

Physician Workforce and Medical Education in California

INTRODUCTION

This report presents an overview of California's allopathic (MD) and osteopathic (DO) physicians.

Allopathic medical schools grant the Doctor of Medicine (MD) degree, while osteopathic medical schools grant the Doctor of Osteopathic Medicine (DO) degree. Graduates earning an MD typically complete four years of medical school and three or more subsequent years in a residency program accredited by the Accreditation Council for Graduate Medical Education (ACGME). A residency program provides additional supervised training and is required for medical licensure and board certification in a chosen specialty or subspecialty. An increasing number of medical schools offer accelerated three-year tracks or accelerated combined BS/MD programs that can be completed in six to seven years.

Individuals earning a DO typically complete four years of medical school and three or more years of a residency program accredited by the ACGME or the American Osteopathic Association (AOA). Beginning in 2020, all medical residency programs will be accredited by the ACGME. Some osteopathic schools offer accelerated three-year tracks or accelerated BS/DO programs that can be completed in seven years.

Osteopathic medical schools offer a similar curriculum to allopathic schools, with an additional emphasis on the musculoskeletal system and providing osteopathic manipulative treatment. Osteopathic education also places greater emphasis on the impact of lifestyle and the environment on health.¹

SUMMARY

- The number of MDs with active licenses in California increased by 7% between 2013 and 2016 (from 105,770 to 112,529 MDs) and the number of DOs increased 26% (from 5,075 to 6,408 DOs).
- 71,348 MDs licensed by the state of California provided patient care in California in 2015. 4,212 DOs reported providing patient care in 2016.
- Asians are overrepresented in California's physician workforce, and Hispanics and African Americans are underrepresented relative to their percentage of the state's population.
- Historically, California has relied heavily on in-migration by physicians trained in other states and nations.
- California has lower ratios of medical students (MD and DO) and medical residents per capita than the United States overall. California is ranked 43rd among the 46 states with medical schools in the ratio of medical students per 100,000 population and ranked 29th among the 50 states that have residency programs in the ratio of residents per 100,000 population.
- California currently has eleven allopathic medical schools and two osteopathic medical schools. One new allopathic school and one new osteopathic school are enrolling their first students in 2020.
- Six of California's medical schools are public (operated by the University of California), seven are private, not-for-profit and two are private, for-profit.
- MD supply will not keep pace with demand in many specialties. Over a third of California's MDs are over 60 years old, and the number of new licensees who join the workforce per year is currently too small to replace these physicians as they retire. DOs, who are younger on average, are likely to fill some of the future gap between supply and demand, but the number of DOs in California is much smaller than the number of MDs.

Chapter 1. Allopathic Physicians (MDs)

CURRENT SUPPLY OF MDs

The number of MDs in California with active licenses increased by 7% between 2013 and 2016, from 105,770 to 112,529 MDs.² According to the Medical Board of California's records, 71,348 MDs with an active California license practiced in California in 2015 and provided at least one hour of patient care per week. In that year, 61,196 MDs in California provided 20 or more hours per week.³

In 2018, there were 277.8 licensed MDs per 100,000 population in the United States, and 279.6 licensed MDs per 100,000 population in California.⁴

Specialties of MDs

In 2018, approximately one-third (32%) of MDs in California who provided patient care 20 or more hours per week reported practicing in a primary care specialty, which the Council on Graduate Medical Education defines as family medicine, general internal medicine, general pediatrics, or general practice (**Table 1**).⁵ An additional 6% practiced in psychiatry and 5% in obstetrics and gynecology. The remaining 57% were in other specialties. In 2015, California had 50 primary care physicians and 104 specialists who provided patient care 20 or more hours per week per 100,000 population.⁶

Table 1. California Active Patient Care MDs by Specialty, 2015

Specialty	Percent of MDs
Primary Care	32%
Psychiatry	6%
OB/GYN	5%
General Surgery	2%
Facility-based Specialties	19%
Medical Specialties	18%
Surgical Specialties	12%
Other	6%

Source: Analysis of Medical Board of California data by the Philip R. Lee Institute for Health Policy Studies, University of California, San Francisco.

