

College for all Texans



Projecting the Need for Pharmacy Education in Texas

January 2009

Texas Higher Education Coordinating Board



Texas Higher Education Coordinating Board

A.W. "Whit" Riter III, CHAIR
Fred W. Heldenfels IV, VICE CHAIR
Elaine Mendoza, SECRETARY OF THE BOARD
Charles "Trey" Lewis III, STUDENT REPRESENTATIVE
Laurie Bricker
Robert W. Shepard
Joe B. Hinton
Brenda Pejovich
Lyn Bracewell Phillips
Robert V. Wingo

Tyler
Austin
San Antonio
Houston
Houston
Harlingen
Crawford
Dallas
Bastrop
El Paso

Raymund A. Paredes, COMMISSIONER OF HIGHER EDUCATION

Mission of the Coordinating Board

The Texas Higher Education Coordinating Board's mission is to work with the Legislature, Governor, governing boards, higher education institutions and other entities to help Texas meet the goals of the state's higher education plan, *Closing the Gaps by 2015*, and thereby provide the people of Texas the widest access to higher education of the highest quality in the most efficient manner.

Philosophy of the Coordinating Board

The Texas Higher Education Coordinating Board will promote access to quality higher education across the state with the conviction that access without quality is mediocrity and that quality without access is unacceptable. The Board will be open, ethical, responsive, and committed to public service. The Board will approach its work with a sense of purpose and responsibility to the people of Texas and is committed to the best use of public monies. The Coordinating Board will engage in actions that add value to Texas and to higher education. The agency will avoid efforts that do not add value or that are duplicated by other entities.

The Texas Higher Education Coordinating Board does not discriminate on the basis of race, color, national origin, gender, religion, age, or disability in employment or the provision of services.

Executive Summary

Selected Findings

Pharmacy Education

- Texas has six schools of pharmacy: The University of Texas at Austin, University of Houston, Texas Southern University, Texas Tech University Health Sciences Center—Amarillo, Texas A&M University Health Science Center at Kingsville, and University of the Incarnate Word. In addition to these schools, there are satellite programs operated by The University of Texas at Austin in Edinburg, San Antonio, and El Paso, as well as satellite programs operated by Texas Tech University Health Sciences Center in Abilene, Lubbock, and Dallas.
- Texas has more pharmacy schools than the majority of the 10 most populous states, with the exception of California, which currently has seven pharmacy schools.
- Pharmacy is a high-demand program. From 1998 to 2008, applications to Texas pharmacy schools have increased 173 percent, reflecting the trend at the national level.
- From 1998 to 2008, first-year entering enrollment in Texas pharmacy schools has increased 63 percent, due to both expansion of existing programs and the creation of the two new programs at University of the Incarnate Word and Texas A&M Health Science Center in Kingsville.
- The entering class of Texas' pharmacy schools is smaller than the national average and six of the ten most populous states.
- From 1999 to 2007, the number of Texas pharmacy graduates increased 49 percent.
- The Hispanic population is dramatically under-represented among Texas pharmacy school graduates, while the proportion of African-Americans graduating is somewhat greater than the African-American percentage of the Texas population as a whole.
- The percentages of women earning pharmacy degrees in the U.S. and in Texas are substantially higher than the percentages of men earning pharmacy degrees.
- When compared with their total population in Texas, residents of the Gulf Coast are the most over-represented in Texas pharmacy schools; residents of the Metroplex are the most under-represented.

Pharmacy Practice

- Texas has fewer pharmacists per 100,000 population (78) than the average of the 10 most populous states (84).

- Pharmacists are not evenly distributed throughout the various regions of the state. The Gulf Coast, High Plains, and Metroplex regions have the most pharmacists per 100,000 population, while the Upper Rio Grande, West Texas, and South Texas (excluding Bexar county) regions have the least.
- In March 2007, the Texas State Board of Pharmacy (TSBP) had 23,939 pharmacists on record, 22,627 of which were considered active and practicing in Texas. About one-half of the state's pharmacists worked in community pharmacies. About 20 percent worked in hospitals, and about 30 percent worked in clinics, mail-order pharmacies, pharmaceutical wholesalers, education, government, and other healthcare facilities.
- In 2007, TSBP licensed 1,024 new pharmacists from domestic schools of pharmacy, and 40 percent of those (404) were Texas graduates. In addition, TSBP licensed 110 new pharmacists from foreign schools of pharmacy. These supply figures are contrasted by the Texas Workforce Commission (TWC) statewide projections for pharmacist job openings, which indicate there will be 805 openings annually through 2014 -- 300 of which will be due to the need for replacements and 505 will be due to growth in demand. Because of this imbalance between the 805 pharmacists needed annually to fill openings and the 404 produced by Texas, the state continues to import most of its pharmacists.

Conclusions

- There are fewer pharmacists in the Upper Rio Grande, West Texas, South Texas, and Southeast Texas regions of the state.
- The current decline in the number of pharmacy graduates produced by Texas schools is primarily the result of the decision by pharmacy programs nationwide to change from a five-year curriculum to a six-year Pharm.D. curriculum in the late 1990s.
- The growth of the Texas population, the significant increase in the number of medications prescribed and dispensed to patients in Texas and the United States, and the continued expansion of retail chain pharmacy outlets are factors that contribute significantly to the demand for pharmacists.
- The number of students in Texas pharmacy schools is increasing as two new schools began enrolling students in 2006. A third new private school at the University of Dallas will begin enrolling students in 2010 and will increase access to pharmacy education for residents of the Metroplex.
- The number of Pharm.D. graduates will increase markedly when new pharmacy schools in Kingsville and San Antonio begin producing graduates in 2010. The state's demand for additional pharmacists and the supply of new pharmacists from Texas pharmacy schools are expected to be balanced by 2014.
- Students from the Metroplex are under-represented in Texas pharmacy schools in comparison to other regions of the state. The lack of a pharmacy school in the Metroplex may make it difficult for some students to pursue careers in pharmacy.

