

Regional Solutions to the Physician Workforce Shortage: The WWAMI Experience

Tom E. Norris, MD, John B. Coombs, MD, Peter House, MHA, Sylvia Moore, PhD, RD, Marjorie D. Wenrich, MPH, and Paul G. Ramsey, MD

Abstract

With major medical organizations predicting a national shortage of physicians in coming years, a number of institutional models are being considered to increase the numbers of medical students. At a time when the cost of building new medical schools is extremely expensive, many medical schools are considering alternative methods for expansion. One method is regional expansion. The University of Washington School of Medicine (UWSOM) has used regional expansion to extend medical education across five states without the need to build new medical schools or campuses. The

WWAMI program (the acronym for Washington, Wyoming, Alaska, Montana, Idaho), which was developed in the early 1970s, uses existing state universities in five states for first-year education, the Seattle campus for second-year education, and clinical sites across all five states for clinical education. Advantages of regional expansion include increasing enrollment in a cost-effective fashion, increasing clinical training opportunities, responding to health care needs of surrounding regions and underserved populations, and providing new opportunities for community-based physicians to enhance

their practice satisfaction. Challenges include finding basic-science faculty at regional sites with backgrounds appropriate to medical students, achieving educational equivalence across sites, and initiating new research programs. UWSOM's successful long-term regional development, recent expansion to Wyoming in 1997, and current consideration of adding a first-year site in Spokane, Washington, indicate that regional expansion is a viable option for expanding medical education.

Acad Med. 2006; 81:857–862.

Physician workforce predictions have influenced the expansion and contraction of the number and the capacities of medical schools throughout the history of

U.S. medical education. Recently, influential medical organizations have called for a 15% increase in medical school enrollment by 2015,^{1–3} and some discussions call for a 30% increase.⁴

WWAMI (the acronym for Washington, Wyoming, Montana, Alaska, Montana, Idaho) program to provide medical education for a five-state area without construction of new medical schools.

Dr. Norris is professor of family medicine and vice dean for academic affairs, University of Washington School of Medicine, Seattle, Washington.

Dr. Coombs is professor of family medicine; associate vice president for medical affairs, clinical systems, and community relations; and vice dean for regional affairs, rural health, and graduate medical education, University of Washington School of Medicine, Seattle, Washington.

Mr. House is director of regional and rural education, research, and support, University of Washington School of Medicine, Seattle, Washington.

Dr. Moore is affiliate professor of medicine and assistant dean and coordinator for the WWAMI program in Laramie, Wyoming, University of Washington School of Medicine, Seattle, Washington.

Ms. Wenrich is affiliate instructor of medical education and biomedical informatics and director, UW Medicine special research and communications projects, University of Washington School of Medicine, Seattle, Washington.

Dr. Ramsey is professor of medicine, vice president for medical affairs, and dean of the School of Medicine, University of Washington School of Medicine, Seattle, Washington.

Correspondence should be addressed to Dr. Norris, Box 356340, University of Washington School of Medicine, Seattle, WA 98195-6340; telephone: (206) 685-3466; fax: (206) 543-9051; e-mail: (tnorris@u.washington.edu).

Strategies to address anticipated workforce shortages in the early 21st century included expanding medical school enrollment and graduate medical education (GME) positions, as well as increasing the number of medical schools and residency programs, especially in underserved areas.³

Federal policies and subsidies fueled the expansion of medical school growth in the 1960s and 1970s. Such subsidies are not being seen in the current period, so the costs of expansion will be a major problem. In efforts to be cost-effective, medical schools have developed alternative models for expansion, such as regional campuses, collaborative arrangements, and incorporation of community-based faculty into teaching roles.

In this article, we review past medical school expansions and key models to address projected shortages. In particular, we describe how the University of Washington School of Medicine (UWSOM) uses a regional model, the

Historical Fluctuations in Numbers and Enrollments of Medical Schools

Physician workforce predictions have varied widely over the last 60 years. From concern about physician shortages after World War II through the 1970s, to predictions of surpluses in subsequent decades, to current concerns about likely future shortages, workforce predictions have influenced expansion and contraction patterns of existing schools and development of new schools. Throughout the history of medical education, the nation has lacked an optimal number, mix, and geographic distribution of physicians. The maldistribution of physicians has affected rural areas disproportionately, and there has been a consistent need for primary care physicians in rural settings for many decades.

The number of medical schools has also varied widely (Figure 1). In 1910, there were 131 U.S. medical schools.⁵ The

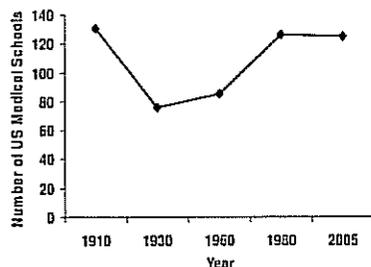


Figure 1 Number of allopathic medical schools in the United States from 1910 to the present.

Flexner Report, released in that year and calling for quality over quantity, led to substantial closures. By 1930, 76 medical schools remained, and the national physician-to-population ratio declined. Before and after World War II, new medical schools were built, including UWSOM.⁶ Later, demand for physician education increased, both from applicants seeking spots in medical school and from patients in underserved regions. In the late 1950s, a shortfall of nearly 40,000 physicians by 1975 was predicted; recommendations called for increases in medical-school graduates from 7,400 per year to 11,000 per year.⁶ Congress responded favorably, providing federal matching funds for construction of new facilities for existing schools that increased their entering class sizes.

Construction of new medical schools, coupled with larger enrollments at existing schools, increased the numbers of physicians nationally. Medical schools built between 1960 and 1980 were primarily community-based medical schools, often created to train primary care physicians.^{5,7} By 1980, 125 medical schools were operating—nearly the number in existence at the time of the Flexner Report. Florida State University College of Medicine, which opened in 2001, has been cited as the first new allopathic medical school in 20 years.⁸

Contemporary Calls and Plans for Increases in Enrollments

Current calls for expanding medical school enrollments emanate from physician workforce trend analyses by influential national organizations, including the Association of American Medical Colleges (AAMC), the American Medical Association (AMA), and the Council on Graduate Medical Education (COGME).¹⁻³ Shortages are predicted for both primary care physicians and specialists. National recommendations

call for development of medical school and residency positions in or adjacent to physician shortage/underserved areas, in undersupplied specialties, and in areas of rapid growth.^{1,3} A recent report from COGME calls for a 15% increase in total enrollment in U.S. medical schools from their 2002 levels over the next decade and an increase in the number of physicians entering residency training each year from approximately 24,000 in 2002 to 27,000 in 2015.² The current level of activity at medical schools is likely to yield an increase of 5% to 8% in additional graduates by 2015.⁹

Models for Expansion

Anticipated models for expansion include increasing existing medical school enrollment, building new schools, and adding campuses or regional sites. A 2004 survey of deans at the 125 allopathic medical schools demonstrated that 31% of the 118 responding schools had already expanded or would definitely or probably expand class size in the next six years, which would result in a 4% increase in graduates.^{10,11} Another 20% of deans (23 schools) said an increase was “possible”; 47% (55 schools) responded “definitely” or “probably not.”

The 2005 entering class had more than 17,000 students, a 2.1% increase over 2004 figures, indicating that enrollment increases are under way.¹² Twenty-two allopathic schools expanded class size by at least 5%; seven of these expanded first-year enrollment by more than 10%.¹² Based on information from deans, the AAMC concluded that by 2010, the nation’s allopathic schools are likely to increase the number of graduates by at least 4.5% (to 17,278) and by as much as by 7.3% (to 17,928).⁹ Barriers cited to increasing enrollment included concerns about high and unrecoverable costs, especially among public schools dependent on tight state budgets, not

enough preceptors in ambulatory settings, and limited labs, study space, and clinical training sites.

Among 56 medical schools indicating a “definite” or “probable” enrollment increase, expansion of existing facilities was the most likely method.¹¹ Sixty-six percent (37 schools) chose new clinical affiliations as a mechanism to increase enrollment. Fifty-two percent (29 schools) were considering expansion of existing campuses to accommodate enrollment expansion. Nineteen (34%) considered this a definite option. Sixteen schools (29%) reported a new satellite/regional campus as an expansion option, and five (3%) called this option definite. Below, we discuss regional expansion as an option and our own experiences with that approach.

Regional Expansion: History and Opportunities

Status of regional expansion

A 2003 AAMC report on regional campuses cited a number of existing definitions of regional campuses.¹³ By the definition used in the report (geographically separate and not the medical school’s primary clinical site for education; has administrative ties to the dean’s office and not simply a department tie; and offers at least four required third-year clerkships), 41 regional campuses were identified at 25 medical schools. Several others were slated to open in subsequent years. Twenty-five medical schools (which will be 27 by the time this article is published) had at least two campuses: a main campus and one or more regional clinical campuses, where third- and fourth-year medical students are educated. The report did not cover in detail those with regional basic-science campuses within existing state universities.

Six medical schools were cited as having basic-science branch campuses without clinical activity: Indiana University School of Medicine, with eight branch campuses; David Geffen School of Medicine at UCLA, with one branch campus; University of California, San Francisco, School of Medicine, with one branch campus; University of Illinois at Chicago College of Medicine, with one branch campus that is also a clinical branch campus; University of Minnesota Medical School, with one branch campus;

and the University of Washington School of Medicine, with five branch campuses.

Advantages of regional expansion

Branch, or regional, campuses were seen as increasing enrollment in a cost-effective fashion, increasing clinical training opportunities and sites, especially ambulatory training sites, expanding graduate medical education (resulting in the need for more teaching patients), and responding to health care needs of surrounding regions and underserved populations.¹³

A major detriment to starting a new medical school is the cost. The 1970 Carnegie Commission on Higher Education called for a 50% increase in the number of first-year medical students by 1978, and called for nine new university health-science centers.¹³ Six of the nine cities cited as needing new medical schools opted instead to develop regional, or branch, campuses. As the AAMC report notes, this underscores the difficulties in starting new medical schools, including high start-up costs, local and state politics, and reluctance of existing medical schools to support new competition.¹³ The most recent medical school to be built, at Florida State University, cost \$155.5 million for facilities and operating revenue.⁸ The state annual operational funding at full roll-out is expected to be \$38 million a year.

Models of regional expansion

Although the AAMC report focused on regional campuses that offer at least four required third-year clerkships, there are a number of regional models. The most common teaches basic sciences at a central medical school and offers clerkships at regional centers. Examples include Florida State University College of Medicine, University of North Dakota School of Medicine and Health Sciences, University of South Dakota School of Medicine, and Michigan State University College of Human Medicine.

Another model involves offering part or the entire basic science curriculum regionally with clerkships both centrally and regionally. Indiana University has eight branch campuses for medical education that provide first- and second-year medical school programs; all students complete clinical training at the Indianapolis campus.

The University of Washington's WWAMI model represents another variation. First-year basic sciences are offered at the Seattle campus and five regional campuses; students attend their home state campus. For the second year, all medical students train in Seattle. In the third and fourth years, clerkship sites are located in Seattle and throughout the five-state region; medical students choose where they complete their rotations. The section below describes WWAMI in more detail, including consideration of plans for further expansion.

WWAMI Expansion: Past, Present, and Future

History of WWAMI and infrastructure

The WWAMI program's inception, history, and development have been described elsewhere in detail.¹⁴ Briefly, the regional program was developed in the early 1970s as a cost-effective solution to health provider and health care shortages in Northwest states without medical schools. The program increased the number of publicly supported medical school positions in a well-established, high-quality medical school (UWSOM) without the major capital construction associated with building new medical schools and without adding significant numbers of new faculty. The primary care focus and significant time each student spends in his or her home state increases the likelihood of returning to practice in one's home state. Each WWAMI state has well-regarded state universities from which most basic science faculty can be drawn for teaching first-year medical students. The different components of the program are described below.

First-year program. Existing state universities serve as first-year academic basic-science sites. These include the University of Alaska at Anchorage (Anchorage—10 students trained per year), Montana State University (Bozeman—20 students), the University of Idaho (Moscow—18 students), and University of Wyoming (Laramie—14 students). Washington residents spend their first year at the Seattle campus (100 students) or at Washington State University-Pullman (20 students), in which case they study with their classmates at nearby University of Idaho.

Second-year program. Students from each regional first-year basic science campus train in Seattle at the UWSOM campus, receiving intensive contact with clinically based academic physicians and physician-scientists in basic-science classes in the integrated organ-system structure. All students receive an intensive introduction to clinical medicine (a continuation of a first-year course at regional campuses) that brings them to the bedside for one half-day each week, working with a faculty mentor and small group of medical students.¹⁵ Faculty mentors maintain contact with their student groups until graduation.

Community-clinical units. UWSOM has affiliations with over 3,000 individual physicians in over 170 active community-based educational sites throughout the five states to teach students in the required and elective clerkships. Settings include community clinics, private practices, and affiliated hospitals. Students choose a combination of states and sites for required and elective clerkships; some spend most of their time in Seattle, others spend considerable or most of their time at regional community sites. Clerkships are hospital-based, ambulatory-practice based, or a combination.

Some states have developed "tracks" or clinical education centers where students complete most or all of their third-year clinical education within a single state. Such tracks are currently offered in Boise, Spokane, and Anchorage, and will eventually be offered in Montana.

Expansion to Wyoming

The first addition of a new academic site since the program's inception was at the University of Wyoming in Laramie. This site began in 1997, training 10 students per year. The regional campus developed in the context of an existing College of Health Sciences established in 1984. The Wyoming legislature has expanded its support of the program by passing a bill increasing Wyoming's participation.¹⁶ The bill allows the state to increase its portion of the WWAMI program to as many as 16 students by 2007. Clinical training sites in Wyoming begin in 1998.

The successful involvement of Wyoming physicians across multiple clinical sites resulted from early attention to building partnerships and formal agreements with

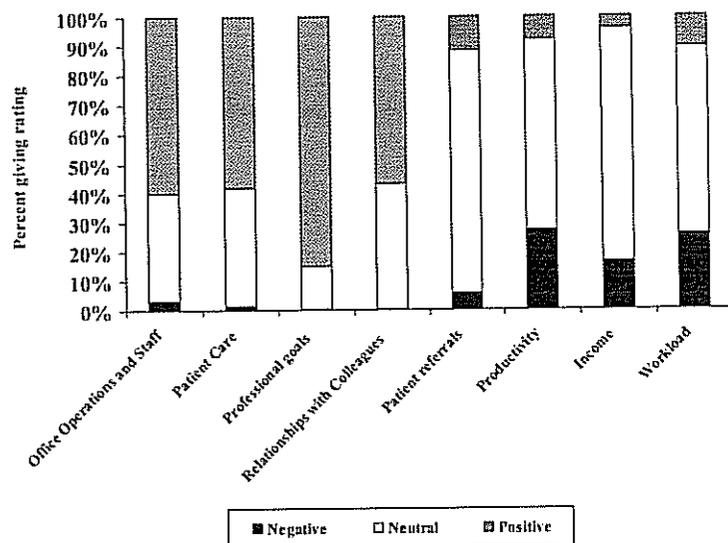


Figure 2 Results from the 2000 University of Washington WWAMI Faculty Survey. Ratings by 238 faculty throughout the five-state region of the impact of teaching students on various aspects of clinical practice at regional WWAMI sites. Faculty included those at first-year sites, clerkships, and residencies, and clinical preceptors throughout the region. Respondents were asked to rate each item on a 1–9 scale with categories ranging from *strongly negative* to *neutral* to *strongly positive*.

the Wyoming Medical Society and the University of Wyoming. A Wyoming physician has been hired to work as the clinical coordinator. The visibility of WWAMI students serving in clinics and hospitals across Wyoming has strengthened support from the Wyoming legislature, and Wyoming views WWAMI as its medical school.

WWAMI Expansion: Interest, Plans, and Challenges

Expansion in existing regional sites

Periodically, the WWAMI states have expressed interest in expanding the number of medical students at their first-year sites. Discussions on possible expansion have occurred recently in Wyoming (expansion now under way), Montana, Idaho, and Alaska.

Current interest in a new first-year site

In 2003, the community in Spokane, eastern Washington's largest city, started a dialogue with the UWSOM for a new first-year site there. Initially interested in a separately accredited school of medicine, the community became more interested over time in joining WWAMI. The community identified the goals of increasing the number of physicians trained in the Spokane area, thereby increasing the supply of physicians in the

state, with particular emphasis on Spokane and eastern Washington; responding to the need to train physicians for underserved rural areas in Washington; and increasing local support for biomedical research and, correspondingly, increasing economic development and new industry. UWSOM's dean called for a feasibility study, now completed; on July 21, 2006, a formal announcement of intent to seek state funding for this expansion was released by the University of Washington, UWSOM, Washington State University, and legislative leaders. A new site would initially accommodate an additional 20 students per year.

Challenges associated with initiating a new site

WWAMI regional administrators have identified several challenges to consider when initiating a new regional site:

Creating basic-science programs away from the medical school site. Preclinical medical students require faculty with scholarly backgrounds who can teach these students the clinical implications of the basic science subjects they are learning. Medical students, both preclinical and clinical, are a different student population from graduate students and residents, and appropriate

instructors must be identified. This sometimes means recruiting outside of existing faculty.

Financial and physical plant challenges.

Total costs to initiate and implement a regional site are not nearly as extensive as those needed to start a new medical school, but start-up costs and educational space still must be considered. In Spokane, which has a relatively new and not fully occupied health sciences campus, capital expenditures are needed to initiate a willed-body program, upgrade the gross anatomy lab, provide microscopy/histology materials, recruit faculty, and provide funds for six new faculty, lab leases, equipment, and lab personnel. Research space must be identified to recruit basic science faculty. The program would also expand needs at the Seattle campus. Start-up and operating costs involve expansion of lecture halls, small-group teaching, and teaching and anatomy spaces to accommodate second-year Spokane students. This may or may not be needed for other medical schools, but the UWSOM has reached the limit of its ability to accommodate medical students in existing facilities.

For expanded clinical education, sites for an additional 20 students per year must be identified throughout the five states; presumably, the majority will be in the Spokane region. In an age of increased productivity demands on clinicians, finding community-based clinical teachers to serve as preceptors and clerkship instructors is challenging. This strong commitment requires teaching skills and willingness to undergo faculty development training.

Research at regional sites. The new medical schools created in the 1960s reported difficulty being accepted by their traditional counterparts, in part because of their preoccupation with educational issues and modest funding of research.^{7,13} Many regional clinical campuses, which focus almost entirely on clinical teaching with little or no research enterprise, faced similar challenges. In the WWAMI states, expectations for research activities have grown and are an important part of the program for regional partners. In 2002, the total external research funding for WWAMI faculty ranged from \$2.5 million to \$14 million per year per site from a variety of

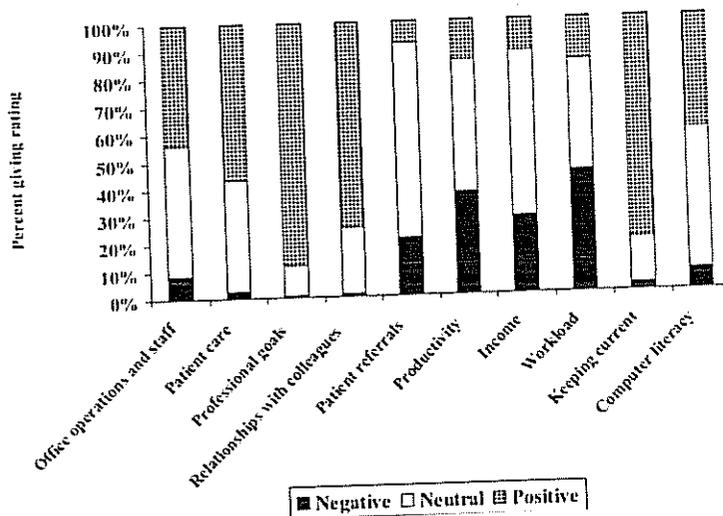


Figure 3 Results from the 2005 University of Washington WWAMI Faculty Survey. Ratings by 259 faculty throughout the five-state region of the impact of teaching students on various aspects of clinical practice at regional WWAMI sites. Faculty included those at first-year sites, clerkships, and residencies, and clinical preceptors throughout the region. Respondents were asked to rate each item on a 1–5 scale with categories ranging from *strongly negative* to *neutral* to *strongly positive*. The 2005 survey contained two items, *keeping current* and *computer literacy*, that were not used in the 2000 survey (see Figure 2).

federal and private sources. As a result of these successes, conduct of research has become an expectation among WWAMI first-year sites, along with the expectation of related regional economic development.

Educational equivalency. A significant challenge in expanding or establishing a regional site is ensuring educational equivalency, mandated by the Liaison Committee on Medical Education. UWSOM embraced equivalency upon inception of the WWAMI program and has focused on it consistently. The University of Washington Department of Medical Education tracks students closely and helps assure and demonstrate educational equivalency.^{14,17} Frequent meetings and trips by UWSOM faculty to first-year and clinical sites, along with annual retreats, are mechanisms for training and ensuring equivalency of approach. Careful evaluation occurs through common exams across all sites and at regular grading and curriculum meetings with clerkship directors and teachers from all sites.

Challenges and rewards for regional clinical faculty. Volunteer faculty must meet their own clinical practice needs and achieve satisfaction and value from faculty activities. To that end, UWSOM conducted surveys of regional clinically-

based volunteer faculty in 2000 and 2005 to assess challenges and satisfaction associated with clinical teaching.

Community-based clinical faculty experience both rewards and challenges (see Figures 2 and 3). Survey responses from 268 faculty from throughout the five-state region in 2000 indicated that the negative impacts of teaching students were relatively minimal compared with the positive impacts. In 2000, the greatest negative impact was on productivity (27% rated a negative impact), followed by workload (26% rated a negative impact). Income was third; 16% rated the impact on their incomes of teaching students as negative. In 2005, 44% of 259 respondents assessed a negative impact of teaching students on workload, 37% assessed a negative impact on productivity, and 28% assessed a negative impact on income.

Across both the 2000 and 2005 surveys, the greatest positive impact was seen in achieving professional goals (85% in 2000 and 88% in 2005 rated serving as a clinical teacher in the WWAMI program as having a strong positive impact on professional goals in their practices). In 2000, other areas in which clinical faculty assessed a positive impact on their practices were office operations and staff (60%), patient care (58%), and colleague

relations (57%). In 2005, clinical faculty also assessed positive impact on their practices in relationships with colleagues (75%) and keeping current (81%); this factor was not assessed in 2000).

Students' reactions to the regional program are consistently positive, as judged by graduating students' responses to the open-ended question, "Please comment on what you perceive to be the strengths of your medical school," tabulated from the AAMC graduation questionnaire for the years 1995 through 1998 and 2002. The WWAMI program, with its first-year and clerkship components considered together, received the highest number of positive comments for three of the five years, and the second most comments for the other two years. Comments in 1999–2001 and 2003–2005 were similar to these.

Summing Up

Medical schools will likely expand over the next 10 years, whether through expansion of existing schools, construction of new schools, or development of regional campuses and programs. Based on surveys of medical school deans, it appears likely that all those models will be utilized. Construction of schools is an enormous undertaking that frequently costs over \$100 million; high start-up costs and extended development time are inevitable.⁸ However, there may be compelling reasons in some settings to initiate new schools. Expansion in existing space works well when space, facilities, teachers, and clinical teaching sites permit or resources are available for expansion. Another option is regional expansion.

The University of Washington School of Medicine WWAMI program has expanded medical education into four surrounding states. Regional expansion was completed without construction of new buildings, campuses, or centers. The program relies on collaborative relationships with existing state universities and faculties for preclinical basic-science education, and on volunteer regional clinicians for clinical education. Participating clinicians hold clinical faculty status and receive the benefits, training, and requirements commensurate with that status; they teach, monitor, and mentor students in

their practices, whether hospital-based or practice-based. Several University of Washington affiliate hospitals located regionally, such as the Boise Veterans Administration Hospital in Boise, Idaho, permit more concentrated basic and elective clerkship activities in and around that site.

Key challenges to the regional model also represent strengths. Those that we have encountered include (1) meeting the unique needs of each region; (2) ensuring educational equivalence; and (3) maintaining interest in, attention to, and unity among program participants across a diverse geographic spread. While preserving this unity is a challenge, we have evidence that, on the whole, our volunteer faculty greatly benefit from their work with WWAMI. The positive effects of teaching students on clinical practice generate loyalty among regional volunteer faculty, as do the clear signs that the WWAMI program is having a positive effect on correcting shortages and maldistribution of physicians in these rural states. These elements, in turn, strengthen the entire WWAMI program.

The WWAMI program was developed to respond to the needs of the surrounding states, all of which were medically underserved and none of which had their own medical schools. Participating states aimed to have medical students return to practice in their home states, and this has been achieved. UWSOM has a high retention rate for students who ultimately practice in their home states. Return rates of students in each of the WWAMI states have been well above the national average. State needs change over time, as evidenced by the Spokane community's interest in a new first-year WWAMI site. The nature of those interests may shift; one of the Spokane community's interests, in addition to increasing the number of future physicians in their region, is promoting biomedical research and related areas as an economic priority for their region. Thus, considering a new site in Spokane must strongly consider this aspect of regional campus development planning.

A focus on partnership among all participants is a key factor in the WWAMI program's success. Continued evolution of the program is another important factor, with careful

development of new ideas, such as the WRITE program (which stands for WWAMI Rural Integrated Training Experience), which gives a small number of students sustained exposure to a rural community in third year.¹⁴ This evolution helps keep the program fresh and contemporary. The focus and evolutionary development of an educational continuum that considers the needs of undergraduate medical education, graduate medical education, continuing education, and recruitment to health careers in K-12, has helped maintain strong interest in and awareness of the relevance of the program to regional communities.

The Value of Regional Approaches

The reasons to consider regional campuses and regional programs are many. At the top of the list is their cost-effectiveness, making use of and carefully building on existing resources to assure a combination of high quality and low cost. Given the important challenge of containing health care costs, efficiency and cost-effectiveness are imperative. Building on an existing successful program has the potential to save money, spread the strengths and lessons of that program to new regions, and build community and cohesion region-wide. The enthusiasm of the medical students in the WWAMI program for the education they receive and the enthusiasm of the regional WWAMI faculty for the way the program helps them stay current and develop and enhance collegial relationships speaks to the success of that program and of the regional education approach it embodies.

References

- 1 Association of American Medical Colleges. The Physician Workforce: Position Statement (www.aamc.org/workforce/). Accessed 22 February 2005.
- 2 Council on Graduate Medical Education. Physician Policy Guidelines for the United States, 2000-2020, Sixteenth Report, January 2005 (<http://www.cogme.gov/report16.htm>). Accessed 10 July 2006.
- 3 Report of the Council on Medical Education. The physician workforce. Recommendations for policy implementation. CME Report 8-A-05. Chicago: American Medical Association, July 2005 (<http://www.ama-assn.org/ama1/pub/upload/mm/377/cme8a-05.doc>). Accessed 10 July 2006.

- 4 AAMC Press Release. AAMC Calls for 30 percent increase in medical schools. June 19, 2006 (<http://www.aamc.org/newsroom/pressrel/2006/060619.html>). Accessed 10 July 2006.
- 5 Liaison Committee on Medical Education. Accreditation Guidelines for New and Developing Schools (<http://www.lcme.org/newschoolguide.pdf>). Accessed 10 July 2006.
- 6 Ludmerer, Kenneth M. Time to Heal. New York City: Oxford University Press, 1999.
- 7 Hunt Andrew D, Weeks LE (eds). Medical education since 1960: marching to a different drummer. East Lansing: Michigan State University Foundation, 1977.
- 8 Hurt MM, Harris JO. Founding a new college of medicine at Florida State University. *Acad Med.* 2005;80:973-79.
- 9 Salsberg E, Erikson C, Yamagata H. Medical Workforce Expansion in the United States—Commitment and Capacity. Presented at the 9th International Medical Workforce Collaborative Conference, Melbourne, Australia, November 2005.
- 10 AAMC Reporter: March 2005. AAMC calls for medical schools to increase enrollment (www.aamc.org/newsroom/reporter/march05/enrollment.htm). Accessed 10 July 2006.
- 11 Salsberg E, Yamagata H. Center for Workforce Studies. Medical School Expansion Plans: 2004 AAMC Survey of U.S. Medical Schools. Washington, DC: Association of American Medical Colleges, April 2005.
- 12 AAMC reports major increase in U.S. medical school expansion. AAMC press release, October 25, 2006. (<http://www.aamc.org/newsroom/pressrel/2005/051025.htm>). Accessed 10 July 2006.
- 13 Mallon WT, Liu M, Jones RF, Whitcomb M. Mini-Med: The role of regional campuses in U.S. medical education. Association of American Medical Colleges, 2003 (https://services.aamc.org/Publications/showfile.cfm?file=version47.pdf&prd_id=57&prv_id=161&pdf_id=47). Accessed 10 July 2006.
- 14 Ramsey PG, Coombs JB, Hunt DD, Marshall SG, Wenrich MD. From concept to culture: the WWAMI program at the University of Washington School of Medicine. *Acad Med.* 2001;76:765-75.
- 15 Goldstein EA, MacLaren CF, Smith S, Mengert TJ, Maestas RR, Foy HM, Wenrich MD, Ramsey PG. Promoting fundamental clinical skills: a competency-based college approach at the University of Washington. *Acad Med.* 2005;80:423-33.
- 16 University of Washington School of Medicine Online News. Wyoming legislature expands state's WWAMI education program. July 23, 2004 (<http://depts.washington.edu/mednews/vol8/no29/wyoming.html>). Accessed 10 July 2006.
- 17 Wolf FM, Schaad DC, Carline JD, Dohner CW. Medical education research at the University of Washington School of Medicine: lessons from the past and potential for the future. *Acad Med.* 2004;79:1007-11.

Retention of New Physicians after Completing Training in New York in 2010

David P. Armstrong, Gaetano J. Forte, and Jean Moore
 Center for Health Workforce Studies
 New York Health Workforce Data System
 School of Public Health, University at Albany, State University of New York

Background

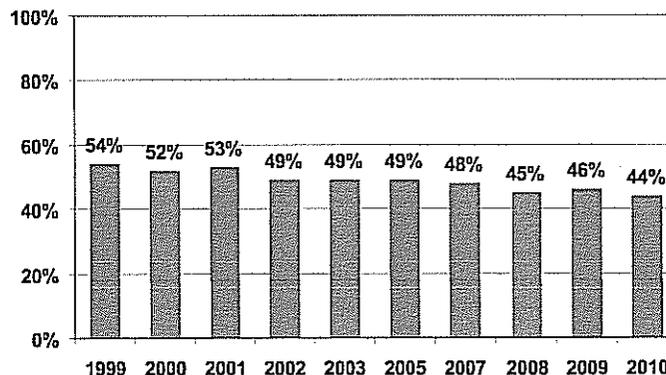
The Center for Health Workforce Studies, in cooperation with graduate medical education program administrators at teaching hospitals in New York, conducts an annual survey of all physicians completing a residency or fellowship training program in the state. Since the survey began in 1998, more than 32,000 graduates have participated. In 2010, the survey had a response rate of 62%. This research brief examines the in-state retention of new physicians; why some new physicians decide to practice out of state and what recruitment incentives were most important to their choice of practice location.

Key Findings

In 2010 less than half of new physicians stayed in New York after completing training.

The percentages in the past few years of newly-trained physicians reporting plans to begin practice in New York have been the lowest since the survey began. The in-state retention of new physicians has gradually declined in recent years from a high of 54% in 1999 to a low of 44% in 2010. A one percent decrease in the in-state retention of newly-trained physicians means that approximately 25 fewer physicians are practicing in New York after completing training.

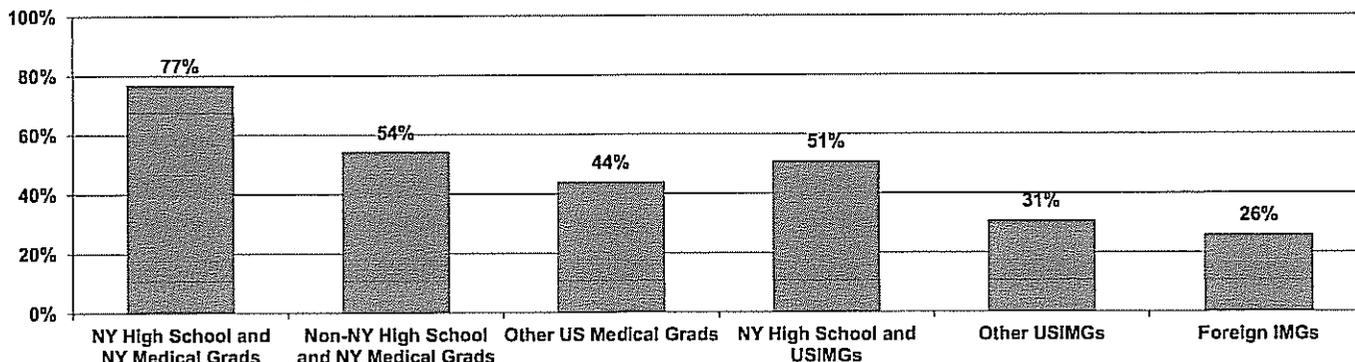
Percentage of Residents/Fellows Reporting Confirmed Practice Plans in NY, 1999-2010



New physicians who attended high school in New York and medical school in New York were the most likely to report plans to practice in New York after completing training.

In 2010, 77% of individuals who went to high school in New York and attended a New York medical school planned to practice in New York. By contrast, just 54% of those who attended medical school in New York but did not go to high school in New York reported plans to practice in New York. International medical graduates who were not U.S. citizens were the least likely to stay in New York (26%).

Percentage of Residents/Fellows Reporting Confirmed Practice Plans in NY by High School Location, Medical School Location, and Citizenship, 2010



Proximity to family was the main reason cited by new physicians for planning to practice outside of New York.

Thirty-one percent of residents and fellows cited proximity to family as the main reason for leaving New York after completing training. The next most reported reasons were better jobs in desired location outside New York (12%) and better salary offered outside New York (10%). When physicians were asked to report *all of their reasons* for leaving New York, 53% indicated better salary offered outside New York, followed by cost of living in New York (49%) and more desirable locations outside New York (49%).

Reasons for Leaving New York After Completion of Residency/Fellowship, 2010

Reasons for Leaving NY	All Reasons	Main Reason
Overall lack of jobs in NY	26%	7%
Better jobs in desired location outside NY	49%	12%
Better jobs in desired practice setting outside NY	36%	8%
Better jobs outside NY that meet visa requirements	16%	9%
Better salary offered outside NY	53%	10%
Cost of malpractice insurance in NY	19%	1%
Cost of starting a practice in NY	14%	0%
Taxes in NY	34%	2%
Cost of living in NY	49%	4%
Proximity to family	46%	31%
Better job for spouse/partner outside NY	20%	5%
Climate/Weather in NY	28%	2%
Never intended to practice in NY	20%	5%
Other reason	5%	4%
Total	N/A	100%

Most Influential Recruitment Incentive Received for Accepting a Job Offer by Practice Location, 2010

Incentives	Staying in New York	Leaving New York	All
H-1 visa sponsorship	6%	16%	12%
J-1 visa waiver	2%	9%	6%
Sign-on bonus	2%	3%	2%
Income guarantees	44%	38%	40%
On-call payments	1%	1%	1%
Relocation allowances	0%	1%	1%
Spouse/Partner job transition	2%	3%	2%
Support for CME	3%	2%	2%
Career development opportunities	27%	17%	21%
Educational loan repayment	5%	3%	4%
Other	8%	9%	8%
Total	100%	100%	100%

Income guarantees were the most influential recruitment incentive reported by newly-trained physicians in making their decision to accept a practice position.

Forty percent of newly-trained physicians indicated that income guarantees were the most influential recruitment incentive they received, followed by career development opportunities (21%). Physicians staying in New York, however, were 10% more likely than physicians who were leaving to report that career development opportunities were the most influential factor in their decision to accept a position (27% versus 17%), while those who were leaving the state were 10% more likely to report H-1 visa sponsorship (16% versus 6%).

More than one in five new physicians indicated that recruitment incentives were not important at all in their decision to accept a position.

Twenty-one percent of new physicians indicated that recruitment incentives were not at all important in their decision to accept a job and another 39% indicated that incentives were only somewhat important. Thirty-nine percent of newly-trained physicians indicated that recruitment incentives were moderately or very important in their job decision.

Implications

With less than half of new physicians staying in New York after completing training, it is essential to consider the factors that affect a new physician's decision to remain in the state to practice. This is particularly important given the growing concern about the adequacy of the future physician supply in New York and the recognition that New York's residents are a primary source of new physicians in the state. Survey results suggested that proximity to family was key in choosing a practice location. Residents and fellows who went to high school in New York and trained in New York were also the most likely to stay in New York to practice. Income guarantees and career development opportunities were the most influential recruitment incentives physicians received, but the majority suggested that incentives were only somewhat important or not important at all in their final decision to accept a practice position. Planners and policy makers should take these factors into account when designing programs and policies aimed at the recruitment and retention of new physicians in New York.

The Center for Health Workforce Studies

This brief was prepared by the Center for Health Workforce Studies at the School of Public Health, University at Albany, State University of New York. The Center's mission is to provide timely, accurate data and conduct policy-relevant research about the health workforce. The residents' exit survey is part of the Center's New York Health Workforce Data System which is designed to support ongoing monitoring of the state's health workforce. Web site: <http://chws.albany.edu>

Highlights

- Demand for newly-trained primary care physicians is increasing and has surpassed demand for specialists.
- The in-state retention of newly-trained primary care physicians is declining.
- Most of the general internal medicine physicians who remain in New York to practice are not working in community-based settings.

Background

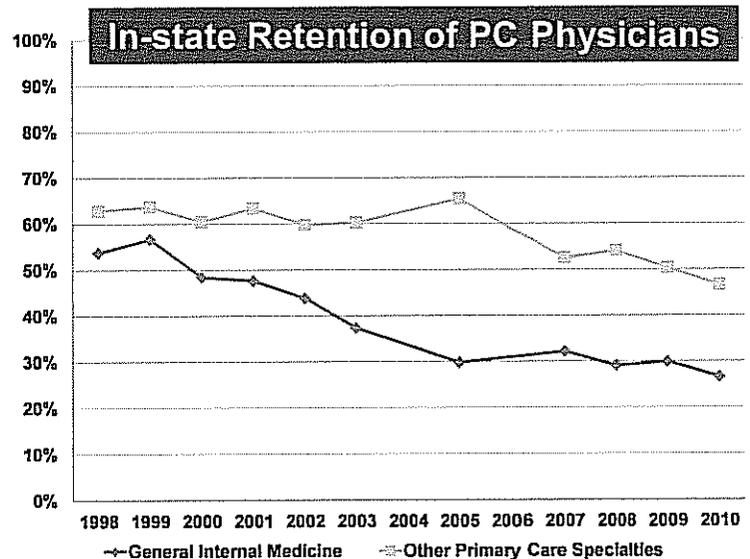
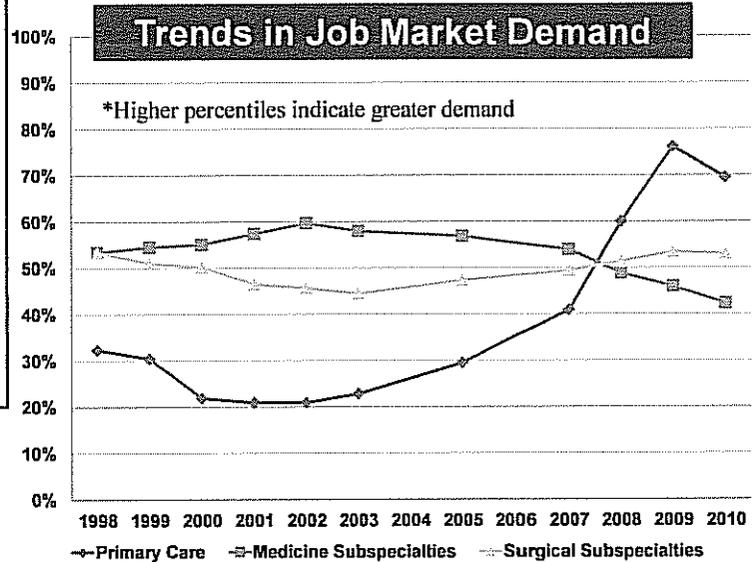
The health care delivery system in New York is undergoing rapid transformation, driven in part by the state's Medicaid Redesign Plan and by the anticipated implementation of federal health reform initiatives. As more people have access to health insurance, demand for primary care services and, by association, community-based primary care physicians is expected to increase dramatically. It is critical to understand current practice trends among newly-trained primary care physicians in order to anticipate future needs in this rapidly changing environment.

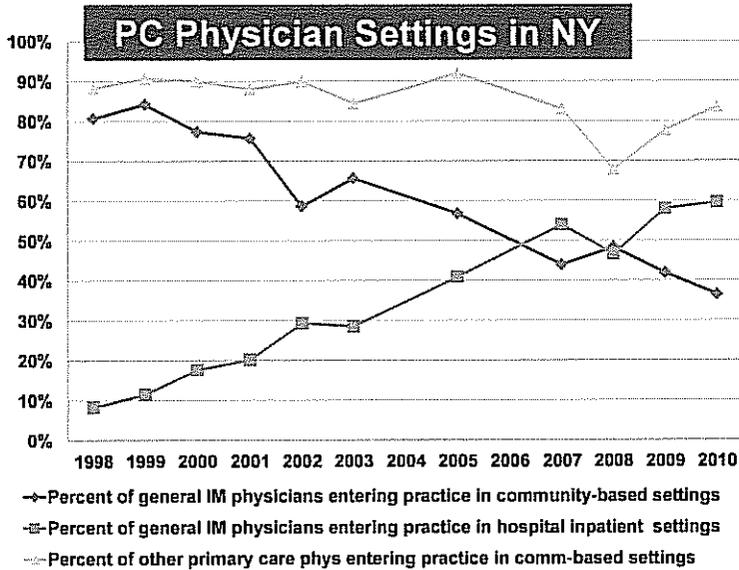
Since 1998, the Center for Health Workforce Studies, with support from New York State Department of Health and in cooperation with graduate medical education program administrators at teaching hospitals in New York, conducts an annual survey of all physicians completing a residency or fellowship training program in the state. This research brief examines practice trends for newly-trained primary care physicians who completed training in New York.

Key Findings

Overall demand for newly-trained primary care physicians has increased and, at the same time, the in-state retention of these physicians has declined.

Since 2008, demand for newly-trained primary care physicians has surpassed demand for specialists, while the in-state retention of these physicians has declined, particularly for general internal medicine physicians (27% decline since 1998).





The majority of general internal medicine physicians staying in New York do not plan to practice in community-based settings.

The percent of general internal medicine physicians reporting plans to enter community-based practices has declined by 44% since 1998. Unlike other newly-trained primary care physicians staying in New York, general internal medicine physicians are increasingly planning to work in hospital inpatient settings. In 2010, only 37% of general internal medicine physicians staying in New York planned to practice in community-based settings, compared to 84% of all other primary care physicians staying in New York.

General internists planning to practice in community-based settings expect to remain at their principal practice longer than those planning to practice in hospital inpatient settings.

Forty-eight percent of newly-trained general internal medicine physicians planning to work in community-based settings in New York expect to remain at their principal practice for more than 5 years, while only 19% of those planning to work in hospital inpatient settings expect to stay at their principal practice longer than 5 years.

Discussion

While the demand for primary care physicians has increased in recent years, the in-state retention of primary care physicians in New York has declined. This is especially the case for general internal medicine physicians. Also, fewer general internal medicine physicians report plans to practice in community-based practice settings in New York. Instead, over the last decade, general internal medicine physicians increasingly report plans to practice in hospital inpatient settings. Given the anticipated increase in demand for primary care services due to health care system reforms, it is important to understand current practice trends among primary care physicians in order to inform programs and policies designed to attract these physicians to community-based primary care positions.

Characteristics of General IM Physicians Staying in NY, 2007-2010

	Community-based	Hospital Inpatient
Female	57%	40%
Underrepresented minority	15%	14%
Foreign international medical graduate	41%	42%
Expected to remain at principal practice for 5+ years	48%	19%
Expected weekly patient care hours	44	43
Expected total weekly hours	60	64
Average annual starting income	\$139,654	\$150,180

Note 1: Community-based practice settings refer to ambulatory care settings that are accessible to the general public (e.g., not hospital inpatient).

Note 2: The Center's resident exit survey was not administered in 2004 and 2006. Thus, no data points for those years are shown on the graphs.

Note 3: Demand was measured using a composite score consisting of multiple indicators that was then converted to a percentile rank. For a complete description of the demand measure, see the report *Trends in Demand for New Physicians, 2005-2010* located on the Center's Web site: <http://chws.albany.edu>

Note 4: Primary care includes: family medicine, general internal medicine, and general pediatrics. Other primary care includes: family medicine and general pediatrics. Medicine subspecialties include: cardiology, critical care medicine, endocrinology and metabolism, gastroenterology, geriatrics, hematology/oncology, infectious disease, nephrology, pulmonary disease, and rheumatology. Surgical subspecialties include: neurosurgery, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, cardiothoracic surgery, and urology.

Center for Health Workforce Studies

This brief was prepared by the Center for Health Workforce Studies at the School of Public Health, University at Albany, State University of New York. Center staff who worked on the report included David Armstrong, Gaetano Forte, and Jean Moore. Funding for this analysis was provided by the New York State Department of Health. Web site: <http://www.chws.albany.edu>

CHWS

Better Information for Better Outcomes

Center for Health Workforce Studies
School of Public Health, University at Albany

Retention of New Physicians after Completing Training in New York

June 2012

Highlights

- **Less than half of new physicians stay in New York after completing training.**
- **New physicians who attended high school in New York and medical school in New York are the most likely to report plans to practice in New York after completing training.**
- **“Proximity to family” is the main reason cited by new physicians who plan to practice outside of New York.**

Key Findings

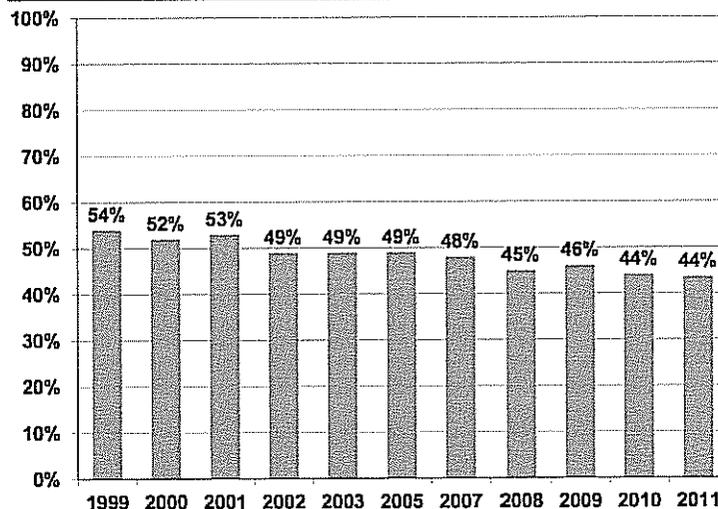
Less than half of new physicians stay in New York after completing training.

