A Census of Actively Licensed Physicians in the United States, 2016

Aaron Young, PhD; Humayun J. Chaudhry, DO, MS; Xiaomei Pei, PhD; Katie Arnhart, PhD; Michael Dugan, MBA; and Gregory B. Snyder, MD

ABSTRACT: An accurate understanding of the demographic and state medical licensure characteristics of physicians in the United States is critical for health care workforce planning. Overall changes in the nation's population demographics, state and federal medical regulatory policies and dynamics surrounding the ongoing health care reform debate further highlight the need to have an up-to-date census of actively licensed physicians across all medical specialties.

This article uses data received by the Federation of State Medical Boards (FSMB) from the nation's state medical and osteopathic licensing boards to report and summarize key features of actively licensed physicians in the United States and the District of Columbia. Our biennial census, current through the end of 2016, identifies a total of 953,695 actively licensed allopathic and osteopathic physicians serving a national population of 323 million people. This represents a net physician-increase of 12% from the 2010 census. From 2010 to 2016, the actively licensed U.S. physician-to-population ratio increased from 277 physicians per 100,000-population to 295 physicians per 100,000-population. Females now make up one-third of all licensed physicians, with osteopathic physicians and Caribbean medical graduates continuing to demonstrate substantial increases in both their absolute numbers and as a percentage of all actively licensed physicians from the 2010 to 2016 time period.

Introduction

Health care in the United States remains in a period of uncertainty and transition, as the Affordable Care Act (ACA) of 2010 faces existential challenges from the right and calls for modification from the left. The executive and legislative branches of our federal government are seeking ways to fundamentally alter the way in which health care is delivered and reimbursed across the country. Changes in population demographics, medical regulatory policies and health care reform are all part of a broader public discourse that highlights the need to have an up-to-date census of physicians who are licensed to practice medicine.

Concerns persist over whether or not the growth rate of physician supply will keep pace with growing health care demands. Health care practitioners, state medical boards and policymakers will need to adjust to these changes, whether they are revolutionary or evolutionary. Growing health care demands have notably focused around the large group of aging "baby boomers," generally those individuals who were born between the mid-1940s and the mid-1960s. While the demands of boomers have captured the current attention of medical researchers, policymakers and providers, millennials — those born between 1982 and 2000 — are now the nation's largest living generation. In 2015, millennials represented 83.1 million people in the United States, compared to 75.4 million baby boomers.[1] With the inclusion of immigration, millennials are expected to grow in number, reaching their peak population around 2036.[2] Future planning needs to take into account the health care needs of all generations.

PHYSICIAN SUPPLY STRIVES TO ADAPT TO INCREASING HEALTH CARE DEMANDS AS THE NATION'S POPULATION AGES AND EVOLVES.

Physician supply strives to adapt to increasing health care demands as the nation's population ages and evolves. United States first-year medical school enrollment has increased by 28% since 2002.[3] In 2016, 88,304 medical students were enrolled, compared to 81,934 medical students in 2012.[4] The FSMB's prior and current census reports, between 2010[5] and 2016, reflect an increase of 12% in the number of physicians licensed to practice medicine throughout the country. While there are more

allopathic and osteopathic medical schools and medical students overall in 2016 than in 2010, limits on funded graduate medical education positions as a result of the Balanced Budget Act of 1997 are preventing many U.S. graduates from pursuing the post-graduate training necessary for medical licensure eligibility.[6] Growth in other health care professions, meanwhile, continues to supplement the delivery of care provided by physicians. From 2010 to 2016, the number of certified physician assistants (PAs) grew by 44%,[7] and according to the U.S. Department of Labor, employment for PAs is expected to increase by 30% between 2014 and 2024.[8] It is expected that the number of nurse practitioners will also continue to grow, from 128,000 in 2008 to 244,000 by the year 2025.[9]

Because of increases in medical school numbers and enrollment, expanded health care roles and practice rights for non-physician clinicians and delayed retirement by older physicians, some assert a physician shortage does not exist.[10] Concerns about health care workforce shortages remain, however, due to a growing and aging U.S. population, as demands are predicted to exceed supply.[11] While earlier projections by workforce researchers anticipated physician shortages to reach upwards of 159,300 physicians by 2025,[12] more recent predictions suggest a still-alarming shortage between 40,800 and 104,900 physicians by 2030.[11]

Increasing the number of practicing physicians in the United States is one of many ways in which the medical profession is responding to increased health care demands. Modifying and adapting the delivery of health care is another way that health policymakers and leaders are responding to the issue. In 2016, the FSMB surveyed state medical boards, asking which medical regulatory topics were most important to them. The top five topics were telemedicine, opioid prescribing, the Interstate Medical Licensure Compact (IMLC), physician reentry into practice and medical marijuana.[13] The growth of telemedicine and the launch of the IMLC highlight how health care delivery is responding to health care demands. Telemedicine offers opportunities for patients to receive health care in settings beyond traditional medical offices and in remote locations or long distances from providers.[14,15] The IMLC offers a way for qualified physicians to apply for multiple individual state medical licenses, thus allowing them to deliver care in additional locations and/or via telemedicine, in an efficient and expedited manner.[16] While the introduction of telemedicine and the IMLC are intended to improve health care outcomes, these advances also impact the way regulators and health policymakers define and account for actively licensed physicians in their jurisdictions.

INCREASING THE NUMBER OF PRACTICING PHYSICIANS IN THE UNITED STATES IS ONE OF MANY WAYS IN WHICH THE MEDICAL PROFESSION IS RESPONDING TO INCREASED HEALTH CARE DEMANDS.

Beneath the surface of many conversations regarding the health care workforce is the changing political climate. The ACA increased the number of Americans with health insurance during the Obama administration, but its implementation came with a price. Fines were issued to certain individuals who did not enroll in health insurance privately or through the exchanges created under the law.[17] States that did not implement Medicaid expansion also saw fewer benefits for certain populations[18] and insurance premiums have doubled in many states since 2013.[19] With the election of President Trump and with both the House of Representatives and Senate now controlled by Republicans, active efforts are underway to either "repeal and replace" the ACA or make substantial changes to the law designed to save federal money for other purposes. This year, and the years to come, will bring a high degree of uncertainty around health care reform as both parties struggle for bipartisanship on an issue that impacts one-sixth of the nation's economy.[20]

As an advocate for patient safety and quality health care, the FSMB is aware that the United States is in a time of transition with regard to population demographics, medical regulatory issues and health care reform. One tangible way the FSMB can contribute to the discussion surrounding these issues is by regularly publishing a census of actively licensed physicians. This article uses data gathered by the FSMB from each of the state medical and osteopathic boards to provide a comprehensive analysis of the 2016 physician population who were actively licensed in the United States and the District of Columbia. This biennial census was first conducted in 2010[5], and again in 2012[21] and 2014.[22] Combined, these censuses demonstrate a growing and more diverse physician population.

Methodology

The FSMB maintains a comprehensive central repository of data (the Physician Data Center, or PDC) from state medical and osteopathic boards responsible for the licensing and discipline of physicians in the United States. The database contains comprehensive biographical, educational and disciplinary information about licensed allopathic and osteopathic physicians as well as the nation's physician assistants. The repository is unique in that it is the only national database containing the most current information from U.S. state and territorial jurisdictions that have granted physicians a license, or a renewal of that license, to practice medicine. The FSMB's database is continuously updated and contains more than 2 million physician records, including information about physicians who are currently licensed, are no longer licensed or are deceased. To obtain an accurate count and precise information about physicians possessing an active license to practice medicine, we conducted a census using the most recent data received by the FSMB during the 2016 calendar year.

THIS BIENNIAL CENSUS WAS FIRST CONDUCTED IN 2010, AND AGAIN IN 2012 AND 2014. COMBINED, THESE CENSUSES DEMONSTRATE A GROWING AND MORE DIVERSE PHYSICIAN POPULATION.

