Academic Quality and Workforce

60x30TX

Texas Higher Education Coordinating Board

The Graduate Medical Education (GME) Report: An Assessment of Opportunities for Graduates of Texas Medical Schools to Enter Residency Programs in Texas

A Report to the Texas Legislature per Texas Education Code, Section 61.0661

October 2020

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Texas Higher Education Coordinating Board

Agency Mission

The mission of the Texas Higher Education Coordinating Board (THECB) is to provide leadership and coordination for Texas higher education and to promote access, affordability, quality, success, and cost efficiency through *60x30TX*, resulting in a globally competitive workforce that positions Texas as an international leader.

Agency Vision

The THECB will be recognized as an international leader in developing and implementing innovative higher education policy to accomplish our mission.

Agency Philosophy

The THECB will promote access to and success in quality higher education across the state with the conviction that access and success without quality is mediocrity and that quality without access and success is unacceptable.

The THECB's core values are:
Accountability: We hold ourselves responsible for our actions and welcome every opportunity to educate stakeholders about our policies, decisions, and aspirations.
Efficiency: We accomplish our work using resources in the most effective manner.
Collaboration: We develop partnerships that result in student success and a highly qualified, globally competent workforce.
Excellence: We strive for excellence in all our endeavors.

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Executive Summary

This report concerns graduates who have completed their education at a Texas medical school and graduates of medical schools who continue their education and training in a Texas residency program. Coursework at a medical school is considered "undergraduate medical education," while residency training is considered "graduate medical education" or "GME." Every two years, as required by Texas Education Code (TEC), Section 61.0661, staff at the Texas Higher Education Coordinating Board (THECB) assesses whether there are adequate opportunities for graduates of Texas medical schools to enter graduate medical education in Texas, i.e., a Texas residency program. In 2011, the 82nd Texas Legislature, Regular Session, passed House Bill (HB) 2908, which initially directed the THECB to include this information in the agency's five-year strategic master plan. In 2013, the THECB was directed to submit a separate report. This report fulfills that legislative directive.

State's Continued Need for Physicians

The Texas physician workforce includes physicians educated and trained in the state, as well as physicians educated in other states or countries. The latter group comes to Texas either to continue their training in a Texas residency program or to join or begin a medical practice. Texas continues to be an appealing state for physicians to practice, and the state continues to attract more physicians who apply for and receive Texas medical licenses. However, according to data released by the Association of American Medical Colleges in the *2019 Physician Workforce Data Book*, Texas continues to have fewer physicians per 100,000 population than the nation as a whole, and it continues to lag behind the 10 most populous states.

This 2020 report is the fifth report to present the current challenges facing the Texas physician workforce, including the educational pipeline. The first report was published in 2012 with updates every two years. This 2020 report also presents updated data, including information on undergraduate medical and osteopathic medical school students, graduate medical education and residents, the current physician workforce, as well as updated conclusions and recommendations.

In accordance with TEC, Section 61.0661, the following information is presented:

- a comparison of the number of first-year graduate medical education positions available annually with the number of medical school graduates;
- a statistical analysis of recent trends in, and projections of, the number of medical school graduates and first-year graduate medical education positions in the state;
- methods and strategies for achieving a ratio for the number of first-year graduate medical education positions, relative to the number of medical school graduates in the state, of at least 1.1 to 1;
- an evaluation of current and projected physician workforce needs in the state, by total number and by specialty, for the development of additional first-year graduate medical education positions; and
- an examination of whether the state should ensure that a first-year graduate medical education position is created for each new medical student position established by a medical or dental unit.

Conclusion

Beginning in Fiscal Year (FY) 2014, the Texas Legislature's Graduate Medical Education (GME) Expansion efforts prompted the creation of more than 400 new first-year residency positions and helped establish 19 new residency programs. As the GME Expansion programs enter their seventh year, the efforts to increase the number of first-year residency positions have provided Texas medical students with a greater opportunity to remain in the state for their residency training. However, with the establishment of six new medical schools, maintaining the state's success in having 10% more first-year residency positions than medical graduates will quickly erode. Unless the state provides additional funding to support the GME Expansion efforts, the goal of a 1.1 to 1 ratio cannot be maintained.

GME Expansion Initiative – GME Grant Programs. The 83rd Texas Legislature, Regular Session, initiated several new programs to address the shortage of first-year residency positions. The initial effort, which started in FY 2014, appropriated more than $14 million in General Revenue to the THECB to administer grant programs that support efforts to increase the number of first-year residency programs. The funding supported the development of several targeted grant programs: the Unfilled Residency Position Program, the New and Expanded Residency Program, the Resident Physician Expansion Program, and the Planning Grant Program.

Unfilled Residency Position Program. Establishment of the Unfilled Residency Position Program was a first-step effort to increase the number of available first-year residency positions in Texas by targeting the residency programs that had available residency positions that were unfilled because the programs could not support them financially. In 2014, this program filled 25 available unfilled positions with funding support of $65,000 per resident. The program increased the number of first-year residency positions in the medical specialties of family medicine, internal medicine, obstetrics/gynecology, anesthesiology, and psychiatry. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

New and Expanded Residency Program. In FY 2015, the second effort to increase available GME positions started through the implementation of the New and Expanded Residency Program. Awards of $2,975,000 to 11 residency programs supported the establishment of 50 new first-year positions. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

Resident Physician Expansion Program. A third program, the Resident Physician Expansion Program, was also initiated in FY 2015. This effort differed from the Unfilled Positions and New and Expanded Programs by requiring community collaboration and a competitive selection process. In addition, eligibility for the program was not restricted to development of new first-year residency positions. Even so, the program provided support for 25 additional first-year residency positions. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

GME Expansion Program. The 84th Texas Legislature, Regular Session, consolidated the Unfilled Residency Position Program, the New and Expanded Residency Program, and the Resident Physician Expansion Program into the single GME Expansion Program. Per-resident funding was increased to $75,000, and overall position funding for the 2016-17 biennium was increased to $49.5 million. The additional funding allowed the new positions created in 2014

and 2015 to be maintained and to provide enough funding to support the addition of approximately 130 new residency positions.

In 2017, the 85th Texas Legislature, Regular Session, increased funding to $97 million to support and maintain the progress made. The 86th Texas Legislature in 2019 again increased funding for GME Expansion and appropriated $157.2 million. A portion of the funding, approximately $22 million, was appropriated from the Permanent Fund for GME, which was created by the Texas Legislature in 2015. The increased funding allowed newly created residency positions to be maintained and provided an opportunity to establish new residency positions. As a result, Texas continues to successfully progress toward achieving the goal of having 10% more first-year residency positions than Texas medical school graduates.

GME Planning Grants. The GME Planning Grant Program was established in 2013 by the Texas Legislature as part of the GME Expansion initiative. The GME Planning Grants are awarded through a competitive process to assist eligible entities in planning the development and establishment of new residency programs that accept first-year residents (Figure 11). In 2014, GME Planning Grants were available only to entities that did not operate a GME program. The grants allowed hospitals that did not have a residency program to investigate the feasibility of establishing one. As a result of initial planning grants, 10 new residency programs received national accreditation and matriculated their first residents, and in the process, created 24 new first-year residency positions. Most programs established are in primary care specialties. A General Revenue appropriation of $1,875,000 funded the initial planning grants.

In Fiscal Years 2016 and 2017, an appropriation of $3,500,000 funded 11 one-time awards of $250,000 each to a broader group of eligible applicants, including federally qualified health care centers, medical schools, and teaching hospitals. The second round of grants also encouraged partnership efforts. New residency programs were established as a result, and three of these programs officially began operation in July 2018. An additional six programs began operation in July 2019. Many of these GME Planning Grant recipients were in medically underserved areas where physician distribution would most likely be positively affected by the establishment of new residency programs.

In 2017, the 85th Texas Legislature, Regular Session, appropriated $500,000 to support new GME Planning Grants. The THECB issued a Request for Applications in fall 2018, and with additional funding reallocated from the GME Expansion Program, awarded grants of $250,000 to four applicants in January 2019. Applications to establish new residency programs in rural areas and in primary care and psychiatry specialties received priority for funding. In 2019, the 86th Texas Legislature appropriated $500,000 to support new GME Planning Grants. The THECB plans to issue a Request for Applications in fall 2020 for competitively awarded grants.

Texas Medical School Enrollment Increases and New Medical Schools. In response to an appeal from the Association of American Medical Colleges to increase medical school enrollments nationally by 30%, Texas medical schools increased entering first-year medical school enrollments 53.9%, from 1,342 in fall 2002 to 2,066 in fall 2019.

In June and July 2016 respectively, two new Texas public medical schools, UT Austin Dell Medical School and UT RGV School of Medicine, matriculated their inaugural classes. With the addition of the two new schools, Texas increased its first-year medical school enrollment by 105 new medical students. In addition, the private osteopathic medical school, The University of the Incarnate Word in San Antonio, enrolled its first 162 osteopathic medical students in fall 2017.

Three additional new medical schools recently enrolled students. In fall 2019, a unique public/private medical school, a partnership between Texas Christian University (TCU) and University of North Texas Health Science Center (UNTHSC), enrolled its first cohort of students. The medical school focuses on developing physicians who are empathetic scholars. In addition, in summer 2020, University of Houston matriculated its first class of medical students. The UH College of Medicine is founded on a social mission to improve health care in underserved communities in Houston and across the state. In fall 2020, Sam Houston State University (SHSU) enrolled its first cohort of 75 students in its new Doctor of Osteopathic Medicine (DO) program at its campus in Conroe. The school's mission is to produce primary care physicians who will practice in rural east Texas. Of note, neither the TCU/UNTHSC partnership medical school nor the SHSU program will receive formula funding.

Medical School Funding. Most public Texas medical schools receive formula funding to support the instruction and operation of their osteopathic medical and allopathic medical students through a prescribed formula. The amount of formula funding support that the Texas public medical schools and the private Baylor College of Medicine receive is set forth in the state's biennial budget document, the General Appropriations Act (GAA). The GAA presents the instruction and operation formula in the Health-Related Institutions Funding Instruction and Operation Formula in Article III, Section 27 (1), of the section Special Provisions Section Relating Only to State Agencies of Higher Education. The three additional formulas for research, facilities, and graduate medical education are also included in Article III, Section 27, of the GAA.

For the current 2020-21 biennium, Instruction and Operation (I&O) Formula funding increased to $45,733 per medical student from $44,825 for FY 2018 and FY 2019. The most recent funding amount is a 15% decrease from the original $54,000 (unadjusted dollars) per medical student provided when the health-related institutions' formula funding was established in 1999 to provide initial funding for the I&O Formula in FY 2000 and FY 2001.

The private Baylor College of Medicine receives a similar formula funding amount. Its formula funding is trusteed to the THECB and is provided to the institution to support its Texas students. This arrangement also allows the institution to leverage additional funding through the Texas Health and Human Services Medicaid program.

Graduate Medical Education Funding. The federal financing of graduate medical education is complex and presents limited opportunities for existing teaching hospitals to add new residency programs and/or residency positions to existing programs. Because hospitals at their resident cap for Medicare GME do not receive additional federal funding to add new residency positions, they often take a measured approach to funding additional residency positions.

Texas provides minimal funding support for residency training affiliated with health-related institutions through a formula allocation. The formula funding for the GME Formula is presented in the GAA, Article III, Section 27 (5). In the 2020-21 biennium, health-related institutions and public general academic institutions with medical schools received $11,940 per medical resident to support faculty costs related to supervising a resident. This was a slight increase from the 2018-19 biennial amount of $11,647 per resident. This level of support equates to about 8% of the estimated cost of $150,000 to educate a resident annually.

Texas family medicine residency programs receive additional funding through the THECB's Family Practice Residency Program. Under this program, eligible family medicine residency programs received an additional amount of $5,889.43 in FY 2020, down from

$6,236.90 per resident in FY 2018. These funds, combined with the formula allocation, cover less than 9% of the estimated cost of training a family medicine resident.

1.1 to 1 Ratio of First-Year Entering Residency Positions to Medical School Graduates. In fall 2011, the ratio of first-year entering residency positions to graduates was near 1 to 1, with 1,494 first-year entering residency positions available for the state's 1,458 medical school graduates. At that time, legislators, representatives of professional organizations, and medical education experts recognized that unless additional first-year residency positions were created, some Texas graduates would have to leave the state to enter residency training.

In spring 2016, Texas medical schools awarded a combined 1,718 Doctor of Medicine (MD) and DO degrees. In fall 2016, the health-related institutions reported and staff identified 1,790 filled first-year residency positions – just 100 positions short of reaching the 1.1 to 1 ratio goal. The number of filled first-year positions included residency programs reported to the THECB on its Coordinating Board Management (CBM)-00R report and through independent residency programs, which are not reported on the CBM-00R.

In 2017, Texas achieved the 1.1 to 1 ratio goal. By spring 2017, the number of medical school graduates declined slightly to 1,660; while the number of filled first-year residency positions increased to 1,868.

A significant increase in medical school graduates to 1,734 in 2018, with only a small increase in filled first-year residency positions to 1,888, prevented Texas from achieving the 1.1 to 1 ratio goal – by only 19 positions.

The 1.1 to 1 ratio goal was met in 2019 with the number of medical school graduates at 1,747 and the number of filled first-year residency positions at 1,950. The projected number of medical graduates for 2020 is 1,810 and is even higher for 2021 at 1,949. If no change occurs in the number of filled first-year residency positions, the state will be short of the goal by 41 positions in 2020 and 194 in 2021. Unfortunately, the goal is becoming increasingly difficult to attain as the state's new medical schools begin to graduate physicians.

Adding new residency positions to existing programs is costly and requires a long-term commitment by a teaching entity and one or more participating training sites, most commonly hospitals. Given uncertainties within the health care system, including efforts to control cost increases, reduce the number of uninsured, and address changes in health care delivery and reimbursement, hospitals continue to remain cautious about GME expansion.

While adding new residency positions and programs is admirable and will contribute to the state's 1.1 to 1 ratio goal, it is also important that the state's existing residency programs receive adequate funding and support. The closing of two family medicine residency programs resulted in reduced access to health care in the communities of Wichita Falls and Corpus Christi, further contributing to physician distribution challenges.

Prior Recommendations and Results. In its 2018 report, the THECB offered four recommendations, and each recommendation is provided below, followed by the result.

Recommendation 1. Continue support of the GME Expansion efforts. To maintain the 1.1 to 1 ratio of first-year residency positions to medical school graduates, the THECB has an exceptional item request of $60,675,000 for the 2020-21 biennium, which would support the addition of new residency positions to accommodate the increase in the number of medical graduates resulting from the opening of three new medical schools. The additional funds would support new residency positions and help maintain recently established residency positions.

Result. The 86th Texas Legislature, Regular Session, appropriated $157.2 million to support GME Expansion Programs. As a result, an estimated 2,000 residency positions will receive funding support in FY 2020 and FY 2021.

