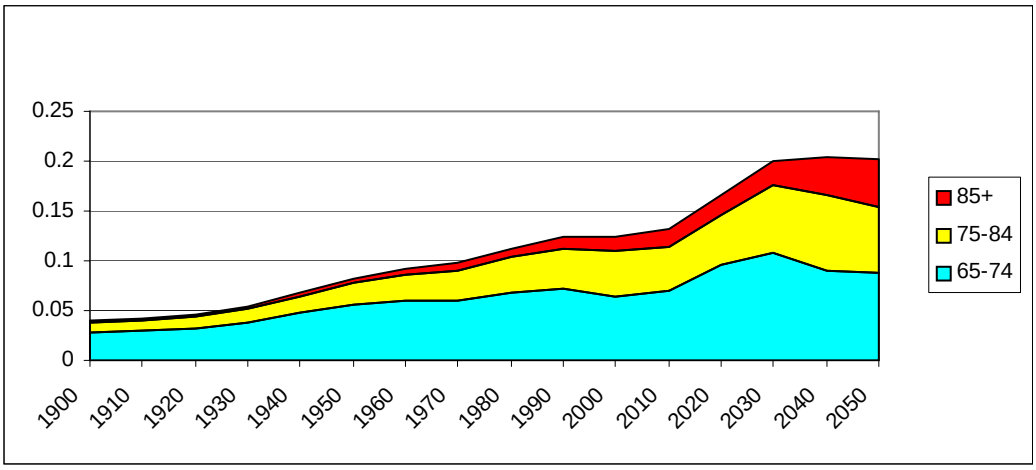
* The full report was authored by Jean Moore, MS, Director; Edward S. Salsberg, Executive Director; Paul Wing, D. Engin, Deputy Director; Michael Dill, Senior Research Associate; Sandra McGinnis, Ph.D., Senior Research Associate; Courtney Stapf, Research Assistant; and Mary Beth Rowell, Graduate Research Assistant of New York Center for Health Workforce Studies and can be found at http://chws.albany.edu

[1] 1 For the purpose of this report, "older adults" are defined as people age 65 and older.

of the population. In many nations, fertility rates rose dramatically following World War II, with large numbers of children were born between 1946 and 1964. Known in the U.S. as the baby boom generation, these children will reach their 65th birthdays between 2011 and 2029. Overall, the numbers of older adults in this country will grow 138% in the next 50 years. By the year 2050, one of every five Americans will be age 65 or older.

Due to greater longevity as a result of better nutrition, safety, and medical care, the numbers of people who are age 85 and older will grow even more dramatically. The population of the "oldest old" is expected to grow by 377% by the year 2050. These people use significantly more health care services than younger people.

Figure 1: Percent of Total Population, Age 65 and Older, 1900 to 2050



Source: U.S. Bureau of the Census

B. More Services Used by Older Adults

This dramatic growth in the population of older adults is important because they have different health care needs than younger age groups, and this will affect the demands placed on the health care system in the future.

Chronic conditions. Older adults are more likely to suffer from chronic illnesses (e.g., cancer, heart disease, diabetes) than younger people. About 84% of those age 65 and

older suffer from at least one chronic condition, compared to 38% of those age 20 to 44 [Wu and Green, 2000].

Percent of persons age 65 and older who suffer from:

- Arthritis: 64% of women, 50% of men
- Diabetes: 12% of women, 13% of men
- Cancer: 17% of women, 23% of men
- Stroke: 8% of women, 10% of men
- Hypertension: 48% of women, 41% of men
- Heart disease: 19% of women, 25% of men

Source: FIFARS, 2000

These chronic conditions demand more from the health care system than acute illnesses (e.g., pneumonia, influenza, diarrheal illness) that were once major causes of death among all age groups. They require more complex treatments and entail a higher risk of functional disability and activity limitation. Many patients with these conditions will require long-term care.

Acute conditions. Older adults are more likely to require the services of health professionals as a result of injuries and illnesses due to greater physical vulnerability (e.g., they are more likely to break bones in falls; they are more likely to contract pneumonia as a consequence of influenza).

Functional limitations. Older adults have more limitations in terms of performing activities of daily living than younger people, due to greater rates of physical and cognitive disability. Almost 35% of those age 65 and older have an activity limitation, compared to about 6% of those ages 18 to 44 [U.S. Department of Health and Human Services (USDHHS), 2003].

Cognitive impairment. Age-related cognitive impairment (e.g., dementia) can affect levels of functionality, and is a major risk factor for entering a nursing home. Cognitive impairment can take the form of mild memory loss, stroke damage, Alzheimer's disease, or

other dementia. Dementia affects judgment as well as memory and organizational skills, and persons with severe dementia often require round-the-clock supervision.

Overall, about 4% of the youngest old (age 65 to 69) suffer from some degree of memory impairment, compared to about 36% of the oldest old (age 85 and older). Among 18% of the oldest old, memory impairment is severe. Men are more likely than women to experience cognitive impairment, and the risk of most forms of cognitive impairment increases with age.

Utilization of services. As a result of these conditions, older adults consume more ambulatory care and hospital, nursing home, and home health care services than younger people. People age 65 and older average 706 ambulatory care visits per 100 people (compared to 291 visits per 100 people age 18-44); average 286.6 hospital discharges per 1,000 people (compared to 94.8 for ages 18-44); and constitute more than 70% of home health care patients [USDHHS, 2003]. They also consume far more prescription medications than younger people.

C. Access to Care is a Greater Issue for Older Adults

The planning of health services for older adults is complicated by several limitations that older people are more likely to experience. Transportation to health care services is more of an issue for frail older adults because their driving abilities are likely to be constrained. More than 90% of people in their 60s are licensed drivers, but only slightly more than 50% of people in their 80s are still licensed [AARP, 2003]. Older adults are also disproportionately likely to live in rural areas (24% of older adults versus 19% of the U.S. population [AARP, 2003]), where health care providers may be in short supply and public transportation is not available.

Older adults who live in residential care settings often only have access to health care providers who visit their facility. Some providers are not easily able to administer services to

institutionalized older adults because necessary equipment (for example, a dental chair) is not available at the facility.

These access issues affect workforce planning because it means that the actual demand for health care employees to fill vacant positions is not equal to the need for services experienced by older adults.

D. Resources to Pay for Services for Older Adults

Health care expenditures for older adults grew dramatically in recent years, and will continue to rise as the number of older adults increases. The AARP [2002] estimates that average health care expenditures per person age 50 and older increased 310% between 1977 and 1996. Even after accounting for inflation, health care expenditures increased by 49% for those age 65-74, 62% for those age 75-84, and 77% for those age 85 and older. In 1996, some form of public reimbursement paid for about 64% of health care expenditures for older adults and private insurance covered about 19% [AARP, 2002].

Medicare is a public health insurance program for people age 65 or older. Medicare consists of two parts: Part A coverage, or Hospital Insurance (available to most older adults), and Part B coverage, or Medical Insurance (optional coverage for which most people pay a monthly premium). In 2003, Medicare Part A covered inpatient care in hospitals and a limited benefit for care in skilled nursing facilities, as well as hospice care and some home health care. In that same year, Medicare Part B covered many doctors' services, outpatient hospital care, therapeutic services, laboratory and diagnostic tests, durable medical equipment, and a range of other medical services. The variation in coverage is often difficult for beneficiaries and their families to understand, especially since many services are not reimbursed at all [The Family Circle/Kaiser Family Foundation, 2000].

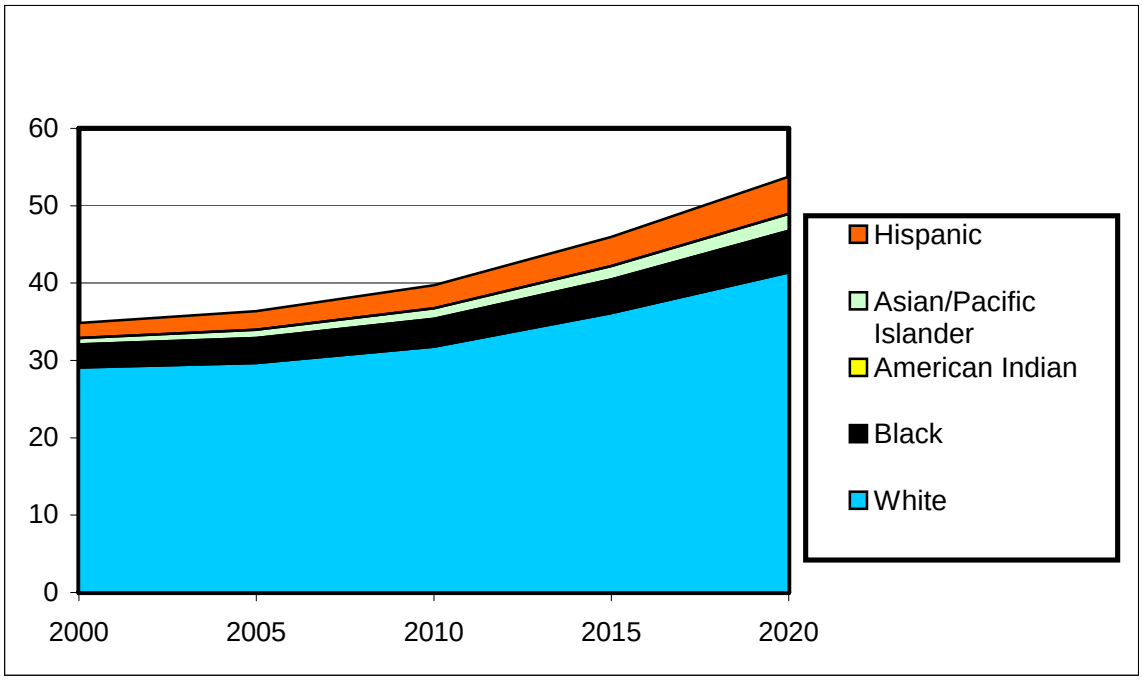
Because older adults in the U.S. have only one major payer for their health care services (the Medicare program), services are structured in large part by Medicare reimbursement. Although many older adults have some sort of supplementary insurance, Medicare reimbursement policies can affect both supply of health workers (by providing incentives or disincentives to serve older adults) and demand for services (by providing incentives or disincentives to older adults to obtain certain services.)

E. Changing Demographic Profile of Older Adults

Due to sweeping changes in American culture and technology in the past few decades, the needs and utilization patterns tomorrow's older adults may be different from those of current older adults in important ways, which will affect the demands placed on the health care system in the future.

The future cohort of older adults will be more racially and ethnically diverse than current older adults (64% non-Hispanic white in 2050, versus 83.5% non-Hispanic white in 2000 [Federal Interagency Forum on Aging-Related Statistics (FIFARS), 2000]), requiring a health care workforce that is more multilingual and culturally competent than is now the case.

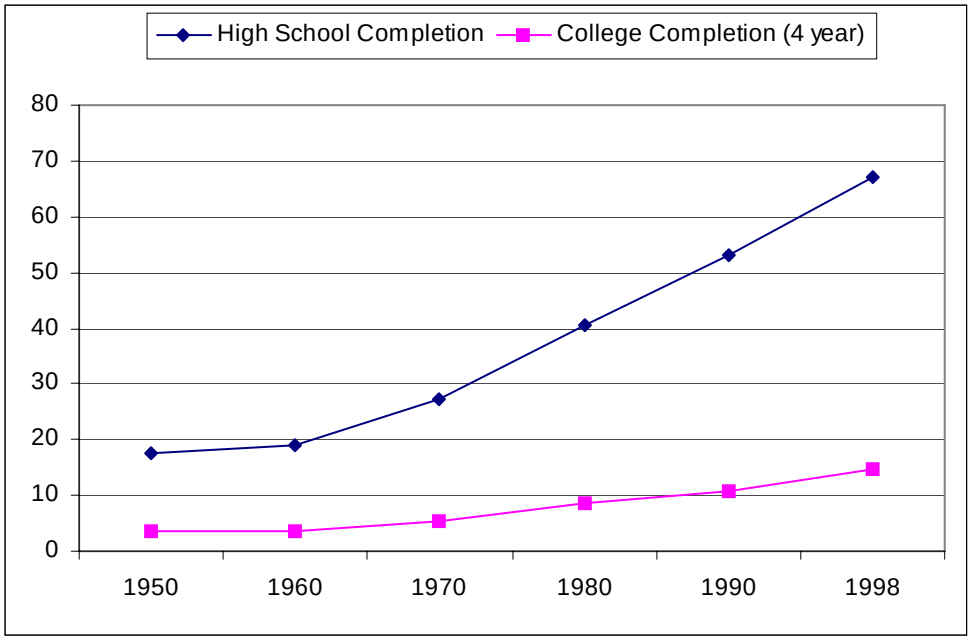
Figure 2: Racial and Ethnic Distribution of Americans Ages 65 and Older (in millions), 2000 through 2020



Source: U.S. Bureau of the Census

Older Americans are more likely to be high school (67%) and college (15%) graduates than in the past. With more health care information available than ever before, older adults are likely to be informed about health care practices and services. They may be more likely to seek out certain services, too, because of their higher level of sophistication, and may look for health care information from new sources (such as the Internet).

Figure 3: Percentage of the Population Age 65 and Older with High School Diploma and Bachelor's Degree or Higher, 1950 to 1998



Source: Federal Interagency Forum on Aging Related Statistics, 2000

Today's older adults are less likely to be poor (10.5%) and more likely to have high incomes[2] (27.5%) than in the past [FIFARS, 2000]. They may be in better health overall because of better access to health care over their lifetimes. Many will also have more discretionary income to spend on health services not covered by Medicare, especially those that may improve their quality of life while perhaps not being medically essential.

Future older adults will have a smaller pool of potential family caregivers than current older adults. They have had fewer children than their parents, and are more likely to have had no children (more than 12% of women in this cohort are childless [USDHHS, 2001a]). They are also more likely to be divorced (lifetime divorce rates are projected to be 53% for the cohort [Cherlin, 1992]), and will thus be more likely to live alone as they enter old age.

F. The Organization of Health Care Delivery

The new demands placed on the health care system will not only include a need for greater numbers of health care workers, but may also involve changes in the way services are currently provided to older adults. New models of care will be developed and modified to serve a swelling population of older adults. In particular, there will be a movement towards community-based care and home care, leaving a more seriously ill population to be cared for in institutions.

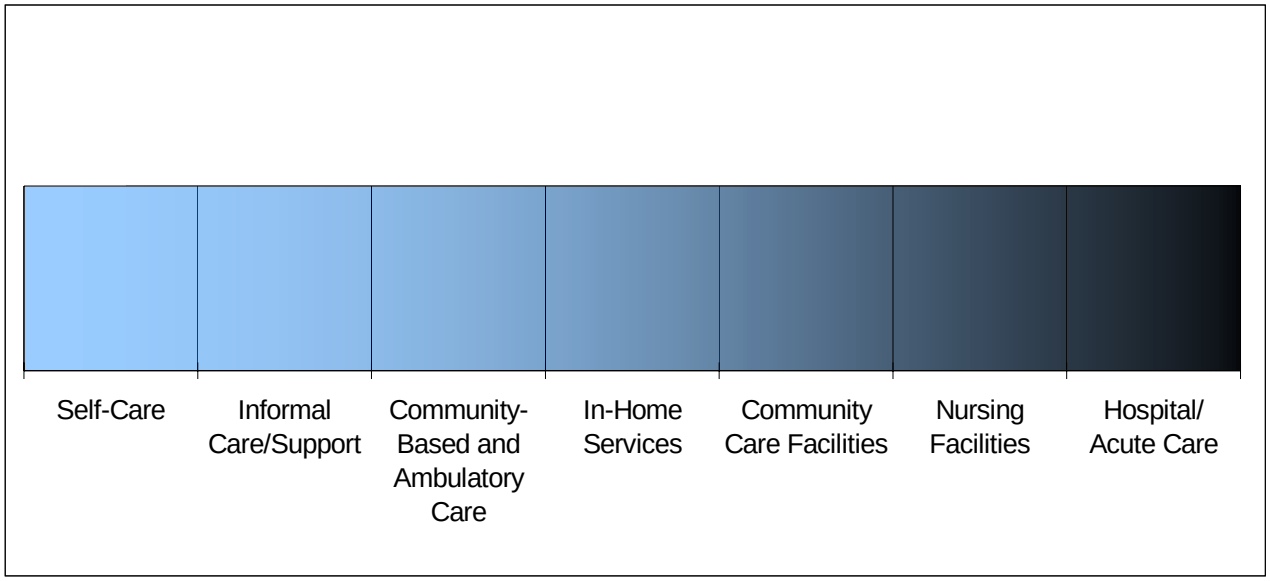
The traditional model of the formal health care delivery system in the U.S. is a physician-centered system focused on the provision of acute and preventive care in hospital or ambulatory care settings. This acute care model is necessary, but not sufficient, for the provision of appropriate services to older adults. In fact, there are six other models of health care relevant to older adults that must be considered in any comprehensive system. As the

[2] Defined as 400% or more of the poverty threshold

older adult population grows in both numbers and as a percentage of the U.S. population, the other six models of care are likely to capture an expanding share of health care services for older adults, and employ an increasing proportion of the health workforce.