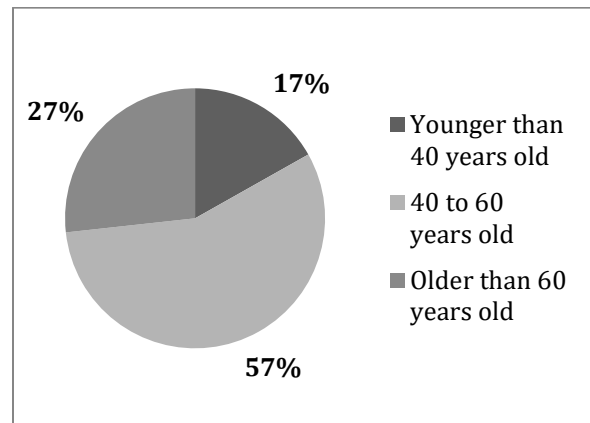
Geographic Distribution of MDs

Across nine regions of California, the Greater Bay Area had the highest ratios of primary care and specialist MDs who provided 20 or more hours of patient care per week per 100,000 population in 2015. The Inland Empire and the San Joaquin Valley had the lowest ratios for both primary care and specialist MDs.⁷

Demographic Characteristics of MDs

Among California MDs who provided 20 or more hours per week of patient care in 2015, 17% were younger than 40, 57% were between the ages of 40 and 60 and 27% were older than 60.⁸

Figure 1. Age Distribution of Patient Care MDs, California, 2015



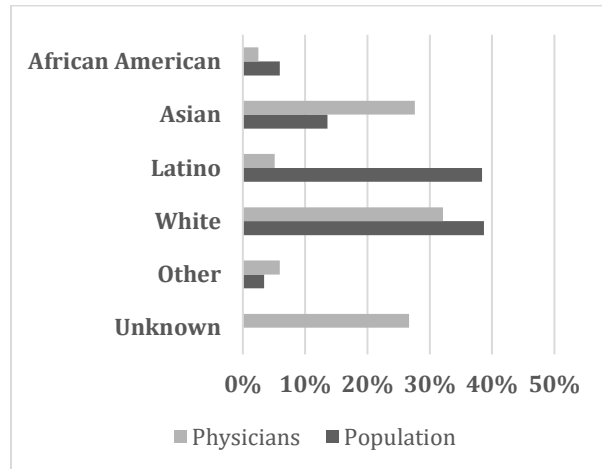
Source: Analysis of Medical Board of California data by the Philip R. Lee Institute for Health Policy Studies, University of California, San Francisco.

Among California MDs who provided 20 or more hours per week of patient care in 2015, 66% were male and 34% were female. The share of male MDs who were over the age of 60 was 34% versus only 14% of female MDs.⁹

The racial and ethnic distribution of California's MDs differed substantially from that of the general population (**Figure 2**), with a higher percentage of Asians (28% of MDs, 14% of population), and a lower percentage of

Latinos (5% of MDs, 38% of the population) and African Americans (3% of MDs, 6% of the population).¹⁰

Figure 2. MDs and Population by Race/Ethnicity, California, 2015



Source: Analysis of Medical Board of California data by the Philip R. Lee Institute for Health Policy Studies, University of California, San Francisco.

In 2017, proficiency in languages other than English among California MDs reflected that of the overall California population, with 26% of MDs reporting speaking Spanish compared to 29% of California's overall population. Seven percent of MDs reported speaking Hindi, 6% Mandarin, 5% French, 4% Vietnamese, and 4% Farsi.¹¹ These data are self-reported and the degree of fluency these physicians have in these languages is unknown.

The geographic distribution of Spanish-speaking primary care physicians is similar to the geographic distribution of all primary care physicians. Regions that have low supplies of primary care physicians per 100,000 population have low supplies of Spanish-speaking primary care physicians per 100,000 Spanish speakers with limited English proficiency.¹²

ALLOPATHIC MEDICAL EDUCATION

Medical School (MD)

California has historically relied heavily on medical schools in other states to train its physicians. Physicians educated outside of

California include many Californians who attend medical school out of state as well as physicians from other states and nations who migrate to California. In 2015, approximately one quarter of California MDs (24%) graduated from a California medical school, while 49% graduated from medical schools in other states and 27% graduated from international medical schools.¹³

There are currently 134 allopathic medical schools in the United States, 12 of which are in California.¹⁴ Six of these are public (University of California system), four are private, not-for-profit and one is private, for-profit (Table 2).