Recommendation 2. Enhance support of the Family Practice Residency Program. The program was started in the late 1970s to help address physician distribution. Unlike other medical specialties, family physicians are able to practice in smaller communities and rural areas. Their geographic distribution is similar to the general population. The THECB has an exceptional item request of $2 million to increase funding per resident to approximately $7,600 to support an estimated 773 family medicine residents in the program.

Result. The 86th Texas Legislature appropriated $10 million for FY 2020 and FY 2021. In FY 2020, eligible family medicine residency programs received $5,889.43 per resident, down from $6,236.90 per resident in FY 2018.

Recommendation 3. Increase the GME formula funding from the FY 2018 and FY 2019 level of $5,824 to $6,654 for FY 2020 and FY 2021, per the Board's recommendation.

Result. The 86th Texas Legislature increased the GME formula funding from $5,824 to $5,970 per resident in FY 2020 and FY 2021.

Recommendation 4. Maintain funding and support for the THECB's Statewide Preceptorship Program established to encourage Texas medical students to consider selecting a primary care residency program.

Result. The Statewide Preceptorship Program was maintained by the 86th Texas Legislature, with a total appropriation of $3,000,000 for FY 2020 and FY 2021.

New Recommendations to Support and Maintain Progress Made. The COVID-19 pandemic has posed challenges to the economic health of the state and the nation. Based on the progress made in previous years and to achieve and maintain the 1.1 to 1 ratio goal, the THECB offers the following revised recommendations:

Recommendation 1. Continue funding and support of the GME Expansion efforts to maintain the 1.1 to 1 ratio of first-year residency positions to medical school graduates. This would maintain support for currently funded positions and provide funding for the addition of new residency positions to accommodate the increase in the number of medical graduates resulting from the opening of new medical schools.

Recommendation 2. Maintain funding and support of the Family Practice Residency Program. The program was started in the late 1970s to help address physician distribution. Family physicians can more easily practice in smaller communities and rural areas, and their geographic distribution is similar to the general population, unlike other medical specialties.

Recommendation 3. Maintain funding and support for the THECB's Statewide Preceptorship Program established to encourage Texas medical students to consider selecting a primary care residency program.

Introduction

This report concerns graduates who have completed coursework at a Texas medical school and continue their education and training in a Texas residency program. Coursework at a medical school is considered "undergraduate medical education," while residency training is considered "graduate medical education" or "GME." Every two years, as required by Texas Education Code (TEC), Section 61.0661, staff at the Texas Higher Education Coordinating Board (THECB) assesses whether there are adequate opportunities for graduates of Texas medical schools to enter graduate medical education, i.e., a residency program. In 2011, the 82nd Texas Legislature, Regular Session, passed House Bill (HB) 2908, which directed the THECB to include this information in the agency's five-year strategic master plan. In 2013, the THECB was directed to submit a separate report. This report fulfills that legislative directive.

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- an examination of whether the state should ensure that a first-year graduate medical education position is created for each new medical student position established by a medical or dental unit.

Texas Physician Workforce

The Texas physician workforce includes physicians educated and trained in the state, as well as physicians educated in other states or countries. The latter group comes to Texas either to continue their training in a Texas residency program or to join or begin a medical practice. Texas continues to be an appealing state for physicians to practice, and the state continues to attract more physicians who apply for and receive Texas medical licenses. However, according to data released by the Association of American Medical Colleges (AAMC) in the *2019 Physician Workforce Data Book*, Texas continues to have fewer physicians per 100,000 population than the nation as a whole, and it continues to lag behind the 10 most populous states.

Led by continuing population increases, Texas has become the second most populous state. The Texas Demographic Center estimated the state's general population to be 29.7 million in 2020. The state's changing demographics include significant increases among two populations: people over 65 years of age and Hispanics. Based on the center's population projections updated in January 2019, Texans over 65 years of age are projected to more than triple in size from 2.6 million in 2010 to almost 8.3 million in 2050. Additionally, the Hispanic population is projected to double in size from just under 10 million in 2010 to 20.2 million by 2050. Growth in these population sectors will exert continuing demands on existing and future physicians and the health care system at large, challenging the system in different ways, including patterns in patient visits and the need for medical procedures.

Escalating health care costs and greater specialized care complicate patients' decisions related to health care services. Other factors that influence the health care delivery system include declining employer-based financial support for health insurance and potential reductions in federal support for Medicare and Medicaid programs.

The Texas physician workforce faces additional challenges, including the high rate of Texas' uninsured population. The lack of insurance is associated with delayed or postponed treatment, which results in more complex and higher cost services. In 2015, 19% of the Texas population was uninsured, compared with 11% nationally. In 2017, federal tax legislation, set to take effect in 2019, removed the penalty associated with the individual mandate to purchase health insurance. A report released by the U.S. Census Bureau in 2019 indicated that Texas had the highest percentage of uninsured population among the 50 states in both 2017 and 2018: 17.3% in 2017 compared with the national average of 8.7%, and 17.7% in 2018, when nationally 8.9% of the population was uninsured.

In 2020, the Coronavirus Disease 2019 (COVID-19) escalated in March and continues to impact the state's health care system at the time of this report. Governor Greg Abbott declared a state of disaster on March 13 and waived certain regulations to increase health care capacity. In August 2020, the Texas Medical Board reported issuing more than 2,300 emergency licenses for physicians. Governor Abbott also eased regulations related to physician-in-training permit holders in Graduate Medical Education (GME) programs to allow more involvement with proper physician oversight. The Liaison Committee on Medication Education and the Accreditation Committee on Graduate Medical Education continue to provide guidance to medical schools and GME institutions regarding the safety and well-being of medical students, residents, faculty, and patients during the COVID-19 pandemic. It is expected that the educational pipeline will be impacted to some degree. In addition, COVID-19 has already directly impacted the active physician workforce, creating negative financial effects that could potentially decrease the state's health care capacity. The Texas Medical Association (TMA) administered a survey in May

2020 to physicians about their practices and affiliations and found that, among the respondents, financial strains were common, leading TMA to suggest the likelihood that many practices may not be able to recover to full capacity by the end of 2020.

Even though Texas attracts many physicians to the state, the need for more physicians is a concern because the Texas physician workforce has faced a shortage for several decades. This concern remains, despite the fact that from 2008 to 2017, the number of newly licensed Texas physicians increased 30%. The Texas Medical Board reported that applications for new licenses continued to rise as well. In 2017, the agency received 5,576 applications, up from 4,026 applications in 2004. In 2019, the number of licensure applications received was 5,686, a nearly 2% increase compared with 2017. In addition, the ratio of active patient care physicians to population in Texas increased from the 2010 level of 176.1 per 100,000 to the 2018 level of 199.9 per 100,000, up from 193.7 per 100,000 in 2016. Still, Texas is well below the 2018 national average of 242.1 physicians per 100,000 people and ranks 41st among states in this category.

The increases in the Texas physician workforce have occurred in medical specialties and subspecialties that are not considered primary care specialties. Texas continues to have fewer primary care physicians than other states, with 66.5 active patient care primary care physicians per 100,000 people. While this was an increase from the ratio of 65.4 per 100,000 in 2016, Texas remains 47th among states in this category and is below the national ratio of 83.2 per 100,000. A 2020 Texas Department of State Health Services, Center on Health Professions Workforce report projects there will be shortages of primary care physicians in every region of Texas by 2032. The report also predicts the shortages will worsen in the coming years.

As noted in previous THECB reports, there is not an established optimal level of physicians per 100,000. However, research studies have shown that the type of physicians within a community affect the cost and quality of health care. Communities with more primary care physicians have lower health care costs and report higher quality of health.

Increases in the number of physicians educated and trained in the U.S. may be traced to a national appeal from the AAMC, which in 2006 asked its member institutions to increase medical school enrollments by 30% from the 2002 enrollment levels. Texas medical schools responded to this call and increased their enrollments.

In the 2008 THECB report*, Projecting the Need for Medical Education in Texas*, it was noted that "Texas schools would need to increase first-year enrollments by a minimum of 43 new students annually to achieve the 30% increase target of 1,745 first-year enrollments." In fall 2011, Texas reached the target with first-year enrollments of 1,762. THECB data show that the enrollment target has been sustained and Texas medical school enrollments continue to increase. In fall 2017, first-year Texas medical school enrollment was 2,052, and in fall 2019, the enrollment number was 2,066.

Medical Education Pipeline

In the U.S., the traditional educational pathway to become a physician includes graduation from a four-year college, graduation from an accredited U.S. osteopathic (DO) or allopathic (MD) medical school, or international medical school, which takes four years, and completion of a residency or graduate medical education (GME) training experience, which takes three to eight years. Training may continue beyond a residency in a subspecialty and/or fellowship, which requires additional time, usually a year or two, to complete. The education and training of a physician is a lengthy and expensive process and commonly takes 11 years of postsecondary education. As a result, most physicians begin their medical practices in their early to mid-30s.

The cost of becoming a physician varies by state and by medical school. In comparison to the nation, according to the AAMC, Texas' public medical schools granting MD degrees have relatively low tuition and fees for in-state first-year students, with an average cost of $22,016 in Academic Year 2019-20, compared with a national average of $37,556 in tuition and fees for public medical schools. A Texas resident attending a public medical school out of state would be charged around $60,000 for tuition and fees.

In comparison to the nation, Texas medical school graduates also have lower educational debt. In a report by the AAMC, 73% of 2019 medical school graduates nationwide reported having education debt, and their median debt load was $200,000, a 4% increase compared to $192,000 in 2017.

Medical Schools

At the time of this report, Texas has 15 medical schools that offer the Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO) degrees. Of these, 12 are public; one, Baylor College of Medicine (Houston), is independent, although it receives state funding; one, The University of the Incarnate Word, is private and does not receive state funding at this time; and one, a partnership between Texas Christian University (TCU) and University of North Texas Health Science Center (UNTHSC) is currently categorized by AAMC as a private program (Table 1). Twelve medical schools provide allopathic training and grant the MD degree, and three provide osteopathic training, granting the DO degree. Eight of the 12 public medical schools are in health-related institutions, which offer many health-related degree programs; the other four are part of public general academic institutions.

Among the four medical schools housed within public general academic institutions, The University of Texas Rio Grande Valley (UT RGV) School of Medicine and The University of Texas at Austin (UT Austin) Dell Medical School began enrolling students in 2016 and awarded their first MD degrees in 2020. Sam Houston State University (SHSU), approved by the THECB in August 2018, and University of Houston (UH), approved in October 2018, enrolled their first cohorts in 2020 and will respectively award DO and MD degrees.

Other recently established Texas medical schools include the University of the Incarnate Word (UIW) in San Antonio, which enrolled its first class of 162 DO students in fall 2017 and will award its first degrees in 2021, and the medical school partnership between TCU and UNTHSC, approved by the THECB in October 2018, which enrolled its first class of 60 MD students in July 2019 and emphasizes educating physicians who will be empathetic scholars. The UH program enrolled its first class of 30 students in July 2020 and focuses on primary care and providing care in underserved communities.

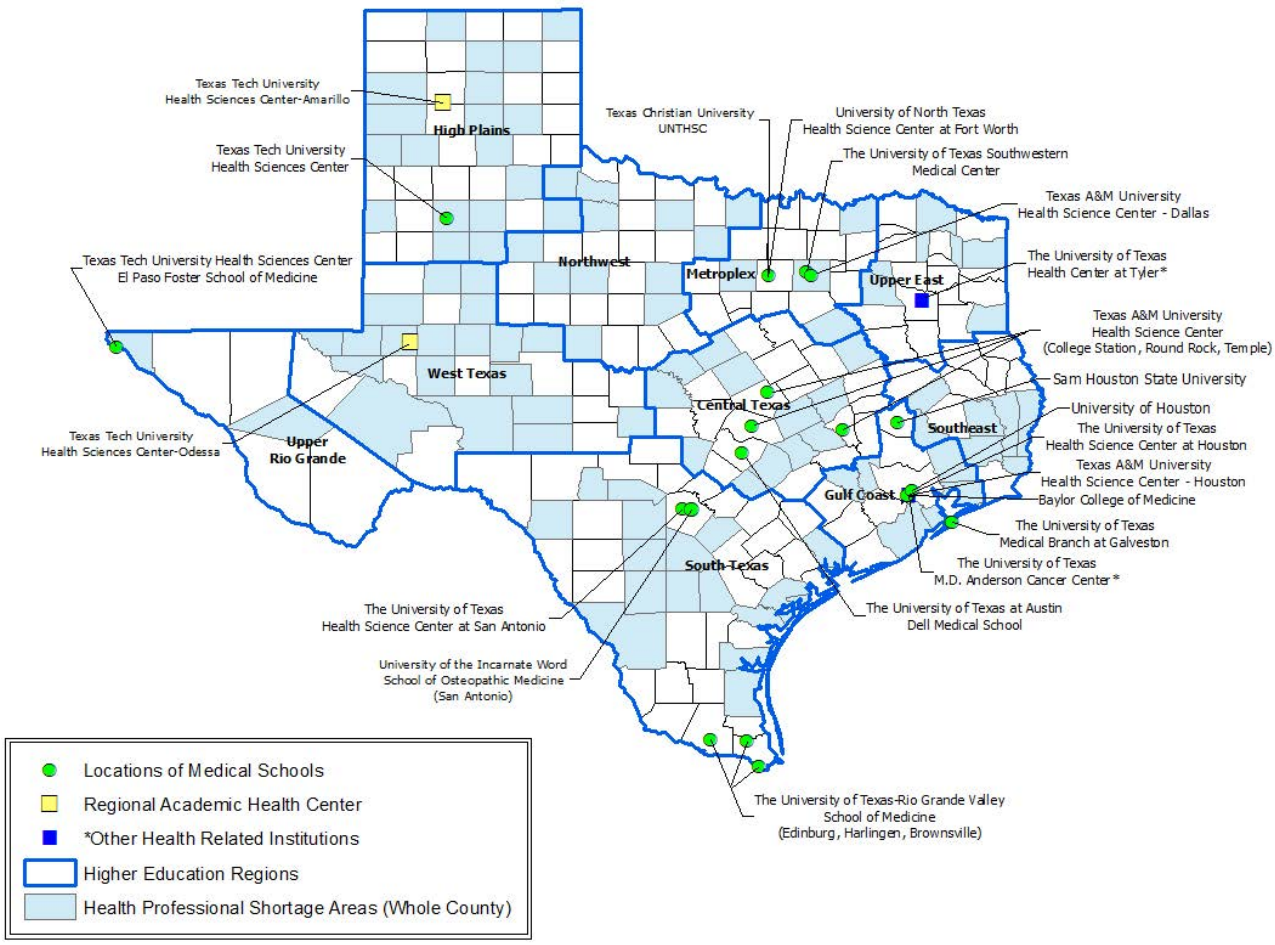
Table 1. Texas Medical Schools that Currently Enroll Students

Texas Medical Schools	Locations
Baylor College of Medicine (BCM)	Houston
Sam Houston State University College of Osteopathic Medicine (SHSU-COM)*	Conroe
Texas A&M University Health Science Center (TAMUHSC), College of Medicine	Bryan/College Station, Dallas, Round Rock, Houston, Temple
Texas Christian University and University of North Texas Health Science Center (TCU/UNTHSC) School of Medicine**	Fort Worth
Texas Tech University Health Sciences Center (TTUHSC) Medical School	Amarillo, Lubbock, Odessa
Texas Tech University Health Sciences Center-El Paso, Paul L. Foster School of Medicine (TTUHSC-El Paso)	El Paso
The University of Texas at Austin (UT Austin) Dell Medical School	Austin
The University of Texas Health Science Center at Houston (UTHSC-Houston), McGovern Medical School	Houston
The University of Texas Health Science Center at San Antonio (UTHSC-SA) Long School of Medicine	San Antonio
The University of Texas Medical Branch at Galveston (UTMB), School of Medicine	Galveston
The University of Texas Rio Grande Valley (UT RGV) School of Medicine	Harlingen, Edinburg, McAllen
The University of Texas Southwestern Medical Center (UT Southwestern) School of Medicine	Dallas
The University of the Incarnate Word (UIW) School of Osteopathic Medicine at Brooks City Base***	San Antonio
University of Houston (UH) College of Medicine****	Houston
University of North Texas Health Science Center at Fort Worth, Texas College of Osteopathic Medicine (TCOM)	Fort Worth

** SHSU-COM enrolled its inaugural class of 75 students in August 2020.*
*** TCU/UNTHSC School of Medicine enrolled its inaugural class of 60 in July 2019.*
**** The University of the Incarnate Word enrolled its inaugural class of 162 students in July 2017.*
***** UH College of Medicine enrolled its inaugural class of 30 in July 2020.*

The locations of medical schools in Texas are shown in relation to the Texas counties identified by the Health Resources and Services Administration as whole-county Health Professional Shortage Areas for primary care (Figure 1). Most Texas medical schools are in large urban areas of the state.