In the past few years, the percentages of newly trained physicians reporting plans to practice in New York have been the lowest since the survey began. The in-state retention of new physicians has gradually declined from a high of 54% in 1999 to a low of 44% in 2011. A 1% decrease in the in-state retention of newly trained physicians means that approximately 25 fewer physicians are practicing in New York after completing training.

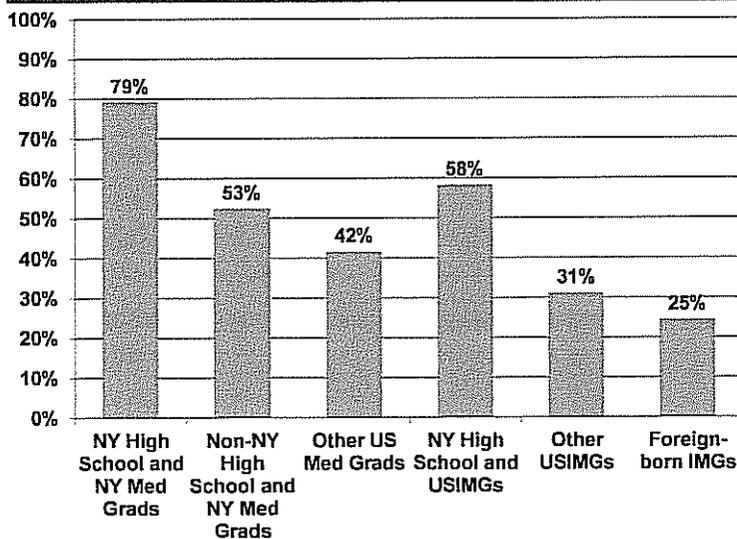
Background

The Center for Health Workforce Studies, in cooperation with graduate medical education program directors at teaching hospitals in New York, conducts an annual survey of all physicians completing a residency or fellowship training program in the state. Since the survey began in 1998, more than 35,000 graduates have participated. This research brief examines the in-state retention of new physicians; why some new physicians decide to practice out of state, and what recruitment incentives are most important to their choice of practice location.

In-state Retention of Newly Trained Physicians, 1999-2011



In-state Retention by School Location and Citizenship, 2011



New physicians who attended high school and medical school in New York are the most likely to report plans to practice in New York after completing training.

In 2011, 79% of individuals who went to high school in New York and attended a New York medical school planned to practice in the state. By contrast, just 53% of those who attended medical school in New York but did not attend high school in New York reported plans to practice in New York. International medical graduates (IMGs) who were not U.S. citizens were the least likely to stay in New York to practice (25%).

“Proximity to family” is the main reason cited by new physicians who plan to practice outside of New York.

Twenty-nine percent of residents and fellows indicated that proximity to family was the main reason for leaving New York after completing training. The next most reported reasons were better salary offered outside New York (12%) and better jobs in desired location outside New York (11%). When physicians were asked to report *all reasons* for leaving New York, 60% indicated better salary offered outside New York, followed by more desirable locations outside New York (56%) and cost of living in New York (50%).

Reasons for Leaving New York after Completing Training, 2011

Reasons for Leaving NY	All Reasons	Main Reason
Proximity to family	45%	29%
Better salary offered outside NY	60%	12%
Better jobs in desired location outside NY	56%	11%
Overall lack of jobs in NY	31%	10%
Better jobs in desired practice setting outside NY	40%	8%
Better jobs outside NY that meet visa requirements	18%	8%
Better job for spouse/partner outside NY	23%	5%
Never intended to practice in NY	18%	5%
Cost of living in NY	50%	3%

Most Influential Recruitment Incentive by Practice Location, 2011

Incentives	Staying in New York	Leaving New York	All
Income guarantees	36%	35%	36%
Career development opportunities	37%	22%	28%
H-1 visa sponsorship	7%	15%	12%
J-1 visa waiver	4%	9%	7%
Spouse/Partner job transition	2%	4%	3%
Educational loan repayment	2%	3%	2%
Sign-on bonus	2%	3%	2%
Support for CME	2%	1%	2%
Relocation allowances	0%	2%	1%
On-call payments	2%	0%	1%

Income guarantees are the most influential recruitment incentive reported by newly trained physicians in making their decision to accept a practice position.

Thirty-six percent of newly trained physicians indicated that income guarantees were the most influential recruitment incentive they received. Physicians staying in New York, however, were 15% more likely than physicians who were leaving to report that career development opportunities were the most influential factor in their decision to accept a position (37% versus 22%), while those who were leaving the state were 8% more likely to report H-1 visa sponsorship as the most influential incentive (15% versus 7%).

One in five new physicians indicate that recruitment incentives are not important at all in their decision to accept a position.

Twenty percent of new physicians indicated that recruitment incentives were not at all important in their decision to accept a job and another 36% indicated that incentives were only somewhat important. Forty-four percent of newly trained physicians indicated that recruitment incentives were moderately or very important in their job decision.

Conclusion

With less than half of new physicians staying in New York after completing training, it is essential to understand the factors that influence a new physician’s decision to remain in the state to practice. This is particularly important given the growing concern about the adequacy of the future physician supply in New York and the recognition that New York’s residents are a primary source of new physicians in the state. Survey results suggested that proximity to family is key in choosing a practice location. Residents and fellows who went to high school in New York and trained in New York are also the most likely to stay in New York to practice. Income guarantees and career development opportunities are the most influential recruitment incentives physicians received, but the majority indicated that incentives are only somewhat important or not important at all in their final decision to accept a practice position. These factors are important for planners and policy makers to understand as they design programs and policies aimed at physician recruitment and retention.

The Center for Health Workforce Studies

This brief was prepared by the Center for Health Workforce Studies at the School of Public Health, University at Albany, State University of New York. Center staff who worked on this brief include David Armstrong, Gaetano Forte, and Jean Moore. The residents’ exit survey is part of the Center’s New York Health Workforce Data System which is designed to support ongoing monitoring of the state’s health workforce.

Web site: <http://chws.albany.edu>

Highlights

- There are more than twice as many physicians per 100,000 population in urban counties than in rural counties.
- Physicians practicing in rural counties are more likely to be male and non-Hispanic White compared to physicians practicing in urban counties.
- Physicians in urban counties are much more likely to have completed a New York residency program than physicians in rural counties.
- Rural physicians are more likely to practice primary care compared to urban physicians.

Background

The vast majority of active patient care physicians in New York practiced in urban counties in 2010. Previous research has found important differences in the demographic, educational, and practice characteristics of physicians who practice in urban versus rural areas. This research brief compares and contrasts the active physician workforce in urban and rural counties in the state.¹ Data for this research brief were drawn from the Center for Health Workforce Studies' New York physician re-registration survey (2005-2010).

Key Findings

There are more than twice as many physicians per 100,000 population in urban counties than in rural counties.

There were 381 active patient care physicians per 100,000 population in urban counties in 2010 (a 7% increase since 2006) and 185 physicians per 100,000 population in rural counties (an 8% increase since 2006). The median patient care hours per week was lower for physicians practicing in urban counties (38) compared to physicians practicing in rural counties (44).

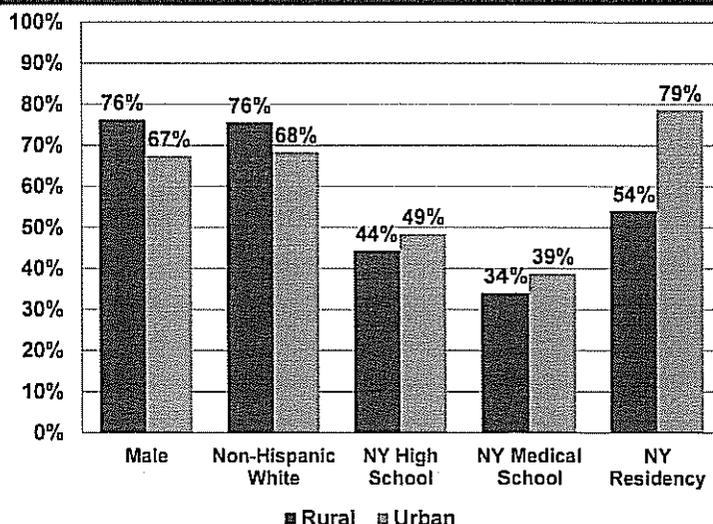
Physicians practicing in rural counties are more likely to be male and non-Hispanic White compared to physicians practicing in urban counties.

Seventy-six percent of physicians practicing in rural counties were male and 76% of them were non-Hispanic White. In contrast, 67% of physicians practicing in urban counties were male and 68% of them were non-Hispanic White. The median age for physicians in rural counties was higher (53) than for physicians in urban counties (51).

Physicians in urban counties are much more likely to have completed a New York residency program than physicians in rural counties.

Almost 80% of physicians practicing in urban counties were trained in New York residency programs compared to 54% of physicians in rural counties.

Physician Characteristics by Geographic Location, 2010



¹ Counties with populations of less than 200,000 are considered rural. This definition is based on "Eberts' typology" and cited in New York State Public Health Law: Article 2, Title 2C, Section 235.

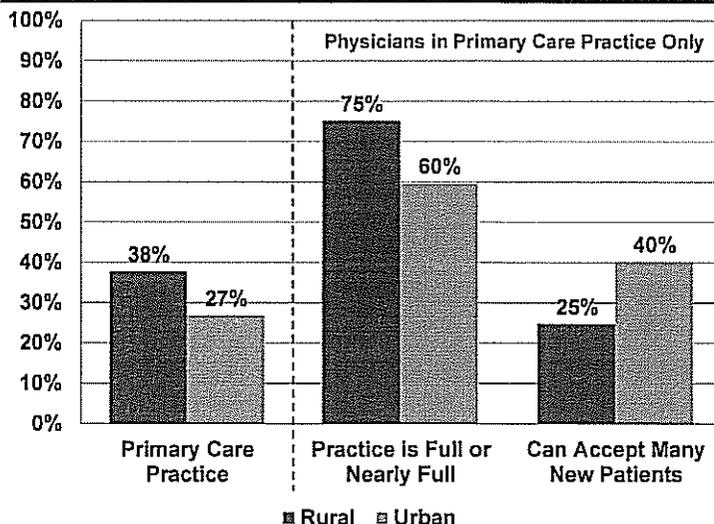
Rural physicians are more likely to practice primary care compared to urban physicians.

Thirty-eight percent of rural physicians reported a principal specialty in primary care² and practiced in a primary care setting³ that was accessible to the general public compared to 27% of urban physicians. Since 2006, the number of primary care physicians in primary care practices per 100,000 population has increased by less than 1% in both rural and urban counties.

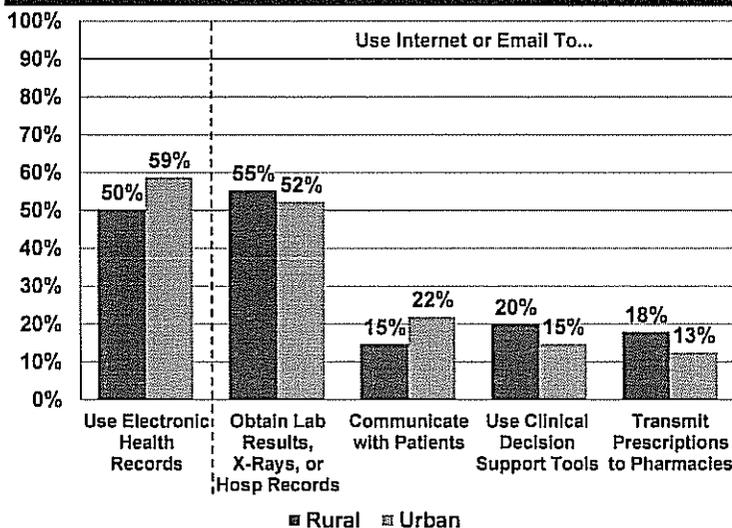
More primary care physicians in rural counties report a full or nearly full practice compared to their urban counterparts.

Seventy-five percent of physicians in rural counties in primary care practices indicated that their practice was full or nearly full compared to 60% of physicians in urban counties.

Physician Specialty and Practice Capacity, 2010



Use of Electronic Health Records and Internet or Email by Geographic Location, 2010



Urban physicians are more likely to use electronic health records compared to rural physicians.

Fifty-nine percent of physicians practicing in urban counties reported using electronic health records compared to 50% of physicians practicing in rural counties. Physicians in urban counties were also more likely to communicate with patients by Internet or email than physicians in rural counties (22% compared to 15%). Physicians in urban counties were less likely than physicians in rural counties, however, to use the Internet or email to obtain lab results, x-rays, or hospital records (52% compared to 55%), use clinical decision support tools (15% compared to 20%), or transmit prescriptions to pharmacies (13% compared to 18%).

Conclusion

There are fewer physicians per capita in rural counties compared to urban counties. Rural physicians are slightly older and less diverse than their urban counterparts. They are less likely to have completed graduate medical education in New York. Rural physicians are more likely to report a primary care practice, work longer hours, and report a full or nearly full practice compared to urban physicians. As demand for primary care services grow, shortages of primary care physicians are expected to worsen. Strategies designed to ease shortages must consider the unique demographic, educational, and practice characteristics of rural physicians compared to physicians in urban areas and develop incentives that can effectively recruit and retain primary care physicians to work in both rural and urban areas of New York.

The Center for Health Workforce Studies

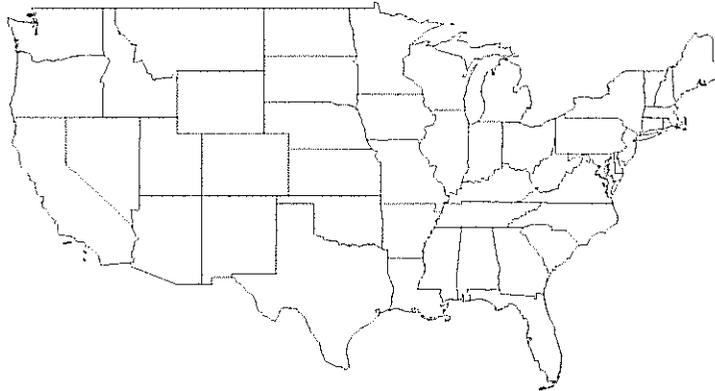
This brief was prepared by the Center for Health Workforce Studies at the School of Public Health, University at Albany, State University of New York. Center staff who worked on this brief included David Armstrong, Gaetano Forte, and Jean Moore. The New York physician re-registration survey is part of the Center's New York Health Workforce Data System, which is designed to support ongoing monitoring of the state's health workforce. Web site: <http://chws.albany.edu>

² Primary care specialties include: family medicine general practice, general internal medicine, general pediatrics, and obstetrics and gynecology.

³ Primary care settings include private offices, free standing health centers or clinics, hospital satellites, and hospital outpatient clinics.

*State Responses to Health Worker Shortages: Results of
2002 Survey of States*

**November 2002
The Center for Health Workforce Studies
School of Public Health
University at Albany, SUNY**



**With support from:
National Center for Health Workforce Analysis
Bureau of Health Professions
Health Resources and Services Administration**

Executive Summary

Health workers are the most critical resource in any health care system. Currently, health worker shortages across the nation are restricting access to needed health services and may potentially reduce the quality of care. The shortages span a wide range of professions and occupations from nurses to pharmacists to home health aides. The health care system, including hospitals, nursing homes, home health agencies, laboratories, and others are struggling to recruit and retain health workers. For the past several years, education programs in numerous health professions have experienced significant drops in applications and enrollments, despite the continued demand for their graduates.

The responsibility for educating, training, employing and retaining health workers in the health field is primarily the responsibility of the education and health sectors. Although both sectors have taken some actions in response to health worker shortages, state governments have been asked and are expected to play a major role in helping to assure an adequate supply of health workers to meet health care needs in their states.

In response to health workforce shortages, most states have established task forces or commissions to assess the problems and to develop recommendations for programs and policies. Over the past two years, these state task forces and commissions have reviewed the available data, gathered new data and information, explored their policy options, and have begun to recommend new or expanded programs and policies. In response to these recommendations and their own analyses, many states have begun to implement new policies and initiatives. This makes 2002 a very opportune time to assess how states are responding to the shortages and to share this information among the states.

With support from the National Center for Health Workforce Analysis in the federal Bureau of Health Professions at the Health Resource and Services Administration, the Center for Health Workforce Studies at the School of Public Health of the University at Albany SUNY conducted a study of how states were responding to health workforce shortages in order to provide guidance to other states. While there are a number of well known initiatives to address shortages of physicians, particularly primary care physicians, less is known about strategies to address shortages of other health workers. The focus of the study was state responses to shortages of non-physicians.

The Center canvassed all 50 states in spring of 2002. Key state organizations, including governors' offices as well as departments of health, education and labor, were asked to complete a one-page fax back questionnaire briefly describing their states' efforts to address shortages of health workers (see Appendix A). This was supplemented by information obtained through follow-up interviews of state officials responsible for many of these programs and from state Internet sites. Staff from the Center for Best Practices at the National Governors Association helped disseminate the surveys to the states. The results of this study form the basis for this report.

Data were obtained on all 50 states and Puerto Rico. The following is a summary on how states are responding to health worker shortages. It is followed by a state-by-state summary. This report contains a profile of each state's response to health workforce shortages, detailing current initiatives, available web sites describing these initiatives and state contacts.

This report presents a "snapshot" of state responses to health worker shortages as of mid 2002. It is likely that many new programs and policies will be adopted by individual states over the next few years. Nevertheless, the report will be helpful to policy makers and others interested in developing new policies and programs. It may be valuable to repeat the survey in the future, perhaps annually, as long as shortages persist and states continue to try to address health workforce issues.

Key Findings

1. A majority of states (88%) reported convening task forces or commissions to study workforce shortages. Many of these task forces and commissions are still deliberating; state policy responses are still in the development stage in most states.

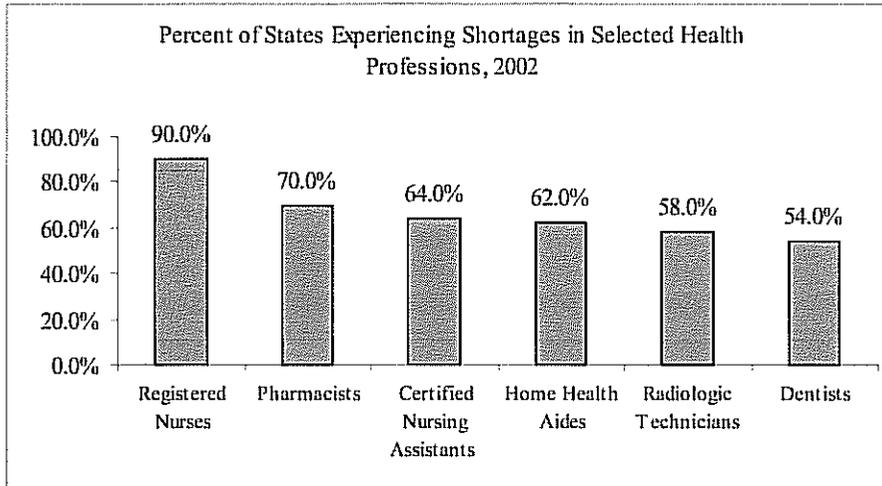
Forty-four (44) of 50 states reported establishing one or more task forces to study health workforce shortages. Most of these bodies were temporary, designed to help recommend state policy responses. In a few states, these organizations evolved or led to the development of more permanent structures to address health workforce concerns. In a few cases, the task forces/commissions were established outside of state government, such as by a state health care association with state participation. In most states, however, the task forces/commissions were established by the state administration. When asked the focus of the task force(s) or commission(s)¹, respondents reported:

- Twenty-five (25) were convened to study shortages in the long-term care workforce²
- Twenty-four (24) were convened to study the shortage of nurses;
- Twenty-three (23) were convened to study general health workforce shortages; and
- Seven (7) were convened to study shortages in other health occupations, including dentistry and pharmacy.

2. States are experiencing shortages in a wide array of health professions. Nursing shortages were cited as a major concern by 90% of states. Seventy percent of states reported pharmacist shortages as a major concern and more than half cited certified nurse aides, home health aides, dentists and radiologic technicians.

¹ The number of task forces and commissions exceeds the number of states as many states had more than one task force or commission.

² Based on findings from the report "Results of the 2002 National Survey of State Initiatives on the Long-Term Care Direct Care Workforce, June 2002", published by the paraprofessional Health Care Institute and the North Carolina Department of Health and Human Services, Office of Long Term Care.
http://www.directcareclearinghouse.org/Documents/pdf/2002_Nat_Survey_State_Initiatives.pdf



3. The most common strategies used by states are scholarship and loan repayment programs for health professionals. Thirty-eight states (76%) reported such programs.

Of the states that reported offering scholarships and/or loan repayment:

- 24 states have programs specifically targeted to registered nurses; and
- 28 states have programs targeted to a broad array of health professionals, including dentists, dental hygienists, and pharmacists.

4. Fifty-four percent of states (27) and Puerto Rico described a wide array of health workforce data collection activities.

Most respondents reported that health professionals were surveyed, sometimes at the time of licensure or re-licensure. In other instances, health workforce needs assessments of providers were completed. While state agencies, particularly departments of health or education initiated much of the data collection, other groups were involved in these efforts, including task forces established to study workforce shortages, health workforce research centers, Area Health Education Centers (AHECs), and provider associations.

5. Half of the states (25) have initiatives to market health careers.

Forty percent (10) of states with marketing initiatives indicated that Area Health Education Centers administered many of them, particularly those targeted to youth.

6. Twenty-eight percent of states (14) are developing or have developed career ladder programs in the health professions.

The main targets of these efforts appear to be career ladders in nursing or career ladders for certified nurse aides.

7. Seven states (14%) reported health workforce training and education initiatives through departments of labor that tap funding streams such as H-1 B Visa Grants and WIA (Workforce Investment Act). Several states were also using TANF (Temporary Assistance to Needy Families) funding.

Many states are exploring the potential for using WIA funds to support health workforce training in many occupations including nursing.

8. In order to promote improved working conditions, increased retention and improved productivity, five states have developed or are exploring strategies related to job redesign.

These included support for demonstrations and evaluations.

9. Several states have passed legislation prohibiting or limiting mandatory overtime and one state has passed legislation mandating minimum nurse staff ratios in hospitals.

While a few states have minimum nurse staff ratios, they are mostly for specialty areas in hospitals. California enacted legislation in 1999 requiring nurse patient ratios on all nursing units in the states acute care hospitals.³

Discussion

- For the most part, states have become involved in addressing health worker shortages not because of their roles in financing and regulation of health and education, which are extensive, but in response to general concerns with the impact on access and quality. Although the health and education sectors have a major stake in the health workforce and they have undertaken many efforts to address shortages, their actions alone have not been successful in preventing or reversing the shortages. Given the failure of the marketplace and the health and education sectors to produce a supply of health workers to meet the demand, the public has turned to state government to provide leadership. States clearly have a major role to play in addressing health worker shortages.
- For the most part, the state responses to date have been relatively modest and narrowly focused. The responses have generally been designed to stimulate the production of new

³ American Nurses Association. "Government Affairs, State Government Relations: 2002 Legislation: Nurse Staffing Plans and Ratios." May 8, 2002.
<http://nursingworld.org/gova/state/2002/staffing.htm>

workers, such as through scholarships, loan repayment, and the marketing of health careers. States have also provided some additional reimbursement, particularly through the Medicaid program for long term care paraprofessionals.

- With few exceptions, states do not appear to be addressing problems of retention or trying to improve productivity. This likely reflects the difficulty for government to influence internal health facility operations. States do not appear to be seeking to change licensure or scope of practice regulations, which is also a sensitive area to most professions.
- Although there is some inevitable duplication and redundancy in having each state explore and develop their own policy responses, there appear to be major benefits to the processes states are going through. This includes development of solutions and programs consistent with each state's health and education systems and increased collaboration between the health and education sectors and between labor and management which can foster effective policy development and implementation. The development of individual state policies also fosters innovation and creativity.
- In light of the significant amount of activity at the state level, the early stage of development, and the need for continued attention to health workforce issues by states, there would appear to be major benefits to collaboration and information sharing among states. A major investment in the evaluation of the impact and effectiveness of the alternative policies and strategies would also seem to be appropriate and very valuable. The federal government and foundations could play an important role in collecting and disseminating information across states and in supporting evaluations of responses to workforce shortages.
- Responding to health worker shortages is an opportunity to address other important issues, including the quality of care, the lack of diversity in many professions, and the quality of life for many workers. Overworked and frustrated workers contribute to errors and poor outcomes. Increasing worker satisfaction, using technology to assist workers and patients, and re-designing jobs and tasks to reduce burnout and errors will not only increase retention but also improve quality of care and the quality of lives of workers. Building career ladders will help diversify the workforce and address the current inequities.

The marketplace for health workers is often slow and inefficient, but it does respond. For example, in response to the publicity around nursing shortages, enrollment in nursing programs is rising, and health facilities are developing initiatives to increase retention. Thus, it is likely that some of the health worker shortages will subside in the next few years as the marketplace responds. While this is good news, the demographics of America will make it very difficult to increase the supply in future years when the demand is likely to rise rapidly as the baby boom generation ages. For this reason, it is critical that the assessment of health workforce needs and the development of systems to address health workforce needs *not* be viewed as temporary issues but as long range issues that will require continuing attention and policy making structures to assure an adequate supply of health workers.

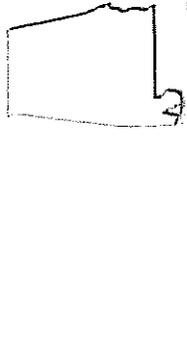
Summary of State Responses to Workforce Shortages⁴

Appendix A

	Task Force, Commission or Panel	Scholarships, Loan Repayment	Career Ladder Development	Health Career Marketing	Labor Department/ Workforce Investment Board	Job Design	Workforce Data Collection
Alabama	√	√		√			
Alaska	√	√	√				
Arizona	√	√					
Arkansas	√	√		√			
California	√	√	√	√	√	√	√
Colorado	√	√					√
Connecticut	√			√			
Delaware	√	√					
Florida	√	√	√	√	√		
Georgia	√	√		√		√	√
Hawaii		√		√			√
Idaho	√	√					√
Illinois		√		√			
Indiana	√			√			√
Iowa	√	√				√	√
Kansas	√	√					√
Kentucky	√	√					
Louisiana	√	√		√			
Maine	√	√	√				√
Maryland	√	√		√			
Massachusetts	√	√					√
Michigan		√		√			
Minnesota	√	√		√			√
Mississippi	√						√
Missouri	√	√		√			√
Montana	√						
Nebraska	√	√	√		√		√
Nevada	√						
New Hampshire	√			√			
New Jersey	√	√	√			√	√
New Mexico	√	√					√
New York	√	√	√	√			√
North Carolina	√	√		√			√
North Dakota	√	√	√	√			√
Ohio	√	√		√			
Oklahoma	√						
Oregon	√	√					
Pennsylvania	√	√					
Puerto Rico							√
Rhode Island	√	√					
South Carolina	√			√			
South Dakota							√
Tennessee	√	√					
Texas		√		√	√		√
Utah		√	√				√
Vermont	√	√	√	√	√	√	√
Virginia	√						
Washington	√	√	√	√	√		√
West Virginia	√	√	√	√			
Wisconsin	√	√	√		√		√
Wyoming	√		√	√			√

⁴ Includes programs and policies that are underway but does not include those in the planning stage.

ALABAMA

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>A Health Workforce Task Force was established in April 2001 and focused on:</p> <ul style="list-style-type: none"> • Health careers marketing; • Data collection; • Career ladder development; and • Financial aid. <p>A report was issued in December 2001. Copies of the report may be obtained by contacting the Alabama Department of Public Health at 334-206-5300.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> • The Rural Primary Care Initiative in Alabama administers: <ul style="list-style-type: none"> • Alabama Board of Medical Scholarship Awards; and • Alabama Community Scholarship Program <p>For more information: http://www.alapubhealth.org/opcrh</p> <ul style="list-style-type: none"> • The Health Workforce Taskforce recommended an expansion of service obligated scholarships and loan repayment programs for faculty and clinicians in short supply. 	
<p>CAREER LADDER DEVELOPMENT</p> <p>The Health Workforce Taskforce recommended enhancing career mobility and transition options for health care workers.</p>	<p>HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> • The Tuskegee Area Health Education Center has developed initiatives to encourage students to pursue careers in the health professions. For more information: http://www.alapubhealth.org/opcrh • The Health Workforce Task Force recommended: <ul style="list-style-type: none"> • A statewide media campaign to generally promote health careers. • Linking the Alabama On-Line High School with the Health Careers web site; and • Establishing a healthcare workforce recruiter program to promote health careers to K – 12 students. 	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <p>The Health Workforce Task Force recommended that Workforce Investment Boards focus on training and education of individuals pursuing careers in health care.</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Health Workforce Task Force recommended establishing a central repository of data on Alabama health care workers within the Alabama Department of Public Health.</p>	<p>OTHER</p> <p>The Health Workforce Taskforce recommended management training programs for health care workers to foster effective supervisory skills and improve retention.</p>

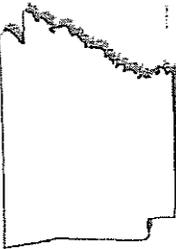
ALASKA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Alaska Hospital & Nursing Home Association established five task forces:</p> <ul style="list-style-type: none"> • The Workforce Development Committee to identify short and long term solutions to Alaska's healthcare workforce shortages; • The Healthcare Consortium, comprised of educators, healthcare providers and professionals interested in workforce development; • The "Need for Nurses" Team to address nurse recruitment and retention issues; • The "Allied Health" Team to address allied health recruitment and retention issues; and • The "K-12 New Worker" Team to promote health careers. <p>For more information: http://www.ashna.com/</p>	<p>The Alaska Native Tribal Health Consortium (ANTHC) offers support for student internships and post-secondary education in any healthcare related occupation/profession. For more information: http://www.anthe.org/</p>	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<ul style="list-style-type: none"> • The Alaska Native Tribal Health Consortium started an employee retention project that included career ladder development for entry-level workers. • A 4-year education program in medical technology is under development and will articulate with a 2-year medical laboratory program. • Y-K Medical Center has developed a career pathway outreach program that includes distance learning and training for RNs, LPNs, physician assistants, and other related professions. 	<p>The K-12/New Worker Team is establishing links and partnerships with school districts and post-secondary institutions to provide teachers and students with information on healthcare career opportunities and education and training available in the state and nationally.</p>	<p>The Healthcare Consortium is working with the Workforce Investment Agency to explore use of WIA funding for health worker training.</p>
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>The Recruitment and Retention Committee of the Alaska Colleagues in Caring is planning a survey of health care employers.</p>	<ul style="list-style-type: none"> • Clinical assistant education will be available through distance learning networks. • The University Medical School is examining health care career training in the Anchorage area. • A Workforce Summit was held in April 2002 and focused on the retention of current health workers and recruitment of new health care workers.

ARIZONA

<p>TASK FORCE COMMISSION OR PANEL</p> <ul style="list-style-type: none"> A Nursing Shortage Task Force was established in 2002 to assess the current and future supply and demand for nurses across the state. For additional information: http://www.governor.state.az.us/nurse/nurse.cfm The Healthcare Institute at the Arizona Hospital and Healthcare Association was created to address the health care needs of Arizonans through the development of a well-prepared, accessible nursing workforce. For more information: http://www.azhha.org/ 	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Arizona Loan Repayment Program, administered by the Arizona Department of Health, offers loan repayment to primary health care providers, i.e., physicians, dentists, nurse practitioners, certified nurse midwives, and physician assistants, in return for a two year commitment to practice in a Health Professional Shortage Area or Medically Underserved Area in Arizona. For additional information: http://www.hs.state.az.us/hsd/az_loan_repayment.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

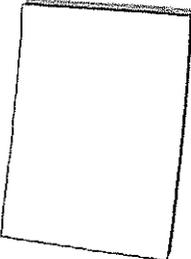
ARKANSAS

<p>TASK FORCE COMMISSION OR PANEL</p> <p>The Arkansas Legislative Commission on Nursing was established in 2001, to:</p> <ul style="list-style-type: none"> • Study the status of the nursing and nurse educator shortage in Arkansas; • Project the need for nurses and nurse educators over the next ten years; • Develop a strategic statewide plan to ensure an appropriately prepared workforce; • Convene stakeholders from nurse education, the healthcare and business industries, the legislature and the public; and • Enhance and promote recruitment, retention, advancement, recognition, reward and renewal for nurses in Arkansas. <p>http://www.arkleg.state.ar.us/data/resources.asp</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The University of Arkansas College of Medicine, College of Pharmacy and College of Nursing offer scholarships to students. For more information: http://www.uams.edu/today/100401/video.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p> <p>The Arkansas Department of Health is developing a horizontal career pathway that allows health care professionals to increase their skills within their current position, which will in turn increase their rates of pay. For more information, contact Lewis Leslie at 501-661-2831</p>	<p>HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> • The Area Health Education Center offers a 2-week summer program for high school students to learn about health careers. For more information: http://www.uams.edu/ahec/AHEC9.HTM • Arkansas State University offers programs targeted to high school students who live in medically underserved areas to pursue advanced education in health professions. For more information: http://conhp.astate.edu/ 	<p>LABOR DEPARTMENT / WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p> <p>In 2000, the AHEC of Arkansas surveyed health administrator to assess their perceptions of health workforce needs. For more information: http://rpweb.uams.edu/HealthWorkforceNeedsWebpageAbstract.htm</p>

CALIFORNIA

TASK FORCE/COMMISSION OR PANEL	SCHOLARSHIPS/LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>The California State Board of Pharmacy developed the Pharmacy Manpower Task Force to address the pharmacist shortage in California and to ensure that patients have access to pharmacy care and prescription services. For more information: http://www.pharmacy.ca.gov/harmacy_manpower_task_force.htm</p>	<p>The Nurse Workforce Initiative offers a variety of programs to support nursing students. For more information: http://www.nurse.ca.gov/workforce-init.html</p>	<ul style="list-style-type: none"> In January 2002, California established the Nursing Workforce Initiative a 3-year, \$60 million WIA funded effort to address the nursing shortage in California. For more information contact: Teri Boughton, California Health and Human Services Agency at 916-654-3297 The Caregiver Training Initiative is a \$25 million program supported by WIA funds to recruit, train, and retain CNAs and related caregivers working primarily in long term care facilities.
OTHER	CAREER/ADDER DEVELOPMENT	HEALTH CAREERS MARKETING
<ul style="list-style-type: none"> California established minimum nurse-to-patient ratios for its acute care hospitals. http://www.futurehealth.ucsf.edu/CWI/nurs/ncisght.html The Board of Registered Nurses (BRN) and Board of Licensed Vocational Nurses/ Psychiatric Technicians (BVNPT) work with community colleges and California State University campuses to ensure the standardization of prerequisites and increased training slots. http://www.nurse.ca.gov/workforce-init.html The Office of Statewide Health Planning and Development operates a Health Careers Training Program that focuses on training CNAs, LVNs, RNs and other related health workers. For more information: http://www.oshpd.ca.gov/ The Employment Training Panel uses state unemployment tax money to provide funds to employers who need specialized training to retain/upgrade their workers 	<ul style="list-style-type: none"> The Nursing Workforce Initiative provides \$3 million to test pilot projects that provide strategies for on-site approaches to delivery of skills upgrade training, including distance learning. http://www.nurse.ca.gov/default.html The Los Angeles County Health Care Workforce Development Program is a 5 year \$40 million skills upgrade and retraining program operating in conjunction with the restructuring of the Los Angeles County health care system. 	<p>The Nurse Workforce Initiative promotes careers in nursing. For more information: http://www.nurse.ca.gov/default.html</p>
JOB REDESIGN	WORKFORCE DATA COLLECTION	
<p>The Nursing Workforce Initiative provides \$1 million to fund projects that design and test reform to improve nurse retention.</p>	<p>The California Workforce Initiative monitors changes in the health care workforce in order to disseminate workforce information, strategies, and best practices. http://www.futurehealth.ucsf.edu/CWI/about.html</p>	

COLORADO

<p>TASK FORCE, COMMISSION OR PANEL</p> <ul style="list-style-type: none"> In 2002, the Health Facilities Division of the Colorado Department of Public Health joined with the Colorado Board of Nursing and other health care industry representatives to review the scope of activities for Certified Nurse Aides. For more information contact Cathy Davenport at 303-692-2800 or 303-692-2908 The Colorado Alliance of Nursing Workforce Development Opportunities (CANDO) was established to examine the supply and demand for nurses in Colorado. For more information: http://www.uchsc.edu/ahec/cando/index.htm 	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Colorado Rural Outreach Program (CROP) provides funding to rural Colorado healthcare facilities to offer loan repayment as a recruitment incentive. For more information: http://www.coruralhealth.org/cpr/crop/index.html 	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>Colorado Alliance of Nursing Workforce Development Opportunities (CANDO) collects and reports data on the distribution, supply, demand, diversity and salary of the nursing workforce in Colorado.</p>	<p>OTHER</p> <p>The Colorado Health Workforce Summit was held in December 2001 to create a unified effort by Colorado's educational institutions in collaboration with business and government to improve the distribution of healthcare workers throughout the State of Colorado in both urban and rural communities. http://www2.uchsc.edu/ahec/workforce/</p>

CONNECTICUT

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Department of Public Health has established the Office of Public Health Workforce Development to:</p> <ul style="list-style-type: none"> enhance public health workforce competencies through the development of a certification program; develop marketing materials for recruitment and retention; advise the Commissioner on health workforce issues; establish a "Health Track" within local schools in cooperation with the Department of Education; and act as a clearinghouse for information on health care careers. <p>http://www.dph.state.ct.us/Commissioner/Work_Force/work_force.htm</p>		
CAREER LEADERSHIP DEVELOPMENT	HEALTH CARE RECRUITMENT MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<ul style="list-style-type: none"> Connecticut's Area Health Education Centers provide a variety of programs geared toward promoting health careers to school age individuals. For more information: <ul style="list-style-type: none"> http://www.ctahec.org/eastern/index.html http://www.nwctahec.org/index.html http://www.ctahec.org/southwest/index.html The Nursing Career Center of Connecticut has developed a number of programs promoting nursing careers to school age individuals. <ul style="list-style-type: none"> http://www.nccct.com/ 	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

DELAWARE

<p>TASK FORCE COMMISSION OR PANEL</p> <p>The Delaware Health Care Commission recently completed a study of the nursing shortage in Delaware, its impact on access, costs and quality, the factors contributing to the shortage, and recommendations to address it. The report, <i>Solving the Nursing Shortage in Delaware</i>, was released in March of 2002. The Commission formed a special committee to implement select recommendations from the report. The implementation committee began meeting in September 2002. For more information: http://www.nesbn.org/public/news/state_shortage.htm</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Delaware State Loan Repayment Program provides awards to physicians and dentists to work in underserved communities throughout the state. For more information: http://www.state.de.us/dhcc/loan2.htm The Delaware Institute of Medical Education and Research (DIMER) Loan Program offers loan repayment to dental or medical students in training at Jefferson Medical College in exchange for practice in primary care in Delaware upon completion of training. For more information: http://www.state.de.us/dhcc/loans2.htm 	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p> <p>The Delaware Institute for Dental Education and Research (DIDER) supports the dental general practice residency program at the Christiana Care Wilmington Hospital Health Center Dental Office.</p>

FLORIDA

TASK FORCE COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>The Florida Center for Nursing was established in 2001 under the auspices of the Florida Department of Health. The Center is charged with addressing issues of supply and demand for nursing, including recruitment, retention and utilization of nurse workforce resources.</p>	<ul style="list-style-type: none"> The Nursing Scholarship Program is available for students enrolled full-time or part-time in an approved program leading to an associate, a baccalaureate, or a graduate degree in nursing. For additional information, call 1-800-342-8660, ext. 3504. Nursing Student Loan Forgiveness Program encourages qualified personnel to seek employment in areas of Florida where critical nursing shortages exist. For additional information, call 1-800-342-8660, ext. 3504. 	 <p>WIA and TANF funds are available for training and upgrading in health occupations.</p>
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>Florida has developed a formal articulation plan between LPN and RN education programs to support bridge programs designed to facilitate LPN advancement to RN in reasonable time frames.</p>	<ul style="list-style-type: none"> Florida recently established the Sunshine Workforce Solutions Grant Program supporting exploratory programs in nursing at middle schools or at comprehensive career and technical education programs. The Florida AHEC Network targets some of its resources to programs that generate interest in health careers, focusing on minority and disadvantaged youth. 	<p>WIA and TANF funds are available for training and upgrading in health occupations.</p>
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
		<ul style="list-style-type: none"> The Area Health Education Center (AHEC) Network, includes Florida's five university-based medical schools and ten AHEC centers, focuses on the recruitment of community-based students into health care professions; the provision of medical training programs, such as residencies and internships in underserved communities; and the retention of medical professionals in these communities through educational and resource support services. For additional information, contact: david_fairweather@doh.state.fl.us

GEORGIA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<ul style="list-style-type: none"> In 2000, the Georgia Department of Community Health convened the Health Care Workforce Technical Advisory Committee to study the shortages of health care workers in the state. The report of the committee, issued in May 2001, can be viewed at: http://www3.state.ga.us/departments/v4/top/shared/con_dhp/dhp_publications/healthcare_workforce_final.pdf On the recommendation of the Technical Advisory Committee, Georgia established a standing policy committee to address non-physician health workforce shortages. 	<p>More than \$3 million was awarded for cancelable loans to nurses and other health care professionals in 2002. This was three times the amount of funding that had been allocated two years earlier.</p>	
CAREER LEADERSHIP DEVELOPMENT	HEALTH CAREERS MARKETING	OTHER
<p>The Health Care Workforce Technical Advisory Committee recommended the development of training and educational strategies to support “bridge” programs and professional career paths that allow entry-level workers to gain skills and move into higher level licensed professions.</p>	<ul style="list-style-type: none"> Georgia has supported the development of: <ul style="list-style-type: none"> Health careers programs in youth organizations, camps and after-school programs; and Public information campaigns for health careers. The Health Care Workforce Policy Advisory Committee has developed recruitment programs for mid-career professionals, as well as middle and high school students. The Area Health Education Center has developed: <ul style="list-style-type: none"> health career manuals and curricula and made them available to middle and high schools; and a health careers website and job postings. http://www.mcg.edu/AHEC/ 	<ul style="list-style-type: none"> The Department of Labor is sponsoring career fairs to recruit displaced and midcareer professionals into the health workforce. The Indigent Care Trust Fund is allowing hospitals to use money allocated for primary care to support approved education, recruitment, and retention activities. The Health Professions Initiative, a collaboration between the University System of Georgia and Georgia’s health care providers, is designed to increase the number of licensed health professionals in the state by more than 500 over the next two years. New nursing education programs have been established in several areas of the state.
JOB REDESIGN	WORKFORCE DATA COLLECTION	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>Georgia provided over \$200,000 in funding to support strategies to encourage workplace innovation and workforce development and retention.</p>	<p>The Health Care Workforce Planning Act provides support for ongoing data collection, analysis and forecasting to more effectively address health workforce needs.</p>	

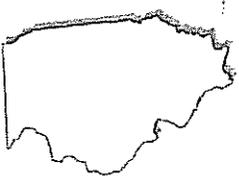
HAWAII

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
	<ul style="list-style-type: none"> The Hawaii Community Foundation offers grants to residents of Hilo or the Hamakua coast, north of the Waialuku River, who are enrolled full-time with a minimum GPA of 2.7 and who are studying medicine or nursing. For more information: http://dbserver.iis.hawaii.edu/cash/ 	
CAREER/LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<p>Hawaii's AHEC promotes health careers on their website. For more information: http://www.ahec.hawaii.edu/resources.htm</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>Hawaii's AHEC conducted a health workforce needs assessment to assist organizations to recruit providers in underserved areas.</p>	

IDAHO

<p>TASKFORCE/COMMISSION OR PANEL</p> <p>The State Board of Education is establishing a Health Professions Committee to examine work force and education issues affecting the delivery of health care services. The committee will include several sub-committees to examine specific professions (i.e., nurses, lab technicians, radiology technicians, etc.) and set goals and outcomes for their efforts.</p>	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Idaho Society for Respiratory Care offers scholarships to Idaho residents who are full-time respiratory students and members of American Association of Respiratory Care. For more information: http://www.idasrc.org/ Idaho State University Department of Dental Hygiene offers a variety of scholarships to their students. For more information: http://www.isu.edu/departments/dentalhy/ 	
<p>CAREER/LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The State Office of Rural Health and Primary Care supports statewide semi-annual vacancy surveys of hospitals, nursing homes, district health departments, rural health clinics, community health centers, and migrant health centers.
<p>JOB REDESIGN</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>	<p>OTHER</p>

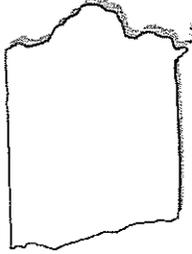
ILLINOIS

<p>TASKFORCE, COMMISSION OR PANEL</p>	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <p>Illinois' Fourteenth District Nurse Scholarship program is for residents who are RNs or student nurses enrolled in a full or part-time nursing programs. For more information: http://www2.semo.edu/nursing/undergraduate/undloans.html#jump29</p>	
<p>CAREER LADDER/DEVELOPMENT</p>	<p>HEALTH CAREERS/MARKETING</p> <p>The Illinois Health Education Consortium/ AHEC and Illinois Rural Health Association hosted a 2-day health careers camp in June 2002. For more information: http://www.ilruralhealth.org/index.html</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