Recommendations

- The Coordinating Board does not recommend a new pharmacy school. By 2014, Texas will be producing enough pharmacists from its own pharmacy schools to meet or exceed state workforce needs without importing pharmacists from other states.
- As a remedy for those regions of the state where the ratio of pharmacists to residents is significantly lower than the state average, the Legislature could fund a pharmacist residency program to help bring practicing pharmacists to underserved communities in Texas. An example of an existing but unfunded program, the Roberta High Memorial Pharmacy Residency Program, is given in Appendix A-3.

Table of Contents

Introduction	1
Institutional and Student Data.....	3
Schools	3
Applications	6
First-Year Entering Enrollment.....	7
Graduates.....	9
Ethnicity	10
Gender.....	11
Educational Pipeline.....	12
Current and Future Opportunities	13
Practitioner and Practice Trends	16
Need for Additional Pharmacists in Texas	19
Special Issues.....	20
Technology’s Impact on Pharmacy Practice and Staffing Levels.....	20
Pharmacy Technicians	21
Summary of Key Findings, Conclusions and Recommendations	22
Data Sources	25
Appendices.....	26

Appendices

- A-1 *A Methodology for Projecting the Need for Professional Education*
- A-2 Projections Methodology
- A-3 Roberta High Memorial Pharmacy Residency Program
- A-4 Pharmacists per 100,000 Population by State

Introduction

To address planning for education needs related to specific disciplines, the Texas Higher Education Coordinating Board (Coordinating Board) adopted a *Methodology for Projecting the Need for Professional Education in Texas* in April 2002. Several subsequent Coordinating Board-adopted reports based on that methodology presented analyses of future need for professional education in medicine, law, veterinary medicine, and pharmacy based on two factors: the need for professional services and the opportunity for students to enter selected professions. The full text of the 2002 *Methodology* is included as Appendix 1.

This 2009 report presents an update to the *Projecting the Need for Pharmacy Education in Texas* report that was issued by the Coordinating Board in 2004. New information, examples, and perspectives based on demographic and educational changes since 2004 are presented in the body of this report. Additional information and data are available in the appendices.

Issues and questions parallel to those for other professions arise in this study:

- Does the state need more pharmacists? If so, which ethnic groups are most under-represented?
- Is there appropriate opportunity for Texans to attend pharmacy school, now and in the foreseeable future?
- If the state decides to educate more pharmacists, should it do so by increasing the class size of some or all of its existing pharmacy schools, or should it create a new pharmacy school?
- Do residents of all regions of the state have opportunities to attend pharmacy school?

Additional questions and challenges arise that are specific to pharmacy education and services. For example, in 2005, Texas pharmacy programs, like those of other states, switched from a 5-year curriculum to a 6-year curriculum, thereby temporarily reducing the number of new pharmacists entering the job market. The educational pipeline that produces pharmacists has not yet had enough time to move past this predictable decrease in the number of pharmacists graduating from Texas programs.

Estimating the number of pharmacists that Texas will need to serve its increasing population over the next decade is itself a challenge because of the burgeoning influence of technology upon professional practice. The advent of online pharmacies, robotic prescription-filling systems, and other computer-based innovations is highly likely to change the staffing patterns of pharmacies, hospitals, and other locations where pharmacists are employed. While it seems likely that such innovations will increase the number of pharmacy technicians employed, as they are often the ones trained to operate the technology, it is difficult to accurately predict how much these innovations may affect the demand for pharmacists.

Other issues specific to pharmacy practice include a change in focus of the pharmacist's duties. In comparison to the past, there is now a greater emphasis on the advising and consultative roles of pharmacists. They are expected to interact more frequently with patients and with physicians. Another factor is a major increase in the demand for pharmaceutical services, primarily driven by the changes in the practice of medicine resulting from the availability of powerful new drugs. In addition, a rapidly aging population, typically the heaviest users of

pharmaceutical drugs, is further increasing the demand for pharmaceutical services. These trends indicate a future in which the responsibilities of pharmacists increase in scope, variety, and number.

The mix of public versus independent professional schools is a factor in considering the overall equation of supply and demand for pharmacy graduates in Texas. Texas has one independent pharmacy school and five public. For some students, an independent pharmacy school may be geographically accessible but financially difficult or prohibitive due to higher tuition rates compared to public schools. Although financial aid is available to students who qualify, the prospect of repaying large loans after graduation may deter some students from seeking admission to independent professional schools.

The Coordinating Board offers recommendations with the acknowledgement that any decision about the expansion of existing pharmacy schools, or the creation of a new pharmacy school, should be made through an analysis of projected demand for student opportunity and demand for services.