Models of care for older adults can be conceptualized in terms of a continuum, ranging from self-care to informal care (i.e., that obtained through family and social networks); community-based care (e.g., support groups, senior centers, adult day care); in-home services (e.g., personal care assistance); congregate living situations (e.g., retirement communities, community care facilities, assisted-living facilities); nursing facilities (e.g., nursing homes); and hospitals [CHWS, 2002a]. Each of these models involves a varying degree of intensiveness of formal services, and a varying degree of care coordination, and progressively greater costs.

Figure 4: Models of Care for the Elderly (Ranging from Least to Most Intensive)



As the settings in which health care is provided to older adults changes, the demand for health care workers will also change. Home health and assisted living settings are

expected to employ many more health professionals in the next 10 years. Employment in nursing homes is expected to also rise, although more moderately.

Table 1 illustrates the extent to which future opportunities for health care workers will more often be available in home health and residential care rather than in nursing homes (although nursing home employment will grow rapidly). Most of the featured occupations will see growth of 36% or less in nursing home settings (an exception being personal care aides, who will find demand growing by 67% in nursing homes)[3]. Dietitians and nutritionists will see their job opportunities in nursing homes *decline* slightly [BLS, 2003a].

In contrast, few occupations will see growth of less than 60% in home health care and residential care (the exceptions being medical and health services managers, who will grow only 36% in home health; licensed practical nurses, who will grow only 45% in residential care; home health aides, who will grow only 53% in residential care; and speech-language pathologists, who will grow only 11% in home health).

Table 1: Projected Growth of Health Occupations and Professions in Home Health Care, Nursing Homes, and Non-Nursing Residential Homes, U.S., 2000-2010

	Overall	**Home Health**	**Nursing Homes**	**Community Care[4]**
General Health Care				
Physician Assistants	54%	Not available	24%	70%
Registered Nurses	26%	70%	36%	70%
Licensed Practical Nurses	20%	70%	23%	45%
Nursing Aides	24%		24%	70%
Home health Aides	47%	70%	24%	53%
Personal care Aides	63%	70%	67%	87%
Medical and Health Services Managers	32%	36%	24%	70%
Therapy				
Physical Therapists	33%	61%	29%	61%
Physical Therapist Aides	46%	87%	36%	87%
Physical Therapist Assistants	45%	87%	36%	87%
Occupational Therapists	34%	68%	34%	68%
Occupational Therapist Assistants	40%	87%	36%	87%

[3] Personal care aides are not health workers, but provide services such as housekeeping and routine personal care.

[4] Facilities providing care that typically includes room, board, supervision, and assistance in daily living, such as housekeeping services. Do not provide nursing care.

Occupational Therapist Aides	45%	87%	36%	87%
Respiratory Therapists	35%	70%	24%	70%
Respiratory Therapy Technicians	35%	70%	24%	
Speech-Language Pathologists	39%	11%	24%	70%
Oral Health				
Dentists	6%	Not available	24%	70%
Dental Hygienists	37%	Not available	24%	70%
Dental Assistants	37%	Not available		71%
Mental /Behavioral Health				
Mental Health and Substance Abuse Social Workers	39%	70%	24%	87%
Medical and Public Health Social Workers	32%	104%	36%	70%
Child, Family, and School Social Workers	27%	70%	24%	70%
Psychologists	18%	64%	19%	70%
Medication and Nutrition				
Pharmacists	24%	70%	24%	70%
Pharmacy Technicians	36%	70%	24%	
Pharmacy Aides	19%	70%	24%	
Dietitians and Nutritionists	15%	70%	-1%	70%

Source: 2000-2010 Industry-Occupation Employment Matrix [BLS, 2003]

This will clearly change the composition and training needs of the workforce required to care for older adults. Health care workers in some professions may need to find new ways of providing services. This may include more services being provided at the homes of patients, in group settings, in nursing homes and assisted living facilities, or through the Internet. New opportunities will develop for health care personnel in settings in which they are not currently well-represented (for example, demand for physician assistants and nurse practitioners may increase in long-term care settings).

G. The Need for New Skills and Procedures

Workers in some health professions/occupations will need better training in geriatric issues. The current standards for geriatric education vary by profession/occupation, but future increases to the geriatric content available to providers as part of their training may include any or all of the following:

- greater geriatric content as part of the required curricula in educational/training programs;
- more geriatric content included on licensure examinations;
- expanded availability of continuing education in geriatrics; and
- establishment of or increases in specialty geriatrics programs or credentials.

The scope of practice for many professions/occupations may change as a response to greater demand due to population aging. Many helper professions and occupations (e.g., pharmacy technicians, dental hygienists, therapy assistants, nursing aides) might potentially assume a greater role in the provision of services to patients if shortages occur in the corresponding primary professions.

Changes in technology may also be necessary to offset potential workforce shortages. From automated pill packaging in pharmacies to video-links that allow urban medical specialists to "see" a rural patient and consult with the primary care physician, to sensors that ensure Alzheimer's patients don't wander away from their homes and microchips that record a patient's nutritional intake, technology will play a growing role in heightening productivity among health professionals by allowing them to serve more patients and consumers.

H. General Supply Trends

Based on information compiled from various sources, a number of general conclusions can be reached about the supply trends in the health care workforce. The most salient conclusion is that large numbers of health care workers will be retiring at the same time the demand for health care is on the rise. This is true in most health professions/occupations, reflecting trends in the civilian labor force as a whole.

However, certain professions and occupations are at greater risk of depletion than others. Occupations with long educational trajectories tend to be older on average than those with shorter educational trajectories. Physicians, for example, with their lengthy training, are

among the oldest health professionals (30% of physicians are age 55 and older, compared to only 14% of the civilian labor force [BLS, 2001]). Clinical psychologists, who must have a doctorate, are also substantially older than the average.

On the other hand, relatively new occupations tend to be younger than average. The therapy professions, for example, largely did not exist 50 years ago. Few baby boomers were aware of these professions as a career option. Therefore, there are fewer baby boomer therapy professionals, and the therapy professions (ranging from only 3% to 7% older than age of 55, compared to 14% of the civilian labor force [BLS, 2001]) will be less depleted by baby boomer retirements than long-standing professions such as nursing.

The aging of professions is not the only factor affecting future supply, however. Some professions and occupations are in a better position to recruit large numbers of young people, for a variety of reasons. Factors such as reimbursement, for example, are associated with the influx of new entrants into occupations. Some professions are simply more attractive to young people than others, too, and these professions will be better able to withstand large numbers of retirements, as the retirees will be quickly replaced.

Another issue is the ability of professions and occupations to recruit new entrants into geriatric settings and specializations. New entrants must have some motivation to choose to work with older adults. Geriatric sub-specialties in medicine, for example, are not popular among new medical school graduates. These specialties are also poorly reimbursed compared to others. Many younger nurses also avoid long-term care settings such as nursing homes (where the median age for registered nurses is 44) in favor of hospitals (where the median age for registered nurses is 41), because the latter pays better. In such a situation, a critical shortage of workers to serve older adults may occur even though the numbers of practitioners in a profession are adequate overall.

I. Geriatric Training

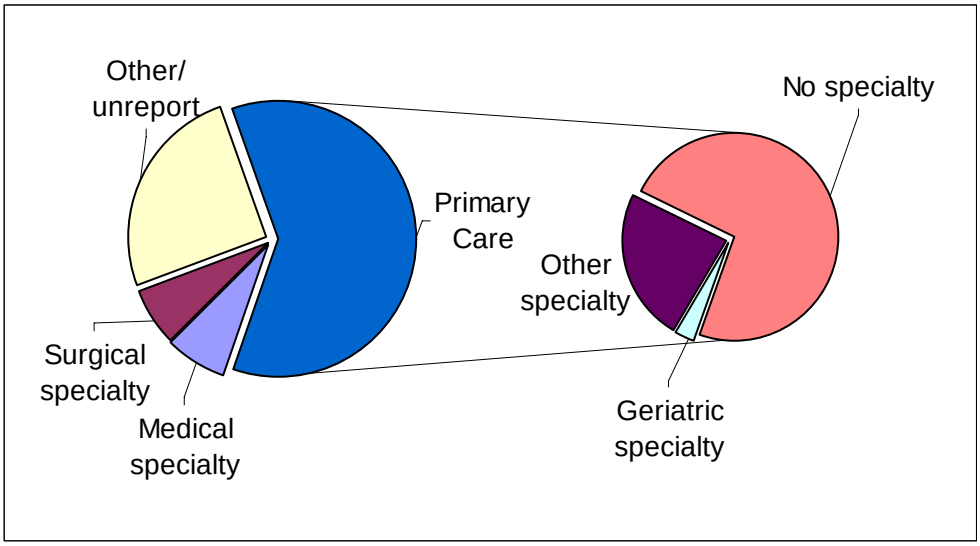
A majority of health workers in most health care settings deal with substantial numbers of older adults whether or not they are specialists. Yet, the core training required in geriatric issues varies greatly by profession and occupation, and between educational programs. For the workforce to be adequately prepared for the coming demographic changes, all health workers educational programs should include basic competencies in serving older adults.

Although many health professions and occupations offer some formal credential focused on the needs of older adults, many do not. When such a credential is offered, the number of workers with the credential is typically very small (even when most workers in the professions deal with large numbers of older adult patients). It is anticipated that demand will increase for workers with such specialized credentials, so efforts should be made to create such credentials and encourage both new entrants and existing workers to pursue them.

J. Specific Professions/Occupations

Physicians. Physicians are currently the core of the U.S. health care system, providing the greater share of both primary and specialty care. Demand for physicians is expected to rise dramatically, in part due to the aging of the population. The numbers of new geriatricians, however, are declining just as the number of Americans age 65 and older will increase dramatically. The decline in geriatric specializations may create imbalances between the population needing care and the training of the physicians giving care.

Figure 5: Distribution of Physicians by Specialty



Source: AMA

In the U.S., there are also a number of professions specializing in the performance of functions that may fall into the scope of practice of physicians in other nations. Podiatrists, for example, specialize in the care of the foot and ankle, while chiropractors specialize in spinal care. There is great need for these services among older adults, yet information on how older adults utilize these services is limited. Because Medicare coverage for non-physician services is limited (although expanding), these needs may or may not lead to corresponding rises in demand.

Physician assistants and advanced practice nurses. In the U.S., other professions also provide primary care similar to that provided by physicians, but within a more limited scope of practice. Physician assistants (PAs) and advanced practice nurses (APNs) may become an important source of care for older adults, particularly the underserved, if physician supply proves limited.

Physician Assistants (PAs) are licensed to practice under the supervision of a physician. The two professions work together in coordinating the care of their patients. PAs

perform most or all of the services provided by physicians, depending upon the scope of practice specified by the laws of their state, and the specific practice agreements worked out between the physician and the PA.

Educational production of PAs currently appears adequate to meet demand over the next decade or more. Shortages in the profession are not anticipated in the near future, but PAs have not yet reached their full potential in the treatment of older adults, and the use of PAs in new models of care may affect the demand trajectories for the profession.

Advanced practice nurses (APNs) are registered nurses who are qualified through additional training or education to provide clinical medical care to patients and have acquired the expert knowledge base, complex decision-making skills, and clinical competencies for expanded practices. Nurses are trained in an approach that emphasizes chronic care and patient management, as opposed to the medical model that emphasizes acute care so the skills and orientation of APNs such as nurse practitioners (NPs) and clinical nurse specialists (CNSs) are especially well-suited to the care of the older adults.

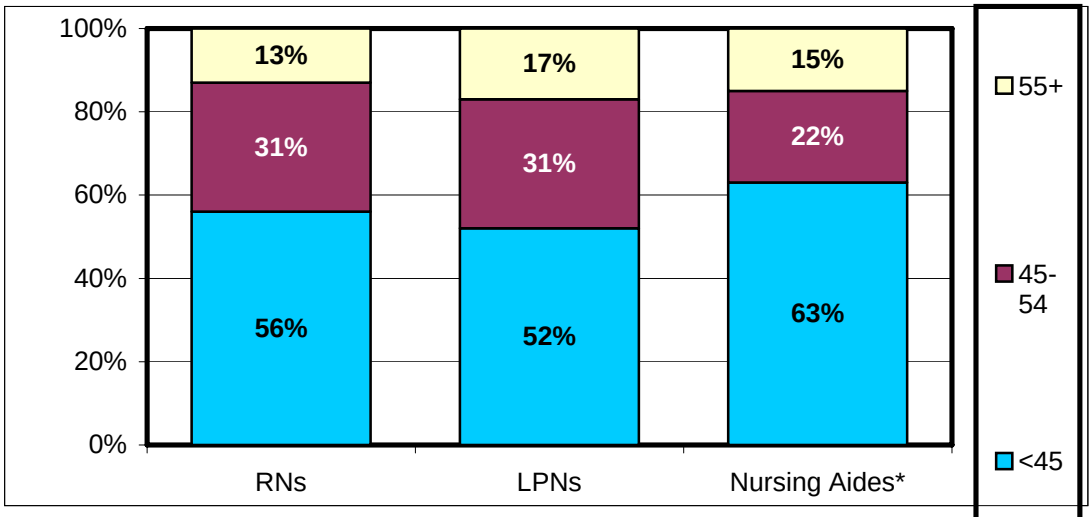
The educational production of advanced practice nurses (APNs) has increased since 1990, with the number of NPs growing especially rapidly. Nonetheless, this growth may be insufficient to meet future demands. Annual replacement needs are likely to accelerate over the next 10 to 20 years because large numbers of APNs will be reaching conventional retirement age. It is not certain whether greater production will occur, and if the increases will be proportionate to the growing replacement needs. APNs have also not been used to their full potential in long-term care settings. As the number of older adults rises and APNs are used more effectively in the treatment of this population, demand for APNs may grow substantially.

Nursing professions and occupations. While physicians provide most higher-level medical care in the U.S., nurses provide most direct patient health care. Nurses in the U.S.

are divided into either registered nurses (RNs) or licensed practical nurses (LPNs), with the former having greater educational preparation than the latter and enjoying a broader scope of practice. Very basic health care (e.g. the taking of vital signs, assistance in personal care) is usually performed by nursing aides (in facilities) and home health aides (in the patient's home), who are collectively known as direct care paraprofessionals.

The nation is already experiencing a shortage of registered nurses (RNs) estimated at 6%. By the year 2020, the supply of RNs is projected to fall 29% below predicted requirements [Health Resources and Services Administration (HRSA), 2002]. Many states reported a shortage of RNs in the past few years, primarily due to an aging RN workforce and inadequate numbers of people choosing to enroll in nursing school [BLS, 2001]. However, in a recent study, 39% nursing schools refused admission to qualified students due to a lack of faculty and resources to educate them, and so were not able to raise their student enrollments. Adequate faculty will continue to be a problem as many are near or at retirement age. Other factors that contribute to reduction in the pool of RNs available to work in long-term care settings are professional burnout, unappealing work climates, lack of job satisfaction, quality of care issues, and lack of managerial support [MacEachern, 2002].

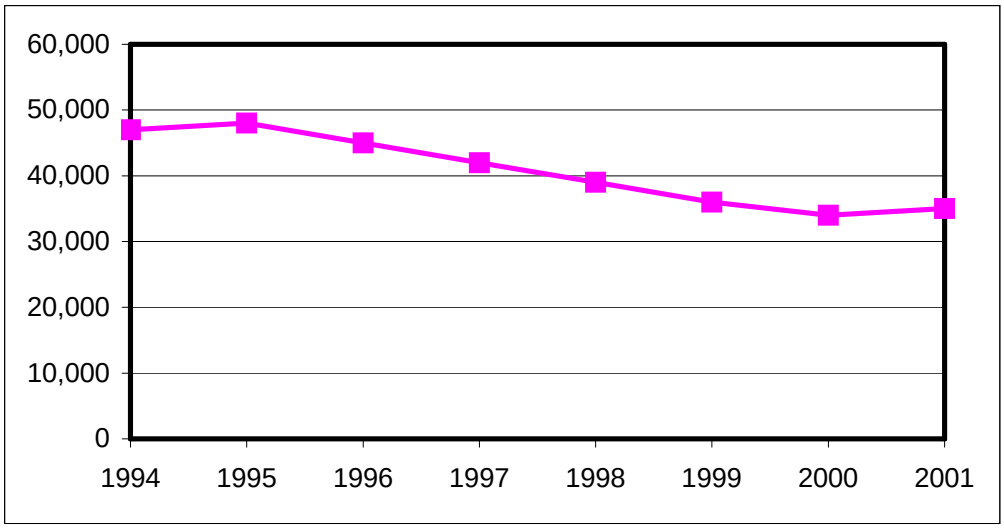
Figure 6: Age Distribution of Nurses and Aides in the U.S., 2001



Source: CPS data (BLS, 2001)
*Nursing aides in the CPS include orderlies and attendants.

The Bureau of Labor Statistics projects that about 320,000 job openings for Licensed Practical Nurses (LPNs) will occur between 2000 and 2010, with about 140,000 of these openings due to net growth. The supply of active LPNs has decreased slightly, however, since 1995, while the number of potential LPNs produced annually (as measured by number of candidates successfully passing the licensure exam) has declined by 28%. Undoubtedly, these reductions in the potential and actual supply of LPNs are ill-timed. Recruitment and retention of LPNs must increase in order to avert a shortage in the near future. LPNs play a greater role than in long-term care than acute care, and so shortages of LPNs will disproportionately affect services for older adults.

