
A Census of Actively Licensed Physicians in the United States, 2012

.....

Aaron Young, PhD; Humayun J. Chaudhry, DO, MS; Jon V. Thomas, MD, MBA; and Michael Dugan, MBA

ABSTRACT: The Patient Protection and Affordable Care Act, signed into law in 2010 and upheld by the U.S. Supreme Court last year, is expected to provide health care coverage to as many as 32 million Americans by 2019. As demand for health care expands, the need for accurate data about the current and future physician workforce will remain paramount. This census of actively licensed physicians in the United States and the District of Columbia represents data received from state medical boards in 2012 by the Federation of State Medical Boards. It demonstrates that the total population of licensed physicians (878,194) has expanded by 3% since 2010, is slightly older, has more women, and includes a substantive increase in physicians who graduated from a medical school in the Caribbean. As state medical boards begin to collect a Minimum Data Set about practicing physicians and their practice patterns in the years ahead, this information will inform decisions by policymakers, regulators and health care market participants to better align health care demand with supply.

Keywords: Physician Workforce, Medical Licensure Data, Physician Supply Estimates, Health Workforce Planning

Introduction

“Where are physicians likely to locate? How long do they remain in the same place? To which types of communities do they tend to migrate? In the answers to these and similar questions may be found a partial explanation of one problem associated with medical care, namely, the availability of professional skill.”

Public Health Reports, September 11, 1942¹

Over the past 150 years, state medical licensing and regulatory boards in the United States have steadily evolved from entities that simply issued medical licenses — based on minimal qualifications that at one time did not include a high school diploma prior to admission into medical school — to multi-faceted and multi-staffed authorities responsible for protecting the public by granting licenses to only the most qualified individuals and ensuring that disciplinary and competency standards are upheld.² Today, each of the 70 state and territorial medical boards in the United States are governed by statutes and regulations in a Medical Practice Act that establishes a board’s legal rights and responsibilities in service to the public.

Because an active license is required to legally practice medicine, and physicians sometimes have more than one license, accurate information about a physician’s credentials and licensure status has

always been crucial to state medical boards to enable them to monitor a physician’s practice, protect the public and promote quality health care. Accurate and current aggregate information about physicians’ licensure status and credentials is also of critical value to state and federal policymakers interested in health care workforce assessments, predictions and planning.

ACCURATE AND CURRENT AGGREGATE INFORMATION ABOUT PHYSICIANS’ LICENSURE STATUS AND CREDENTIALS IS... OF CRITICAL VALUE TO STATE AND FEDERAL POLICYMAKERS INTERESTED IN HEALTH CARE WORKFORCE ASSESSMENTS, PREDICTIONS AND PLANNING.

This article provides a summary, analysis and discussion of the most recent physician licensure data, collected in 2012 from each of the state medical boards in the United States and the District of Columbia by the Federation of State Medical Boards (FSMB). This is the second such census of actively licensed physicians, following one that was published two years ago,³ and contains expanded state-specific information and additional data sets. In aggregate, the information offers a useful and

current snapshot for health care workforce determinations of the number, gender, age, American Board of Medical Specialties (ABMS) certification and location by state of all physicians with an active license to practice medicine.

Methodology

The FSMB maintains a comprehensive, central repository of data from every state medical board in the United States that contains comprehensive biographical, educational and disciplinary information about all licensed allopathic (MD) and osteopathic (DO) physicians. The repository is unique in that it is the only national database that contains the most current information about which jurisdictions have granted physicians a license, or renewal of a license, to practice medicine. The complete database, known since its development in 2004 as the Federation Physician Data Center (FPDC), is continuously updated and currently contains more than 1.7 million physician records, including information about physicians who are currently licensed, no longer licensed or deceased. To obtain an accurate count and precise information about physicians with an active, current license to practice medicine, we conducted a census using the most recent data obtained by the FPDC during the 2012 calendar year.

Licensure data is continuously provided throughout the year to the FPDC by the 51 state medical boards (which regulate both allopathic and osteopathic physicians) and 14 state osteopathic boards (which only regulate osteopathic physicians) in the United States and the District of Columbia. These state boards are specifically authorized by each of their Medical Practice Acts to license and discipline physicians. Four additional territorial medical boards (Guam, U.S. Virgin Islands, Commonwealth of Northern Mariana Islands and Puerto Rico) are also member boards of the FSMB but their physician data was excluded from the current analysis (just as it was in 2010) because current data from these jurisdictions was not available. Because of their differing capacities and resources, state boards submit information to the FPDC at varying intervals throughout the year. The majority (85%) of state boards provide medical licensure information to the FPDC on a monthly or quarterly basis, with some boards able to provide such data weekly or even daily (e.g., Maine Board of Licensure in Medicine, New York State Board for Medicine and the Oklahoma State Board of Medical Licensure and Supervision).

A physician record in the FPDC is typically initiated when a U.S. medical school student or an international medical graduate (IMG) first registers to take the United States Medical Licensing Examination (USMLE), a program created in 1992 that is co-sponsored by the Federation of State Medical Boards and the National Board of Medical Examiners and is required of U.S. and IMG allopathic physicians for licensure eligibility by state medical boards. For U.S. osteopathic medical students who do not register for the USMLE* and for physicians who were first licensed prior to the introduction of the

AN ANALYSIS OF DATA COLLECTED IN 2012 ABOUT PHYSICIANS IN THE UNITED STATES AND THE DISTRICT OF COLUMBIA REVEALS THAT THERE WERE 878,194 PHYSICIANS WITH AN ACTIVE LICENSE TO PRACTICE MEDICINE.

USMLE and the Comprehensive Osteopathic Medical Licensure Examination (COMLEX-USA) in the early 1990s, licensure files from state boards serve as the initial FPDC record and as the primary source for a physician's record of successful completion of a licensure examination, which may include older examinations such as the National Board of Medical Examiners (NBME), the National Board of Osteopathic Medical Examiners (NBOME) or the Federation Licensure Examination (FLEX).

When the FPDC receives additional physician data, each record is matched to a master physician identity table using a set of algorithms developed by the FSMB. The five data elements used for matching the information to ensure that it is accurate include name, date of birth, Social Security number, medical school name and medical school graduation year. If there is a physician record match with three of the five data elements, the information is automatically entered. When there are fewer than three data elements available for matching a new physician record, the record is sent to the FSMB's Data Integration department for manual review. More than 90% of physician records received in files from state boards are matched automatically. This systematic process also allows the FSMB to track the same physician

* Doctors of Osteopathic Medicine (DO) usually take the Comprehensive Osteopathic Medical Licensure Examination (COMLEX-USA), which is offered by the National Board of Osteopathic Medical Examiners and accepted in all states and territories of the United States for licensure eligibility.

across multiple jurisdictions if more than one state license is sought at any time during his or her professional career.