Table 2. California Medical Schools, 2020

Medical School	Ownership Type
University of California, Davis	public
University of California, Irvine	public
University of California, Los Angeles	public
University of California, Riverside	public
University of California, San Diego	public
University of California, San Francisco	public
California Northstate University	private, for-profit
California University of Science and Medicine	private, not-for-profit
Kaiser Permanente School of Medicine	private, not-for-profit
Loma Linda University	private, not-for-profit
Stanford University	private, not-for-profit
University of Southern California	private, not-for-profit

Source: AAMC Facts Table, 2019

Two new private allopathic medical schools have opened within the last five years, one private, not-for-profit (California University of Science and Medicine) and one private, for-profit (California Northstate University). Additionally,

the Kaiser Permanente Bernard J. Tyson School of Medicine, a private, not-for-profit school will enroll its first class of 48 students in 2020. Charles Drew University (CDU), a private, not-for-profit university, has applied to the Liaison Committee on Medical Education (LCME) for accreditation as a four-year medical school. (Since 1981, CDU has operated a medical education program in partnership with the University of California, Los Angeles.)¹⁵ The Keck Graduate Institute School of Medicine appointed a founding dean in March 2020,¹⁶ but the year in which it will begin enrolling students is unknown because it has not yet applied to the LCME for accreditation.

More than half of the students enrolled in MD-granting institutions for 2018-2019 academic year were enrolled in public schools, both in California (58.3%) and in the United States overall (61.1%).¹⁷

During the 2018-2019 academic year, there were 5,940 students enrolled in California allopathic medical schools and 89,934 students enrolled in allopathic medical schools in the U.S.

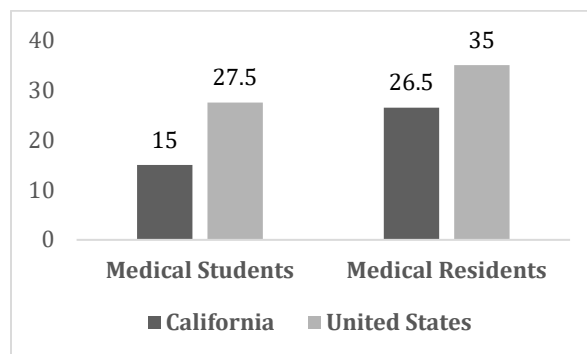
California has one of the lowest ratios of allopathic medical students per capita in the United States. During the 2018-2019 academic year, California's ratio of allopathic medical students per 100,000 population was ranked 41st among the 44 states with allopathic medical schools.¹⁸ There were 15 students enrolled in California allopathic medical schools per 100,000 population versus 27.5 students enrolled in MD granting institutions per 100,000 population nationwide (**Figure 3**).¹⁹

Due to the low number of seats in MD-granting medical schools in California relative to the number of applicants, only 40.3% of Californians who entered an MD-granting medical school in 2018-2019 enrolled in schools in California. Nationwide, 60.7% of MD medical students entered a medical school in their state of legal residence.²⁰

California leads the nation in retention of graduates of public medical schools, however. Among physicians who graduated from any MD- or DO-granting medical school in California, 62.8% practiced in California in 2018. Among

graduates of public (University of California) medical schools, 68.6% practiced in California.²¹

Figure 3. Allopathic Medical Students and Residents per 100,000 Population, 2018



Source: Association of American Medical Colleges. 2019 State Physician Workforce Data Report.

Since 2004-2005, MD-granting medical schools nationwide have consistently had at least twice as many applicants as matriculants. During the 2018-2019 application cycle, for example, there were 2.44 applicants to MD-granting schools per matriculant.^{22,23} Ratios of applicants to matriculants are higher for individual medical schools because applicants submit multiple applications; in 2019, applicants submitted applications to an average of 17 medical schools.²⁴ Ratios of applicants to matriculants at California medical schools in 2019 ranged from 38 (Loma Linda) to 83 (Stanford) applicants per matriculant. Among University of California medical schools, the ratio of applicants to matriculants ranged from 46 to 77.²⁵

Residency (MD)