The FSMB gathers license information for all 65 state medical and osteopathic boards in the United States. Four additional territorial medical boards (Guam, Northern Mariana Islands, Puerto Rico and U.S. Virgin Islands) are also member boards of the FSMB but, as in previous censuses, data from these boards were not included in the 2016 physician census. To ensure quality and up-to-date information, the majority (91%) of state boards in the country routinely provide medical licensure information weekly or monthly (all provide it at least quarterly) to the PDC.

Most physician records are first entered into the PDC database when U.S. medical school students or International Medical Graduates (IMGs) register to take the United States Medical Licensing Examination (USMLE). The USMLE is an assessment program created in 1992 that is co-sponsored by the FSMB and the National Board of Medical Examiners (NBME). The USMLE is accepted for state medical licensure eligibility by all jurisdictions in the United States and required of all U.S. allopathic and IMG physicians who apply for a state medical license.

In cases where U.S. osteopathic medical students do not register for the USMLE or for physicians who were first licensed prior to the introduction of the USMLE or the Comprehensive Osteopathic Medical Licensure Examination (COMLEX-USA) in the early 1990s, licensure files from state boards typically serve as the initial PDC record. These licensure files also serve as the primary source for a physician's record of successful completion of initial licensure requirements, which may include older assessments like the examinations of the NBME, the National Board of Osteopathic Medical Examiners (NBOME) or the FSMB's Federation Licensing Examination (FLEX).

FROM 2010 TO 2016, THERE HAS BEEN A NET INCREASE OF 12%, OR 103,610 ACTIVELY LICENSED PHYSICIANS NATIONWIDE.

When the FSMB receives additional physician data, each record is then matched to a master physician-identity table using a set of algorithms developed by the FSMB. This systematic process allows the FSMB to track the same physician across multiple jurisdictions if more than one state license is sought at any time during the physician's professional career. Additional physician data includes disciplinary information and any specialty certification information.

Physician specialty and subspecialty certification information received by the FSMB comes from the American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA). Even though physicians in the United States are not licensed based on their specialty or practice focus, and specialty board certification is not an absolute requirement for medical licensure, specialty designation is an important attribute to the state medical boards for informational purposes. As another measure to ensure up-to-date information, deceased physicians are identified and flagged in the FSMB database by cross-referencing physician records with the Death Master File of the Social Security Administration (SSA), a federal database that contains more than 86 million records of reported deaths.[23]

Table 1
Population Characteristics

Actively Licensed Physicians in the United States and the District of Columbia, 2010 and 2016	2010[a]		2016	
	Counts	Percentages	Counts	Percentages
Total	**850,085**	**100.0%**	**953,695**	**100.0%**
Degree				
Doctor of Medicine (MD)	789,788	92.9%	870,312	91.3%
Doctor of Osteopathic Medicine (DO)	58,329	6.9%	81,115	8.5%
Unknown	1,968	0.2%	2,268	0.2%
Medical School				
U.S. and Canadian Graduates (MD or DO)	649,736	76.4%	724,640	76.0%
International Graduates	188,598	22.2%	216,182	22.7%
Unknown	11,751	1.4%	12,873	1.3%
Age				
Less than 30	16,519	1.9%	18,023	1.9%
30-39 years	184,120	21.7%	208,799	21.9%
40-49 years	214,595	25.2%	227,953	23.9%
50-59 years	215,541	25.4%	214,422	22.5%
60-69 years	138,815	16.3%	183,870	19.3%
70+ years	75,627	8.9%	94,969	10.0%
Unknown	4,868	0.6%	5,659	0.6%
Gender				
Male	583,315	68.6%	617,186	64.7%
Female	252,861	29.7%	319,145	33.5%
Unknown	13,909	1.6%	17,364	1.8%
Certified by an ABMS/AOA Specialty Board[b]				
Yes	633,733	74.5%	752,558	78.9%
No	216,352	25.5%	201,137	21.1%
Number of Active Licenses				
1	657,208	78.4%	746,417	78.3%
2	142,423	15.7%	148,250	15.5%
3 or more	50,454	5.8%	59,028	6.2%

a. Counts for licensed physicians by medical school, age and gender have been revised and updated for 2010.

b. FSMB matched physician license data with ABMS and AOA certification data to obtain counts of physicians with an active license in the U.S. and District of Columbia who also hold one or more active specialty or subspecialty certificates from an ABMS or AOA member board. The counts included in this census may vary from counts reported by the ABMS and AOA. For example, ABMS Board Certification counts measure a broader geographic base and additional specialty related degrees. The number of certified physicians for 2010 includes only those with ABMS certifications because the FSMB did not receive AOA certification data until 2015. As with all counts and percentages in the 2016 FSMB Census, resident physician licenses were excluded when such licenses could be identified.

Source: 2016 FSMB Census of Licensed Physicians.

Results

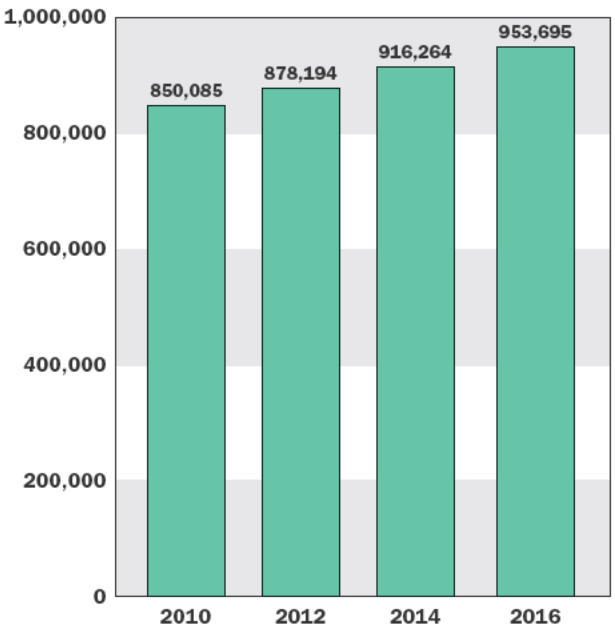
Table 1 summarizes the population characteristics of the 953,695 physicians who are actively licensed in the United States and the District of Columbia* as of 2016, with comparison to the 850,085 actively licensed physicians that the nation had in 2010. This is detailed by degree, medical school, age, gender, certification of specialty board and number of active licenses. Figure 1 illustrates the continuous growth of the actively licensed physician population. From 2010 to 2016, there has been a net increase of 12%, or 103,610 actively licensed physicians nationwide.

In 2015 and 2016, a total of 160,781 new medical licenses were issued by state medical boards, including licenses issued for the first time or subsequently, in one or more jurisdictions. During these two years, 38,896 physicians received their very first medical licenses from state medical boards, accounting for 24% of all newly issued licenses for those years.

The Doctor of Medicine (MD) remains the dominant degree (91%) of actively licensed physicians in 2016, with Doctors of Osteopathic Medicine (DOs) constituting 9% of the actively licensed population.

* Future references to the U.S. include the District of Columbia

Figure 1
Actively Licensed Physicians in the United States and the District of Columbia by Year



Source: 2016 FSMB Census of Licensed Physicians.

Although there are substantially fewer DOs than MDs nationally, the osteopathic profession is growing at a relatively faster rate. The number of actively licensed physicians who are DOs increased by 39% between 2010 and 2016, compared with a 10% increase in the number of MDs during the same time period.

In 2016, 76% of actively licensed physicians are U.S. or Canadian medical graduates (USMGs), 23% are international medical graduates (IMGs) and 1% have an unknown medical school because the information was not available to the FSMB (Table 1).

THE NUMBER OF ACTIVELY LICENSED PHYSICIANS WHO ARE DOs INCREASED BY 39% BETWEEN 2010 AND 2016, COMPARED WITH A 10% INCREASE IN THE NUMBER OF MDs...