Though physicians in the United States are not licensed based on their specialty or practice focus, and specialty board certification is not a requirement for medical licensure, the FPDC receives and supplements licensure data provided by state boards with specialty and subspecialty certification information obtained from the American Board of Medical Specialties (ABMS).** The ABMS represents 24 independent specialty boards† that certify

physicians in more than 145 specialties and subspecialties of medicine and surgery.⁴ Deceased physicians are also identified and flagged in the FPDC by cross-referencing physician records with the

** Osteopathic physicians trained in the United States can also obtain specialty certification by the American Osteopathic Association's Bureau of Osteopathic Specialists (AOA BOS). Information about which osteopathic physicians are certified by the AOA-BOS is not available to the FSMB.

† Though both the ABMS and FSMB have "member" boards, the ABMS has independent "specialty" boards. The FSMB's member boards are state-regulated boards responsible for the licensing and discipline of physicians.

Table 1
Population Characteristics

Physicians with an Active License to Practice Medicine in the United States and the District of Columbia, 2010 and 2012	2010		2012	
	Counts	Percentages	Counts	Percentages
Total	850,085	100.0%	878,194	100.0%
Degree Type				
Doctor of Medicine (MD)	789,788	92.9%	812,019	92.5%
Doctor of Osteopathic Medicine (DO)	58,329	6.9%	63,045	7.2%
Unknown	1,968	0.2%	3,130	0.4%
Medical School Type				
U.S. and Canadian Graduates (MD or DO)	641,815	75.5%	661,996	75.4%
International Medical Graduates	188,402	22.2%	196,573	22.4%
Unknown	19,868	2.3%	19,625	2.2%
Age				
Less than 30 years	16,285	1.9%	12,047	1.4%
30–39 years	181,889	21.4%	182,536	20.8%
40–49 years	211,668	24.9%	216,234	24.6%
50–59 years	210,797	24.8%	214,936	24.5%
60–69 years	134,933	15.9%	152,175	17.3%
70 + years	72,582	8.5%	78,794	9.0%
Unknown	21,931	2.6%	21,472	2.4%
Gender				
Male	568,501	66.9%	578,478	65.9%
Female	246,314	29.0%	264,846	30.2%
Unknown	35,270	4.1%	34,870	4.0%
Certified by an ABMS Specialty Board				
Yes	633,733	74.5%	671,755	76.5%
No	216,352	25.5%	206,439	23.5%
Number of Active Licenses				
1	657,208	77.3%	688,781	78.4%
2	142,423	16.8%	138,274	15.7%
3 or more	50,454	5.9%	51,139	5.8%

Death Master File of the Social Security Administration (SSA), a federal database that contains more than 86 million records of reported deaths.

Results

An analysis of data collected in 2012 about physicians in the United States and the District of Columbia reveals that there were 878,194 physicians with an active license to practice medicine, representing a net increase since 2010 of 28,109 (3%) physicians. State medical boards issued 134,456 new licenses to physicians since the FSMB's 2010 physician census, a figure which includes physicians obtaining their first license, one or more additional licenses (enabling practice in multiple jurisdictions) or a new license when moving from one jurisdiction to another. Between 2010 and 2012, 48,219 physicians received their first medical license from a state medical board.

Actively licensed allopathic physicians represent the vast majority (93%) of the licensed physician population in the United States, while actively licensed osteopathic physicians account for 7%, figures essentially unchanged from 2010 (Table 1).

BETWEEN 2010 AND 2012, 48,219 PHYSICIANS RECEIVED THEIR FIRST MEDICAL LICENSE FROM A STATE MEDICAL BOARD.

The osteopathic medical profession continues to experience exponential growth in its numbers, however. From 2010 to 2012, the number of physicians with a DO degree and an active license increased by 8%, compared to a 3% increase in the number of licensed physicians with an MD degree.

Table 2
U.S. Medical Schools and Colleges of Osteopathic Medicine

U.S. Medical Schools and Colleges of Osteopathic Medicine with the Greatest Number of Graduates Having an Active License to Practice Medicine in the United States, 2012	City and State	Number of Actively Licensed Physicians
MD Medical School		
Indiana University School of Medicine	Indianapolis, IN	10,493
University of Minnesota Medical School	Minneapolis, MN	10,434
Ohio State University	Columbus, OH	8,717
SUNY Downstate Medical Center	Brooklyn, NY	8,613
Wayne State University School of Medicine	Detroit, MI	8,488
University of Illinois College of Medicine	Chicago, IL	8,351
Jefferson Medical College of Thomas Jefferson University	Philadelphia, PA	8,318
University of Texas Medical Branch	Galveston, TX	7,920
University of Michigan Medical School	Ann Arbor, MI	7,802
University of Texas Southwestern Medical Center	Dallas, TX	7,568
DO Medical College		
Philadelphia College of Osteopathic Medicine	Philadelphia, PA	6,801
Des Moines University	Des Moines, IA	6,258
Kansas City University of Medicine and Biosciences	Kansas City, MO	5,491
Kirkville College of Osteopathic Medicine	Kirkville, MO	5,078
Midwestern University	Downers Grove, IL	4,723
New York Institute of Technology College of Osteopathic Medicine	Old Westbury, NY	4,476
Western University, The College of Osteopathic Medicine of the Pacific	Pomona, CA	3,400
University of North Texas Health Science Center	Fort Worth, TX	3,050
Oklahoma State University Center for Health Sciences College of Osteopathic Medicine	Tulsa, OK	3,013
Nova Southeastern University College of Osteopathic Medicine	Fort Lauderdale, FL	2,989

The actively licensed physicians identified in our 2012 census graduated from a total of 1,881 medical schools located in 166 countries around the world. Nearly 76% of physicians graduated from a U.S. or Canadian medical school (allopathic or osteopathic), 22% graduated from a medical school outside the United States and its territories or Canada, and for 2% the medical school of graduation could not be determined. Table 2 shows the ten allopathic and osteopathic medical schools that had the largest number of graduates with an active license to practice medicine in the United States. Table 3 provides a listing of the ten medical schools outside the United States that had the largest number of graduates with an active license to practice medicine in the United States.

ACTIVELY LICENSED ALLOPATHIC PHYSICIANS REPRESENT THE VAST MAJORITY (93%) OF THE LICENSED PHYSICIAN POPULATION IN THE UNITED STATES, WHILE ACTIVELY LICENSED OSTEOPATHIC PHYSICIANS ACCOUNT FOR 7%.