Figure 7: Number of Candidates Passing the LPN Licensure Examination (NCLEX-PN), 1995 to 2001



Source: NCSBN

Although the supply of both nursing aides and home health aides has expanded since 1995, these increases have been moderate relative to projected demand. The Bureau of Labor Statistics projects 498,000 job openings for nursing aides, and 370,000 job openings for home health aides between 2000 and 2010. The work of direct care paraprofessionals is demanding and poorly paid, and problems with recruitment and retention of qualified workers continue to threaten their supply.

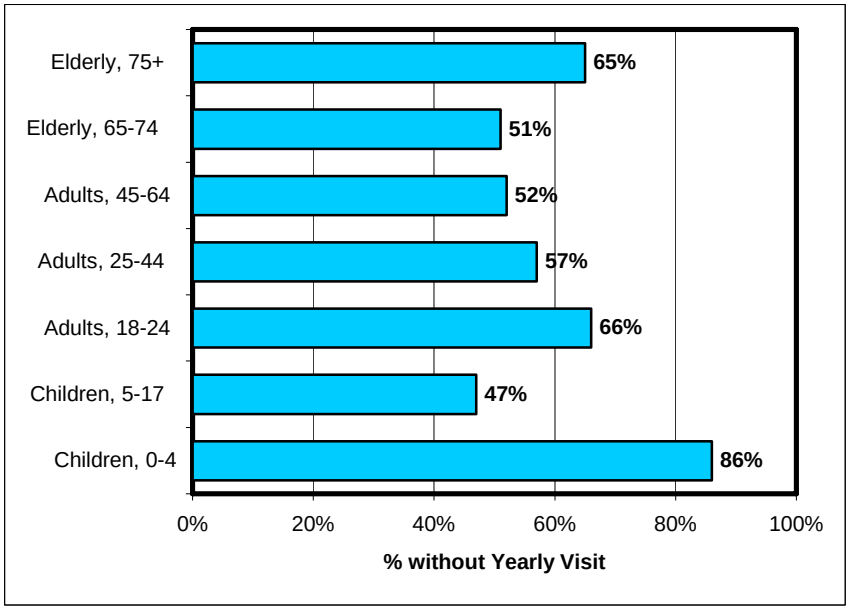
Oral health professions and occupations. Most oral health care in the U.S. is provided by dentists, not physicians. Dentists work with dental hygienists (who provide tooth cleanings and routine care) and dental assistants (who perform basic auxiliary functions such as sterilizing instruments and restocking supplies).

The Bureau of Labor Statistics projects that job openings for 43,000 dentists, 76,000 dental hygienists, and 136,000 dental assistants will occur between the years 2000 and 2010. In 2000, accredited postsecondary schools with oral health programs produced 4,488 dentists, 5,777 dental hygienists, and 4,792 dental assistants (National Center for Education Statistics (NCES), 2001; American Dental Association (ADA)). Production of dentists may therefore

be sufficient to meet BLS-projected demand, but the production of dental hygienists and dental assistants may be inadequate (although dental assistants are not required to graduate from a formal educational program).

Some sources indicate a possible shortage of dentists (USDHHS, 2000), but a greater potential problem may be the distribution of oral health professionals. Some people (e.g., those in rural areas) have very limited access to dental care, while others may have no difficulty obtaining oral health care. Improved access to oral health care for older adults would increase demand for these services, but the increased demand could lead to pronounced shortages.

Figure 8: Utilization of Oral Health Services by Age, 1999



Source: MEPSnet [Agency for Healthcare Research and Quality, 2003].

Optometrists. Optometrists provide most primary vision care in the U.S., including treating the most common eye pathologies in older adults. Although there are currently enough optometrists to meet the needs of the public, around the year 2012, older optometrists will reach retirement age and start to leave practice. The supply may begin to shrink sooner if

enrollments in schools of optometry do not increase. There has been concern among practicing optometrists about the harm that a potential oversupply could do to the profession, but these fears do not seem founded at this point. The average income of optometrists has continued to rise, despite their strong numbers [Center for Health Workforce Studies (CHWS), 2003].

Therapy professions. The therapy professions include physical therapists, occupational therapists, respiratory therapists, speech-language pathologists, and audiologists. All provide services related to optimizing physical and sensory functioning, including treating functional limitations that may increase with aging. The future job market for therapy professionals will be influenced by a number of variable factors, especially reimbursement. Strong growth is currently projected for each of these professions [BLS, 2003a] and there is some indication that shortages of occupational therapists (OTs) may already be developing, despite a recent oversupply. The small numbers of therapy students specializing in aging practice is also a concern.

Another variable that will influence demand for therapists is the role played by therapy assistants in the provision of therapy services. Due to rising health care costs, third party payers are beginning to encourage therapist assistants and aides to take more hands-on responsibility for the delivery of services. Having assistants and aides work more closely with clients under the guidance of a therapist should help to control the costs of therapy [BLS, 2003a], and help to reduce the magnitude of any shortages of therapists that may arise in the future.

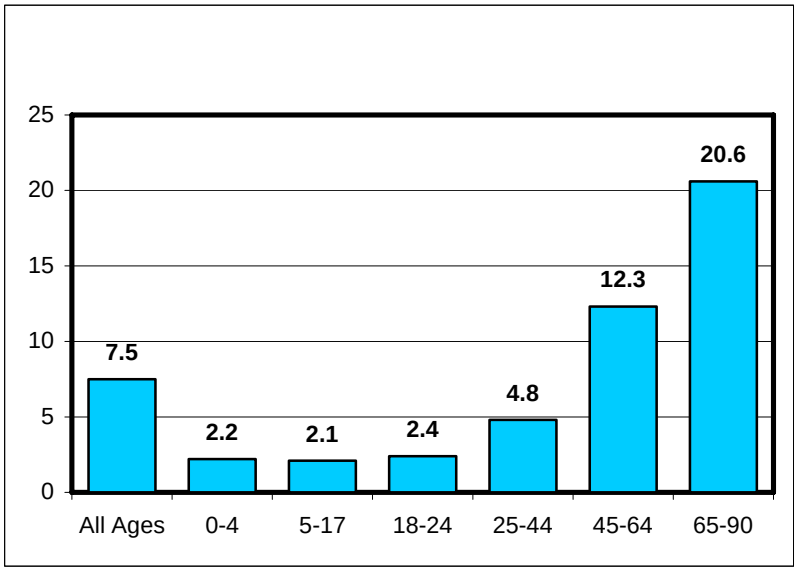
Pharmacists. The Bureau of Labor Statistics projects that pharmacy positions will grow by 53,000 jobs between the years 2000 and 2010. Another 65,000 job openings will occur due to replacements [BLS, 2003a]. Thus, a total of 118,000 new pharmacists would be needed to fill open positions between 2000 and 2010. Currently, 7,600 pharmacists earn first

professional degrees each year, meaning that only about 76,000 new pharmacists will be produced between 2000 and 2010 [American Association of Colleges of Pharmacy (AACP), 2003], and some of these may choose not to practice or to practice part time. Although pharmacy enrollments have increased notably since the 1999-2000 academic year, it is uncertain this growth will be sufficient to ensure an adequate supply of pharmacists over the coming decade.

Until recently, the entry-level pharmacy degree was the Bachelor of Science (BS). In 2001, 62% of self-reported pharmacists held a bachelor's degree, with the remainder holding a master's, professional, or doctoral degree [BLS, 2001]. The BS in Pharmacy has been gradually replaced as the entry-level degree by the Doctor of Pharmacy (PharmD) degree, which requires six years of postsecondary study. By 2005, the BS in Pharmacy will no longer be awarded. It is expected that the transition from BS to PharmD programs in pharmacy will result in better preparation of pharmacists to meet the new demands of a drug-centered health care system, but may slow current production of pharmacists by adding years to the pharmacy pipeline.

The U.S. may face a critical shortage of pharmacists unless educational production can be enlarged or unless ways are found to further enhance the productivity of pharmacists (e.g., by using more pharmacy technicians or by adopting new technologies) [HRSA, 2000]. Such a shortage would disproportionately affect older adults, due to their much higher use of prescription medications and their greater risk of complications from such medications.

Figure 9: Average Annual Prescriptions per Person (Including Refills) by Age Group, 1999



Source: MEPSnet/HC

Registered dietitians. The future supply of dietitians will depend, in part, on future trends in educational production. The Bureau of Labor Statistics projects 21,000 job openings by the year 2010, with 7,000 of them resulting from net growth in the profession. If registrations of new dietitians stabilize at current rates, the supply *will* continue to grow. If rates of graduation from educational programs continue to decline, however, the supply will begin to level off and eventually decrease. It is not certain how the recent introduction of the Medicare Medical Nutrition Therapy (MNT) benefit will affect future demand. The new availability of non-referral services from independent dietitians may result in a greater demand for nutritional services than anticipated.

Clinical psychologists. About 20% of older Americans suffer from a diagnosable mental disorder, including anxiety disorders, severe cognitive impairment, and mood disorders. Despite this situation, mental and emotional disorders are underdiagnosed and undertreated in older adults. Older adults are about half as likely as younger adults to see a mental health provider.

Clinical psychologists are one of the key professions in the U.S. that diagnose and treat mental and emotional disturbances. Due to the diversity of specializations and settings in which psychologists work, it is difficult to determine the future labor market demand for *clinical* psychologists (as opposed to other types of psychologists) relative to how many are being produced. Thirty-four percent of psychologists with doctoral degrees will reach retirement age by 2010 (if clinical psychologists with doctoral degrees are not substantially older or younger than their non-clinical colleagues, this is approximately 27,000 retirements of clinical psychologists by 2010). If current annual educational production of clinical psychologists continues at current rates, about 22,000 clinical psychologists will be produced between 2000 and 2010, which would not be sufficient to replace retirees.

Professional social workers. Professional social workers in the U.S., like clinical psychologists, may diagnose and treat mental and emotional disorders. Social workers are also involved in cognitive, social, and health care problems (e.g., case management, discharge planning) that may disproportionately affect older adults. Although the social work profession will continue to grow in the coming years, it is not evident the current social work needs of older adults are being met. If barriers to professional social work care for older adults are addressed in the coming decades, it may be necessary to employ many more social workers. Furthermore, it is not certain the number of social workers who are adequately trained to work with older adults will be sufficient to meet the social work needs of the growing population of older adults.

Nursing home administrators. Nursing home administrators (NHAs) play a central role in the quality of life of nursing home residents. They are responsible for supervising and managing staff, managing the finances of the facility, guaranteeing the safety of their patients and residents, and assuring compliance with many government regulations and reporting requirements.

As of 1999, there were approximately 1.6 million nursing home residents in 18,000 nursing homes across the U.S. About 4% of older adults live in nursing homes at any given time, but 46% of those who turn 65 in the next 20 years are expected to spend at least some time in a nursing home. Nursing homes have been waning in popularity as a work setting over the past decade, but have continued to grow slowly in number due to increasing demand for nursing home services. This slow growth is expected to continue as the numbers of older adults continue to rise over the next ten to twenty years.

Approximately 30,000 to 35,000 NHAs were licensed in the U.S. in 2000, but only an estimated 17,000 to 18,000 were actively employed as nursing home administrators. While demand for nursing home administrators (NHAs) will continue to grow proportionate to the growth of the population of older adults, substantially smaller numbers of candidates are sitting for the national licensure examination (only about half of which are likely to actually become NHAs at current rates). About 1,500 new NHAs per year will be needed between 2000 and 2010 to account for both demand growth and replacement needs. Recent estimates suggest that only about 1,150 new NHAs will enter the workforce each year.

III. Conclusions

The population of older adults will grow dramatically over the next 50 years, especially the oldest old (those 85 and older). Older adults have more health care needs than younger age groups, and this will affect the demands placed on the health care system in the future. Furthermore, the needs and utilization patterns of the baby boomer generation may be different than today's older adults in important ways, and this will also affect the health care system in the years ahead.

Large numbers of health care workers will be retiring at the same time that the demand for health care is increasing. Some professions are at greater risk for depletion than others (e.g. professions with long educational trajectories, or that attract older or second

career students). The new demands placed on the health care system will not only include a need for greater numbers of health care workers, but may also involve changes in what type of services are offered to older adults and how they are provided. The settings in which older adults access health care may be different. The scope of practice for many health professions and occupations may shift in response to an aging population. Advances in technology may also be necessary to offset potential workforce shortages.

A majority of health workers in most health care settings deal with many older adults whether these workers are geriatric specialists or not. Yet, many health professions and occupations do not offer formal credentials focused on the needs of older adults. When such a credential is offered, the number of workers with it is typically very small. Workers in some health professions and occupations will need better training in geriatric issues including greater geriatric content in required curricula; more geriatric content on licensure examinations; expanded availability of continuing education in geriatrics; and developing geriatric specialists within the profession. Health care workers must prepare for new roles in different settings to meet the needs of an aging population.

Excerpts from the United States Health Workforce Profile

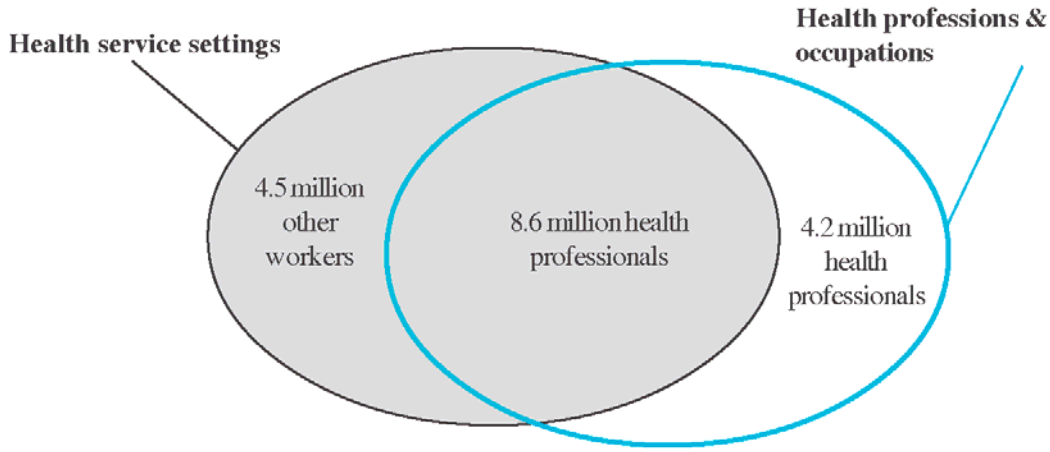
By

Mark G. Dionne, MS, Assistant Director, CHWS, U Albany

Introduction

The health care workforce represents more than 11% of the U.S. workforce. More than one in ten Americans either works in a health care setting or is a health professional.

THE US HEALTH WORKFORCE, 2004



	Health professionals	Other workers	Total
Health service settings	8,588,097	4,474,003	13,062,100
Other work settings	4,176,903	128,373,329	132,550,232
Total	12,765,000	132,847,332	145,612,332

Health professionals working in health service settings	8,588,097	5.8%
Health professionals working in other settings	4,176,903	2.9%
Other workers in health service settings	4,474,003	3.1%
US health workforce	17,239,003	11.8%
US civilian labor force	145,615,332	100.0%

Source: Bureau of Labor Statistics.

Nonetheless, the U.S. struggles with current shortages of many different types of health workers -- from physicians and nurses to home health aides. Comprehensive data about the health care workforce is now increasingly important so that informed policies can be developed to address the shortfalls.

Certainly, the U.S. benefits from rapidly emerging medical advances, and yet many Americans face barriers to high quality health care, in part, because the right mix of health care professionals is not available to serve them. Successfully increasing access to health care for all Americans depends on the availability of a well-trained and culturally-competent workforce.

In the U.S., individual states play several critical roles related to the health workforce. They license and credential health professionals and provide funding for health professions education, particularly at public colleges and universities. In addition, states set reimbursement rates for publicly-funded insurance and regulate private insurers operating in their region. States also need to assure access to high quality health care for all their residents. To carry out these roles and other responsibilities, it is essential for state policy makers and planners to have basic data on the health workforce.