In 2018, there were 114,594 graduates of allopathic medical schools in ACGME-accredited residency and fellowship programs in the United States, 10,468 of whom were in residency and fellowship programs in California. The number of residents and fellows in California increased by 22.7% between 2008 and 2018.²⁶

California's ratio of allopathic residents and fellows per 100,000 population ranked 24th nationally.²⁷ There were 26.5 such residents and fellows per 100,000 population in California compared to 35 such residents and fellows per 100,000 population in the United States overall (**Figure 3**).²⁸

Chapter 2. Osteopathic Physicians (DOs)

CURRENT SUPPLY OF DOs

Over the past 30 years, the number of osteopathic physicians (DOs) practicing in the United States has more than tripled.²⁹ According to the American Osteopathic Association, there were 108,118 licensed DOs in the United States in 2017.³⁰

The number of DOs in California increased by 26% between 2013 and 2016, rising to 6,408 licensed DOs in 2016.³¹ Fewer than half of DOs surveyed by the Osteopathic Medical Board of California in 2017 reported that they provided patient care (48%).³²

Specialties of DOs

In 2017, 56% of active DOs nationwide worked in primary care specialties (family medicine, internal medicine, and pediatrics) and 44% of DOs worked in non-primary care specialties.³³ (Table 3). Estimates of the specialty distribution of DOs in California are not available.

Table 3. Active Patient Care DOs by Specialty, United States, 2017

Specialty	Percent of DOs
Primary Care	56%
Emergency Medicine	10%
Anesthesiology	4%
OB/GYN	4%
General Surgery	3%
Psychiatry	3%
Other	20%

Source: American Osteopathic Association, Osteopathic Medical Profession Report, 2017

Geographic Distribution of DOs

Across nine regions of California, Los Angeles had the largest number of licensed DOs (1,479) followed by the Greater Bay Area (1,023). The Northern and Sierra region had the smallest numbers of DOs (266). The distributions of MDs and DOs across regions were similar, except

that the Greater Bay Area's share of DOs is much smaller than its share of MDs (16% vs. 28%) and the share of DOs in the Inland Empire is much larger than the share of MDs (15% vs. 7%).³⁴

Demographic Characteristics of DOs

DOs are on average younger than MDs, primarily due to the large increase in the number of osteopathic medical schools over the past two decades. In 2017, more than half of all DOs in the United States were age 45 or younger: 27% were under the age of 35, 27% ages 35-44, 18% ages 45-54, 15% ages 55-64 and 12% 65 years old and older.³⁵

Women constitute a larger percentage of DOs than MDs. In 2017, 45% of DOs in California were female and 55% were male. (In 2015, 34% of MDs in California were female and 66% were male). The percentage of female DOs in California is larger than the percentage in the United States overall (41%).³⁶

As is the case with MDs, Latinos and African Americans are underrepresented among DOs. In 2017, the percentage of DOs who were Latino was much lower than that of the state population (2% of DO physicians versus 38% of the population). African Americans accounted for 6% of the population but only 1% of DO physicians.³⁷

The percentage of DOs who speak Spanish is lower than the percentage of MDs who do so (19% vs. 26%). The percentages of DOs who speak Vietnamese, Mandarin, or Farsi are similar to the percentages of MDs.³⁸

Osteopathic Medical Education

Medical School (DO)

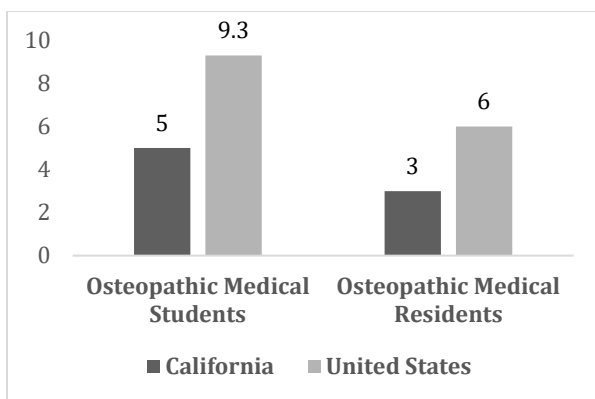
There are currently 34 colleges of osteopathic medicine in 32 states.³⁹ Two of these are in California; both are private, not-for-profit. A third osteopathic medical school, the California Health Sciences University - College of

Osteopathic Medicine, plans to enroll its first class in fall 2020. This school will be California's first for-profit osteopathic medical school and the second for-profit medical school in the state.