Of the 196,573 IMGs who graduated outside the United States or Canada, more graduated from medical schools in India (45,558 or 23%) than any other country in the world. IMGs from schools in the Philippines were a distant second, at (14,785 or 8%), while Pakistan (10,880 or 6%), and Mexico (10,012 or 5%), ranked third and fourth, respec-

tively. Our census revealed a substantive increase since 2010 in the number of actively licensed IMGs who graduated from a medical school in the Caribbean.^{††} In 2012, 13% (25,726) of IMGs with an active license to practice medicine in the U.S. graduated from a medical school in the Caribbean (Figure 1). While the total number of IMGs with an active license in the United States increased by only 4% since 2010, the number of physicians who graduated from a school in the Caribbean increased during that time period by 14%.

The age composition of the actively licensed physician population reflects the gradual, but significant and certain, shift seen in the general population. The average age for physicians with an active license to practice in 2012 was 51 years, up from 50 years in 2010. Furthermore, the actively licensed physician population grew at a faster rate in the older age groups than in the younger. In 2012, 26% of actively licensed physicians were 60 years of age or older, compared with 24% in 2010 (Figure 2); this represents a two-year increase of 11% compared with less than a 1% increase for the number of physicians 49 years of age or younger.

^{††} Medical schools in Puerto Rico and the U.S. Virgin Islands are not included in our census in the listing of graduates from medical schools in the Caribbean because they are territories of the United States and have medical schools that are accredited by the Liaison Committee on Medical Education.

Table 3
International Medical Schools

International Medical Schools with the Greatest Number of Graduates Having an Active License to Practice Medicine in the United States, 2012	Country	Number of Actively Licensed Physicians
International Medical School		
St. Georges University	Grenada	6,518
Ross University	Dominica	5,647
Universidad Autonoma De Guadalajara	Mexico	5,260
University of Santo Tomas	Philippines	5,165
American University of The Caribbean	Saint Maarten	3,387
Dow University of Health Sciences	Pakistan	3,013
University of Damascus	Syria	2,483
University of the East Ramon Magsaysay Medical Center	Philippines	2,207
University of the Philippines	Philippines	2,081
Osmania Medical College	India	2,065

Figure 1

Physicians with Active Licenses In the United States and the District of Columbia by Country of Medical School Graduation, 2012

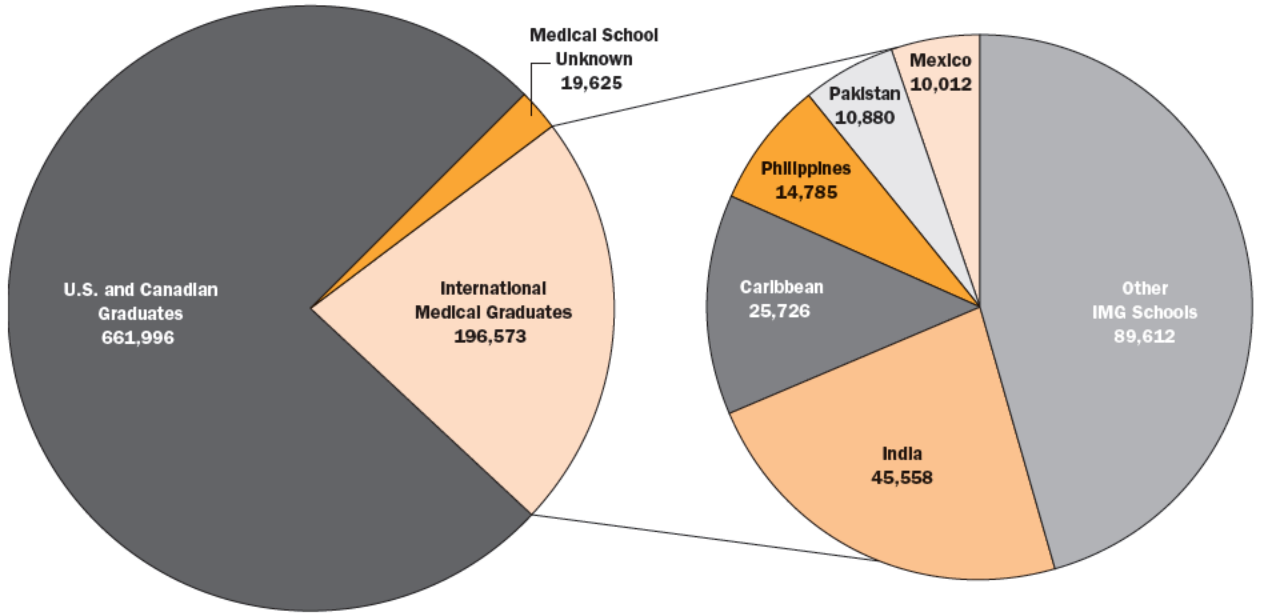
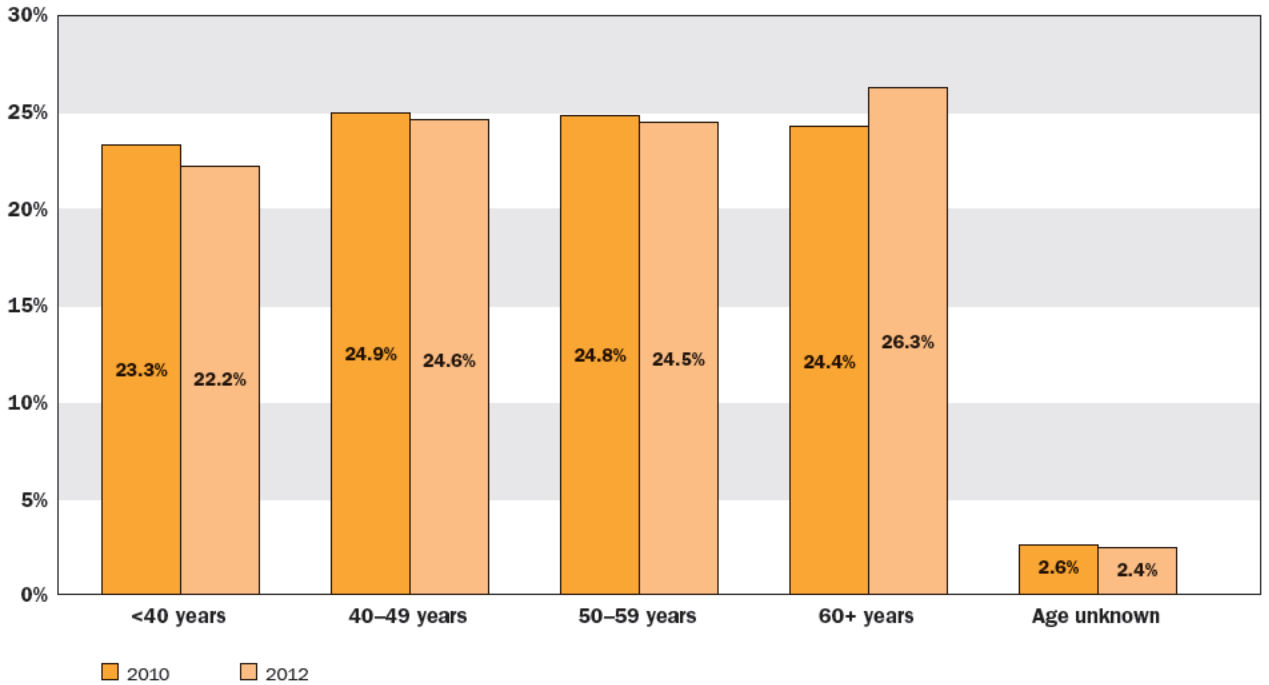