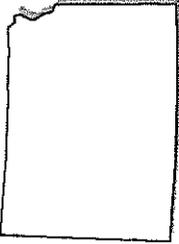
INDIANA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Indiana State Department of Health established the Indiana Health Care Professional Development Commission to develop a strategic plan to ensure an adequate supply of health professionals who are distributed appropriately throughout the state. http://www.state.in.us/isdh/publications/pubs/toc97.htm</p>		
CAREER LADDER DEVELOPMENT	HEALTH CAREERS/MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<p>Nursing 2000 is an organization comprised of practicing nurses from health care agencies, universities, professional nursing associations, and communities who work together to promote the positive image of professional nursing. For more information: http://www.nursing2000inc.org/organizational_overview.html</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>The Indiana State Department of Health conducted surveys of physicians and nurses in 1997 and surveys of dentists and dental hygienists in 1998. For more information: http://www.in.gov/isdh/publications/publications.htm</p>	

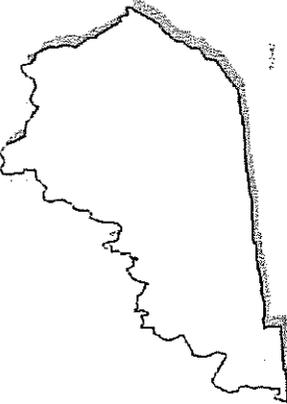
IOWA

TASK FORCE COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Governor's Task Force on Nursing Shortage was established in May 2001 to examine and evaluate actual and potential shortages of RNs, LPNs, home health aides, and CNAs.</p>	<ul style="list-style-type: none"> Iowa has loan repayment programs for physicians, nurses, dentists, dental hygienists, and physician assistants. For more information: http://www.ncsl.org/programs/health/Forum/workforceprofiles/iowa.pdf The Task Force on Nursing Shortage recommended the development of scholarship and loan forgiveness programs for nursing. 	
CAREER LADDER/DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>The Iowa Hospital Association is seeking to reduce regulatory burdens by eliminating duplication in licensure/certification processing and standardizing documentation/claims processing. For more information: http://www.ihonline.org/govrelations/position/labor.shtml</p>	<p>The Iowa Hospital Association is planning to promote health careers to students in grades 5-12 and non-traditional students. For more information: http://www.ihonline.org/govrelations/position/labor.shtml</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
<p>The Iowa Hospital Association is seeking to reduce regulatory burdens by eliminating duplication in licensure/certification processing and standardizing documentation/claims processing. For more information: http://www.ihonline.org/govrelations/position/labor.shtml</p>	<ul style="list-style-type: none"> Iowa collects and analyzes data on physicians, nurses, dentists and physician assistants, using primary (e.g., licensure renewal process) and secondary sources (e.g., state-based professional trade associations). For more information: http://www.ncsl.org/programs/health/Forum/workforceprofiles/iowa.pdf The Iowa Council of Nurses recently completed the Nurse Shortage Workforce Survey. For more information: http://www.iowanurses.org/2001res.htm 	

KANSAS

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The Bi-State Dental Task Force is a collaboration between Missouri and Kansas created by the University of Missouri at Kansas City, to develop strategies to address dental provider shortages. For more information, contact Barry Daneman at 816-235-2100.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Office of Local and Rural Health (OLRH) operates a loan repayment program for health care professionals who agree to practice in underserved communities. For more information: http://www.kdhe.state.ks.us/olrh/FundLoan.html The Kansas Board of Regents offers a state funded Nurse Service Scholarship, as well as scholarships for osteopathic, optometric, and dental students. For more information: http://www.kansasregents.org or contact: Don Wimpelberg-Kansas Board of Regents, Student Financial Aid, 785-296-3518 	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Kansas Health Care Data Governing Board promotes the availability of and access to health care data including health care professional licensing data. For more information: http://www.state.ks.us/public/hcdgb/hcdabout.html</p>	<p>OTHER</p> <ul style="list-style-type: none"> The University of Kansas Medical Center Office of Continuing Education offers training opportunities for practicing physicians and nurses on aging. http://www2.kumc.edu/coa/Education/ed-cont_ed.htm In November 2001, the Health Occupations Credentialing Act reduced the lag time for CNAs relocating to Kansas and seeking certification based on reciprocity. For more information: http://www.kdhe.state.ks.us/hoc/index

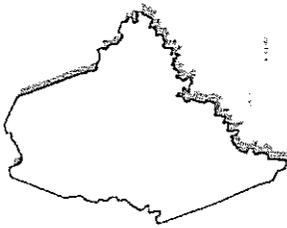
KENTUCKY

TASKFORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>In 2001, Kentucky established a task force charged with identifying strategies to maintain an adequate supply of nurses in the state. http://www.lrc.state.ky.us/record/01rs/HIC2.htm</p>	<ul style="list-style-type: none"> The Nursing Incentive Scholarship Fund (NISF) provides scholarships annually to Kentucky residents who will be attending approved registered nursing, practical nursing, or graduate nursing programs. A recipient must work as a nurse in Kentucky for one year for each annual award received. The Nursing Workforce Foundation awards grants to educational institutions to help nurses seeking to further their education. <p>For more information: http://www.lrc.state.ky.us/record/02rs/SB289.htm</p>	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

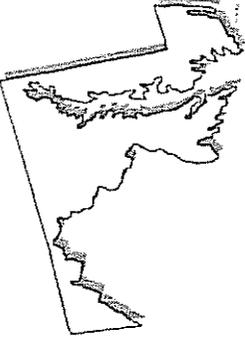
LOUISIANA

<p>TASKFORCE COMMISSION OR PANEL</p> <ul style="list-style-type: none"> In 2001, the state established the Louisiana Health Works Commission, charged with integrating and coordinating resources for health workforce development within various state departments and key organizations. For more information, contact Chris Weaver at: 225-342-4495 or cweaver@ids.mail The Task Force on Healthcare Workforce Shortage was created in 2001 by the Louisiana Hospital Association. In July 2002, the taskforce issued a final report with recommendations and activities geared toward reducing health workforce shortages. For more information: http://www.lhaonline.org/ 	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <p>The Louisiana Association of Student Nurses offers a variety of scholarships to nursing students. For additional information, contact: http://www.lasn.org/awards.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTHCAREERS MARKETING</p> <p>The Louisiana Association of Student Nurses provides marketing materials on careers in nursing to students of all ages. For more information: http://www.lasn.org/links_professional.htm</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

MAINE

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIP, LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<ul style="list-style-type: none"> The Health Care Workforce Leadership Council was established in 2002 by the Maine legislature to ensure an adequate supply of skilled health care workers in the state. The Organization of Maine Nursing Executives (OMNE) established a task force on nursing and allied health workforce issues. http://omne.org/ The Maine Committee to Address the Health Care Skilled Worker Shortage, comprised of health care leaders, state legislators, and higher education officials, called for a series of actions to address worker shortages. For more information: http://www.mtc.net/newfiles/pressrelease18.html 	<ul style="list-style-type: none"> OMNE/Nursing Leaders of Maine provides support for Maine nursing students attending nursing programs in the state. For more information: http://omne.org/ Dental scholarships and loan forgiveness is available to address dental shortages. 	
CAREER LADDER DEVELOPMENT	HEALTH CARE RECRUITING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<ul style="list-style-type: none"> In 1998, Maine State Labor Task Force combined existing aide jobs with new lower-level entry positions and new higher-level team leader positions to provide opportunities for advancement. The Maine State Labor Task Force has been working to assure that entry-level education for unlicensed caregivers will include a 20-hour core curriculum that is transferable among the educational programs for PCAs and CNAs. 	<p>The Maine Hospital Association (MHA) is developing a multimedia program to increase interest in health care careers, as well as ensuring that students interested in health professions are adequately prepared.</p> <p>http://www.themha.org/pages/new_pages/new2m.htm</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<ul style="list-style-type: none"> The Maine Hospital Association collects workforce data on nurses and allied health workers, mostly through membership surveys. In 2001, the Maine State Chamber of Commerce and the Maine Technical College System conducted a Maine Health Care Workforce Needs Survey. Beginning September 1, 2002, Maine implemented voluntary reporting at the time of relicensure for RNs in order to develop the Maine Minimum Nursing Data Set. 	<ul style="list-style-type: none"> The Colleagues in Caring Nursing Workforce Initiative held a Nursing Summit in December 2001 to discuss the future of nursing, analyze the changes needed in nurse education while creating opportunities to enhance the integration of nurse education and practice, and the development of strategies for recruitment and retention. http://omne.org/hot_topics/m_summit-report.html. The Maine legislature recently funded a 50-cent-per-hour wage increase for home care workers in long term care (excluding nurses). The Maine Hospital Association, Maine Society for Healthcare Human Resources Administration, and OMNE have ongoing initiatives that address recruitment, retention, and the work environment.

MARYLAND

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>Maryland established the Statewide Commission on the Crisis in Nursing in July 2000 to study issues of nurse recruitment, retention, education, workplace issues, and workplace technology. http://www.mbon.org/</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Maryland Higher Education Commission offers a variety of nursing scholarships. Additional information may be obtained by contacting the State Scholarship Administration at 410-260-4565 or 800-974-1024 The Maryland State Nursing Scholarship Program provides financial assistance to full or part-time nursing students who are Maryland residents with GPAs of 3.0 or higher. For more information: http://www.mbon.org/ Income eligible state and local government employees may qualify for a loan assistance/repayment program to study nursing, physical or occupational therapy. For more information: http://www.finaid.org/loans/forgiveness.shtml 	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p> <p>The Maryland Health Careers website offers information on the recruitment and retention of healthcare professionals. http://www.marylandhealthcareers.org/</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

MASSACHUSETTS

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The Massachusetts Health Care Task Force was established in May 2000 to conduct a comprehensive analysis of the health industry, examining health care operation, administration, access, regulation, financing, revenues, cost, liabilities, reserves, financial viability, delivery, outcome and quality. For more information: http://www.state.ma.us/healthcare/</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Massachusetts Nurses Association has a variety of scholarships for RNs seeking to advance and for student nurses. For more information: Call: 781-830-5745 or http://www.massnurses.org/</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Center for Health Professions at Worcester State College collects data on the health care workforce in Massachusetts. http://www.worcester.edu/academics/wsc_centers_inst.htm</p>	<p>OTHER</p> <p>The Massachusetts Association of Registered Nurses (MARN) held a conference in on the nursing shortage. http://www.bc.edu/publications/bcm/summer_2002/11_summit.html</p>

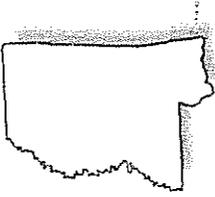
MICHIGAN

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
	<ul style="list-style-type: none"> The following scholarship & loan repayment proposals are currently under consideration by the legislature: <ul style="list-style-type: none"> grants to student RNs, LPNs, or CNAs who are employed by nursing homes and who will remain in their positions for one year after accepting the grant. a scholarship program for eligible resident students enrolled in an accredited RN education programs. a loan repayment program for eligible residents RN students. http://www.michiganlegislature.org/ The Michigan State Loan Repayment Program (SLRP) offers loan repayment to physicians, dentists, nurse practitioners, nurse midwives, and physician assistants in return for working in underserved communities. For more information, contact the Michigan Department of Community Health at 517-241-9946 	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT / WORKFORCE INVESTMENT BOARD
	<p>The Michigan Health Council maintains a website dedicated to increasing healthcare professions awareness among school age children. For more information: http://www.mihott.com/resources.cfm</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
		<p>A study of the current and future needs of the professional nursing workforce was completed in July 2001 by the Department of Consumer and Industry Services, as authorized by the Michigan legislature. http://www.mhc.org/mhc_images/nursingworkforcept.pdf</p>

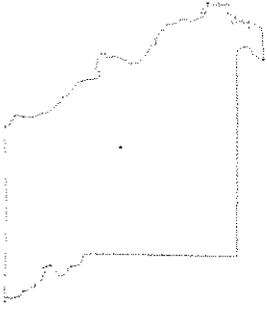
MINNESOTA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS/LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<ul style="list-style-type: none"> The Minnesota Hospital and Healthcare Partnership has established a task force on workforce development to recommend strategies to address future workforce needs. http://www.mhhp.com/wfintro.htm In 2001, the Minnesota Health Professions Workforce Partnership convened eleven regional forums to discuss strategies to address health workforce shortages. http://www.health.state.mn.us/divs/chs/rhpc/PDFdocs/forum.pdf In 2001, the Minnesota Department of Health convened a panel of nursing workforce experts to examine use of a Magnet Nursing Services Recognition Program as a way to address nursing shortages. http://www.health.state.mn.us/ 	<p>Minnesota's Department of Health website offers loan repayment programs for rural and urban physicians, dentists, physicians assistants, nurse practitioners, and nurses. For more information see: http://www.health.state.mn.us/divs/chs/loan.htm</p>	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<ul style="list-style-type: none"> Minnesota Hospital and Healthcare Partnership offers a Summer Healthcare Internship program for high school students. http://www.mhhp.com/intern.htm The Targeted Industry Partnership hosts a health careers website. For more information: http://www.tip.mnscu.edu/healthcare_facts.htm 	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>Minnesota's Department of Health regularly surveys the state's health care practitioners at the time of license renewal or registration. http://www.health.state.mn.us/divs/chs/data.htm</p>	<p>The "Creating Capacity for Nursing Education in Minnesota" workshop developed by the Healthcare Education-Industry Partnership (HEIP), Minnesota Colleagues in Caring (MnCIC), and MHHP, was held in St. Cloud on Oct. 5, 2001. The workshop convened nurse educators, employers, and students to comprehensively understand and improve the academic nursing environment. A report that incorporates the information shared and the recommendations developed during workshop is under development. http://www.mhhp.com/workforce/capacity.htm</p>

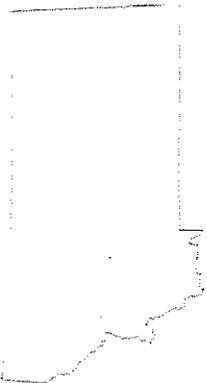
MISSISSIPPI

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Office of Nursing Workforce (ONW) of the Mississippi Board of Nursing was authorized by the legislature in 2001 to study the nursing shortage in the state. The ONW is required to report its findings to the legislature annually. For more information: http://www.mscode.com/free/statutes/73/015/0018.htm</p>		
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>The Board of Nursing collects data on registered nurses in the state. http://www.mscode.com/free/statutes/73/015/0018.htm</p>	

MISSOURI

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The Bi-State Dental Task Force is a collaboration between Missouri and Kansas, through the University of Missouri at Kansas City, to address shortages of dental providers. As a result of this effort, Missouri has revised the Dental Practice Act, expanding the scope of practice for dental hygienists to provide preventive services in public health settings. For more information, please contact Barry Daneman at 816-235-2100.</p>	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Bi-State Dental Task Force expanded the state medical loan repayment program, Primary Care Resource Initiative for Missouri (PRIMO), to include dental and dental hygiene students. The Professional Nursing Student Loan Repayment Program provides up to \$10,000 per year to selected professional (RN or higher) nurses to repay educational loans, in exchange for nursing services in areas of need in Missouri. For more information: http://www.health.state.mo.us/CommunityHealthInitiatives/HSDUloanrepayments.html The Health Professions Scholarships, funded by contributions from Missouri hospitals, is available for students pursuing careers in nursing or allied health professions. A scholarship recipient may receive up to \$6,000 over a two-year period. For more information: http://web.mhnet.com/asp/education/scholarships.asp 	
<p>CAREER/LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p> <p>The Health Resource Partners has a website that markets health careers in Missouri. For more information: http://www.healthresource.org/main.html</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>Since 1979, Missouri's Department of Health and Human Services' Bureau of Health Resources Statistics has surveyed health professionals every 2 years. This voluntary survey helps determine the unmet need for doctors, nurses (RN/LPN), dentists, and dental hygienists and targets resources, such as loan repayment, to address current workforce needs. For information, contact Alice Kempker at 573-751-6280.</p>	<p>OTHER</p> <p>The University of Missouri at Kansas City has increased the size its dental program; class size from 86 to 100 dental students. For more information, contact Barry Daneman at 816-235-2100.</p>

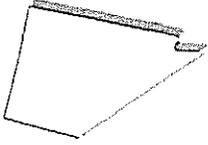
MONTANA

<p>TASK FORCE COMMISSION OR PANEL</p> <p>The Governor's Blue Ribbon Task Force on Healthcare Workforce Shortages was established in October of 2001 to study education, work environment, and compensation in order to assist the state in developing strategies to address health workforce shortages. For more information, contact: Jean Branscum at 406-444-4521</p>	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <p>The Blue Ribbon Task Force is studying the development of scholarships for high school students interested in health professions, as well as for medical and dental school students.</p>	
<p>CAREER LADDER DEVELOPMENT</p> <p>The Blue Ribbon Task Force is exploring the use of distance learning as a way to upgrade current workers into shortage occupations.</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

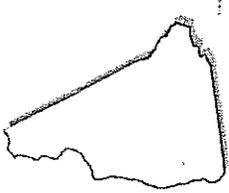
NEBRASKA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Center for Nursing was established in 2000 to collect data on nurse supply and demand and to develop a strategic plan to address shortages. For more information, please contact Dr. Charlene Kelly at 402-471-0317 or visit: http://www.center4nursing.org/</p>	<ul style="list-style-type: none"> The State of Nebraska offers forgivable loans to students currently enrolled in nursing programs in the state. Recipients are required to practice nursing in Nebraska for at least one year following graduation. For more information: http://www.center4nursing.org/loan.htm Nebraska Loan Repayment Program offers loan repayment awards of \$10,000 to health care practitioners with a practice obligation in a state-designated underserved area. For more information, contact: Marlene Janssen, Program Manager PHONE: (402)-471-2337 FAX: (402)-471-0180 The Rural and Metropolitan Basic Occupation (RAMBO) Scholarship Program provides financial assistance to individuals pursuing two-year allied health degrees. For more information, call 1- 877-557-2200 	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD (WIB)
<p>The Concerned Partners in the Region for Health Related Training (CPR-HRT) is a collaboration among key stakeholders to identify strategies to address health care skill shortages. This project creates employer led partnerships in health related occupations and supports career ladders in nursing and allied health occupations, with a strong focus on recruitment and training. For more information, contact Cathy Plager of the Nebraska Department of Labor at 402-471-9928</p>		<p>Lincoln and Greater Nebraska WIBs are supporting health care related H1B grants. For more information contact: Cathy Plager: Greater Nebraska WIB 402-471-9928 or Jan Norlander- Jensen: Lincoln WIB 402-441-7117.</p>
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
	<p>The Nebraska Center for Nursing has conducted surveys of RNs and LPNs focusing on demographics, salary, employment environment, education, and job satisfaction. For more information: http://www.center4nursing.org/Results.html</p>	

NEVADA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>The Nevada Nurse Task Force, established by the Nevada Nurses Association, is a statewide multi-disciplinary group that released a report on the nursing shortage in Nevada. The Task Force developed three subcommittees: Attraction, Commitment, and Professional Development. For more information: http://www.nvha.net/nursing/nurses.htm</p>		
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<p>The Attraction Sub-Committee of the NNTF is developing a brochure geared toward attracting high school students to nursing and is in the process of developing a high school course for nursing prerequisites in the tech/prep programs. Additionally, the development of a coloring book for elementary school students is underway. For more information: http://www.nvha.net/nursing/nurses.htm</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

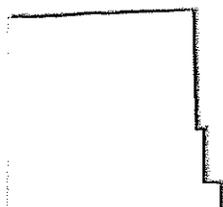
NEW HAMPSHIRE

TASKFORCE/COMMISSION OR PANEL	SCHOLARSHIPS/LOAN FORGIVENESS	
<p>New Hampshire's Direct Care Task Force established by the New Hampshire Department of Health and Human Services has been meeting quarterly to discuss workforce issues. For more information, contact Richard Chevrefils at 603-271-4321.</p>		
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<ul style="list-style-type: none"> The North New Hampshire AHEC website offers health career information to middle and high school students. For more information: http://www.nnhahec.org/ The South New Hampshire AHEC offers health career information through their Health Careers Catalog and programs geared to high school students. For more information: http://www.snhahcec.org/online.html - health 	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

NEW JERSEY

TASK FORCE COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>New Jersey has appropriated \$1.2 million to establish the New Jersey Collaborative Center for Nursing at Rutgers University. The Center will focus on improving areas such as nursing education, recruitment, retention, and the utilization of adequately prepared personnel. For more information: http://www.rutgers.edu/menus/rescenters.shtml</p>	<p>The Health Research and Educational Trust of New Jersey (HRET), an affiliate of the New Jersey Hospital Association (NJHA), has established a scholarship fund to assist New Jersey residents pursuing health careers. The Association will provide grants for financial support (minimum of \$2,000 each to one or more applicants) to selected students who are enrolled in nursing, allied health, or graduate level public health programs. For more information: http://www.njha.com/hret/hrescholarship.html</p>	 <p style="text-align: center;">1-1-82</p>
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>New Jersey appropriated \$5 million to establish a Specialty Nurse Education and Training Pilot Program in the Department of Health and Senior Services. The program provides financial support to hospitals, long-term care facilities, and home health care agencies for specialty training programs for RNs on staff. For more information: http://www.nerwoen.org/legislative/reporsnsl.html</p>		
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
<p>New Jersey has prohibited mandatory overtime for certain health care workers. For more information: http://www.healthsafetyinfo.com/news/index.cfm?artid=1756</p>	<p>New Jersey's Center for Occupational Employment Information collects supply and demand data for selected health care occupations. http://www.wnipin.net/coei/</p>	

NEW MEXICO

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The New Mexico Consortium for Nursing Workforce Development studied of the supply of and demand for nurses in New Mexico. The study included a survey of nursing leaders; an analysis of trends in applications, enrollment and graduations from nursing education programs; a study of vacancies in hospitals, nursing homes, home health agencies and public health departments; and a trend analysis of nursing licensure statistics available through the Board of Nursing. For more information, contact Doney Shane at 505-298-6268 or e-mail doney@unm.edu.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Health Professional Loan Repayment program provides repayment of outstanding student loans for practicing health professionals in return for a two-year service commitment to practice full-time in a designated medical shortage area in New Mexico. Eligible health professions include: physicians and physician assistants; advanced practice nurses; osteopathic physicians and osteopathic physician assistants; dentists; optometrists; and podiatrists. For more information: http://www.nmche.org/financialaid/healthprof.html</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The University of New Mexico Institute of Public Policy surveyed nurses and nurse practitioners, physician assistants, general dentists, and general physicians to identify differences between rural and non-rural providers, to identify key factors that influence recruitment in rural and non-rural areas, and to assess provider satisfaction in these areas. For more information: http://hpc.state.nm.us/reports New Mexico Health Resources, Inc. (NMHR) conducted the 2000-2001 Healthcare Professional Salary Compensation Survey to collect salary and benefit information on approximately 1,500 healthcare providers and administrators providing primary and rural healthcare in New Mexico. For more information: http://www.nmhr.org/compsvy.html The New Mexico Health Policy Commission provides reports of survey data on New Mexico's health workforce for more information: http://www.nmhr.org/compsvy.html 	<p>OTHER</p> <p>New Mexico Health Resources, Inc. (NMHR) is a private, non-profit agency organized to support efforts to recruit and retain health personnel in New Mexico. For more information: http://www.nmhr.org/</p>

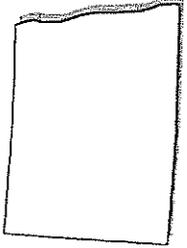
NEW YORK

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	CAREER LEADERSHIP DEVELOPMENT
<p>In April 2001, the New York State Board of Regents appointed a Blue Ribbon Task Force on the Future of Nursing to evaluate the current nursing shortage, solutions to the problem, and the long-term future of nursing. The Task Force has released their findings and recommendations in their report, "Protecting the Public." The report is available on line at: http://www.op.nysed.gov/taskforcereport.htm</p> 	<p>The Regents Professional Opportunity Scholarship Program, administered by the State Education Department, makes awards of up to \$5,000 per year for four years to New York State residents who are economically disadvantaged and/or a member of an underrepresented minority group and who are beginning or engaged in an approved program leading to a degree in a profession licensed by the Regents, including registered nursing. Scholarship recipients must agree to work in New York State in their chosen profession or field for one year for each annual award received.</p>	<ul style="list-style-type: none"> The TANF Health Worker Training Initiative, administered by the New York State Departments of Health and Labor, made available up to \$20 million in 2002 for the provision of recruitment, job training, and support services for individuals eligible for TANF funded services for jobs in the hospital, nursing home, and home care service sectors. The Health Workforce Retraining Initiative, administered by the New York State Departments of Health and Labor, made available up to \$90 million in 2002 for projects to train or retrain health industry workers in occupations with documented shortages and provide employment for health industry workers who need new skills due to changes in the health care system. The Supplemental General Hospital Recruitment and Retention Adjustment, administered by the New York State Department of Health, provides a total of \$45 million over three years (2002-2004) in additional Medicaid rate increases to non-public hospitals for workforce recruitment and retention. The Nursing Home Quality Improvement Demonstration Program, administered by the New York State Department of Health, provides a total of \$187.5 million over three years (2002-2004) for additional Medicaid rate increase to nursing homes to address recruitment and retention needs of the long term care workforce.
WORKFORCE DATA COLLECTION	HEALTH CAREERS MARKETING	OTHER
<ul style="list-style-type: none"> The State Education Department plans to conduct a survey of RNs to identify specific characteristics, attributes, and expectations of New York's nurses. The survey tool will be mailed by September 2002, and the collection and analysis of results will be completed by June 2003. The New York Center for Health Workforce Studies conducts an annual survey of all RN education programs in the state to obtain up-to-date information on current trends in enrollment, graduations, and the job market for RNs. 	<p>The New York State Department of Labor maintains the Career Zone, an interactive career information system targeted to youth. Information is provided on health services jobs. For more information: http://www.nycareerzone.org/index.jsp</p>	<p>The New York State Education Department has begun a clearinghouse on nursing, i.e., collecting data and reports related to the nursing profession and organizing them based on source, purpose, and outcome. For more information: http://www.op.nysed.gov/nurse.htm</p>
LABOR DEPARTMENT WORKFORCE INVESTMENT BOARD		

NORTH CAROLINA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	OTHER
<ul style="list-style-type: none"> The North Carolina Physical Therapy Workforce Assessment Technical Panel was developed to assess the status of various allied health professions, in order to develop a consensus statement for the need and supply of allied health professionals. For more information: http://www.med.unc.edu/wrkunits/ahcc/ahcc/ahccreport.pdf In March 2002, the Cecil G. Sheps Center for Health Services Research convened a panel of pharmacy workforce educators, practitioners, employers, and regulators to identify strategies to address the pharmacist workforce shortage. Findings from the panel meeting and an analysis of the pharmacist workforce are expected to be released shortly at the following website: http://www.shepscenter.unc.edu/hp 	<p style="text-align: center;">HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> The North Carolina Community Colleges Foundation has developed statewide awareness materials, particularly on allied health careers. The North Carolina Center for Nursing (NCCN) has awarded grants to 10 North Carolina health care agencies to implement creative nurse recruitment and retention programs. Designed to assist agencies experiencing nurse shortages in specific specialties or geographic areas, the Recruitment and Retention Grant Program allows agencies to develop and implement programs that enhance nurse recruitment and retention. http://www.ga.unc.edu/NCCN/newsroom/docword/release%208-29-01.doc 	 <ul style="list-style-type: none"> Special state funded nursing initiatives, to recruit and retain nurses include: <ul style="list-style-type: none"> A statewide self-paced RN Refresher Program, which includes a precepted clinical experience, is offered at all nine regional AHECs. Enrollment in 2002 has doubled over previous years to 187 students enrolled statewide, indicating an increase in interest by many nurses in returning to the nursing workforce. Off-campus BSN and MSN programs are being developed, enabling nurses to live and continue to work in their home communities while studying nursing. A grant program administered by the NC AHEC provides funds to community college and university nursing schools to develop new sites for clinical experiences, particularly in shortage areas such as long term care, critical care, and in rural and underserved parts of North Carolina. Over 160 new clinical sites have been developed through these funds. The North Carolina Community College System through its statewide foundation, has raised more than a half-million dollars from health care providers and other major employers toward a \$2 million endowment designed to support efforts to match health training programs to health workforce needs. The North Carolina Hospital Association (NCHA) and the North Carolina Nurse Association's (NCNA) Collaborative Task Force is working with the UNC School of Nursing to develop a Clinical Management Institute to teach clinical management to hospital personnel throughout the state. http://www.ga.unc.edu/NCCN/newsroom/docword/release%208-29-01.doc
<p style="text-align: center;">WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill has collected healthcare workforce data from 1979 to 2001. They provide annual workforce data books, longitudinal analyses, biannual fact sheets on medical and residency training, and special topic fact sheets. For more information: http://www.shepscenter.unc.edu/hp Statewide surveys of nurses interested in attaining BSN and MSN degrees are conducted by the AHEC periodically. Two MSN education programs have been developed utilizing the AHEC MSN Interest Survey data of 2000. These programs will prepare nursing faculty to address the faculty shortage in nursing schools. The North Carolina Hospital Association has compiled data from its workforce survey of hospitals and will be releasing its findings shortly. http://www.ncha.org The North Carolina Center for Nursing (NCCN) has developed the Nurse Planning Model to promote local and state level strategic planning for nursing resources. http://www.ga.unc.edu/NCCN/newsroom/docword/release%208-29-01.doc 	<p style="text-align: center;">CAREER LADDER DEVELOPMENT</p>	<p style="text-align: center;">LABOR DEPARTMENT WORKFORCE INVESTMENT BOARD</p>
<p style="text-align: center;">JOB REDESIGN</p>		

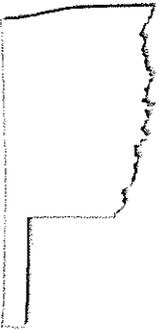
NORTH DAKOTA

<p>TASK FORCE, COMMISSION OR PANEL</p> <ul style="list-style-type: none"> A collaboration of many state and private groups including the Board of Nursing, Organization of Nurse Executives, Long-Term Care Association, North Dakota Healthcare Association, North Dakota Department of Health, the Center for Rural Health and the North Dakota Nurses Association analyzed health workforce data to assess and track current/future workforce issues. 	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Nursing Education Loan Program is available to students in associates, bachelors, and graduate degree programs in nursing, as well as nurses enrolled in refresher courses. For more information: http://www.ndbon.org/education/default.asp The State/Community Program provides loan repayment of up to \$40,000 for nurse practitioners, physician assistants, and certified nurse midwives in return for practice in underserved communities. The State Dental Loan Repayment Program provides loan repayment of up to \$80,000 to dentists in return for four years of service in North Dakota. 	
<p>CAREER LADDER DEVELOPMENT</p> <p>The North Dakota Health Related Technical Skills Project funded under a H-1B grant provides career ladder training in nursing to entry-level workers in health related occupations. For more information, contact Jim Hirsch at 701-328-5345.</p>	<p>HEALTHCAREERS MARKETING</p> <p>Project CRISTAL, a Quentin N. Burdick Interdisciplinary Training Grant Program, markets health careers to elementary, middle and secondary school students.</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The Board of Nursing has contracted with the University of North Dakota Center for Rural Health to develop a survey for the Nurse Needs Study that will focus on certification, re-certification, recruitment, and retention. For more information, please contact Connie Kalenек at 701-328-9788 In 1999, a survey of Emergency Medical Services Provider and Squad Leaders was conducted. 	<p>OTHER</p> <ul style="list-style-type: none"> The North Dakota Healthcare Association has developed a workforce information framework which will be used by their taskforce to develop short and long term strategies for addressing hospital workforce needs/challenges. The Board of Nursing held a Nurse Leadership Summit in 2001 in order to identify recruitment and retention strategies. For additional information, contact Connie Kalenек at 701-328-9877.

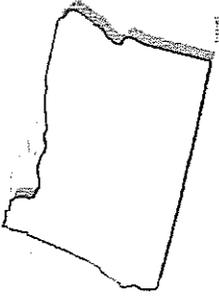
OHIO

<p>TASKFORCE COMMISSION OR PANEL</p> <p>The Ohio Workforce Shortage Task Force was established in 2001 by the Ohio legislature to study health workforce shortage in Ohio and to propose a statewide plan to address these shortages. For more information: http://www.odh.state.oh.us/</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Ohio Board of Regents administers the Nurse Education Assistance Loan Program which provides financial assistance to students enrolled in Ohio nurse education programs. For more information: http://www.regents.state.oh.us/sgs/neapolis.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p> <p>The Association for Career and Technical Education (ACTE), Division of Health Careers and Technology promotes health career education. For more information: http://www.ohioacte.org/divisions.htm - health</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

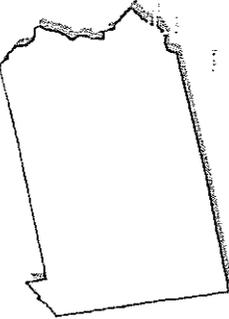
OKLAHOMA

TASKFORCE/COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>In 2002, Oklahoma established the Nursing Workforce Task Force to identify strategies to:</p> <ul style="list-style-type: none"> • enhance recruitment and retention; • increase health career marketing; • develop uniform data collection; • upgrade the image of nursing and eliminate barriers to mobility in education and career advancement; • identify and implement best practice retention models for employers; • assure that governmental payors and private insurers adequately cover labor costs; • describe the roles and responsibilities of private and public organizations in addressing nursing workforce shortage issues; and • gather information on work by other groups regarding the nursing shortage. <p>http://www.oknurses.com/</p>		
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

OREGON

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>The Oregon Nursing Leadership Council developed a strategic plan to address the nursing shortage in Oregon. The goals of this plan are to:</p> <ul style="list-style-type: none"> • Double the enrollment in Oregon's nursing programs by 2004; • Develop, implement, and evaluate staffing models that make the best use of the available nursing workforce; • Redesign nursing education to more directly meet the changing health care needs of Oregon; • Recruit and retain nurses in the profession; and • Create the Oregon Center for Nursing, which will coordinate implementation and ongoing evaluation of this plan. <p>http://www.ohsuhealth.com/nurse/resource/solution.asp?sub=2</p>	<p>In July 2001, Oregon established the Nursing Services Program loan repayment program designed to recruit additional nurses to work in targeted rural areas. For more information: http://www.osac.state.or.us/nursing_1.html</p>	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

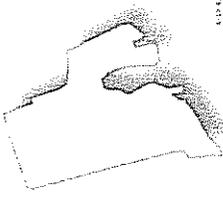
PENNSYLVANIA

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>In 2002, the Department of Health, through its Bureau of Health Planning, Division of Health Professions Development, convened a work group to address nursing shortages. After completing the work related to nursing shortages, the Department is planning to work on issues related to other health care occupations. For more information, contact: Helen Burns, PhD, Deputy Secretary for Health Planning and Assessment, 717-783-8804, or Joseph May, Director, Bureau of Health Planning, 717-772-5298.</p>	<p>SCHOLARSHIPS/LOAN FORGIVENESS</p> <p>State legislation created a one-time \$3 million nursing loan forgiveness program administered by the Pennsylvania Higher Education Assistance Agency. For more information, call (717)720-4000.</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <p>The CEO of the Hospital & Healthsystem Association of Pennsylvania (HAP) was appointed to the statewide Workforce Investment Board and has placed the healthcare workforce on the Board's agenda. For more information contact: Diane Bosak, Chief Operating Office, PA Workforce Investment System at 717-772-4966</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

PUERTO RICO

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	
JOB REDESIGN	WORKFORCE DATA COLLECTION	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<p>The State Health Department surveys all licensed health professionals at the time of registration or re-registration. The data is being used to compile a Health Workforce Profile for Puerto Rico that will be published later this year.</p>	OTHER

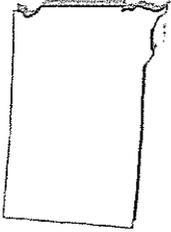
RHODE ISLAND

<p>TASK FORCE, SUB-COMMITTEE OR PANEL</p> <p>The Governor's Advisory Council on Health has developed the Health Professions Workforce Workgroup to examine the issue of health workforce shortages and to make recommendations to the full Council.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Rhode Island Loan Repayment Program offers awards to health care practitioners in return for service in underserved areas of Rhode Island. For additional information, call: (401)-277-1171 Rhode Island established a no interest loan program for nursing students. <p>For more information: http://www.health.state.ri.us/publications/leg00_01.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p> <p>Recently enacted legislation:</p> <ul style="list-style-type: none"> Supports training of pharmacy technicians at Vocational High Schools; and Allows retired nurses to volunteer their services. <p>For more information: http://www.health.state.ri.us/publications/leg00_01.htm</p>

SOUTH CAROLINA

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	
<p>In 2001, the South Carolina Colleagues in Caring (SCCIC) Project Coordinating Council, recommended the following to address the current and evolving nursing shortage:</p> <ul style="list-style-type: none"> • Maintaining a permanent state-supported structure for nursing workforce planning and development; • Developing and implement a statewide plan for recruiting and retaining students in nursing education programs; • Maximizing enrollments in SC nursing education programs to meet the demand for nurses in the state; and • Developing programs that will facilitate workforce transition and retention. <p>For a complete report of the Council's activities, contact: Renatta Loquist 803-777-4499 or visit: http://www.sc.edu/nursing/etc/SCCICPub/CriticalforCare.html</p>		
CAREER LEADER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
	<p>South Carolina's AHEC offers information about recruitment and retention of health care professional as well as health careers information. For more information: http://www.ahec.net/</p>	
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER
		<p>The South Carolina Department of Health and Environmental Control is a partner in the HRSA funded Southeast Public Health Training Center at the University of North Carolina to address the training needs of the public health workforce. For more information: http://www.scdhec.net/</p>

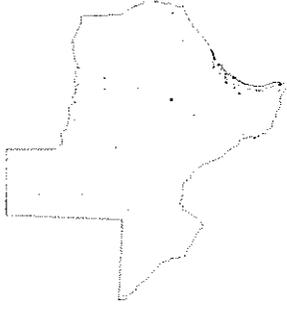
SOUTH DAKOTA

<p>TASK FORCE, COMMISSION OR PANEL</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The South Dakota Center for Nursing conducted several surveys in 2002 to assess the health care workforce, including:</p> <ul style="list-style-type: none"> • The Provider Scenario Survey to assess provider expectations for future health care needs; • The Consumer Scenario Survey to assess public expectations for future health care needs; and • The Employer Demand and Intention Survey of South Dakota to assess the demand for nurses in the future. For more information: http://www.sdcenterfornursing.org/ 	<p>OTHER</p> <ul style="list-style-type: none"> • South Dakota State University, College of Nursing has developed Learning Communities to aid nursing freshmen including: <ul style="list-style-type: none"> • Internet-equipped computers and a nursing library in residence halls; • Co-enrollment in classes for Fall and Spring semesters; • Organized study groups; and • A Learning Community Coordinator to help with academic problems <p>For more information: http://www3.sdstate.edu/Academics/CollegeOfNursing/Index.cfm</p> <ul style="list-style-type: none"> • South Dakota's Colleagues in Caring is charged with analyzing trends in the supply and demand for registered nurses in South Dakota and developing a statewide nursing care consortium. To accomplish these goals, Colleagues in Caring conducted the surveys described under 'Workforce Data Collection' and convened a task force to create an articulation plan for eleven schools of nursing in the state. <p>For more information: http://www.sdcenterfornursing.org/</p>

TENNESSEE

TASK FORCE, COMMISSION OR PANEL	SCHOLARSHIPS, LOAN FORGIVENESS	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
<p>In 2002, the Tennessee Hospital Association received a grant to establish a Center for Health Workforce Planning to assess the state's health care workforce shortages and develop recruitment and retention strategies to address them. http://frist.senate.gov/press-item.cfm/hurl/id=183657</p>	<p>The Health Access Incentive Program offers grants to physicians, nurse practitioners, physician assistants, and nurse midwives in return for 3 years of service in an underserved area. Loan repayment is also available in return for service in qualifying areas.</p>	
CAREER LADDER DEVELOPMENT	HEALTH CAREERS MARKETING	LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD
JOB REDESIGN	WORKFORCE DATA COLLECTION	OTHER

TEXAS

<p>TASK FORCE, COMMISSION OR PANEL</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Texas Higher Education Coordination Board has loan repayment programs for medical students and nursing students. For more information: http://www.theeb.state.tx.us/HealthRelated/ Outstanding Rural Scholar Recognition Program (ORSRP) assists rural communities in "growing their own" health care professionals by matching community funds with state funds to support a student of the community's choice in a health professional education program. For more information: http://www.orca.state.tx.us/Rural_Health_Unit/index.html 	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> The Nurses Association markets nursing on its website, offering career pathway information to individuals. http://www.texasnurses.org/foundation/careerinfo/index.html The Office of Rural Health has a Health Careers Promotion Program designed to encourage rural high school students to pursue higher education in health care careers and to work in rural communities in Texas. For more information: http://www.orca.state.tx.us/Rural_Health_Unit/index.html 	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <p>The Texas Workforce Commission, comprised of 28 local workforce development boards and their service contractors, are working together as the Texas Workforce Network to implement an initiative targeted to nursing. For more information: http://www.lwc.state.tx.us/</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The Texas Department of Health collects health workforce data on a number of health professions within the state. For more information: http://www.tdh.state.tx.us/ The Texas Nurses Association collects and reports information using the Texas Nurse Workforce Data System. For more information: http://www.texasnurses.org/foundation/dataproject/index.html 	<p>OTHER</p> <p>The Texas Statewide Health Care Coordinating Council is addressing development needs to assure an adequate supply of health workers. For more information: http://www.texasshcc.org/</p>

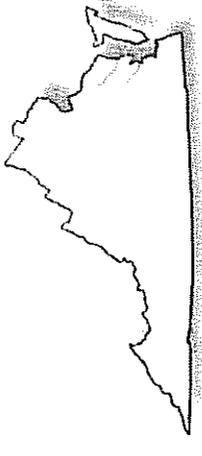
UTAH

<p>TASKFORCE, COMMISSION OR PANEL</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Office of Primary Care, Rural and Ethnic Health administers a Health Care Workforce Program through the Department of Health to assist underserved communities to address shortages of health care workers including:</p> <ul style="list-style-type: none"> • The Rural Physicians and Physician Assistants Grant and Scholarship; • The Urban Special Population Health Care Provider Financial Assistance Program; and • The Nurse Education Financial Assistance Program. <p>http://www.health.state.ut.us/primary_care/scholarloanmenu.html</p>	
<p>CAREER LADDER DEVELOPMENT</p> <p>Utah has identified competency levels that differentiate nurses at Associate, Baccalaureate and Masters levels. The involved universities are using this information to enable nurses to further their education without losing or having to repeat course credits, thus shortening the length of time required to obtain an advanced degree.</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Medical Education Council maintains data files on physicians, nurse practitioners, physician assistants, pharmacists, and dentists in Utah. They have also completed comparative studies on RNs, lab technologists, respiratory therapists, radiology technicians and technologists and LPNs. For more information call: 801-526-4550.</p>	<p>OTHER</p>

VERMONT

<p>TASK FORCE, COMMISSION OR PANEL</p> <ul style="list-style-type: none"> The Vermont Department of Human Services convened a Blue Ribbon Nursing Commission to study the nursing shortage in Vermont. The Commission issued a report in January of 2001 and provided seven recommendations to address the state's nursing shortage, including the establishment of a Center for Nursing to address on-going issues of supply, education, practice, and research. The report is available on-line at: http://www.ahs.state.vt.us/PDFfiles/0101NursingRpt.pdf The Human Resources Investment Council of the Vermont Department of Employment and Training established the Healthcare Workforce Development Partnership, a public/private partnership to address the workforce shortage in Vermont's healthcare system and to facilitate the recruitment, education and employment of Vermonters to support a vital healthcare system. For more information: http://www.det.state.vt.us/~hric/ 	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The Nursing Educational Loan Repayment Program is funded by the State of Vermont through the Department of Health and provides nursing loan forgiveness (for students in an RN or LPN program in Vermont) and loan repayment (for working nurses). The Primary Care Educational Loan Repayment Program is funded by the State of Vermont, through the Department of Health. Eligible practitioners include physicians, physician assistants, nurse practitioners, and certified nurse midwives. The Educational Loan Repayment Program for Dentists is funded by the State of Vermont through the Department of Health. The purpose of the program is to help recruit and retain dentists in Vermont and increase access to dental care for the Medicaid population. <p>For more information on all of these programs: http://www.med.uvm.edu/ahcc/</p>	 <p style="text-align: right;">7-11-02</p>
<p>CAREER LADDER DEVELOPMENT</p> <p>The Vermont Technical College offers an on-line LPN education program that articulates with its ADN program. For more information: http://www.vtc.edu/site/academics/cert_nrel.html</p>	<p>HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> The Vermont Office of Nursing Workforce, Research, Planning, and Development received state and federal support to market nursing careers to middle school students. The Southern Vermont Area Health Education Center sponsors a variety of programs to expose k-12 students to health careers. For more information about these programs: http://www.southernvermontahcec.org/programs_and_partnerships.html 	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <p>A Department of Labor H-1B visa grants support specialty training programs for operating room, critical care, and psychiatric nurses.</p>
<p>JOB REDESIGN</p> <p>The Vermont Office of Nursing Workforce, Research, Planning and Development received a federal grant to study factors that promote the retention of older nurses.</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Vermont Board of Nursing and the Office of Nursing Workforce are collaborating on a secondary analysis of RN and LPN relicensure survey data, particularly intention to leave.</p>	<p>OTHER</p> <p>The Vermont Nurse Internship Project has developed a formal nursing internship program that provides adequate practical clinical experience for novice nurses to function at a competent level when they enter the workforce and has expanded clinical opportunities for nursing students by increasing the use of clinical staff as preceptors in specialty areas. For more information: http://www.springfieldhospital.org/vninp.html</p>

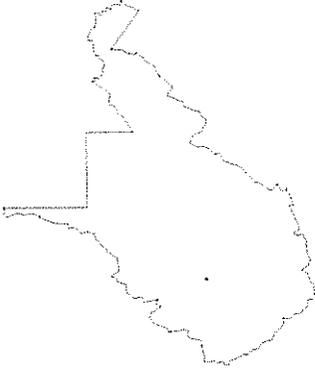
VIRGINIA

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>In 2002, Virginia established, the State Advisory Council on the Future of Nursing to address the nursing shortage.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>Legislation has been introduced to make part-time nursing students eligible for scholarship and loan repayment.</p>	
<p>CAREER LADDER DEVELOPMENT</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>Legislation has been introduced to authorize the Board of Nursing to accept private grants or donations for the purposes of collecting and analyzing nursing workforce information.</p>	<p>OTHER</p> <ul style="list-style-type: none"> The Virginia Department of Education, Office of Career and Technical Education, is working closely with local school divisions on requests for additional programs that provide education and certification/licensure for emergency medical technicians, dental assistants, nurse aides, LPNs, and veterinary aides. The Virginia League for Nursing and the Virginia Partnership for Nursing held a nursing summit in the fall of 2001 to study the cause and effects of the nursing shortage. The summit included health care professionals, nursing educators, and hospital and nursing home administrators. Findings of the summit will be made available to the newly established State Advisory Council.