Acknowledgements

The Coordinating Board would like to thank the following individuals for their contributions to this report. Outside consultants—Dr. John Cormier, Dean of the University of New England College of Pharmacy, and Dr. Carmen Catizone, Executive Director of the National Association of Boards of Pharmacy—applied their expertise in pharmacy administration and provided valuable insight and comments. Staff of the Texas State Board of Pharmacy—Carol Willess, Cathy Stella, and their Executive Director, Gay Dodson—provided quick and accurate responses for data relating to pharmacist licensing in Texas. Finally, research associates—Elizabeth Mayer and Freddie Obregón—worked diligently to obtain data and draw charts and graphs that were vital to the clarity and accuracy of the report.

Institutional and Student Data

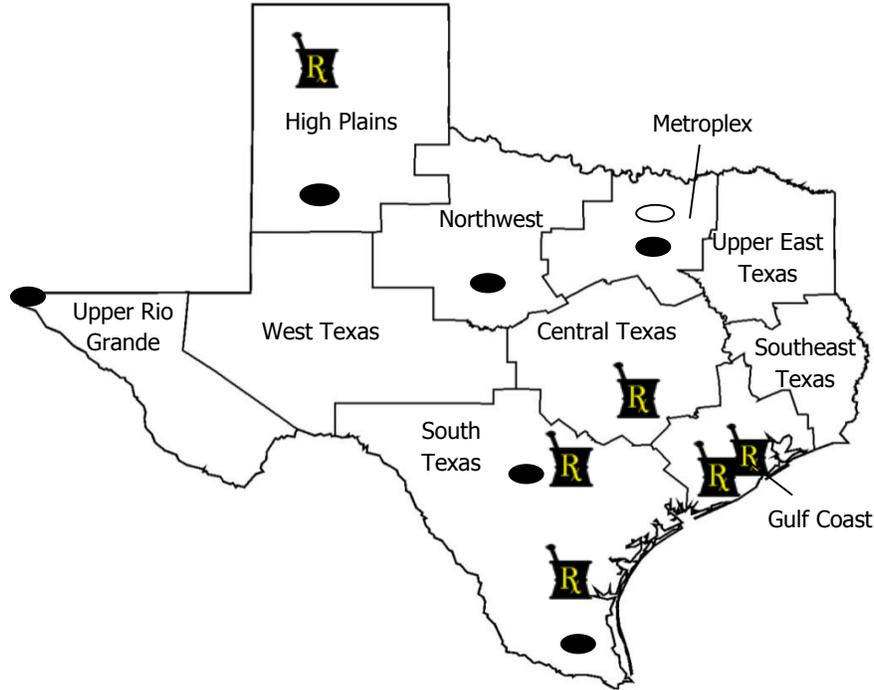
Schools

The map on the following page shows the locations of Texas pharmacy schools. The schools operated by The University of Texas at Austin, University of Houston, Texas Southern University, and Texas Tech University Health Sciences Center-Amarillo are well-established institutions. The University of Texas at Austin operates satellite¹ programs in Edinburg, San Antonio, and El Paso. Texas Tech University Health Science Center operates satellite programs in Abilene, Lubbock, and Dallas.

The Texas A&M University Health Science Center opened a new pharmacy school in Kingsville and University of the Incarnate Word opened a new pharmacy school in San Antonio in August 2006. Texas Tech University Health Sciences Center's satellite program in Abilene opened in August 2007.

¹ "Satellite" programs are separated from the main program by geography, but are considered to be part of the main program for accreditation purposes. These satellite programs rely on the resources of the main program, and usually require students to receive some of their Doctor of Pharmacy course work at the main campus and some at the satellite location.

Locations of Texas Pharmacy Schools



Pharmacy Schools

● Satellite Programs

○ University of Dallas
(Proposed date of opening 2010)

Pharmacy Schools

- Texas Southern University [TSU] – Houston
- Texas Tech University Health Sciences Center [TTUHSC] – Amarillo
- University of Houston [UH]
- The University of Texas at Austin [UT-Austin]
- University of the Incarnate Word [UIW] – San Antonio
- Texas A&M University Health Science Center – Kingsville

Satellite Programs

- University of Texas at Austin – San Antonio
- University of Texas at Austin – El Paso
- University of Texas at Austin – Edinburg
- TTUHSC – Abilene
- TTUHSC – Dallas
- TTUHSC – Lubbock

Region	Population (2007)
High Plains	833,764
Northwest	567,635
Metroplex	6,226,815
Upper East Texas	1,069,458
Southeast Texas	777,670
Gulf Coast	5,436,942
Central Texas	2,621,139
South Texas	4,380,974
West Texas	552,621
Upper Rio Grande	792,899
Total Texas Population	23,259,917

