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The 2019 AAMC Survey of Medical School Enrollment Plans would not have been possible without the collaboration of many people. We are especially grateful to the deans and administrators of the MD-granting schools for their participation in the survey and to the AAMC’s John Prescott, MD, chief academic officer, and Nicole Sweeney, director of medical school leadership, for their assistance with outreach to the deans. Enrollment data for DO-granting schools were provided by Erik Guercio, director of research, and Aisha Ali, research analyst, of the American Association of Colleges of Osteopathic Medicine.

We owe special thanks to the AAMC Communications team for their work on editing and design.

The AAMC welcomes your comments and suggestions for future editions of this report.

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Executive Summary

This report presents data about first-year matriculants to MD-granting schools over the past decade and projects first-year matriculants through 2027. It also presents data about first-year matriculants at DO-granting schools between the 2002-2003 and 2018-2019 academic years. The goal is to inform the academic medicine community, researchers, and policymakers about trends and issues related to enrollment at MD- and DO-granting schools. The report is based on the 16th annual AAMC Survey of Medical School Enrollment Plans and the Annual Osteopathic Medical School Questionnaire from the American Association of Colleges of Osteopathic Medicine. Each fall, the AAMC survey is sent to deans at all U.S. MD-granting schools that have preliminary accreditation or higher from the Liaison Committee on Medical Education (LCME®). This most recent survey was conducted between November 2019 and January 2020. The 2019 survey was completed before the 2020 COVID-19 pandemic, so this report does not include enrollment counts or reported concerns that have come up since the pandemic began.

Key findings:

- **U.S. MD-granting school enrollment has grown 33% since 2002-2003.** In 2006, in response to concerns of a likely future physician shortage, the AAMC recommended a 30% increase in first-year enrollment at MD-granting schools by the 2015-2016 academic year (over 2002-2003 levels). When the 2002-2003 enrollment of 16,488 students is used as the baseline, a 30% increase corresponds to 4,946 additional students, for a total of 21,434. The 30% goal was attained in 2018-2019, when first-year matriculation reached 21,622, and surpassed in 2019-2020, when there were 21,869 first-year matriculants.

- **Concern about the availability of graduate medical education opportunities at the state and national levels remains high.** Survey respondents expressed concern about undergraduate medical education (UME) enrollment growth outpacing growth in graduate medical education (GME). Forty-four percent of MD-granting schools had concerns about their own incoming students’ ability to find residency positions of their choice after medical school. Although 2019 marked the lowest levels of concern from MD-granting schools about GME availability at the state level since 2012, over 60% of schools were still concerned about it. Sixty-seven percent were concerned about the availability of GME at the national level — up slightly from the previous year.

- **A large majority of schools are concerned about the number of clinical training sites and available preceptors.** In 2019, majorities of respondents expressed concern about the number of clinical training sites (84%), the supply of qualified primary care preceptors (86%), and the supply of qualified specialty preceptors (71%). Over half of respondents mentioned having some level of difficulty dealing with replacing retired physician volunteers (66%), with competition from DO-granting schools (67%), other MD-granting medical schools (74%), other health care professional programs (e.g., for nurse practitioners (NPs) and physician assistants (PAs), 77%), and more.
• Enrollment increases at DO-granting schools continue.

First-year matriculation at DO-granting schools in 2018-2019 was 8,124, a 164% increase from 3,079 students in 2002-2003. Combined first-year matriculation at existing MD-granting (2019-2020) and DO-granting (2018-2019) schools increased by 10,426 students, a 53% increase since 2002-2003. The 2019-2020 matriculation data for DO-granting schools were not available at the time of production for this report.
Background

In 2006, in response to concerns about a future physician shortage, the AAMC recommended a 30% increase in enrollment at LCME®-accredited MD-granting schools by 2015. Using the first-year enrollment of 16,488 students in 2002-2003 as a baseline, a 30% increase would mean 21,434 first-year medical students, an increase of 4,946 students. The annual Survey of Medical School Enrollment Plans has monitored progress toward this goal.

To meet the 30% goal, the AAMC recommended expanding enrollment at existing MD-granting schools and creating new medical schools. In 2002, the United States had 125 LCME-accredited MD-granting schools. As of March 2020, the LCME had granted full, provisional, or preliminary accreditation status to 30 more schools, for a total of 155 U.S. MD-granting schools. The LCME lists an additional school as having applicant status, Charles R. Drew University of Medicine and Science College of Medicine (see Figure 1). Additionally, the American Osteopathic Association's Commission on Osteopathic College Accreditation (COCA) lists 38 DO-granting schools operating at 59 sites as of March 2020, an increase of 18 DO-granting schools since 2002-2003.