The 953,695 actively licensed physicians in 2016 graduated from 2,023 medical schools in 167 countries from around the world. From 2010 to 2016, the number of actively licensed USMGs has increased by 12%, and the number of actively licensed IMGs has increased by 15%.

Table 2 lists the 10 U.S. allopathic and osteopathic schools with the largest number of graduates who are actively licensed in the United States. The 10 allopathic programs with the largest number of graduates account for approximately 10% of all actively licensed allopathic physicians. Comparatively, the 10 osteopathic schools with the largest number of graduates account for 62% of actively licensed osteopathic physicians.

Table 3 lists the 10 international medical schools with the largest number of graduates who are actively licensed in the U.S. These 10 international medical schools account for 21% of all actively licensed IMGs in the U.S. Of the 216,182 actively licensed IMGs, the largest number have graduated from schools in India (n = 49,563 or 23%), followed by the Caribbean (n = 35,971 or 17%), the Philippines (n = 13,507 or 6%), Pakistan (n = 12,410 or 6%) and Mexico (n = 10,111 or 5%). Physicians from all other international countries (n = 94,620) constitute 44% of IMGs who are actively licensed in the U.S. in 2016 (Figure 2).

Of the five countries and regions that have the largest number of actively licensed IMGs in the United States, the number of physicians from four of these locations increased from 2010 to 2016. Actively licensed physicians who graduated from

Table 2

U.S. Medical Schools and Colleges of Osteopathic Medicine

U.S. Medical Schools and Colleges of Osteopathic Medicine with the Largest Number of Graduates Actively Licensed in the United States and the District of Columbia, 2016	City and State	Number of Actively Licensed Physicians
Medical School		
Indiana University School of Medicine	Indianapolis, IN	11,393
University of Minnesota Medical School	Minneapolis, MN	10,150
Wayne State University School of Medicine	Detroit, MI	9,341
Ohio State University College of Medicine and Public Health	Columbus, OH	8,999
SUNY Downstate Medical Center	Brooklyn, NY	8,988
Jefferson Medical College of Thomas Jefferson University	Philadelphia, PA	8,799
University of Illinois College of Medicine	Chicago, IL	8,729
University of Texas Medical School at Galveston	Galveston, TX	8,163
University of Michigan Medical School	Ann Arbor, MI	8,134
New York Medical College	Valhalla, NY	8,037
College of Osteopathic Medicine		
Philadelphia College of Osteopathic Medicine	Philadelphia, PA	7,452
Des Moines University, College of Osteopathic Medicine	Des Moines, IA	6,548
Kansas City University of Medicine and Biosciences	Kansas City, MO	6,324
NY Institute of Technology College of Osteopathic Medicine	Old Westbury, NY	5,317
Kirksville College of Osteopathic Medicine	Kirksville, MO	5,188
Midwestern University, Chicago College of Osteopathic Medicine	Downers Grove, IL	4,791
Western University, College of Osteopathic Medicine of the Pacific	Pomona, CA	4,278
Nova Southeastern University, College of Osteopathic Medicine	Fort Lauderdale, FL	3,703
UNT Health Science Center, Texas College of Osteopathic Medicine	Fort Worth, TX	3,580
Michigan State University College of Osteopathic Medicine	East Lansing, MI	2,814

Source: 2016 FSMB Census of Licensed Physicians.

Table 3

International Medical Schools

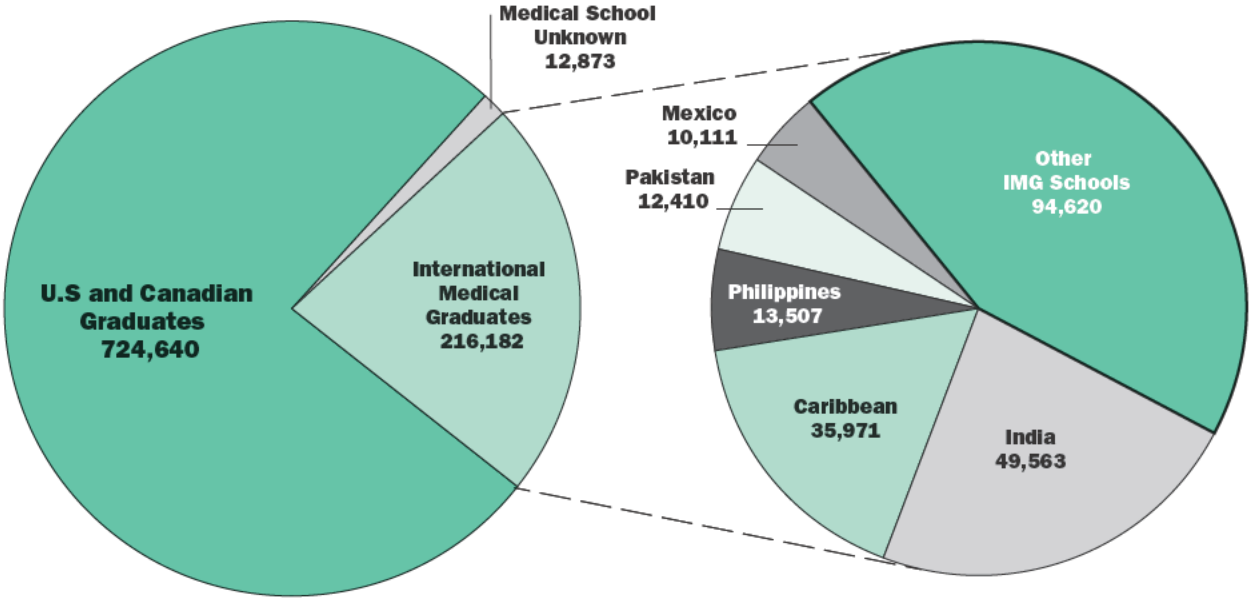
International Medical Schools with the Largest Number of Graduates Actively Licensed in the United States and the District of Columbia, 2016	Country	Number of Actively Licensed Physicians
International Medical School		
St. George's University	Grenada	9,296
Ross University	Dominica	8,618
Universidad Autonoma De Guadalajara	Mexico	5,785
University of Santo Tomas	Philippines	4,545
American University of the Caribbean	Saint Maarten	4,267
Dow Medical College, University of Karachi	Pakistan	3,181
University of Damascus	Syria	2,745
Osmania Medical College	India	2,157
University of the East, Ramon Magsaysay Memorial Medical Center	Philippines	2,070
University of the Philippines	Philippines	2,044