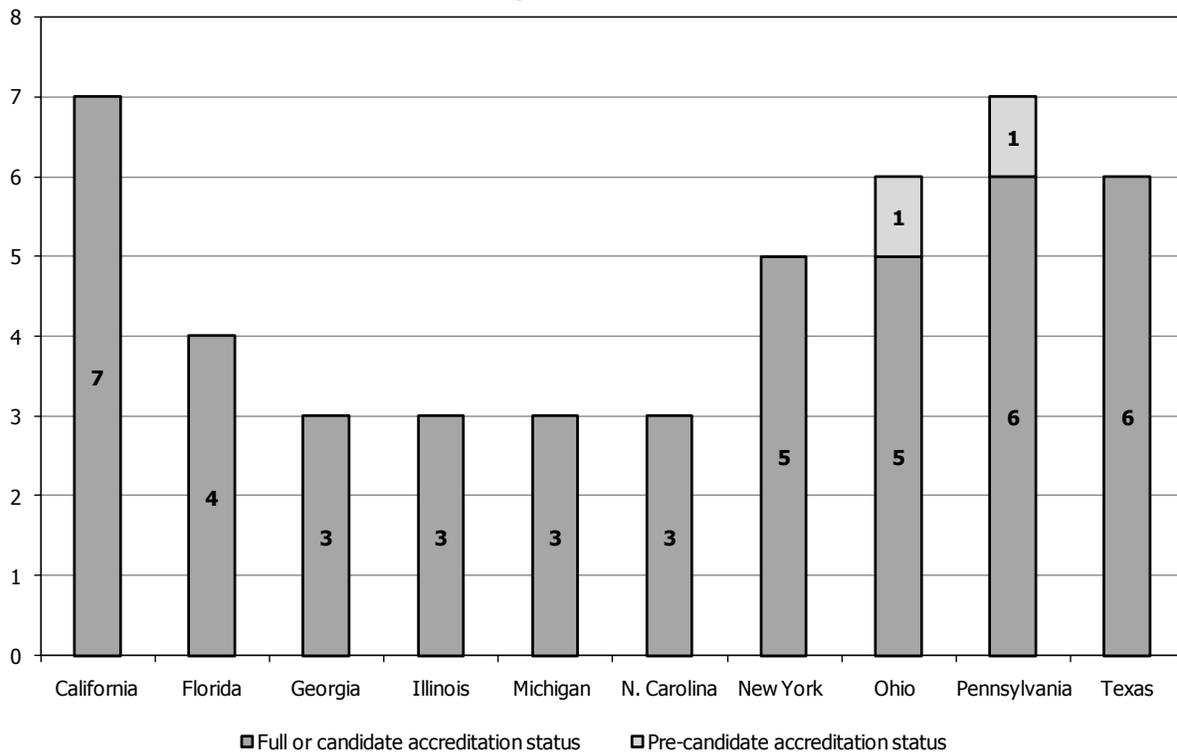
Source: Texas State Demographer using 5 migration scenario.

Pharmacy schools often offer a number of pharmacy-related degrees, but for the purposes of this study, “pharmacy school” is defined as an administrative unit of a university or health science center that offers the Doctor of Pharmacy (Pharm.D.) degree, generally a six-year degree

program that requires at least two years of college study prior to admittance. This degree replaced the five-year bachelor's degree, which ceased to be awarded in 2005. After receiving their degrees, Texas graduates must pass the national licensing exam and the Texas Pharmacy Jurisprudence exam, and then apply for licensure with the Texas State Board of Pharmacy before they may practice in Texas.

Recently, the University of Dallas, a private institution, announced that it is founding a new college of pharmacy, with an opening date of 2010. The institution anticipates that the program will have a total enrollment of 300 students once it is operating at full capacity. Given the four-year delay between first enrollment and licensing, University of Dallas graduates will not impact the state's available pool of pharmacists until 2014. Nonetheless, the addition of this new school is likely to bring the ratio of pharmacists to general state population closer to parity with other populous states and provide greater opportunities to potential pharmacy students in the Metroplex region.

Number of Pharmacy Schools in the 10 Most Populous States

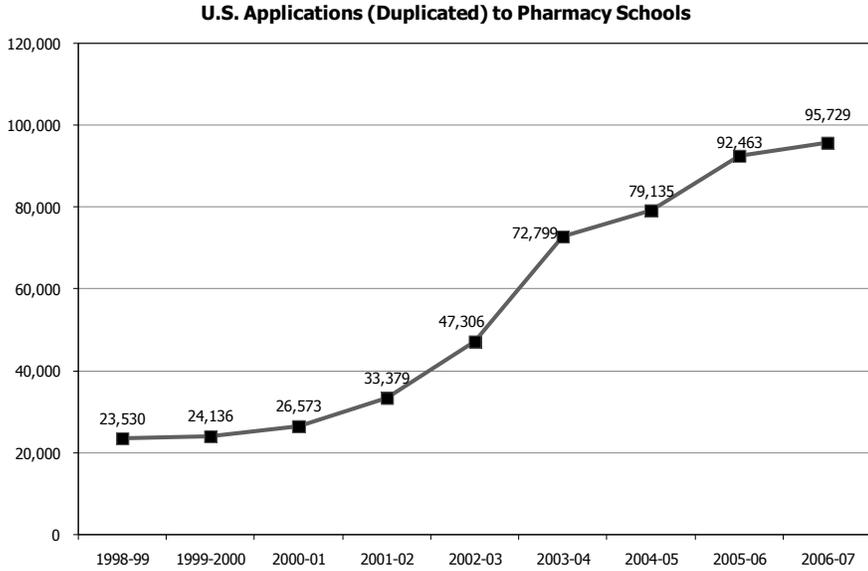


Source: American Association of Colleges of Pharmacy.

Texas has more pharmacy schools than the majority of the 10 most populous states, with the exception of California, which currently has seven pharmacy schools.