Figure 2

Physicians with an Active License In the United States and the District of Columbia by Age, 2010 and 2012



Sources: 2012 FSMB Census of Licensed Physicians

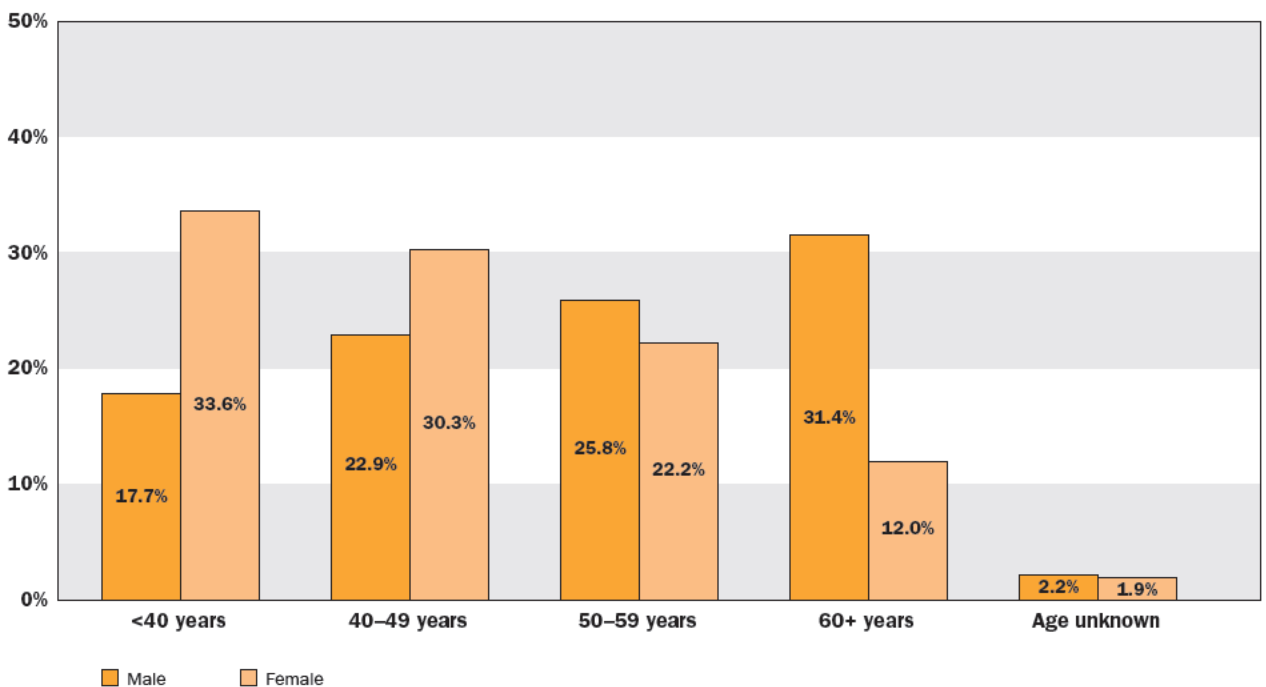
As with age, a shift in the gender makeup continued from 2010 to 2012. Though two-thirds of actively licensed physicians were male in 2012, the number of female physicians with an active license increased by 8% compared with only a 2% increase for male physicians. In 2010, females represented 29% of licensed physicians in the United States, and by 2012 they comprised 30% of the population. In 2012, the average age for female physicians was 46 years compared with 52 years for males. Furthermore, 34% of female physicians were 39 years of age or younger, compared to only 18% of male physicians (Figure 3).

OUR CENSUS REVEALED A SUBSTANTIVE INCREASE SINCE 2010 IN THE NUMBER OF ACTIVELY LICENSED IMGs WHO GRADUATED FROM A MEDICAL SCHOOL IN THE CARIBBEAN.

Overall, 77% of physicians with an active license to practice medicine were certified by at least one ABMS specialty board in 2012, up from 75% in 2010. While 80% of MDs and 39% of DOs were found

to hold ABMS certification, the count is considerably lower for DOs because many osteopathic physicians achieve specialty board certification, in addition to or in place of ABMS certification, through the 18 specialty boards of the American Osteopathic Association's (AOA) Bureau of Osteopathic Specialists: a total of 23,819 DOs (38% of actively licensed osteopathic physicians) have AOA BOS certification, according to data reported by the AOA in 2012. There was a difference in ABMS certification rates based on country of medical graduation. U.S. and Canadian medical school graduates (both MDs and DOs) were more likely than IMGs to have ABMS specialty certification (78% vs. 73% in 2012). However, IMGs have narrowed the gap slightly over the past two years (a five-percentage-point difference now, compared with a seven-point difference in 2010).² A strong and predictable relationship continues to exist between specialty certification status and age. The percentage of physicians who are ABMS certified appears to increase dramatically for physicians aged 30 to 39, peaks for physicians aged 40 to 49 and then begins to diminish during the 60-69 age range and beyond (Figure 4).

Figure 3
Physicians with an Active License in the United States and the District of Columbia by Gender and Age, 2012



Sources: 2012 FSMB Census of Licensed Physicians

The data about the number of active medical licenses maintained by physicians have essentially remained static from 2010 to 2012. Seventy-eight percent of physicians held only one active license to practice medicine from a state medical board, 16% had active licenses in two jurisdictions and 6% had active licenses in three or more jurisdictions. Twenty-four percent of male physicians, compared with 19% of female physicians, had a license to practice medicine in more than one jurisdiction. Physicians with specialty certification from an ABMS board were more likely to have two or more active licenses (23%) than physicians without ABMS certification (17%).

THE AVERAGE AGE FOR PHYSICIANS WITH AN ACTIVE LICENSE TO PRACTICE IN 2012 WAS 51 YEARS, UP FROM 50 YEARS IN 2010.