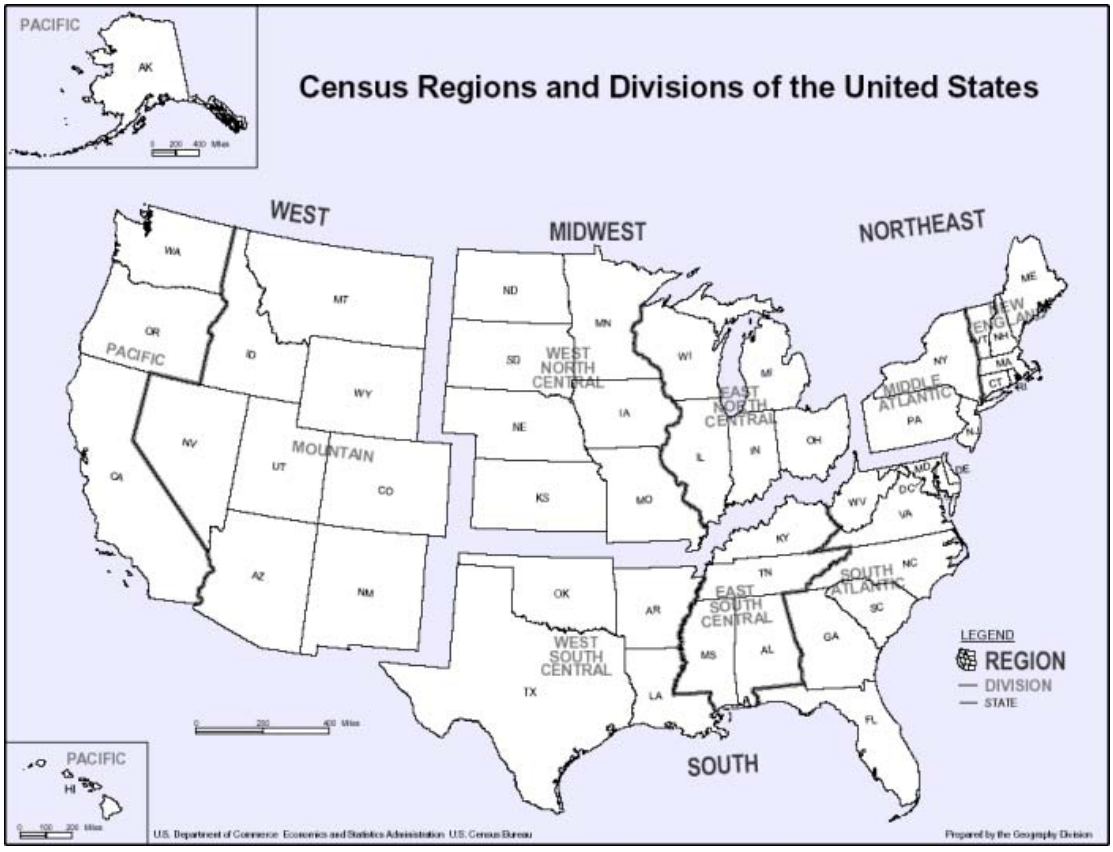
The U.S. National Health Workforce Profile was developed to give states timely data that can help them better understand the size and composition of their health workforce and use the information to address critical health workforce issues. The profile is a compilation of national, regional, and state data that contains the latest, most accurate information on the health workforce. With the profile, health researchers, educators, and policymakers can assess current workforce needs and plan for the future.

Collectively, the maps and charts in the profile provide information on:

- the health status of the nation's residents;
- health services employment; and
- the health workforce, including physicians, nurses, dentists, and professionals from 27 other health care disciplines.

In this article, the profile also presents a variety of ways of displaying health workforce data to best illustrate the story behind the statistics, with bar graphs, pie charts, line graphs, and maps.

Throughout this profile, comparisons are presented between the states, regions and the nation as a whole in order to provide a broader context for the data. The designated regions used in the profile are the nine geographic divisions within the U.S. officially recognized by the U.S. Census Bureau.



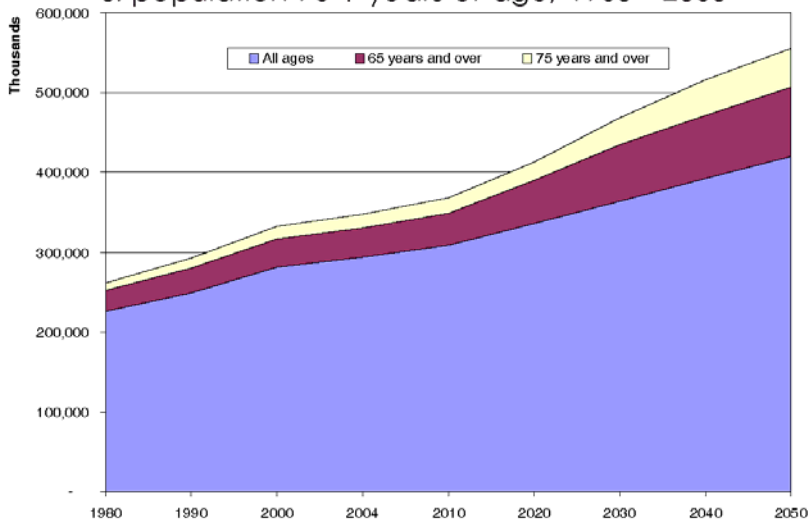
Source: U.S. Census Bureau

The following pages are excerpts from the U.S. National Health Workforce Profile.

BACKGROUND

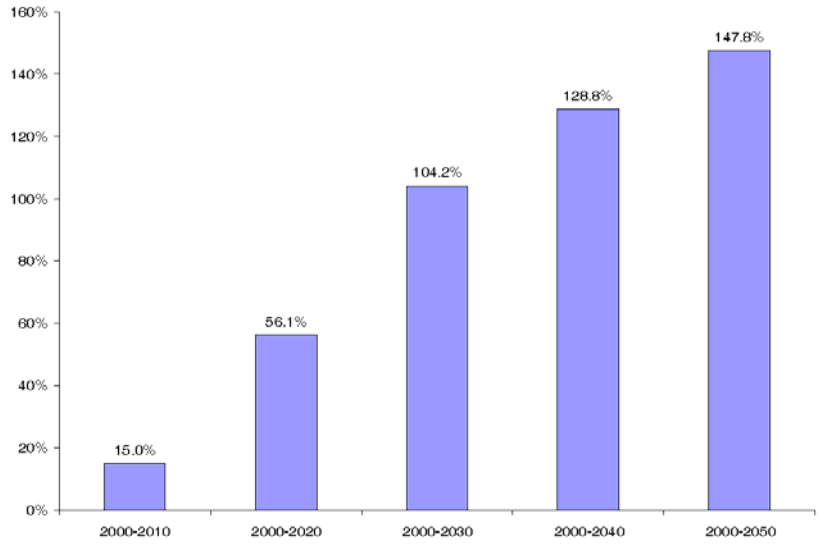
POPULATION PROFILE

Projected percentage change in total population, population 65+ & population 75 + years of age, 1980 - 2050

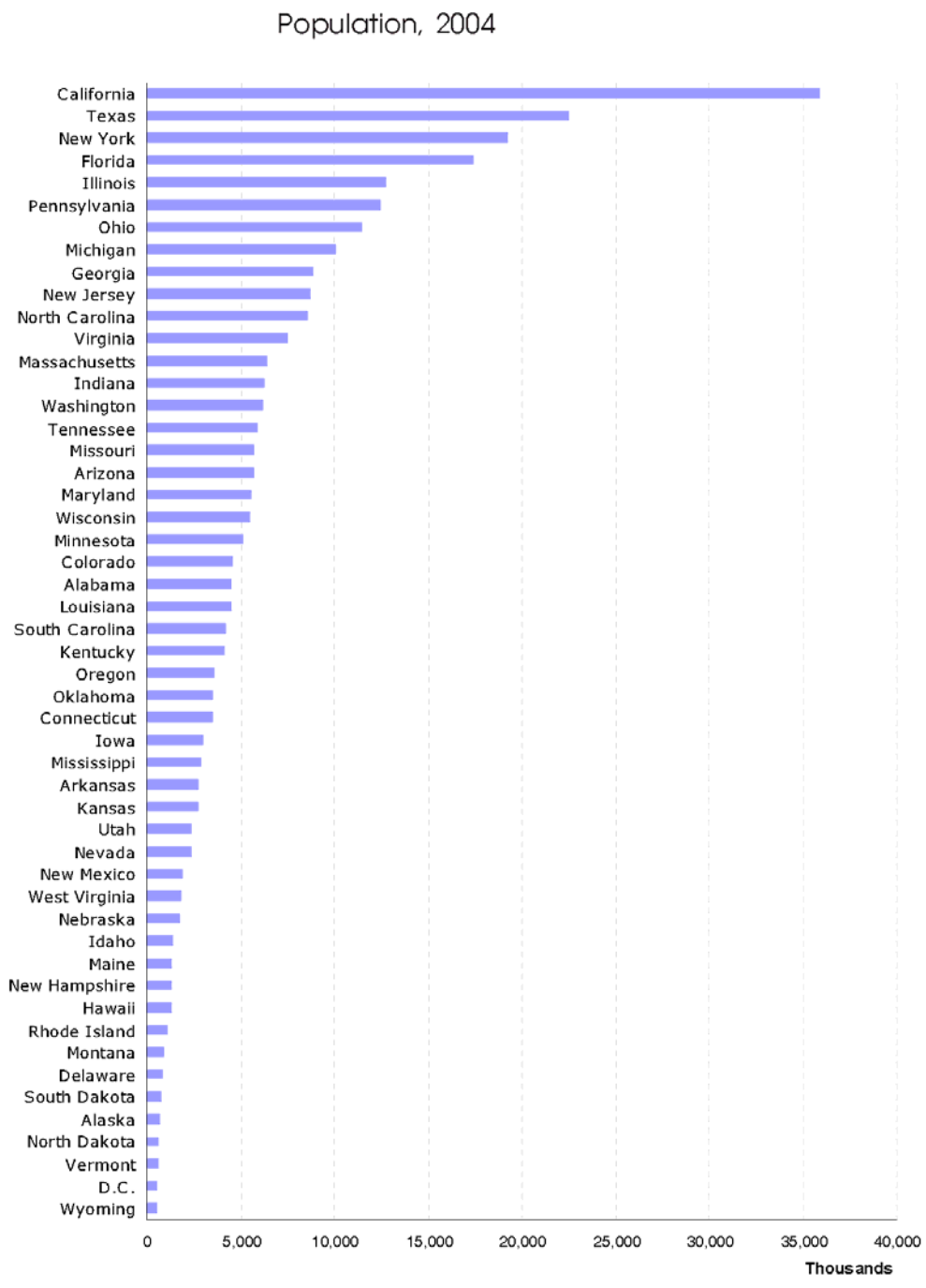


Source: Bureau of the Census.

Projected percentage change in Population 65 + years of age, 2004



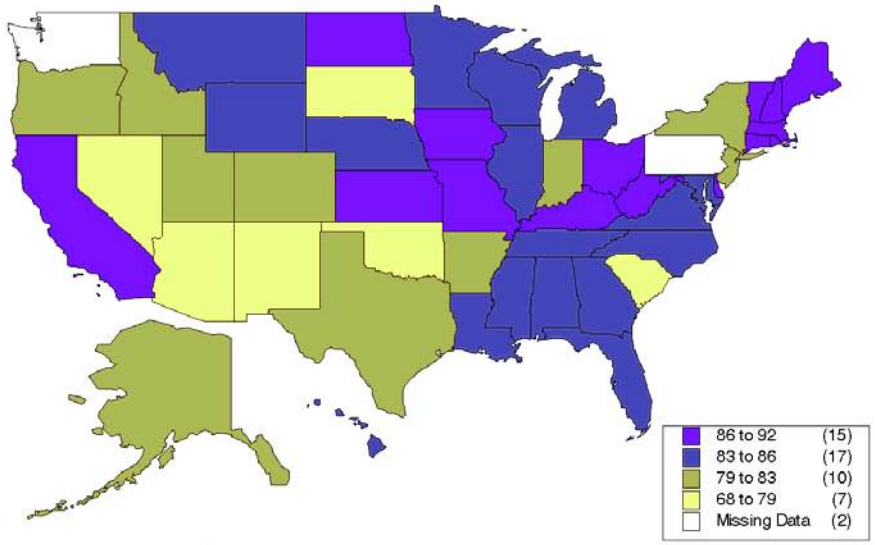
Source: Bureau of the Census.



Source: Bureau of the Census.

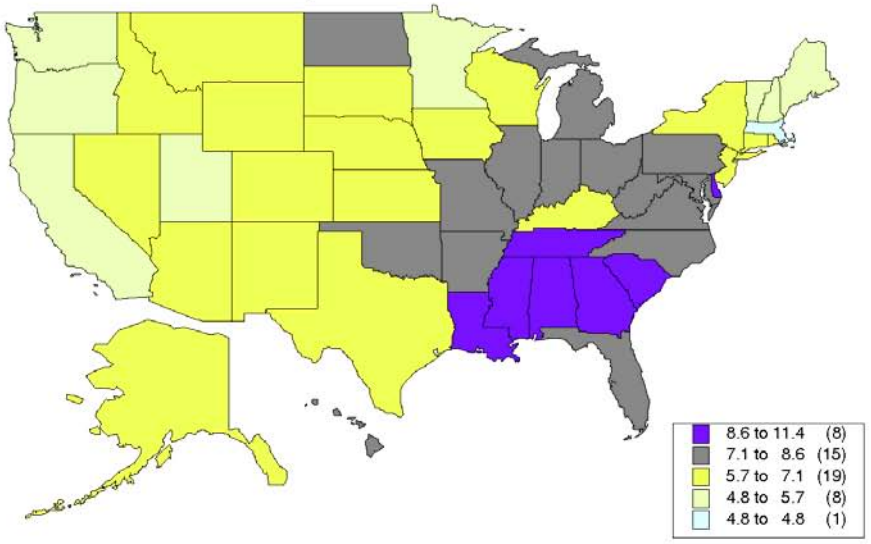
HEALTH STATUS INDICATORS

Percentage of mothers receiving prenatal care during first trimester, 2003



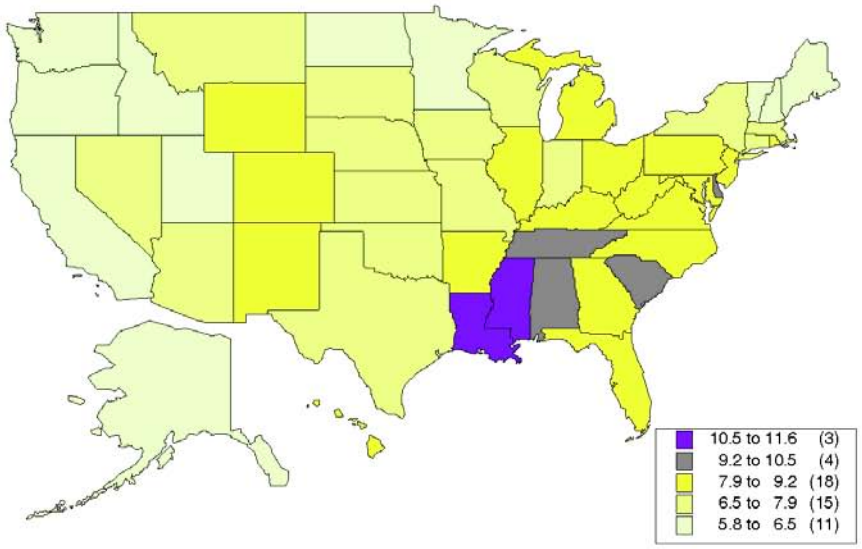
Source: National Center for Health Statistics.

Infant mortality rate, 2002



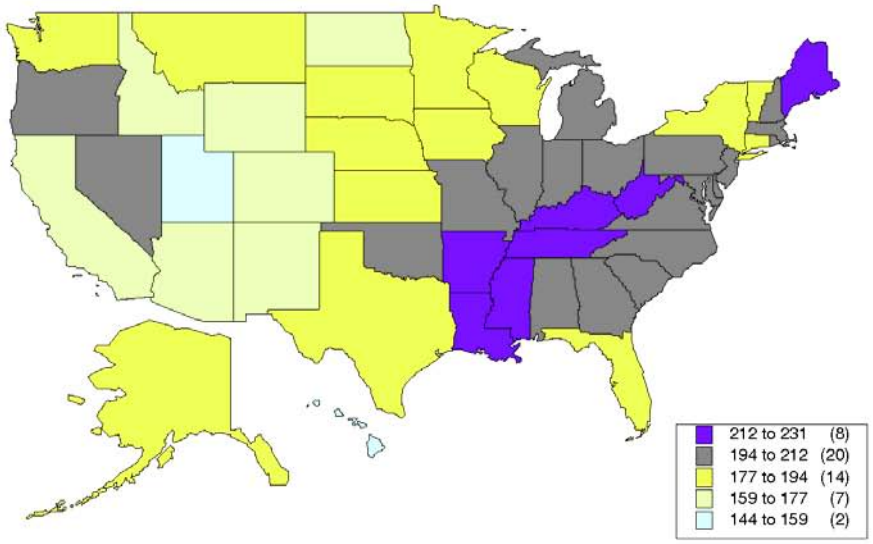
Source: National Center for Health Statistics.

Percent of infants low birth weight, 2003



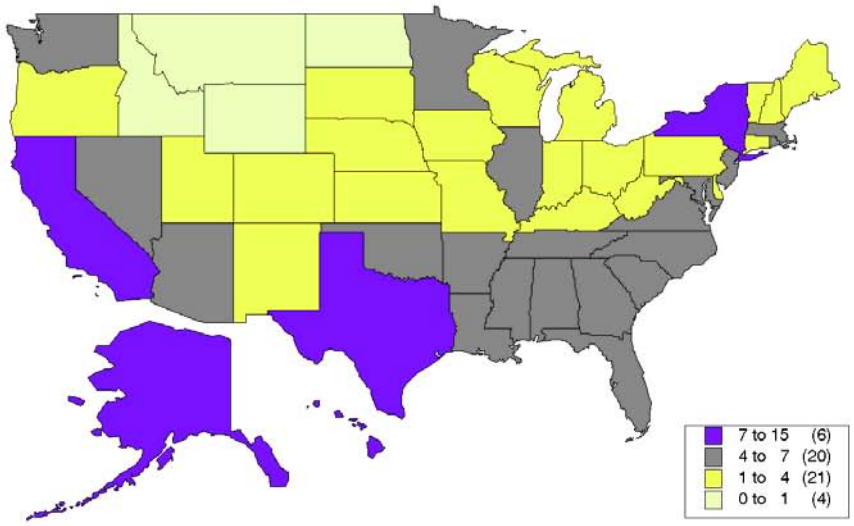
Source: National Center for Health Statistics.