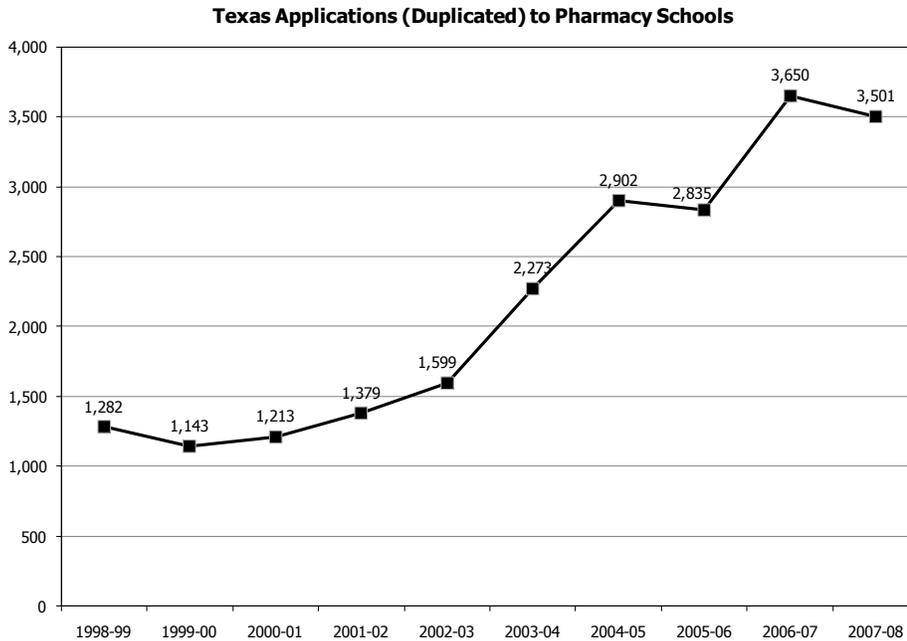
Applications

From 1998 to 2007, applications to U.S. pharmacy schools increased 307 percent with the most significant increase (54 percent) occurring between 2002 and 2004.



Source: American Association of Colleges of Pharmacy.
 U.S. applications for 2007-08 are not available.

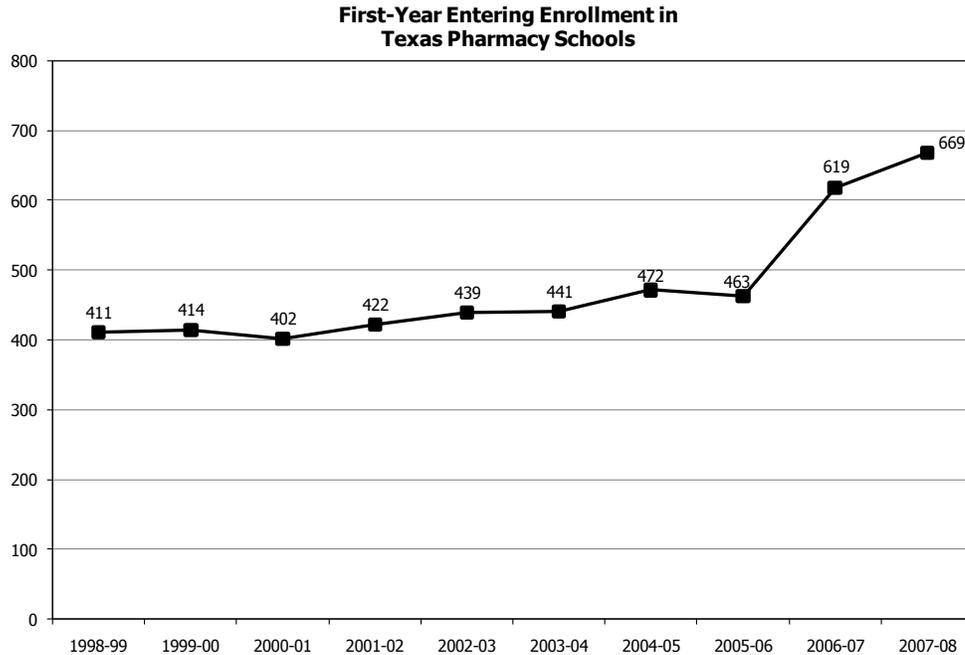
Pharmacy is currently a very high-demand program. From 1998 to 2008, applications to Texas pharmacy schools have increased 173 percent, reflecting the trend at the national level. The graph below shows past applications to all of the state's pharmacy programs.



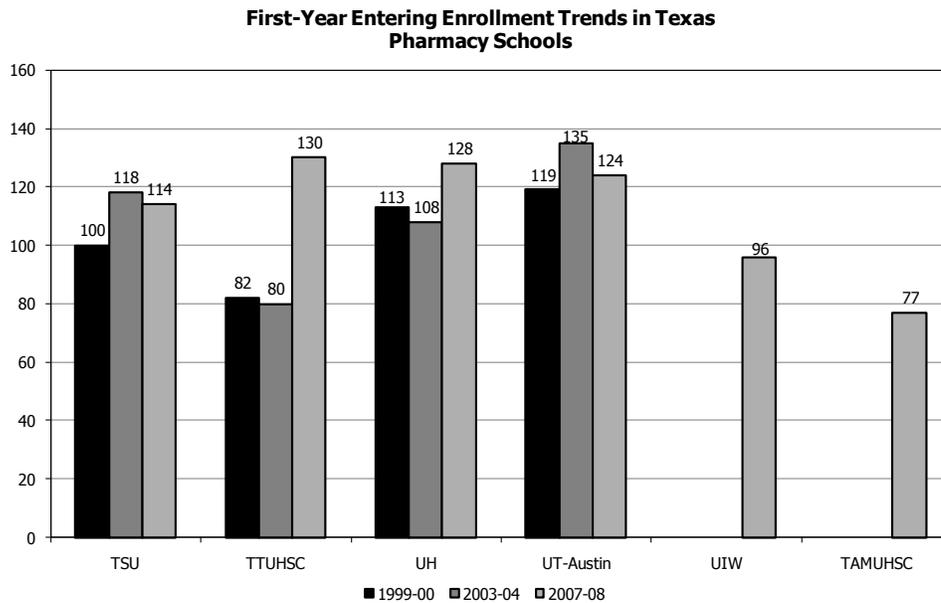
Source: Texas Public and Independent Pharmacy Schools.