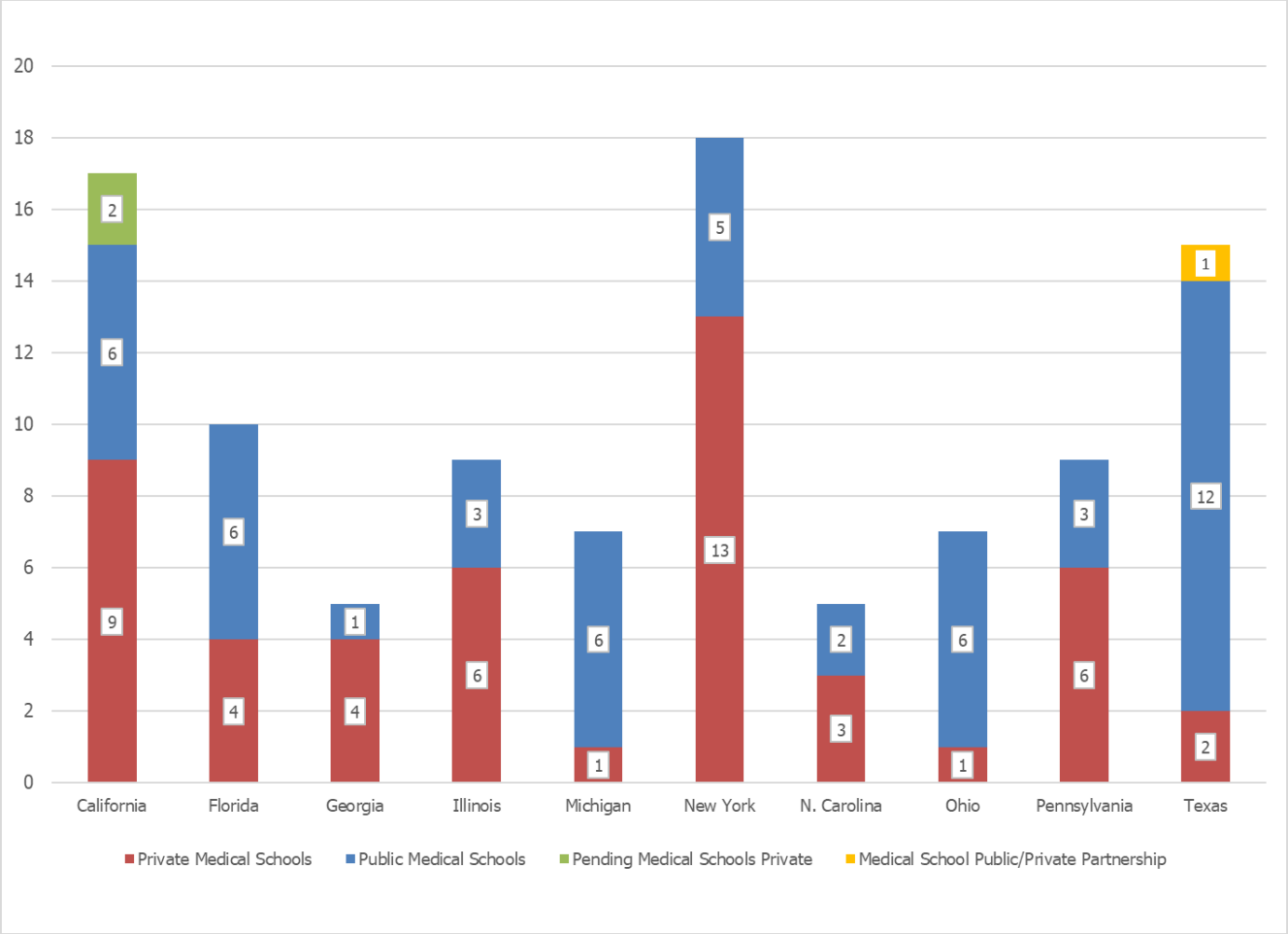
Figure 1. Location of Medical Schools, Regional Academic Health Centers, and Other Health-Related Institutions



Source: THECB; Health Resources and Services Administration, 2020
Note: The designation as a whole-county Health Professional Shortage Area is a federal designation that reflects a shortage of primary care physicians and other direct patient care providers.

With 15 medical schools, Texas has more medical schools than most high-population states, with the exception of New York (18) and California (15) (Figure 2). Texas has more public medical schools (12) than any other state. Conversely, Texas is seventh among the ten most populous states in its number of private medical schools, with three such programs if TCU/UNTHSC School of Medicine is included. Only Michigan and Ohio, with one each, have fewer private medical schools than Texas.

Figure 2. Public, Private, Approved, and Pending MD and DO Medical Schools in the 10 Most Populous States

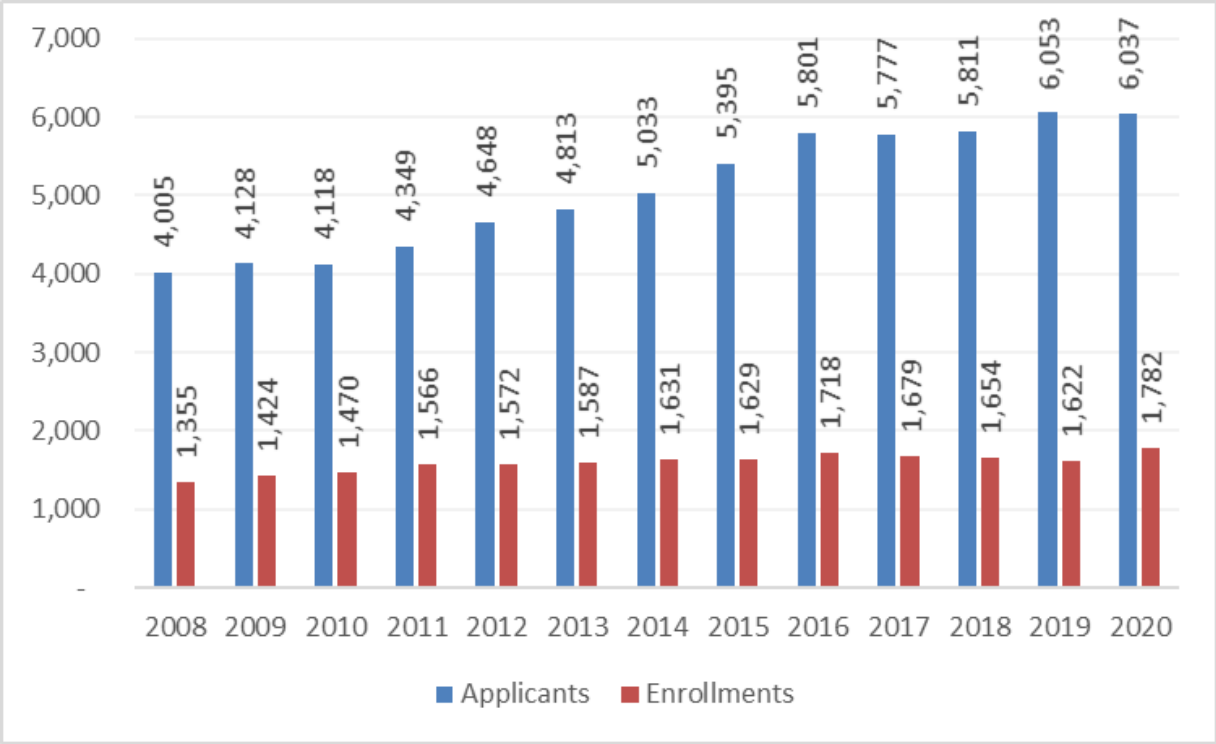


Source: Liaison Committee on Medical Education (LCME), American Association of Colleges of Osteopathic Medicine, Commission on Colleges Accreditation (COCA), 2020
Note: Pending Medical Schools include LCME Applicant and Candidate Accreditation Status and COCA Candidate Status.

Applicants. Medical school applicants typically apply to more than one medical school. Texas offers applicants a coordinated submission process where one application may be submitted to all Texas public medical schools through the Texas Medical and Dental Schools Application Services (TMDSAS). Texas public medical schools further report annual enrollment data to TMDSAS.

Since 2002, the number of unduplicated applicants to Texas public medical schools has steadily increased. With the opening of two new medical schools in 2016, the number of unduplicated applicants increased by 7.5% from the previous year (Figure 3). From 2008 to 2020, the number of applicants increased by 50.7%, while the number of enrolled first-year students increased by 31.5%.

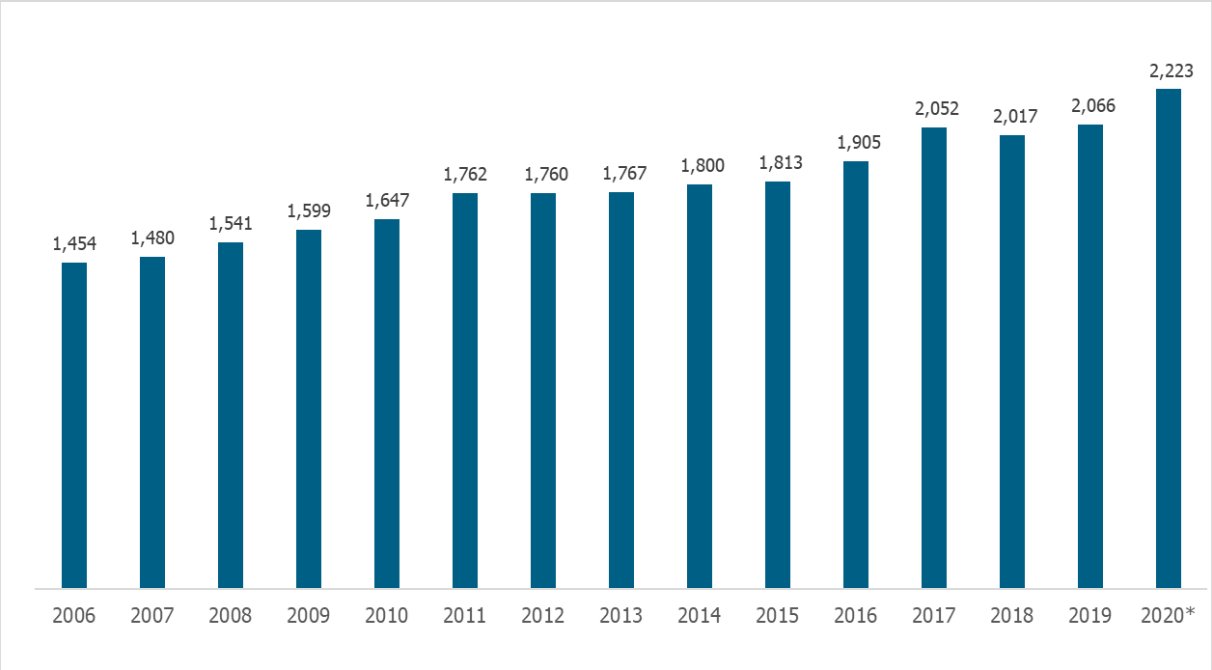
Figure 3. Applicants and Enrollments at Texas Public Medical Schools, 2008-20



Source: Texas Medical and Dental Schools Application Services, September 2020
Note: Applicants to Baylor College of Medicine, The University of the Incarnate Word School of Osteopathic Medicine, and TCU/UNTHSC School of Medicine are not included.

First-year entering enrollment. From 2006 to 2019, the number of students entering Texas medical schools, both public and private, increased 42%, from 1,454 to 2,066 (Figure 4). The steady increase of entering medical students is reflective of both the total increased enrollments in all the medical schools and the opening of new medical schools. The Texas Tech University Health Sciences Center El Paso, Paul L. Foster School of Medicine, enrolled its inaugural class in 2009; UT Austin Dell Medical School enrolled 50 students; and UT RGV School of Medicine enrolled at least 55 students per year beginning in 2016. Additionally, the University of the Incarnate Word enrolled 162 students in 2017, and the TCU/UNTHSC School of Medicine enrolled 60 students in 2019. Both Sam Houston State University College of Osteopathic Medicine and University of Houston College of Medicine enrolled their first classes in 2020, enrolling 75 and 30 students respectively.