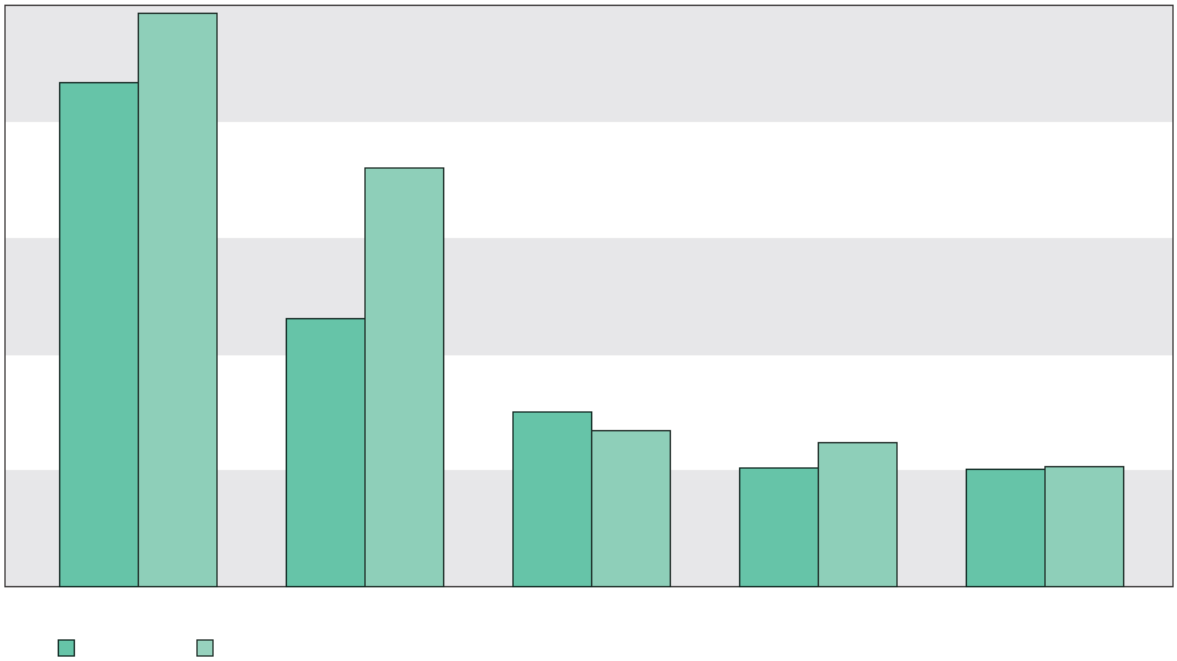
Source: 2016 FSMB Census of Licensed Physicians.

medical schools in the Caribbean had the largest growth, from 22,820 to 35,971, or an increase of 58% between 2010 and 2016. Actively licensed physicians who graduated from the Philippines decreased by 10% between 2010 (n = 14,946) and 2016 (n = 13,507) (Figure 3).

Figure 2

Actively Licensed Physicians in the United States and the District of Columbia by Location of Medical School Graduation, 2016





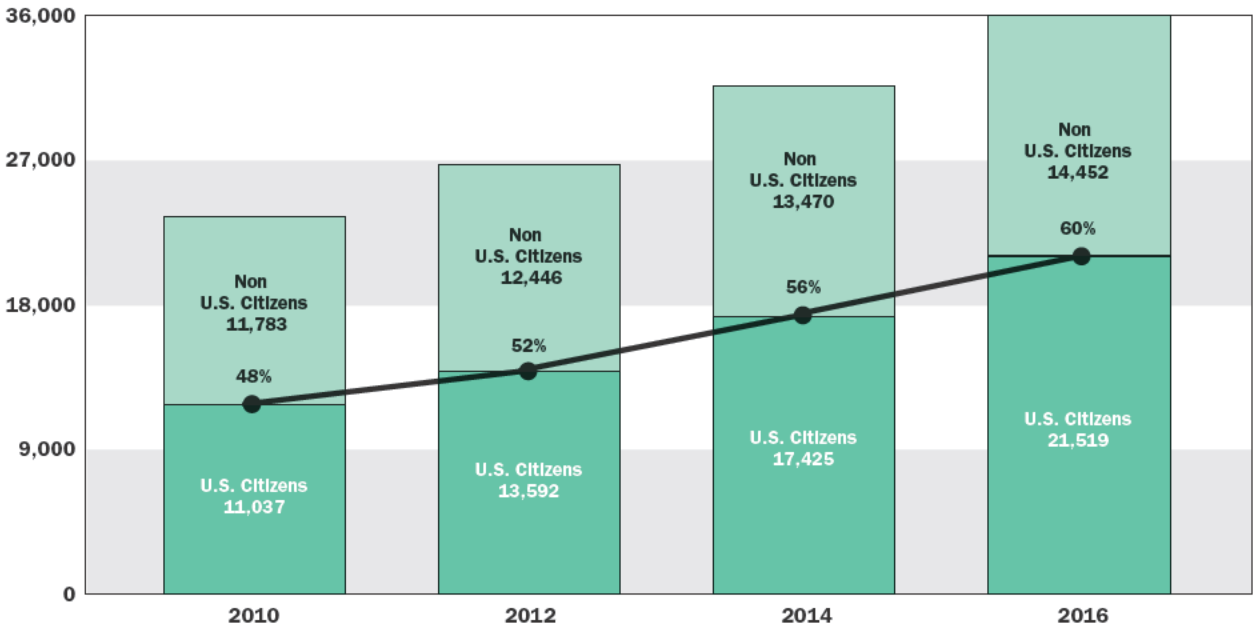
As the number of actively licensed physicians in the United States who graduated from Caribbean medical schools continues to grow, the percentage of physicians from this region who are U.S. citizens has also steadily increased from 2010 to 2016. In 2010, 48% of actively licensed physicians who were Caribbean medical school graduates were U.S. citizens; in 2016, this percentage has grown to 60%. Alternatively stated, in 2010, there were 11,783 actively licensed physicians who were non-U.S. citizen Caribbean medical graduates, a number that has grown to 14,452 in 2016 (an increase of 23%). In 2010, there were 11,037 actively licensed physicians who were U.S. citizen Caribbean medical graduates and in 2016 there are 21,519 of them—an increase of 95% (Figure 4).

Actively licensed physicians in 2016 are on average 51.3 years old (SD = 13.6 years), compared to an average physician age of 50.7 years in 2010 (SD = 13.2 years). Figure 5 shows that the percentage of physicians who are 60 years of age or older continues to grow—from 25% of the actively licensed physician population in 2010 to 29% in 2016. Between 2010 and 2016, actively licensed physicians who are 60 years of age and older increased by 30%, compared to 10% for physicians 49 years or younger. Differences in average age by degree, Caribbean medical graduates and gender exist. Actively licensed DOs tend to be younger (46.0 years, SD = 12.5 years) than MDs (51.7 years, SD = 13.6 years). Actively licensed physicians who graduated from Caribbean medical schools on average are also younger (44.9 years, SD = 11.9 years) compared to all physicians. The female physician population tends to be younger (46.4 years, SD = 11.6 years) than the male physician population (53.7 years, SD = 13.7 years).

...THE PERCENTAGE OF PHYSICIANS WHO ARE 60 YEARS OF AGE OR OLDER CONTINUES TO GROW — FROM 25% OF THE ACTIVELY LICENSED PHYSICIAN POPULATION IN 2010 TO 29% IN 2016.

ACTIVELY LICENSED PHYSICIANS WHO GRADUATED FROM CARIBBEAN MEDICAL SCHOOLS ON AVERAGE ARE YOUNGER COMPARED TO ALL PHYSICIANS.

Figure 4
U.S. Citizenship for Actively Licensed Caribbean Medical School Graduates In the United States and District of Columbia by Year



Source: 2016 FSMB Census of Licensed Physicians.

Males constitute 65% of actively licensed physicians in 2016, females constitute 34%, and almost 2% of physicians are of an unknown gender because the information was not available to the FSMB (Table 1). From 2010 to 2016, the number of actively licensed female physicians increased by 26%, compared to 6% for male physicians.

THE DISTRIBUTION OF PHYSICIANS BY GENDER VARIES CONSIDERABLY BY AGE CATEGORIES; A GREATER PERCENTAGE OF FEMALE PHYSICIANS TEND TO FALL WITHIN YOUNGER AGE CATEGORIES THAN MALE PHYSICIANS.