First-year Entering Enrollments

While gaining admission is a very competitive process, over 90 percent of students who are admitted eventually graduate. From 1998 to 2008, first-year entering enrollment has increased 63 percent, due to both expansion of existing programs and the creation of the two new programs at University of the Incarnate Word and Texas A&M Health Science Center in Kingsville.



Source: Texas Public and Independent Pharmacy Schools.

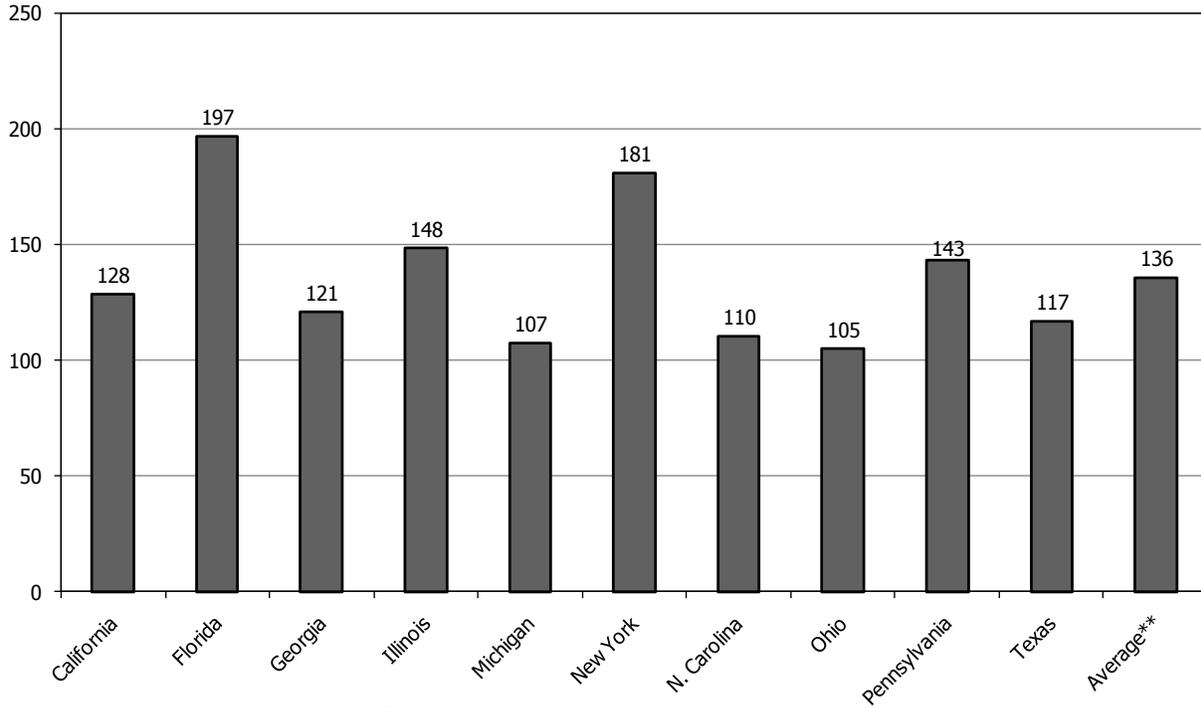


Source: Texas Public and Independent Pharmacy Schools.

Note: University of the Incarnate Word and Texas A&M University System Health Sciences Center - Kingsville did not begin enrolling students until 2006-07.

The entering class of Texas' pharmacy schools is smaller than the national average and six of the ten most populous states. This suggests that there could be expansion capacity in Texas pharmacy programs, a proposition that is supported by the plans of The University of Texas at Austin and the Texas Tech Health Sciences Center at Amarillo to expand their cooperative programs at locations around the state.