WASHINGTON

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>In 2001, the Health Care Labor Shortage Work Group of the Workforce Training Education Coordinating Board (WTECB) issued a report on strategies to address the health care labor shortage. The detailed report is available at: http://www.wfb.wa.gov/</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>The Office of Community and Rural Health offers up to \$25,000 annually in loan repayment or scholarships to encourage primary care health professionals who are residents of Washington State to serve in health care shortage areas of the state. http://www.doh.wa.gov/hsqg/ocrh/retention.htm</p>	
<p>CAREER LADDER DEVELOPMENT</p> <ul style="list-style-type: none"> The Employment Security Department provides \$450,000 to train current workers for career advancement. Local Workforce Development Councils (local workforce investment boards) are developing health care career ladders. For example, Pierce County WDC has established a partnership with employers, educators, and labor to develop career ladders/maps so that students may not only move up but laterally in the health professions. They have added ESL components to health care courses. 	<p>HEALTH CAREERS MARKETING</p> <ul style="list-style-type: none"> A health partnership established by local Workforce Development Councils in NW Washington has researched local labor market data for shortage healthcare occupations, qualifications needed, and projections for future openings. This information was used to develop a recruitment video available at Work Source Centers (one-stop employment service delivery centers) and at job fairs. The Department of Education has established career pathways for high school students. These career pathways are designed to be integrated into the curriculum. One of the career strands is health care. 	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <ul style="list-style-type: none"> The Workforce Training and Education Coordinating Board (Workforce Investment Board) has funding to set up partnerships between industry, education and labor. Between 2000 and 2002, 8 of 12 local workforce development areas have received grants to establish these partnerships. The U.S. DOL funded a consortium in NW Washington to support programs that expand educational capacity.
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA CONNECTION</p> <p>The Washington State Hospital Association, in conjunction with the WWAMI Center for Health Workforce Studies, surveyed 83 acute care hospitals in the state to gather data on nurses and other allied health occupations.</p>	<p>OTHER</p> <p>In 2002, the State Board for Community and Technical Colleges directed over \$3 million in WIA funds (High Demand Program Grants) to expand educational capacity in a variety of health care programs at community and technical colleges. Nineteen separate programs were funded, with a projected additional capacity of about 3,000 students.</p>

WEST VIRGINIA

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The West Virginia Oral Health Task Force was established in 1999 to improve access to dental care.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <ul style="list-style-type: none"> The West Virginia Division of Recruitment offers a variety of financial incentives funded by the State and communities that can be used for medical education loan repayment, residency stipends, sign-on bonuses, or other incentives to attract or retain a primary care physicians, nurse practitioners, physician assistants, and/or certified nurse midwives in underserved communities. http://www.wvrecruitment.org/projects/financial_incentive.htm The West Virginia Higher Education Policy Commission offers \$20,000 scholarships to medical students and \$10,000 scholarships to students pursuing degrees in other health care professions. http://www.wvrecruitment.org/publications/student_opportunities.htm 	
<p>CAREER LADDER DEVELOPMENT</p> <p>The West Virginia Department of Health and Human Resources is developing the Medical Field Training Opportunities program, which will create a career ladder in nursing for WV WORKS participants. The program offers financial assistance to interested individuals using WIA funds. For more information contact Leslie Ventura at 304-558-0939</p>	<p>HEALTH CAREERS MARKETING</p> <p>The West Virginia Hospital Association offers links to health careers information, with tips for success in health professions.</p> <p>http://www.wvha.com/</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p>	<p>OTHER</p>

WISCONSIN

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>In April 2002, the Governor appointed a Committee to study health care worker shortages. The Committee will submit a report to the Governor in late 2002. For more information, contact Eric Baker WI DWD Deputy Secretary at eric.baker@dwd.state.wi.us or 608-266-2284.</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p> <p>Health care professionals in Wisconsin can receive up to \$50,000 in educational loan assistance through the Health Professions Loan Assistance Program (HPLAP). The HPLAP was established in 1990 by the Wisconsin Department of Commerce, in cooperation with the Wisconsin Office of Rural Health, and is available to communities to assist in recruiting and retaining primary care health professionals. http://www.worh.org/new_orh_docs/rsrc_newsletter.asp - article 1</p>	
<p>CAREER LADDER DEVELOPMENT</p> <p>The Wisconsin Hospital Association and representatives of Wisconsin Health Facilities have created a career ladder that will allow CNAs to obtain advanced degrees once they get a high school diploma and achieve the skill standards in the four units of the health services curriculum. http://www.cesa2.k12.wi.us/ya/health.html</p>	<p>HEALTH CAREERS MARKETING</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p> <p>The Wisconsin Department of Workforce Development and the Wisconsin Technical College System Board will oversee a \$2.6 million grant from the U.S. Department of Labor that will help the state address health worker shortages. The grant calls for funding the collaborative activities of partnerships of technical colleges and local workforce development boards. For more information, contact: Ron Hunt, Deputy Administrator, DWD, 608-266-2687 or ron.hunt@dwd.state.wi.us</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <ul style="list-style-type: none"> The Wisconsin Nurses Association, along with other nursing organizations in Wisconsin, is collecting and analyzing RN workforce data. http://www.wingroup.com/wisconsinnurses/newscopy.asp?id=38 The Department of Health and Family Services records and reports workforce data for dentists, physicians, and registered nurses. http://www.dhfs.state.wi.us/provider/index.htm 	<p>OTHER</p>

WYOMING

<p>TASK FORCE, COMMISSION OR PANEL</p> <p>The Commission on Nursing and Nurse Education is assessing the current state of the nurse workforce and devising strategies to address shortages. For more information, contact Toni Decklever at 307-771-2256 or tsdhoc@aol.com</p>	<p>SCHOLARSHIPS, LOAN FORGIVENESS</p>	
<p>CAREER LADDER DEVELOPMENT</p> <p>Wyoming has hospital-based efforts to develop a flexible career advancement system. Programs are available to allow CNAs to complete nursing degrees.</p>	<p>HEALTH CAREERS MARKETING</p> <p>The Health Occupations Consortium has a program to market health careers to high school students.</p>	<p>LABOR DEPARTMENT/WORKFORCE INVESTMENT BOARD</p>
<p>JOB REDESIGN</p>	<p>WORKFORCE DATA COLLECTION</p> <p>The Department of Employment and the Long Term Care Association currently have the most extensive data on Wyoming's health workforce, with information on salary, nurse/patient ratios and nursing turnover at health care facilities.</p>	<p>OTHER</p> <p>Wyoming healthcare facilities in conjunction with the Wyoming Nurses Association hosted a teleconference town hall meeting open to all health professionals and administrators on health workforce shortages.</p>

2011 State Physician Workforce Data Book

Center for Workforce Studies

*EXCERPTS: SUPPLY
RETENTION*

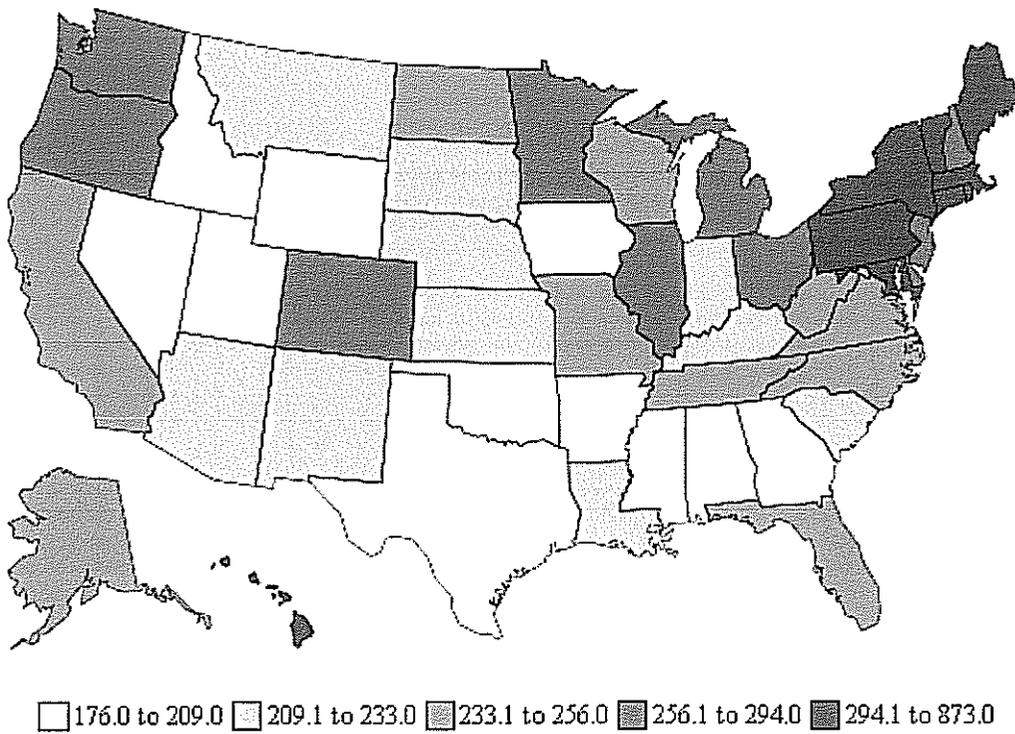
November 2011



Key Findings – Physician Supply

- In 2010, there were 258.7 active physicians per 100,000 population in the United States, ranging from a high of 415.5 in Massachusetts to a low of 176.4 in Mississippi. The states with the highest number of physicians per 100,000 population were concentrated in the northeast (see Map 1, Figure 1, and Table 1).

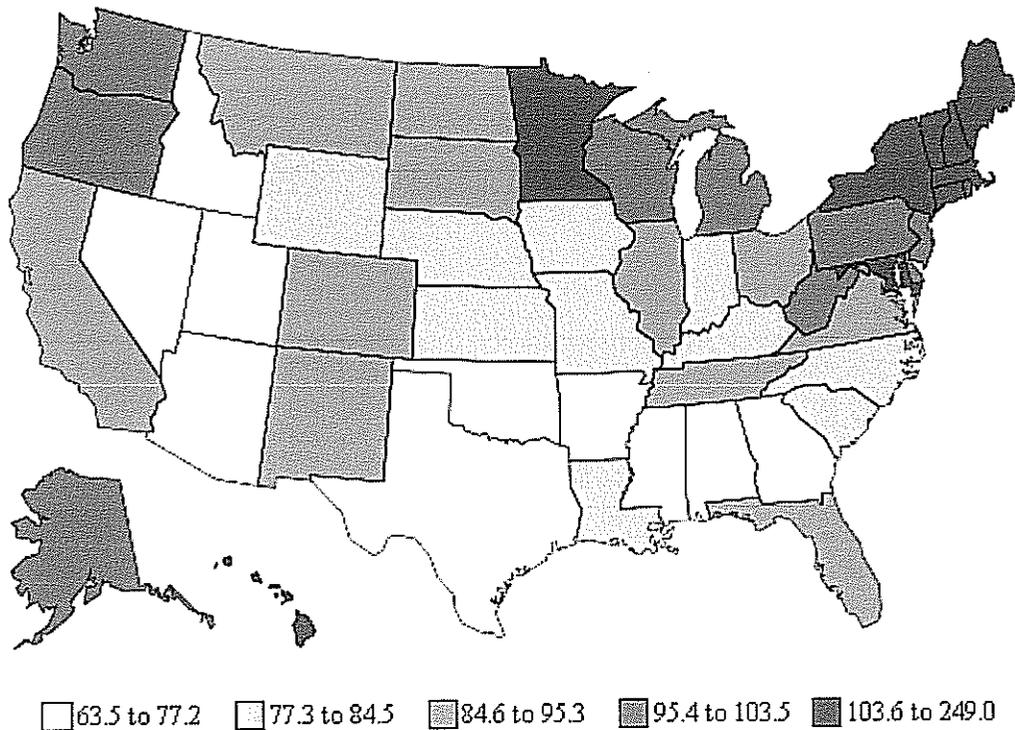
Map 1. Total Active Physicians per 100,000 Population, 2010



Source: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February, 2011). Physician data are from the AMA Physician Masterfile (December 31, 2010).

- Nationally in 2010, there were 219.5 physicians active in patient care² per 100,000 population. Massachusetts had the highest number of patient care physicians per 100,000 population (314.8), while Mississippi had the lowest (159.4) (see Figure 2 and Table 2).
- There were 90.5 primary care physicians per 100,000 population in the United States in 2010. Once again, Massachusetts ranked highest with 132.0 while Mississippi had the lowest number of primary care physicians per 100,000 population (63.6). The distribution of primary care physicians per 100,000 population was very similar to the distribution of all physicians per 100,000 population (see Map 2, Figure 3, and Table 3).

Map 2. Primary Care Physicians per 100,000 Population, 2010

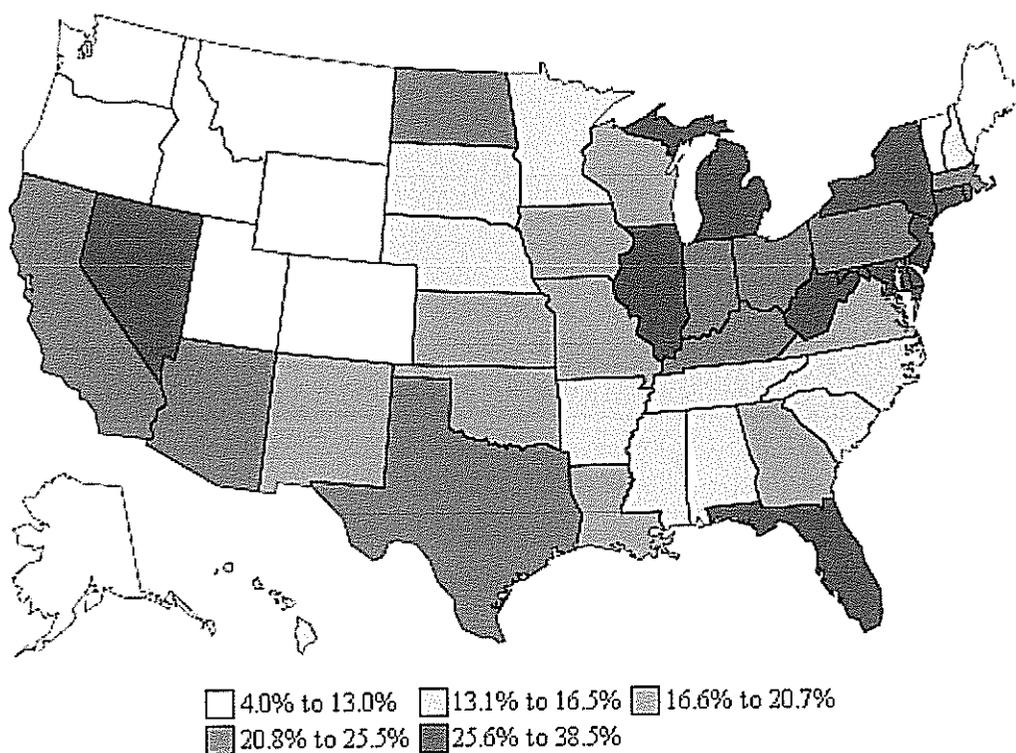


Source: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February, 2011). Physician data are from the AMA Physician Masterfile (December 31, 2010).

² This refers to physicians whose type of practice is categorized as patient care. Physicians whose type of practice is administration, medical research, medical teaching, or other non-patient care activities are not included here.

- In 2010, there were 79.4 primary care physicians active in patient care per 100,000 population in the United States, ranging from a low of 58.4 in Utah to a high of 111.5 in Vermont. In Oklahoma and Iowa, D.O.s represented more than one quarter of the patient care primary care physicians. Nationally, D.O.s comprised approximately 10 percent of active patient care primary care physicians (see Figure 4 and Table 4).
- In 2010, more than one third (36.6 percent) of active physicians in Massachusetts were female. Idaho had the lowest percentage of female physicians (21.0). Nationally, 30.4 percent of active physicians were female (see Figure 5 and Table 5).
- In 2010, states varied widely in the percentage of their physician workforce that graduated from an international medical school³ (see Map 3, Figure 6, and Table 6). Nationally, 24.0 percent of the physician workforce was IMGs. New Jersey and New York had the highest percentages (39.1 and 38.3 percent, respectively), while Montana and Idaho had the lowest (4.6 and 4.0 percent, respectively).

Map 3. Percentage of Active Physicians Who Are IMGs, 2010



Source: AMA Physician Masterfile (December 31, 2010).

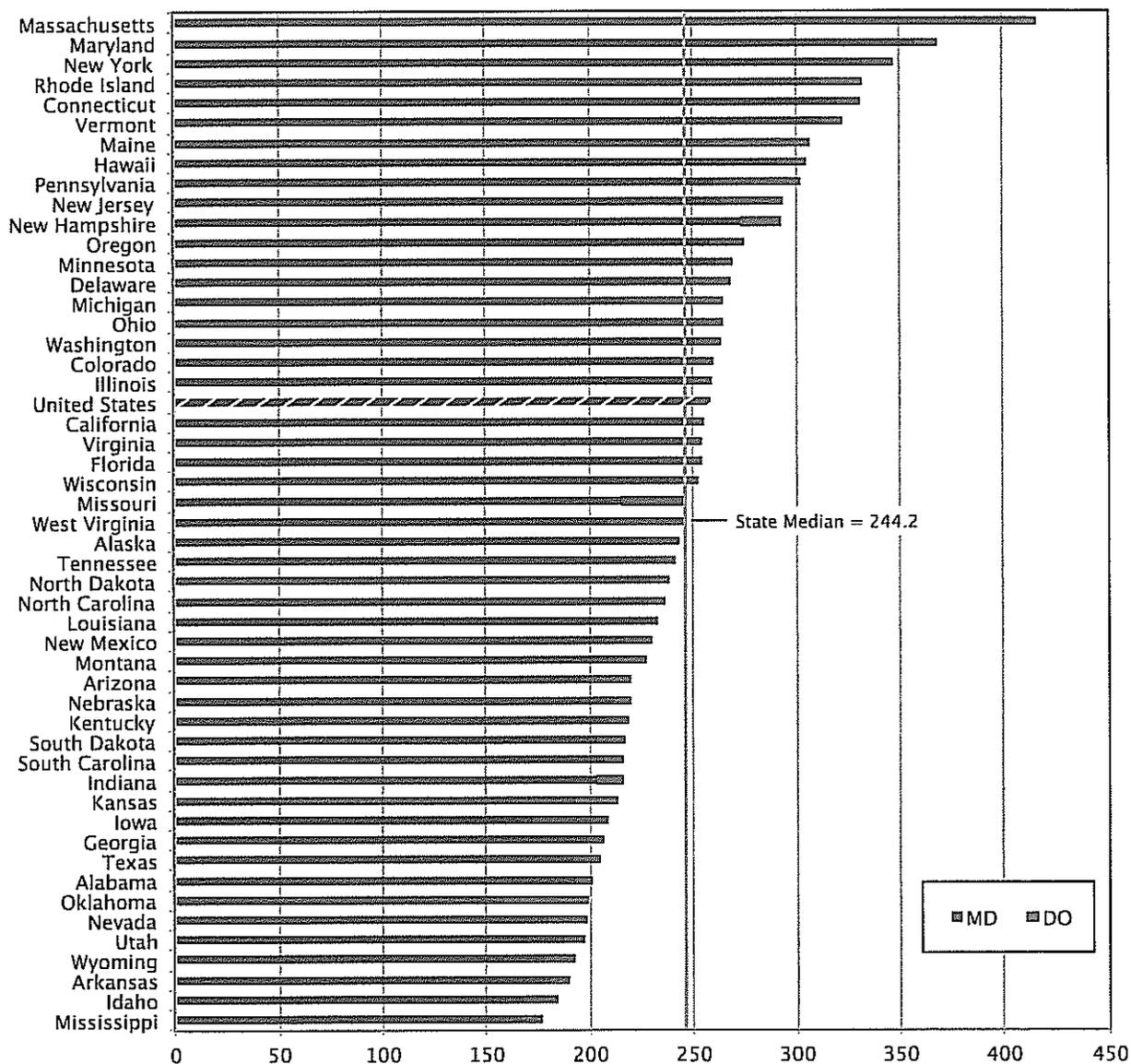
³ Graduates from Canadian medical schools are not considered IMGs. See Key Definitions for more information.



- Nationally, over one fourth (26.3 percent) of the active physician workforce was age 60 or older. There was some variation among the states in the percentage of physicians who were age 60 or older in 2010. New Mexico had the highest percentage (30.8), while North Carolina had the lowest percentage (20.8) (see Figure 7 and Table 7).



Figure 1. Active Physicians per 100,000 Population by Degree Type, 2010



Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the 2011 AMA Physician Masterfile (December 31, 2010). Physicians whose medical school type was not available are excluded (n=67).



Table 1. Active Physicians per 100,000 Population by Degree Type, 2010

	Total Population	Total Active Physicians*			Active M.D.s		Active D.O.s	
		Number	Rate per 100,000	Rank	Number	Rate per 100,000	Number	Rate per 100,000
United States	309,050,816	799,509	258.7	N.R.	744,224	240.8	55,218	17.9
Alabama	4,729,656	9,508	201.0	43	9,126	193.0	382	8.1
Alaska	708,862	1,721	242.8	26	1,565	220.8	156	22.0
Arizona	6,676,627	14,694	220.1	33	13,027	195.1	1,665	24.9
Arkansas	2,910,236	5,518	189.6	48	5,265	180.9	253	8.7
California	37,266,600	95,198	255.5	20	91,497	245.5	3,697	9.9
Colorado	5,095,309	13,243	259.9	18	12,202	239.5	1,041	20.4
Connecticut	3,526,937	11,678	331.1	5	11,282	319.9	396	11.2
Delaware	891,464	2,393	268.4	14	2,124	238.3	269	30.2
District of Columbia	610,589	5,327	872.4	N.R.	5,211	853.4	116	19.0
Florida	18,678,049	47,590	254.8	22	43,651	233.7	3,933	21.1
Georgia	9,908,357	20,511	207.0	41	19,674	198.6	836	8.4
Hawaii	1,300,086	3,970	305.4	8	3,782	290.9	188	14.5
Idaho	1,559,796	2,873	184.2	49	2,610	167.3	263	16.9
Illinois	12,944,410	33,594	259.5	19	31,421	242.7	2,170	16.8
Indiana	6,445,295	13,900	215.7	38	13,052	202.5	847	13.1
Iowa	3,023,081	6,294	208.2	40	5,204	172.1	1,090	36.1
Kansas	2,841,121	6,058	213.2	39	5,467	192.4	591	20.8
Kentucky	4,339,435	9,479	218.4	35	9,039	208.3	439	10.1
Louisiana	4,529,426	10,541	232.7	30	10,425	230.2	116	2.6
Maine	1,312,939	4,031	307.0	7	3,420	260.5	611	46.5
Maryland	5,737,274	21,153	368.7	2	20,511	357.5	641	11.2
Massachusetts	6,631,280	27,550	415.5	1	26,912	405.8	627	9.5
Michigan	9,931,235	26,325	265.1	15	21,595	217.4	4,727	47.6
Minnesota	5,290,447	14,262	269.6	13	13,791	260.7	470	8.9
Mississippi	2,960,467	5,221	176.4	50	4,916	166.1	304	10.3
Missouri	6,011,741	14,825	246.6	24	12,932	215.1	1,892	31.5
Montana	980,152	2,232	227.7	32	2,077	211.9	155	15.8
Nebraska	1,811,072	3,981	219.8	34	3,829	211.4	150	8.3
Nevada	2,654,751	5,264	198.3	45	4,771	179.7	493	18.6
New Hampshire	1,323,531	3,872	292.6	11	3,613	273.0	257	19.4
New Jersey	8,732,811	25,629	293.5	10	23,000	263.4	2,629	30.1
New Mexico	2,033,875	4,673	229.8	31	4,418	217.2	255	12.5
New York	19,577,730	68,042	347.5	3	64,943	331.7	3,093	15.8
North Carolina	9,458,888	22,367	236.5	29	21,561	227.9	806	8.5
North Dakota	653,778	1,558	238.3	28	1,499	229.3	59	9.0
Ohio	11,532,111	30,485	264.3	16	26,819	232.6	3,665	31.8
Oklahoma	3,724,447	7,406	198.8	44	5,873	157.7	1,532	41.1
Oregon	3,855,536	10,594	274.8	12	9,967	258.5	627	16.3
Pennsylvania	12,632,780	38,207	302.4	9	32,857	260.1	5,348	42.3
Rhode Island	1,056,870	3,515	332.6	4	3,303	312.5	210	19.9
South Carolina	4,596,958	9,922	215.8	37	9,485	206.3	437	9.5
South Dakota	820,077	1,779	216.9	36	1,662	202.7	117	14.3
Tennessee	6,338,112	15,302	241.4	27	14,720	232.2	581	9.2
Texas	25,213,445	51,691	205.0	42	48,255	191.4	3,435	13.6
Utah	2,830,753	5,598	197.8	46	5,288	186.8	310	11.0
Vermont	622,433	2,008	322.6	6	1,945	312.5	63	10.1
Virginia	7,952,119	20,270	254.9	21	19,426	244.3	842	10.6
Washington	6,746,199	17,796	263.8	17	16,910	250.7	878	13.0
West Virginia	1,825,513	4,485	245.7	25	3,815	209.0	670	36.7
Wisconsin	5,668,519	14,319	252.6	23	13,512	238.4	804	14.2
Wyoming	547,637	1,057	193.0	47	975	178.0	82	15.0

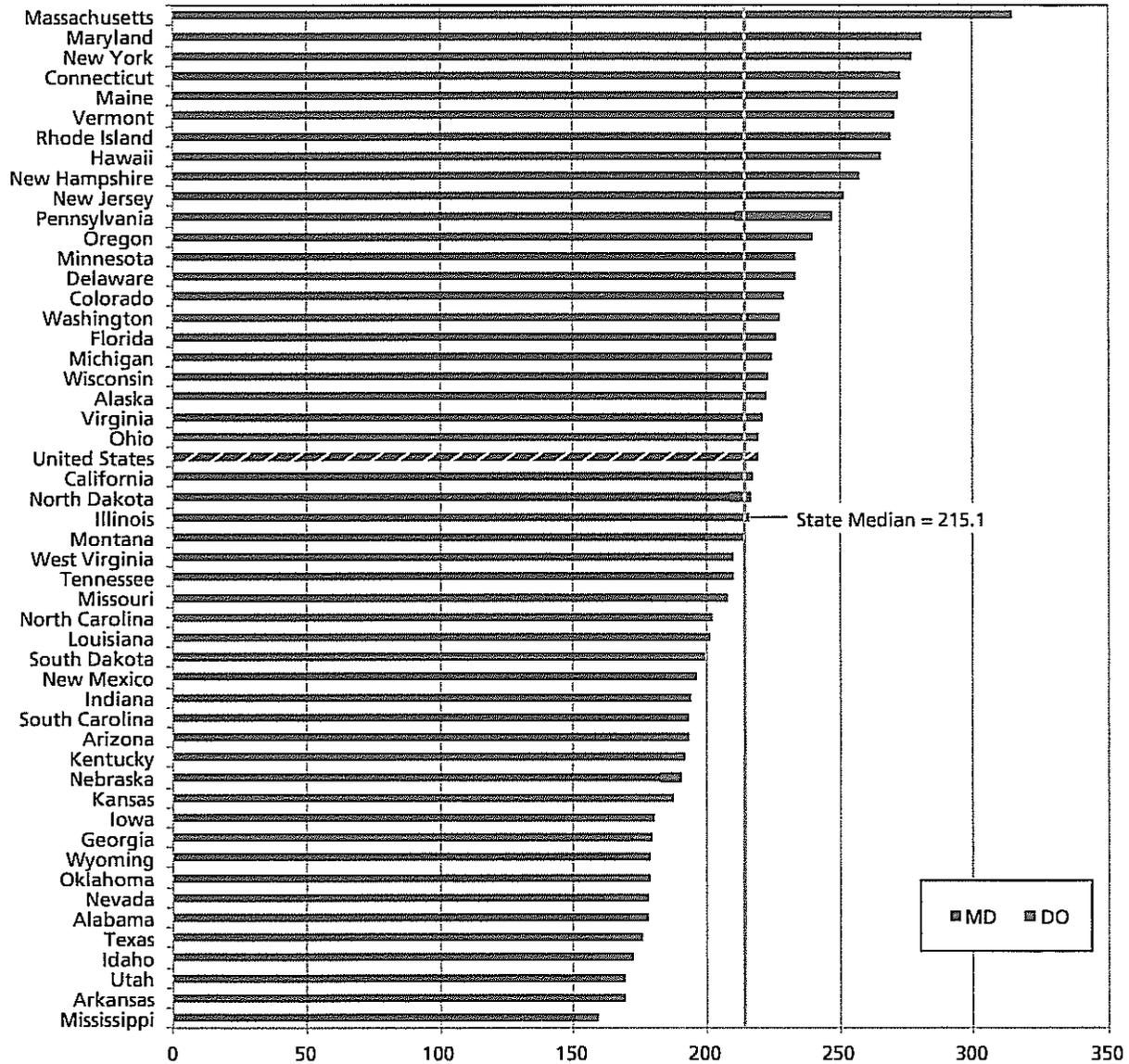
Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the 2011 AMA Physician Masterfile (December 31, 2010).

N.R. = Not Ranked

* Physicians whose medical school type was unavailable (n=67) are included in the total.



Figure 2. Active Patient Care Physicians per 100,000 Population by Degree Type, 2010



Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the 2011 AMA Physician Masterfile (December 31, 2010). Physicians whose medical school type was not available are excluded (n=29).



Table 2. Active Patient Care Physicians per 100,000 Population by Degree Type, 2010

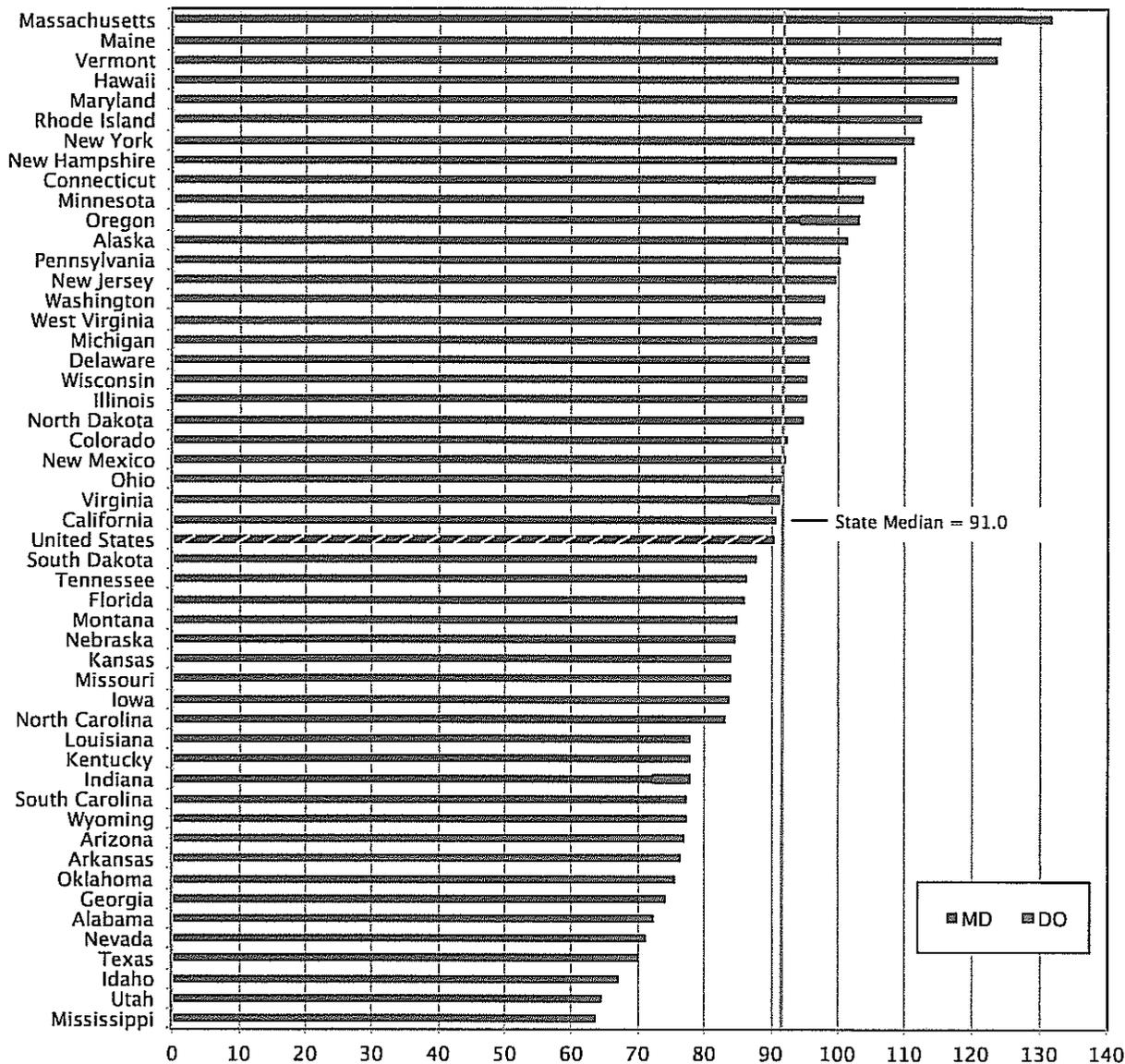
	Total Population	Total Active Patient Care Physicians*			Active Patient Care M.D.s		Active Patient Care D.O.s	
		Number	Rate per 100,000	Rank	Number	Rate per 100,000	Number	Rate per 100,000
United States	309,050,816	678,324	219.5	N.R.	630,370	204.0	47,925	15.5
Alabama	4,729,656	8,418	178.0	45	8,074	170.7	344	7.3
Alaska	708,862	1,575	222.2	20	1,435	202.4	140	19.7
Arizona	6,676,627	12,904	193.3	36	11,432	171.2	1,471	22.0
Arkansas	2,910,236	4,921	169.1	49	4,693	161.3	228	7.8
California	37,266,600	81,017	217.4	23	77,870	209.0	3,147	8.4
Colorado	5,095,309	11,663	228.9	15	10,698	210.0	965	18.9
Connecticut	3,526,937	9,628	273.0	4	9,298	263.6	330	9.4
Delaware	891,464	2,079	233.2	14	1,851	207.6	228	25.6
District of Columbia	610,589	3,741	612.7	N.R.	3,668	600.7	73	12.0
Florida	18,678,049	42,302	226.5	17	38,785	207.7	3,514	18.8
Georgia	9,908,357	17,823	179.9	41	17,100	172.6	723	7.3
Hawaii	1,300,086	3,452	265.5	8	3,294	253.4	158	12.2
Idaho	1,559,796	2,691	172.5	47	2,449	157.0	242	15.5
Illinois	12,944,410	27,935	215.8	25	26,125	201.8	1,809	14.0
Indiana	6,445,295	12,536	194.5	34	11,764	182.5	772	12.0
Iowa	3,023,081	5,459	180.6	40	4,443	147.0	1,016	33.6
Kansas	2,841,121	5,339	187.9	39	4,809	169.3	530	18.7
Kentucky	4,339,435	8,318	191.7	37	7,967	183.6	351	8.1
Louisiana	4,529,426	9,109	201.1	31	9,017	199.1	92	2.0
Maine	1,312,939	3,572	272.1	5	3,029	230.7	543	41.4
Maryland	5,737,274	16,120	281.0	2	15,616	272.2	503	8.8
Massachusetts	6,631,280	20,878	314.8	1	20,372	307.2	500	7.5
Michigan	9,931,235	22,344	225.0	18	18,187	183.1	4,157	41.9
Minnesota	5,290,447	12,363	233.7	13	11,932	225.5	431	8.1
Mississippi	2,960,467	4,718	159.4	50	4,450	150.3	267	9.0
Missouri	6,011,741	12,514	208.2	29	10,817	179.9	1,697	28.2
Montana	980,152	2,101	214.4	26	1,955	199.5	146	14.9
Nebraska	1,811,072	3,444	190.2	38	3,310	182.8	134	7.4
Nevada	2,654,751	4,728	178.1	44	4,292	161.7	436	16.4
New Hampshire	1,323,531	3,407	257.4	9	3,174	239.8	232	17.5
New Jersey	8,732,811	21,958	251.4	10	19,655	225.1	2,303	26.4
New Mexico	2,033,875	3,987	196.0	33	3,757	184.7	230	11.3
New York	19,577,730	54,306	277.4	3	51,767	264.4	2,535	12.9
North Carolina	9,458,888	19,096	201.9	30	18,410	194.6	686	7.3
North Dakota	653,778	1,418	216.9	24	1,365	208.8	53	8.1
Ohio	11,532,111	25,315	219.5	22	22,262	193.0	3,053	26.5
Oklahoma	3,724,447	6,655	178.7	43	5,286	141.9	1,369	36.8
Oregon	3,855,536	9,243	239.7	12	8,675	225.0	568	14.7
Pennsylvania	12,632,780	31,250	247.4	11	26,679	211.2	4,571	36.2
Rhode Island	1,056,870	2,843	269.0	7	2,669	252.5	174	16.5
South Carolina	4,596,958	8,902	193.6	35	8,520	185.3	382	8.3
South Dakota	820,077	1,636	199.5	32	1,533	186.9	103	12.6
Tennessee	6,338,112	13,307	210.0	28	12,800	202.0	507	8.0
Texas	25,213,445	44,395	176.1	46	41,383	164.1	3,011	11.9
Utah	2,830,753	4,798	169.5	48	4,518	159.6	280	9.9
Vermont	622,433	1,685	270.7	6	1,632	262.2	53	8.5
Virginia	7,952,119	17,570	220.9	21	16,855	212.0	714	9.0
Washington	6,746,199	15,366	227.8	16	14,569	216.0	789	11.7
West Virginia	1,825,513	3,841	210.4	27	3,264	178.8	577	31.6
Wisconsin	5,668,519	12,675	223.6	19	11,953	210.9	721	12.7
Wyoming	547,637	979	178.8	42	912	166.5	67	12.2

Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the AMA Physician Masterfile (December 31, 2010).

N.R. = Not Ranked

* Physicians' medical school type was unavailable (n=29) are included in the total.

Figure 3. Active Primary Care Physicians per 100,000 Population by Degree Type, 2010



Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the 2011 AMA Physician Masterfile (December 31, 2010). Physicians whose medical school type was unavailable are excluded (n=29).



Table 3. Active Primary Care Physicians per 100,000 Population by Degree Type, 2010

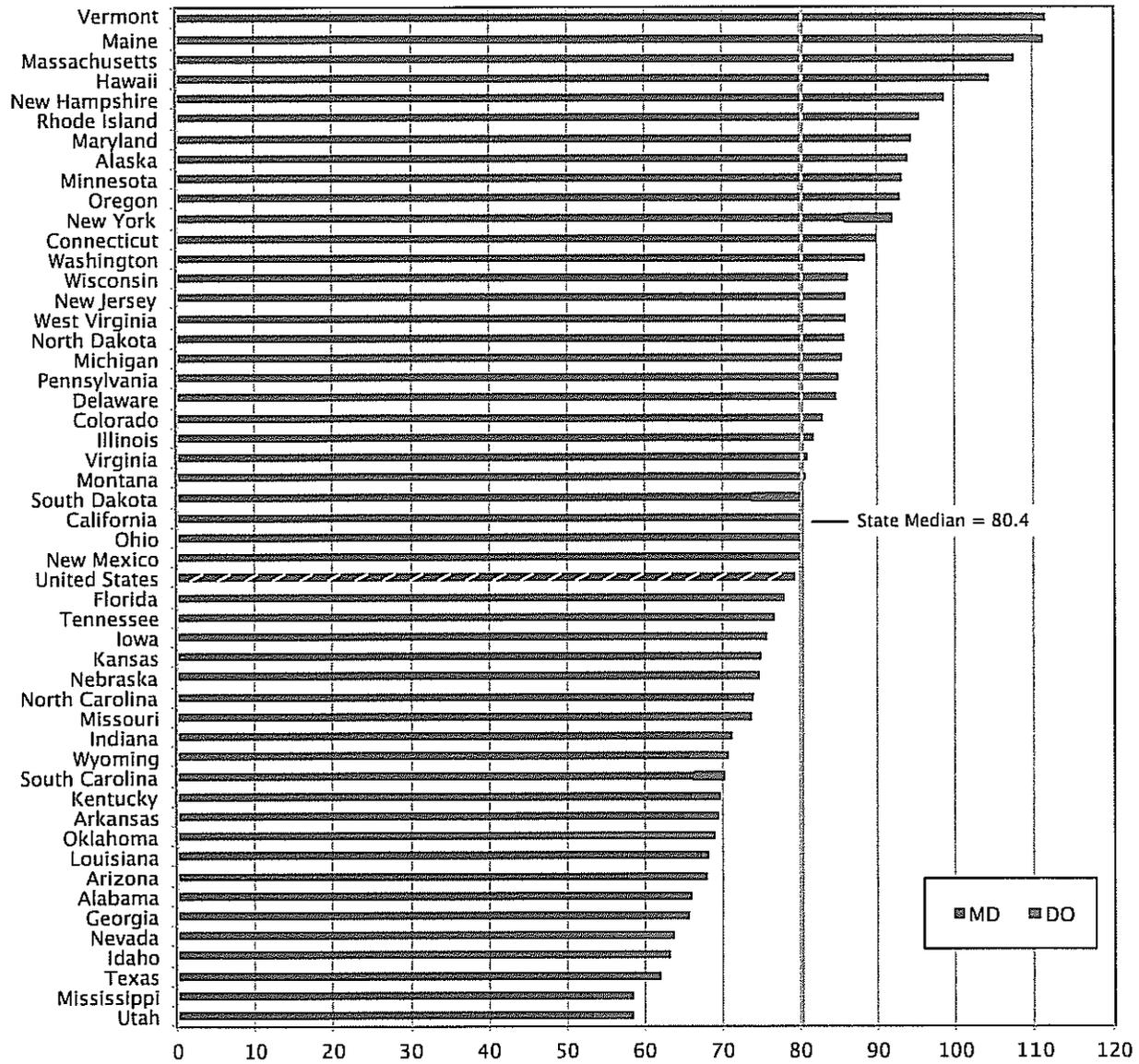
	Total Population	Total Active Primary Care Physicians*			Active Primary Care M.D.s		Active Primary Care D.O.s	
		Number	Rate per 100,000	Rank	Number	Rate per 100,000	Number	Rate per 100,000
United States	309,050,816	279,719	90.5	N.R.	254,217	82.3	25,473	8.2
Alabama	4,729,656	3,419	72.3	45	3,230	68.3	189	4.0
Alaska	708,862	719	101.4	12	638	90.0	81	11.4
Arizona	6,676,627	5,151	77.1	41	4,390	65.8	760	11.4
Arkansas	2,910,236	2,223	76.4	42	2,080	71.5	143	4.9
California	37,266,600	33,822	90.8	26	31,875	85.5	1,947	5.2
Colorado	5,095,309	4,704	92.3	22	4,173	81.9	531	10.4
Connecticut	3,526,937	3,725	105.6	9	3,577	101.4	148	4.2
Delaware	891,464	852	95.6	18	721	80.9	131	14.7
District of Columbia	610,589	1,520	248.9	N.R.	1,480	242.4	40	6.6
Florida	18,678,049	16,060	86.0	29	14,345	76.8	1,711	9.2
Georgia	9,908,357	7,335	74.0	44	6,942	70.1	393	4.0
Hawaii	1,300,086	1,535	118.1	4	1,444	111.1	91	7.0
Idaho	1,559,796	1,048	67.2	48	921	59.0	127	8.1
Illinois	12,944,410	12,336	95.3	20	11,355	87.7	980	7.6
Indiana	6,445,295	5,015	77.8	38	4,639	72.0	376	5.8
Iowa	3,023,081	2,530	83.7	34	1,882	62.3	648	21.4
Kansas	2,841,121	2,387	84.0	32	2,061	72.5	326	11.5
Kentucky	4,339,435	3,378	77.8	37	3,192	73.6	185	4.3
Louisiana	4,529,426	3,532	78.0	36	3,483	76.9	49	1.1
Maine	1,312,939	1,636	124.6	2	1,288	98.1	348	26.5
Maryland	5,737,274	6,755	117.7	5	6,521	113.7	234	4.1
Massachusetts	6,631,280	8,751	132.0	1	8,449	127.4	295	4.4
Michigan	9,931,235	9,609	96.8	17	7,737	77.9	1,872	18.8
Minnesota	5,290,447	5,492	103.8	10	5,270	99.6	222	4.2
Mississippi	2,960,467	1,882	63.6	50	1,714	57.9	167	5.6
Missouri	6,011,741	5,043	83.9	33	4,126	68.6	917	15.3
Montana	980,152	833	85.0	30	756	77.1	77	7.9
Nebraska	1,811,072	1,530	84.5	31	1,451	80.1	79	4.4
Nevada	2,654,751	1,889	71.2	46	1,669	62.9	220	8.3
New Hampshire	1,323,531	1,440	108.8	8	1,301	98.3	138	10.4
New Jersey	8,732,811	8,702	99.6	14	7,614	87.2	1,088	12.5
New Mexico	2,033,875	1,874	92.1	23	1,742	85.6	132	6.5
New York	19,577,730	21,824	111.5	7	20,462	104.5	1,357	6.9
North Carolina	9,458,888	7,864	83.1	35	7,500	79.3	364	3.8
North Dakota	653,778	619	94.7	21	593	90.7	26	4.0
Ohio	11,532,111	10,552	91.5	24	9,113	79.0	1,439	12.5
Oklahoma	3,724,447	2,817	75.6	43	2,101	56.4	716	19.2
Oregon	3,855,536	3,976	103.1	11	3,630	94.2	346	9.0
Pennsylvania	12,632,780	12,673	100.3	13	10,229	81.0	2,444	19.3
Rhode Island	1,056,870	1,190	112.6	6	1,075	101.7	115	10.9
South Carolina	4,596,958	3,559	77.4	39	3,365	73.2	194	4.2
South Dakota	820,077	719	87.7	27	656	80.0	63	7.7
Tennessee	6,338,112	5,467	86.3	28	5,173	81.6	294	4.6
Texas	25,213,445	17,659	70.0	47	15,984	63.4	1,674	6.6
Utah	2,830,753	1,828	64.6	49	1,677	59.2	151	5.3
Vermont	622,433	772	124.0	3	744	119.5	28	4.5
Virginia	7,952,119	7,251	91.2	25	6,896	86.7	355	4.5
Washington	6,746,199	6,612	98.0	15	6,172	91.5	434	6.4
West Virginia	1,825,513	1,777	97.3	16	1,395	76.4	382	20.9
Wisconsin	5,668,519	5,410	95.4	19	4,998	88.2	411	7.3
Wyoming	547,637	423	77.2	40	388	70.8	35	6.4

Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the AMA Physician Masterfile (December 31, 2010).