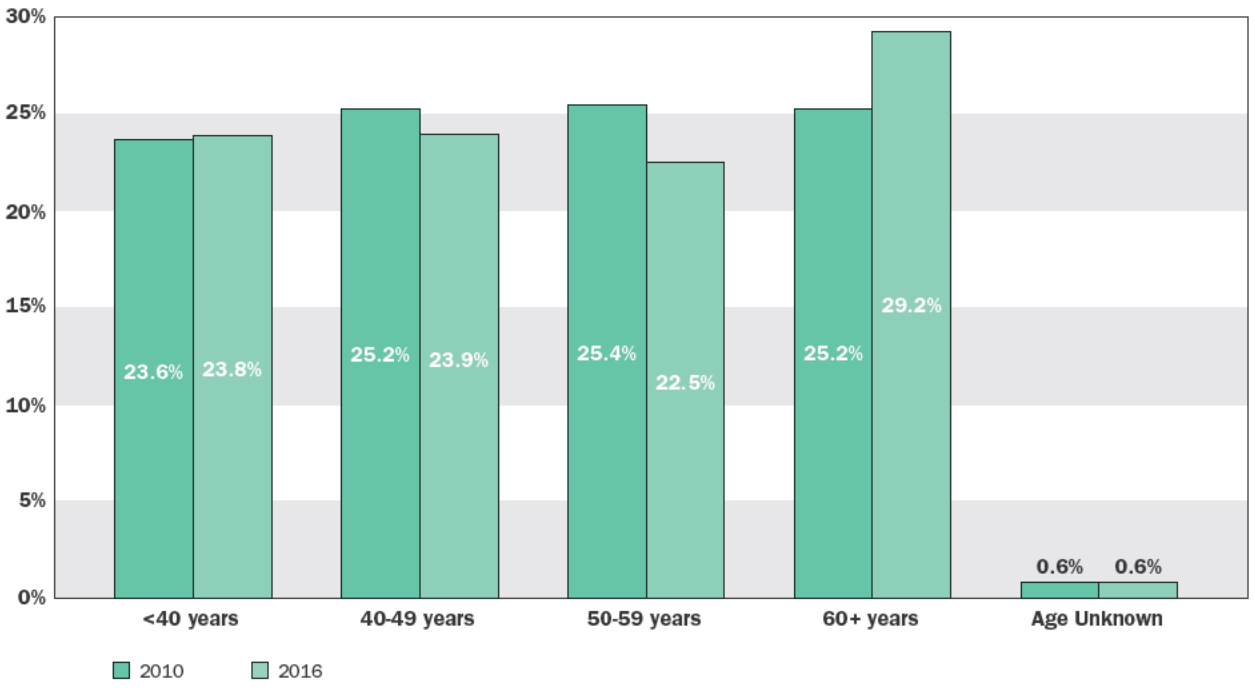
The distribution of physicians by gender varies considerably by age categories; a greater percentage of female physicians tend to fall within younger age categories than male physicians. The 2016 census shows that 34% of female physicians are 39 years of age or younger, compared to 19% of male physicians. When looking at older physicians, however, 36% of male physicians are 60 years of age or older, compared to 16% of female physicians (Figure 6).

The large majority (79%) of actively licensed physicians in the United States are certified by an ABMS or AOA specialty board (Table 1). Specialty certification varies greatly by age: 14% of actively licensed physicians who are less than 30 years old have an ABMS or AOA certification, rising to 75% for physicians 30 to 39 years old, peaking at 89% for physicians 40 to 49 years old and then decreasing to 61% for physicians 70 years of age and older (Figure 7). USMGs are slightly more likely (79%) to hold an ABMS or AOA certification than IMGs (76%).

IN BOTH 2010 AND 2016, 78% OF PHYSICIANS HELD ONE ACTIVE MEDICAL LICENSE, 16% HELD TWO LICENSES AND 6% HELD THREE OR MORE ACTIVE LICENSES.

In both 2010 and 2016, 78% of physicians held one active medical license, 16% held two licenses and 6% held three or more active licenses (Table 1). Six physicians had an active license in all 50 states

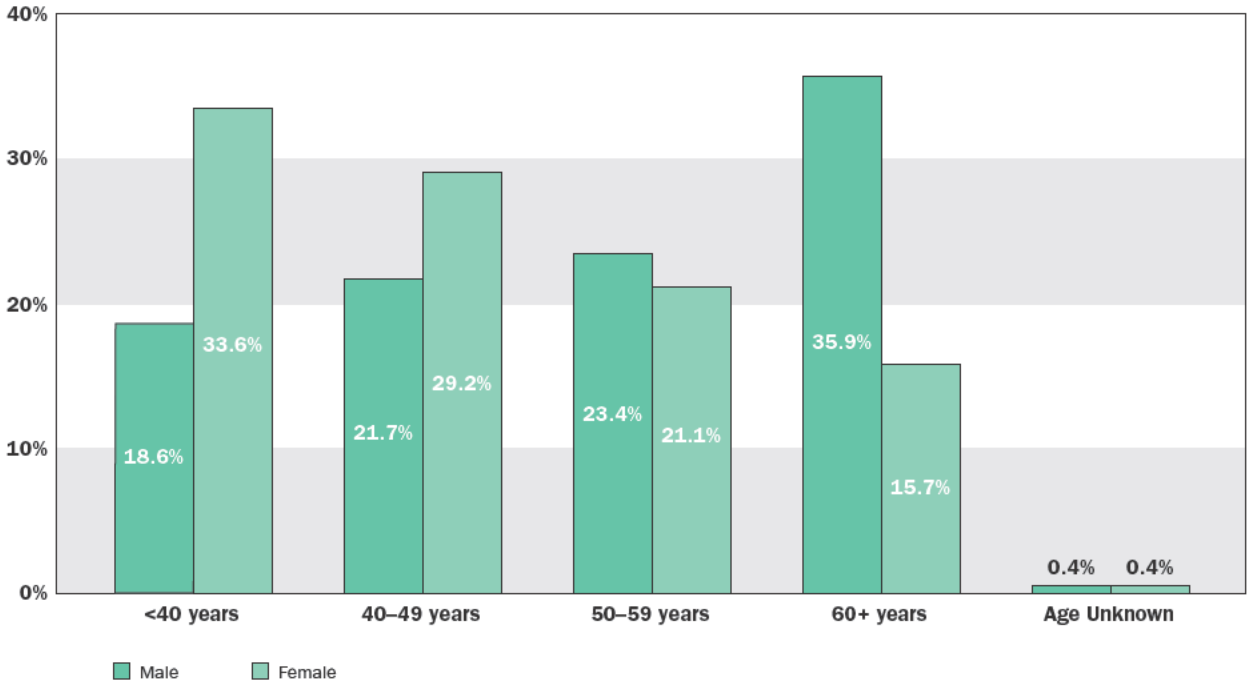
Figure 5
Actively Licensed Physicians in the United States and the District of Columbia by Age, 2010 and 2016



Source: 2016 FSMB Census of Licensed Physicians.

Figure 6

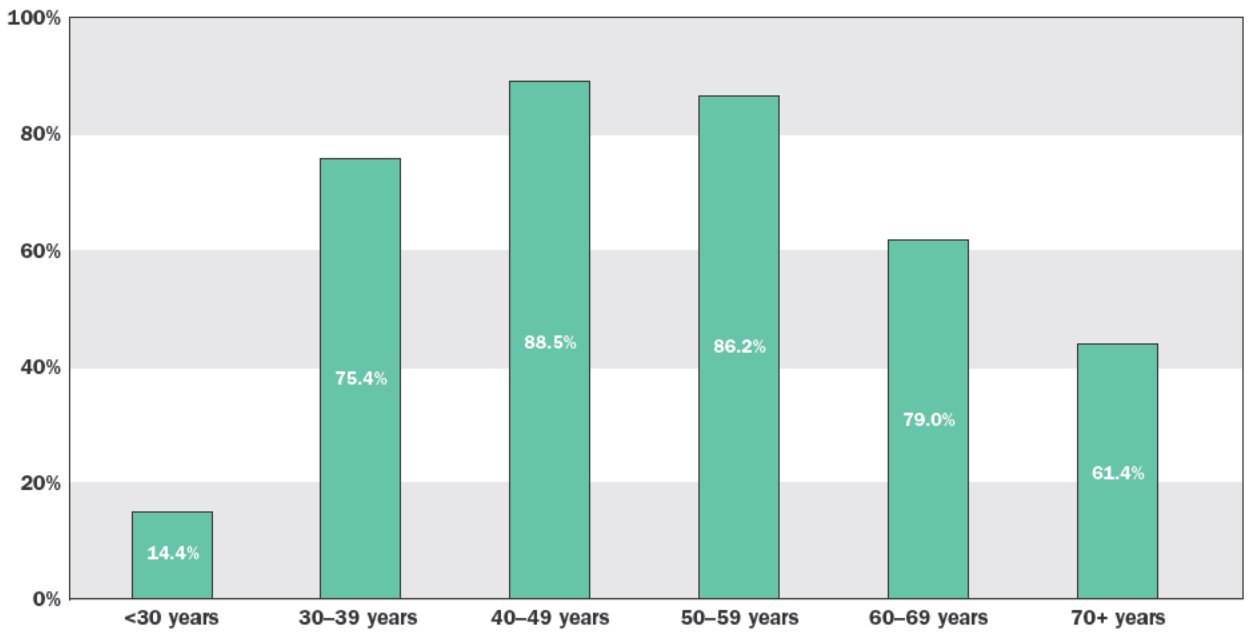
Actively Licensed Physicians in the United States and the District of Columbia by Gender and Age, 2016