Figure 4. First-Year Enrollments at Texas Public and Private Medical Schools, 2006-20

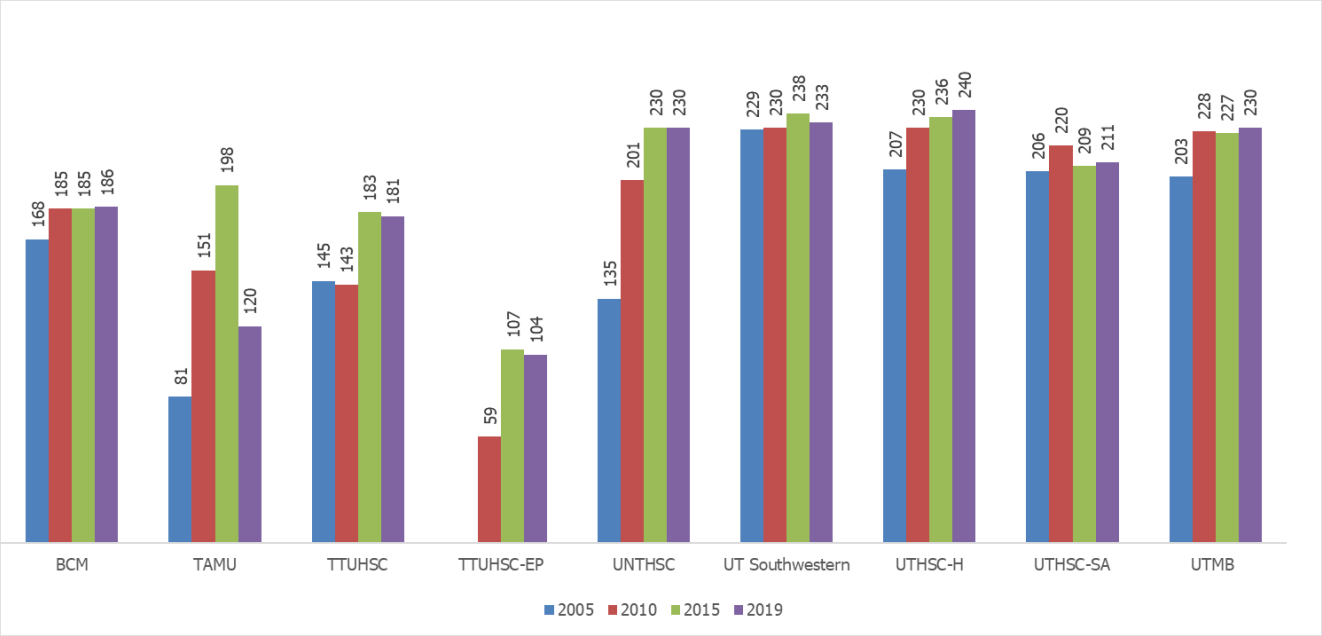


Source: THECB, CBM-001, January 2020
**The enrollment number for 2020 is estimated and includes inaugural classes at SHSU and UH.*

Medical schools do not have set admissions numbers, and the entering class sizes may vary from year to year. Some variation in class size occurs because applicants may receive admissions offers from several medical schools. In some cases, more applicants than anticipated may decide to enroll, which may result in an increase in class size.

From 2005 to 2019, the established medical schools reported variations in their first-year enrollments. Figure 5 presents enrollment numbers in five-year intervals for those schools that were in operation in or before 2009; the most current enrollment numbers for those schools at the time of the report was 2019 (Texas Tech University Health Sciences Center El Paso, Paul Foster School of Medicine enrolled its inaugural class of 40 in 2009). Within each five-year interval, enrollment numbers fluctuated to some degree. Between 2005 and 2019, Texas A&M University Health Science Center; University of North Texas Health Science Center, Texas College of Osteopathic Medicine; Texas Tech University Health Sciences Center El Paso, Paul Foster School of Medicine; and Texas Tech University Health Sciences Center had sizable increases in their first-year entering enrollments.

Figure 5. First-Year Entering Students by Texas Medical School, 2005-19

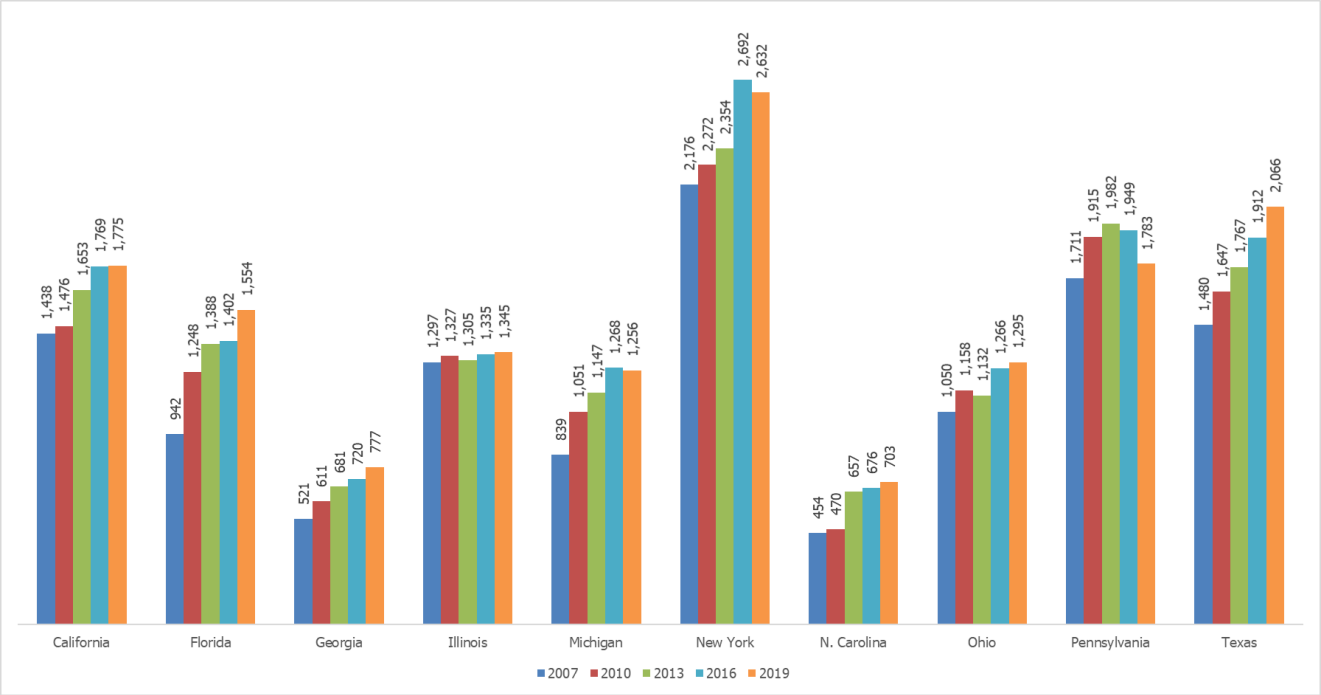


Source: THECB CBM-001, January 2020

In 2017, Texas surpassed Pennsylvania in the number of entering students (2,052 compared to 1,857) to become the state with the second largest number of entering medical students among the 10 most populous states. In 2019, Texas continued to have the second largest number of entering medical students, exceeded only by New York (Figure 6). Among the 10 most populous states, the increase in entering medical students between 2007 and 2019 was 28%.

Some of the enrollment increases were the result of new medical schools opening, with other increases resulting from the expansion of existing programs. Florida, Michigan, New York, Pennsylvania, California, and Texas each had at least one medical school open, with inaugural classes beginning in 2008 or later.

Figure 6. First-Year Entering Students in the 10 Most Populous States, 2007-19

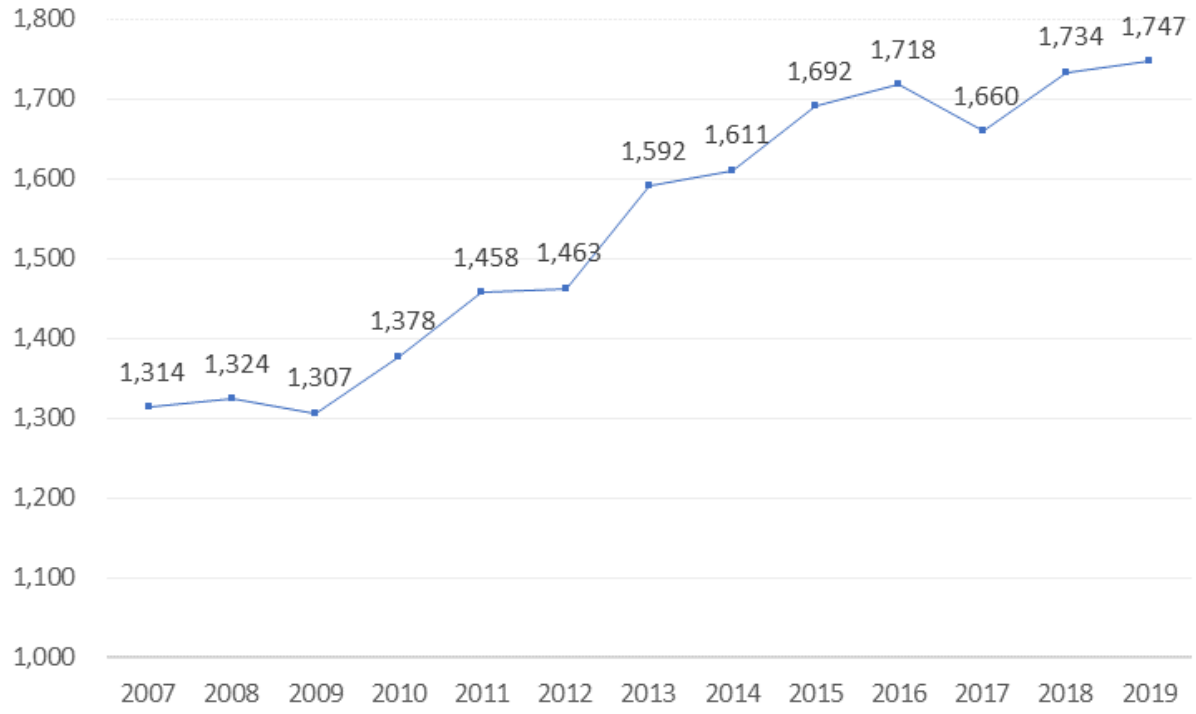


Source: THECB, American Association of Colleges of Osteopathic Medicine, Association of American Medical Colleges, August 2020

Graduates. Between 2007 and 2016, the number of Texas medical school graduates steadily increased (Figure 7). While the 2017 number of graduates declined, increases resumed in both 2018 and 2019 and will likely continue for several years, reflecting the expansion of first-year entering medical school enrollments and the establishment of new medical schools. In addition to growing numbers of graduates, Texas medical schools have high graduation rates; of the Texas medical schools' first-year entering class in fall 2015, 96% graduated in 2019.

Funding. Texas provides funding to the state's public medical schools located in health-related institutions and public general academic institutions through several funding allocations that support education, infrastructure, and research. As previously mentioned, Sam Houston State University College of Osteopathic Medicine will not receive state formula funding, and the TCU/UNTHSC partnership that is considered private does not receive funding. State funding, however, is provided to Baylor College of Medicine to educate and train medical students consistent with the educational funding provided to public medical schools. Medical schools receive state funding to support instruction and operations through a funding allocation formula of approximately $45,000 annually, or a total of $180,000 per medical student for their four-year education; this amount does not cover the total cost of the education of a physician.

Figure 7. Texas Medical School Graduates, 2007-19



Source: THECB, CBM-009, January 2020

Graduate Medical Education

Texas physicians are required (as in most states) to complete at least one year of residency training before they may be fully licensed by the Texas Medical Board to begin practicing medicine. Few physicians stop after only one year of residency training, as residency programs are typically three to eight years in length. National certifying organizations, including the American Board of Medical Specialties and the American Osteopathic Association, require completion of residency training to be eligible to become board certified.

Physician residents care for patients under the supervision of physician faculty and participate in educational and research activities during residency training. When physicians complete their graduate medical education program in an accredited program, they may be eligible to take their specialty board certification examinations and begin practicing independently. Teaching hospitals, academic medical centers, health care systems, and other institutions or entities, including nonprofit organizations, sponsor residency programs.

Before 2020, both the Accreditation Council on Graduate Medical Education (ACGME) and the American Osteopathic Association (AOA) provided accreditation for residency and fellowship programs. In 2014, the ACGME entered an agreement with the AOA and the American Association of Colleges of Osteopathic Medicine to have a single accreditation system in place by 2020. Currently in effect, this allows both MD and DO graduates to complete their training in ACGME-accredited programs and has eliminated the need for the AOA's separate match.

Unlike college or medical school experience, resident physicians are contractually obligated to the residency program. Resident physicians enter a contractual arrangement with residency programs through a unique national matching process. Most senior medical students, graduates of international medical schools, and other physicians select their residency training through participation in the National Resident Matching Program (NRMP), which has established a uniform date of appointment and commitment to residency programs. Prior to the single accreditation system, osteopathic medical graduates could also choose to participate in the AOA Match program.

The NRMP process (called the Match) occurs in March. Graduating physicians of accredited U.S. medical schools and qualifying international medical graduates submit their list of preferences for residency programs, which may include several medical specialty areas and different geographic locations for their future residency training. Concurrently, each residency program submits a rank-ordered list of their preferred future residents. The two lists are then matched, and the future residents and residency programs are notified of their contractual commitments. Following graduation from medical school in the spring, medical school graduates generally begin residency training in July.

Typically, residency programs and medical specialties that fill all available positions through the Match are viewed as more competitive. NRMP data indicate that the total number of residency applicants has exceeded the number of positions available nationally for many years, including in 2019 and 2020. The 2020 Match offered the largest number of first-year entering residency positions, with 34,266 positions offered through the Match, 2,072 more positions than in 2019 and 4,034 more positions than in 2018. The number of physicians registering in the Match in 2020, 44,959, was also a record. Of those, 40,084 fully completed the process, including 19,326 U.S. senior MD graduates; 6,581 U.S. senior DO graduates; 1,519 previous graduates of U.S. medical schools; and 5,167 U.S. citizens who graduated from an

international medical school. Most of the remaining participants were non-U.S. citizens who graduated from an international medical school.

The education and training of resident physicians is a multi-year process. Most residency programs range from three to eight years and may include additional opportunities for continued training beyond residency training. When physicians complete a residency program, in family medicine, for example, they may choose to continue training in a specialized area of medicine, such as a year-long fellowship in sports medicine or geriatrics. Often, residents remain and practice in the state in which they complete their residency training.

Residency positions. The opportunity for a Texas medical school graduate to enter a Texas residency program is limited to the number of residency programs that accept first-year residents (Table 2). First-year entry residency positions are available in some, but not all, medical specialties. The following medical specialty areas provide first-year residency positions in Texas: family medicine, internal medicine, pediatrics, obstetrics and gynecology, surgery, anesthesiology, emergency medicine, cardiothoracic surgery-integrated, transitional year (internship), neurology, neurological surgery, orthopedic surgery, pathology, otolaryngology, pathology-anatomical and clinical, physical medicine and rehabilitation, plastic surgery-integrated, psychiatry, urology, and some combined programs such as internal medicine/pediatrics. Other residency programs require physician residents to complete at least one year of training in another specialty, most commonly internal medicine, before they may enter the specialty program. Residency programs that require completion of a year or more of training before entering tend to be highly specialized and include programs such as ophthalmology.