Analyses by state, and within the nine geographic divisions of the United States as defined by the U.S. Census Bureau (Figure 5), were used to illustrate the location of actively licensed physicians in the United States during 2012. Similar to 2010, the South Atlantic, Pacific, Middle Atlantic and East

North Central divisions accounted for a little more than two-thirds of the actively licensed physicians in 2012 (Figure 6). Some areas experienced growth in their physician populations, while others saw declines. The number of physicians in the South Atlantic, Pacific and West South Central divisions increased by 9% or more from 2010 to 2012, for instance, while the New England and West North Central divisions experienced decreases of more than 5% (Table 4).

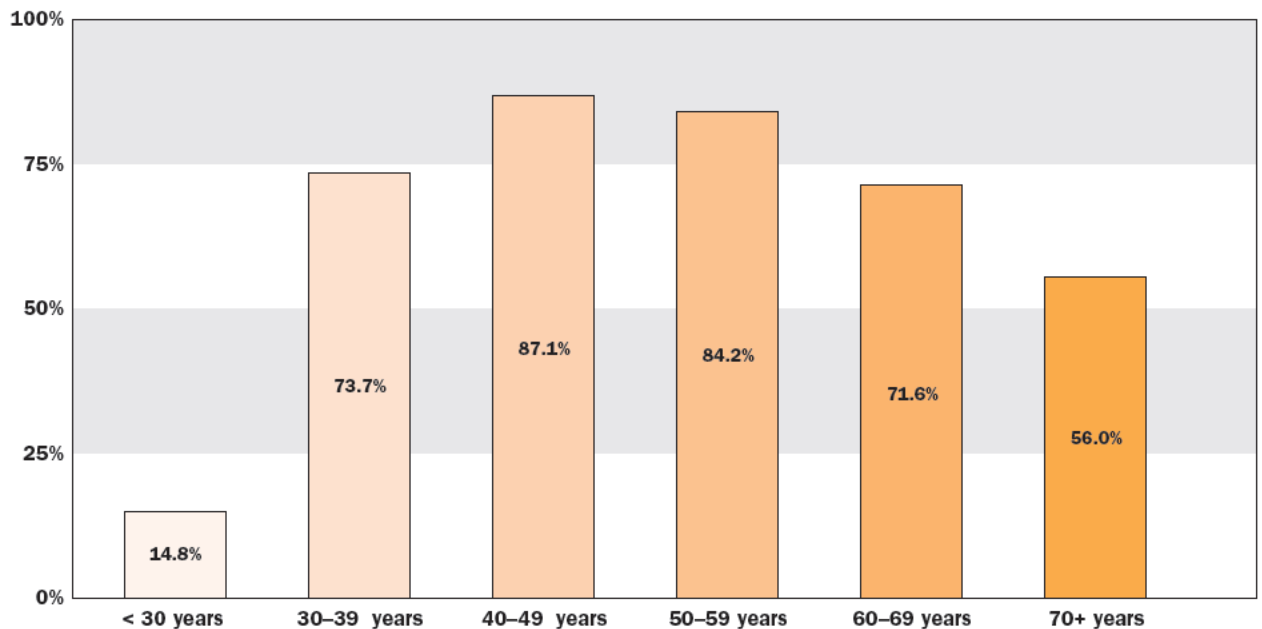
The 878,194 physicians with an active license to practice medicine represent a physician-to-population ratio of 280 actively licensed physicians for every 100,000 people in the United States and Washington, D.C. The 2012 state-by-state totals in Table 5 provide additional information on the geographic breakdown of physicians with an active license to practice medicine in the United States.

Discussion

Our census results show that the actively licensed physician population in the United States since 2010 is steadily growing in total number, slightly older, with more women and with more diversity in terms of medical school of graduation, with a

Figure 4

Percentage of Physicians with Active License and ABMS Specialty Certification in the United States and the District of Columbia by Age, 2012



Sources: 2012 FSMB Census of Licensed Physicians and The American Board of Medical Specialties

Figure 5
Divisions of the United States; U.S. Census Bureau 2012

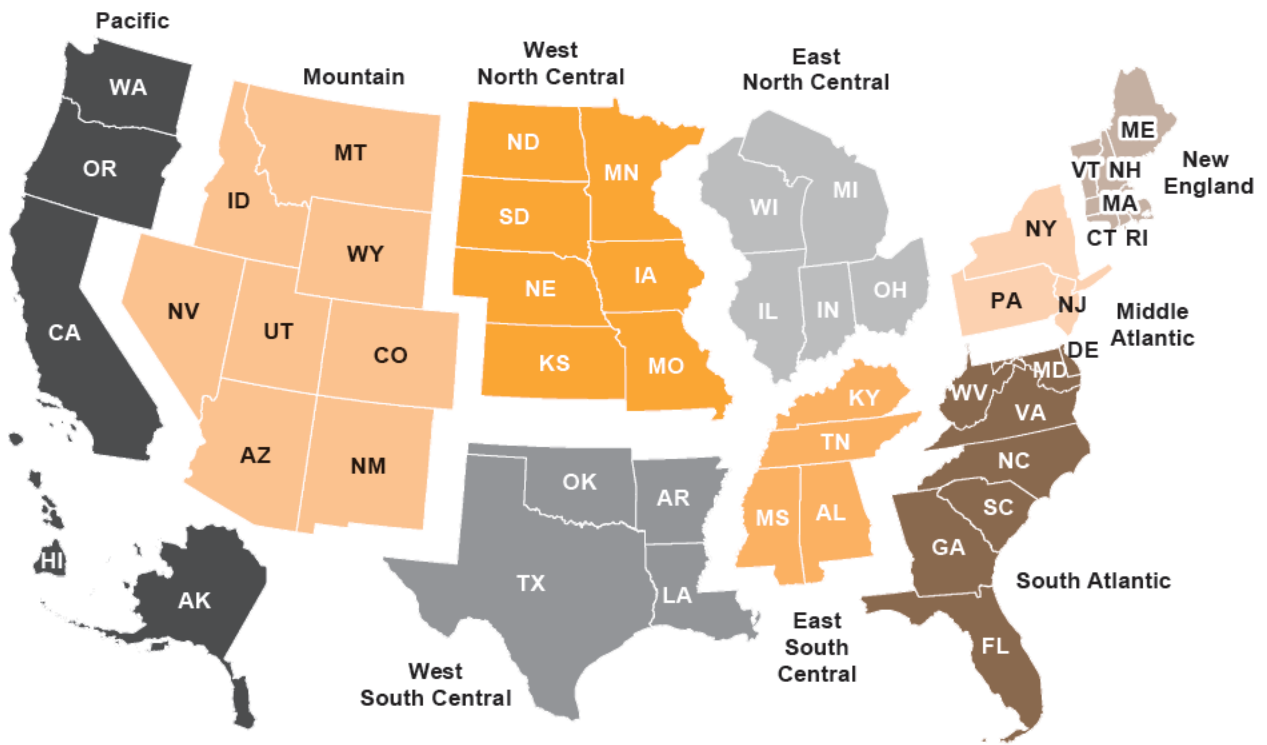
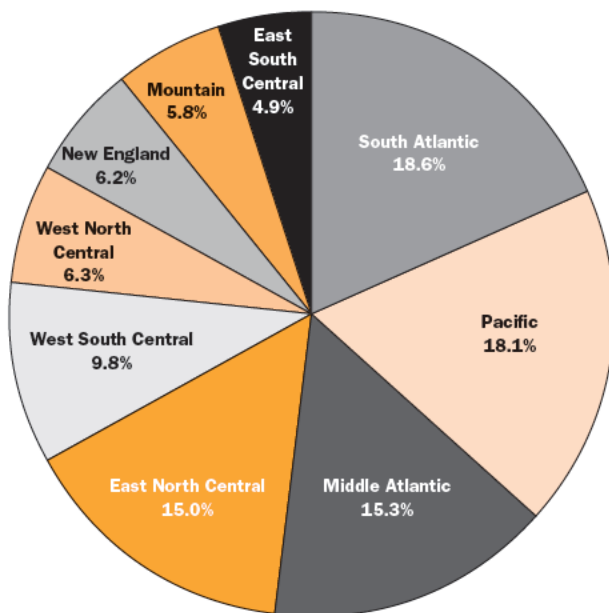