Source: 2016 FSMB Census of Licensed Physicians.

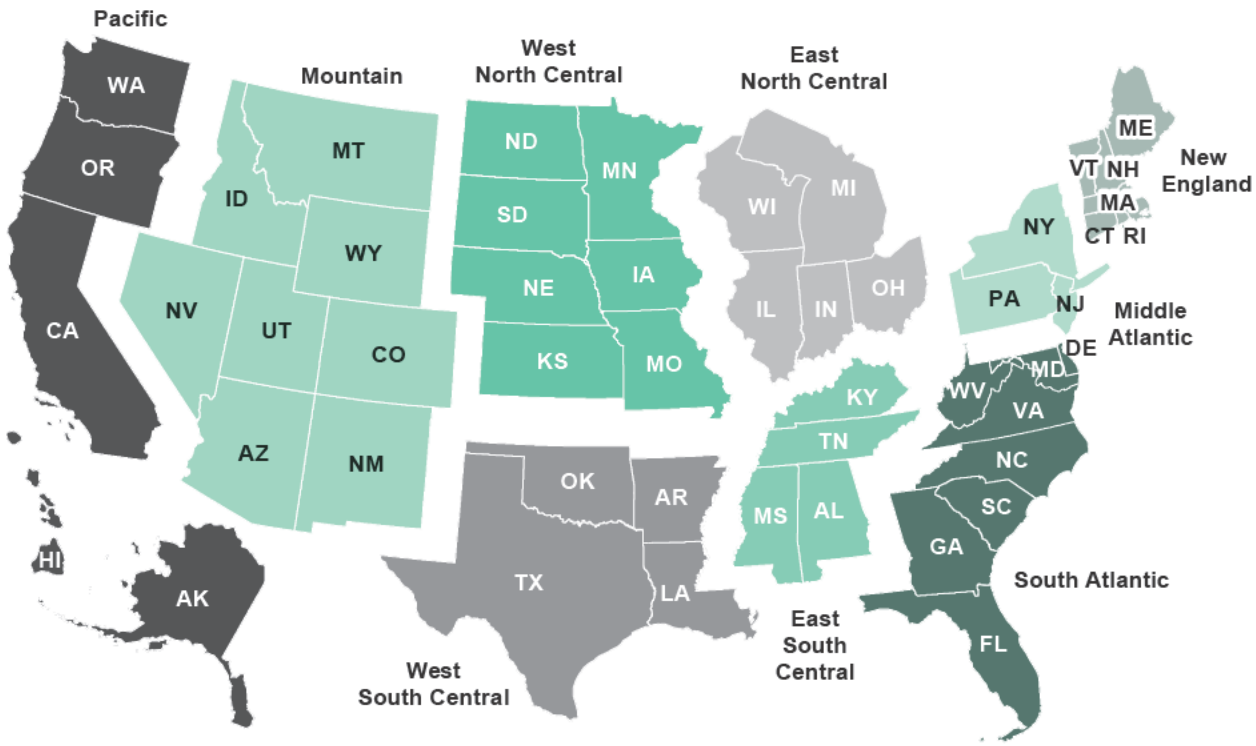
Figure 7

Actively Licensed Physicians with ABMS or AOA Certifications in the United States and District of Columbia by Age, 2016



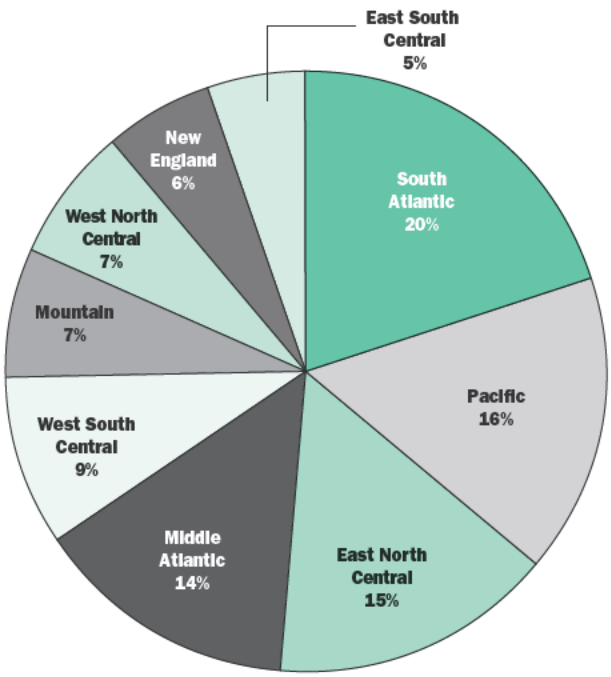
Source: 2016 FSMB Census of Licensed Physicians.

Figure 8
Divisions of the United States; U.S. Census Bureau



Source: 2016 FSMB Census of Licensed Physicians.

Figure 9
Distribution of Active Licenses in the United States and the District of Columbia by U.S. Census Bureau Division, 2016



Source: 2016 FSMB Census of Licensed Physicians.

as well as the District of Columbia in 2016. There are, however, differences in the percentage of physicians who hold multiple active licenses by gender and specialty certification. A greater percentage of male physicians tend to hold more than one active license (24%) than female physicians (19%). Physicians with an ABMS or AOA certification are also more likely to hold more than one active license (24%) than physicians without such a certification (15%).

PHYSICIANS WITH AN ABMS OR AOA CERTIFICATION ARE ALSO MORE LIKELY TO HOLD MORE THAN ONE ACTIVE LICENSE (24%) THAN PHYSICIANS WITHOUT SUCH A CERTIFICATION (15%).