**Average* Pharmacy School
Entering Class Size**



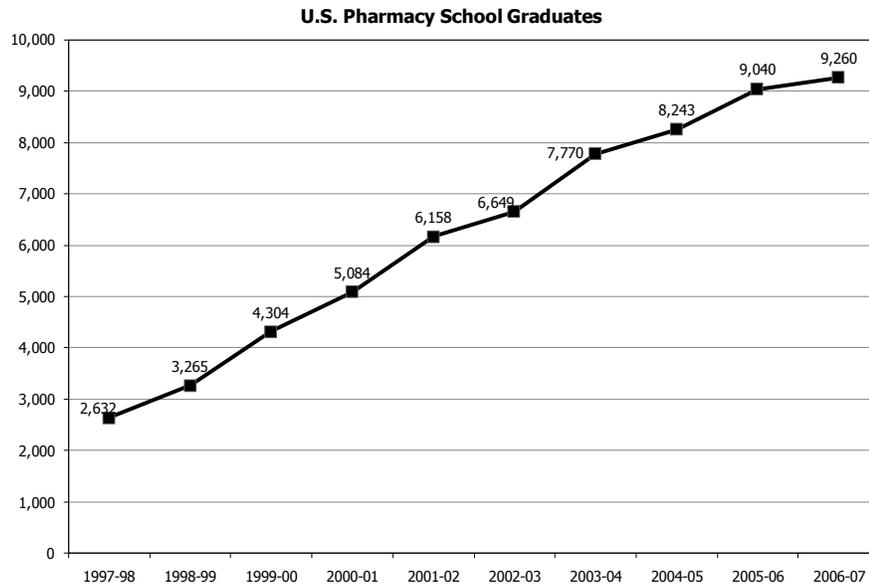
Source: American Association of Colleges of Pharmacy.

*For most institutions, the class enrollments are for the first-year entering class of 2007, but for some of them another recent year had to be used since first-year entering class data for 2007 was not available.

**Average is for the 10 most populous states.

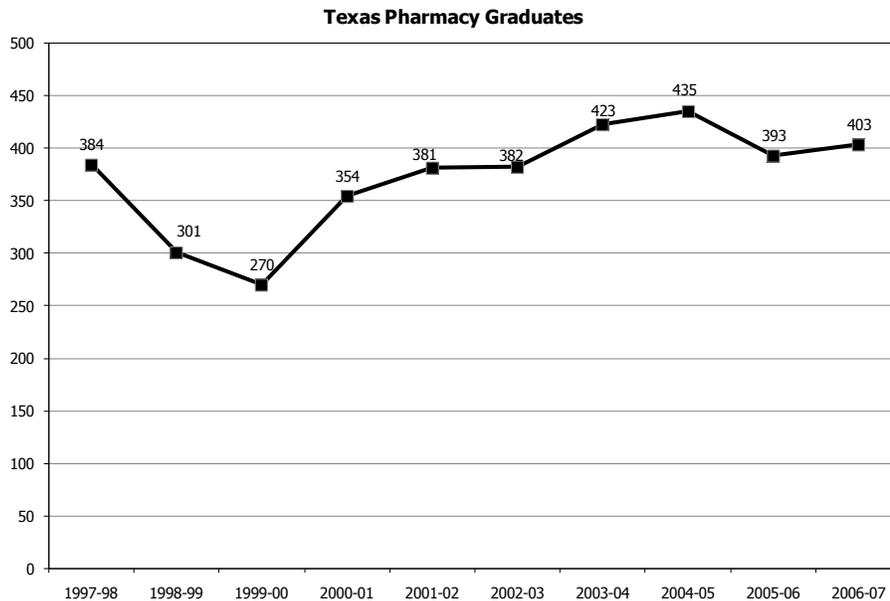
Graduates

From 1997 to 2007, the number of U.S. pharmacy graduates has increased steadily.



Source: American Association of Colleges of Pharmacy.

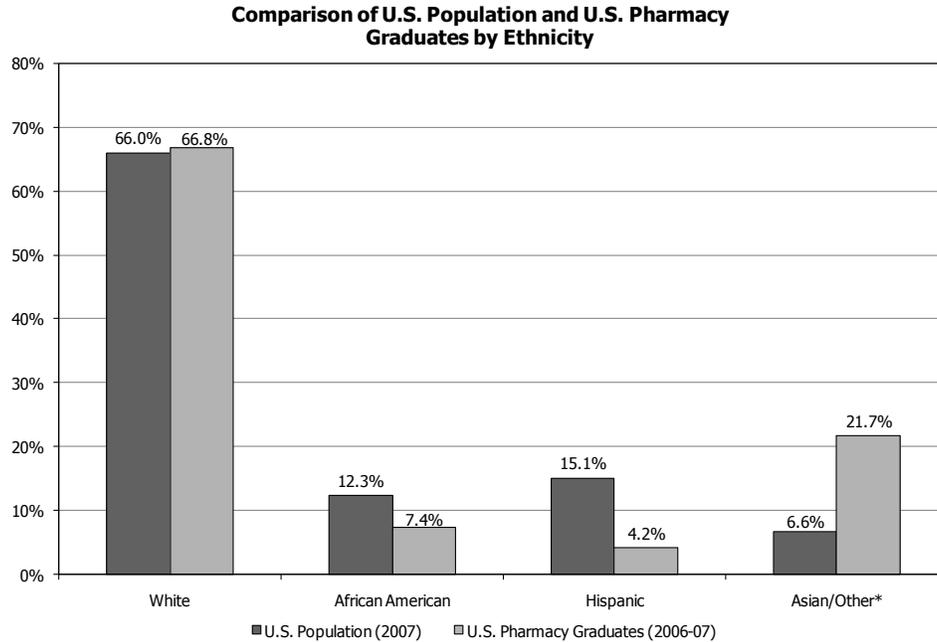
From 1999 to 2007, the number of Texas pharmacy graduates increased 49 percent. Note the dip in the chart for the academic year 2005, which coincides with the move to the Doctor of Pharmacy. There should be another notable increase in the number of graduates when the University of the Incarnate Word and Texas A&M University Health Science Center—Kingsville programs begin producing graduates in 2010.