N.R. = Not Ranked

* Physicians whose medical school type was unavailable (n=29) are included in the total.

Figure 4. Active Patient Care Primary Care Physicians per 100,000 Population by Degree Type, 2010



Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the 2011 AMA Physician Masterfile (December 31, 2010). Physicians whose medical school type was unavailable are excluded (n=22).



Table 4. Active Patient Care Primary Care Physicians 100,000 Population by Degree Type, 2010

	Total Population	Total Active Patient Care Primary Care Physicians*			Active Patient Care Primary Care M.D.s		Active Patient Care Primary Care D.O.s	
		Number	Rate per 100,000	Rank	Number	Rate per 100,000	Number	Rate per 100,000
United States	309,050,816	245,367	79.4	N.R.	221,999	71.8	23,346	7.6
Alabama	4,729,656	3,120	66.0	44	2,940	62.2	180	3.8
Alaska	708,862	667	94.1	8	594	83.8	73	10.3
Arizona	6,676,627	4,544	68.1	43	3,857	57.8	686	10.3
Arkansas	2,910,236	2,026	69.6	40	1,892	65.0	134	4.6
California	37,266,600	29,968	80.4	26	28,240	75.8	1,728	4.6
Colorado	5,095,309	4,229	83.0	21	3,727	73.1	502	9.9
Connecticut	3,526,937	3,172	89.9	12	3,049	86.4	123	3.5
Delaware	891,464	755	84.7	20	636	71.3	119	13.3
District of Columbia	610,589	1,110	181.8	N.R.	1,084	177.5	26	4.3
Florida	18,678,049	14,582	78.1	29	12,986	69.5	1,594	8.5
Georgia	9,908,357	6,516	65.8	45	6,167	62.2	349	3.5
Hawaii	1,300,086	1,358	104.5	4	1,282	98.6	76	5.8
Idaho	1,559,796	987	63.3	47	865	55.5	122	7.8
Illinois	12,944,410	10,591	81.8	22	9,717	75.1	873	6.7
Indiana	6,445,295	4,588	71.2	36	4,238	65.8	350	5.4
Iowa	3,023,081	2,288	75.7	31	1,672	55.3	616	20.4
Kansas	2,841,121	2,128	74.9	32	1,822	64.1	306	10.8
Kentucky	4,339,435	3,028	69.8	39	2,863	66.0	165	3.8
Louisiana	4,529,426	3,094	68.3	42	3,051	67.4	43	0.9
Maine	1,312,939	1,459	111.1	2	1,143	87.1	316	24.1
Maryland	5,737,274	5,427	94.6	7	5,220	91.0	207	3.6
Massachusetts	6,631,280	7,144	107.7	3	6,891	103.9	249	3.8
Michigan	9,931,235	8,487	85.5	18	6,729	67.8	1,758	17.7
Minnesota	5,290,447	4,938	93.3	9	4,734	89.5	204	3.9
Mississippi	2,960,467	1,732	58.5	49	1,575	53.2	156	5.3
Missouri	6,011,741	4,441	73.9	35	3,581	59.6	860	14.3
Montana	980,152	792	80.8	24	717	73.2	75	7.7
Nebraska	1,811,072	1,356	74.9	33	1,284	70.9	72	4.0
Nevada	2,654,751	1,691	63.7	46	1,486	56.0	205	7.7
New Hampshire	1,323,531	1,308	98.8	5	1,182	89.3	125	9.4
New Jersey	8,732,811	7,506	86.0	15	6,500	74.4	1,006	11.5
New Mexico	2,033,875	1,626	79.9	28	1,503	73.9	123	6.0
New York	19,577,730	17,989	91.9	11	16,782	85.7	1,203	6.1
North Carolina	9,458,888	7,011	74.1	34	6,684	70.7	327	3.5
North Dakota	653,778	561	85.8	17	537	82.1	24	3.7
Ohio	11,532,111	9,227	80.0	27	7,900	68.5	1,327	11.5
Oklahoma	3,724,447	2,571	69.0	41	1,892	50.8	679	18.2
Oregon	3,855,536	3,589	93.1	10	3,268	84.8	321	8.3
Pennsylvania	12,632,780	10,749	85.1	19	8,515	67.4	2,234	17.7
Rhode Island	1,056,870	1,009	95.5	6	904	85.5	105	9.9
South Carolina	4,596,958	3,231	70.3	38	3,052	66.4	179	3.9
South Dakota	820,077	660	80.5	25	604	73.7	56	6.8
Tennessee	6,338,112	4,872	76.9	30	4,605	72.7	267	4.2
Texas	25,213,445	15,633	62.0	48	14,097	55.9	1,535	6.1
Utah	2,830,753	1,654	58.4	50	1,510	53.3	144	5.1
Vermont	622,433	694	111.5	1	668	107.3	26	4.2
Virginia	7,952,119	6,446	81.1	23	6,128	77.1	318	4.0
Washington	6,746,199	5,971	88.5	13	5,561	82.4	404	6.0
West Virginia	1,825,513	1,568	85.9	16	1,208	66.2	360	19.7
Wisconsin	5,668,519	4,887	86.2	14	4,497	79.3	389	6.9
Wyoming	547,637	387	70.7	37	360	65.7	27	4.9

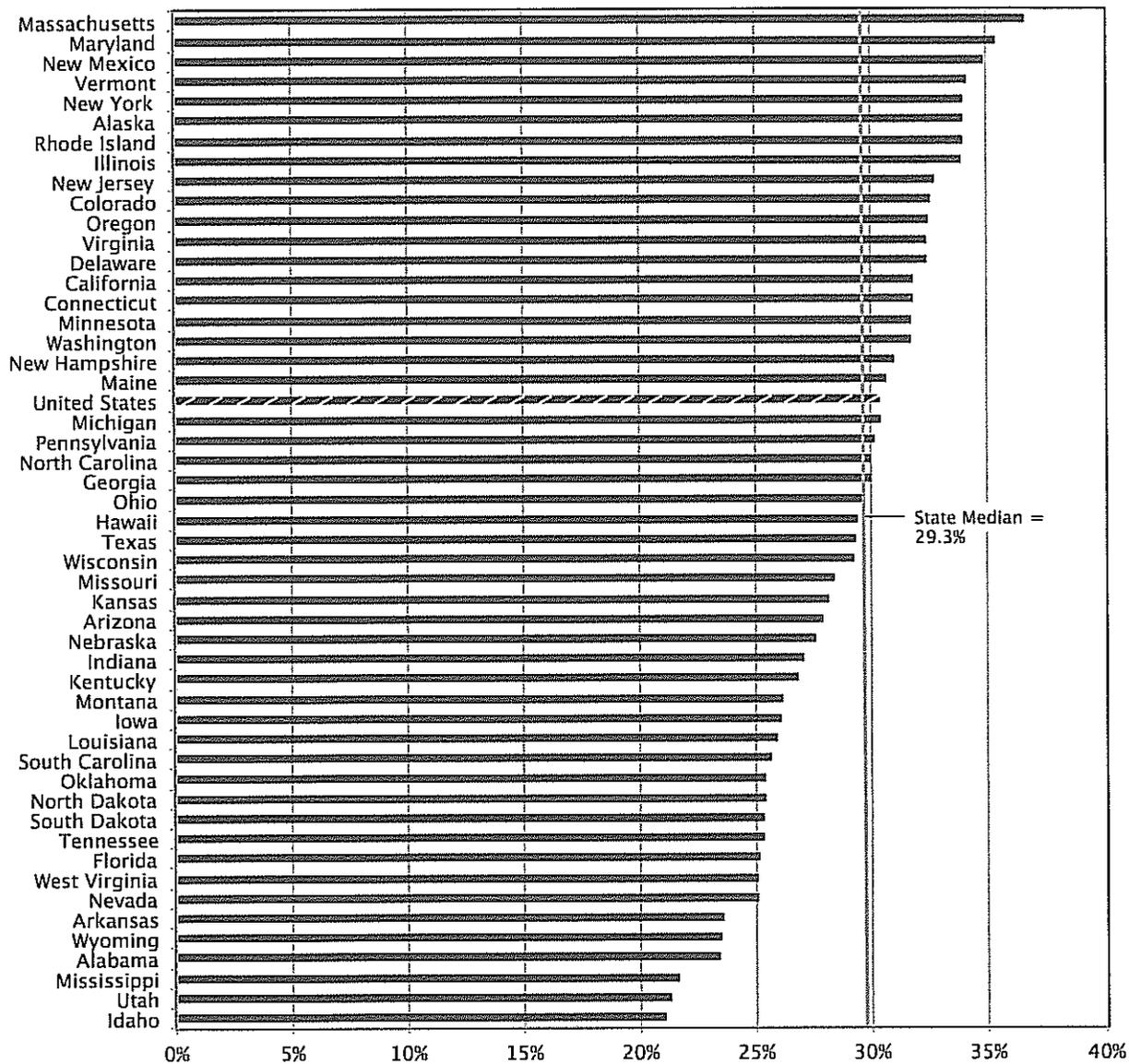
Sources: July 1, 2010 population estimates are from the U.S. Census Bureau (Release date: February 2011). Physician data are from the AMA Physician Masterfile (December 31, 2010).

N.R. = Not Ranked

* Physicians whose medical school type was unavailable (n=22) are included in the total.



Figure 5. Percentage of Active Physicians Who Are Female, 2010



Source: AMA Physician Masterfile (December 31, 2010). Physicians whose sex was unavailable (n=1,104) are excluded.

Table 5. Active Female Physicians, 2010

	Total Active Physicians*	Active Female Physicians		
		Number	Percent	Rank
United States	798,405	242,427	30.4%	N.R.
Alabama	9,501	2,226	23.4%	47
Alaska	1,719	584	34.0%	6
Arizona	14,670	4,093	27.9%	30
Arkansas	5,511	1,300	23.6%	45
California	95,021	30,210	31.8%	14
Colorado	13,230	4,309	32.6%	10
Connecticut	11,671	3,707	31.8%	15
Delaware	2,392	774	32.4%	13
District of Columbia	5,323	2,056	38.6%	N.R.
Florida	47,527	11,959	25.2%	42
Georgia	20,496	6,138	29.9%	23
Hawaii	3,964	1,166	29.4%	25
Idaho	2,870	604	21.0%	50
Illinois	33,540	11,357	33.9%	8
Indiana	13,884	3,762	27.1%	32
Iowa	6,282	1,635	26.0%	35
Kansas	6,053	1,705	28.2%	29
Kentucky	9,471	2,536	26.8%	33
Louisiana	10,535	2,730	25.9%	36
Maine	4,026	1,233	30.6%	19
Maryland	21,126	7,475	35.4%	2
Massachusetts	27,511	10,077	36.6%	1
Michigan	26,264	7,971	30.3%	20
Minnesota	14,245	4,524	31.8%	16
Mississippi	5,217	1,129	21.6%	48
Missouri	14,811	4,200	28.4%	28
Montana	2,229	583	26.2%	34
Nebraska	3,976	1,095	27.5%	31
Nevada	5,252	1,314	25.0%	44
New Hampshire	3,870	1,198	31.0%	18
New Jersey	25,581	8,374	32.7%	9
New Mexico	4,669	1,627	34.8%	3
New York	67,917	23,080	34.0%	5
North Carolina	22,354	6,696	30.0%	22
North Dakota	1,557	395	25.4%	39
Ohio	30,440	9,030	29.7%	24
Oklahoma	7,392	1,876	25.4%	38
Oregon	10,585	3,436	32.5%	11
Pennsylvania	38,155	11,485	30.1%	21
Rhode Island	3,513	1,193	34.0%	7
South Carolina	9,910	2,543	25.7%	37
South Dakota	1,777	450	25.3%	40
Tennessee	15,296	3,866	25.3%	41
Texas	51,604	15,109	29.3%	26
Utah	5,592	1,190	21.3%	49
Vermont	2,007	685	34.1%	4
Virginia	20,246	6,552	32.4%	12
Washington	17,778	5,640	31.7%	17
West Virginia	4,478	1,123	25.1%	43
Wisconsin	14,311	4,179	29.2%	27
Wyoming	1,056	248	23.5%	46

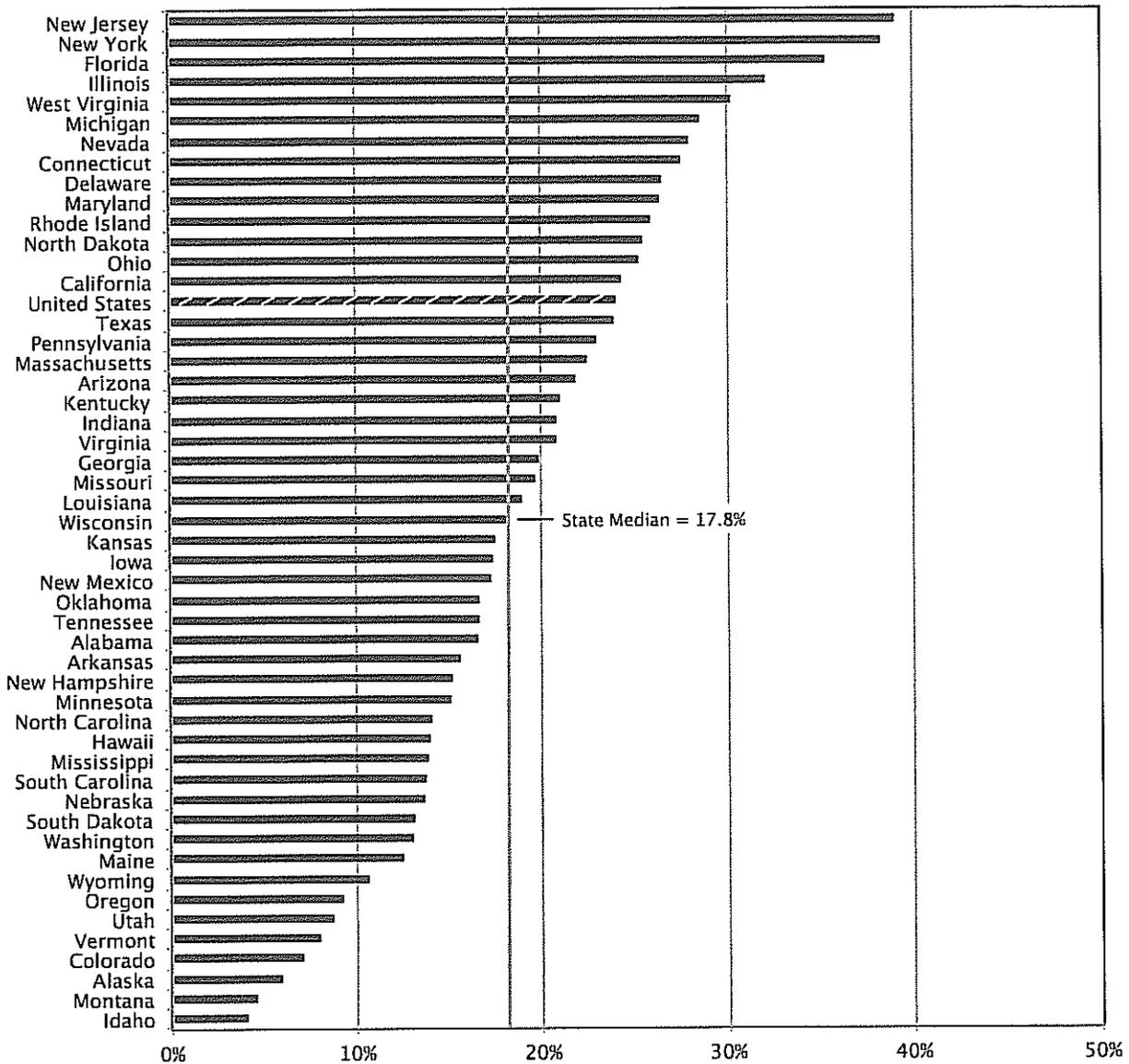
Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked

* Physicians whose sex was missing (n=1,104) are excluded.



Figure 6. Percentage of Active Physicians Who Are International Medical Graduates (IMGs), 2010



Source: AMA Physician Masterfile (December 31, 2010). Physicians whose medical school type was unavailable are excluded (n=67).
 Physicians who are graduates of Canadian medical schools are not included (n=9,700).



Table 6. Active Physicians by Medical School Type, 2010

	Total Active Physicians*	U.S.M.D.		D.O.		IMG		
	Number	Number	Percent	Number	Percent	Number	Percent	Rank
United States	799,442	542,321	67.8%	55,218	6.9%	192,203	24.0%	N.R.
Alabama	9,508	7,450	78.4%	382	4.0%	1,568	16.5%	31
Alaska	1,721	1,452	84.4%	156	9.1%	102	5.9%	48
Arizona	14,692	9,555	65.0%	1,665	11.3%	3,209	21.8%	18
Arkansas	5,518	4,367	79.1%	253	4.6%	860	15.6%	32
California	95,194	66,909	70.3%	3,697	3.9%	23,122	24.3%	14
Colorado	13,243	11,114	83.9%	1,041	7.9%	939	7.1%	47
Connecticut	11,678	7,939	68.0%	396	3.4%	3,215	27.5%	8
Delaware	2,393	1,474	61.6%	269	11.2%	635	26.5%	9
District of Columbia	5,327	3,989	74.9%	116	2.2%	1,166	21.9%	N.R.
Florida	47,584	26,379	55.4%	3,933	8.3%	16,823	35.4%	3
Georgia	20,510	15,425	75.2%	836	4.1%	4,073	19.9%	22
Hawaii	3,970	3,167	79.8%	188	4.7%	552	13.9%	36
Idaho	2,873	2,452	85.3%	263	9.2%	115	4.0%	50
Illinois	33,591	20,328	60.5%	2,170	6.5%	10,807	32.2%	4
Indiana	13,899	10,010	72.0%	847	6.1%	2,889	20.8%	20
Iowa	6,294	4,044	64.3%	1,090	17.3%	1,093	17.4%	27
Kansas	6,058	4,359	72.0%	591	9.8%	1,059	17.5%	26
Kentucky	9,478	6,935	73.2%	439	4.6%	1,989	21.0%	19
Louisiana	10,541	8,353	79.2%	116	1.1%	1,997	18.9%	24
Maine	4,031	2,814	69.8%	611	15.2%	501	12.4%	42
Maryland	21,152	14,709	69.5%	641	3.0%	5,589	26.4%	10
Massachusetts	27,539	20,016	72.7%	627	2.3%	6,182	22.4%	17
Michigan	26,322	13,811	52.5%	4,727	18.0%	7,517	28.6%	6
Minnesota	14,261	11,274	79.1%	470	3.3%	2,145	15.0%	34
Mississippi	5,220	4,158	79.7%	304	5.8%	721	13.8%	37
Missouri	14,824	9,938	67.0%	1,892	12.8%	2,907	19.6%	23
Montana	2,232	1,959	87.8%	155	6.9%	102	4.6%	49
Nebraska	3,979	3,250	81.7%	150	3.8%	541	13.6%	39
Nevada	5,264	3,246	61.7%	493	9.4%	1,471	27.9%	7
New Hampshire	3,870	2,908	75.1%	257	6.6%	585	15.1%	33
New Jersey	25,629	12,863	50.2%	2,629	10.3%	10,021	39.1%	1
New Mexico	4,673	3,569	76.4%	255	5.5%	806	17.2%	28
New York	68,036	38,002	55.9%	3,093	4.5%	26,090	38.3%	2
North Carolina	22,367	18,205	81.4%	806	3.6%	3,144	14.1%	35
North Dakota	1,558	1,037	66.6%	59	3.8%	396	25.4%	12
Ohio	30,484	18,762	61.5%	3,665	12.0%	7,704	25.3%	13
Oklahoma	7,405	4,597	62.1%	1,532	20.7%	1,229	16.6%	29
Oregon	10,594	8,789	83.0%	627	5.9%	978	9.2%	44
Pennsylvania	38,205	23,774	62.2%	5,348	14.0%	8,761	22.9%	16
Rhode Island	3,513	2,332	66.4%	210	6.0%	908	25.8%	11
South Carolina	9,922	8,076	81.4%	437	4.4%	1,362	13.7%	38
South Dakota	1,779	1,416	79.6%	117	6.6%	233	13.1%	40
Tennessee	15,301	12,021	78.6%	581	3.8%	2,538	16.6%	30
Texas	51,690	35,329	68.3%	3,435	6.6%	12,354	23.9%	15
Utah	5,598	4,743	84.7%	310	5.5%	485	8.7%	45
Vermont	2,008	1,705	84.9%	63	3.1%	160	8.0%	46
Virginia	20,268	15,044	74.2%	842	4.2%	4,207	20.8%	21
Washington	17,788	14,186	79.8%	878	4.9%	2,301	12.9%	41
West Virginia	4,485	2,429	54.2%	670	14.9%	1,358	30.3%	5
Wisconsin	14,316	10,800	75.4%	804	5.6%	2,582	18.0%	25
Wyoming	1,057	858	81.2%	82	7.8%	112	10.6%	43

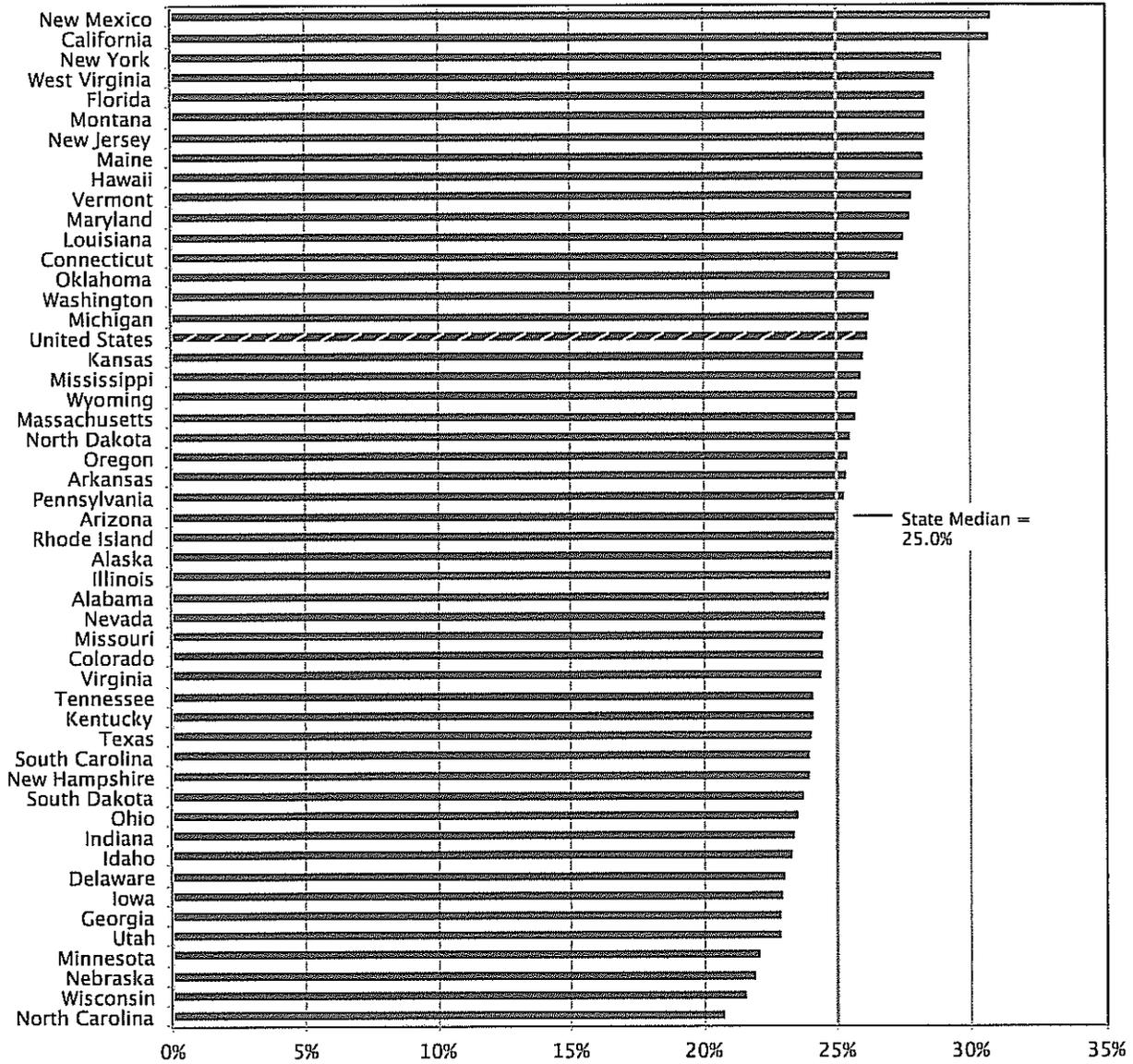
Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked

* The total excludes active physicians whose medical school type was unavailable (n=67). Physicians who are graduates of Canadian medical schools are included in the total (n=9,700).



Figure 7. Percentage of Active Physicians Who Are Age 60 or Older, 2010



Source: AMA Physician Masterfile (December 31, 2010). Physicians whose age was unavailable are excluded (n=1,274).



Table 7. Active Physicians by Selected Age Groups, 2010

	Total Active Physicians*	Under Age 40		Age 60 or Older		
	Number	Number	Percent	Number	Percent	Rank
United States	798,235	140,464	17.6%	208,802	26.2%	N.R.
Alabama	9,505	1,521	16.0%	2,346	24.7%	29
Alaska	1,718	244	14.2%	427	24.9%	27
Arizona	14,633	2,425	16.6%	3,670	25.1%	25
Arkansas	5,513	933	16.9%	1,397	25.3%	23
California	95,097	15,968	16.8%	29,217	30.7%	2
Colorado	13,233	2,212	16.7%	3,239	24.5%	32
Connecticut	11,666	1,889	16.2%	3,186	27.3%	13
Delaware	2,390	399	16.7%	550	23.0%	43
District of Columbia	5,326	1,207	22.7%	1,605	30.1%	N.R.
Florida	47,465	6,544	13.8%	13,446	28.3%	5
Georgia	20,506	3,578	17.4%	4,686	22.9%	45
Hawaii	3,969	633	15.9%	1,121	28.2%	9
Idaho	2,872	398	13.9%	670	23.3%	42
Illinois	33,541	6,857	20.4%	8,303	24.8%	28
Indiana	13,892	2,289	16.5%	3,245	23.4%	41
Iowa	6,280	1,189	18.9%	1,440	22.9%	44
Kansas	6,051	1,112	18.4%	1,571	26.0%	17
Kentucky	9,468	1,735	18.3%	2,279	24.1%	35
Louisiana	10,539	1,971	18.7%	2,899	27.5%	12
Maine	4,022	528	13.1%	1,136	28.2%	8
Maryland	21,131	3,740	17.7%	5,864	27.8%	11
Massachusetts	27,537	5,492	19.9%	7,086	25.7%	20
Michigan	26,078	4,659	17.9%	6,833	26.2%	16
Minnesota	14,252	2,699	18.9%	3,143	22.1%	47
Mississippi	5,219	604	15.4%	1,352	25.9%	18
Missouri	14,798	2,959	20.0%	3,625	24.5%	31
Montana	2,231	236	10.6%	632	28.3%	6
Nebraska	3,976	809	20.3%	871	21.9%	48
Nevada	5,257	816	15.5%	1,288	24.5%	30
New Hampshire	3,871	589	15.2%	926	23.9%	38
New Jersey	25,581	3,953	15.5%	7,240	28.3%	7
New Mexico	4,669	679	14.5%	1,439	30.8%	1
New York	67,961	12,036	17.7%	19,682	29.0%	3
North Carolina	22,357	4,219	18.9%	4,636	20.7%	50
North Dakota	1,557	270	17.3%	397	25.5%	21
Ohio	30,428	6,020	19.8%	7,155	23.5%	40
Oklahoma	7,396	1,278	17.3%	1,999	27.0%	14
Oregon	10,584	1,738	16.4%	2,686	25.4%	22
Pennsylvania	38,063	7,255	19.1%	9,625	25.3%	24
Rhode Island	3,513	644	18.3%	875	24.9%	26
South Carolina	9,919	1,797	18.1%	2,379	24.0%	37
South Dakota	1,776	301	16.9%	422	23.8%	39
Tennessee	15,290	2,522	16.5%	3,688	24.1%	34
Texas	51,651	10,135	19.6%	12,412	24.0%	36
Utah	5,593	1,093	19.5%	1,278	22.8%	46
Vermont	2,004	268	13.4%	558	27.8%	10
Virginia	20,241	3,613	17.8%	4,931	24.4%	33
Washington	17,785	2,816	15.8%	4,706	26.5%	15
West Virginia	4,474	802	17.9%	1,282	28.7%	4
Wisconsin	14,303	2,448	17.1%	3,087	21.6%	49
Wyoming	1,054	142	13.5%	272	25.8%	19

Source: AMA Physician Masterfile (December 31, 2010)

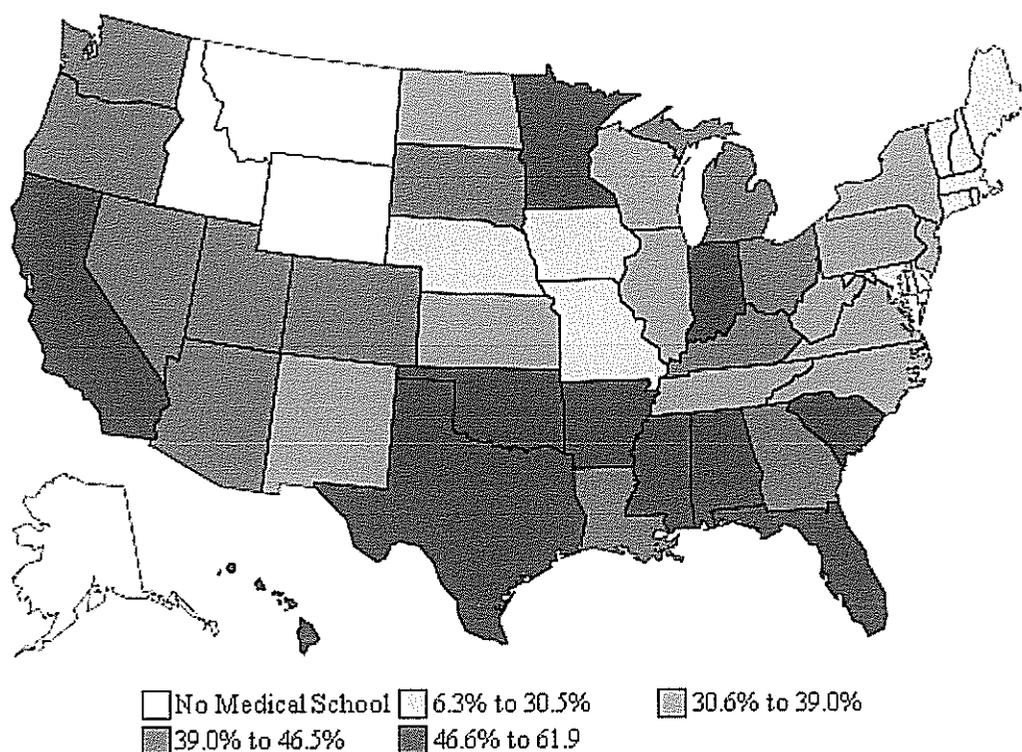
N.R. = Not Ranked

* Physicians whose age was unavailable (n=1,274) are excluded.

Key Findings – Retention

- Overall, 38.6 percent of medical and osteopathic students end up practicing in the same state where they received their undergraduate medical education (UME). Seven of the top 10 states in terms of UME retention were in the South (see Map 10, Figure 17, and Table 17).

Map 10. Percentage of Physicians Retained From UME, 2010

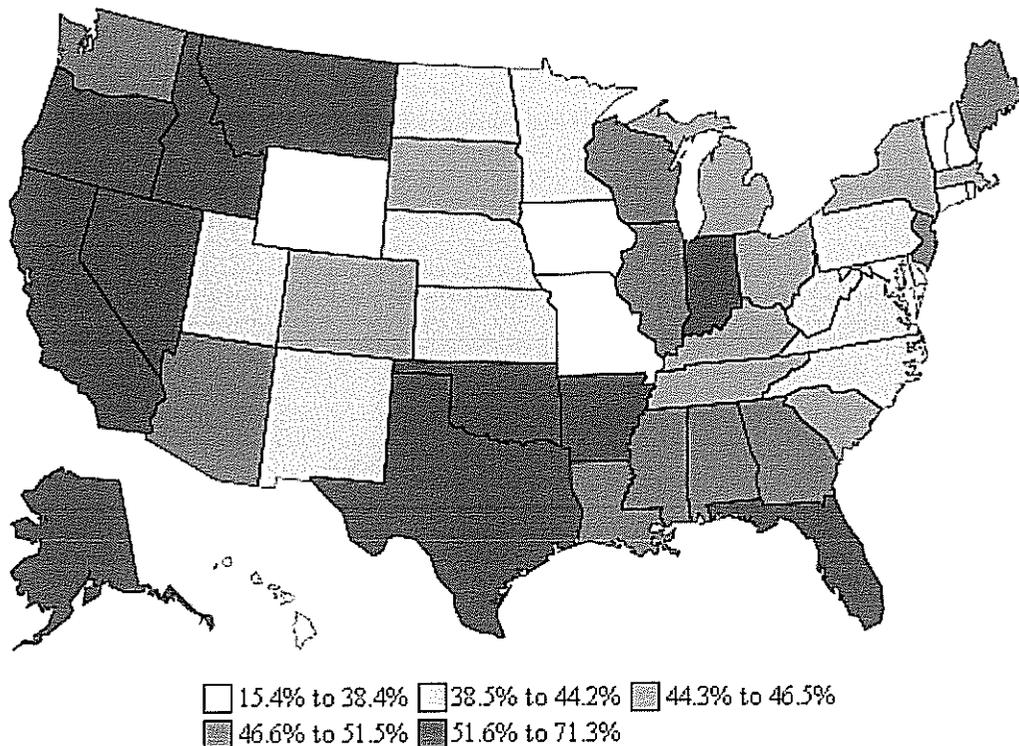


Source: AMA Physician Masterfile (December 31, 2010)

- In 2010, 46.8 percent of the physicians who graduated from a public medical or osteopathic school were practicing in the state from which they graduated (see Figure 18 and Table 18).

- After completing training in an ACGME-accredited program, 47.8 percent of physicians either stayed or returned to the state where they completed their most recent graduate medical education (GME). Six of the top 10 states with the highest GME retention rates were in the West (see Map 11, Figure 19, and Table 19).

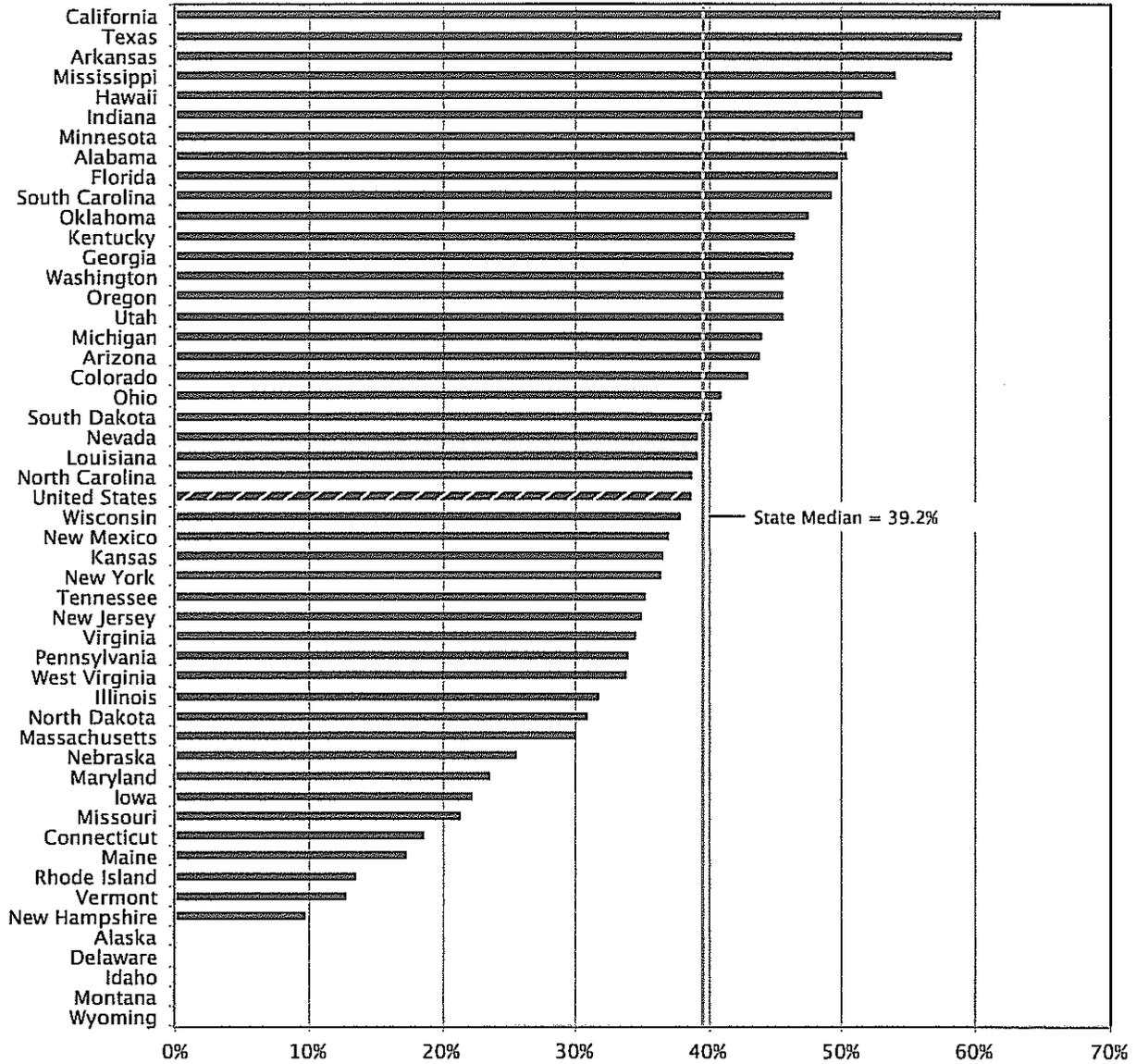
Map 11. Percentage of Residents and Fellows Retained From ACGME Programs, 2010



Source: AMA Physician Masterfile (December 31, 2010)

- Retention rates were highest for physicians who completed both UME and GME in the same state. Two thirds (66.6 percent) of the physicians who completed UME and GME in the same state remained in state to practice. In terms of overall retention (i.e., UME and GME were completed in the same state), 8 of the top 10 states were in the South and West (see Figure 20 and Table 20).

Figure 17. Physicians Retained from Undergraduate Medical Education (UME)



Source: AMA Physician Masterfile (December 31, 2010).



Table 17. Physicians Retained from Undergraduate Medical Education (UME)

	Active Physicians Who Graduated from Medical or Osteopathic School In-State	Active Physicians Who Graduated from Medical or Osteopathic School In-State and Are Active In-State		
		Number	Percent	Rank
United States	596,819	230,655	38.6%	N.R.
Alabama	7,083	3,572	50.4%	8
Alaska	---	---	---	---
Arizona	3,583	1,571	43.8%	18
Arkansas	4,641	2,702	58.2%	3
California	38,038	23,556	61.9%	1
Colorado	4,600	1,974	42.9%	19
Connecticut	6,275	1,166	18.6%	41
Delaware	---	---	---	---
District of Columbia	16,155	1,011	6.3%	N.R.
Florida	14,284	7,088	49.6%	9
Georgia	11,545	5,343	46.3%	13
Hawaii	1,767	937	53.0%	5
Idaho	---	---	---	---
Illinois	40,902	12,988	31.8%	34
Indiana	9,873	5,084	51.5%	6
Iowa	12,040	2,675	22.2%	39
Kansas	6,313	2,303	36.5%	27
Kentucky	8,416	3,904	46.4%	12
Louisiana	14,736	5,771	39.2%	23
Maine	1,948	337	17.3%	42
Maryland	13,939	3,278	23.5%	38
Massachusetts	20,584	6,178	30.0%	36
Michigan	22,698	9,984	44.0%	17
Minnesota	10,055	5,128	51.0%	7
Mississippi	3,918	2,117	54.0%	4
Missouri	26,557	5,672	21.4%	40
Montana	---	---	---	---
Nebraska	8,772	2,251	25.7%	37
Nevada	1,225	480	39.2%	22
New Hampshire	2,010	195	9.7%	45
New Jersey	10,382	3,633	35.0%	30
New Mexico	2,208	815	36.9%	26
New York	66,783	24,257	36.3%	28
North Carolina	14,106	5,469	38.8%	24
North Dakota	1,470	454	30.9%	35
Ohio	28,973	11,846	40.9%	20
Oklahoma	7,607	3,611	47.5%	11
Oregon	3,645	1,661	45.6%	15
Pennsylvania	46,895	15,871	33.8%	32
Rhode Island	2,015	273	13.5%	43
South Carolina	6,456	3,179	49.2%	10
South Dakota	1,335	537	40.2%	21
Tennessee	14,205	5,001	35.2%	29
Texas	36,401	21,494	59.0%	2
Utah	3,511	1,599	45.5%	16
Vermont	3,163	406	12.8%	44
Virginia	13,022	4,491	34.5%	31
Washington	5,627	2,567	45.6%	14
West Virginia	5,619	1,898	33.8%	33
Wisconsin	11,439	4,328	37.8%	25
Wyoming	---	---	---	---

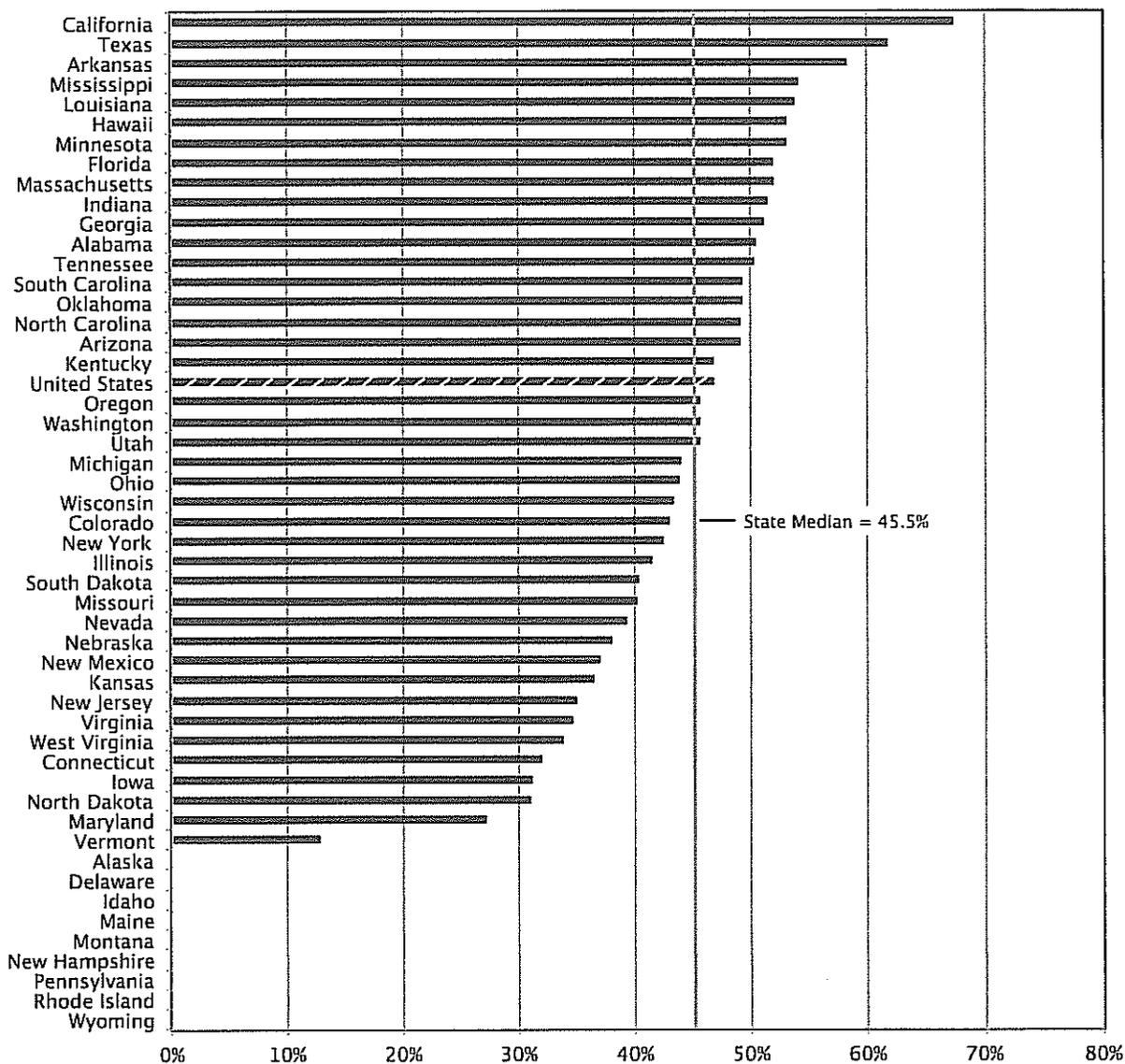
Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked

--- Indicates that the data are not applicable. Some states do not have a medical or osteopathic school.