Figure 8 is a map of the United States divided into the nine geographic divisions used by the U.S. Census Bureau. Using these same divisions, Figure 9 shows the distributions of all active licenses held by the 953,695 physicians in the United States. The largest percentage of all active licenses issued are

Table 4

Physicians with an Active License by State

Physicians with an Active License by State and the District of Columbia, 2016[a]	Licensed Physicians	Population Counts[b]	Physicians Per 100,000 Population
United States	953,695	323,127,513	295
Alabama	15,947	4,863,300	328
Alaska	4,049	741,894	546
Arizona	25,344	6,931,071	366
Arkansas	9,967	2,988,248	334
California	149,283	39,250,017	380
Colorado	21,897	5,540,545	395
Connecticut	17,414	3,576,452	487
Delaware	5,269	952,065	553
District of Columbia	12,520	681,170	1,838
Florida	74,012	20,612,439	359
Georgia	35,951	10,310,371	349
Hawaii	9,464	1,428,557	662
Idaho	5,969	1,683,140	355
Illinois	49,513	12,801,539	387
Indiana	28,251	6,633,053	426
Iowa	11,931	3,134,693	381
Kansas	9,566	2,907,289	329
Kentucky	18,526	4,436,974	418
Louisiana	16,894	4,681,666	361
Maine	6,779	1,331,479	509
Maryland	30,188	6,016,447	502
Massachusetts	34,847	6,811,779	512
Michigan	47,284	9,928,300	476
Minnesota	23,494	5,519,952	426
Mississippi	10,249	2,988,726	343
Missouri	25,763	6,093,000	423
Montana	5,244	1,042,520	503
Nebraska	9,316	1,907,116	488
Nevada	8,861	2,940,058	301
New Hampshire	7,262	1,334,795	544
New Jersey	37,181	8,944,469	416
New Mexico	9,235	2,081,015	444
New York	93,951	19,745,289	476
North Carolina	38,716	10,146,788	382
North Dakota	3,895	757,952	514
Ohio	46,631	11,614,373	401
Oklahoma	13,141	3,923,561	335
Oregon	15,165	4,093,465	370
Pennsylvania	56,337	12,784,227	441
Rhode Island	5,432	1,056,426	514
South Carolina	18,999	4,961,119	383
South Dakota	3,806	865,454	440
Tennessee	23,039	6,651,194	346
Texas	77,894	27,862,596	280
Utah	10,751	3,051,217	352
Vermont	3,540	624,594	567
Virginia	37,820	8,411,808	450
Washington	28,747	7,288,000	394
West Virginia	7,943	1,831,102	434
Wisconsin	26,755	5,778,708	463
Wyoming	3,775	585,501	645
State and D.C. Totals[c]	**1,293,807**	**323,127,513**	

a. State counts are based on physician data recorded by the FSMB using state medical board license files from 2016 and reflect the number of physicians with an active license. Resident physician licenses were excluded when such license could be identified.

b. U.S. Census Bureau, Population Division, July 2016.

c. Physician counts by state do not add up to 953,695 because some physicians maintain active licenses in more than one jurisdiction.

Source: 2016 FSMB Census of Licensed Physicians.

in the South Atlantic (20%), followed by the Pacific (16%), East North Central (15%) and Middle Atlantic (14%). These four divisions account for almost two-thirds of all active licenses in 2016.

Table 4 provides the number of physicians with active licenses by each state within the United States. The 953,695 actively licensed physicians in 2016 represent a physician-to-population ratio of 295 actively licensed physicians per 100,000-population, a steady increase from the 277 physicians per 100,000 in 2010[5], 280 physicians per 100,000 in 2012[21] and 287 physicians per 100,000 in 2014.[22]

Discussion

At a time when the United States faces a transformation in population demographics, medical regulatory policies and health care reform, an up-to-date, accurate count and detailed analysis of physicians who are licensed to practice medicine provides essential information to support health care workforce planning and public policy deliberations.

...THE ACTIVELY LICENSED PHYSICIAN-TO-POPULATION RATIO HAS INCREASED OVER TIME FROM 277 PHYSICIANS PER 100,000-POPULATION IN 2010 TO 295 PHYSICIANS PER 100,000-POPULATION IN 2016.

The 2016 FSMB census adds to the body of physician and health care workforce literature by not only documenting the overall growth of the actively licensed physician population, but also by identifying dominant physician characteristics and growing sub-populations for the profession.

First, the FSMB's four physician censuses clearly show an actively licensed physician population in the United States and District of Columbia that is growing. From 2010 to 2016, the total number of actively licensed physicians has increased from 850,085 to 953,695—an average annual net growth rate of 2%. Accordingly, the actively licensed physician-to-population ratio has increased over time from 277 physicians per 100,000-population[5] in 2010 to 295 physicians per 100,000-population in 2016.

Second, physicians who are MDs, USMGs, older and male remained a foremost presence in the actively licensed physician workforce between 2010 and 2016. More than 90% of actively licensed physicians during this time period have been MDs, compared to DOs. USMGs have remained relatively constant, constituting approximately three-quarters of the actively licensed population during this time span. In 2010, 25% of actively licensed physicians were 60 years of age or older, a percentage that has increased to 29% by 2016. Males continue to represent the majority of actively licensed physicians, although in relative terms their percentage has decreased from 69% in 2010 to 65% in 2016.

OSTEOPATHIC MEDICINE REMAINS ONE OF THE FASTEST GROWING HEALTH CARE PROFESSIONS IN THE UNITED STATES AND THE INCREASE IN THE OSTEOPATHIC POPULATION IS EVEN LARGER WHEN COMPARED WITH WORKFORCE COUNTS FROM PREVIOUS YEARS.

Third, while they still represent smaller sub-populations, some of the fastest growing segments among actively licensed physicians are females, DOs and Caribbean medical school graduates. There has been a steady increase in the percentage of actively licensed female physicians. In 2010, 30% were female, rising to 34% in 2016. The increase in the number of female physicians coincides with the steady rise of first-time medical licenses issued to female physicians in past decades,[24] as well as a greater percentage of female physicians graduating from U.S. medical schools. Between 2012 and 2016, the percentage of graduates from U.S. medical schools who were females ranged between 46% and 48%.[25]

Congruently, actively licensed physicians who are DOs grew in number by 39% between 2010 and 2016, compared to 10% for MDs. Osteopathic medicine remains one of the fastest growing health care professions in the United States and the increase in the osteopathic physician population is even larger when compared with workforce counts from previous years. According to the American Osteopathic Association (AOA), the number of DOs has increased by 65% since 2006 and 276% since 1986.[26]

Actively licensed physicians who are Caribbean medical school graduates have increased dramatically in the United States, by 58% between 2010 and

2016. A greater percentage of Caribbean medical graduates are also listed as U.S. citizens. Between 2010 and 2016, actively licensed Caribbean medical graduates who are U.S. citizens increased by 95%, compared with a 23% increase for non-U.S. citizens. The 2016 census shows that three-fifths of Caribbean medical graduates who were actively licensed in the United States are U.S. citizens. Not only are there more U.S. citizen Caribbean medical graduates practicing medicine in the United States, a high percentage of IMGs are also now U.S. citizens. In 2015, U.S. citizens represented the single largest (31%) country of citizenship who were issued certificates by the Educational Commission for Foreign Medical Graduates (ECFMG).[27] These certificates are required for IMGs to take the USMLE examination, enter U.S. graduate medical education (GME) and become eligible for an unrestricted state medical license.

While the aging physician population remains a concern in terms of health care supply, some of the fastest growing segments of the physician population in the United States — including females, DOs and Caribbean medical graduates — tend to be younger compared to the overall physician population. While the average age for the total actively licensed physician population is 51 years old, it is considerably lower for DOs, Caribbean medical graduates and females, who average between 45 and 46 years old. It is a point of further interest to track how the average ages of females, DOs and Caribbean medical graduates may affect the composition of the overall licensed physician population in the years to come.

WHILE THE AGING PHYSICIAN POPULATION REMAINS A CONCERN IN TERMS OF HEALTH CARE SUPPLY, SOME OF THE FASTEST GROWING SEGMENTS OF THE PHYSICIAN POPULATION IN THE UNITED STATES...TEND TO BE YOUNGER COMPARED TO THE OVERALL PHYSICIAN POPULATION.

Despite the rise in the number of medical school students in the United States[3,4] and growth in the actively licensed physician population, concerns persist over an impending physician shortage as the nation's population continues to grow and age.[11,12] Though the vast majority of physicians (78%) hold only one active license, emerging innovations for health care delivery, such as telemedicine and the implementation of the Interstate Medical Licensure Compact (IMLC),[15] are providing new opportunities for qualified physicians to apply for medical licenses and treat patients (either in person or with technology) in multiple jurisdictions. Future FSMB census reports will continue to play an important role in tracking the number of licensed physicians and physician-to-population ratios as indicators of the degree of the physician shortage facing the country. Census reports are also helpful in monitoring the impact of such advances as the IMLC and in determining whether a greater proportion of physicians will choose to be licensed in more than one jurisdiction over time.