Although pre-accredited schools cannot yet enroll students, some will probably attain accreditation in time to enroll students before 2027-2028.

This report includes enrollment data and projections for the 155 pre-accredited or fully accredited MD-granting schools and enrollment data for the 35 accredited DO-granting schools that had an accreditation status of preliminary or higher as of November 2019.

Figure 1. New MD-granting schools, accredited since 2002 or in the LCME accreditation process (as of March 2020).
Survey Methodology

The AAMC administered the 16th annual Survey of Medical School Enrollment Plans in November 2019 to the deans of the 154 U.S. MD-granting schools that were fully, provisionally, or preliminarily LCME-accredited at the time of the survey. One school that was not accredited by November 2019 was not given the survey. An email introduction included a link to the web-based survey. Deans who did not initially respond received follow-up emails. Of the schools surveyed, 140 responded (91%). Survey information was provided by the dean of the MD-granting school or a designated appointee, most often an associate dean.

Respondents were asked to provide their school’s number of first-year matriculants for the current year (2019-2020) and their anticipated number of first-year matriculants for the next five years, ending with the 2024-2025 academic year. For nine of the 14 schools that did not provide enrollment plans on the 2019 survey, the AAMC used their reported plans from the 2018 survey. For the five schools that did not provide enrollment plans in 2018-2019 or 2019-2020, matriculant data for the 2019-2020 academic year were substituted for each projected year. For the one MD-granting school that received preliminary accreditation after the survey was fielded, the AAMC used the anticipated matriculant counts from the school’s website. Historical matriculant data in this report are from the AAMC Student Records System.

The survey asked respondents to report their concerns about clerkship opportunities and graduate medical education placements. It included detailed questions about the availability of clinical training sites by specialty and the practices the institution has adopted to address shortages of clinical training sites and preceptors. This report presents trends over time using available data from previous surveys when possible.

Data about 2018-2019 enrollment at DO-granting schools were obtained from the American Association of Colleges of Osteopathic Medicine (AACOM).
Results

Current Enrollment and Projected Trends in the Next Five Years

First-year enrollment at LCME-accredited MD-granting schools increased by 33% between the 2002-2003 baseline level and the 2019-2020 academic year, and it is projected to increase by 40% between 2002-2003 and 2024-2025.

Of the 125 schools accredited as of 2002-2003, 28 (22%) plan to grow from 2020-2021 to 2024-2025. By comparison, 12 of the 30 schools accredited since 2002-2003 (40%) plan to grow during that period. Cumulatively, the currently accredited 155 MD-granting schools continued to surpass the targeted 30% increase in enrollment in 2019-2020, with further increases expected in succeeding years (Table 1).

Table 1. Summary of Baseline, Current, and Projected First-Year Enrollment in MD-Granting Schools Through 2024

<table>
<thead>
<tr>
<th>Group</th>
<th>Baseline</th>
<th>Current</th>
<th>Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>Schools accredited as of 2002 (n = 125)</td>
<td>16,488</td>
<td>19,587</td>
<td>19,787</td>
</tr>
<tr>
<td>Increase from 2002</td>
<td>3,099</td>
<td>3,299</td>
<td>3,445</td>
</tr>
<tr>
<td>% Increase from 2002</td>
<td>18.8%</td>
<td>20.0%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Schools accredited after 2002 (n = 30)*</td>
<td>2,282</td>
<td>2,479</td>
<td>2,566</td>
</tr>
<tr>
<td>Schools with preliminary accreditation or higher (n = 155)**</td>
<td>16,488</td>
<td>21,869</td>
<td>22,266</td>
</tr>
<tr>
<td>Increase from 2002</td>
<td>5,381</td>
<td>5,778</td>
<td>6,011</td>
</tr>
<tr>
<td>% Increase from 2002</td>
<td>32.6%</td>
<td>35.0%</td>
<td>36.5%</td>
</tr>
</tbody>
</table>

* Includes 28 MD-granting schools that have matriculated students and two MD-granting schools with preliminary accreditation that have not. These two schools are included in the 2020-2024 enrollment projections.

** Includes 153 MD-granting schools that have matriculated students and two MD-granting schools with preliminary accreditation that have not. These two schools are included in the 2020-2024 enrollment projections.
Enrollment Growth by Public-Private Status, Region, and Accreditation Year

On the basis of these reported projections, increases at the 125 schools that were LCME-accredited as of 2002-2003 account for 56% of the projected growth in first-year enrollment between 2002-2003 and 2024-2025. The growth at new schools since 2002-2003 accounts for the remaining 44% of the overall 2002-2024 growth. The majority (65%) of the projected growth in enrollment between 2002-2003 and 2024-2025 is expected to occur at public schools. Nationally, schools in the Southern region account for the largest portion (44%) of the projected increase in enrollment between 2002-2003 and 2024-2025 (Figure 2).