Figure 6
Distribution of Physicians with an Active License in the United States and the District of Columbia by U.S. Census Bureau Division, 2012



Source: 2012 FSMB Census of Licensed Physicians

substantive increase in licensed physicians who graduated from a medical school in the Caribbean. Though the vast majority of the 878,194 physicians with an active license continued to hold an MD degree in 2012, the number of physicians holding an osteopathic medical degree grew at a faster rate in our census, consistent with data reported elsewhere that one in five medical students in the U.S. is now enrolled in an osteopathic medical school.⁶ The overall percentage of actively licensed physicians graduating from international medical schools remained steady from 2010 to 2012. The undergraduate medical education programs in the Caribbean continue to expand,⁷ however, and the number of IMGs with an active license who graduated from a medical school in the Caribbean, many of whom are U.S. citizens,⁸ grew at a faster pace (14%) from 2010 to 2012 than the number of actively licensed physicians who graduated from all international medical schools (4%).

Beyond the changes by degree and medical school type, gradual, but significant, shifts in the age and gender composition of the actively licensed physician population also continued and will likely

have a substantial impact on the U.S. health care system in the years to come. Our census indicates that 26% of actively licensed physicians in the U.S. are 60 years of age or older, signaling an actuarial need for increasing the supply of physicians as older physicians retire from practice or become deceased. Our findings also indicate that nearly one-third of actively licensed physicians are women, and the average age for female physicians (46 years) is considerably younger compared with their male counterparts (52 years). With women making up nearly half of all enrolled U.S. medical and osteopathic medical students during the 2011–2012 academic year,^{9,10} this trend will likely continue among those who become actively licensed in the years ahead.

The aging of the actively licensed physician population and the shift in gender composition could have a considerable effect on health workforce determinations considering the different work patterns ascribed, even in contemporary studies, to both male and female physicians. Research conducted with data from the U.S. Census Bureau’s Current Population Survey (CPS) indicates that male physicians are generally less active than their female counterparts in the latter part of their career (55 to 64 years) while female physicians are less active in the early stages of their career (25 to 34 years).¹¹ A recent nationwide survey of 13,575 physicians indicated that 22% of physicians above the age of 40 work 40 hours a week or fewer, compared with 15% of physicians who are age 40 or younger. A breakdown by gender in that

survey showed 27% of female physicians working 40 hours a week or less, compared to 18% percent of male physicians.¹² In a similar manner, an analysis of data from the New York State Survey of Residents Completing Training concluded that “the growing number of female physicians will probably create a new set of provider preferences that includes more predictable schedules and less time pressures on other aspects of life.”¹³

THE 878,194 PHYSICIANS WITH AN ACTIVE LICENSE TO PRACTICE MEDICINE REPRESENT A PHYSICIAN-TO-POPULATION RATIO OF 280 ACTIVELY LICENSED PHYSICIANS FOR EVERY 100,000 PEOPLE IN THE UNITED STATES AND WASHINGTON, D.C.

Like actively licensed physicians, the general population in the United States is projected to undergo extensive and steady growth in the older age cohorts. The number of Americans aged 65 and older is projected to more than double to 88 million by 2050.¹⁴ Baby boomers — those individuals born between 1946 and 1964 — started turning 65 years old in 2011 and will be largely responsible for the increase as an estimated 10,000 boomers reach age 65 each day for the next 17 years.¹⁵ All baby boomers will be 65 years of age or older by 2030 and are expected to represent

Table 4
Physicians with an Active License

Physicians with an Active License in the United States and District of Columbia by U.S. Census Bureau Division, 2010 and 2012	2010	2012	Percentage Change
U.S. Census Bureau Division			
South Atlantic	147,869	163,319	10.4%
Pacific	145,964	159,064	9.0%
Middle Atlantic	137,060	133,896	-2.3%
East North Central	129,582	132,103	1.9%
West South Central	78,628	85,933	9.3%
West North Central	58,903	55,437	-5.9%
New England	57,287	53,998	-5.7%
Mountain	50,669	50,731	0.1%
East South Central	44,077	43,406	-1.5%
Unknown	46	307	NA
Totals	850,085	878,194	3.3%