Table 2. Residency and Fellowship Programs Affiliated or Sponsored by Texas Health-Related Institutions, Fiscal Years 2015-19

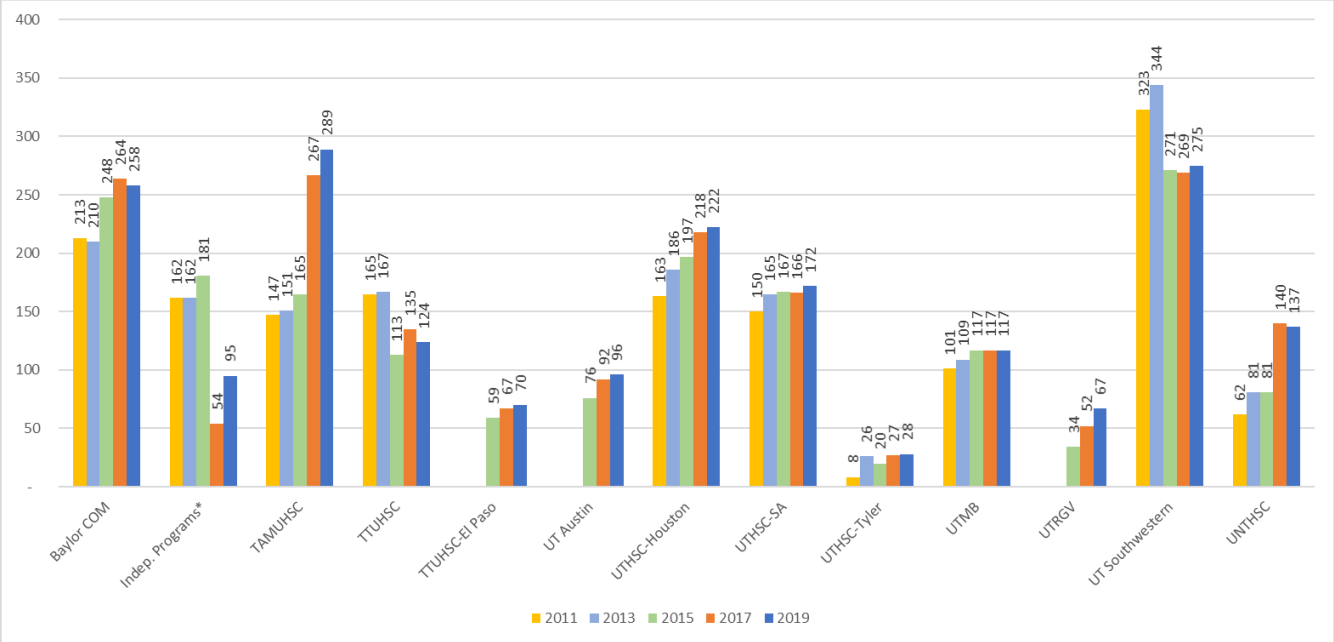
Institution	1st Year FY 2015	Total FY 2015	1st Year FY 2016	Total FY 2016	1st Year FY 2017	Total FY 2017	1st Year FY 2018	Total FY 2018	1st Year FY 2019	Total FY 2019
TAMUHSC	16	42	18	42	35	100	35	104	38	107
TTUHSC	15	28	16	31	19	34	19	32	20	34
TTUHSC-El Paso	7	13	7	13	7	13	7	13	7	14
UNTHSC	11	20	12	23	17	28	15	19	15	23
UTMD Anderson Cancer Center	0	24	0	25	0	25	0	25	0	23
UT Austin			8	15	9	16	9	16	10	17
UHTSC-Tyler	2	4	2	3	4	5	4	4	4	4
UTHSC-Houston	17	58	17	58	18	64	17	67	18	70
UTHSC-SA	16	52	13	50	15	51	15	53	16	55
UTMB	12	38	14	40	13	43	13	44	15	47
UT RGV			6	6	8	9	9	10	9	13
UT Southwestern	24	107	17	89	18	93	17	98	17	96
Total - Public Institutions	120	386	130	395	163	481	160	485	169	503
Baylor College of Medicine	14	86	17	84	18	91	18	98	18	98
Total - All Institutions*	134	472	147	479	181	572	178	583	187	601

*Number of Sponsored/Affiliated Programs

Source: THECB CBM-00R; Accreditation on Graduate Medical Education, American Osteopathic Association, August 2020
Note: The 1st Year numbers represent programs that accept first-year residents, and the Total FY columns represent programs that accept residents or fellows.

In 2011, the number of filled, first-year Texas residency positions was 1,494, and this number increased to 1,729 in fall 2015 and to 1,950 in fall 2019 (Figure 8). The number of first-year filled residency positions varies from year to year and depends largely on the programs having adequate resources to educate, train, supervise, and pay for the residents.

Figure 8. First-Year Filled Residency Positions in Texas by Affiliated Institution, 2011-19



Source: THECB CBM-00R; ACGME; AOA, August 2020
Note: UT Austin, Dell Medical School became the sponsoring institution for residency programs located in Austin that were previously affiliated with UT Southwestern, and UT RGV became the sponsoring institution for residency programs located in the Rio Grande Valley that were previously affiliated with UTHSC San Antonio. TAMUHSC became affiliated with several previously independent residency programs. The University of Texas MD Anderson Cancer Center does not offer first-year entry positions.

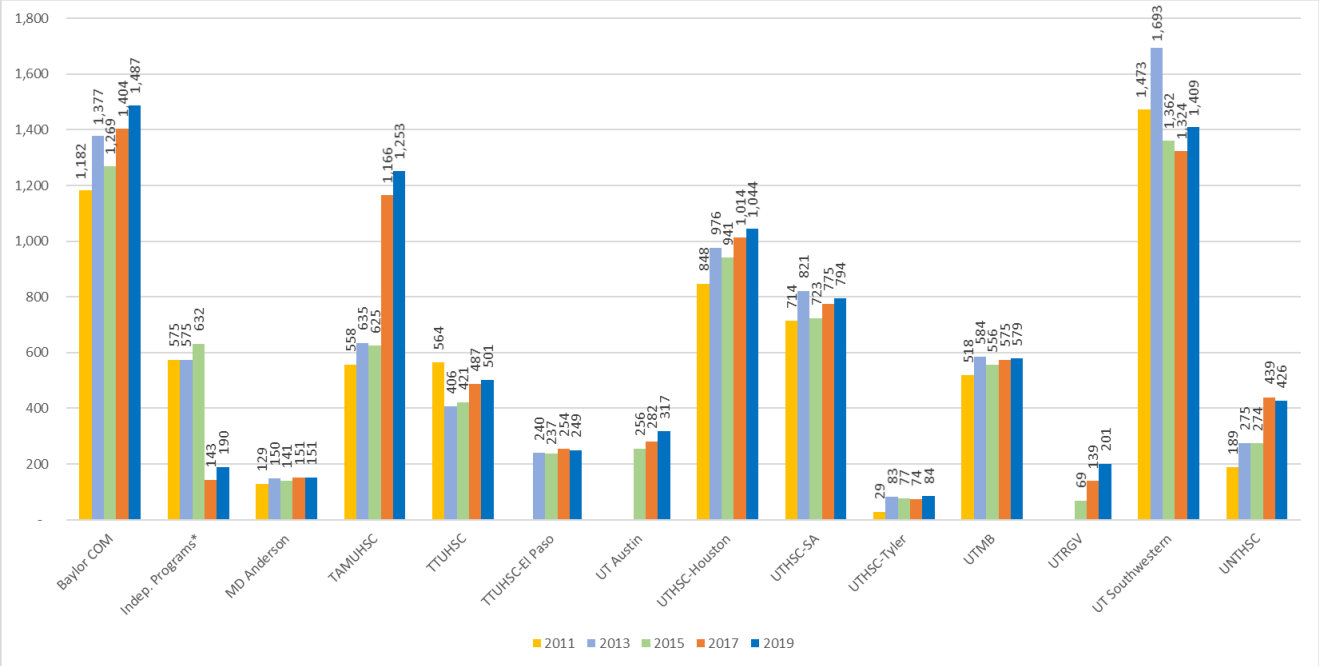
Adding a new residency position requires the sponsoring residency program to have adequate resources to support the resident for the entire length of training, which is typically a minimum of three years. Resident physicians received an average annual stipend of approximately $59,000 in 2019-20 according to an AAMC report. In addition to having the financial resources to provide the resident's stipend, the sponsoring entity must also have adequate faculty to supervise residents. Supervision requirements vary by type of residency program. Residency programs must also have enough patient care opportunities for residents to gain the required experiences to prepare them for independent practice.

While residents are under the supervision of faculty physicians, they provide a variety of patient care services, including diagnosis and performance of medical procedures. Often residents treat patients who have limited or no financial resources. Residents practice under the supervision of faculty physicians and, therefore, do not bill patients for their services.

Figure 9 presents physician residents and fellows in Texas GME programs. Independent programs are not required to report data to the THECB. Therefore, all numbers included in Figure 9 for independent programs are estimates based on a review of data released by ACGME and AOA. In addition, some programs may have previously been affiliated with another sponsoring institution, resulting in numbers of positions shifting between institutions. For example, the UT Austin programs had a prior affiliation with The University of Texas Southwestern Medical Center (UT Southwestern).

In 2011, there were 6,779 Texas physician residents and fellows identified as training in Texas GME programs (Figure 9). Of that, only 22% (1,494) were first-year residents (Figure 8). By 2019, the total number of residents and fellows increased to 8,685. However, the percentage of first-year residents remained at 22% with 1,950 first-year residents.

Figure 9. Total Filled Residency and Fellowship Positions in Texas, 2011-19



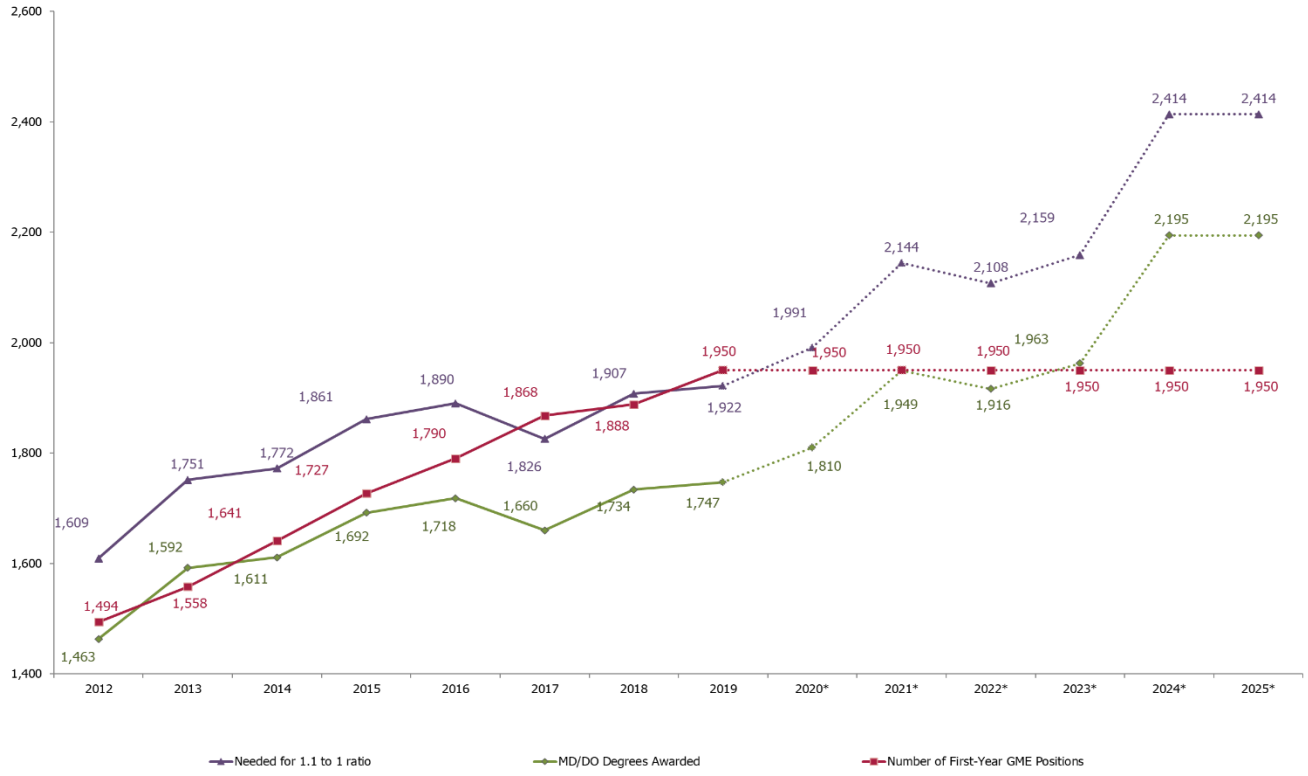
Source: THECB CBM-00R; ACGME; AOA, August 2020

As mentioned previously, the state invests approximately $180,000 in general revenue formula funding for instruction and operation for each medical graduate of a Texas public medical school. UT Austin Dell Medical School and UT RGV School of Medicine now graduate about 100 students each year. The University of the Incarnate Word will graduate its first class of 162 students in 2021, and the TCU/UNTHSC partnership's first class of 60 students will graduate in 2023. Unless additional first-year residency positions are established, there will not be enough first-year positions available for graduates to remain in Texas in 2021. Additionally, University of Houston and Sam Houston State University enrolled their inaugural classes in 2020, and this will contribute to additional pressure on first-year residency position availability.

From 2007 through 2017, the number of Texas first-year filled residency positions exceeded the number of Texas medical school graduates, except for 2009 and 2013. In the last few years, Texas medical school enrollments increased markedly. To ensure that graduates had the opportunity remain in Texas, an equivalent number of new residency positions were needed. In 2019, first-year filled residency positions exceeded the number of graduates by 203. Texas must maintain the important increases it has made in the number of its first-year residency positions and add more positions to accommodate future graduates. Otherwise, the state must recognize it will be educating medical school graduates who will have to leave Texas for residency training. While some medical school graduates who enter residency training in other states may eventually return to Texas to practice, others will not. To achieve the goal of having 10% more first-year entering residency positions, the state will need to provide additional ongoing funding to maintain the residency positions. If GME expansion funding is not increased, the substantial progress the state has made will not be sustained.

As shown in Figure 10, achieving the goal of 1.1 first-year entering residency positions for each medical school graduate will allow every Texas medical graduate an opportunity to remain in the state for residency training and will allow graduates from other states an opportunity to enter a Texas residency program.

Figure 10. Residency Positions Needed to Achieve the Goal of a 1.1 to 1 Ratio of GME First-Year Positions to Texas Medical School Graduates, 2012-25



Source: THECB, CBM-009, CBM-00R, ACGME, and AOA, August 2020
Note: Medical school graduates are based on a 95% graduation rate and include two new medical schools that admitted students in summer/fall 2016 and one that admitted students in fall 2017.
**Estimate*

GME Expansion Initiative

The 83rd Texas Legislature, Regular Session, initiated several new programs to address the shortage of first-year residency positions. The initial effort, which started in FY 2014, appropriated more than $14 million in General Revenue to the THECB to administer grant programs that support efforts to increase the number of first-year residency programs. The funding supported the development of several targeted grant programs: the Unfilled Residency Position Program, the New and Expanded Residency Program, the Resident Physician Expansion Program, and the Planning Grant Program.