THE 2016 CENSUS SHOWS THAT THREE-FIFTHS OF CARIBBEAN MEDICAL GRADUATES WHO WERE ACTIVELY LICENSED IN THE UNITED STATES ARE U.S. CITIZENS.

Furthermore, there are additional opportunities to make detailed comparisons of various segments of the licensed physician population. A recent study by researchers at the FSMB examined first-time licenses issued to female physicians to better understand the physician pipeline and physicians' transition from medical school to practice.[24] Forthcoming analyses that explore demographic, practice and license characteristics within specific physician subgroups should also help further define and identify changes to the composition of the health care workforce. ■

About the Authors

Aaron Young, PhD, is Assistant Vice President, Research and Data Integration, at the FSMB.

Humayun J. Chaudhry, DO, MS, is President and CEO of the FSMB.

Xiaomei Pei, PhD, is Senior Research Analyst, Research and Data Integration, at the FSMB.

Katie Arnhart, PhD, is Senior Research Analyst, Research and Data Integration, at the FSMB.

Michael Dugan, MBA, is Chief Information Officer and Senior Vice President for Operations at the FSMB.

Gregory B. Snyder, MD, is Chair of the FSMB Board of Directors.

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References

1. United States Census Bureau, "Millennials Outnumber Baby Boomers and Are Far More Diverse, Census Bureau Reports," 2015. [Online]. Available at: https://www.census.gov/newsroom/press-releases/2015/cb15-113.html.
2. Fry, R. "Millennials Overtake Baby Boomers as America's Largest Generation," 2016. [Online]. Available at: http://www.pewresearch.org/fact-tank/2016/04/25/millennials-overtake-baby-boomers/.
3. Association of American Medical Colleges, "Results of the 2016 Medical School Enrollment Survey," 2017. [Online]. Available at: https://news.aamc.org/press-releases/article/enrollment-05252017/.
4. Association of American Medical Colleges, "Table B-1.2: Total Enrollment by U.S. Medical School and Sex, 2012-2013 through 2016-2017," 2016. [Online]. Available at: https://www.aamc.org/download/321526/data/factstableb1-2.pdf.
5. Young A, Chaudhry HJ, Rhyne J, Dugan M. "A Census of Actively Licensed Physicians in the United States, 2010," *Journal of Medical Regulation*, Vol. 96, No. 4: 10-20, 2011.
6. U.S. Department of Health and Human Services Council on Graduate Medical Education, "The Effects of the Balanced Budget Act of 1997 on Graduate Medical Education," 2000. [Online]. Available at: https://www.hrsa.gov/advisorycommittees/bhpradvisory/cogme/Publications/budgetact.pdf.
7. National Commission on Certification of Physician Assistants, "2016 Statistical Profile of Certified Physician Assistants," 2017. [Online]. Available at: http://www.nccpa.net/Uploads/docs/2016StatisticalProfileofCertifiedPhysicianAssistants.pdf.
8. U.S. Department of Labor: Bureau of Labor Statistics, "Occupational Outlook Handbook, 2016-17, Physician Assistants," 2015. [Online]. Available at: https://www.bls.gov/ooh/health care/physician-assistants.htm#tab-6.
9. Auerbach DI. "Will the NP Workforce Grow in the Future?: New Forecasts and Implications for Healthcare Delivery," *Med Care*, Vol. 50, No. 7: 606-610, 2012.
10. Gudbranson E, Glickman A, Emanuel EJ. "Reassessing the Data on Whether a Physician Shortage Exists," *JAMA*, Vol. 317, No. 19: 1945-1946, 2017.
11. Association of American Medical Colleges, "2017 Update: The Complexities of Physician Supply and Demand: Projections from 2015 to 2030," 2017. [Online]. Available at: https://aamc-black.global.ssl.fastly.net/production/media/filer_public/a5/c3/a5c3d565-14ec-48fb-974b-99fafaeecb00/aamc_projections_update_2017.pdf.
12. Dill MJ, Salsberg ES. "The Complexities of Physician Supply and Demand: Projections through 2025," AAMC Center for Workforce Studies, 2008.
13. Federation of State Medical Boards, "FSMB Survey Identifies Telemedicine as Most Important Regulatory Topic for State Medical Boards in 2016," 2016. [Online]. Available at: http://www.fsmb.org/Media/Default/PDF/Publications/20161215_annual_state_board_survey_sesults.pdf.
14. The Federation of State Medical Boards, "Model Policy for the Appropriate Use of Telemedicine Technologies in the Practice of Medicine," 2014. [Online]. Available at: http://www.fsmb.org/Media/Default/PDF/FSMB/Advocacy/FSMB_Telemedicine_Policy.pdf.
15. Chaudhry HJ, Robin LA, Fish EM, Polk DH, Gifford JD. "Improving Access and Mobility — The Interstate Medical Licensure Compact," *New England Journal of Medicine*, Vol. 372, No. 17: 1581-1583, 2015.
16. Interstate Medical Licensure Compact. [Online]. Available at: http://www.imlcc.org/.
17. Internal Revenue Service, "Affordable Care Act (ACA) Tax Provisions," 2017 [Online] Available at: https://www.irs.gov/affordable-care-act/.
18. The Henry J. Kaiser Family Foundation, "Where Are States Today? Medicaid and CHIP Eligibility Levels for Children, Pregnant Women, and Adults," 2017 [Online]. Available at: http://www.kff.org/medicaid/fact-sheet/where-are-states-today-medicaid-and-chip/.
19. U.S. Department of Health and Human Services, "Individual Market Premium Changes: 2013-2017," 2017 [Online]. Available at: https://aspe.hhs.gov/system/files/pdf/256751/IndividualMarketPremiumChanges.pdf.
20. Gleckman H. "CBO Has No Idea What the Repeal of the Affordable Care Act Means for the Economy," 2015 [Online]. Available at: https://www.forbes.com/sites/beltway/2015/06/23/cbo-has-no-idea-what-repeal-of-the-affordable-care-act-means-for-the-economy-or-the-deficit/#7eb6cf532946.
21. Young A, Chaudhry HJ, Thomas JV, Dugan M. "A Census of Actively Licensed Physicians in the United States, 2012," *Journal of Medical Regu*lation, Vol. 99, No. 2: 11-24, 2013.
22. Young A, Chaudhry HJ, Pei X, Halbesleben K, Polk DH, Dugan M. "A Census of Actively Licensed Physicians in the United States, 2014," *Journal of Medical Regulation*, Vol. 101, No. 2: 8-23, 2015.
23. Social Security Death Master File, 2017. [Online]. Available at: https://www.ssdmf.com.
24. Arnhart K, Pei X, Young A. "The Rise of Female International Medical Graduates and their Contribution to Physician Supply in the United States," *Journal of Medical Regulation*, Vol 103, No. 1: 5–11, 2017.
25. Association of American Medical Colleges, "Table B-2.2: Total Graduates by U.S. Medical School and Sex, 2011-2012 through 2015-2016," 2016 [Online]. Available at: https://www.aamc.org/download/321532/data/factstableb2-2.pdf.
26. American Osteopathic Association, "2016 Osteopathic Medical Profession Report," 2016 [Online]. Available at: http://www.osteopathic.org/inside-aoa/about/aoa-annual-statistics/Documents/2016-OMP-report.pdf.
27. Educational Commission for Foreign Medical Graduates, "ECFMG 2015 Annual Report," 2016 [Online]. Available at: http://www.ecfmg.org/resources/ECFMG-2015-annual-report.pdf.