Number of Cancer Deaths per 100,000 Population, 2002



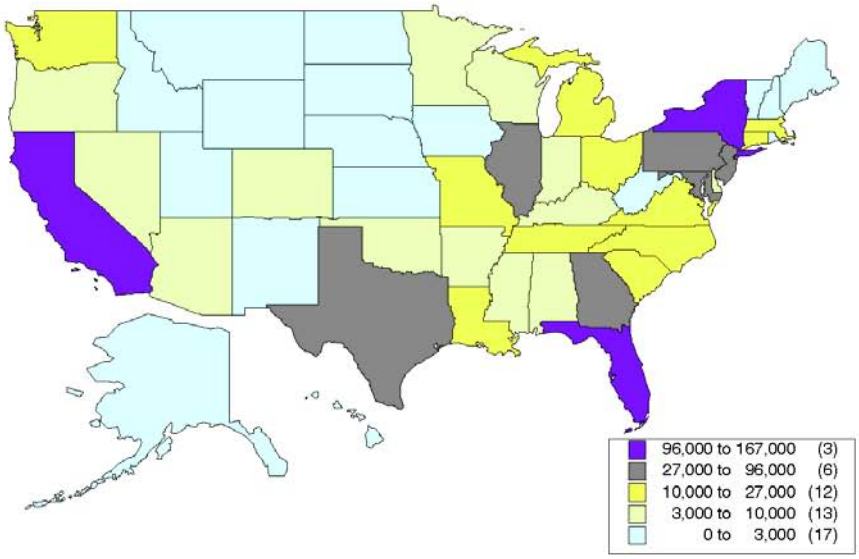
Source: National Center for Health Statistics.

Tuberculosis Cases per 100,000 Population, 2003



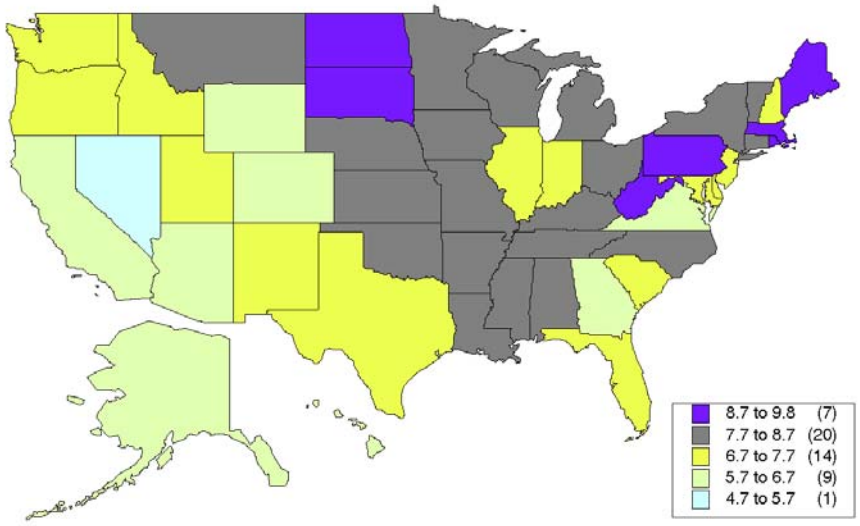
Source: National Center for Health Statistics.

Reported Number of AIDS Cases, Cumulative through December 2004



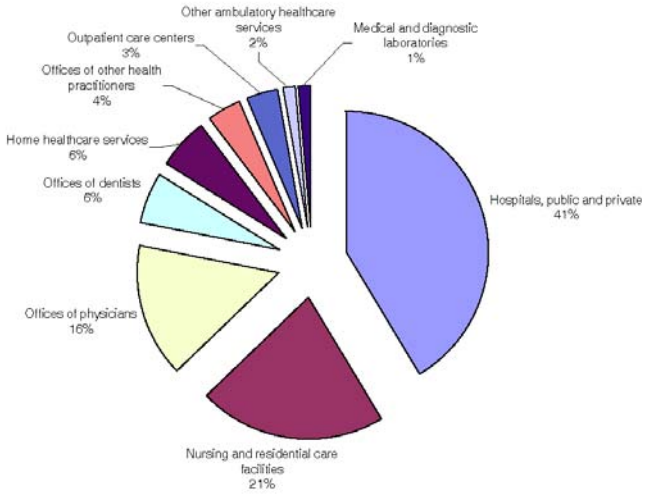
Source: National Center for Health Statistics.

Percent of total employment in health services, 2004



Source: Bureau of Labor Statistics.

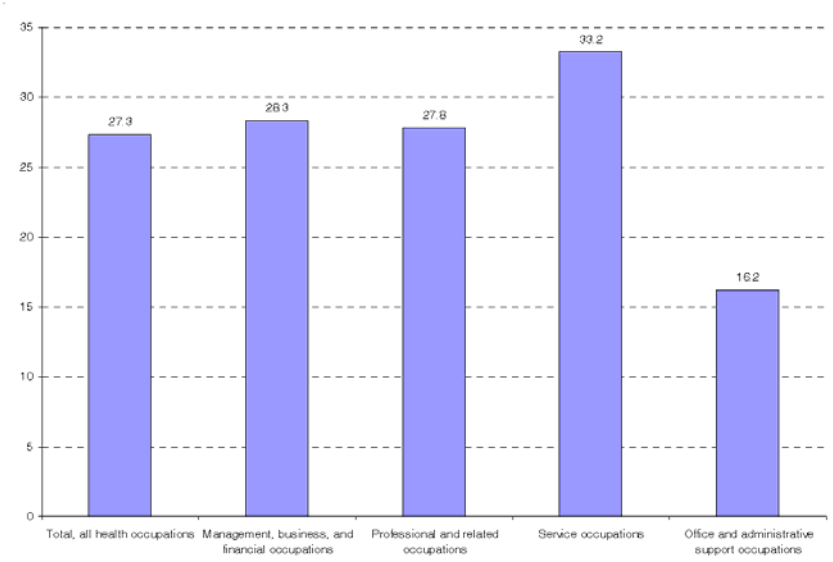
Percent distribution of employment in health services, 2004



Source: Bureau of Labor Statistics.

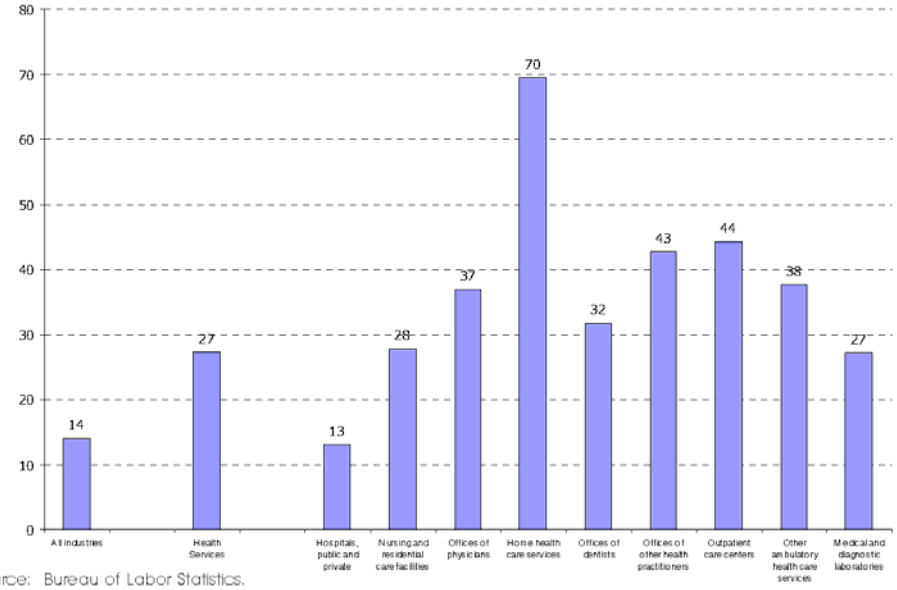
HEALTH CARE OUTLOOK 2004-14

Projected percent change in employment by occupation, 2004-14



Source: Bureau of Labor Statistics.

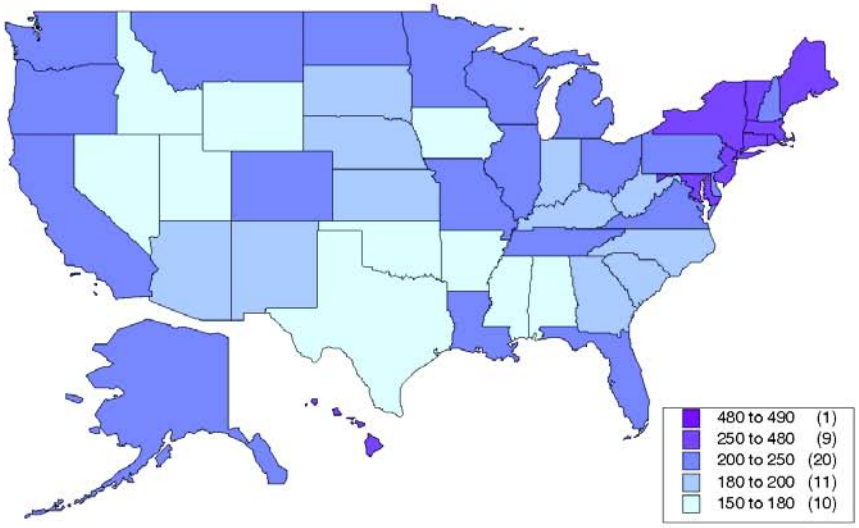
Projected percent change employment in health care by industry segment, 2004-14



Source: Bureau of Labor Statistics.

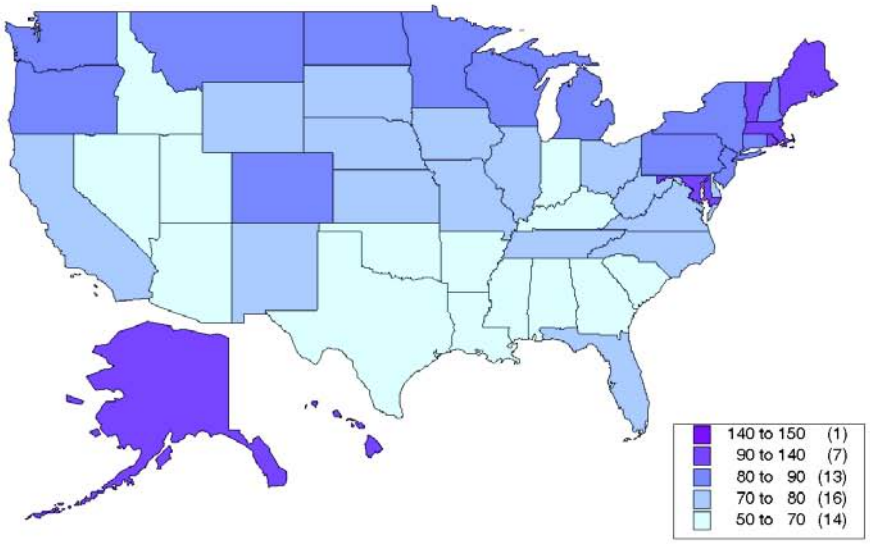
PHYSICIANS

Physicians per 100,000 population, 2004



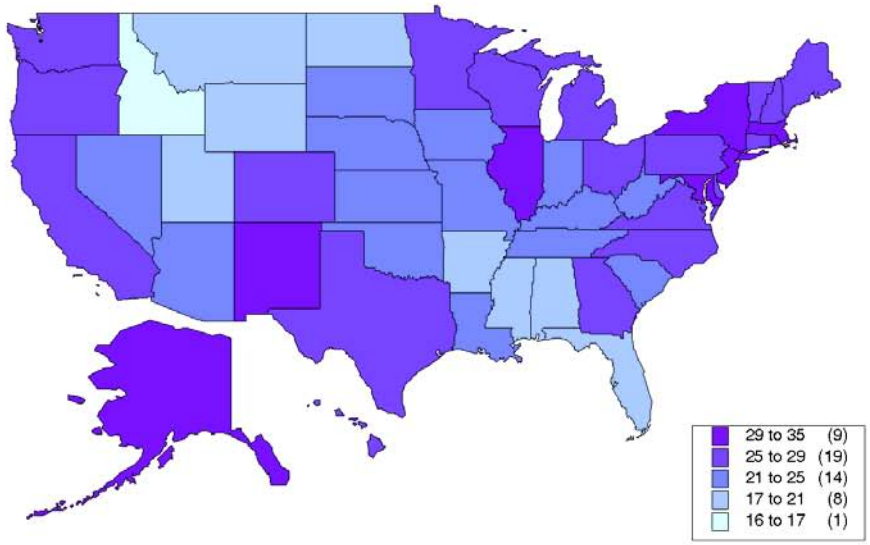
Source: American Medical Association; American Osteopathic Association; Bureau of the Census.

Primary care physicians per 100,000 population, 2004



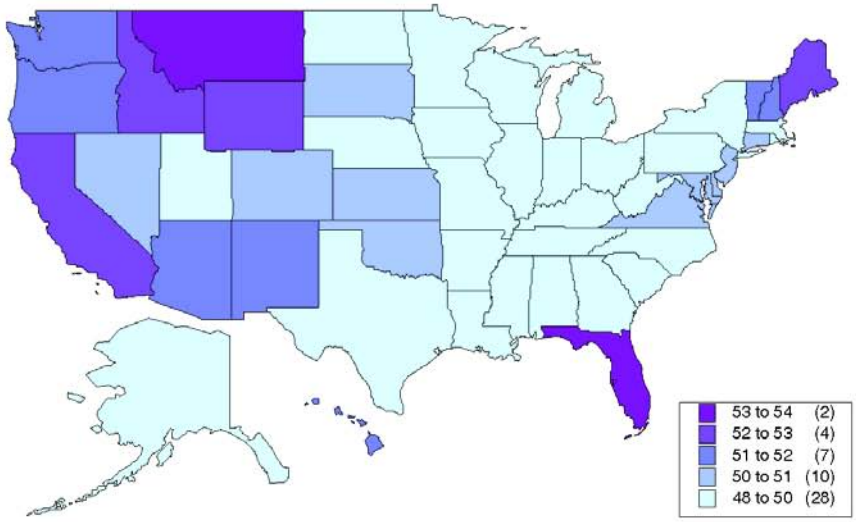
Source: American Medical Association; American Osteopathic Association; Bureau of the Census.

Percent female of physicians, 2004



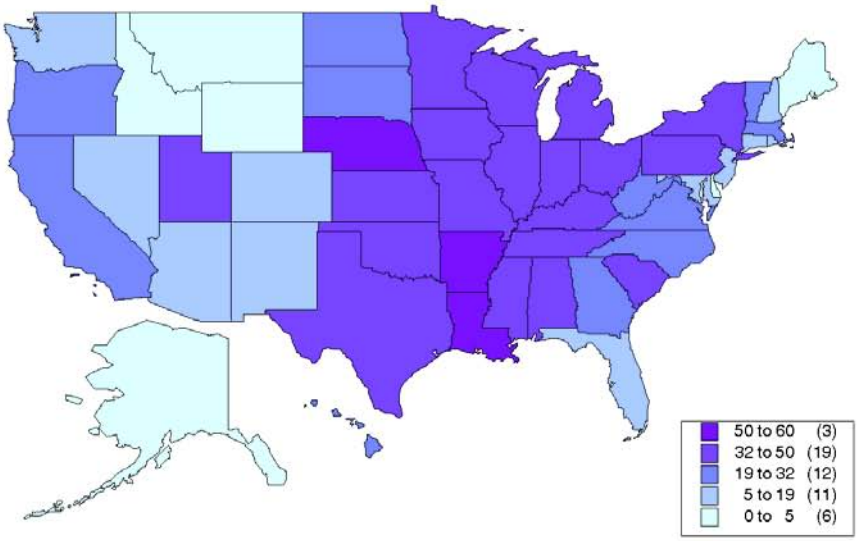
Source: American Medical Association; American Osteopathic Association.

Average age of physicians, 2004



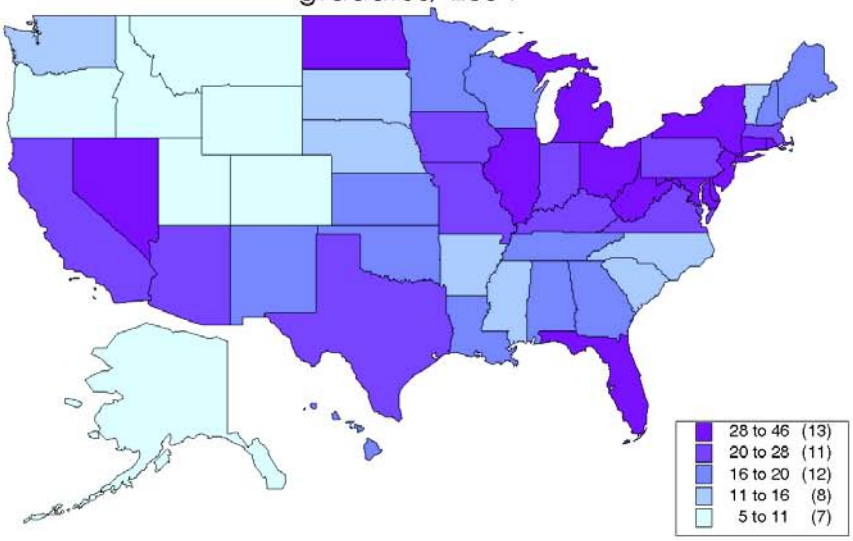
Source: American Medical Association; American Osteopathic Association.