Figure 18. Physicians Retained from Public Undergraduate Medical Education



Source: AMA Physician Masterfile (December 31, 2010).



Table 18. Physicians Retained from Public Undergraduate Medical Education

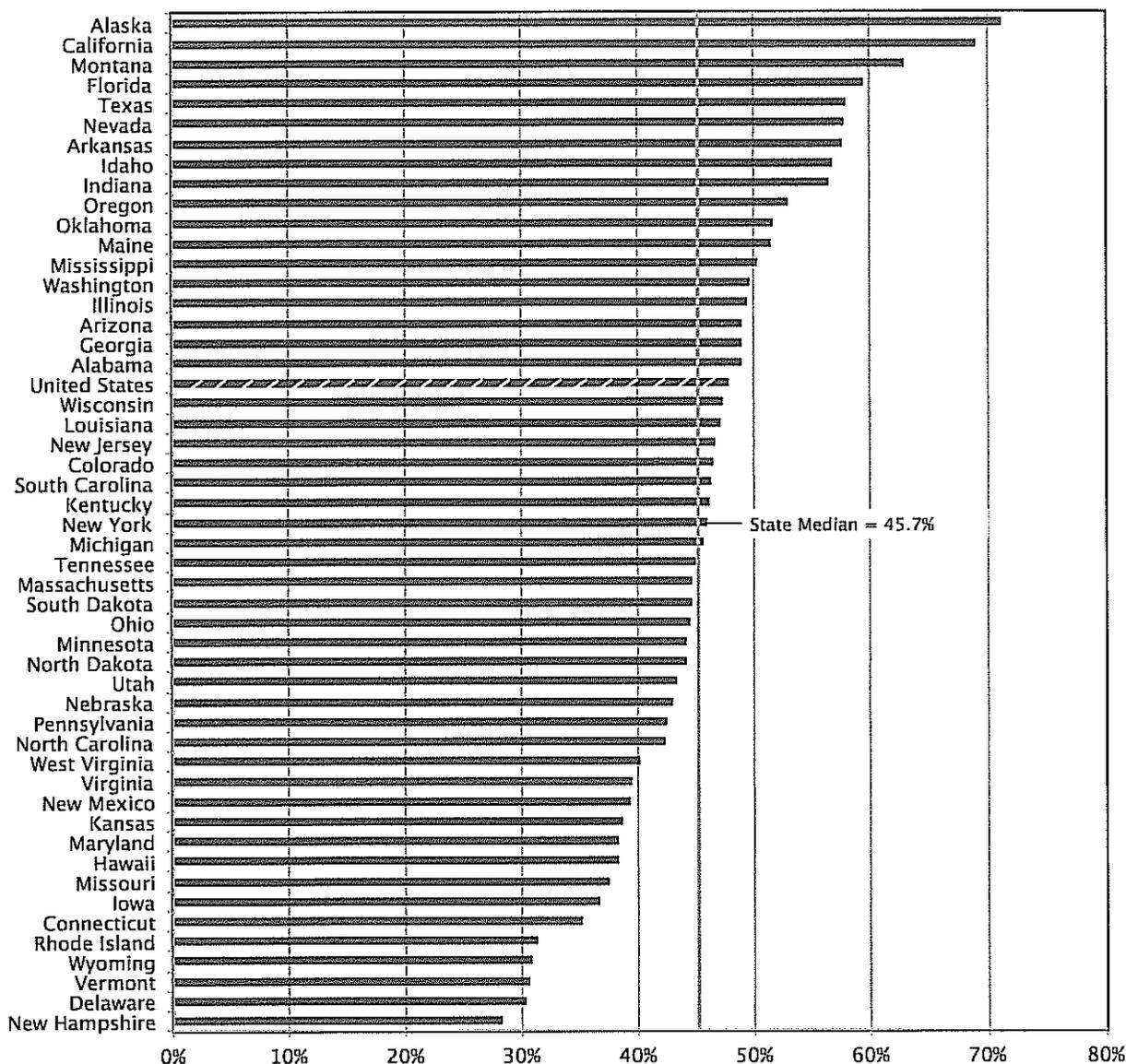
	Active Physicians Who Graduated from Public Medical or Osteopathic School In-State	Active Physicians Who Graduated from Public Medical or Osteopathic School In-State and Are Active In-State		
		Number	Percent	Rank
United States	327,717	153,255	46.8%	N.R.
Alabama	7,083	3,572	50.4%	12
Alaska	—	—	—	—
Arizona	2,810	1,378	49.0%	17
Arkansas	4,641	2,702	58.2%	3
California	21,067	14,211	67.5%	1
Colorado	4,600	1,974	42.9%	25
Connecticut	2,430	778	32.0%	37
Delaware	—	—	—	—
District of Columbia	—	—	—	N.R.
Florida	6,421	3,332	51.9%	8
Georgia	6,073	3,105	51.1%	11
Hawaii	1,767	937	53.0%	6
Idaho	—	—	—	—
Illinois	12,708	5,270	41.5%	27
Indiana	9,873	5,084	51.5%	10
Iowa	5,950	1,852	31.1%	38
Kansas	6,313	2,303	36.5%	33
Kentucky	8,088	3,784	46.8%	18
Louisiana	8,978	4,821	53.7%	5
Maine	—	—	—	—
Maryland	9,478	2,576	27.2%	40
Massachusetts	2,728	1,415	51.9%	9
Michigan	22,698	9,984	44.0%	22
Minnesota	8,909	4,723	53.0%	7
Mississippi	3,918	2,117	54.0%	4
Missouri	6,096	2,440	40.0%	29
Montana	—	—	—	—
Nebraska	4,697	1,785	38.0%	31
Nevada	1,224	480	39.2%	30
New Hampshire	—	—	—	—
New Jersey	10,382	3,633	35.0%	34
New Mexico	2,208	815	36.9%	32
New York	21,346	9,040	42.3%	26
North Carolina	6,657	3,272	49.2%	16
North Dakota	1,470	454	30.9%	39
Ohio	23,840	10,435	43.8%	23
Oklahoma	7,281	3,581	49.2%	15
Oregon	3,645	1,661	45.6%	19
Pennsylvania	—	—	—	—
Rhode Island	—	—	—	—
South Carolina	6,456	3,179	49.2%	14
South Dakota	1,335	537	40.2%	28
Tennessee	7,808	3,923	50.2%	13
Texas	30,668	18,913	61.7%	2
Utah	3,511	1,599	45.5%	21
Vermont	3,163	406	12.8%	41
Virginia	12,967	4,480	34.5%	35
Washington	5,618	2,560	45.6%	20
West Virginia	5,619	1,898	33.8%	36
Wisconsin	5,193	2,246	43.3%	24
Wyoming	—	—	—	—

Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked

— Indicates that the data are not applicable. Some states do not have a public medical or osteopathic school.

Figure 19. Physicians Retained from GME



Source: AMA Physician Masterfile (December 31, 2010)



Table 19. Physicians Retained from GME

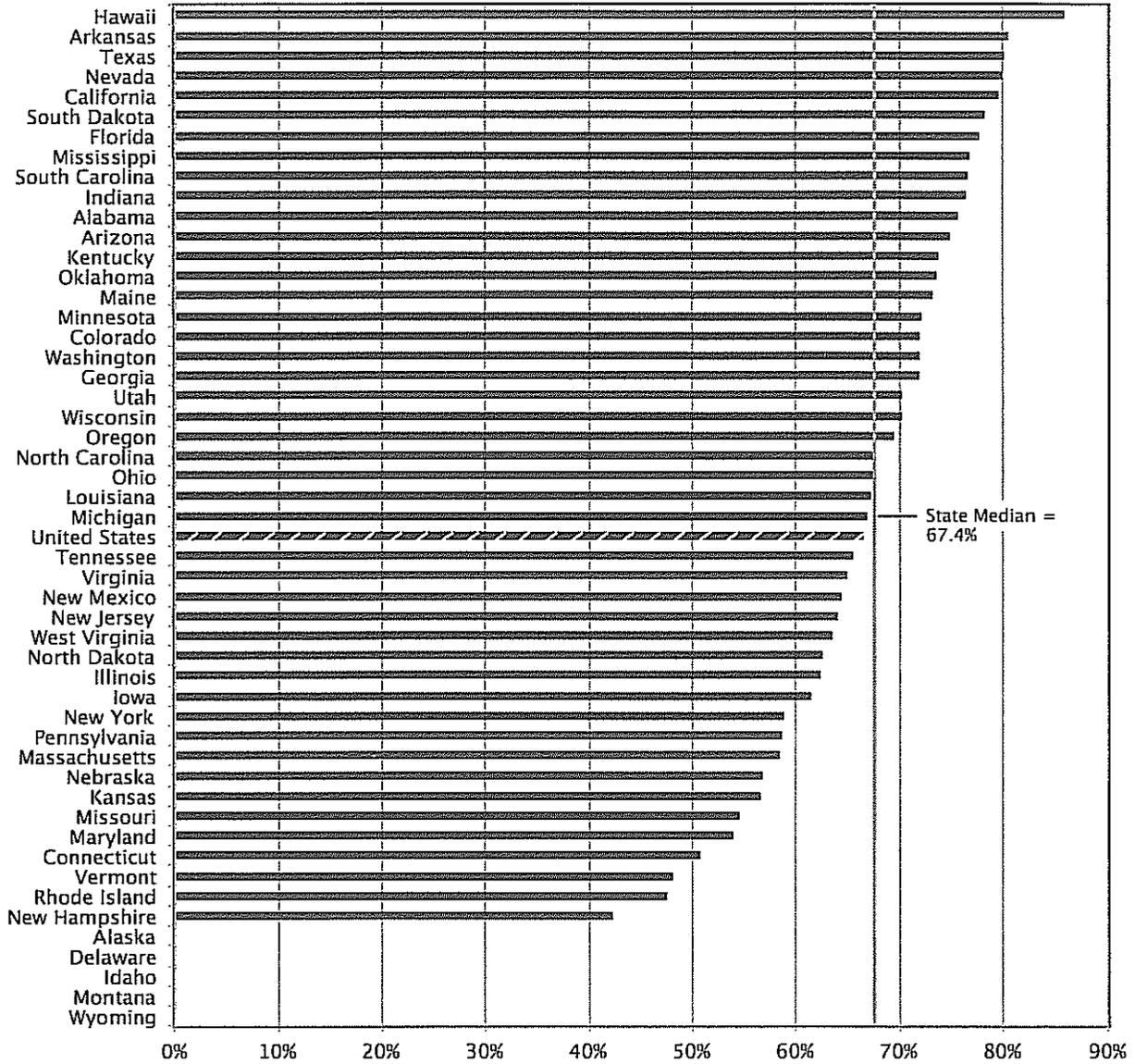
	Active Physicians Who Completed GME In-State	Active Physicians Who Completed GME In-State and are Active In-State		
		Number	Percent	Rank
United States	759,058	362,763	47.8%	N.R.
Alabama	7,978	3,898	48.9%	18
Alaska	94	67	71.3%	1
Arizona	7,568	3,708	49.0%	16
Arkansas	4,383	2,525	57.6%	7
California	76,259	52,685	69.1%	2
Colorado	9,519	4,421	46.4%	22
Connecticut	13,265	4,662	35.1%	45
Delaware	1,519	461	30.3%	49
District of Columbia	16,006	2,461	15.4%	N.R.
Florida	21,394	12,698	59.4%	4
Georgia	13,881	6,795	49.0%	17
Hawaii	2,998	1,149	38.3%	42
Idaho	317	180	56.8%	8
Illinois	41,480	20,505	49.4%	15
Indiana	9,722	5,489	56.5%	9
Iowa	6,476	2,371	36.6%	44
Kansas	5,643	2,178	38.6%	40
Kentucky	7,527	3,473	46.1%	24
Louisiana	12,422	5,855	47.1%	20
Maine	1,802	927	51.4%	12
Maryland	19,277	7,392	38.3%	41
Massachusetts	34,345	15,313	44.6%	28
Michigan	32,760	14,927	45.6%	26
Minnesota	17,516	7,735	44.2%	31
Mississippi	3,344	1,678	50.2%	13
Missouri	17,738	6,636	37.4%	43
Montana	81	51	63.0%	3
Nebraska	4,019	1,727	43.0%	34
Nevada	916	529	57.8%	6
New Hampshire	1,805	510	28.3%	50
New Jersey	18,132	8,462	46.7%	21
New Mexico	3,056	1,201	39.3%	39
New York	110,084	50,544	45.9%	25
North Carolina	17,663	7,454	42.2%	36
North Dakota	837	369	44.1%	32
Ohio	37,686	16,747	44.4%	30
Oklahoma	5,637	2,906	51.6%	11
Oregon	5,276	2,794	53.0%	10
Pennsylvania	50,430	21,437	42.5%	35
Rhode Island	4,229	1,323	31.3%	46
South Carolina	7,343	3,393	46.2%	23
South Dakota	709	316	44.6%	29
Tennessee	13,444	6,034	44.9%	27
Texas	44,704	25,863	57.9%	5
Utah	4,442	1,921	43.2%	33
Vermont	1,631	498	30.5%	48
Virginia	14,310	5,640	39.4%	38
Washington	11,200	5,549	49.5%	14
West Virginia	3,979	1,598	40.2%	37
Wisconsin	11,865	5,600	47.2%	19
Wyoming	347	107	30.8%	47

Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked



Figure 20. Physicians Retained from Undergraduate Medical Education (UME) and GME Combined



Source: AMA Physician Masterfile (December 31, 2010).



Table 20. Physicians Retained from Undergraduate Medical Education (UME) and GME Combined

	Active Physicians Who Graduated from Medical or Osteopathic School In State <i>and</i> Completed GME In State	Active Physicians Who Graduated from Medical or Osteopathic School In State, Completed GME In State, and are Active In State		
		Number	Percent	Rank
United States	232,309	154,614	66.6%	N.R.
Alabama	2,942	2,225	75.6%	11
Alaska	---	---	---	---
Arizona	1,222	916	75.0%	12
Arkansas	2,268	1,828	80.6%	2
California	23,989	19,084	79.6%	5
Colorado	1,658	1,192	71.9%	17
Connecticut	1,475	747	50.6%	42
Delaware	---	---	---	---
District of Columbia	3,573	691	19.3%	N.R.
Florida	4,991	3,883	77.8%	7
Georgia	4,179	3,002	71.8%	19
Hawaii	577	495	85.8%	1
Idaho	---	---	---	---
Illinois	15,134	9,447	62.4%	33
Indiana	4,721	3,610	76.5%	10
Iowa	2,352	1,445	61.4%	34
Kansas	2,342	1,325	56.6%	39
Kentucky	2,954	2,179	73.8%	13
Louisiana	6,001	4,031	67.2%	25
Maine	176	129	73.3%	15
Maryland	3,589	1,932	53.8%	41
Massachusetts	7,863	4,588	58.3%	37
Michigan	10,193	6,811	66.8%	26
Minnesota	5,127	3,692	72.0%	16
Mississippi	1,568	1,204	76.8%	8
Missouri	5,663	3,088	54.5%	40
Montana	---	---	---	---
Nebraska	2,238	1,269	56.7%	38
Nevada	180	144	80.0%	4
New Hampshire	163	69	42.3%	45
New Jersey	2,927	1,876	64.1%	30
New Mexico	596	384	64.4%	29
New York	33,451	19,639	58.7%	35
North Carolina	4,507	3,037	67.4%	23
North Dakota	310	194	62.6%	32
Ohio	12,535	8,439	67.3%	24
Oklahoma	2,698	1,986	73.6%	14
Oregon	1,066	740	69.4%	22
Pennsylvania	18,581	10,873	58.5%	36
Rhode Island	284	135	47.5%	44
South Carolina	2,389	1,829	76.6%	9
South Dakota	222	174	78.4%	6
Tennessee	4,741	3,105	65.5%	27
Texas	18,612	14,932	80.2%	3
Utah	926	650	70.2%	20
Vermont	333	160	48.0%	43
Virginia	3,731	2,422	64.9%	28
Washington	1,938	1,393	71.9%	18
West Virginia	1,725	1,095	63.5%	31
Wisconsin	3,599	2,525	70.2%	21
Wyoming	---	---	---	---

Source: AMA Physician Masterfile (December 31, 2010)

N.R. = Not Ranked

— Indicates that the data are not applicable. Some states do not have a medical or osteopathic school.

Recent Studies and Reports on Physician Shortages in the US

August 2011

Center for Workforce Studies
Association of American Medical Colleges

Contents

STATE REPORTS.....	3
Alaska (2006) - “Competition for Physicians will Intensify”	3
Arizona (2005) – “Still Far Below the National Average”	3
California (2009) – “Likely to Face Physician Shortage in 2015”	3
California (2008) – “Minorities Underrepresented in California Physician Workforce”	4
Colorado (2007) – “Serious Implications for Access to Primary Health Care”	4
Florida (2008) – “Impending Physician Shortage in the State”	4
Georgia (2008) – “Georgia’s Drought of Physicians Will Become a Crisis”	4
Hawaii (2011) - “Hawaii’s Utilization of Physician Services will be Rising Significantly”	5
Idaho (2007) - “Need for more Physicians in Idaho”	5
Illinois (2010) - “One-half of Graduating Illinois Residents and Fellows are Leaving”	5
Indiana (2007) – “Projections Indicate that Shortages Will Continue to Worsen”	6
Iowa (2007) – “Aging Population will Alter Demand for Physician Services”	6
Kentucky (2007) – “Demand for Physicians Expected to Increase”	6
Maryland (2008) - “Critical Statewide Physician Shortages in Maryland”	6
Massachusetts (2010) – “Physician Labor Market Continues to be Under Extreme Stress”	7
Michigan (2006) – “Growth in Demand Will Outpace Growth in Supply”	7
Minnesota (2008) – “Physician Supply in Minnesota is Diminishing”	7
Mississippi (2003) – “Extant Physician Shortage will Become More Severe”	7
Missouri (2009) – “Recruitment and Retention of Health Care Providers Very Difficult”	7
Montana (2009) – “We are not Prepared for the Health Workforce Shortage”	7
Nebraska (2008) – “Over 1/3 of all Physicians in Nebraska are Older than 50 Years”	8
Nevada (2009) – “Nevada Currently Ranks 48th in the Number of Physicians per Capita”	8
New Jersey (2009) – “Facing Significant Future Shortages”	8
New Mexico (2006) – “Long History of Being a Physician Shortage State”	8
New York (2007) – “Upstate New York Reported Most Difficulty Recruiting”	9
North Carolina (2007) – “State Likely to Face a Severe Shortage Over Next 20 Years”	9
Oregon (2004) – “Looming Shortage of Physicians”	9
Pennsylvania (2008) – “Pennsylvania’s Physician Numbers Have Not Been Growing”	9
Texas (2008) – “Physician to Population Ratios Increasingly Unfavorable”	9
Utah (2006) – “Shortages Exist in many Specialties”	10
Vermont (2010) - “Overall Supply of Primary Care Practitioners is Below Adequate Levels”	10
Virginia (2007) - “Virginia Must Begin Acting Now to Increase Physician Workforce”	10
Wisconsin (2008) – “Who Will Care for Our Patients?”	10
Wyoming (2008) – “Major Primary Care Provider Shortages”	10
 SPECIALTY SPECIFIC STUDIES.....	 11
Allergy and Immunology (2006) – “Shortage within Next Ten Years”	11
Anesthesia (2003) – “Current Shortfall of Anesthesiologists”	11
Cardiology (2009) – “Currently a Substantial Shortage of Cardiologists”	11
Child Psychiatry (2006) – “Evident Shortage Will Continue Well into the Future”	12
Critical Care Workforce (2006) – “Growing Supply of Intensivists will be Insufficient”	12
Dermatology (2008) – “Stable Undersupply of Dermatologic Services”	12
Emergency Medicine (2009) – “Emergency Care System Remains in Serious Condition”	12
Endocrinology (2003) – “Demand Will Exceed Supply from Now until 2020”	12

Family Physicians (2006)–“Declining Medical Student Selection of Family Medicine”	13
Gastroenterology (2009) – “A Shortfall of Gastroenterologists Projected by 2020”	13
General Surgery (2007) – “General Surgeon to Population Ratios Declined Steadily”	13
Geriatric Medicine (2009) – “The Healthcare Workforce Receives little Geriatric Training”	13
Medical Genetics (2004) – “Situation is Critical”	13
Neurosurgery (2005) – “Severe Decline in Number of Active Neurosurgeons”	14
Neurology (2010) – “Shortage of Neurologists Likely to Continue”	14
Oncology (2007) – “Oncology Moving to a State of Acute Shortages in 2020”	14
Pediatric Subspecialties (2007) - “Pediatric Subspecialty Care is in a Crisis”	14
Primary Care (2006) – “Primary Care on the Verge of Collapse”	14
Psychiatry (2003) – “Unclear Rate of Growth will Keep Up with Demand”	15
Public Health (2008) – “Public Health Workforce Shortages Imperil Nation’s Health”	15
Rheumatology (2007) – “Shortage Exists Now and is Likely to Worsen”	15
Thoracic Surgery (2009) – “Projections of a Shortfall”	15
NATIONAL REPORTS	15
“Physicians and Their Practices Under Health Care Reform” - The Physicians Foundation, Inc. (2009)	15
“The Complexities of Physician Supply and Demand: Projections Through 2025” – Association of American Medical Colleges (2008)	16
“Out of Order out of Time” - Association of Academic Health Centers (2008)	16
“Growth and Aging of the U.S. Population will Cause a Surge in Demand” – The Federal Department of Health and Human Services (DHHS) (2006).....	16
“U.S. Likely to Face a Shortage in 2020” – U.S. Council on Graduate Medical Education (COGME) Report (2005)	16
“America is Running out of Physicians” – Merritt, Hawkins & Associates (2004).....	17
References	18

Recent Studies and Reports on Physician Shortages in the U.S.

Over the past several years, a growing number of national, state and specialty specific studies have concluded that the US physician workforce is facing current or future shortages. This report presents a summary of these recent studies. The report is divided into three sections: 1) a summary of 33 state reports on physician shortages; 2) a summary of 22 specialty shortage reports; and 3) a summary of 6 national studies on the physician workforce.

STATE REPORTS

Since 2002, at least 33 states have assessed their current or future physician workforce needs. In general, the underserved and elderly populations are most likely to be affected. Additionally, many of the state reports point out shortages in specialties that are featured in the specialty report section, including allergy and immunology, cardiology, child psychiatry, dermatology, endocrinology, neurosurgery, primary care, and psychiatry.

Alaska (2006) - “Competition for Physicians will Intensify”

According to a report by the Alaska Physician Supply Task Force, Alaska has a severe shortage of physicians and is far behind other states in production capacity. Up to 16% of rural physician positions in Alaska were vacant in 2004. There are currently 205 physicians (MDs and DOs) providing patient care per 100,000 residents compared to the national average of 238 for the same population. According to the Task Force projections, Alaska needs a net gain of 59 new physicians a year to offset the annual loss of 40 per year due to retirement or migration out of the state. Some strategies for securing an adequate physician supply for Alaska’s needs include increasing the number of state-subsidized medical school seats, increasing the number of residency positions in Alaska, and expanding loan repayment assistance programs for physicians practicing in Alaska.¹

Arizona (2005) – “Still Far Below the National Average”

The 2005 Arizona Physician Workforce Study, prepared by the Arizona State University and University of Arizona Health Sciences Center, concludes that while the growth in the physician workforce over the past decade outpaced the increase in population, a number of specialties have decreased in numbers, including allergists, cardiovascular surgeons, endocrinologists, gastroenterologists, hematologists, and infectious disease specialists. Arizona’s high projected population growth combined with the limited number of in-state medical education and training opportunities will make Arizona increasingly reliant on recruiting physicians from other states at a time of projected national shortages.²

California (2009) – “Likely to Face Physician Shortage in 2015”

The California HealthCare Foundation, in a 2009 report, states that the overall supply of physicians in the state is lower than earlier estimates. Rural counties have fewer physicians per capita than their urban counterparts and also face the additional burden of an aging physician workforce coupled with difficulty recruiting younger replacements. Moreover, the state has a diminishing supply of primary care physicians but an abundance of specialists. For example, only 34% of active physician reported practicing primary care and only 16 of California’s 58 counties are within the range of 60-80 primary care physicians per 100,000 population and in 8 counties the number is less than half the recommended amount. Of all active physicians in the state 67% reported being non-primary care physicians and the number of specialists per 100,000 is 115 in California, well above the target range of 85-105.

The University of California Office of Health Affairs and University of California Health Sciences Committee commissioned a report on California's physician workforce conducted by the University of Albany's Center for Health Workforce Studies. The population of California is growing rapidly which will place great strains on the healthcare delivery system and the physician workforce. More than one-fourth of the state's practicing physicians were over age 55 in 2000. In addition, the state has a maldistribution of physicians with 60% of the current physicians practicing in only five counties.³ In partial response to this report, in 2006, the California Board of Regents approved the establishment of a new medical school at the University of California at Riverside.⁴

California (2008) – “Minorities Underrepresented in California Physician Workforce”

A report by the Center for California Health Workforce Studies at the University of California, San Francisco shows that both black and Latino physicians are underrepresented in the workforce. In California, 40% of the population is black or Latino but less than 10% of the physicians in the state are. The state has a population of 35 million people and only 2,000 black physicians and 3,000 Latino physicians are currently practicing. This lack of diversity hurts access to care in underserved areas since minority physicians play a crucial role in serving these areas with 40% of ethnic physicians working in primary care.⁵

Colorado (2007) – “Serious Implications for Access to Primary Health Care”

The Colorado Health Institute with funding from the Colorado Trust released a report detailing the aging physician workforce in Colorado as the main impetus for the shortage of physicians in the state. 35% of physicians who responded to a 2005 survey were 55 years of age or older just as the elderly population in Colorado is expected to increase by 50% by 2020; a segment of the population that generally uses more health care services. Additionally, maldistribution continues to be a problem in Colorado with only 11% of physicians practicing in rural areas and 15% of the population living there.⁶

Florida (2008) – “Impending Physician Shortage in the State”

In 2007 the Florida legislature directed the Florida Department of Health to undertake a comprehensive evaluation of Florida's physician workforce and its impact on accessing quality care in the state. One of the report's recommendations for offsetting the physician shortage is to pursue a policy of creating and expanding medical residency positions in Florida. They also note that the physician workforce in Florida is predominantly white (66.57%) and male (77%) which is not representative of the population. An earlier 2005 report by the Board of Governors of the State University System of Florida, notes, “though data sources are conflicting on the exact number of physicians that will be needed, all agree demand outstrips production.” A quarter of Florida's practicing physicians are over 65 and only 10% are under 35. Florida's population is projected to increase 60% by 2030 and the aged population is projected to grow by 124% in the same span which will dramatically increase demand for physician services.^[i] In 2006, the Florida Board of Governors approved the establishment of two new medical schools, University of Central Florida (UCF) and the Florida International University (FIU). Both schools opened for their inaugural classes in the fall of 2009 with 41 and 43 students respectively.^{7 8}

Georgia (2008) – “Georgia's Drought of Physicians Will Become a Crisis”

Georgia has fallen far behind in training physicians and is now scrambling to make up for the deficit said a study commissioned by the Medical College of Georgia. Without immediate statewide cooperation in expanding medical education and residency programs, the state may never again have an adequate supply of physicians. For too long Georgia has relied on out of state and international physicians to make up for the lack of Georgia trained doctors. Without changes in the state's medical

education system, Georgia will rank last in the United States in physicians per capita by 2020. The study suggests increasing Medical College of Georgia's class size from 190 currently to 240 by 2017 making it one of the largest classes in the country. Furthermore, the Medical College of Georgia is advised to open a new campus in Athens in association with the University of Georgia and develop regional campuses for 3rd and 4th year students across the state.⁹ An earlier study, conducted in 2006, showed that only 50% of the graduates with confirmed practice plans are remaining in the state, down from 56% in 2002.¹⁰

Hawaii (2011) - "Hawaii's Utilization of Physician Services will be Rising Significantly"

A report prepared by the John A. Burns School of Medicine indicates that the state of Hawaii is facing a shortage of over 600 physicians, a number equivalent to about 20% of the total state physician workforce. With a growing and aging population, the demand for healthcare services will also grow. The 65 and over population in Hawaii is expected to double between 2000 and 2030, the populace that uses physician services the most. Additionally, 41% of Hawaii's physicians are 55 or older compared with 29% for the US average. The combined effects of general population growth and the aging of both the population and the physician workforce will push the shortfall to a projected 1,600 physicians by 2020. An earlier, 2005, health workforce assessment of Hawaii's physicians published in the Californian Journal of Health Promotion outlined the complex issues of maldistribution of physicians in Hawaii. The Islands of Maui, Kauai, Lanai, Molokai, and Hawaii are federally designated shortage areas making health care difficult to obtain. However, the state as a whole maintains a higher than average physician to population ratio with 19 more physicians and 15 more primary care physicians than the national average. These statistics mask the fact that the rural areas are suffering from a small workforce as the physician to population ratio does not take location and distribution into account at a sub-state level.^{11,12}

Idaho (2007) - "Need for more Physicians in Idaho"

In order for Idahoans to have access to physician services the State needs to provide reasonable student access to medical education says a study requested by the Idaho Board of Education. Idaho ranks 49th among the 50 states (50th if the District of Columbia is considered) on the total number of physicians in the state with 198 per 100,000 population which is 66 percent of the national average. The physician shortage is likely to become more acute due to an aging workforce. Using data from the American Medical Association, it was determined that 40 percent of Idaho's physicians are age 55 or older and that 21 percent are 65 or older. This shows Idaho has the 6th oldest physician workforce in the country. To complicate the shortage further, the reports suggest that the population of Idaho is expected to increase and was ranked 8th in growth rate between 1970 and 2000. To resolve the physician shortage, Idaho is looking for ways to expand medical education in the state. Without a medical school in Idaho, the state relies on and subsidizes 18 WWAMI seats and 8 Utah seats. With only 1.82 first-year medical school seats per 100,000 population, Idaho ranks 48th in the nation and the state is looking for new ways to open doors to medical education for Idaho students.¹³

Illinois (2010) - "One-half of Graduating Illinois Residents and Fellows are Leaving"

A 2010 Illinois Physician Workforce report by Northwestern University's Fienberg School of Medicine, the Illinois Hospital Association, and Illinois State Medical Society describes Illinois as "in danger of being unable to meet even the most pressing healthcare needs." The report describes the many causes of the Illinois physician shortage with one reason being that one-half of residents and fellows who graduate end up leaving the state to practice. The reason for the low retention rate is that Illinois has a reputation for not being physician friendly due to its medical liability procedures and high malpractice insurance

rates. Aside from the flight of Illinois graduates, the rural areas of the state are suffering from a lack of physicians and only 1.5% of residents indicated that they planned to practice in a rural setting. In 2010, the Illinois assembly passed legislation to create an Illinois Workforce Institute to collect, analyze, and distribution information of the state's physician workforce.¹⁴

Indiana (2007) – “Projections Indicate that Shortages Will Continue to Worsen”

In a brief written by the University Of Indiana School Of Medicine's Department of Family Medicine severe shortages of several health professions, especially primary care physicians, have been documented. Currently the state is lacking at least 5,000 physicians, out of which 1,000 need to be primary care physicians, to appropriately care for the population. This number will grow by 2020 to 2,000 additional primary care physicians. Furthermore, a mere 19% of urban counties and only 2% of rural counties in Indiana are at the target for population to physician ratios when considering the number of primary care physicians. These already severe shortages are going to become even more prevalent when considering that the number of Indiana residents over age 65 will double between 2000 and 2030, the segment of the population that uses health care services the most.¹⁵

Iowa (2007) – “Aging Population will Alter Demand for Physician Services”

After reviewing physician supply and demand data, a task force established by University of Iowa Health Care leaders developed a set of recommendations for improving the physician supply that focused on modest increases in physician education and training capacity as well as a detailed set of recruitment and retention strategies. The five specialties perceived to be in greatest need were psychiatry, neurosurgery, general internal medicine, orthopedic surgery, and cardiology.¹⁶

Kentucky (2007) – “Demand for Physicians Expected to Increase”

For decades Kentucky has been plagued by a shortage of physicians, especially in rural areas says a report by the Kentucky Institute of Medicine. Almost half of Kentucky's counties-55 out of 120, and most of them rural-are officially designated Health Professional Shortage areas (HPSA) for primary care. Aside from the overall shortage of physicians, 400 of all the family physicians in Kentucky, are age 60 or above and are nearing retirement. Kentucky's physicians are not well distributed which is evidenced by the fact that, “more than 43% of the State's 4.2 million residents live in rural areas, but only 28% of its physicians do.” Furthermore, high rates of chronic diseases at far greater rates than the national average might necessitate additional physicians beyond those already needed, to serve the State. To address the projected shortage the report recommends increasing the applicant pool, increasing medical school class size, and developing regional clinical medical school campuses, among other strategies.¹⁷ A study conducted in 2005 confirmed many of the same findings in the 2007 study.¹⁸

Maryland (2008) - “Critical Statewide Physician Shortages in Maryland”

A study commissioned by the Maryland Hospital Association, with the support of MedChi, the Maryland State Medical Society, found that overall Maryland is 16% below the national average for the number of physicians available for clinical practice. The shortage of physicians has most affected Southern Maryland, Western Maryland, and the Eastern Shore and all three regions fall significantly below national levels in active practicing physicians. One of the reasons for these shortages is an aging workforce with 33.4 percent of physicians over age 55. Some changes that could curtail the imminent crisis are: initiate a state loan forgiveness program that draws physicians to regions in need, increase the number of residency slots, and offer incentives to encourage physicians to practice in the state's rural areas.¹⁹

Massachusetts (2010) – “Physician Labor Market Continues to be Under Extreme Stress”

For nine years in a row, the Massachusetts Medical Society has conducted a physician workforce study and each successive report points to a strained health care market. This most recent report has identified 10 physician specialties that meet the classification for critical or severe conditions in the labor market up from 7 in 2009. The specialties where shortages have been noted are: dermatology, emergency medicine, family medicine, general surgery, internal medicine, orthopaedics, psychiatry, neurology, urology, and vascular surgery. Both family medicine and internal medicine are characterized as critical while the rest are deemed severe. The demand for services in these specialties has surpassed the supply in the state. As new health care initiatives go into effect, this could further strain the state’s ability to meet demand for services.²⁰

Michigan (2006) – “Growth in Demand Will Outpace Growth in Supply”

A study by the Center for Health Workforce Studies at the University of Albany, State University of New York concluded that between 2005 and 2020, growth in the demand for physicians in Michigan will likely outpace growth in the supply of physicians. Michigan is likely to face a physician shortage by 2020. The severity of this shortage is expected to be about 4,400 physicians, or about 12% of the number of physicians required to meet the forecasted demand for medical services in 2020.²¹

Minnesota (2008) – “Physician Supply in Minnesota is Diminishing”

According to a study by the Minnesota Hospital Association Board of Directors, Minnesota’s physician workforce is waning. Nearly half (45%) of Minnesota’s physicians are over the age of 50 and the 65 and older population is projected to increase by 58% by 2020. Only 5% of all Minnesota physicians practice in rural areas, while 13% of Minnesotans live there. Rural areas also suffer from having too few specialists as physician distribution is becoming a bigger problem in the southern and northern rural areas. Physician recruitment and retention strategies must be developed for and by Minnesota hospitals to ensure the state’s ability to provide quality health care.²²

Mississippi (2003) – “Extant Physician Shortage will Become More Severe”

Even before hurricane Katrina devastated the gulf coast region, Mississippi was facing a shortage of physicians. Findings presented in a 2003 white paper by the Health Policy Research Center at Mississippi State University indicate an “extant physician shortage will become more severe.” Over half (56%) of the states physicians practice in four counties and 2 out of 3 counties are officially designated health professional shortage areas (HPSAs) with high levels of chronic illness and poverty. A survey of practicing physicians indicates that many are considering relocation or early retirement which will likely exacerbate the current shortages.²³

Missouri (2009) – “Recruitment and Retention of Health Care Providers Very Difficult”

A 2009 study by the Health Management Associates, Inc. and funded by the Missouri Foundation for Health and the Healthcare Foundation of Greater Kansas City, suggests that Missouri has a shortage of healthcare professionals based on the ratio of the population to the availability of healthcare services. Missouri is experiencing the most acute shortage of physicians in rural areas shown by the fact that 40% of the population resides in rural areas but only 25% of the state’s physicians practice there. The access to healthcare in rural areas is compounded by the fact that the rural population is generally older, requiring more services and includes a rapidly growing Hispanic population which raises cultural and language challenges.²⁴

Montana (2009) – “We are not Prepared for the Health Workforce Shortage”

In a report put out by the Montana Office of Rural Health (MORH) a serious shortage of primary care physician services is cited in Montana. The distribution of physicians in Montana is extremely uneven

with 37% of all primary care physicians practicing in only three cities and 40 of Montana's 56 counties are designated HPSAs. Furthermore, there are 9 counties without any physicians, 12 counties with no primary care physicians, and 7 counties without any hospitals. For Montanans living in rural areas, access to primary care is much more limited than that of their counterparts in Montana's urban centers. Exacerbating the shortage of healthcare services is the fact that there is no medical school in Montana and only 20 students a year are able to receive a publicly sponsored medical education through the WWAMI program at the University of Washington.²⁵

Nebraska (2008) – “Over 1/3 of all Physicians in Nebraska are Older than 50 Years”

In a recent study by the Nebraska Center for Rural Health Research it was reported that only 9 of Nebraska's 93 counties have a physician-to-population ratio above the 2004 national average ratio of 214.09 physicians per 100,000 population. It is expected that in the next 10 to 15 years over a third of all Nebraska's physicians will retire. Furthermore, Nebraska has not developed an all-inclusive plan to predict the need for health care services or stayed in touch with innovations in training programs to meet future needs for professionals who practice effectively in health care teams. A task force has been established to look at the health workforce issues that are currently facing Nebraska.²⁶

Nevada (2009) – “Nevada Currently Ranks 48th in the Number of Physicians per Capita”

A 2009 report by The Center for Education and Health Services Outreach (CEHSO) at the University of Nevada School of Medicine describes the changing face of the physician workforce in Nevada. The makeup of practicing physicians in Nevada is characterized by growth in the proportion of female physicians and by growing percentages of older physicians nearing retirement. Furthermore, only 5 out of 39 specialties have practicing physicians at a per capita level higher than other states in the region and only 2 higher than the national average leaving Nevada experiencing shortages for most medical and surgical specialties. Also troubling is the fact that Nevada only has 218 physicians per 100,000 of the population while the national average is 307. A 2006 report by LarsonAllen, a Minnesota consulting firm charged with reviewing Nevada medical education capacity and need, recommends that the state develop a health sciences center in order to dramatically increase medical school and graduate medical education training opportunities. With one of the lowest physician to population ratios and one of the highest population growth rates in the nation, the existing medical education system cannot keep up with the need.²⁷

New Jersey (2009) – “Facing Significant Future Shortages”

A report by the New Jersey Council of Teaching Hospitals projects New Jersey will experience a significant shortage of physicians in both primary care and several specialties. In 2020 the state will be lacking over 2,800 physicians, approximately 1,000 in primary care and 1,800 specialists, beyond the existing GME pipeline. This data represents a 12% gap between physician supply and the demand for physician services. The council recommends expanding retention and recruitment initiatives and consistently monitoring the supply and demand for physicians in New Jersey.²⁸

New Mexico (2006) – “Long History of Being a Physician Shortage State”

New Mexico's population is both growing and aging and as the population ages, the health needs, expectations and wealth of baby boomers may motivate and enable them to use more health care services. Only Los Alamos County, with a rate of 2.41 physicians per 1,000 population, came close to the national average of 2.42, and all other counties were far below. The distribution of physicians is still a major concern with more than half of New Mexico's physicians located in Bernalillo County. Furthermore, New Mexico relies on other states to provide physician supply with three quarters of

physicians being trained out of state. In order for New Mexico to have sufficient supply of physicians in the future, ongoing monitoring of the status of the physician workforce is essential.²⁹

New York (2007) – “Upstate New York Reported Most Difficulty Recruiting”

A report by the Center for Health Workforce Studies noted that hospitals in upstate New York were experiencing difficulties in recruiting and retaining pharmacists, physical therapists, medical laboratory technicians as well as experienced RNs and PAs. A general regional shortage of health workers as well as low salaries, were cited as the main reasons for the recruiting problems. Around 50% of hospitals in the region reported problems hiring part-time workers and 36% reported difficulty finding bilingual, Spanish-speaking workers.³⁰

North Carolina (2007) – “State Likely to Face a Severe Shortage Over Next 20 Years”

A Task Force convened by the North Carolina Institute of Medicine concluded that without major changes in the health care delivery system or significant increases in the number of physicians, the state is likely to face a severe shortage of physicians. The projected shortages are not limited to physicians and will also include nurse practitioners, physician assistants and certified nurse midwives. The projected gap is mainly due to population growth, aging of the population and providers, and the increasing prevalence of chronic diseases.³¹

Oregon (2004) – “Looming Shortage of Physicians”

Oregon Health & Science University’s Center for Rural Health has been collecting workforce data since the mid-70’s; 2004 data suggests a “looming shortage of physicians.” Population growth in Oregon exceeds growth in the number of physicians; nearly half of the state’s practicing physicians are over 50 and approaching retirement age. This comes at a time when the state is already experiencing shortages in rural areas and in several specialties, including rheumatology, nephrology, gastroenterology, cardiology, allergy-immunology and pediatrics.³²

Pennsylvania (2008) – “Pennsylvania’s Physician Numbers Have Not Been Growing”

A report by the Pennsylvania Medical Society presents a number of trends that raise concerns regarding the future supply of physicians. The report points out that the physician workforce in Pennsylvania is old, with 50% of their physicians over the age of 50 and less than 8% of their physicians are under the age of 35. With increasing demand for health services outpacing supply, physicians are needed to work more hours and this negative trend could make retention and recruitment more problematic. Another problem is the residency retention rate which dropped from 60% in 1992 to only 22% in 2006. Specialty specific physicians have been on the decline since 1997 especially in the areas of family medicine, internal medicine, obstetrics and gynecology, cardiology, pathology, orthopedic surgery, general surgery, and neurosurgery.³³

Texas (2008) – “Physician to Population Ratios Increasingly Unfavorable”

The Texas Higher Education Coordinating Board released a report in 2002 stating that, “if the number of physicians does not increase, the [physician to population] ratios will become increasingly unfavorable.” An update of the 2002 report released in 2008 highlights some of the efforts that Texas is implementing to alleviate a shortage of physicians. While the number of Texas medical school applicants has increased by 40% since 2002 and 4 schools have added more than 20 new slots, problems such as an aging population and maldistribution of physicians continue to plague the state. In addition, underserved populations and the under-representation of Hispanics and African-Americans in the workforce are critical issues for the state.³⁴ The Texas Tech University Health Sciences Center’s El Paso Paul

L. Foster School of Medicine is the first new Texas medical school in 30 years becoming a fully operational four-year medical school in 2009 with a class of 40 students.³⁵

Utah (2006) – “Shortages Exist in many Specialties”

In 2003, the Utah Medical Education Council sent a survey to all practicing physicians licensed in the state to better understand the existing workforce and to forecast future supply and demand. There are current shortages in pediatric neurology, child psychiatry, adult psychiatry, obstetrics & gynecology, general surgery, dermatology, urology, and cardiology. The state will need to recruit up to 270 physicians a year in order to keep up with growth in demand due to the growth and aging of the population and to replace loss of FTEs due to retirements. Given the nationwide shortages, it will be a challenge to even maintain current recruitment levels.³⁶

Vermont (2010) - “Overall Supply of Primary Care Practitioners is Below Adequate Levels”

The Vermont Area Health Education Centers (AHEC) Network released a report detailing the primary care workforce in the state and found that the number of primary care physicians falls short of the number needed to care for all Vermont residents and is prevalent in all counties. In addition the report states that 34% of all primary care physicians are either not accepting or limiting their acceptance of new patients increasing from 31% in 2008. Shortages in primary care in Vermont are due to the aging of both the population and the physician workforce, the accompanying increases in chronic illnesses brought on by an elderly population, and the smaller supply of new primary care physicians affecting the nation as a whole. To remedy the shortfall of primary care physicians in the state there have been focused efforts, by AHEC and other collaborators, on pipeline development, recruitment, retention, and continuing education of the primary care workforce.³⁷

Virginia (2007) - “Virginia Must Begin Acting Now to Increase Physician Workforce”

In the Report of the Governor’s Health Reform Commission it is estimated that by 2020 there will be a shortage of approximately 1,500 physicians in Virginia. Physician retention is the primary issue in the supply of Virginia’s doctors with only 28% of active physicians in the state who completed a residency or fellowship there. It is also estimated that by 2020 the state will need of 22,600 full-time RNs. By 2030 25% of the state’s population will be over the age of 60 meaning more people will be making more frequent doctor’s visits. If the state could work to increase its current retention rate (36%) as well as increasing medical school class size, there is a greater chance of stemming this shortage. The Report also recommends increasing funds for scholarship and loan repayment programs.³⁸

Wisconsin (2008) – “Who Will Care for Our Patients?”

A 2008 report updating an earlier 2004 report from the Task Force on Wisconsin’s Future Physician Workforce, entitled “Who Will Care for Our Patients? Wisconsin Takes Action to Fight a Growing Physician Shortage” concluded that Wisconsin has current unmet needs for physician services that are likely to worsen in the foreseeable future. Shortages are most severe in rural and inner-city areas of the state. Areas of Milwaukee and other Health Professional Shortage Areas are in dire need of primary care physicians specifically.