**Figure 2.** Projected percentage of growth in enrollment for MD-granting schools from 2002 to 2024 by public-private status, region, and accreditation year.
Projections Beyond 2024
To project enrollment beyond 2024-2025, the last academic year for which enrollment data were requested on the survey, the rate of growth reported between the last two academic years of survey data for each school was applied. Six of the 125 schools accredited as of 2002-2003 and four of the 30 newly accredited schools projected they would grow between the 2023-2024 and 2024-2025 academic years. Most of the remaining schools projected no growth during that year, and none projected any declines. Overall, enrollment is expected to grow by less than 1% per year from 2024-2025 to 2027-2028 (Figure 3).

![Graph showing projected enrollment trends from 2002 to 2027](image)

* Includes 152 MD-granting schools that have matriculated students and three MD-granting schools with preliminary accreditation that have not. These three schools are included in the enrollment projections displayed after 2019.

**Figure 3.** Projected first-year enrollment for MD-granting schools through 2027.
Graduate Medical Education Concerns

Starting in 2012, the survey included two questions addressing concerns about GME. The first asked deans to consider their own students: “What is your level of concern about your incoming students’ ability to find a residency training position of their choice upon completion of medical school?” The second broadened the scope to the state and national levels, asking, “Now thinking more broadly, what is your level of concern that the overall expansion in medical school enrollment could produce more graduates than graduate medical education can accommodate?” Response options were “no concern,” “minor concern,” “moderate concern,” and “major concern.”

The percentage of respondents who expressed “major” or “moderate” concern about their incoming students’ ability to find residency positions of their choice after medical school increased from 39% in 2016 to 44% in 2017 and has held at 44% since (Figure 4). Concern about the impact of medical school enrollment expansion on GME at the state level was lower than ever reported before, and concern at the national level increased slightly from the previous year. Concerns about GME at the state and national levels have dropped since their peaks in 2013. In 2019, 60% of schools reported concerns about GME in their state, and 76% had concerns about GME at the national level.

The prevalence of concern about GME at the state and local levels was compared by geographic region, public-private status, and whether schools were accredited before or after 2002, but there were no statistically significant differences.

Figure 4. Percentage of MD-granting schools concerned about graduate medical education, 2012-2019.
**Clinical Training Opportunities for Students**

The survey asked schools to rate their concerns about the number of clinical training sites, the supply of qualified primary care preceptors, and the supply of qualified specialty preceptors (Figure 5). Responses were collapsed into two categories: “concerned” and “not concerned.” Of the schools surveyed in 2019, 84% were concerned about the number of sites and 86% were concerned about the supply of qualified primary care preceptors. The share of schools concerned about the supply of qualified specialty preceptors grew from just over half of schools surveyed in 2011 to 71% of schools in 2019.

**Figure 5.** Percentage of MD-granting schools concerned about clinical training opportunities, 2011-2019.
Starting in 2018, the survey asked schools what level of difficulty they experienced, if any, with factors affecting their existing clinical training sites (Figure 6). Competition for clinical training sites from other health care professionals (e.g., NPs, PAs) and pressure from existing clinical sites regarding payments for student rotations were reported as being the most challenging, with 43% and 44% of schools, respectively, reporting these as a moderate or major concern.

![Figure 6. Percentage of 140 MD-granting schools that experienced difficulty with their existing clinical training sites by type of difficulty, 2019. (Due to rounding, totals may be +/-1%).](image-url)
Payments for Clinical Rotations
Starting in 2015, the survey asked the following question: “Do you currently pay for any of your students to have clinical rotations in either academic or nonacademic (i.e., community-based) training sites?” The percentage of schools that reported they do not pay for clinical rotations declined from 64% in 2016 to 56% in 2019. On the other hand, the percentage of schools that reported paying for one or more students to rotate at academic and nonacademic clinical sites continued to increase from the reported 16% in 2016 (Figure 7).

<table>
<thead>
<tr>
<th>Year</th>
<th>Did not pay</th>
<th>Paid only at academic sites</th>
<th>Paid only at nonacademic sites</th>
<th>Paid at both types of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>56%</td>
<td>4%</td>
<td>23%</td>
<td>17%</td>
</tr>
<tr>
<td>2018</td>
<td>53%</td>
<td>8%</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>2017</td>
<td>59%</td>
<td>12%</td>
<td>19%</td>
<td>10%</td>
</tr>
<tr>
<td>2016*</td>
<td>64%</td>
<td>6%</td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td>2015</td>
<td>61%</td>
<td>10%</td>
<td>15%</td>
<td>14%</td>
</tr>
</tbody>
</table>

*In 2016, 1% of survey recipients did not respond to this question.