Percent of physicians who are instate medical school graduates, 2004



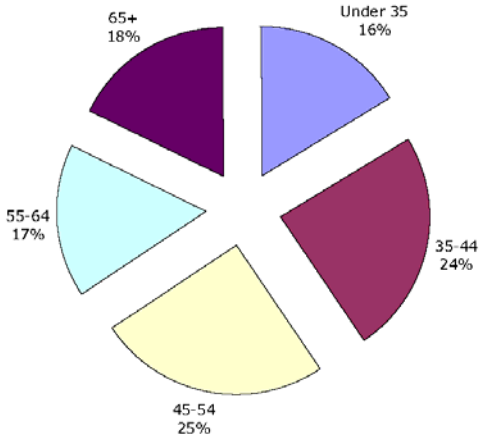
Source: American Medical Association; American Osteopathic Association.

Percent of physicians who are international medical school gradates, 2004



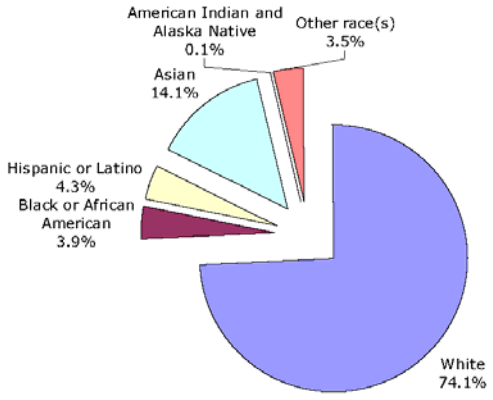
Source: American Medical Association; American Osteopathic Association.

Age distribution of physicians, 2004



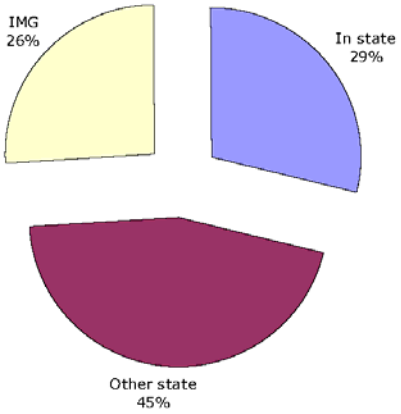
Source: American Medical Association; American Osteopathic Association.

Race/ethnicity of physicians, 2004



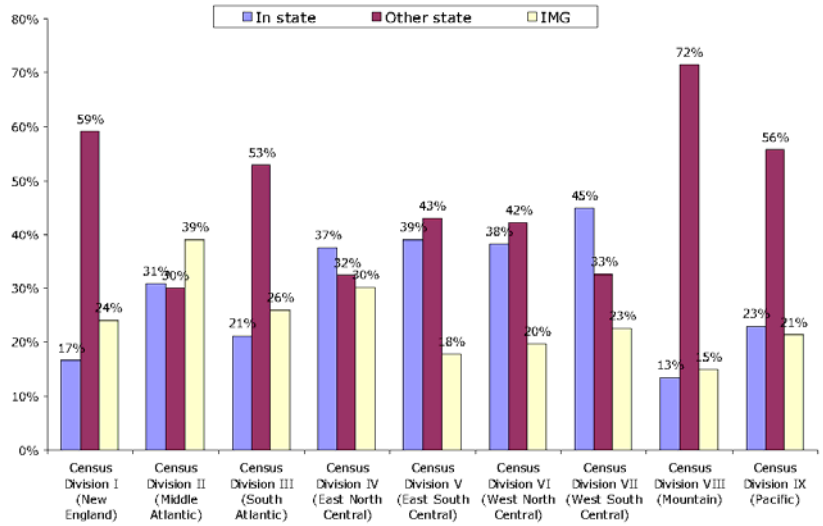
Source: American Medical Association; American Osteopathic Association.

Location of medical school attended by MDs currently practicing, 2004



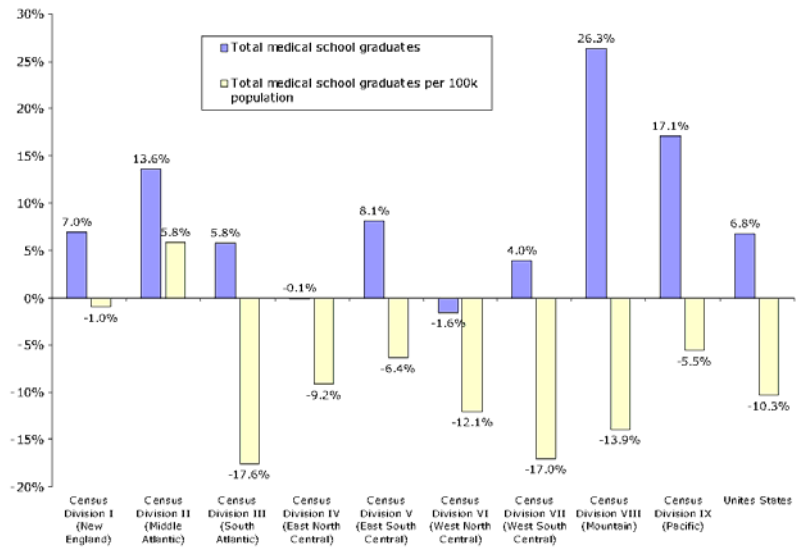
Source: American Medical Association; American Osteopathic Association.

Location of medical school attended by MDs currently practicing in state, 2004



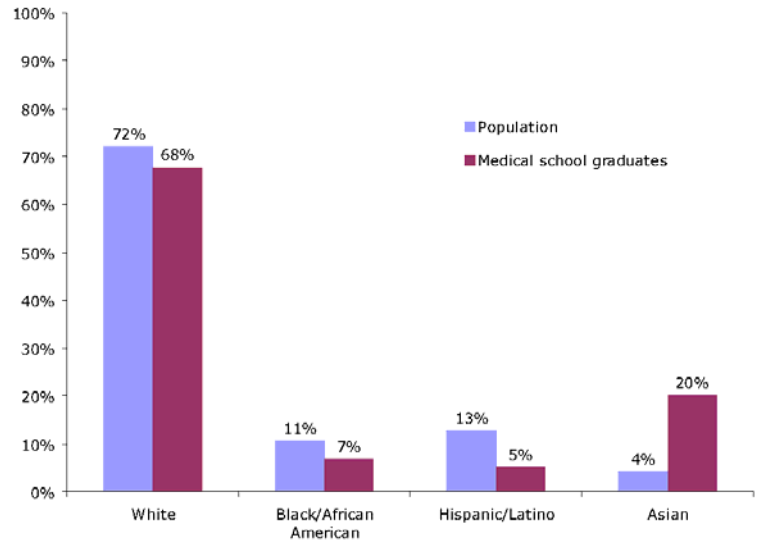
Source: American Medical Association; American Osteopathic Association.

Percentage change in medical school graduates & medical school graduates per 100,000 population, 1989-90 to 2003-04



Source: Association of American Medical Colleges; American Association of Colleges of Osteopathic Medicine; Bureau of the Census.

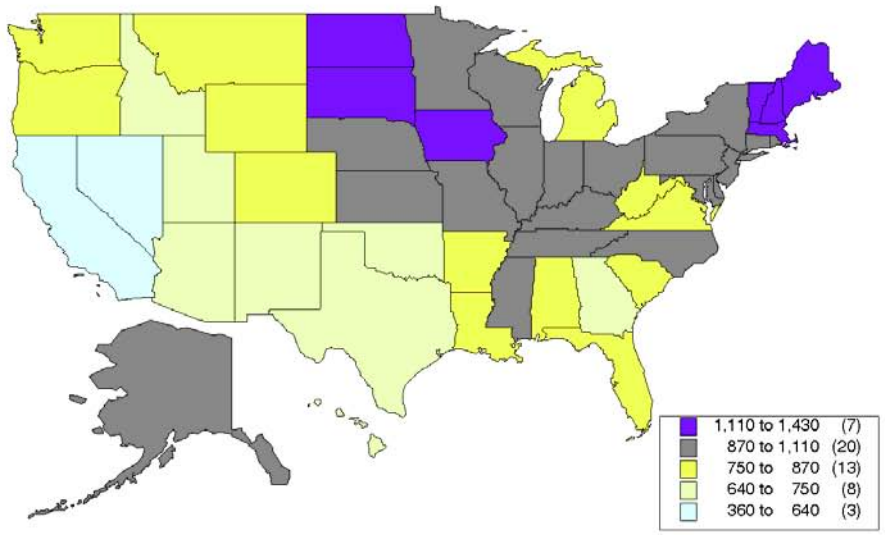
Race/ethnicity of medical school degree recipients & the population, 2003-04



Source: National Center for Education Statistics; Bureau of the Census.

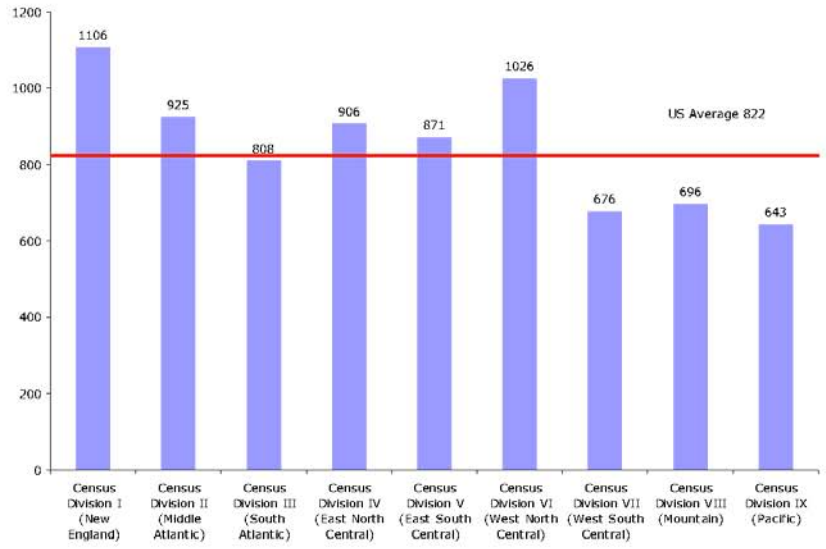
Registered Nurses

RNs per 100,000 population, 2004

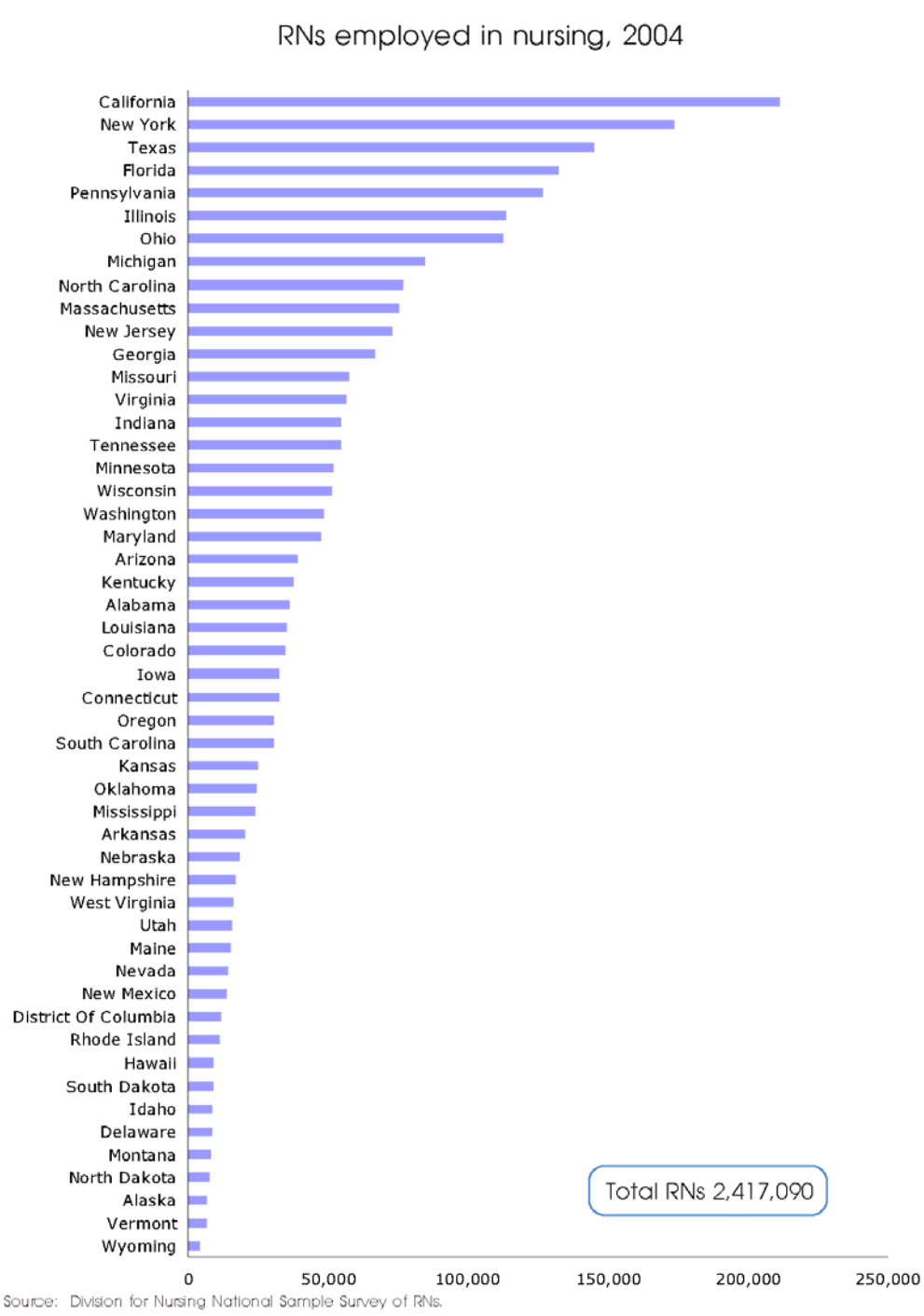


Source: Division for Nursing National Sample Survey of RNs; Bureau of the Census.

RNs per 100,000 population by region, 2004

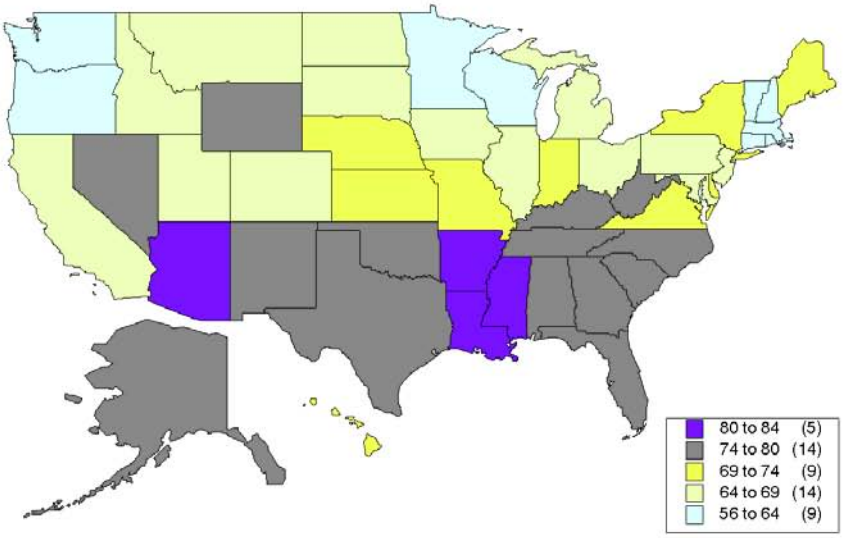


Source: Division for Nursing National Sample Survey of RNs; Bureau of the Census.



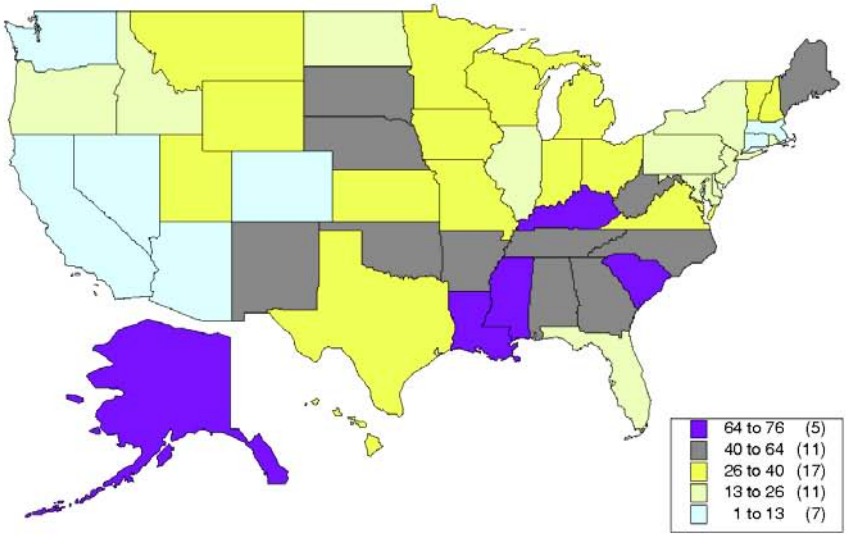
Source: Division for Nursing National Sample Survey of RNs.