Wyoming (2008) – “Major Primary Care Provider Shortages”

The University of Washington’s Center for Health Workforce Studies completed a study of the primary care workforce in Wyoming a rural frontier state, and found a definite shortage of physicians in Wyoming. The report notes that more than two-thirds of Wyoming’s counties (15 out of 23) have fewer primary care providers than the national average and 20 out of 23 Wyoming counties (87%) have fewer

than the national average of primary care physicians per 100,000 population. In three rural counties, over a third of all physicians indicated they would retire in the next 5 years (by 2012) and about 15% of primary care physicians statewide plan to retire by the same date. Wyoming has trouble importing physicians since no medical school or physician assistant education programs exist in Wyoming.³⁹

SPECIALTY SPECIFIC STUDIES

Recent workforce studies indicate that we face current and future shortages in a wide array of specialties. In addition to potential shortages in primary care specialties, as the population ages, the demand for specialists that provide care for patients over 65 will increase significantly. As indicated by a number of the studies below, the aging of the population is expected to contribute to shortages in many of these specialties.

Allergy and Immunology (2006) – “Shortage within Next Ten Years”

A June 2000 report prepared for the American Academy of Allergy, Asthma, and Immunology by SUNY Albany’s Center for Health Workforce Studies concludes, “there will be a shortage of allergist/immunologists within the next ten years.” Demand is rising and the supply of new physicians will not be able to keep pace with the current retirement rate of practicing allergists and immunologists and unable to meet the projected increase in demand.⁴⁰ A follow-up report in June of 2006 also by the Center for Health Workforce Studies notes “The prevalence of asthma and allergy-related disorders in American continues to increase. Allergies affect as many as 40 to 50 million people in the United States, more than 20 percent of the nation’s population.” Despite this large demand for services, a relatively small number of physicians specialize in Allergy and Immunology. In fact, between 1990 and 1998 the number of physicians training in Allergy and Immunology fellowships declined 34%. The rising demand for services coupled with the low rates of new physicians entering into the specialty are some reasons cited for the projected shortfall.⁴¹

Anesthesia (2003) – “Current Shortfall of Anesthesiologists”

A 2003 assessment of the supply of and demand for anesthesiologists found a current shortage. There was not enough data to determine with confidence how demand for anesthesiologists would change in the coming years. If demand increases above 1.5%, the authors project a continued shortage through 2015.⁴²

Cardiology (2009) – “Currently a Substantial Shortage of Cardiologists”

In 2009, the Lewin Group conducted an assessment of the supply and demand for cardiologists for the American College of Cardiology (ACC) and the American College of Cardiology Foundation. The study concluded that there is currently a substantial shortage of cardiologists and that this shortage will increase over the next 20 years. The key drivers of the shortage are a higher demand for cardiology services, as the general population ages, coupled with the fact that 43% of general cardiologists are currently over the age of 55 and will likely retire in the next 20 years. The shortage of general cardiologists is projected to increase from about 1,700 in 2008 to about 16,000 in 2025. An earlier, 2004, study by The American College of Cardiology (ACC) Task Force on Workforce concluded that the U.S. is facing a “serious shortage of cardiologists.” Additionally, report from their 35th Bethesda Conference, endorsed by the American Heart Association and a host of other cardiology-related societies, predicts that, by 2020, there will be a 20% decrease in the age-adjusted supply of cardiologists at the same time we will see a substantial increase in the incidence and prevalence of cardiovascular disease due to the aging of population and the epidemic of obesity.^{43 44 45}

Child Psychiatry (2006) – “Evident Shortage Will Continue Well into the Future”

A 2003 Academic Psychiatry article finds that, “despite the decades-long projection of an increasing utilization of child and adolescent psychiatry services and an undersupply of child psychiatrists, the actual growth and supply of child and adolescent psychiatrists has been very slow.” A 1990 report by the Department of Health and Human Services concluded the nation should have over 30,000 child psychiatrists but there are less than 7,000 currently practicing in the nation.⁴⁶

Critical Care Workforce (2006) – “Growing Supply of Intensivists will be Insufficient”

In June 2003, Congress asked HRSA to examine the adequacy of the critical care workforce in response to concerns that the number of pulmonary and critical care physicians would not be able to meet the needs of the aging baby boomer population. HRSA worked with the College of Chest Physicians to update physician workforce models to include critical care physicians and found that “demand for intensivists will continue to exceed available supply through the year 2020 if current supply and demand trends continue.”⁴⁷

Dermatology (2008) – “Stable Undersupply of Dermatologic Services”

In an article published in the *Journal of the American Academy of Dermatology*, an update from a 2002 article, “a stable undersupply of dermatologic services has been reported in the United States, with a mal-distribution of physicians exacerbating the problem.” This shortage comes at a time when the demand for dermatologists is rising due to the aging population and the increasing occurrence of various skin diseases. In the last five years, dermatologists increased the use of PAs or NPs by 43%. The 2002 study noted that nearly half of practicing dermatologists believe their community could use more dermatologists and one third are recruiting new associates and new graduates are readily able to find jobs.⁴⁸

Emergency Medicine (2009) – “Emergency Care System Remains in Serious Condition”

In 2009, the American College of Emergency Physicians released the National Report Card on the State of Emergency Medicine and “access to emergency care” received a “D”. The reason for this dismal grade is the fact that the nation has too few emergency departments to meet the needs of a growing and aging population. Over the past 10 years, the number of people needing emergency care annually has increased 32%, from 90.3 million to 119.2 million. At the same time, the number of hospital emergency departments in the country has dropped nearly 7%, from 4,109 to 3,833. Another paper on shortages in the Emergency Medicine workforce was published in 2009 in *Annals of Emergency Medicine*. In 2006, the IOM released a series of three reports on the future of emergency medicine concluding that emergency departments and ambulatory services are overburdened, under-funded, and highly fragmented. Patients face long waits in overcrowded emergency rooms and often needed on-call specialists are not available. A significant contributing factor is that more and more patients are turning to emergency departments for care because of lack of insurance, for after-hours care, or due to limited options in rural communities.^{49 50}

Endocrinology (2003) – “Demand Will Exceed Supply from Now until 2020”

According to a study published jointly in the May 2003 issues of the journals *Endocrine Practice*, *Diabetes Care*, and the *Journal of Clinical Endocrinology & Metabolism*, the supply of newly trained endocrinologists will not be sufficient to offset retirements and future increases in demand. As it stands, current demand exceeds supply by 15% and the aging of the population compounded with physician retirements will exacerbate the situation. The authors present multiple models for estimating the future

demand for endocrinologists and even the conservative estimates predicate a widening shortage by 2020.⁵¹

Family Physicians (2006)–“Declining Medical Student Selection of Family Medicine”

A report by the American Academy of Family Physicians states that in order for the country to have enough physicians to meet the demands of the population in 2020, a typical accredited family medicine residency program would need to increase from an average of 21.7 residents to 24 residents. The report suggests recruiting diverse candidates to become family physicians who will most likely serve rural, underserved, and elderly patients.⁵²

Gastroenterology (2009) – “A Shortfall of Gastroenterologists Projected by 2020”

In a 2009 report, the Lewin Group found that gastroenterologists are crucial for detecting colorectal cancer (CRC) as they provide the majority of colonoscopies. A shortfall of approximately 1,050 gastroenterologists is expected by 2020 as demand for colonoscopies is expected to rise by 10 percentage points. Both the aging and growth of the population is causing demand to exceed supply and the number of gastroenterologists entering the field are not going to be able to meet the needs of the growing and aging population.⁵³

General Surgery (2007) – “General Surgeon to Population Ratios Declined Steadily”

A longitudinal study published in the Archives of Surgery on general surgeons from 1981 to 2005 shows a constant decline. There are 723 fewer general surgeons practicing today than were in 1981. The general surgeon to population ratio decreased steadily across the study period, from 7.68 per 100,000 in 1981 to 5.69 per 100,000 in 2005. The overall number of general surgeons has remained static since 1994, despite an increase in the population of 1% per annum during this period. This coupled with the rise in surgical specialization and the decreased interest among medical students in general surgical careers has generated concern over a shortage.⁵⁴

Geriatric Medicine (2009) – “The Healthcare Workforce Receives little Geriatric Training”

The Association of Directors of Geriatric Academic Programs (ADGAP) recently completed a three year study of the newly implemented programs sponsored by foundations, state and federal budgets to address the shortage of Geriatric physicians that was cited in an Institute of Medicine study. The main obstacle cited for training new Geriatricians is that there are only 14 departments of geriatric medicine in the country, many of which have small operating budgets. In the 2007 AAMC graduating medical student survey, only 23% of students strongly agreed that they were exposed to expert geriatric care. Moreover, as the nation’s 78 million baby boomers begin to retire, a report issued by the Institute of Medicine concludes that the healthcare workforce is not prepared to offer the best care to older patients. Only a small percentage of physicians specialize in geriatric medicine because of the high cost associated with extra years of training and the relatively low pay. The study recommends that incentives be provided to increase the number of geriatric specialists such as higher pay, loan repayment, and scholarships.^{55 56}

Medical Genetics (2004) – “Situation is Critical”

An October 2004 Report of the Banbury Summit Meeting on Training of Physicians in Medical Genetics states that “the medical genetics workforce situation is critical.” As the scope of practice for geneticists increases beyond rare pediatric disorders and becomes increasingly relevant to common health concerns (including some forms of cancer and a number of neurological and cardiovascular disorders), declining numbers of physicians are going into the field. 58% of clinical genetics GME slots

are unfilled. 17 states currently have shortages and the 5 to 15 year forecast indicates further shortages.⁵⁷

Neurosurgery (2005) – “Severe Decline in Number of Active Neurosurgeons”

According to a study published in the February 2005 issue of the *Journal of Neurosurgery* the nation is encountering a “severe decline in the number of active neurosurgeons and a static supply of residents.” The number of practicing neurosurgeons has declined while at the same time there has been a significant increase in the demand for neurosurgeons. Evidence cited includes a doubling in the average number of journal-advertised academic and private neurosurgery positions per year between 1994 to 1998 and 1999 to 2003.⁵⁸

Neurology (2010) – “Shortage of Neurologists Likely to Continue”

In a study published by *Neurologic Clinics*, the uneven distribution of neurologists, resulting in shortages in rural areas is reported. The maldistribution ranges from 11.02 per 100,000 population in Washington, DC, to 1.78 per 100,000 population in Wyoming. This shortage of neurologists similar to that of other specialists in underserved and rural areas is expected to continue given the high overhead and salary costs necessitating a steady supply of patients. Neurologists have historically been concentrated in urban areas but with an increase in the elderly population, acute stroke care evaluation and management will be challenging for rural populations. Additionally, shortages of neurologists are expected to continue due to an essentially level or declining number of new neurologists and the increased subspecialization of those new neurologists.

Oncology (2007) – “Oncology Moving to a State of Acute Shortages in 2020”

A 2007 report in the *Journal of Oncology Practice* concludes that the nation will face a shortage of oncologists if current cancer rates and practice patterns continue. Demand is projected to increase by 48% by 2020 due to the growth in the aged population and to the increasing number of cancer survivors. Supply is only projected to increase by 14% by 2020 due to physician retirements and limited expected growth in the number of oncology fellowship training slots. The authors note there are opportunities to minimize the gap in supply and demand but that no single remedy alone can fully address the likely shortage.⁵⁹

Pediatric Subspecialties (2007) - “Pediatric Subspecialty Care is in a Crisis”

The Expert Work Group on Pediatric Subspecialties has determined that the main causes for the crisis in pediatric subspecialties are an insufficient number of specialists, an increasing demand for these services, and not enough funding for medical education. The lack of available care harms children and families and produces pricey inefficiencies in the healthcare system as a whole. The report recommends making access to these subspecialties a priority in medical home reform efforts and increasing collaboration among specialists in pediatrics care at the local and regional levels.⁶⁰

Primary Care (2006) – “Primary Care on the Verge of Collapse”

In 2006, the American College of Physicians released a report entitled “The Impending Collapse of Primary Care Medicine and Its Implications for the State of the Nation’s Health Care”. At a time of growing demand for primary care due to growth in the number of people with chronic diseases and long term care needs of an aging population, there has been a decline in the number of medical students entering primary care. The authors cite a number of policy recommendations for averting a crisis, including implementing the advanced medical home (a care coordination model), reforming reimbursement policies, and creating financial incentives for improving quality and efficiency.⁶¹

The numbers of generalist residency graduates have declined each year since 1998, causing concern about future shortages says a study published in *Health Affairs*. Furthermore, between 2005 and 2025 the population above age 65 will increase 73 percent, the same group who seeks care from generalists at twice the rate of those under the age of 65. Using 2005 levels as a benchmark, a 20-27 percent shortfall, about 35,000 to 44,000 generalists, is anticipated by 2025. The major decline is attributed to more and more graduates in internal medicine sub-specializing. To increase the number of generalists, the authors recommend that reimbursement reform realigning incentives to make the “medical home” financially viable should be at the top of the list.⁶²

Psychiatry (2003) – “Unclear Rate of Growth will Keep Up with Demand”

In the Winter 2003 issue of *Academic Psychiatry*, an analysis of the current psychiatric workforce trends makes it doubtful “the rate of growth will be able to keep up with the rate of growth of demand.” The average age of practicing psychiatrists is 55.7 and the percentage under 40 dropped from 24% in 1989 to 8% in 2002. Additionally, analysis of the Professional Activities Survey data reveals reductions in the average number of hours worked per week and in the percent of time psychiatrists spend in direct patient care.⁶³

Public Health (2008) – “Public Health Workforce Shortages Imperil Nation’s Health”

A research brief by the Center for Studying Health System Change reports that local health departments are facing a workforce crisis in that they are unable to recruit, train, and retain Public Health workers to meet communities’ needs. Some factors leading to this shortage are inadequate funding, uncompetitive salaries and benefits, large numbers of retiring workers, not enough currently trained workers, and a general lack of enthusiasm for service in public health. Public health workers provide essential services and without enough of these workers the public’s health would suffer drastically.⁶⁴

Rheumatology (2007) – “Shortage Exists Now and is Likely to Worsen”

In a 2007 *Arthritis and Rheumatism* article, the authors predict substantial excess in demand relative to the supply of rheumatologists between 2005 and 2025. The nation is facing an increasing prevalence of musculoskeletal diseases due to the growth and aging of the population at a time when the supply of rheumatologists is not projected to increase. The authors note it appears there is a current shortage as a survey of rheumatologists reveals an average wait for a new appointment of 38 days.⁶⁵

Thoracic Surgery (2009) – “Projections of a Shortfall”

A new study in *Circulation* explores the fact that cardiovascular disease, currently responsible for a third of American deaths, will remain the leading cause of mortality and morbidity for the elderly, whose numbers will double between now and 2030. Not only will the population require more thoracic surgery services but the number of active cardiothoracic surgeons has fallen for the first time in 20 years and by 2025, it is probable that there will be a shortage of at least 1,500 surgeons. The supply alone of cardiothoracic surgeons will fail to meet the demands of an expanding and aging US population and with the expected increase in demand; the shortfall will be even greater.⁶⁶

NATIONAL REPORTS

“Physicians and Their Practices Under Health Care Reform” - The Physicians Foundation, Inc. (2009)

In the wake of health care reform, the Physicians Foundation saw a need for a “critical analysis of how various proposed changes might affect the demand for physicians and the ability of their practices to

provide optimum patient care.” The Team of experts rejected the notions that higher use of physician services in certain areas is considered “overuse” and that savings could be found by reducing the volume of care in these areas. Through an assessment of the future demand for physician services, the Team endorsed the recent reports citing a shortage of physicians in different specialties and geographic regions. In light of the shortage of physicians, the Team recommends training more physicians, removing the cap on GME positions, that was established a decade ago, and creating new medical schools. Training healthcare workers at all levels, from physicians to aides, is essential in creating a functioning healthcare system and must begin immediately given the duration of training required. Overall, this report, “projects the size and characteristics of the physician workforce that will be required in the future, while recognizing that, because of the long lead times in training physicians, health care will have to be structured around persistent physician shortages for a decade or more.”⁶⁷

“The Complexities of Physician Supply and Demand: Projections Through 2025” – Association of American Medical Colleges (2008)

Using the most recently available data, a new report by the AAMC Center for Workforce Studies projects future supply and demand for physicians and concludes that a national shortage is likely. Driven by such factors as U.S. population growth, aging population and doctors, and increased physician visits, the demand for doctors will outstrip the supply through at least 2025. If physician supply and use patterns stay the same, the United States will experience a shortage of 124,000 full-time physicians by 2025. US medical schools are increasing their enrollment as recommended by the AAMC. The report concludes that while this increase is necessary, it will not be sufficient to meet future patient needs and demand. Actions beyond increasing the supply of physicians will be needed. Complex changes such as improving efficiency, reconfiguring health care delivery, and making better use of both physicians and other health care professionals will also be necessary.⁶⁸

“Out of Order out of Time” - Association of Academic Health Centers (2008)

In a report by the Association of Academic Health Centers (AAHC) the dysfunction of public and private health workforce planning is highlighted and a call is given to implement a comprehensive national policy with effective solutions. The study claims that too many entities are controlling health workforce policy making which leads to a limited focus instead of a broad strategic vision and short term decisions driven by responses to crisis rather than long term planning. A broader integrated approach is recommended where the Federal Government is in charge of workforce planning and it becomes a priority domestic policy issue.⁶⁹

“Growth and Aging of the U.S. Population will Cause a Surge in Demand” – The Federal Department of Health and Human Services (DHHS) (2006)

The Health Resources and Services Administration (HRSA) in the U.S. Department of Health and Human Services (DHHS) released a report in 2006, projecting a shortfall of approximately 55,000 physicians in 2020. If current trends continue, the full time equivalent (FTE) physician supply is projected to grow to 866,400 by 2020, while demand for physicians will increase to 921,500 due to the growth and aging of the U.S. population. The report projects shortages will be in greatest in non-primary care specialties.⁷⁰

“U.S. Likely to Face a Shortage in 2020” – U.S. Council on Graduate Medical Education (COGME) Report (2005)

In January 2005, the Council on Graduate Medical Education (COGME) released its 16th Report, “Physician Workforce Policy Guidelines for the United States, 2000-2020” recommending an increase

of 3,000 medical school graduates by 2015 in order to meet rising demand and need. Only under the most optimistic of various supply and demand scenarios outlined in the report would the nation have an adequate supply to meet demand in the year 2020. When the mid-points of the projected supply and demand scenarios outlined in the report are used, the net result is a projected shortage of about 85,000 physicians in 2020 – which is equivalent to approximately ten percent of today’s physician workforce.⁷¹

“America is Running out of Physicians” – Merritt, Hawkins & Associates (2004)

In 2004, Merritt, Hawkins & Associates, a health care staffing and consulting firm, published, “Will the Last Physician in America Please Turn off the Lights? A Look at America’s Looming Doctor Shortage.” The authors predict there will be a shortage of 90,000 to 200,000 physicians and that average wait times for medical specialties are likely to increase dramatically beyond the current range of two to five weeks. Various factors, including the demise of managed care, the aging of the population, changing practice patterns, increasing regulation and paperwork are some of the reasons cited for the impending shortage.⁷²

References

- ¹ Alaska Department of Health and Human Services, Report of the Alaska Physicians Supply Task Force: Securing an Adequate Number of Physicians for Alaska's Needs, University of Alaska. August 2006.
- ² William G. Johnson, P., M. Mary E. Rizma, FAAP, et al. (2005). "The Arizona Workforce Study – Part I: The Numbers of Practicing Physicians 1992-2004." Arizona State University and University of Arizona Health Sciences Center.
- ³ Center for Health Workforce Studies University at Albany, SUNY (2004). "California Physician Workforce Supply and Demand through 2015." Rensselaer, NY, University at Albany, State University of New York.
- ⁴ <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2006/11/14/BAG4JMCA8D1.DTL> last downloaded July 27, 2007.
- ⁵ Center for California Health Workforce Studies, University of California, San Francisco. "Physician Diversity in California: New Findings from the California Medical Board Survey" March 2008.
- ⁶ Colorado Health Institute. 2007. "2005 Colorado Physician Workforce Survey: Key Findings and Technical Notes" http://www.coloradohealthinstitute.org/~media/Documents/workforce/md_tech.ashx
- ¹¹ Florida Board of Governors Meeting, Nov. 17, 2005, http://www.fibog.org/BOG/meetings/2005_11_17/25_FIU.pdf
- ⁷ <http://news.ucf.edu/UCFnews/index?page=article&id=002400410774959e30109f4453599007871> last downloaded July 27, 2007.
- ⁸ Florida Department of Health. (2008). "2008 Florida Physician Workforce Annual Report."
- ⁹ The Board of Regents University System of Georgia, Expanding Medical Education in Georgia: Roadmap for Medical College of Georgia School of Medicine and Statewide Partners. January, 2008.
- ¹⁰ The Georgia Board for Physician Workforce (2005). "Physician Supply and Demand Indicators in Georgia," Atlanta, GA
- ¹¹ John A. Burns School of Medicine (2010). A report to the 2011 Hawai'i State Legislature: Report on Findings from the Hawai'i Physician Workforce Assessment Project.
- ¹² M. Inada et al. / Californian Journal of Health Promotion 2005, Volume 3, Issue 4, 157-159
- ¹³ Medical Education Study Committee, Medical Education Study Final Report. Boise, ID. November 2007.
- ¹⁴ Illinois New Physician Workforce Study. 2010. Northwestern University's Fienberg School of Medicine, the Illinois Hospital Association, and Illinois State Medical Society.
- ¹⁵ McKeag et al. Indiana's Health Professions Workforce Shortages & Maldistribution. 2007
- ¹⁶ University of Iowa Task Force. 2007.
- ¹⁷ Kentucky Institute of Medicine Task Force Report, Comprehensive Statewide Physician Workforce Study. August 2007.
- ¹⁸ Casey, B. R., J. Owens, et al. (2005). "Rural Kentucky's physician shortage: strategies for producing, recruiting, and retaining primary care providers within a medically underserved region." *J Ky Med Assoc* 103(10): 505-13.
- ¹⁹ Maryland Hospital Association and The Maryland State Medical Society, Maryland Physician Workforce Study, Prepared by Boucher and Associates. January 2008.
- ²⁰ Massachusetts Medical Society (2010). "2010 Physician Workforce Study." <http://www.massmed.org/AM/Template.cfm?Section=Search&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=31513>

- ²¹ Center for Health Workforce Studies. "Physician Supply and Demand in Michigan Through 2020" February 2006.
- ²² Brooks KD, Cieslak JE, Radcliffe PM, Sjogren K. "Primary Care in Minnesota: An Academic Health Center Perspective" January 2008.
- ²³ Cossman, J. S. (2004). "Mississippi's physician labor force: current status and future challenges." J Miss State Med Assoc 45(1): 8-31.
- ²⁴ Health Management Associates, Inc. (2009). "Issues in Missouri Health Care 2009"
http://www.covermissouri.org/docs/issues2009/13_Who%20Will%20Care%20for%20Missouri's%20Sick%20Assuring%20a%20Adequate%20Health%20Care%20Workforce_New%20Years%20Packet.pdf
- ²⁵ Saul M. J. Rivard. (2009). "Montana's Primary Care Workforce" Montana State University Office of Rural Health.
http://www.montanaruralhealthinitiative.org/Images/Programs/Attachments/93/Montana%E2%80%99s_Primary_Care_Workforce8-14.pdf
- ²⁶ Mueller, Keith, et al. (2008). Nebraska Center for Rural Health Research. "A Critical Match"
<http://www.unmc.edu/rural/documents/InterimWorkforceReport090308.pdf>
- ²⁷ http://www.unr.edu/med/news/BoardofRegentsPresentation/HSC_Release_3_17_06.pdf last downloaded July 31, 2007.
- ²⁸ New Jersey Council of Teaching Hospitals. (2009). "New Jersey Physician Workforce Task Force Report"
- ²⁹ New Mexico Health Policy Commission. "Physician Supply in NM 2006", Printed December 2007.
- ³⁰ Center for Health Workforce Studies. "The Healthcare Workforce in New York, 2007" March 2009.
- ³¹ North Carolina Institute of Medicine. Providers in Demand: North Carolina's Primary Care and Specialty Supply. NCIOM Task Force on Primary Care and Specialty Supply. Durham, NC. June 2007
- ³² Oregon Health & Science University's Center for Rural Health (2004). "Physician Workforce in Oregon 2004: A Snapshot."
- ³³ Pennsylvania Medical Society. "The State of Medicine in Pennsylvania: An Overview of Pennsylvania's Physician Market Place" 2008.
- ³⁴ Texas Higher Education Coordinating Board (2002). "Projecting the Need for Medical Education in Texas."
- ³⁵ <http://www.ttuhscc.edu/el Paso/fouryear/> last downloaded July 31, 2007.
- ³⁶ Utah Medical Education Council (2006). Utah's Physician Workforce: A Study on the Supply and Distribution of Physicians in Utah. Salt Lake City, UT
- ³⁷ Vermont Area Health Education Centers (AHEC) Network. The Vermont Primary Care Workforce Snapshot. 2009
- ³⁸ Governor's Health Reform Commission Final Report; Roadmap for Virginia's Health, September 2007
- ³⁹ Washington Center for Health Workforce Studies. (2008). Wyoming Primary Care Gaps and Policy Options.
- ⁴⁰ Center for Health Workforce Studies University at Albany, SUNY (2000). "A/I Physician Workforce Report." Rensselaer, NY, University at Albany, State University of New York.
- ⁴¹ The Center for Health Workforce Studies. (2006) "Forecasting Allergy and Immunology Physician Supply and Demand through 2024"

- ⁴² Schubert A, Eckhout, G, Tremper K. "An Updated View of the National Anesthesia Personnel Shortfall" *Anesth Analg* 2003; 96:207-14
- ⁴³ Fye, W. B. (2004). "Cardiology's Workforce Shortage: Implications for Patient Care and Research." *Circulation* 109(7): 813-816.
- ⁴⁴ Fye, W. B. (2004). "Cardiology workforce: a shortage, not a surplus." *Health Aff (Millwood)* Suppl Web Exclusives: W4-64-6.
- ⁴⁵ Fye, W. B. (2004). "Introduction: The origins and implications of a growing shortage of cardiologists." *J Am Coll Cardiol* 44(2): 221-32.
- ⁴⁶ Kim, W. J. (2003). "Child and Adolescent Psychiatry Workforce: A Critical Shortage and National Challenge". *Academic Psychiatry* 4:277-282.
- ⁴⁷ Health Resources and Services Administration (HRSA). *The Critical Care Workforce: A Study of the Supply and Demand for Critical Care Physicians*. May 2006.
- ⁴⁸ Kimball, A.B. and Jack S. Resneck, Jr. (2008). "The US dermatology workforce: A specialty remains in shortage. *J AM Acad Dermatol* 59 (5): 745-745.
- Resneck, J., Jr. and A. B. Kimball (2004). "The dermatology workforce shortage." *J Am Acad Dermatol* 50(1): 50-4.
- ⁴⁹ <http://www.iom.edu/CMS/3809/16107/35010.aspx> last downloaded July 31, 2007
- ⁵⁰ American College of Emergency Physicians. (2009) "The National Report Card on the State of Emergency Medicine" <http://www.emreportcard.org/uploadedFiles/ACEP-ReportCard-10-22-08.pdf.pdf>
- ⁵¹ Rizza, R. A., R. A. Vigersky, et al. (2003). "A model to determine workforce needs for endocrinologists in the United States until 2020." *Endocr Pract* 9(3): 210-9.
- ⁵² American Academy of Family Physicians "Family Physician Workforce Reform: Recommendations of the American Academy of Family Physicians" December 2006.
- ⁵³ Dall, Tim, et al. *The Impact of Improved Colorectal cancer Screening Rates on Adequacy of Future Supply of Gastroenterologists*" Prepared for Olympus America Inc. January 7, 2009.
- ⁵⁴ Lyng, Dana C. et al. "A longitudinal Analysis of the General Surgery Workforce in the United States, 1981-2005" *American Medical Association* 143 no. 4 2008.
- ⁵⁵ Institute of Medicine. "Retooling for an Aging America: Building the Health Care Workforce" April 2008.
- ⁵⁶ The Donald W. Reynolds Foundation and the John A. Hartford Foundation. (2009). "The Status of Geriatrics Workforce Study"
- ⁵⁷ Korf, B. R., G. Feldman, et al. (2005). "Report of Banbury Summit meeting on training of physicians in medical genetics, October 20-22, 2004." *Genet Med* 7(6): 433-8.
- ⁵⁸ Gottfried, O. N., R. L. Rovit, et al. (2005). "Neurosurgical workforce trends in the United States." *J Neurosurg* 102(2): 202-8.
- ⁵⁹ Erikson CE, Salberg E, Forte G, et al. "Future Supply and Demand for Oncologists: Challenges to Assuring Access to Oncology Services" *Journal of Oncology Practice* 3 (2):79-86.

- ⁶⁰ Expert Work Group on Pediatric Subspecialty Capacity. "Recommendations for Improving access to Pediatric Subspecialty Care through the Medical Home" December 2007.
- ⁶¹ http://www.acponline.org/hpp/statehc06_1.pdf - 2006-01-31 last downloaded August 2, 2007
- ⁶² Colwill JM, Cultice JM, Kruse RL. "Will Generalist Physician Supply Meet Demands of an Increasing and Aging Population?" Health Affairs. April 29, 2008.
- ⁶³ Scully J.H. and J.E. Wilk (2003). "Selected Characteristics and Data of Psychiatrists in the United States, 2001-2002" Academic Psychiatry 27(4): 247-251.
- ⁶⁴ Center for Studying Health System Change. Public Health Workforce Shortages Imperil Nation's Health. No. 4, April 2008.
- ⁶⁵ Deal CL, Hooker R, Harrington R et al. "The United States Rheumatology Workforce: Supply and Demand, 2005-2025". Arthritis and Rheumatism. 2007; 56 (2) 722-9.
- ⁶⁶ Grover, A. et al. 2009. "Shortage of Cardiothoracic Surgeons Is Likely by 2020" (*Circulation*. 2009;120:488-494.).
- ⁶⁷ Cooper RA, Getzen T, Johns MME, Ross-Lee B, Sheldon GF, Whitcomb ME. Physicians and Their Practices Under Health Care Reform. Physicians Foundation, 2009.
- ⁶⁸ Association of American Medical Colleges "The Complexities of Physician Supply and Demand: Projections Through 2025" October 2008.
- ⁶⁹ Association of Academic Health Centers. (2008). "Out of Order, Out of Time". Washington, DC, AAHC.
- ⁷⁰ Health Resources and Services Administration (HRSA). Physician Supply and Demand: Projections to 2020. October 2006.
- ⁷¹ Council on Graduate Medical Education. "Physician Workforce Policy Guidelines for the U.S. for 2000 – 2020." Rockville, MD: U.S. Department of Health and Human Services; 2005.
- ⁷² Merritt, J., J. Hawkins, et al. (2004). Will the Last Physician In America Please Turn Off The Lights? A Look at America's Looming Doctor Shortage. Irving, TX, Practice Support Resources, Inc.

California's Health Care Workforce— Are We Ready for the ACA?

Tim Bates, MPP; Lisel Blash, MPA, MS; Susan Chapman, BSN, MSN, PhD; Catherine Dower, JD;
and Edward O'Neil, FAAN, MPA, PhD

© 2011 Center for the Health Professions at UCSF, Revised Dec. 1, 2011

ABSTRACT

This research brief summarizes the report *California's Health Care Workforce: Readiness for the ACA Era*. The brief and corresponding report explore the current and future capacity of California's health care workforce to meet the expected increase in demand resulting from expanded insurance coverage under the Patient Protection and Affordable Care Act (ACA). Both documents present data, analyses, and policy recommendations for addressing the workforce challenges presented by the ACA.

The Patient Protection and Affordable Care Act (ACA) provides an unprecedented opportunity to address structural issues in the US health care system. Much of the work will reside at the state level, and California is taking a lead in improving financing and organizational structures. Meaningful decisions about expanding coverage and moving to new practice models require solid workforce data and analysis. *California's Health Care Workforce: Readiness for the ACA Era* uses key informant interviews, detailed analyses of the California Department of Consumer Affairs (DCA) Professional

License Masterfile, a literature review, and an environmental scan to highlight the challenges of comparing data across professions and identifying and analyzing the options for meeting workforce needs in the context of the current economic environment.

What are the drivers that affect the quantity and quality of California's health care workforce?

Several forces are exerting pressure on the state's health workforce to expand and evolve. Demographic factors include a population that is projected to grow 15% in the next 20 years, an increasingly culturally diverse and aging population, and an increase in chronic disease burden.

Market forces are also bringing about change. Advances in health information technology both facilitate and demand workflow redesign, providing unprecedented opportunity and challenge. New models of care such as retail clinics and school- and work-based clinics are emerging to offer enhanced access to health care.

Perhaps most dramatically, the state is poised to implement the Patient Protection and Affordable Care Act, which will in part expand coverage to four to six million more Californians. Undocumented residents are not covered by the ACA, and this continues to provide special challenges to the state's safety net providers.

- There are over a million individuals in California's health care workforce.
- Geographic maldistribution of health care professionals has resulted in shortages in some areas of the state, and surpluses in others.
- Existing datasets are not standardized across the health professions and contain significant gaps.
- The health professions are overall not reflective of the state's ethnic and racial diversity.
- California has numerous health professions education programs, but many are oversubscribed.
- Practice models are changing in response to new pressures and opportunities.

Can the current health care workforce meet the changes in demand?

Despite the economic recession, the number of workers in nearly all health care professions has continued to grow. While shortages exist, distribution poses a bigger challenge. California's health care workers are not distributed appropriately throughout the state, leading to access problems for primary and high demand specialty care in many areas.

Lack of cultural and linguistic concordance between patients and health care workers may limit access, even in areas without apparent shortages. Only 5 percent of California's MDs and 8 percent of its nurses are Latino (compared to 37 percent of the population). According to the California Pan-Ethnic Health Network, more than half those eligible for subsidies or Medi-Cal under the ACA in California are people of color, and 32-51% of the adults in these groups speak English less than well. Many health care organizations rely on support staff for language interpretation.

Workforce planning is complicated by incomplete or insufficient data, economic uncertainty, and changing workforce models. However, it is clear that primary care will be the area most impacted by demographic and policy changes as preventive care and chronic disease management become increasingly important under the ACA.

Do we educate enough providers to meet the state's growing needs and are those provider's skills aligned with emerging needs?

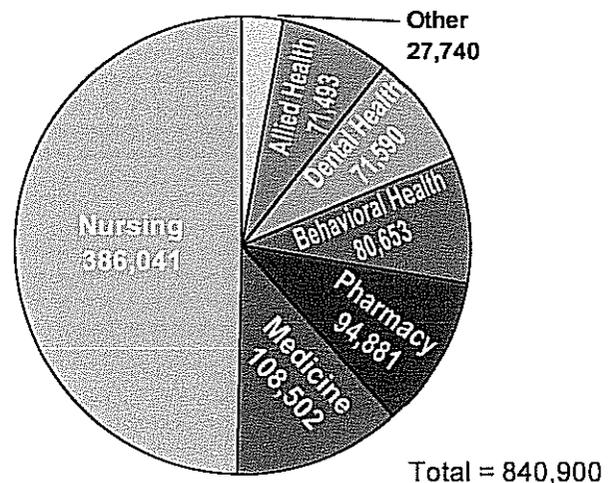
California has many health careers training programs, and some are full to capacity. California needs more primary care providers, and yet the state has fewer family medicine residency slots available today than it had ten years ago. At least some of this decrease has been offset by growth in NP, PA and DO programs and graduates of those programs choosing primary care. Recent efforts to expand nursing education in the state have helped to meet the demand for registered nurses and diversify the nursing workforce.

Health information technology has the potential to enhance educational opportunity, improve patient care, and redesign workflow to alleviate the burden on primary care providers. Additional investment could be

made in programs that train technicians and clinical staff to implement and maintain this technology.

Racial and cultural disparities between patients and the health care workforce continue. Low graduation rates for under-represented minority youth make it difficult to increase diversity at medical and nursing schools in particular. The community colleges that offer allied health programs attract a diverse student population that is more reflective of the state's population, but attrition rates are high and programs have difficulty finding the resources to expand to meet growing numbers of applicants.

California's Licensed and Registered Health Care Workforce—February 2011



Nursing: Registered Nurses (including all Advanced Practice Nurses) and Licensed Vocational Nurses.

Medicine: Physicians and Surgeons, Osteopathic Physicians, Naturopathic Doctors, and Physician Assistants.

Pharmacy: Pharmacists and Pharmacy Technicians.

Behavioral Health: Licensed Clinical Social Workers, Associate Social Workers, Marriage and Family Therapists & Interns, Psychologists, Educational Psychologists, & Psychological Assistants.

Dental Health: Dentists, Dental Assistants (including Dental Assistants in Extended Function), and Dental Hygienists (including Dental Hygienists in Alternative Practice).

Allied Health: Audiologists, Speech Pathologists & Assistants, Occupational Therapists & Assistants, Physical Therapists & Assistants, Psychiatric Technicians, and Respiratory Therapists.

Other: Acupuncturists, Chiropractors, Optometrists, Podiatrists, and Licensed Professional Midwives.

Not included are professions that are not licensed by the state, including medical assistants and direct-care workers such as personal care assistants and certified nurse assistants, which would bring the total to well over one million.

Source: California DCA Professional License Masterfile

What policy solutions can help California meet changing demands?

Starting with the workforce development opportunities offered in the ACA, the state can begin building California-specific strategies.

Improving Supply, Distribution, and Workforce Practice Models

Because maldistribution is such a critical issue in California, adopting and expanding successful policies that address geographic practice choices will be key.

An underlying theme for policy making in the future is the potential to rethink *how* we question our supply of practitioners. Perhaps it is time to focus on the type of care – such as primary, oral, or vision – that needs to be provided rather than the type of provider in calculating supply. New practice and financing models, including patient-centered medical homes and accountable care organizations, look to teams of providers where doctors, nurses, medical assistants, and many others might all play key roles in providing care. These models will require changes in financing and reimbursement, as well as better implementation of health information technology and practice culture changes, to succeed.

Policy suggestions include the following:

- Because professionals tend to practice where they train, increasing **training and residency opportunities in under-represented fields and communities** is a good investment.
- Expand **loan repayment programs** for practicing in underserved areas and for high-need professions.
- **Enhance telehealth** to improve communications between clinicians and patients, and between clinicians, particularly in remote areas.
- Strengthen the capacity of **safety net providers** who serve under-represented patient populations.
- Expand the **legal scopes of practice** for select professions such as nurse practitioners and physician assistants.
- Invest in training and **health information technology** that would allow the safe delegation of tasks to clinical support staff in team-based models.
- Develop **financing models** that mitigate income differences between primary and specialist

providers and that reward patient outcomes-based services by teams of providers.

- Improve, standardize, and streamline **workforce data collection** and availability to enhance regional and statewide planning.
- Promote ongoing statewide and regional **partnerships for health workforce planning**. Adequate responses to changes in demand can only be met through coordinated planning efforts beyond the level of individual organizations or communities.

Improving the Education Pipeline

Recent state-level programs intended to increase the supply of registered nurses suggest that focus on educational investments can make a difference, but these investments must be carefully targeted. This experience highlights the need for good educational and employment data for tailoring these efforts. California's Office of Statewide Health Planning and Development (OSHPD) has recently set up a website that offers maps of the educational programs offered in the state, which holds great promise for future students and policy makers alike.

Specific policy considerations include:

- **Increasing the number of primary care physicians** is an important, but long-term goal that cannot be achieved fast enough to meet the upcoming increase in demand. However, investing in strategies to **encourage medical students to practice in primary care** is an important step.
- **Refocus some education resources on professions such as nurse practitioner and physician assistant**, which require less training time than medical school and could help meet some of the more immediate demand for primary care providers.
- Promoting and supporting innovations in **California's community colleges to increase completion** of health professions programs and **enhance retention** of historically under-represented students would also help increase diversity and meet workforce demands.
- **Investing more equitably in primary and secondary (K-12) education programs** would help prepare a more diverse group of students to enter the health professions in the first place.

Increasing Diversity

While research suggests that linguistic, racial and ethnic concordance between physicians and patients improves the quality of care, the state's mismatch between providers and patients can be mitigated by strategies to build bridges between the health care system and patients from various cultures. Possible solutions include:

- **Investing in interpretation**, including training existing providers to work better with interpreters and interpretation services; training existing bilingual clinical support staff such as medical assistants to serve as dual-role interpreters; and improving reimbursement and reward for practices utilizing interpretation services.
- Training for positions such as **community health worker, promotorá, and health educator** that can 1) facilitate links between clinical care delivery and population health and 2) reach out to California's diverse communities to assist them in navigating the system, inform them of opportunities under the ACA and support interest in health careers.
- **Building career ladders** that allow members of California's diverse allied health professions to move up will improve their careers, help their communities, and help diversify the health care workforce.
- **Evaluating and replicating models that work** to enroll members from under-represented communities in health professions programs.
- **Including communities of color in the policy and planning** processes for ACA implementation.

How are things changing and where are the good ideas on education and practice?

Several groups in California are focusing on the health workforce across professions, sharing information available, and exploring promising directions. These efforts require good data and ongoing coordination to help the state plan for the ACA.

The data systems for California's health workforce are good but could be better as some basic questions cannot be answered. Some of the shortcomings of the current data sets are likely to be improved upon launch of OSHPD's planned Health Workforce Clearinghouse.

Additional improvements to the collection and availability of data could be encouraged through policy changes that would help those who are trying to determine whether and where to build new educational programs and how to administer incentive programs for practitioners serving hard-to-reach populations.

Perhaps more importantly, the state would be well-served by enhancing efforts to collect best practice ideas on education and health care services so training programs and delivery institutions throughout the state could benefit from innovators and early adapters of good ideas. Such efforts would be most helpful if they also formed bridges between employer needs and schools, would-be employees and communities seeking to prepare youth for job opportunities.

Going Forward

The health care workforce is vital: it constitutes a significant portion of the state's labor market and is the source of care for Californians. The state makes major investments each year in the health care workforce through support for the University of California health professional schools and health systems, the State University and Community College training programs, Medi-Cal, grants to local health departments and community-based direct training and loan programs.

California's Health Care Workforce: Readiness for the ACA Era helps frame ways to understand the issues surrounding the health care workforce and how California can best realize a good return on its investment while helping ensure that the state's population has access to high quality providers. As California moves toward implementing the ACA and to meeting the evolving needs of the population, the role of the health care workforce is critical.

Acknowledgements

This report was funded by a grant from The California Wellness Foundation (TCWF). Created in 1992 as a private, independent foundation, TCWF's mission is to improve the health of the people of California by making grants for health promotion, wellness education and disease prevention.





California's Health Care Workforce: Readiness for the ACA Era

Prepared by the
Center for the Health Professions, UCSF
With a Grant from
The California Wellness Foundation

by Tim Bates, MPP; Lisel Blash, MPA, MS; Susan Chapman, BSN, MSN, PhD;
Catherine Dower, JD; and Edward O'Neil, FAAN, MPA, PhD.

California's Health Care Workforce: Readiness for the ACA Era

This report was prepared by staff at the Center for the Health Professions, University of California, San Francisco. Project staff included: Tim Bates, MPP; Lisel Blash, MPA, MS; Susan Chapman, BSN, MSN, PhD; Catherine Dower, JD; and Edward O'Neil, FAAN, MPA, PhD.

The mission of the Center for the Health Professions is to transform health care through workforce research and leadership development.

This report was funded by a grant from The California Wellness Foundation (TCWF). Created in 1992 as a private, independent foundation, TCWF's mission is to improve the health of the people of California by making grants for health promotion, wellness education and disease prevention.

© 2011 Center for the Health Professions, UCSF. All materials subject to this copyright may be used for the non-commercial purpose of scientific or educational advancement. Revised December 1, 2011.