Table 5

Physicians with an Active License

Physicians with an Active License by State ¹ and the District of Columbia, 2012	Licensed Physicians	Population Counts ²	Physicians Per 100,000 Population
United States	878,194	313,914,040	280
Alabama	15,462	4,822,023	321
Alaska	3,521	731,449	481
Arizona	24,107	6,553,255	368
Arkansas	8,863	2,949,131	301
California	133,642	38,041,430	351
Colorado	18,383	5,187,582	354
Connecticut	16,926	3,590,347	471
Delaware	4,838	917,092	528
District of Columbia	9,966	632,323	1,576
Florida	64,977	19,317,568	336
Georgia	31,782	9,919,945	320
Hawaii	8,671	1,392,313	623
Idaho	5,130	1,595,728	321
Illinois	43,049	12,875,255	334
Indiana	26,512	6,537,334	406
Iowa	11,202	3,074,186	364
Kansas	10,951	2,885,905	379
Kentucky	16,665	4,380,415	380
Louisiana	16,538	4,601,893	359
Maine	6,190	1,329,192	466
Maryland	28,596	5,884,563	486
Massachusetts	33,767	6,646,144	508
Michigan	44,786	9,883,360	453
Minnesota	20,174	5,379,139	375
Mississippi	9,543	2,984,926	320
Missouri	25,279	6,021,988	420
Montana	4,174	1,005,141	415
Nebraska	8,607	1,855,525	464
Nevada	7,613	2,758,931	276
New Hampshire	6,230	1,320,718	472
New Jersey	35,152	8,864,590	397
New Mexico	8,504	2,085,538	408
New York	84,474	19,570,261	432
North Carolina	33,213	9,752,073	341
North Dakota	3,477	699,628	497
Ohio	41,644	11,544,225	361
Oklahoma	12,416	3,814,820	325
Oregon	13,992	3,899,353	359
Pennsylvania	54,248	12,763,536	425
Rhode Island	4,306	1,050,292	410
South Carolina	14,824	4,723,723	314
South Dakota	3,624	833,354	435
Tennessee	21,356	6,456,243	331
Texas	68,717	26,059,203	264
Utah	9,038	2,855,287	317
Vermont	3,427	626,011	547
Virginia	31,949	8,185,867	390
Washington	25,830	6,897,012	375
West Virginia	7,057	1,855,413	380
Wisconsin	23,499	5,726,398	410
Wyoming	2,960	576,412	514
State and D.C. Totals³	1,169,851	313,914,040	373

¹ State counts are based on physician data recorded by the FSMB using state medical board licensure files from 2012 and reflect the number of physicians with a full unrestricted license. Resident physician (temporary) licenses were excluded, where such licenses could be identified.

² U.S. Census Bureau, Population Division, December 2012.

³ Physician counts do not add up to 878,194 because some physicians maintain active licenses in more than one U.S. jurisdiction.

nearly 20% of the total U.S. population.¹⁶ Moreover, data on health care expenditures indicates that Americans 65 years and older use more health care per capita than any other age group.¹⁷ A report published by the Institute of Medicine (IOM) confirms this finding, showing that those aged 65 years and over represented only 12% of the U.S. population in 2008 but account for 26% of all physician office visits, 34% of all prescriptions, 35% of all hospital stays, and 38% of the emergency medical services responses.¹⁸ Those percentages are almost certain to increase as baby boomers age in the next two decades.

Health Workforce Planning

The full impact of the Patient Protection and Affordable Care Act (PPACA), enacted in 2010 and upheld by the U.S. Supreme Court in 2012,¹⁹ is yet to be realized, but it is safe to assume that the law represents a historic, comprehensive approach to health care reform that is expected to touch nearly every aspect of the U.S. health care system. The law predominantly addresses what is held to be a societal need to extend health care coverage to more individuals, improve health system quality and efficiency, promote health and prevent disease, limit fraud and abuse, provide more availability for long-term care and increase the health care workforce, particularly in primary care.²⁰ The ability of young adults to enroll in a parent's health plan up to the age of 26 is already in place, having gone into effect in September of 2010. On the horizon are significant expansions in eligibility for Medicaid and the implementation of state-based health insurance exchanges beginning in 2014.²¹ While the outcome of negotiations between the federal government and the states over procedural

THE NUMBER OF ACTIVELY LICENSED PHYSICIANS AND WHERE THEY ARE LICENSED ARE IMPORTANT CONTRIBUTIONS TO HEALTH WORKFORCE STUDIES BUT THESE DATA ELEMENTS PROVIDE A LIMITED PICTURE.

aspects of the new law (and coverage for various health care services) will play out in the months ahead, there is little argument that health care reform will greatly expand coverage in the coming years and that as many as an additional 32 million Americans may become insured by 2019.²²

An aging population and millions of Americans becoming eligible for health insurance highlight the importance of health workforce data determinations and predictions. Even before the Affordable Care Act was passed, demand for physicians in the U.S. was on the rise with nearly three out of four hospitals planning to increase physician employment.²³ This phenomena continues to bolster the already decades-long swing to more physicians working in hospitals, integrated delivery systems or large group practices rather than as solo practitioners.²⁴

THE AGING OF THE ACTIVELY LICENSED PHYSICIAN POPULATION AND THE SHIFT IN GENDER COMPOSITION COULD HAVE A CONSIDERABLE EFFECT ON HEALTH WORKFORCE DETERMINATIONS.

According to the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services, there are 5,864 Primary Care Health Professional Shortage Areas (HPSAs) with 57 million people living in them,²⁵ and the most recent projections suggest national physician shortages as high as 130,000 by 2025.²⁶ Similarly, a growing number of specialty-specific and state-specific studies have concluded that the physician workforce is facing current or future shortages.²⁷ For example, there were 7,356 specialty-certified geriatricians in the U.S. in 2012, one for every 2,551 Americans 75 years of age or older, but few physicians appear to be choosing to pursue specialty training in geriatrics; by 2030 the ratio is expected to drop to 1 in 3,798.²⁸ California is facing a striking physician shortage, as nearly 30% of physicians in that state near retirement age, the second highest percentage in the nation.²⁹ Some lawmakers in the state are contemplating filling the gaps by redefining who may provide care and by expanding the scope of practice of non-physician health care providers.³⁰

The Association of American Medical Colleges contends that existing physician shortages will worsen without significant interventions.³¹ It proposes a supply-side solution that expands funded graduate medical education positions, increases utilization of non-physician health care providers and increases physician productivity through team-based care that encourages physicians and nonphysician clinicians to work with care

coordinators and improve efficiencies through the use of electronic health records, online communications and practice-management innovations.

A minority view holds that the use of teams, information technology, better sharing of clinical data and the use of non-physician providers have the potential to offset the demand for physician services in the future.³² Where there is little argument is that the U.S. health care system is financially stressed and that the cost of health care will continue to rise, even with long-term benefits said to derive from the Affordable Care Act. Health care spending now constitutes 18% of the nation's gross domestic product (GDP) and is projected to increase to 21% by 2023.³³

Our findings in this article build upon baseline physician census data we reported in 2010, which continues to highlight the need for a better understanding and accurate assessment of the current supply of physicians. The number of actively licensed physicians and where they are licensed are important contributions to health workforce studies but these data elements provide a limited picture. At the FSMB's Annual Meeting last year in Fort Worth, Texas, its House of Delegates adopted as policy a recommendation that all state medical boards adopt a framework for a physician minimum data set (MDS) of questions for physicians to answer at the time of licensure renewal.³⁴ The MDS for physicians was developed by an FSMB Working

A STATE MEDICAL BOARD'S LICENSE RENEWAL PROCESS IS A UNIQUE OPPORTUNITY FOR COLLECTING ADDITIONAL, UP-TO-DATE WORKFORCE INFORMATION FROM PHYSICIANS.