Percent RNs employed full time, 2004



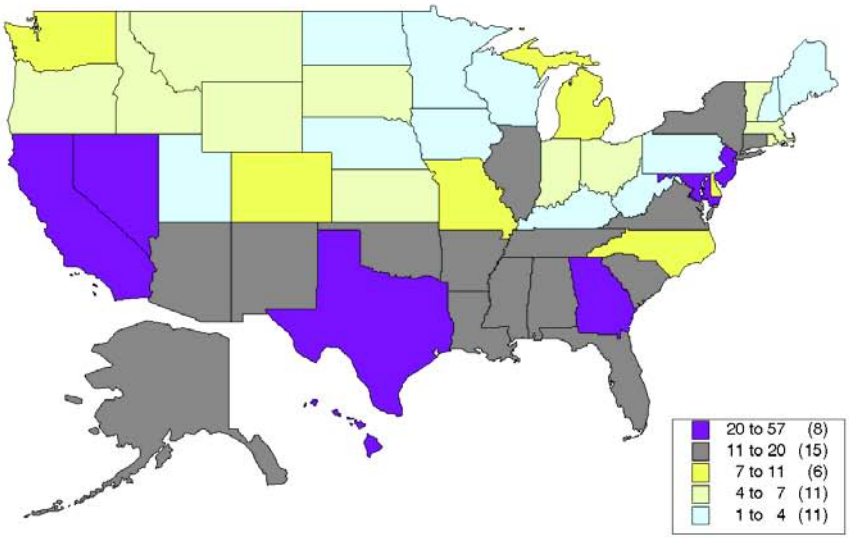
Source: Division for Nursing National Sample Survey of RNs.

Percentage change in RNs per 100,000 population, 1988 - 2004



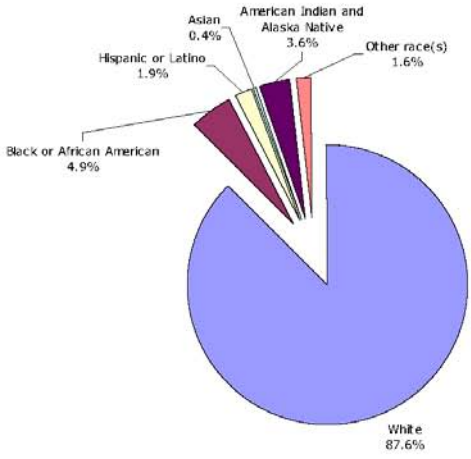
Source: Division for Nursing National Sample Survey of RNs; Bureau of the Census.

Percent minority RNs employed full time, 2004



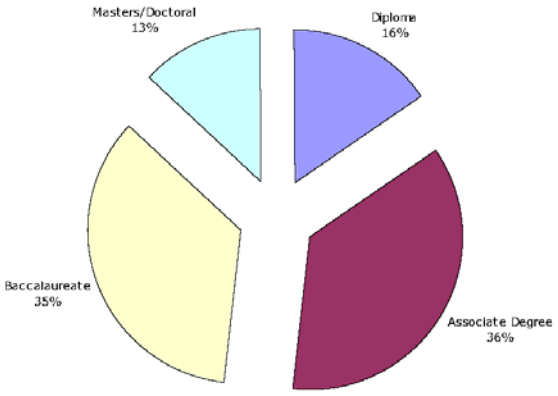
Source: Division for Nursing National Sample Survey of RNs.

Race /ethnicity of RNs employed in nursing, 2004



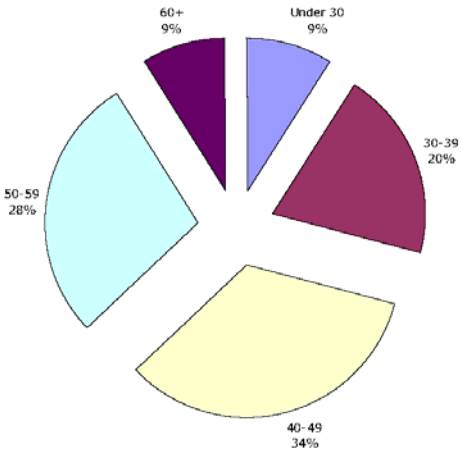
Source: Division for Nursing National Sample Survey of RNs.

Highest nursing-related educational attainment of RNs employed in nursing, 2004



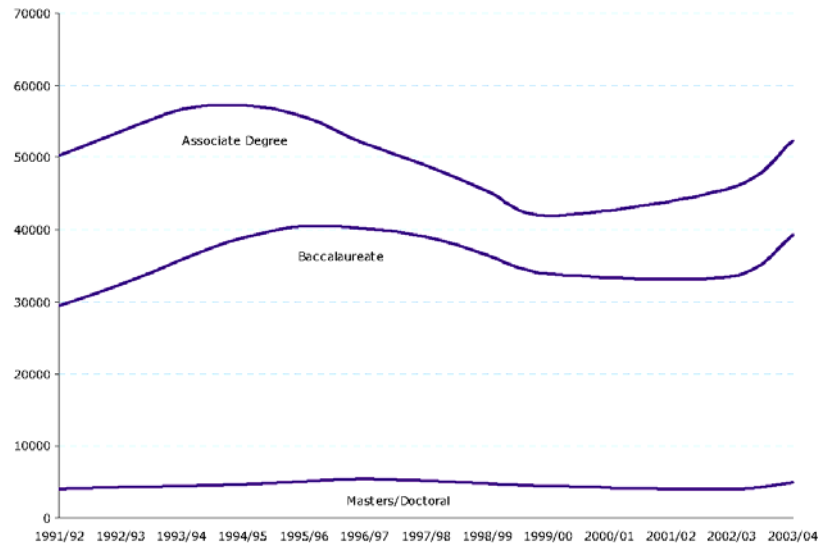
Source: Division for Nursing National Sample Survey of RNs.

Age distribution of RNs employed in nursing, 2004



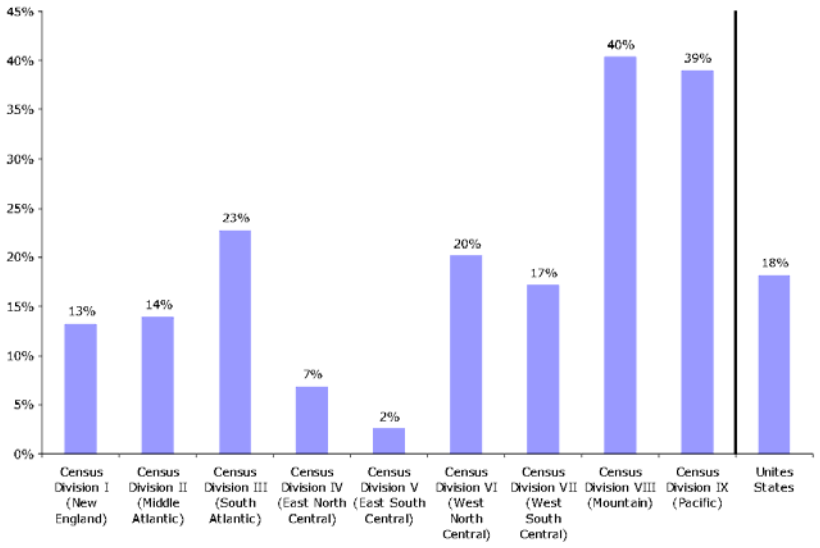
Source: Division for Nursing National Sample Survey of RNs.

RN education program degrees received by award level, 1991-92 to 2003-04



Source: National Center for Education Statistics; Bureau of the Census.

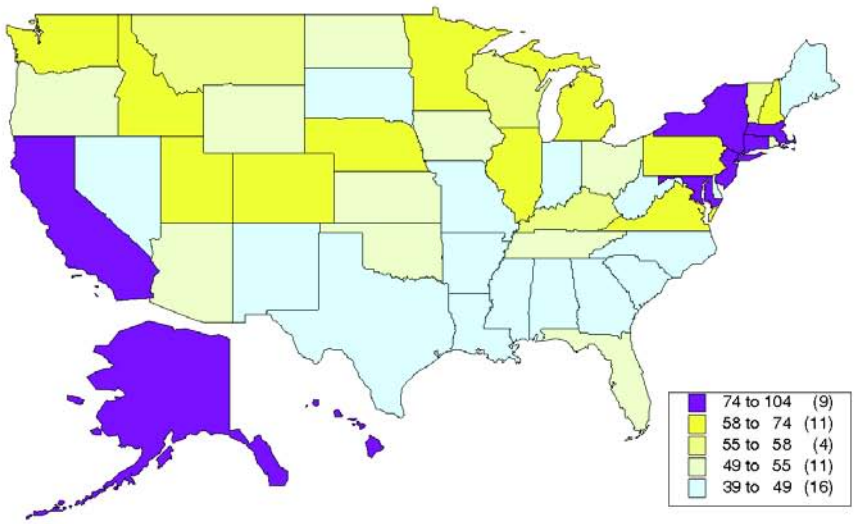
Percentage change in RN program degrees awarded, 1991-92 to 2003-04



Source: National Center for Education Statistics; Bureau of the Census.

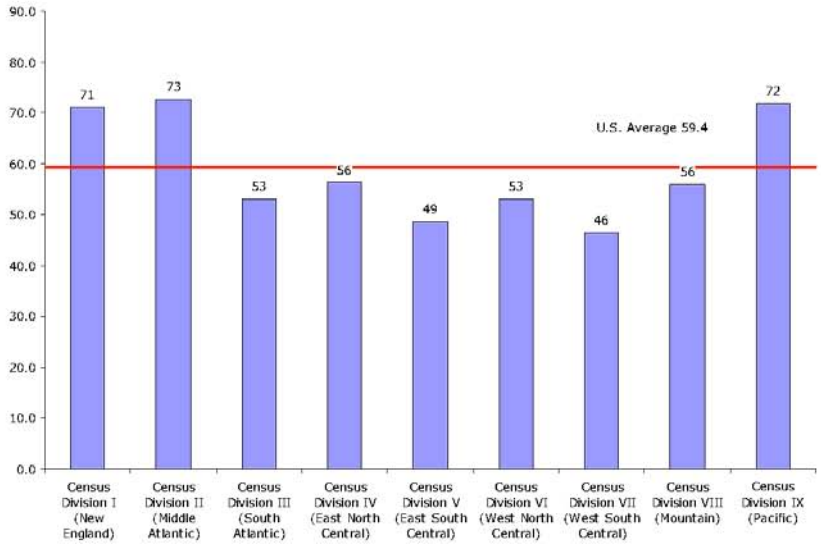
Dentistry
Dentists

Dentists per 100,000 population, 2004



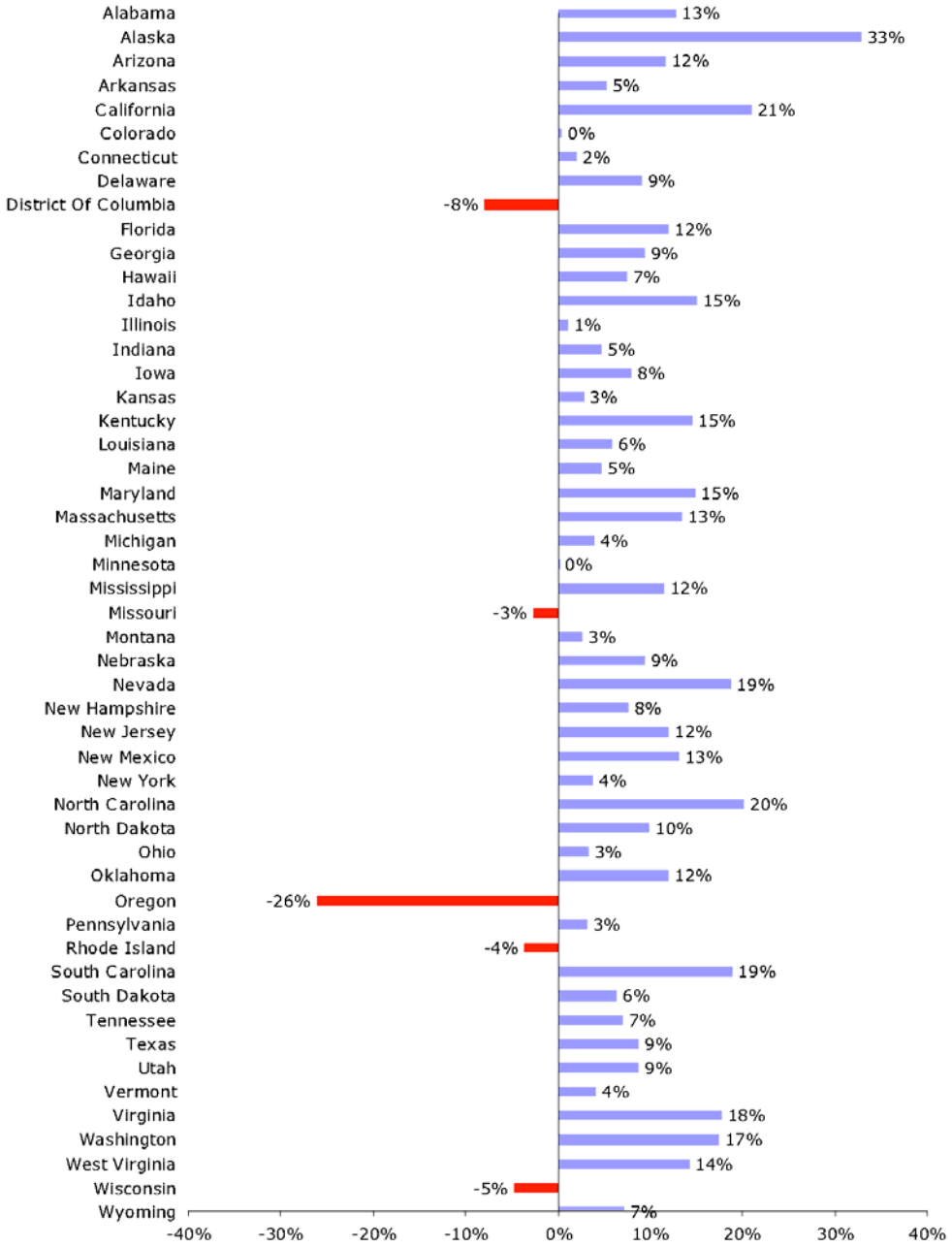
Source: The Kaiser Family Foundation statehealthfacts.org. Data Source: American Dental Association; Bureau of the Census.

Dentists per 100,000 population by region, 2004



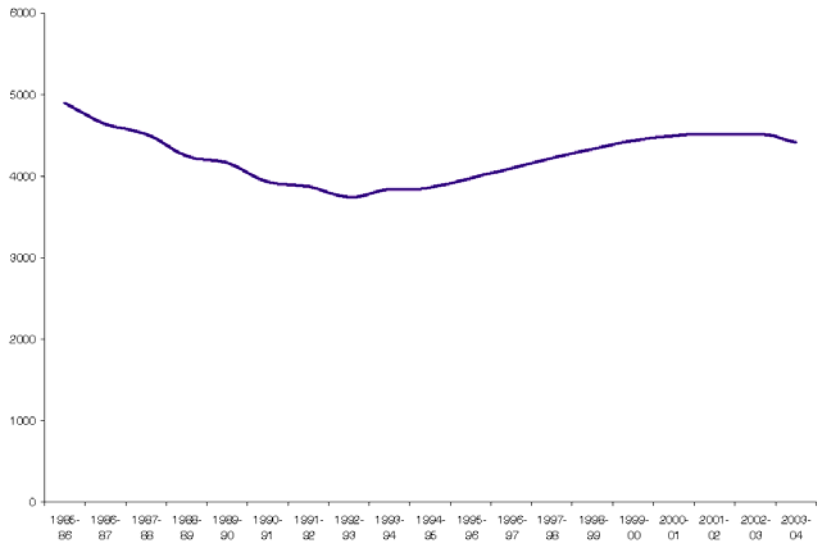
Source: The Kaiser Family Foundation statehealthfacts.org. Data Source: American Dental Association; Bureau of the Census.

Percentage change in Dentists per 100,000 population, 1991-2004



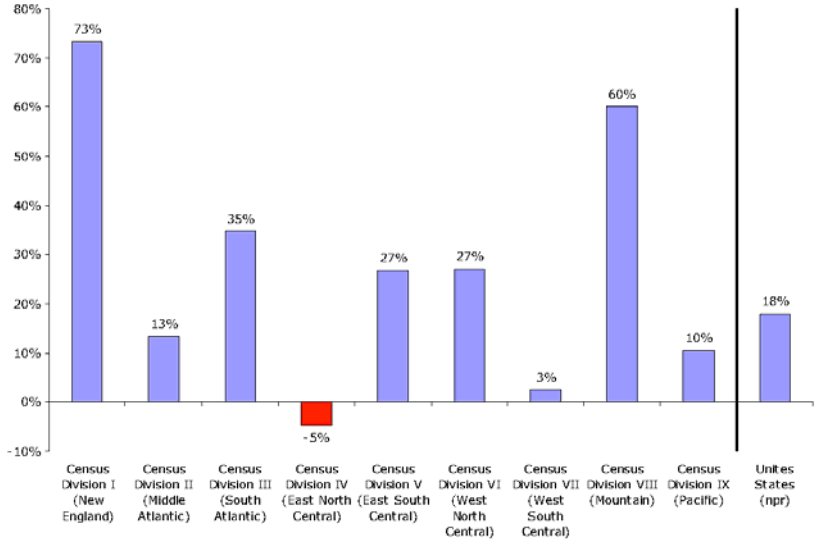
Source: The Kaiser Family Foundation statehealthfacts.org. Data Source: American Dental Association; Bureau of the Census.