GME Grant Programs

Unfilled Residency Position Program. Establishment of the Unfilled Residency Position Program was a first-step effort to increase the number of available first-year residency positions in Texas by targeting the residency programs that had available residency positions that were unfilled because the programs could not support them financially. In 2014, this program filled 25 available unfilled positions with funding support of $65,000 per resident. The program increased the number of first-year residency positions in the medical specialties of family medicine, internal medicine, obstetrics/gynecology, anesthesiology, and psychiatry. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

New and Expanded Residency Program. In FY 2015, the second effort to increase available GME positions started through the implementation of the New and Expanded Residency Program. Awards of $2,975,000 to 11 residency programs supported the establishment of 50 new first-year positions. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

Resident Physician Expansion Program. A third program, the Resident Physician Expansion Program, was also initiated in FY 2015. This effort differed from the Unfilled Positions and New and Expanded Programs by requiring community collaboration and a competitive selection process. In addition, eligibility for the program was not restricted to development of new first-year residency positions. Even so, the program provided support for 25 additional first-year residency positions. Funding for these residency positions was continued in subsequent years and will be maintained in FY 2021.

GME Expansion Program. The 84th Texas Legislature, Regular Session, consolidated the Unfilled Residency Position Program, the New and Expanded Residency Program, and the Resident Physician Expansion Program into the single GME Expansion Program. Per-resident funding was increased to $75,000, and overall position funding for the 2016-17 biennium was increased to $49.5 million. The additional funding allowed the new positions created in 2014 and 2015 to be maintained and to provide enough funding to support the addition of approximately 130 new residency positions.

In 2017, the 85th Texas Legislature, Regular Session, increased funding to $97 million to support and maintain the progress made. The 86th Texas Legislature in 2019 again increased funding for GME Expansion and appropriated $157.2 million. A portion of the funding, approximately $22 million, was appropriated from the Permanent Fund for GME, which was created by the Texas Legislature in 2015. The increased funding allowed newly created residency positions to be maintained and provided an opportunity to establish new residency positions. As a result, Texas continues to successfully progress toward achieving the goal of having 10% more first-year residency positions than Texas medical school graduates.

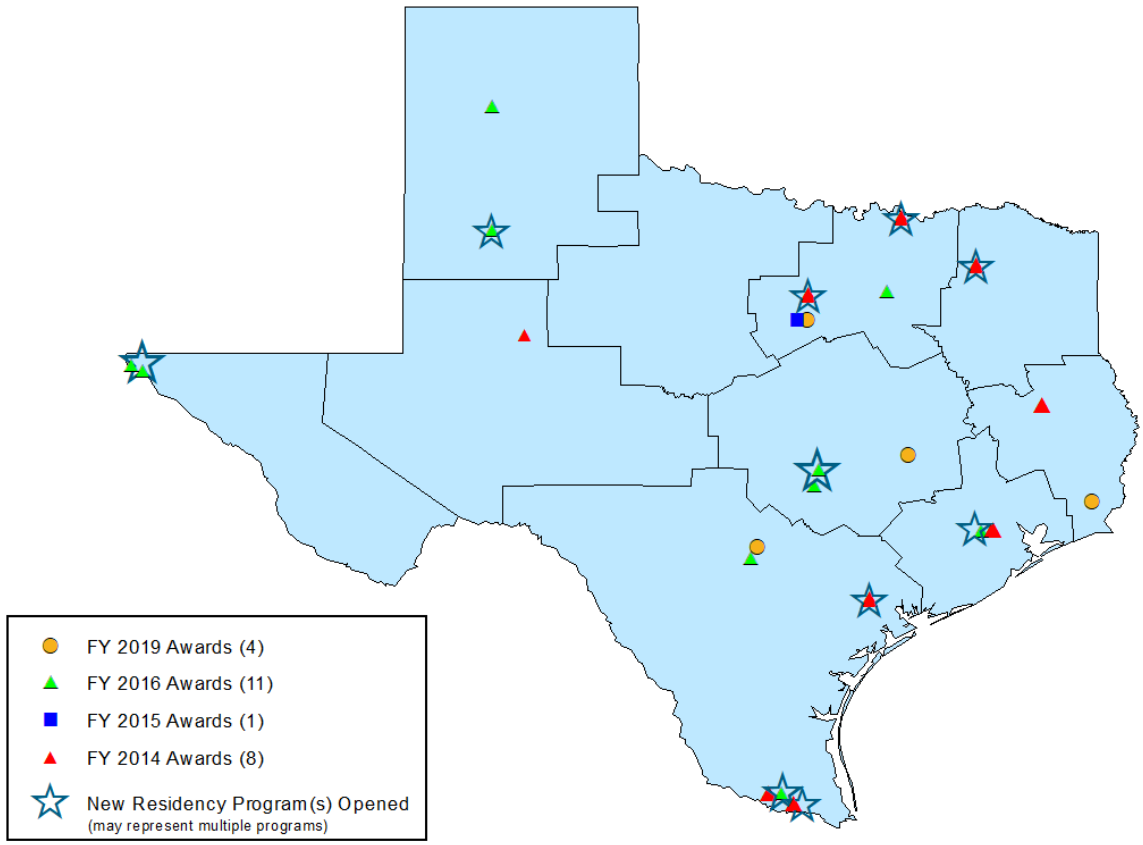
GME Planning Grants. The GME Planning Grant Program was established in 2013 by the Texas Legislature as part of the GME Expansion initiative. The GME Planning Grants are awarded through a competitive process to assist eligible entities in planning the development and establishment of new residency programs that accept first-year residents (Figure 11). In 2014, GME Planning Grants were available only to entities that did not operate a GME program. The grants allowed hospitals that did not have a residency program to investigate the feasibility of establishing one. As a result of initial planning grants, 10 new residency programs received national accreditation and matriculated their first residents, and in the process, created 24 new first-year residency positions. Most programs established are in primary care specialties. A General Revenue appropriation of $1,875,000 funded the initial planning grants.

In Fiscal Years 2016 and 2017, an appropriation of $3,500,000 funded 11 one-time awards of $250,000 each to a broader group of eligible applicants, including federally qualified health care centers, medical schools, and teaching hospitals. The second round of grants also encouraged partnership efforts. New residency programs were established as a result, and three of these programs officially began operation in July 2018. An additional six programs began operation in July 2019. Many of these GME Planning Grant recipients were in medically underserved areas where physician distribution would most likely be positively affected by the establishment of new residency programs.

In 2017, the 85th Texas Legislature, Regular Session, appropriated $500,000 to support new GME Planning Grants. The THECB issued a Request for Applications in fall 2018 and with additional funding reallocated from the GME Expansion Program, awarded grants of $250,000 to four applicants in January 2019. Applications to establish new residency programs in rural areas and in primary care and psychiatry specialties received priority for funding.

In 2019, the 86th Texas Legislature appropriated $500,000 to support new GME Planning Grants. The THECB plans to issue a Request for Applications in fall 2020 for competitively awarded grants.

Figure 11. Location of Entities that Received a GME Planning Grant, by Higher Education Region

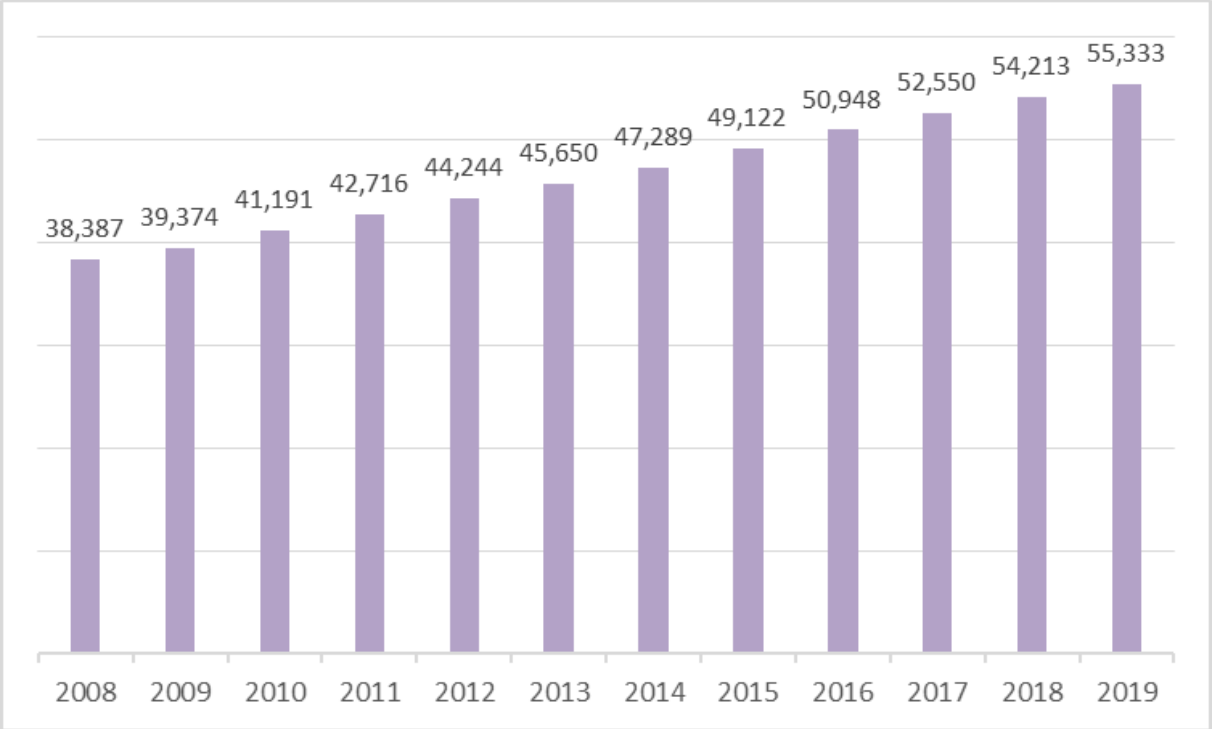


Source: THECB, August 2020.

Workforce – Physicians in Practice

Texas continues to be an attractive location for physicians to practice. For the last decade, Texas has been a net importer of physicians. From 2008 to 2019, the number of physicians actively practicing in Texas increased 44% (Figure 12).

Figure 12. Texas Direct Patient Care Physician Supply, 2008-19



Source: Department of State Health Services, August 2020

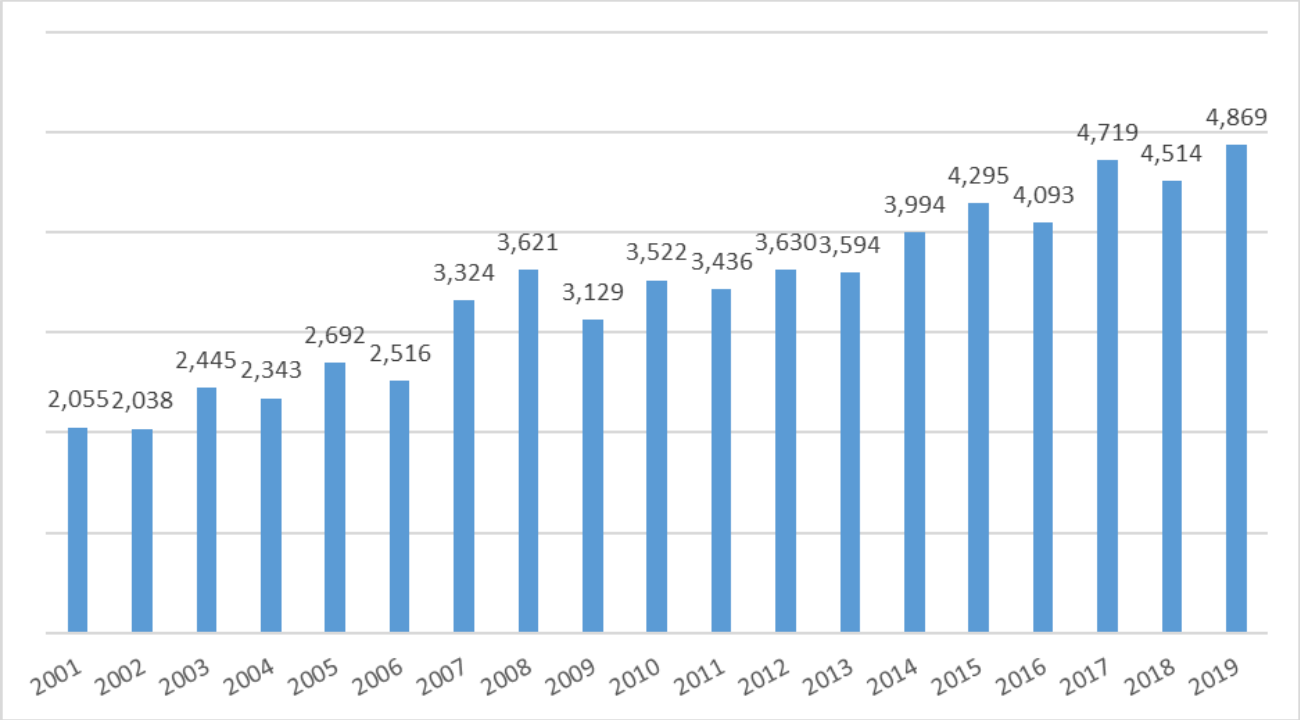
The AAMC's *2019 Physician Workforce Data Book* showed that, nationally, retention rates were highest for physicians who graduated from a medical school and completed residency training in the same state. This is particularly true in Texas, which ranks third among the states, with a retention rate of 81% for physicians who graduated from a Texas medical school and completed residency training in the state.

Licensed Texas Physicians

Since the passage of the Tort Reform Act of 2003, which limited the liability of physicians in malpractice suits, physicians applying for a license and practicing medicine in Texas has increased dramatically. Because of an improved climate of professional liability and the positive effect on the cost of professional liability insurance, since 2003 the annual numbers of newly licensed physicians in Texas have steadily increased (Figure 13).

By comparison, the number of new physicians licensed held relatively constant at just over 2,000 annually in the years preceding tort reform. The increase in licensed physicians may have mitigated physician shortages during the past decade of population growth in Texas; however, it is not known if the state will continue attracting and educating sufficient physicians to keep up with the projected population growth.

Figure 13. Newly Licensed Physicians in Texas, 2001-19



Source: Texas Medical Board, August 2020

Age. Similar to the general population of the state, the Texas physician population is aging. According to data released by the Texas Medical Board in May 2020, 19% of Texas physicians are within 10 years of retirement age (56 to 65 years of age), and 14% of physicians are 66 years of age or older. These 2020 percentages mirror those included in the last report in 2018. While age is commonly used to understand the supply of a profession, physicians tend to retire later in life than most other professionals. Many physicians may continue to practice into their late 60s and early 70s. However, an AAMC physician supply and demand projection report in June 2020 noted that growing concerns with physician burnout may accelerate retirement, while economic uncertainty or other detrimental effects on physician wealth could delay retirement.