**Figure 7.** Percentage of MD-granting schools that paid for clinical rotations, 2015-2019.
Strategies Used to Compete for Clinical Training Sites

The survey asked: “What strategies (if any), other than paying money for clinical sites, are you using to compete for clinical training sites?” Respondents could select more than one option and add options not on the list. Most schools rely on building strategic relationships (80%) and providing other nonfinancial incentives (71%) (Figure 8). Schools added nonfinancial incentives as strategies, including library access, continuing medical education (CME), and adjunct faculty titles. “Other” options respondents named included providing free housing to students or housing students and residents together, providing enhanced educational experiences, and providing support for community physicians.

![Figure 8. Percentage of MD-granting schools using certain strategies to compete for clinical training sites (other than paying money).](image)
Specialties and Practice Areas for Which It Is Particularly Difficult to Find Clinical Training Sites

Respondents were asked to select from a list the specialties they found most difficult to obtain clinical training sites for (if any). The list contained core rotation specialties, and respondents could insert other specialties as needed. Over half the schools reported experiencing difficulty finding clinical training sites for Obstetrics/Gynecology (Figure 9). Two schools inserted Geriatric Medicine as a specialty they had difficulty finding sites for, and two other schools mentioned having difficulty finding Emergency Medicine sites.

![Figure 9. Percentage of MD-granting schools having difficulty finding clinical training sites by selected specialties.](image_url)
Strategies Adopted to Address the Shortage in Clinical Training Sites

Respondents were asked to select from a list of possible approaches to mitigating a shortage in clinical training sites and preceptors. In 2019, three new response options were provided: considering new types of institutions for clinical training sites (e.g., urgent care), establishing agreements with new clinical sites, and increasing the number of partnerships with current sites (e.g., adding a new specialty program within an existing site). More than half (58%) indicated establishing new agreements with clinical sites, and almost two-thirds (61%) have expanded the geographical area where they look for clinical training sites (Figure 10). Two schools mentioned forming strategic partnerships and joint faculty recruitment. Another school uses other nonphysician advanced practitioners such as nurse midwives for training partners.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded geographic area for selecting sites</td>
<td>74%</td>
</tr>
<tr>
<td>Established new agreements</td>
<td>74%</td>
</tr>
<tr>
<td>Used simulations (e.g., mannequins, computer-generated avatars)</td>
<td>43%</td>
</tr>
<tr>
<td>Increased partnerships</td>
<td>32%</td>
</tr>
<tr>
<td>Used part-time preceptors</td>
<td>32%</td>
</tr>
<tr>
<td>Increased student/preceptor ratio</td>
<td>31%</td>
</tr>
<tr>
<td>Considered new types of sites</td>
<td>31%</td>
</tr>
<tr>
<td>Used other method</td>
<td>4%</td>
</tr>
<tr>
<td>Experienced no shortage</td>
<td>18%</td>
</tr>
</tbody>
</table>

Figure 10. Percentage of MD-granting schools adopting certain practices to address shortages in clinical training sites and preceptors.
Combined MD and DO Enrollment
In 2018, first-year enrollment at DO-granting schools was 8,124, which represents a 164% increase over first-year enrollment in 2002. Together, enrollment at MD-granting and DO-granting schools has increased 53% since 2002: 10,426 more students were enrolled in first-year classes in 2019-2020 than in 2002 (Table 2). About half that growth came from DO-granting schools. The 2019-2020 matriculation data for DO-granting schools were not available at the time of production for this report.

Table 2. MD and DO Enrollment Growth Since 2002

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2018 and 2019</th>
<th>Increase</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD (2019)</td>
<td>16,488</td>
<td>21,869</td>
<td>5,381</td>
<td>33%</td>
</tr>
<tr>
<td>DO (2018)</td>
<td>3,079</td>
<td>8,124</td>
<td>5,045</td>
<td>164%</td>
</tr>
<tr>
<td>Total</td>
<td>19,567</td>
<td>29,993</td>
<td>10,426</td>
<td>53%</td>
</tr>
</tbody>
</table>
Over the past decade, the medical education community has responded to the AAMC’s call for an increase in medical school enrollment to address a projected national shortage of physicians. Since 2002, the LCME has accredited 30 new U.S. MD-granting schools, for a total of 155 LCME-accredited schools as of March 2020. Collectively, these schools expanded enrollment by 33% over 2002-2003 levels as of the 2019-2020 academic year, achieving the AAMC’s 30% goal and exceeding it in subsequent years.