During the 2018-2019 academic year, there were 1,897 students enrolled in DO-granting medical schools in California and 30,367 students enrolled in such schools in the United States overall.⁴⁰ DO-granting medical schools enrolled 5 students per 100,000 population in California and 9.3 students per 100,000 population nationwide (**Figure 4**).

In 2018, there were three DO residents and fellows per 100,000 population enrolled in ACGME programs in California and six DO residents and fellows per 100,000 population enrolled in ACGME-accredited programs in the United States overall (**Figure 4**).⁴³ Data regarding ratios of DO residents in AOA-accredited programs per 100,000 population are not available.

Figure 4. Osteopathic Medical Students and Residents per 100,000 Population, 2018



Sources: Association of American Medical Colleges. 2019 State Physician Workforce Data Report.
 Note: Does not include DOs in AOA-accredited (osteopathic) residency programs.

In 2018-2019, there were 2.49 applicants for each seat in first-year classes of osteopathic medical schools approved by the AOA Commission on Osteopathic College Accreditation.⁴¹

Residency (DO)

Graduates of osteopathic medical schools may complete a residency program accredited by either the AOA or the ACGME. During the 2016-2017 academic year, there were 20,482 DO graduates nationwide enrolled in a residency program accredited by either the AOA or the ACGME.⁴² The osteopathic medical profession is currently transitioning to a single accreditation system, and by 2020, all medical residencies will be accredited solely by the ACGME.

Chapter 3. Future Supply and Demand for Primary Care Physicians and Psychiatrists (MDs and DOs)

By 2030, demand for primary care clinicians (i.e., physicians, nurse practitioners, and physician assistants) in California is expected to increase by 14.5% above current levels. Demand for primary care clinicians is projected to be 9.8% higher than supply.

One factor contributing to the shortage of primary care clinicians is a projected 8% to 25% decrease in the number of primary care MDs. The number of new licensees will not be large enough to replace primary care physicians who retire. In contrast, supplies of primary care NPs and PAs are projected to increase by 82% to 157% and 64% to 127%, respectively.⁴⁴

An important limitation of these California forecasts is that they do not include DOs. The Osteopathic Medical Board of California did not begin surveying DOs until 2016 and there is a paucity of historical data about the state's DO workforce.

National forecasts of supply and demand for primary care physicians (MDs and DOs) disagree as to whether the United States will have a nationwide shortage in the future.^{45,46} Depending on which forecast is most accurate,

California may be able to partially mitigate its shortage of primary care physicians by importing physicians from other states. However, California is unlikely to maintain an adequate supply unless it increases the number of primary care residency positions in the state.

Forecasts of supply and demand for psychiatrists suggest that California will have a severe shortage of psychiatrists by 2028. A large percentage of California's psychiatrists are over 60 years old and forecasts suggest that as they retire, the number of newly licensed psychiatrists will fall 41% short of the number demanded.⁴⁷

National projections for psychiatrists (MDs and DOs) indicate that the United States will also have a shortage of psychiatrists by 2030.⁴⁸ This finding suggests that California will not be able to rely solely on importing psychiatrists from other states to meet its workforce needs and will need to increase the number of psychiatry residency positions in the state.

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³ Coffman, J., Fix, M., & Ko, M. (2018, June). *California Physician Supply and Distribution: Headed for a Drought*. Retrieved from <https://www.chcf.org/publication/californias-physicians-headed-drought/>

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¹⁰ Coffman, J., Fix, M., & Ko, M. (2018, June). *California Physician Supply and Distribution: Headed for a Drought*. Retrieved from <https://www.chcf.org/publication/californias-physicians-headed-drought/>

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¹² Garcia M.D., Bindman A.B., & Coffman J. Language-Concordant Primary Care Physicians for a Diverse Population: The View from California. *Health Equity*. 2019;3(1):343-349.

¹³ California Physicians: Who They Are, How They Practice. (2017, August). Retrieved from <https://www.chcf.org/wp-content/uploads/2017/08/PhysiciansAlmanacWhoTheyAre2017.pdf>

¹⁴ AAMC Facts Table

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