Gender. Today, men outnumber women as practicing physicians. However, this imbalance will likely change, as women and men now apply to, are admitted to, and graduate from medical school equally. The number of female medical school graduates surpassed males for the first time in Texas in 2007, with 662 female graduates and 652 males. However, since 2008, women and men are graduating at approximately the same proportion, and the gender gap appeared to be widening again in recent years. In 2019, there were 785 female students and 962 male students who graduated from Texas medical schools.

The number of practicing licensed female physicians in Texas grew 192% from 8,097 in May 2002 to 23,635 in May 2020 (Figure 14). The presence of more women physicians likely will change the future physician workforce. Research has shown that women physicians enter primary care specialties at higher rates, practice fewer hours, and spend more time with patients. These gender differences in practice patterns may affect the need for more physicians in Texas and must be factored into projected future workforce needs.

Figure 14. Active Licensed Physicians in Texas by Gender, 1998-2020

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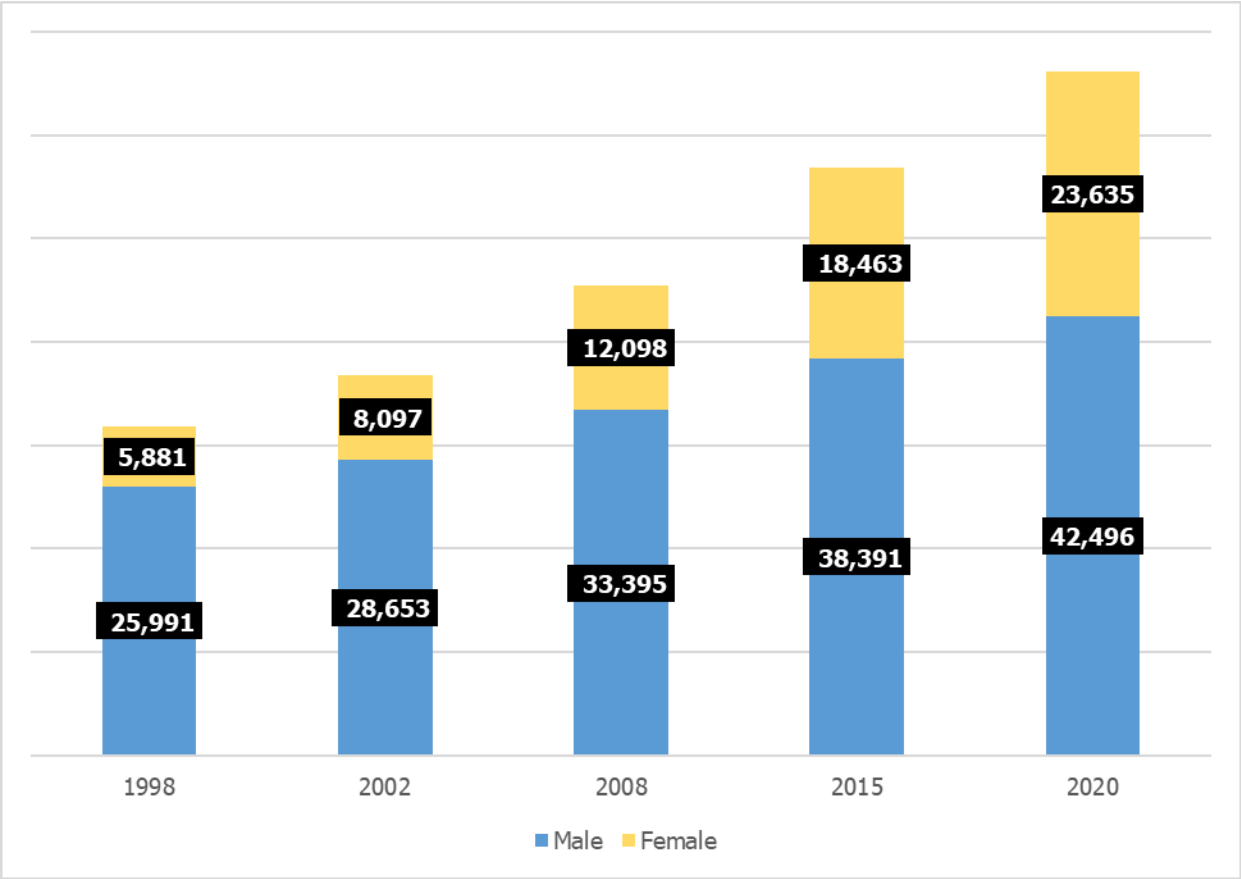


Source: Texas Medical Board, May Data Publication, August 2020
Note: The information reported does not include the numbers of unknown gender, which for May 2020 was 28.

Ethnicity. Physicians of African American and Hispanic origin continue to be underrepresented proportionally in comparison with the Texas general population (Table 3). Although more physicians from underrepresented populations are graduating from Texas medical schools, increases have not kept pace with the growth of African Americans and Hispanics in the state's general population. Research suggests that underrepresented minority physicians provide care for underrepresented populations at greater rates than physicians of other races/ethnicities.

Additional research shows that patients prefer to have physicians who understand and reflect similar cultural characteristics, including similar ethnicities. Given the racial and ethnic changes occurring in Texas, educating and training more physicians who represent the changing demographics of the state would be beneficial.

Table 3. Texas Physicians by Race, 2020

	Total of Hispanic Origin	Total of Non-Hispanic Origin	Unknown	Total	Percent
American Indian or Alaska Native	13	117	0	130	0.20%
Asian	25	14,438	0	14,463	21.86%
Black or African American	30	3,962	0	3,992	6.03%
Native Hawaiian or Other Pacific Islander	4	135	0	139	0.21%
Other	1,276	4,199	0	5,475	8.28%
Unknown	2	1	0	3	0.00%
White	3,750	38,207	0	41,957	63.42%
TOTAL	5,100	61,059	0	66,159	100%
PERCENT	7.71%	92.29%	0.00%	100%	

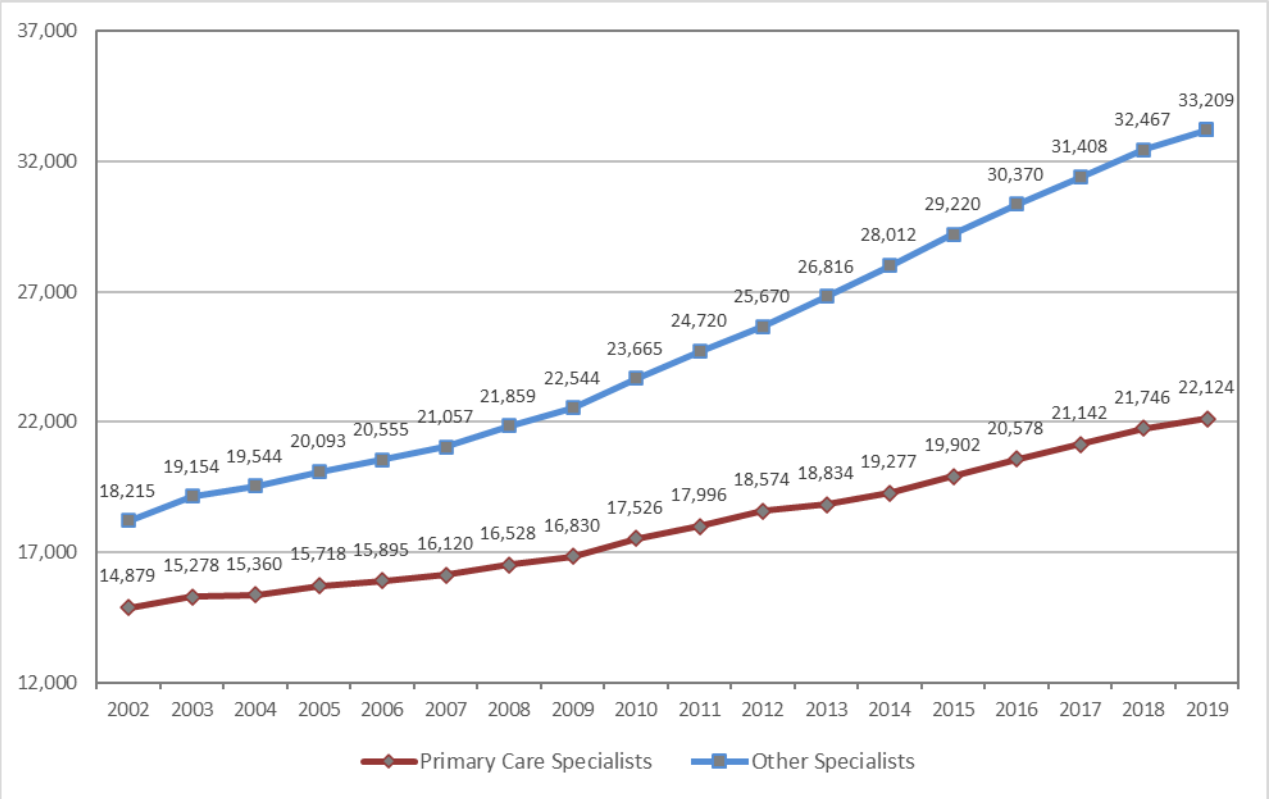
Source: Texas Medical Board, May 2020

Physician Supply and Demand

Physician supply and demand projections for Texas and the nation continue to predict physician demand growing faster than supply through 2033. Population growth and aging continue to be the primary driver, which means a higher demand for primary care specialties.

Since 2002, the number of primary care physicians (which includes the specialties of family medicine, internal medicine, obstetrics and gynecology, and pediatrics) in Texas increased by 49%, much lower than the 82% increase in other specialty care physicians. The long-standing trend shows that Texas has more other specialty physicians than primary care physicians. (Figure 15). For the 10-year period between 2009 and 2019, the percent increase is not as drastic, at 31% and 47% respectively; however, the trend remains.

Figure 15. Primary Care and Other Specialists, Direct Patient Care Physicians in Texas, 2002-19



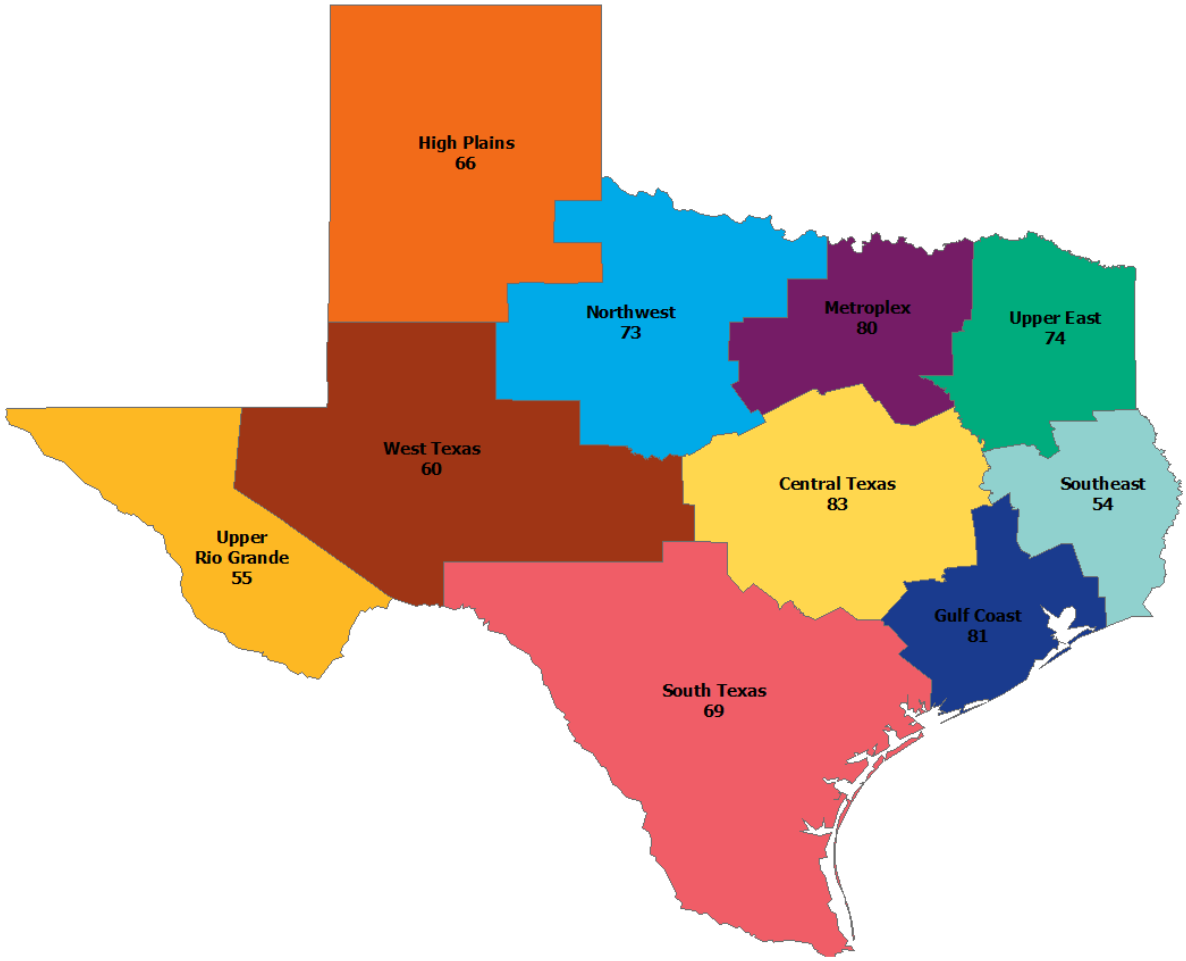
Source: Texas Department of State Health Services, August 2020.

Primary care physicians by region. The ratio of primary care physicians to the general population varies by region. To understand the distribution of physicians in a region, the number of physicians per 100,000 population is the standard reference. Figure 16 presents primary care physician ratios per 100,000 population based on 2019 data from the Texas Department of State Health Services by higher education regions delineated by the THECB.

Ratios are greater in the Metroplex, Central Texas, and Gulf Coast regions. Compared with 2018, nearly all regions have increased the ratios, except West Texas, which experienced a decrease from 66 physicians per 100,000 population to 60. Increases for the other regions ranged from one to seven additional physicians per 100,000 population, with the largest increases of seven physicians in Northwest (from 66 to 73), five in Central Texas (from 78 to

83), five in High Plains (from 61 to 66), and five in Upper Rio Grande (from 50 to 55). Even with the increases, the ratio of physicians per 100,000 population remains low in each region. In addition, while the South Texas region increased from 65 to 69 physicians per 100,000 population in 2019, if Bexar County, the most populous county in the region, is removed, the primary care physician per 100,000 population ratio decreases to 60 in 2019 among the other counties, compared with 55 in 2018.