Group, chaired by Richard Whitehouse, Esq., of Ohio and more recently by Mark Eggen, MD, of Minnesota, that worked collaboratively with HRSA's National Center for Health Workforce Analysis, which is led by Edward Salsberg, MPA.

A state medical board's license renewal process is a unique opportunity for collecting additional, up-to-date workforce information from physicians. Implementing an MDS using a uniform, basic set of questions that all state boards can ask of actively licensed physicians will provide more robust census information that can be used to improve access and delivery, and reduce waste. The MDS

will provide a window into physicians' clinical participation (including entry, retention, exit and re-entry to practice); a better understanding of the geographic distribution of health care delivery and physician migratory patterns; and a consistent body of information that can be tracked over time. As the MDS is implemented by state boards in the months and years ahead, a census of licensed physicians that includes information about how many physicians are actively engaged in the practice of medicine — whether full-time or part-time, in their area of primary residency or fellowship training or not, and where — could offer greater insight to state and federal policymakers, managed care organizations, physicians and the public as coordinated efforts are made across the country to deliver quality health care that is affordable, efficient and accessible. ■

Acknowledgements: the authors wish to thank Cyndi Streun, Frann Holmes, Bradley Dunn, Lucie Maomanivong, Martha Buchholz, Cassandra Irving, Amanda Johnson and Sheila Still for their valuable assistance in the preparation of this manuscript.

Endnotes

1. Mountin JW, Pennell EH, Nicolay V. Location and Movement of Physicians, 1923 and 1938—General Observations. *Public Health Reports*, Vol. 57 No 37 Sept 11, 1942.
2. Johnson DA, Chaudhry HJ. Medical Licensing and Discipline in America. Lanham, MD: Lexington Books. 2012.
3. Young A, Chaudhry HJ, Rhyne J and Dugan, M. A Census of Actively Licensed Physicians in the United States, 2010. *Journal of Medical Regulation*. 2011;96(4):10-20.
4. American Board of Medical Specialties. [Online] March 2013. http://www.abms.org/About_ABMS/member_boards.aspx.
5. Ayres RE, et al. Changes to Osteopathic Specialty Board Certification. *Journal of the American Osteopathic Association*, Vol. 112, No. 4, April 2012.
6. Osteopathic Medicine and Medical Education in Brief, American Association of Colleges of Osteopathic Medicine. <http://www.aacom.org/about/osteomed/pages/default.aspx>. Accessed March 1, 2013.
7. Medical education in the Caribbean: a longitudinal study of United States Medical Licensing Examination performance, 2000-2009. *Academic Medicine*. 2011;86(2):231-238.
8. 2011 Annual Report. Educational Commission for Foreign Medical Graduates. 2012.
9. U.S. Medical School Applicants and Students 1982-83 to 2011-2012. AAMC 2012.
10. Trends in Osteopathic Medical School Applicants, Enrollment and Graduates, American Association of Colleges of Osteopathic Medicine. March 2012.

11. Staiger DO, Auerbach DI, Buerhaus PI. Comparison of Physician Workforce Estimates and Supply Projections. *JAMA*. 2009, Vol. 302.
12. A Survey of America's Physicians: Practice Patterns and Perspectives. Survey conducted by Merritt Hawkins. The Physicians Foundation. September 2012.
13. Lo Sasso AT, Richards MR, Chou C, Gerber SE. The \$16,819 Pay Gap for Newly Trained Physicians: The Unexplained Trend of Men. *Health Affairs*, 30, no.2 (2011):193-201.
14. Vincent GK, Velkoff VA. The Next Four Decades, The Older Population in the United States: 2010 to 2050, *Current Population Reports*, P25-1138, U.S. Census Bureau, Washington, DC. 2010.
15. Cohn D, Taylor P. Baby Boomers Approach Age 65 — Glumly: Survey Findings about America's Largest Generation. s.l. : Pew Research Center. 2010.
16. Projections of the Population by Selected Age Groups and Sex for the United States: 2010 to 2050 (NP2008-T2). s.l.: Population Division, U.S. Census Bureau. 2008.
17. AgingStats.gov. http://www.agingstats.gov/Main_Site/Data/2012_Documents/Health_Care.aspx Accessed on March 1, 2013.
18. Retooling for an Aging America: Building the Health Care Workforce. Washington D.C. : The National Academies Press. 2008.
19. National Federation of Independent Business et al. v. Sebelius. No. 11–393, June 28, 2012. <http://www.supremecourt.gov>.
20. McDonough J. Inside national health reform. Berkeley: University of California Press. 2011.
21. Health Care and Education Reconciliation Act of 2010 (H.R. 4872). 2010.
22. H.R. 4872, Reconciliation Act of 2010 (Final Health Care Legislation). s.l.: Congressional Budget Office, 2010.
23. Cantlupe J. Physician alignment in an era of change. Health Leaders Media. September 2010. <http://www.healthleadersmedia.com/intelligence>.
24. Kocher R, Sahni NR. Hospitals' race to employ physicians—the logic behind a money-losing proposition. *N Engl J Med*. 2011;364(19):1790-1793.
25. Health Resources and Services Administration—Health Professions. Shortage Designation: Health Professional Shortage Areas & Medically Underserved Areas/Populations underscore the importance of knowing as much as possible about the current physician workforce. <http://bhpr.hrsa.gov/shortage/>. Accessed on March 1, 2013.
26. The Impact of Health Care Reform on the Future Supply and Demand for Physicians Updated Projections Through 2025. AAMC, Center for Workforce Studies, 2010.
27. Recent Studies and Reports on Physician Shortages in the U.S. AAMC, Center for Workforce Studies. October 2012.
28. The American Geriatrics Society. June 2012 The Demand for Geriatric Care and the Evident Shortage of Geriatrics Healthcare Providers. www.americangeriatrics.org. Accessed on March 1, 2013.
29. 2011 State Physician Workforce Data Book. AAMC, Center for Workforce Studies. November 2011.
30. Mishak MJ. Facing doctor shortage, lawmakers want to redefine healthcare roles. *Los Angeles Times*. February 11, 2013.
31. Kirch DG, Henderson MK, Dill MJ. Physician Workforce Projections in an Era of Health Care Reform. *Annual Review of Medicine*. 2012. 63:4.1-4.11.
32. Green LV, Savin S, Lu Y. Primary Care Physician Shortages Could Be Eliminated Through Use Of Teams, Nonphysicians And Electronic Communication. *Health Affairs*, 32, no.1 (2013):11-19.
33. The Commonwealth Fund Commission on a High Performance Health System. Confronting Costs Stabilizing U.S. Health Spending While Moving Toward a High Performance Health Care System. January 2013.
34. Federation of State Medical Boards. Workgroup to Define a Minimal Data Set. Report on a Recommended Framework for a Minimal Physician Data Set. April 2012.