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY 1

II. SUMMARY OF INTERVIEWS: PERSPECTIVES FROM THOUGHT LEADERS..... 8

 ACA Programs and Policies 8

 Workforce Development..... 8

 Strengthening Existing Models of Care 9

 Reforming Primary Care Reimbursement Rates..... 9

 New Financing and Delivery Models..... 10

 Key Informants' Specific Solutions and Recommendations..... 10

 Improve Telehealth and HIT Capacity to Implement Meaningful Use..... 11

 Target Workforce Development..... 11

 Promote Regional and Statewide Planning and Coordination 12

 Strengthen the Capacity of Safety Net Providers 13

 Redesign Practice Models and Financing Structures..... 13

 Enhance Diversity..... 14

 Key Informants Interviewed June 2011 16

III. ANALYSIS OF CALIFORNIA HEALTH PROFESSIONS LICENSING DATA..... 17

 Description of Data..... 17

 Summary of Data Findings..... 18

 Figures and Maps 21

 Allied Health 22

 California Licensed Audiologists..... 22

 California Licensed Occupational Therapists (OT) and Licensed Occupational Therapy Assistants (OTA) 24

 California Licensed Physical Therapists (PT) and Licensed Physical Therapy Assistants (PTA)..... 28

 California Licensed Psychiatric Technicians 32

 California Licensed Respiratory Therapists..... 34

 California Licensed Speech-Language Pathologists and Registered Speech-Language Pathology Assistants..... 36

 Behavioral and Mental Health..... 40

 California Licensed Clinical Social Workers (LCSW) & Registered Associate Social Workers 40

 California Licensed Marriage & Family Therapists (MFT)..... 44

 California Licensed Educational Psychologists 48

 California Licensed Psychologists..... 51

 Dental and Oral Health..... 55

 California Licensed Dentists (DDS), Registered Dental Assistants (RDA) and Registered Dental Assistants in Extended Function (RDA-EF)..... 55

 California Licensed Registered Dental Hygienists (RDH) and Registered Dental Hygienists in Alternative Practice (RDHAP)..... 63

 Nursing..... 67

 California Licensed Registered Nurses (RN) and Certified Public Health Nurses..... 67

 California Certified Clinical Nurse Specialists and Certified Nurse Practitioners (NP)..... 71

 California Certified Nurse Anesthetists and Certified Nurse Midwives 75

 California Certified Psychiatric/Mental Health Nurses..... 79

 California Licensed Vocational Nurses (LVN)..... 81

 Pharmacy 83

 California Licensed Pharmacists..... 83

 California Registered Pharmacy Technicians 85

 Physicians and Doctors..... 87

 California Licensed Naturopathic Doctors..... 87

 California Licensed Osteopathic Physicians (DO) 89

 California Licensed Physicians and Surgeons (MD) 91

 California Licensed Physician Assistants (PA) 95

Other Health Professions.....	97
California Licensed Acupuncturists.....	97
California Licensed Chiropractors	99
California Licensed Optometrists	102
California Licensed Podiatrists.....	104
California Licensed Professional Midwives.....	106
IV. HEALTH PROFESSIONS WORKFORCE DATA	108
Labor Market Information Division (LMID) data.....	108
Occupational Employment Statistics (OES) Survey.....	108
Staffing Patterns by Industry & Occupation	108
Projections of Employment by Occupation	109
Professional Association Data	109
Licensing Board Data	109
Department of Consumer Affairs (DCA), Professional License Masterfile.....	109
California Medical Board Survey	111
Dental Board of California Survey.....	111
Osteopathic Medical Board Survey	111
Board of Behavioral Sciences Demographic Survey (2006)	111
California Board of Registered Nursing, Survey of Registered Nurses	112
Other Workforce Surveys.....	112
California Survey of Dental Hygienists, 2005-2006: A Workforce Profile.....	112
2009 Survey of Alternative Dental Hygiene Practice.....	112
California Respiratory Care Practitioner Workforce Study (2006/2007)	112
Health Professions Education Data.....	112
Integrated Postsecondary Education Data System (IPEDS).....	112
Association of American Medical Colleges.....	113
American Association of Colleges of Osteopathic Medicine	113
American Association of Colleges of Pharmacy.....	113
American Dental Education Association	113
Board of Registered Nursing Annual School Survey.....	114
California's Higher Education Systems.....	114
OSHPD Healthcare Workforce Clearinghouse.....	114
Other sources of workforce data	116
American Community Survey (ACS).....	116
V. SUMMARIES OF THE LITERATURE BY PROFESSION.....	117
California's Physician Workforce.....	117
Overview of published literature.....	117
1. Supply, Geographic Distribution and Demographics: Key Issues	117
2. Diversity and Cultural Competence: Key Issues.....	118
3. Education and Training: Key Issues.....	118
4. Scope of Practice: Key Issues.....	119
5. Limitations of Available Data and Research	119
California's Physician Assistant Workforce	120
Overview of published literature.....	120
1. Supply, Geographic Distribution and Demographics: Key Issues	120
2. Diversity and Cultural Competence: Key Issues.....	120
3. Education and Training: Key Issues.....	120
4. Scope of Practice: Key Issues.....	120
5. Limitations of Available Data and Research	121
California's Registered Nurse and Licensed Vocational Nurse Workforce	122
Overview of published literature.....	122
1. Supply, Geographic Distribution, and Demographics: Key Issues	122
2. Diversity and Cultural Competence: Key Issues.....	122
3. Education and Training: Key Issues.....	122

4. Scope of Practice: Key Issues.....	123
5. Limitations of Available Data and Research	124
California's Pharmacists and Pharmacy Technicians	125
Overview of published literature	125
1. Supply, Geographic Distribution and Demographics: Key Issues	125
2. Diversity and Cultural Competence: Key Issues.....	125
3. Education and Training: Key Issues.....	126
4. Scope of Practice: Key Issues.....	126
5. Limitations of Available Data and Research	127
California's Dentists and Dental Hygienists	128
Overview of published literature	128
1. Supply, Geographic Distribution and Demographics: Key Issues	128
2. Diversity and Cultural Competence: Key Issues.....	129
3. Education and Training: Key Issues.....	129
4. Scope of Practice: Key Issues.....	130
5. Limitations of Available Data and Research	130
California's Allied Health Workforce.....	131
Overview of published literature	131
1. Therapists	131
2. Imaging	132
3. Clinical Laboratory Scientists and Medical Lab Technologists.....	133
4. Mental Health	133
5. Support Occupations.....	134
6. Emergency Medical Technicians/Paramedics.....	135
VI. ANNOTATED BIBLIOGRAPHIES OF SELECT PUBLISHED LITERATURE BY PROFESSION	
AND ISSUE	136
California's Physician Workforce.....	136
1. Supply & Demographics	136
2. Education	140
3. Scope of Practice.....	141
California's Nursing Workforce.....	142
1. Supply and Demographics.....	142
2. Education	148
3. Education Issues	150
4. Scope of Practice.....	152
5. Mandated Nurse Staffing Ratios	153
California's Pharmacy Workforce	155
1. Supply & Demographics	155
2. Education	157
3. Scope of Practice.....	158
California's Dental Workforce.....	159
1. Supply & Demographics	159
2. Defining Shortage.....	166
3. Education	166
4. Scope of Practice/Models of Care.....	167
5. Supply Issues - Dentist Wage and Medi-Cal Reimbursement.....	168
6. Demand - Dental Coverage Considerations.....	169
California's Allied Health Workforce.....	171
National Publications	171
California Publications	173
Workforce Diversity and Language Access	191
National Publications	191
California Publications	193

TABLES

Table 1. California dentists per 5,000 population ratios by county: Comparing data from the DCA Masterfile and California Dental Association..... 59

Table 2. California physicians per 100,000 population ratios by county: Comparing data from the DCA Masterfile and California Medical Board survey 93

FIGURES

Figure 1. Non-Farm Private Sector Job Creation in California: 2001 - 2009 19

Figure 2. California licensed audiologists – new licenses issued per year: 1980 – 2010 22

Figure 3. California licensed occupational therapists – new licenses issued per year: 2005 – 2010 24

Figure 4. California licensed occupational therapy assistants – new licenses issued per year: 2005 – 2010 25

Figure 5. California licensed physical therapists – new licenses issued per year: 1980 – 2010..... 28

Figure 6. California licensed physical therapy assistants – new licenses issued per year: 1980 – 2010..... 29

Figure 7. California licensed psychiatric technicians – new licenses issued per year: 1980 – 2010..... 32

Figure 8. California licensed respiratory therapists – new licenses issuer per year: 1990 – 2010 34

Figure 9. California licensed speech-language pathologists – new licenses issued per year: 1980 – 2010 36

Figure 10. California registered speech-language pathology assistants – new registrations per year: 2005 – 2010..... 37

Figure 11. California licensed clinical social workers – new licenses issued per year: 1980 – 2010 40

Figure 12. California registered associate social workers – new registrations per year: 2000 – 2010..... 41

Figure 13. California marriage & family therapists – new licenses issued per year: 1980 – 2010..... 44

Figure 14. California registered marriage & family therapist interns – new registrations per year: 2000 – 2010..... 45

Figure 15. California licensed educational psychologists – new licenses issued per year: 1980 – 2010..... 48

Figure 16. California Board of Behavioral Sciences – current licenses & registrations by type..... 50

Figure 17. California licensed psychologists – new licenses issued per year: 1980 – 2010..... 51

Figure 18. California registered psychological assistants – new registrations per year: 2000 – 2010..... 52

Figure 19. California licensed dentists – new licenses issued per year: 1980 – 2010..... 55

Figure 20. California registered dental assistants – new registrations per year: 1980 – 2010..... 56

Figure 21. California registered dental assistants in extended function – new registrations per year: 1990 – 2010..... 57

Figure 22. California licensed registered dental hygienists – new licenses issued per year: 1980 – 2010 63

Figure 23. California licensed registered dental hygienists in alternative practice – new licenses issued per year: 2003 – 2010 64

Figure 24. California licensed registered nurses – new licenses issued per year: 1980 – 2010 67

Figure 25. California certified public health nurses – new certificates issued per year: 1980 – 2010..... 68

Figure 26. California certified clinical nurse specialists – new certificates issued per year: 2000 – 2010 71

Figure 27. California certified nurse practitioners – new certificates issued per year: 1990 – 2010..... 72

Figure 28. California certified nurse anesthetists – new certificates issued per year: 1990 – 2010..... 75

Figure 29. California certified nurse midwives – new certificates issued per year: 1990 – 2010..... 76

Figure 30. California certified psychiatric/mental health nurses – new certificates issued per year: 1985 – 2010..... 79

Figure 31. California licensed vocational nurses – new licenses issued per year: 1980 – 2010 81

Figure 32. California licensed pharmacists – new licenses issued per year: 1980 – 2010 83

Figure 33. California registered pharmacy technicians – new registrations per year: 1995 – 2010..... 85

Figure 34. California licensed naturopathic doctors – new licenses issued per year: 2005 – 2010..... 87

Figure 35. California licensed osteopathic physicians – new licenses issued per year: 1980 – 2010 89

Figure 36. California licensed physicians – new licenses issued per year: 1980 – 2010..... 91

Figure 37. California licensed physician assistants – new licenses issued per year: 1980 – 2010 95

Figure 38. California licensed acupuncturists – new licenses issued per year: 1980 – 2010 97

Figure 39. California licensed chiropractors – new licenses issued per year: 1980 – 2010 99

Figure 40. California licensed chiropractors – new satellite office licenses issued per year: 2000 – 2010..... 100

Figure 41. California licensed optometrists – new licenses issued per year: 1980 – 2010 102

Figure 42. California licensed podiatrists – new licenses issued per year: 1980 – 2010..... 104

Figure 43. California licensed professional midwives – new licenses issued per year: 2000 – 2010..... 106

MAPS

Map 1. California's Counties 21

Map 2. Current California audiologist licenses per population by county..... 23

Map 3. Current California occupational therapist licenses per population by county..... 26

Map 4. Current California occupational therapy assistant licenses per population by county..... 27

Map 5. Current California physical therapist licenses per population by county..... 30

Map 6. Current California physical therapy assistant licenses per population by county..... 31

Map 7. Current California psychiatric technician licenses per population by county 33

Map 8. Current California respiratory therapy licenses per population by county..... 35

Map 9. Current California speech-language pathologists licenses per population by county 38

Map 10. Current California speech-language pathologist assistant registrations per population by county..... 39

Map 11. Current California clinical social worker licenses per population by county..... 42

Map 12. Current California associate social worker registrations per population by county..... 43

Map 13. Current California marriage & family therapy licenses per population by county..... 46

Map 14. Current California marriage & family therapist intern registrations per population by county 47

Map 15. Current California educational psychologist licenses per population by county..... 49

Map 16. Current California psychologist licenses per population by county..... 53

Map 17. Current California psychological assistant registrations per population by county..... 54

Map 18. Current California dentistry (DDS) licenses per population by county 60

Map 19. Current California dental assistant registrations per population by county 61

Map 20. Current California dental assistant in extended function registrations per population by county..... 62

Map 21. Current California registered dental hygienist licenses per population by county..... 65

Map 22. Current California registered dental hygienist in alternative practice licenses per population by county 66

Map 23. Current California registered nurse licenses per population by county..... 69

Map 24. Current California public health nurse certifications per population by county..... 70

Map 25. Current California clinical nurse specialist certifications per population by county 73

Map 26. Current California nurse practitioner certifications per population by county 74

Map 27. Current California nurse anesthetist certifications per population by county..... 77

Map 28. Current California nurse midwife certifications per population by county 78

Map 29. Current California psychiatric/mental health nurse certifications per population by county..... 80

Map 30. Current California licensed vocational nurse licenses per population by county 82

Map 31. Current California registered pharmacist licenses per population by county..... 84

Map 32. Current California registered pharmacy technician registrations per population by county..... 86

Map 33. Current California naturopathic doctor licenses per population by county..... 88

Map 34. Current California osteopathic physician licenses per population by county..... 90

Map 35. 2008 California active patient care physicians per population by county..... 94

Map 36. Current California physician assistant licenses per population by county 96

Map 37. Current California acupuncture licenses per population by county 98

Map 38. Current California chiropractor licenses per population by county..... 101

Map 39. Current California optometrist licenses per population by county..... 103

Map 40. Current California podiatrist licenses per population by county..... 105

Map 41. Current California professional midwife licenses per population by county..... 107

I. EXECUTIVE SUMMARY

Driven by a growing and aging population, changing disease burdens, market forces and the Patient Protection and Affordable Care Act (ACA), health care is changing. In particular, the ACA provides an unprecedented opportunity to address structural issues in the US health care system that lead it to underperform while remaining very expensive. Most health regulation resides at the state level, but most states now confront major budget shortfalls, largely due to their Medicaid obligations, that will challenge their ability to implement the ACA. The Act does not detail how each state should respond; it only provides general expectations and direction. Much of the attention on the legislation to date has been on finance – the expansion of the insurance pool through exchanges and regulation of private insurers – or organization – the creation of Accountable Care Organizations and encouragement of Patient Centered Medical Homes. California has taken a lead on positioning itself to implement key components of the ACA. But the broad challenges of expanded insurance coverage and new financing models will be possible only with an adequate health care workforce that has the requisite skills and expectations to create new practice models for care delivery. Without such redesigns to create more effective and efficient models, the movement to reform will increasingly be characterized by reduction in payments to providers or rationing for consumers. Neither of these options will be attractive and perhaps not politically sustainable.

Meaningful decisions about expanding coverage and moving to new practice models need solid workforce data and analysis. This report pulls together much of this work. In addition to raising awareness about the links between ACA implementation and workforce, this compilation highlights the challenges of securing current data sets; comparing data across professions; and identifying and analyzing the options – through the training pipeline, practice acts and technology,

for example – for meeting workforce needs in the context of expanded insurance coverage.

As a way of organizing the issues, several critical questions are posed:

What are the drivers that affect the quantity and quality of California's health care work force?

Several forces are exerting pressure on the state's health workforce to expand and evolve. These include changing disease burdens and demographic shifts such as a growing and aging population that is increasingly racially and ethnically diverse. California is also linguistically diverse—40 percent of the state's residents speak a language other than English, and 20 percent do not speak English “very well”.¹ The state's large immigrant population includes many individuals who are not documented—a factor that will offer particular challenges to California's safety net providers in future years.

Market forces are also bringing about change. Advances in health information technology both facilitate and demand workflow redesign, providing unprecedented opportunity and challenge. New models of care such as retail clinics and school- and work-based clinics are emerging to offer enhanced access to health care. Perhaps most dramatically, the state is poised to implement the Patient Protection and Affordable Care Act, which will in part expand coverage to four to six million more Californians. We need not only sufficient numbers of providers but also providers who can meet the needs of a diverse and changing public.

These changes and shifts are being monitored by various researchers and institutions but the information is often scattered across various websites and publications. Several groups in California are focusing on the health workforce across professions, sharing the information available and exploring promising directions. These efforts

1 2000 US Census, Summary File 3.

Lack of cultural and linguistic concordance between patients and health care workers may limit access, even in areas without apparent shortages. For example, only five percent of California's MDs and eight percent of its nurses are Latino (compared to 37 percent of the population). Many of the allied health professions more closely reflect the state's general population than do medicine, nursing, pharmacy or dentistry. Many health care organizations rely on support staff for language interpretation without knowing whether staff have sufficient bilingual skills to serve in this role.²

Finally, some professions in California's health care workforce are aging faster than its population. Looming waves of retirement without corresponding influxes of new practitioners could further impact the state's ability to provide care. For example, 29 percent of the state's physicians are nearing retirement age³, as are 19 percent of the state's dentists,⁴ and more than 30 percent of clinical laboratory scientists.⁵ However, the economic recession has encouraged some clinicians to delay, or return from, retirement, confounding supply predictions in some categories such as nursing.

Do we educate enough providers to meet the state's growing needs and are those providers' skills aligned with emerging needs?

While California has many health careers training programs, from community college certificate programs to advanced residencies at academic health centers, many are full to capacity, and the question remains whether the skills and backgrounds of graduates are well-matched

² Moreno, M.R., Otero-Sabogal, R., and Newman, J. (2007). "Assessing Dual-Role Staff-Interpreter Linguistic Competency in an Integrated Healthcare System". *Journal of General Internal Medicine*. 2007 November; 22(Suppl 2): 331–335.

³ Paxton, C. (2010). *California Physicians: Facts and Figures*. Oakland: California Health Care Foundation. 10.

⁴ Pourat, N., and Nicholson, G. (2009). *Distribution and Characteristics of Dentists Licensed to Practice in California*. Los Angeles: UCLA Health Policy Research Center. 2.

⁵ California HealthCare Foundation (2011). *California's Clinical Laboratory Scientists and Technicians*. Oakland, CA. 1.

to address the state's changing needs. Some professions have programs throughout the state but many require significant travel for individuals from various locations to attend.

California needs more primary care providers, and yet the state has fewer family medicine residency slots available today than it had ten years ago. At least some of this decrease has been offset by growth in NP, PA and DO programs and graduates of those programs choosing primary care. Recent efforts to expand nursing education in the state have helped meet the demand for registered nurses and diversify the nursing workforce.

Health information technology has the potential to enhance educational opportunity, improve patient care, and redesign workflow to alleviate the burden on primary care providers. Additional investment could be made in programs training technicians and clinical staff in the implementation and use of this technology.

Racial and cultural disparities between patients and the health care workforce continue. Low high school and college graduation rates for underrepresented minority youth make it difficult to increase diversity at medical and nursing schools in particular. The allied health professions continue to be more reflective of the state's population. The community colleges that offer allied health programs attract a diverse student population, but attrition rates are high and programs have difficulty finding the resources to expand to meet growing numbers of applicants.

Are there other sources of health professionals?

While researchers have documented that California retains a number of its residents upon completion of training, others move out of state. One of the key data points missing is exactly how many leave, for what reason, and whether there is a chance to encourage the repatriation of Californians that move to other states for training. Some states

collect data at relicensure on where their health care workers went to high school to track migration patterns. California might consider such research to better understand patterns and options. It is also clear that California relies quite heavily on foreign trained professionals – particularly in nursing and primary care medicine – in meeting the state's health care needs. For example, approximately 31 percent of California's primary care physicians, and 24 percent of the state's nurses, were trained outside the country. The practice patterns of such individuals and the success of programs such as San Francisco's Welcome Back Center could be further explored.

What policy solutions can help California meet changing demands?

Efforts to offset the anticipated increase in demand for care can be found throughout the ACA in the form of investments in:

- a) Workforce development (including support for primary care training, loans and scholarships for education support, and changes in the National Health Services Corps program);
- b) Primary care payment rates; particularly the change in Medi-Cal rates to equal Medicare;
- c) Existing models of care – such as community clinics, school-based health centers, nurse managed health centers and public hospitals – that are likely to see higher proportions of the newly insured than other delivery settings; and
- d) New financing and delivery models, such as accountable care organizations and patient-centered medical homes, which show potential for improvements in access, cost and quality of care.

Starting with the workforce development opportunities offered in the ACA,⁶ the state can begin building California-specific strategies to improve supply, distribution and workforce practice models; strengthen the education pipeline; and

⁶ Morgan, Rachel. (2010). Summary of the Health Workforce Provisions in the Patient Protection and Affordable Care Act: H.R. 3590. Washington, D.C.: National Conference of the State Legislatures.

increase diversity. The policy issues raised and addressed in the recommendations below come from the compilation and analysis of the data, literature and key informant perspectives included in this report. Future action on most of these issues will require concerted efforts to identify and partner with appropriate stakeholders to design targeted strategies and task-oriented action plans. To facilitate this process, additional background material and resources can be found in the charts, maps, interview summaries and bibliographies that follow.

Improving Supply, Distribution and Workforce Practice Models

Because maldistribution is such a critical issue in California, adopting and expanding successful policies that address geographic practice choices will be key. It is also appropriate to question whether telehealth modalities could make better use of limited resources and whether California could make better use of its workforce by expanding practice acts for selected professions, notably those providing primary care, oral health care, and vision care.

An underlying theme for policy making in the future is the potential to rethink *how* we question our supply of practitioners. Perhaps it is time to focus on the type of care – such as primary, oral, or vision – that needs to be provided rather than the type of provider in calculating supply. New practice and financing models, including patient-centered medical homes and accountable care organizations, look to teams of providers where doctors, nurses and medical assistants might all play key roles in providing care. These models alleviate some of the demand for physicians, but require changes in financing and reimbursement, as well as better implementation of health information technology and practice culture changes, to succeed. Policies to address supply and distribution and to facilitate the development of new practice models include the following.

- Because professionals tend to practice in the areas where they train, increasing **training and residency opportunities in underrepresented fields and communities** is a good investment. The ACA provides for the establishment of Teaching Health Centers, which provide medical residency opportunities in community health centers. California is developing such a center in Modesto. Although individually insufficient to meet upcoming demand, it is a step in the right direction.
- Expand **loan repayment programs** for practicing in underserved areas and expanding these programs to encompass high-need professions/roles such as registered nurses working in expanded roles (care manager) in primary care, and to professional counselors, social workers and psychologists working in community clinics.
- Enhance integration and implementation of **telehealth** to reach more patients more effectively, and allow connections between clinicians, and between clinical sites, particularly in remote areas.
- Strengthen the capacity of **safety net providers** who serve underrepresented patient populations.
- Improve, standardize and streamline **workforce data collection** and availability in order to enhance regional and statewide planning and coordination.
- Promote ongoing statewide and regional **partnerships for health workforce planning**. Adequate responses to changes in demand can only be met through coordinated planning efforts beyond the level of individual organizations or communities.
- Expand the **scope of practice** for select professions such as nurse practitioners and physician assistants to serve as providers. Research suggests that these professionals are already serving key roles in rural areas where physicians are scarce.
- Invest in training and **health information technology** that would allow the safe delegation

of tasks to clinical support staff in team-based models.

- Develop **financing models** that mitigate income differences between primary and specialist providers and that reward outcomes-based services by teams of providers focused on the patient.

Improving the Education Pipeline

Recent state-level programs intended to increase the supply of registered nurses suggest that focused educational investments *can* make a difference, but these investments must be carefully targeted. This experience highlights the need for good educational and employment data for tailoring these efforts. California's Office of Statewide Health Planning and Development (OSHPD) has recently set up a website that offers maps of the educational programs offered in the state, which holds great promise for future students and policy makers alike. Many of the educational issues are profession-specific and can be explored in more depth through the literature cited in the bibliographies at the end of this report. Specific policy considerations that can be gleaned from the work done to date on this topic include:

- **Increasing the number of primary care physicians** is an important, but long-term goal that cannot be achieved fast enough to meet the upcoming increase in demand. However, investing in strategies to encourage medical students to practice in primary care is an important goal.
- In the short term, the ACA offers some opportunities for **refocusing education resources on** professions such as **nurse practitioner and physician assistant**. These professions require less training time than medical school and could help meet some of the more immediate demand for primary care providers.
- Promoting and supporting innovations in California's **community colleges to increase completion** of health professions programs and **enhance retention** of underrepresented

students would also help increase diversity and meet workforce demands. This will require creative and tailored solutions and partnering between community college administrators, faculty, workforce investment boards, and local communities. In addition, some allied health programs could explore partnering with private sector technology manufacturers, for example, to help support clinical training options, which are often in short supply. Such a move would require legislative action to help protect from misuse and conflict of interest.

- **Investing more equitably in primary and secondary education programs** would help prepare a diverse group of students to enter the health professions in the first place.

Increasing Diversity

According to the California Pan-Ethnic Health Network, more than half those eligible for subsidies or Medi-Cal under the ACA are people of color, and 32-51% of adults in these groups speak English less than well.⁷ While research suggests that linguistic, racial and ethnic concordance between physicians and patients improves the quality of care, California's physician workforce does not reflect its patient population. Neither do the nursing, dentistry or pharmacy professions. Long-term strategies for addressing these disparities include developing the education pipeline, as noted above, particularly to encourage Latinos to pursue more educationally-intense occupations. In the short-run, the mismatch between providers and patients calls for other strategies to build bridges between the health care system and patients from various cultures. Possible solutions include:

- **Investing in interpretation**, including training existing providers to work better with interpreters and interpretation services; training existing bi-lingual clinical support staff such as medical assistants to serve as dual-role interpreters; and improving reimbursement and reward for practices utilizing interpretation services.

- **Training for positions such as community health worker, promotorá, and health educator** that can 1) facilitate links between clinical care delivery and population health and 2) reach out to California's diverse communities to assist them in navigating the system, inform them of opportunities under the ACA and support interest in health careers.
- **Building career ladders** that allow members of California's diverse allied health professions to move up will improve their careers, help their communities, and help diversify the health care workforce.
- **Evaluating and replicating models that work** to recruit and enroll members from underrepresented communities into health professions programs.
- **Including communities of color in the policy and planning** processes for implementing health care reform.

How are things changing and where are the good ideas on education and practice?

As described in detail in the data sections below (see both the description of data that introduces the chart and figure section as well as the analysis of available data sets), the data systems for California's health workforce are good but could be much better. There are many basic questions that cannot be answered by the current data. These include practice locations (not just address of record, which could be a mailing address) and comparisons across professions (for example, to see how many NPs, PAs, MDs and DOs are providing primary care services). Some of the shortcomings of the current data sets are likely to be improved upon launch of OSHPD's Health Workforce Clearinghouse but this effort is still in development. Additional improvements to the collection and availability of data could be encouraged through policy changes that would significantly help those who are trying to determine whether and where to build new educational programs and how to administer incentive programs for practitioners serving traditionally hard-to-reach populations.

⁷ CPEHN. (2010). *Equity Through Implementation*. November 2010. Policy brief based on data from the California Health Interview Survey (CHIS).

Perhaps more importantly, the state would be well served by enhancing efforts to collect best practice ideas on education and health care services so training programs and delivery institutions throughout the state could benefit from innovators and early adapters of good ideas. Such efforts would be most helpful if they also formed bridges between employer needs and schools, would-be employees and communities seeking to prepare youth for job opportunities.

Going forward

The health care workforce is vital: it constitutes a significant portion of the state's labor market and is the source of care for Californians. The state makes major investments each year in the health care workforce through support for the University of California health professional schools and health systems, the State University and community college training programs, Medi-Cal, grants to local health departments and community-based direct training and loan programs. To plan for the optimal outcome of workforce investments, the state needs to:

- 1) Measure the investments and adequacy of supply;
- 2) Evaluate their effectiveness;
- 3) Develop ways to improve their effectiveness; and
- 4) Monitor the improvements.

The following information helps frame ways to understand the issues surrounding the health care workforce and how California can best realize a good return on its investment while helping ensure that the state's population has access to high quality providers. As California moves toward implementing the ACA and to meeting the evolving needs of the population, the role of the health care workforce is critical. This report provides an overview of much of the information, data and perspectives on California's health care workforce and offers recommendations for policy makers to consider.

Following this executive summary, the report includes the following sections:

- II. *Summary of interviews of key informants*
In June 2011, fifteen individuals with health care workforce expertise were interviewed. A summary of these thought leaders' responses to questions is included here along with their specific solutions and recommendations.
- III. *Workforce data charts and figures*
Section III of this report includes graphic presentation of data from the state's Department of Consumer Affairs for the professions it oversees, which includes the vast majority of health professions in California. Specific data presented include new licenses over time by profession and maps that show distribution by profession by county.
- IV. *Health Professions Workforce Data*
Section IV provides an overview and analysis of California health professions workforce data. It lists licensing, professional and education data, describing the various data sets and workforce surveys available, and offering commentary on both the strengths of these data as well as opportunities for improvement. This section also describes OSHPD's new Health Workforce Clearinghouse.
- V. *Summaries of published California workforce literature by profession*
Section V offers summaries of the literature included in the bibliographies that are in Section VI.
- VI. *Annotated Bibliographies*
Section VI provides annotated bibliographies of select, non-exclusive published literature on the health workforce. The focus is on California but we include some seminal national reports and literature.

II. SUMMARY OF INTERVIEWS: PERSPECTIVES FROM THOUGHT LEADERS

The following section is based on interviews of fifteen key informants with expertise in the health care field. Respondents were interviewed during the month of June 2011. All interviews were conducted using methodology approved by the Committee on Human Research at the University of California, San Francisco. A list of those interviewed is included at the end of the section.

ACA Programs and Policies

Leaders were asked to identify which ACA programs and policies aimed at mitigating the impact of significant increased demand for services had the most potential and promise for California, and whether these programs would be sufficient to meet the demand.

Workforce Development

While many of those interviewed thought that there is a shortage of primary care physicians, and that the ACA would result in increased demand on primary care clinicians, increasing the *number* of primary care physicians was seen as a long-term solution incapable of meeting the increase in demand projected by 2014.

Other types of providers could be developed to address these demands. While about 32 percent of physicians and one-third of physician's assistants enter into primary care (pediatrics, family medicine and internal medicine), 65 percent of nurse practitioners do so.⁸ Interest in primary care among current medical school students has been on the wane for years, ranging between 14-20 percent, although by 2010, interest in this field

8 American College of Physicians. *Nurse Practitioners in Primary Care*. Philadelphia: American College of Physicians; 2009: Policy Monograph. (Available from American College of Physicians, 190 N. Independence Mall West, Philadelphia, PA 19106.); Bodenheimer, T.; Chen, E. and Bennet, H.D. (2009) "Confronting The Growing Burden Of Chronic Disease: Can The U.S. Health Care Workforce Do The Job? The answer is "no"—not as currently constituted." *Health Affairs*, 2009 January/February (28)1: 64-74.

had increased back to 30.5 percent.⁹ However, very few medical students (6%) were interested in family medicine.¹⁰

Even if the number of primary care providers could be increased fast enough, additional measures would be required to ensure that these new providers were a) culturally and linguistically competent, and b) targeted to the geographic areas (medically underserved) and institutions (community health clinics) likely to experience the greatest demand.

Because the number of providers, including culturally and linguistically competent providers, is unlikely to increase fast enough to meet demand, redesigning practice models so that providers can delegate tasks to other health care professionals—such as nurses, community health workers, and medical assistants—holds promise. Research suggests that 50 percent of the time spent by primary care physicians is spent on preventive care and screenings, much of which could conceivably be done by others.¹¹ Allied health professionals are more likely to reflect the demographic cultural and linguistic makeup of the communities in which they are employed, which is an additional asset. However, there have also been shortages in some of the allied health fields, so investment in these programs would likely be worthwhile. While there was considerable success in expanding training programs for nurses at the community colleges, approximately one-quarter of this funding is grant-based and likely non-sustainable in the long run.

The ability to delegate tasks is reliant not only upon changing practice models, but on enhancing

9 Kruse, J. (2011) COGME 20th Report: Advancing Primary Care. Accessed June 27, 2011. <http://www.hrsa.gov/advisorycommittees/bhpradvisory/cogme/Reports/index.html>.

10 Association of American Medical Colleges. (2010). 2010 GQ Medical School Graduation Questionnaire: All Schools Summary Report. Accessed June 27, 2011. <https://www.aamc.org/data/gq/allschoolsreports/>.

11 Yarnall, K.S.H; Pollak, K.I.; Ostbye, T.; Krause, K.M.; and Michener, L.J. (2002). "Primary Care: Is There Enough Time for Prevention?" *American Journal of Public Health*, 2003 April; (93)4: 635-641.

health information technology, and restructuring reimbursement. One “hidden workforce” that needs to be developed to address increasing demand is the health information technology workforce. This workforce includes those tasked with implementing and maintaining telemedicine and electronic health records systems, and clinical and administrative support staff who must work with these systems. Current training programs reportedly do not adequately prepare technicians for the workforce due to lack of resources and applied training opportunities.

Proposed new models of care such as the patient-centered medical home call for a whole-person orientation and coordinated care across the health care system. Access to behavioral and mental health services, and integration of behavioral health into primary care, require more coordinated training of behavioral health providers and the supporting workforce. The state has only two pathway programs at the secondary school level in human services, and an inchoate set of certificate programs at the graduate level to develop this workforce.

Finally, as California’s population ages, the demand for home health workers and personal care attendants is increasing. This workforce is among the fastest growing job categories in the state--projected to increase by 44-46 percent by 2018.¹² Because nearly a third of this workforce is currently uninsured, the Affordable Care Act would benefit these low-wage workers by expanding access to health care coverage.

Strengthening Existing Models of Care

Many informants agreed that community health centers (CHCs) and public hospitals would bear the brunt of the increase in demand. Capacity building for these institutions will be vital to the successful implementation of health care reform. While both school-based health centers and nurse managed health centers show promise, their

numbers and capacity may be currently insufficient to meet growing demand. One person noted that these latter, primarily nurse-managed centers had potential to address primary care physician shortages, especially in physician-shortage areas, while another felt that nurse practitioners and other nurses would be better deployed in community health clinics.

Better coordination between public hospitals, non-profit hospitals, including academic medical centers, and community health centers, could help to strengthen capacity and improve quality of care. This should include electronic integration. One individual noted that hospitals needed to re-assess the way they look at their provision of community benefit and include investment in prevention rather than just emergency room services for Medicaid and uninsured populations. Since these institutions are using public resources in the form of tax breaks to provide care, they should be encouraged to practice better stewardship of these resources.

Another issue that impacts the capacity of community health centers has to do with a disparity in designation between CHCs and rural health centers. While the CHC cannot turn away uninsured patients, rural health centers have more flexibility in this respect. This may result in cost shifting opportunities for rural health centers, which can turn away the undocumented while CHCs cannot. This could increase the strain on CHCs already experiencing greater patient flow, especially if federal funding to cover the uninsured is decreased under the assumption that most citizens will be insured as a result of the Affordable Care Act.

Reforming Primary Care Reimbursement Rates

Reforming primary care payment rates will have some positive impact. In California, payment rates for primary care under Medi-Cal (Medicaid) are scheduled to be increased to 100 percent of Medicare rates, and 80 percent of Medicare for other

¹² Paraprofessional Healthcare Institute. (2010). State Facts: California's Direct Care Workforce. 2010 December. Bronx, NY.

outpatient care. One respondent noted that while this would help, Medicare rates are not that high and reforming primary care payment rates is “not a game-changer” that will encourage physicians to rush to become Medi-Cal providers. It is also unclear whether this is a good *long term* solution since the increased federal dollars to support this strategy may only last for a couple of years.

New Financing and Delivery Models

According to several key informants, new financing and delivery models have greater potential for addressing the increase in demand. These include the patient-centered medical home model of care (PCMH) and accountable care organizations (ACOs).

While both of these models are projected to cut costs and improve access and quality of care, the shift to the PCMH model may actually require *more* primary care physicians. Researchers evaluating Seattle-based GroupHealth Cooperative's medical home pilot concluded that the medical home model required more primary care physicians, smaller patient panels, enhanced staffing ratios, and improved staff training to effectively implement this team based model of care. Nonetheless, downstream cost savings for the GroupHealth pilot included decreases in emergency room use and hospitalization.¹³

Developing means of capturing and redirecting these cost-savings, and covering the costs of employing the allied health professionals and health information technology required to implement these models, requires fundamental reimbursement reform away from a volume-based to a value-based system.

While many of the individuals interviewed thought ACOs a good idea, others were skeptical, noting

that ACOs would not bring about significant change unless more fundamental changes were made to practice models. One noted that the current models are not properly structured around rewards and consequences. Current models for ACOs in California reportedly reward organizations for reducing unnecessary hospitalizations, but do not punish them for failing to reduce costs or hospitalizations.

The Affordable Care Act also contains additional provisions for improving and transforming long term care and support services. The Community Living Assistance Services and Supports (CLASS) Act within the ACA establishes a public / private long-term care insurance program. It is privately funded by individual payroll contributions, but the federal government will administer it. This cash benefit is anticipated to slow the rate of the elderly and infirm relying on Medicaid as they exhaust their resources. This cash benefit could be paid directly to home health workers or family members to provide care in the home. As one person noted, an integrated health care system has to work across the full spectrum and support sufficient home health capacity to allow people to age at home rather than in hospitals. The latter is more costly and less desirable for quality of life. The workforce implication is for more home care and in-home health care services and for integrating these direct care workers into the broader PCMH model.

Key Informants' Specific Solutions and Recommendations

Key informants made a number of recommendations for strengthening California's capacity to meet the demands of health care reform. They also identified a number of strategies already in the planning or implementation phases that will help to contain costs and maintain or improve quality of care.

¹³ Soman, M.P., Trescot, C.E., Erikson, M. Larson, E. B. Reid, R.J., Coleman, K., Johnson, E.A., Fishman, P.A., and Hsu, C. (2010). “The Group Health Medical Home At Year Two: Cost Savings, Higher Patient Satisfaction, And Less Burnout For Providers” *Health Affairs*, 2010; (29)5:835-843.

Improve Telehealth and HIT Capacity to Implement Meaningful Use

- 1) Find ways to use HIT to stretch the health care workforce—Address the need for a **workforce competent in health information technology** that is capable of implementing, using, and maintaining electronic health records (EHRs) and telemedicine.
 - a. Enhance the preparation of HIT specialists by **developing internships and apprenticeships** to provide on-the-job training to enrollees in community college HIT programs.
 - b. Develop and disseminate an **HIT curriculum** for medical assistant training programs and other **health professional training programs**. Training providers in HIT will allow them to develop protocols to delegate tasks, and training medical assistants and other clinical support staff in computer skills and HIT will allow them to better assist providers in patient care and documentation.
- 2) **Improve data integration** across systems so that information can be shared safely and efficiently between labs, hospitals, community health centers, and medical office practices.
- 3) **Enhance telehealth** so that primary care physicians in remote sites can access specialists and non-physician providers can provide care in remote sites and access primary care physicians. Telemedicine can also relieve the pressure on providers and other clinic staff by allowing nurse case managers and other clinic staff to receive and monitor physiological data sent electronically from patients at home. Changing the laws around telehealth could go a long way towards creating better access, coordination of care, and cost containment.

- 4) **Utilize teleconferencing for interpretation services** to increase accessibility and cut the time required for interpreters to travel from place to place.

Target Workforce Development

- 1) Invest in training to **develop multi-disciplinary teams**. Place more emphasis on teambuilding and communication in health professions training.
- 2) **Promote and support innovations in community colleges** to increase the successful completion of health professions programs, with a focus on underrepresented racial and ethnic groups. This requires creative solutions and partnering between community college administrators, faculty, workforce investment boards (WIBs), and the community.
- 3) **Invest in nurse practitioner and physician assistant training programs**, and increase the number of slots available for training NPs and PAs. Both of these professions are easier to scale up and require less time in training than primary care physicians.
- 4) **Maintain**, rather than increase, **capacity in RN training programs** for the time being. Support community college nursing program capacity so that it can be scaled up when necessary to meet demand. Continue to support collaborative programs between the community colleges and the CSU and UC system for the seamless transition between associates and baccalaureate degrees.
- 5) **Reform nurse training** away from a hospital-based focus towards a community health-based focus. Create more roles for RN care managers and chronic disease managers to support the 10 percent of patients that incur 70 percent of health care costs.¹⁴ Increase clinical training for RNs

¹⁴ Bodenheimer, T. and Berry-Millett, R. (2009). "Follow the Money — Controlling Expenditures by Improving Care for Patients Needing Costly Services". *New England Journal of Medicine*. 2009; 361:1521-1523.

- and allied health workers in community clinics and home settings.
- 6) Train for positions like **community health worker, promotorías and health educator** that can facilitate a link between clinical care delivery and population health.
 - 7) **Invest in primary education:** Strengthen pathway programs for the health careers and provide students with more information early on about the types of careers available beyond doctors and nurses. Work on enhancing math and science skills in the early grades so that students are eligible to participate in pathway programs in the first place. Invest more equitably in primary education to obtain a more diverse healthcare workforce.
 - 8) **Scholarships and loans:** forgivable loans are an important component of building the health care workforce in geographically remote and underserved areas. Expanding loan repayment programs like the National Health Service Corps to registered nurses working in expanded roles (care manager) in primary care, and to professional counselors, social workers and psychologists working in community clinics might help meet growing demand and implementation of patient centered medical homes. Investigate models like those utilized in Europe where loan repayment for college education is based on a proportion of post-graduation salary. This strategy might remove some of the disincentive to enter primary care.
 - 9) **Develop data sources:** Better data sources are needed to allow training organizations and others to determine employer demand and assess educational outcomes post-graduation.
 - 10) **Grow-your-own strategies:** Health professions training programs need to adopt recruitment and outreach strategies that benefit the region in which they are situated. These benefits might take the form of developing health care practitioners who are culturally and linguistically concordant with local patient populations, developing practitioners who are likely to stay in underserved areas, providing jobs and economic opportunities to local communities, and providing educational support to K-12 educators in the local community.
 - a. Use performance criteria to fund residency programs that have shown the ability to address local health care needs and train professionals that will stay in the community, not just programs that recruit the best and brightest from around the world. While this might mean recruiting from the local area, in one case an interviewee noted that recruiting from Mexico produced candidates that best met these criteria.
 - b. Use distance learning and collaborative arrangements between community colleges and CSUs to train and retain local trainees in rural areas.
 - c. Teaching Health Centers established through the ACA were noted as promising, although unlikely to be able to provide anywhere near enough graduates to meet growing demand for primary care physicians.
 - d. Develop and strengthen regional partnerships and develop pathways for high-need professions in underserved areas.

Promote Regional and Statewide Planning and Coordination

- 1) Encourage ongoing statewide and regional partnerships for health workforce planning. This can provide a statewide perspective while respecting conditions unique to each region. The work of the Health Workforce Planning Council has been valuable, but is only funded through the planning stages for the ACA, and not into implementation.

- Workforce investment boards, colleges, community-based organizations, employers, and foundations are key players.
- 2) Changes underway at the Department of Mental Health Services include a statewide behavioral health services assessment and plan over the next year to look at integrating behavioral health services into primary care. This will make it imperative to integrate behavioral and mental health into statewide workforce planning.
 - 3) Strengthen the relationship of the AHECs (Area Health Education Centers) and the community health centers so that they can better coordinate educational opportunities to train providers and other health professionals to serve in community-based health care.

Strengthen the Capacity of Safety Net Providers

- 1) **Develop better partnerships between Community Health Centers (CHCs) and hospitals.** Encourage or require hospitals to invest in community clinics and prevention as part of their community benefit. Begin a process to place CHCs at risk of losing money if they do not reduce hospitalization, and share the savings if they do. Provide both types of organizations with support for innovation during the transition.
- 2) **Enhance Community Health Center electronic health record (EHR) capacity** so that CHCs can document and publicize their role in decreasing preventable emergency department utilization.
- 3) **Level the playing field between Rural Health Centers (RHCs) and FQHCs** by requiring that both provide care to the uninsured.
- 4) **Community Health Centers will need a sustainable business model** beyond '330 funding', a grant program under the Public Health Service Act, which is not guaranteed past 2013. This might include increasing the number of privately insured patients and patients with Medicare. CHCs can capitalize upon the fact that they are the ideal medical home, providing a comprehensive range of services including primary care, urgent care and often oral health, laboratory services, and mental and behavioral health.

Redesign Practice Models and Financing Structures

- 1) **Develop practice models** that include an **interdisciplinary team** working together to provide patient care. Require all clinical staff to work at the top of their license. In a clinic or other primary care setting, staff such as care managers, promotorás, health coaches, nurses, medical assistants, community health workers, and others can be trained to take on much of the planning, screening, health education, panel management, community linkages and follow-up to lighten the burden on the primary care providers.
- 2) **Changes to reimbursement structures** that pay for value, rather than volume, and emphasize prevention, are expected to improve health outcomes and contain costs in the long run by decreasing emergency room visits and hospitalization. Reimbursement structures that cover preventive services provided by nurses, medical assistants, patient navigators, care coordinators, and other clinical support staff are vital to implementing new practice models.
- 3) Encourage **patient engagement and self-management** through renewed emphasis on prevention. Utilize telehealth, patient portals and other HIT resources to provide greater access to health information, and new staffing models to encourage patient participation.

- 4) The state of California has used its section 1115 Medicaid waiver to **restructure the state's public hospital financing system** and prepare for the Affordable Care Act. This waiver is intended to ensure better coordination of care through the establishment and strengthening of organized delivery systems.¹⁵ The State is providing incentives to public hospitals for quality improvement and better integration with primary care.

Enhance Diversity

Key informants discussed a number of issues surrounding work to **diversify California's health workforce**. Several people noted that physician-to-patient cultural and linguistic concordance was ideal and resulted in better health outcomes. Visits can also be shorter if no interpretation is needed. However, because of the lack of racial and ethnic diversity among physicians in particular, other members of the health care team who may be more reflective of local communities are often called upon to serve as a bridge between the patient and the provider. Finally, employment in the health careers, especially if career ladders are in place, can serve as an engine for upward mobility in underserved communities.

Several leaders noted that the allied health professions were more likely to reflect the demographics of the state. Even in nursing, younger nurses in training are more diverse than the group of currently practicing nurses, possibly due to a number of initiatives bolstering diversity in the nursing workforce. Individuals noted that the diversity programs funded through grants from The California Wellness Foundation and The California Endowment have made a big difference, but their future remains uncertain.

- 1) Ensure that communities of color are represented on the new **Health Benefit Exchange Board**, which will broker coverage for expanded insurance for the ACA.

¹⁵ State of California – Health and Human Services Agency. (2010). "California Section 1115 Comprehensive Demonstration Project Waiver—A Bridge to Reform: A Section 1115 Waiver Proposal."

- 2) **Fund interpreter training** for programs for medical assistants at Community Health Centers and other practice sites. Some feel that MAs are key staff who have sufficient language background and have the potential to become interpreters in the exam rooms.
- 3) **Reimburse and reward practices** for the extra costs of using **interpreting services**. Longer visit times and the increased costs of interpretation may serve as a disincentive to take on non-English speaking patients. The number of non- and limited-English speaking patients will increase as a result of health care reform.
- 4) Train and utilize more **promotorás** in health care settings and determine how **promotorás** can be further utilized in both Latino and non-Latino communities that need a bridge to the health care system.
- 5) **Fund primary education programs:** Disproportionate numbers of Latino and African American youth drop out of high school before they even get a chance to enter health careers programs, so supporting primary education is important. Support programs in the high schools like Health Academies and career and technical education so that youth connect with the subject matter early.
- 6) **Build career ladders:** Because the allied health professions are more diverse, building career ladders to move allied health workers up is an important strategy to diversifying the health care workforce.
- 7) **Develop better data:** Use data from the medical board to track race, language, ethnicity, and practice type for physicians. Implement data collection and tracking similar to this in other health professions in the state.
- 8) Medical schools need to need to invest in **recruiting diverse students** and in requiring **cultural competency training** of all students.

- 9) Work with private sector employers to encourage investment in **training a diverse workforce**. Make the business case that if you invest money in this community, you will develop the sort of workforce you need to do business in this community.
- 10) Hold California's medical schools responsible for **recruiting local underrepresented students** and not just fulfilling their diversity requirement by recruiting from abroad.
- 11) Further examine the issue of **private allied health training programs**. These programs market heavily to low-income communities of color. They offer financial aid with very high tuition, but for fields that tend to offer very low wages. They are often the only health care training institutions in some communities. What are the pros and cons of these organizations for workforce diversity?