Dental (DDS) graduates, 1985-86 to 2003-04



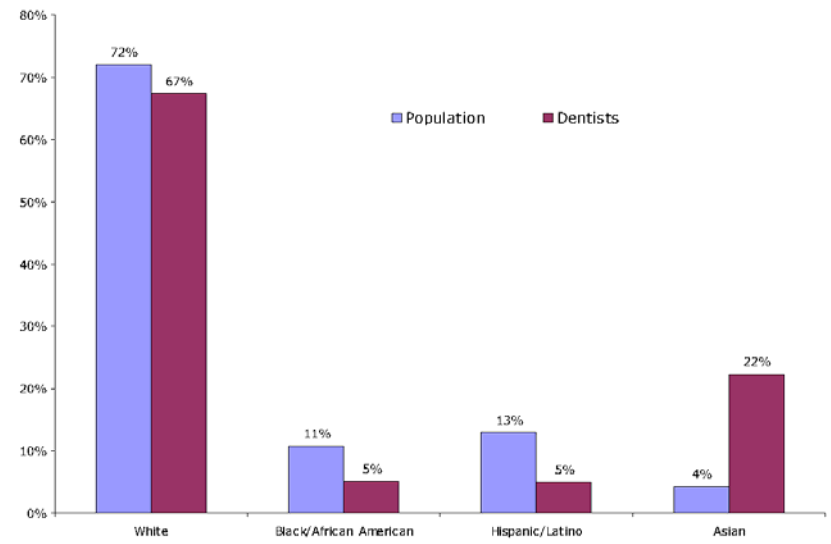
Source: ADA and National Center for Education Statistics.

Percentage change in Dental (DDS) degrees awarded, 1992-93 to 2003-04



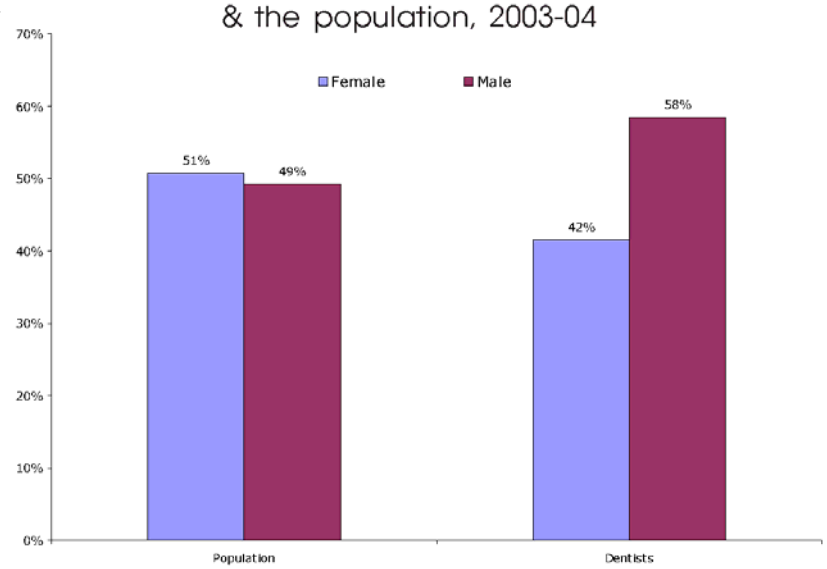
Source: ADA and National Center for Education Statistics.

Race/ethnicity & gender of dental (DDS, DMD) degree recipients & the population, 2003-04



Source: National Center for Education Statistics; Bureau of the Census.

Gender of dental (DDS, DMD) program degree recipients & the population, 2003-04

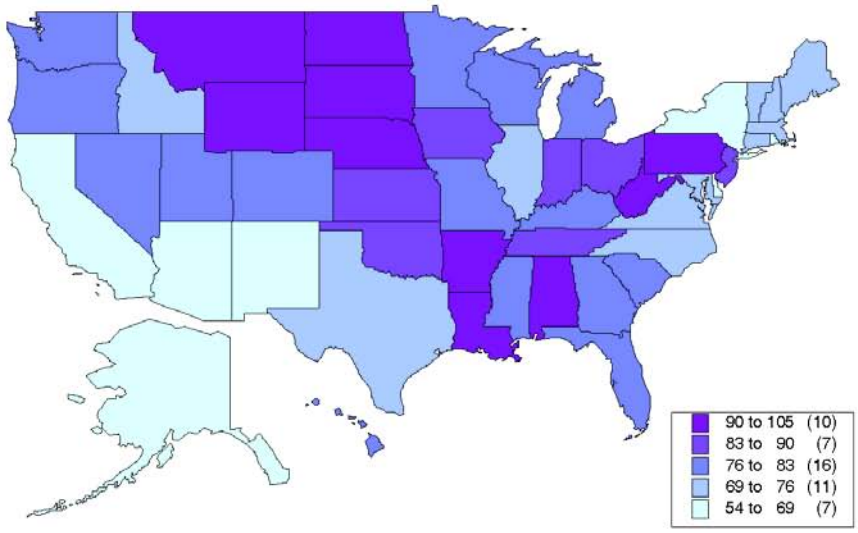


Source: National Center for Education Statistics; Bureau of the Census.

Pharmacy

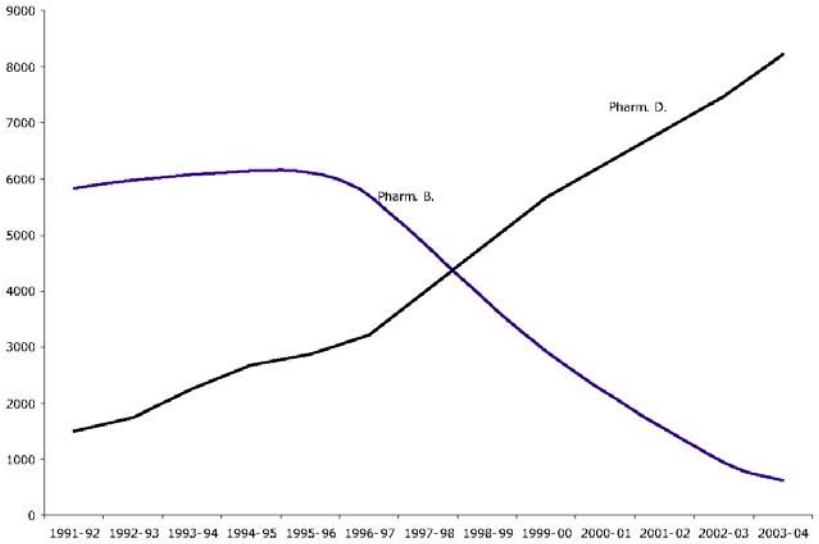
Pharmacists

Pharmacists per 100,000 population, 2004



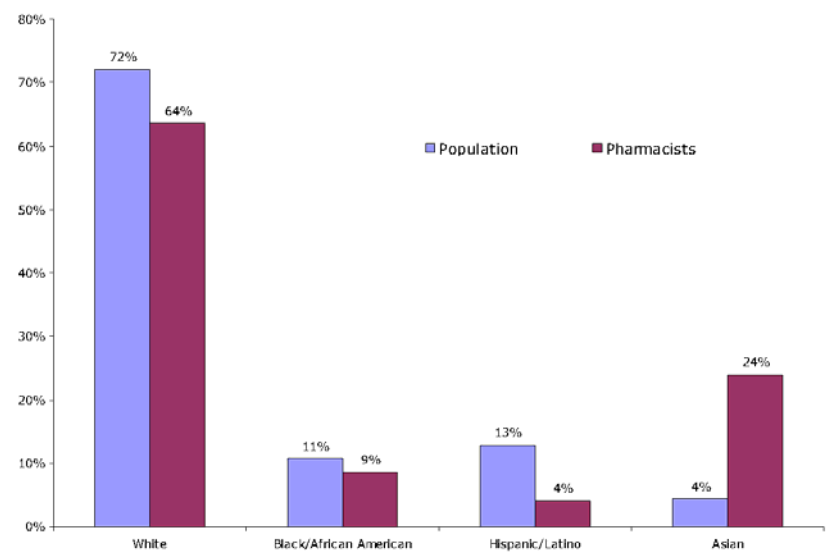
Source: Bureau of Labor Statistics; Bureau of the Census.

Pharmacy degrees awarded, by award level, 1991-92 to 2003-04



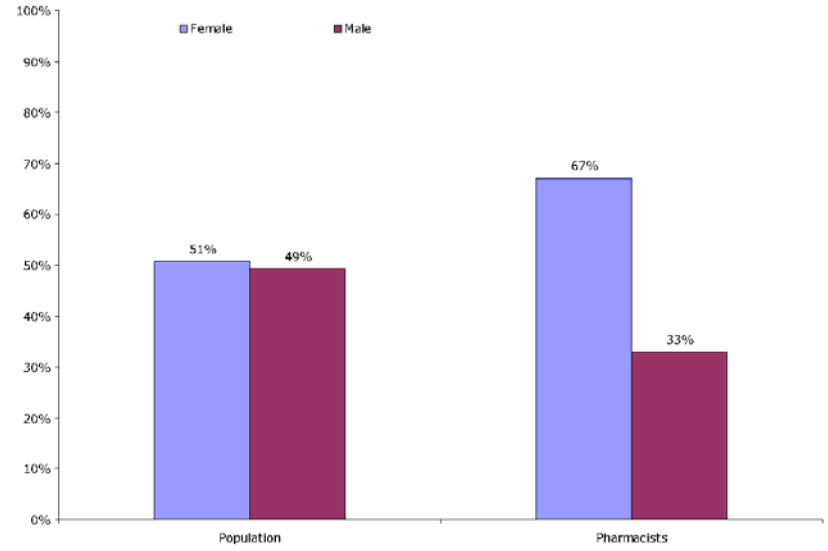
Source: American Association of Colleges of Pharmacy and IPEDS.
Note: Inlcudes PharmB and PharmD only.

Race/ethnicity pharmacy degree recipients & the population, 2003-04



Source: National Center for Education Statistics; Bureau of the Census.
Note: Inlcudes PharmB and PharmD only.

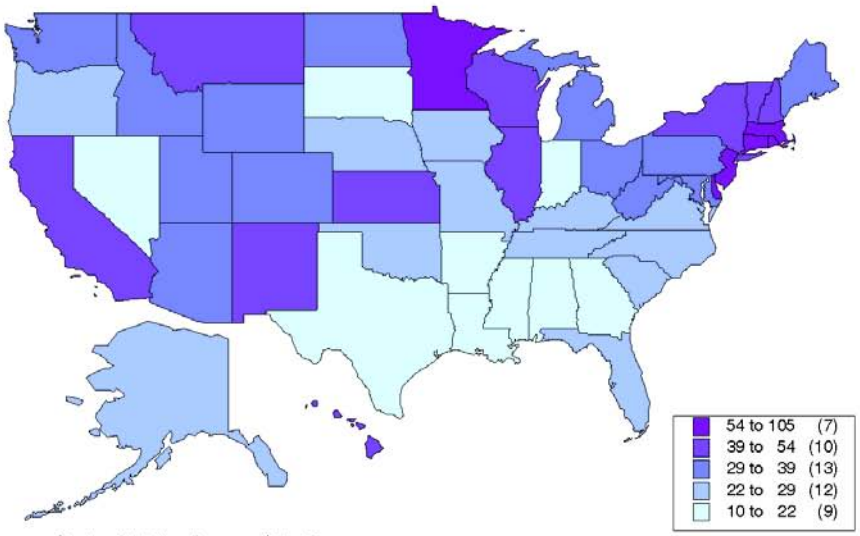
Gender of pharmacy degree recipients & the population, 2003-04



Source: National Center for Education Statistics; Bureau of the Census.
Note: Inlcudes PharmB and PharmD only.

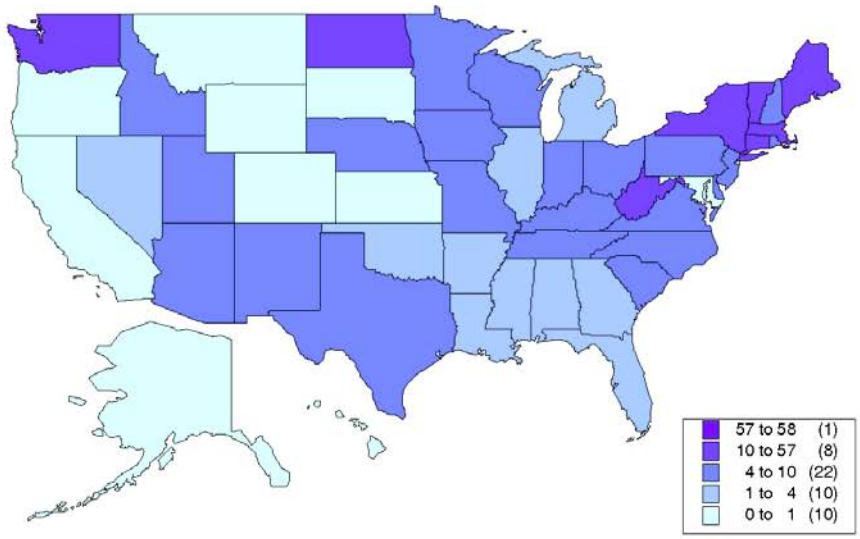
MENTAL HEALTH
PSYCHOLOGISTS

Psychologists per 100,000 population, 2004



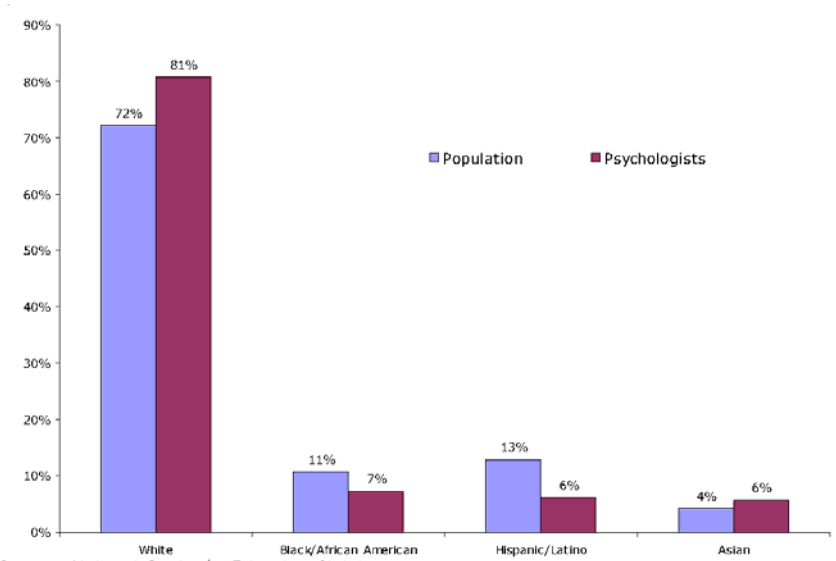
Source: Bureau of Labor Statistics; Bureau of the Census.

Psychiatrists per 100,000 population, 2004



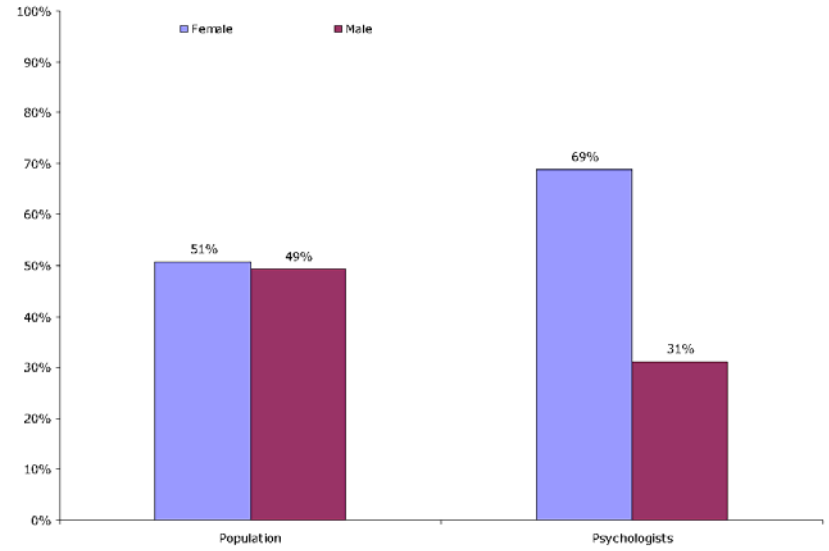
Source: American Medical Association; Bureau of the Census.

Race/ethnicity psychology doctoral degree recipients & the population, 2003-04



Source: National Center for Education Statistics.

Gender of psychology doctoral degree recipients & the population, 2003-04



Source: National Center for Education Statistics.