As student enrollment grows, school administrators remain concerned about the number of available clerkship sites and the supply of preceptors. Because other health professions are also growing, clerkship opportunities are proving to be more competitive. Only one-third of survey respondents indicated they did not experience competition with DO-granting schools, and an even smaller percentage of respondents reported no concerns over competition from other health disciplines, such as NP and PA programs. Respondents reported that finding sufficient clinical training sites continues to be particularly problematic for certain specialties, such as Obstetrics/Gynecology and Pediatrics. Many respondents continue to experience pressure to pay for clinical training slots, though a slight majority of schools did not pay for clinical training in 2019.

Enrollment expansion alone will not resolve the projected shortage of 54,100-139,000 physicians by 2033. MD-granting schools have reached the 30% goal in enrollment growth and are expected to increase it to 40% by 2024-2025, but entry-level residency positions accredited by the Accreditation Council for Graduate Medical Education (ACGME) are growing too slowly to meet the demand for them. Until 2015, the number of positions accredited by the ACGME grew at a rate of only about 1% per year. In 2015, the ACGME, Association of American Colleges of Osteopathic Medicine (AACOM), and American Osteopathic Association (AOA) moved to implement a single GME accreditation system by 2020. Since the implementation of the single system, the growth of ACGME slots has increased to about 4% per year. Still, 44% of MD-granting schools surveyed are concerned about their incoming students’ ability to find a residency training position of their choice upon completion of medical school, and federal caps on Medicare-funded residency training positions remain effectively frozen at 1996 levels.

On the basis of feedback from stakeholders across the academic medicine community, the AAMC continues to make progress in its effort to support physician training and is focusing on three areas of critical concern: (1) transition to residency (T2R) support, (2) the learning environment and the well-being of individuals in that environment, and (3) advocating for increased numbers of GME slots with federal support. Continued monitoring of medical school enrollment is crucial to support current efforts to improve and optimize the GME system.
Appendix. New Schools Accredited Since 2002 or in the LCME® Accreditation Process as of March 2020

**Fully Accredited Since 2002 (n = 17)**
- Central Michigan University College of Medicine (Michigan)
- Florida Atlantic University Charles E. Schmidt College of Medicine (Florida)
- Cooper Medical School of Rowan University (New Jersey)
- Donald and Barbara Zucker School of Medicine at Hofstra/Northwell (New York)
- Florida International University Herbert Wertheim College of Medicine (Florida)
- Frank H. Netter MD School of Medicine at Quinnipiac University (Connecticut)
- Geisinger Commonwealth School of Medicine (Pennsylvania)
- Oakland University William Beaumont School of Medicine (Michigan)
- Texas Tech University Health Sciences Center Paul L. Foster School of Medicine (Texas)
- San Juan Bautista School of Medicine (Puerto Rico)
- University of Arizona College of Medicine - Phoenix (Arizona)
- University of Texas at Austin Dell Medical School (Texas)
- University of California, Riverside, School of Medicine (California)
- University of Central Florida College of Medicine (Florida)
- University of South Carolina School of Medicine - Greenville (South Carolina)
- Virginia Tech Carilion School of Medicine (Virginia)
- Western Michigan University Homer Stryker M.D. School of Medicine (Michigan)

**Schools with Provisional Accreditation (n = 4)**
- California Northstate University College of Medicine (California)
- CUNY School of Medicine (New York)
- University of Nevada, Las Vegas, School of Medicine (Nevada)
- Washington State University Elson S. Floyd College of Medicine (Washington)

**Schools with Preliminary Accreditation (n = 9)**
- California University of Science and Medicine - School of Medicine (California)
- Carle Illinois College of Medicine (Illinois)
- Hackensack-Meridian School of Medicine at Seton Hall University (New Jersey)
- Kaiser Permanente School of Medicine (California)
- NYU Long Island School of Medicine (New York)
- Nova Southeastern University Dr. Kiran C. Patel College of Allopathic Medicine (Florida)
- TCU and UNTHSC School of Medicine (Texas)
- University of Texas Rio Grande Valley School of Medicine (Texas)
- McGovern Medical School at the University of Texas Health Science Center at Houston (Texas)

**Schools With Candidate Status (n = 0)**

**Schools With Applicant Status (n = 1)**
- Charles R. Drew University of Medicine and Science College of Medicine (California)
Notes


11. For definitions of each accreditation status, view the glossary of LCME accreditation terminology at https://www.lcme.org/glossary.