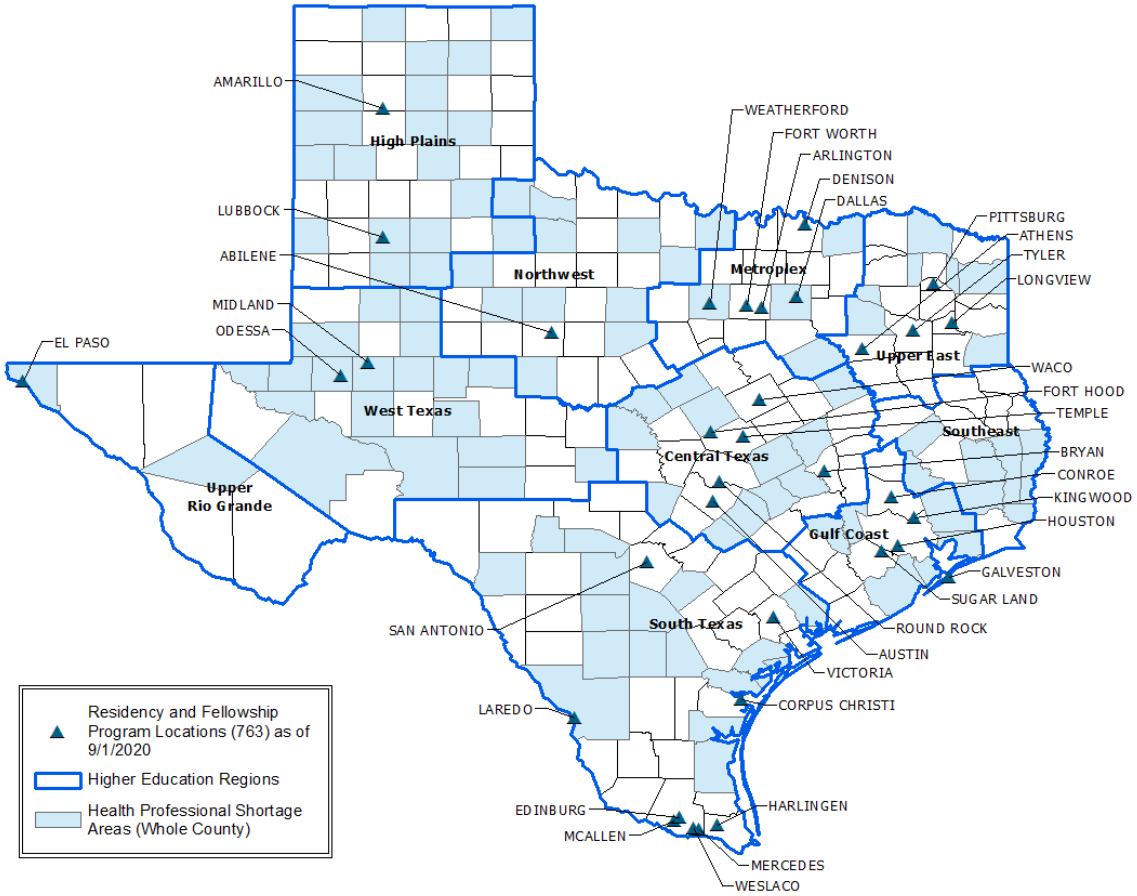
Figure 16. Primary Care Physicians per 100,000 Population by Higher Education Regions



Source: Texas Department of State Health Services, September 2019; THECB and Texas Data Center.

The geographic distribution of physicians continues to be a concern for public policymakers. In 2019, there were 28 Texas counties without a physician. Among the 10 higher education regions in Texas, 11 of the 28 counties were in the High Plains region, seven in the West Texas region, six in South Texas, three in Northwest, and one in the Upper East regions. The other five higher education regions, which did not have counties with such dire shortages, were Central Texas, Gulf Coast, Metroplex, Southeast, and Upper Rio Grande. One reason for this uneven distribution is that the education and training of the state's physicians, including medical schools and most residency programs, especially highly specialized residency programs, are in large urban areas (Figure 17).

Figure 17. Location of Texas Residency and Fellowship Programs and Whole County Primary Care Health Professional Shortage Areas



Source: THECB; Health Resources and Services Administration; Accreditation Council on Graduate Medical Education, August 2020

Across the state, Texas has fewer primary care physicians than other physician specialties. There are several reasons for this, depending on specialty, including experiences in medical school, prestige and higher salaries, psychomotor skills and interest in procedures, work-life integration, and practice environment for non-primary care physician specialties. The number of medical specialty choices has increased significantly since the beginning of the 21st century. The AAMC currently lists more than 135 specialty and subspecialty opportunities available in the United States. Many of these specialties and subspecialties require some residency training in a primary care specialty, such as internal medicine or pediatrics.

Primary care physicians, particularly family physicians, tend to distribute themselves in patterns geographically similar to the general population. Based on 2019 data from the Texas Department of State Health Services, statewide 33.8% of the total primary care physicians were family medicine physicians. Notably, the Upper Rio Grande region had the lowest percentage at 13.2%, with only 65 out of the 494 primary care physicians in the region practicing as family physicians. GME efforts to support primary care specialties and increase first-year positions could help alleviate physician maldistribution. In addition, communities with more primary care physicians have lower health care costs and report higher quality of health.

According to the AAMC, in 2018 Texas continued to have one of the lowest total active patient care physicians per 100,000 population ratios in the nation (ranked 41st with 242.1 physicians) and one of the nation's lowest ratios for active patient care primary care physicians (ranked 47th with 66.5 physicians). If Texas is to reduce the gap when compared with the national average of physician ratios per 100,000 population, the state's commitment to support GME Expansion efforts to increase first-year residency positions must be maintained. Otherwise, the substantial progress made by the state may be jeopardized.

Conclusion

Beginning in FY 2014, the Texas Legislature's Graduate Medical Education (GME) Expansion efforts prompted the creation of more than 400 new first-year residency positions and helped establish 19 new residency programs. As the GME Expansion programs enter their seventh year, the efforts to increase the number of first-year residency positions have provided Texas medical students with a greater opportunity to remain in the state for their residency training. However, with the establishment of six new medical schools, maintaining the state's success in having 10% more first-year residency positions than medical graduates will quickly erode. Unless the state provides additional funding to support the GME Expansion efforts, the 1.1 to 1 goal cannot be maintained.

Texas Medical School Enrollment Increases and New Medical Schools

In response to an appeal from the Association of American Medical Colleges to increase medical school enrollments nationally by 30%, Texas medical schools increased entering first-year medical school enrollments 53.9%, from 1,342 in fall 2002 to 2,066 in fall 2019.

In June and July 2016 respectively, two new Texas public medical schools, UT Austin Dell Medical School and UT RGV School of Medicine, enrolled their inaugural classes. With the addition of the two new schools, Texas increased its first-year medical school enrollment by 105 new medical students. In addition, the private osteopathic medical school, The University of the Incarnate Word in San Antonio, enrolled its first 162 osteopathic medical students in fall 2017.

Three additional new medical schools recently enrolled students. In fall 2019, a unique public/private medical school, a partnership between Texas Christian University (TCU) and University of North Texas Health Science Center (UNTHSC) enrolled its first cohort of students. The medical school focuses on developing physicians who are empathetic scholars. In addition, in summer 2020, the University of Houston (UH) enrolled its first class of medical students. The UH College of Medicine is founded on a social mission to improve health care in underserved communities in Houston and across the state. In fall 2020, Sam Houston State University (SHSU) enrolled its first cohort of 75 students in its new Doctor of Osteopathic Medicine (DO) program at its campus in Conroe. The school's mission is to produce primary care physicians

who will practice in rural east Texas. Of note, neither the TCU/UNTHSC partnership medical school, nor the SHSU program will receive formula funding.

Medical School Funding

Most public Texas medical schools receive formula funding to support the instruction and operation of their osteopathic medical and allopathic medical students through a prescribed formula. The amount of formula funding support that the Texas public medical schools and the private Baylor College of Medicine receive is set forth in the state's biennial budget document, the General Appropriations Act (GAA). The GAA presents the instruction and operation formula in the Health-Related Institutions Funding Instruction and Operation Formula in Article III, Section 27 (1), of the section Special Provisions Section Relating Only to State Agencies of Higher Education. The three additional formulas for research, facilities, and graduate medical education are also included in Article III, Section 27, of the GAA.

For the current 2020-21 biennium, Instruction and Operation (I&O) Formula funding increased to $45,733 per medical student from $44,825 for FY 2018 and FY 2019. The most recent funding amount is a 15% decrease from the original $54,000 (unadjusted dollars) per medical student provided when the health-related institutions' formula funding was established in 1999 to provide initial funding for the I&O Formula in FY 2000 and FY 2001.

The private Baylor College of Medicine receives a similar formula funding amount. Its formula funding is trusteed to the THECB and is provided to the institution to support its Texas students. This arrangement also allows the institution to leverage additional funding through the Texas Health and Human Services Medicaid program.

Graduate Medical Education Funding

The federal financing of graduate medical education is complex and presents limited opportunities for existing teaching hospitals to add new residency programs and/or residency positions to existing programs. Because hospitals at their resident cap for Medicare GME do not receive additional federal funding to add new residency positions, they often take a measured approach to funding additional residency positions.

Texas provides minimal funding support for residency training affiliated with health-related institutions through a formula allocation. The formula funding for the GME Formula is presented in the GAA, Article III, Section 27 (5). In the 2020-21 biennium, health-related institutions and public general academic institutions with medical schools received $11,940 per medical resident to support faculty costs related to supervising a resident. This was a slight increase from the 2018-19 biennial amount of $11,647 per resident. This level of support equates to about 8% of the estimated cost of $150,000 to educate a resident annually.

Texas family medicine residency programs receive additional funding through the THECB's Family Practice Residency Program. Under this program, eligible family medicine residency programs received an additional amount of $5,889.43 in FY 2020, down from $6,236.90 per resident in FY 2018. These funds, combined with the formula allocation, cover less than 9% of the estimated cost of training a family medicine resident.

1.1 to 1 Ratio of First-Year Entering Residency Positions to Medical School Graduates

In fall 2011, the ratio of first-year entering residency positions to graduates was near 1 to 1, with 1,494 first-year entering residency positions available for the state's 1,458 medical school graduates. At that time, legislators, representatives of professional organizations, and medical education experts recognized that unless additional first-year residency positions were created, some Texas graduates would have to leave the state to enter residency training.

In spring 2016, Texas medical schools awarded a combined 1,718 Doctor of Medicine (MD) and DO degrees. In fall 2016, the health-related institutions reported and staff identified 1,790 filled first-year residency positions, just 100 positions short of reaching the 1.1 to 1 ratio goal. The number of filled first-year positions included residency programs reported to the THECB on its Coordinating Board Management (CBM)-00R report and through independent residency programs, which are not reported on the CBM-00R.

In 2017, Texas achieved the 1.1 to 1 ratio goal. By spring 2017, the number of medical school graduates declined slightly to 1,660; while the number of filled first-year residency positions increased to 1,868.

A significant increase in medical school graduates to 1,734 in 2018, with only a small increase in filled first-year residency positions to 1,888, prevented Texas from achieving the 1.1 to 1 ratio goal by only 19 positions.

The 1.1 to 1 ratio goal was met in 2019 with the number of medical school graduates at 1,747 and the number of filled first-year residency positions at 1,950. The projected number of medical graduates in 2020 is 1,810 and is even higher in 2021 at 1,949. If no change occurs in the number of filled first-year residency positions, the state will be short of the goal by 41 positions in 2020 and 194 in 2021. Unfortunately, the goal is becoming increasingly difficult to attain as the state's new medical schools begin to graduate physicians.

Adding new residency positions to existing programs is costly and requires a long-term commitment by a teaching entity and one or more participating training sites, most commonly hospitals. Given uncertainties within the health care system, including efforts to control cost increases, reduce the number of uninsured, and address changes in health care delivery and reimbursement, hospitals continue to remain cautious about GME expansion.

While adding new residency positions and programs is admirable and will contribute to the state's 1.1 to 1 ratio goal, it is also important that the state's existing residency programs receive adequate funding and support. The closing of two family medicine residency programs resulted in reduced access to health care in the communities of Wichita Falls and Corpus Christi, further contributing to physician distribution challenges.

Prior Recommendations and Results

In its 2018 report, the THECB offered four recommendations, and each recommendation is provided below, followed by the result.

Recommendation 1. Continue support of the GME Expansion efforts. To maintain the 1.1 to 1 ratio of first-year residency positions to medical school graduates, the THECB has an exceptional item request of $60,675,000 for the 2020-21 biennium, which would support the addition of new residency positions to accommodate the increase in the number of medical graduates resulting from the opening of three new medical schools. The additional funds would support new residency positions and help maintain recently established residency positions.

Result. The 86th Texas Legislature, Regular Session, provided $157.2 million to support GME Expansion Programs. As a result, an estimated 2,000 residency positions will receive funding support in FY 2020 and FY 2021.

Recommendation 2. Enhance support of the Family Practice Residency Program. The program was started in the late 1970s to help address physician distribution. Unlike other medical specialties, family physicians are able to practice in smaller communities and rural areas. Their geographic distribution is similar to the general population. The THECB has an exceptional item request of $2 million to increase funding per resident to approximately $7,600 to support an estimated 773 family medicine residents in the program.

***Result*.** The 86th Texas Legislature appropriated $10 million for FY 2020 and FY 2021. In FY 2020, eligible family medicine residency programs received $5,889.43 per resident, down from $6,236.90 per resident in FY 2018.

Recommendation 3. Increase the GME formula funding from the FY 2018 and FY 2019 level of $5,824 to $6,654 for FY 2020 and FY 2021, per the Board's recommendation.

***Result*.** The 86th Texas Legislature increased the GME formula funding from $5,824 to $5,970 per resident in FY 2020 and FY 2021.

Recommendation 4. Maintain funding and support for the THECB's Statewide Preceptorship Program established to encourage Texas medical students to consider selecting a primary care residency program.

***Result*.** The Statewide Preceptorship Program was maintained by the 86th Texas Legislature, with a total appropriation of $3,000,000 for FY 2020 and FY 2021.

Recommendations to Support and Maintain Progress Made

The COVID-19 pandemic has posed challenges to the economic health of the state and the nation. Based on the progress made in previous years and to achieve and maintain the 1.1 to 1 ratio goal, the THECB offers the following revised recommendations:

Recommendation 1. Continue funding and support of the GME Expansion efforts to maintain the 1.1 to 1 ratio of first-year residency positions to medical school graduates. This would maintain support for currently funded positions and provide funding for the addition of new residency positions to accommodate the increase in the number of medical graduates resulting from the opening of new medical schools.

Recommendation 2. Maintain funding and support of the Family Practice Residency Program. The program was started in the late 1970s to help address physician distribution. Family physicians can more easily practice in smaller communities and rural areas, unlike other medical specialties, and their geographic distribution is similar to the general population.

Recommendation 3. Maintain funding and support for the THECB's Statewide Preceptorship Program established to encourage Texas medical students to consider selecting a primary care residency program.

This document is available on the Texas Higher Education Coordinating Board website: http://highered.texas.gov.

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