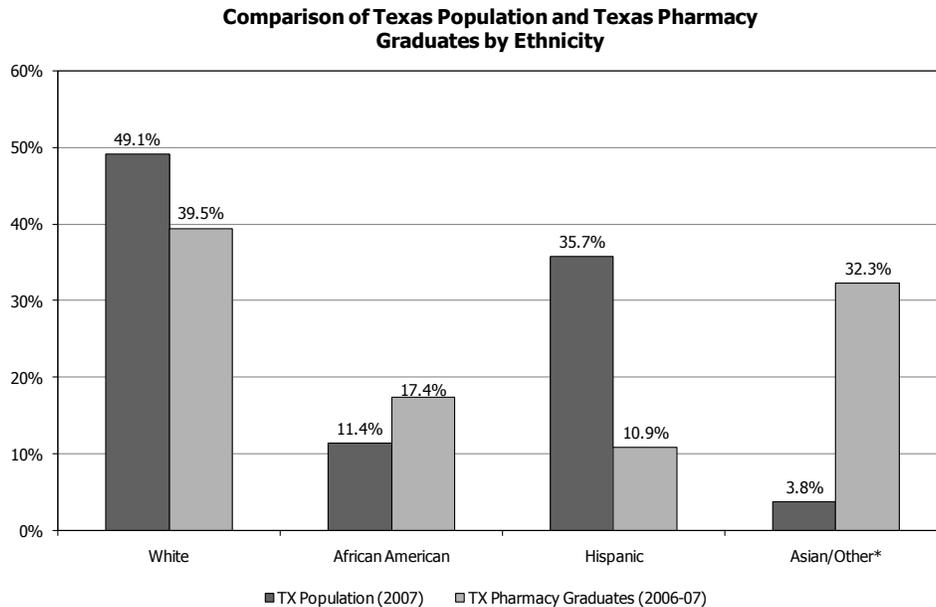
Sources: 1997-98 and 1998-99 Texas Public and Independent Pharmacy Schools; 1999-2007: Texas Higher Education Coordinating Board.

Ethnicity

The African American and Hispanic populations are proportionally under-represented among graduates from U.S. pharmacy schools.



The Hispanic population is dramatically under-represented among Texas pharmacy school graduates, while the proportion of African-Americans graduating is somewhat greater than the percentage of African-Americans in the Texas population as a whole.

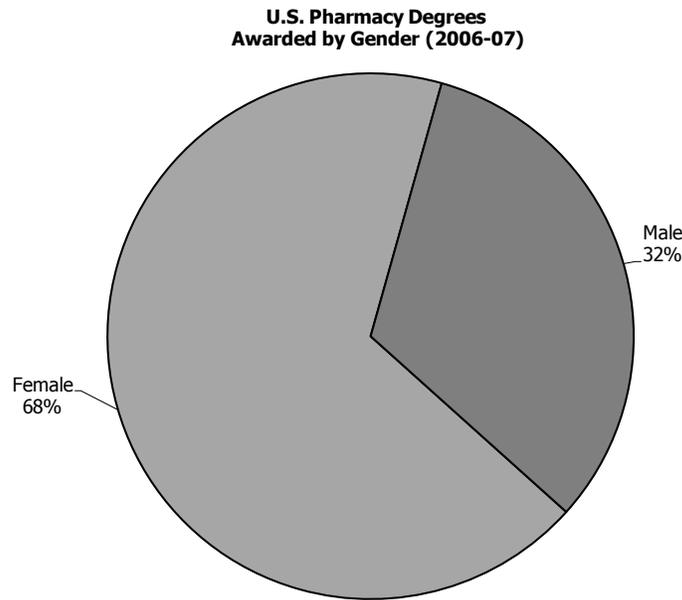


*"Other" includes Native American, International, and Unknown.

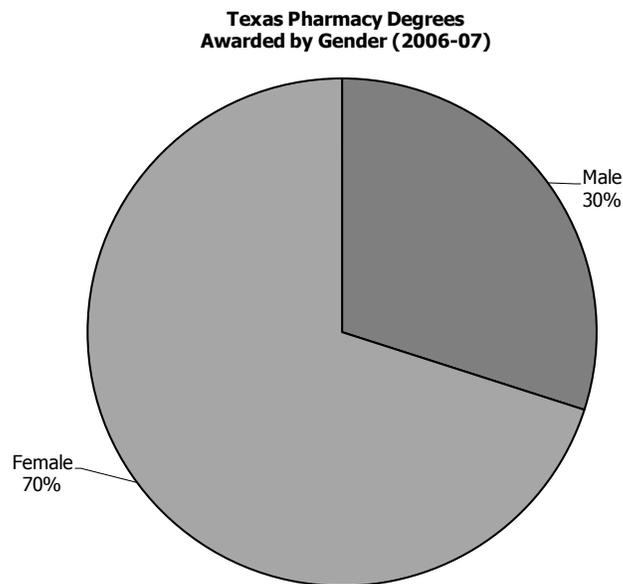
The opening of new pharmacy schools in Kingsville and San Antonio, both population centers with high concentrations of Hispanics, is expected to increase the percentage of Hispanic pharmacy graduates. This expectation is supported by the relatively high percentage (36 percent) of Hispanics currently enrolled in the Kingsville program.

Gender

The percentages of women earning pharmacy degrees in the U.S. and in Texas are substantially higher than the percentages of men earning pharmacy degrees.



Source: American Association of Colleges of Pharmacy.

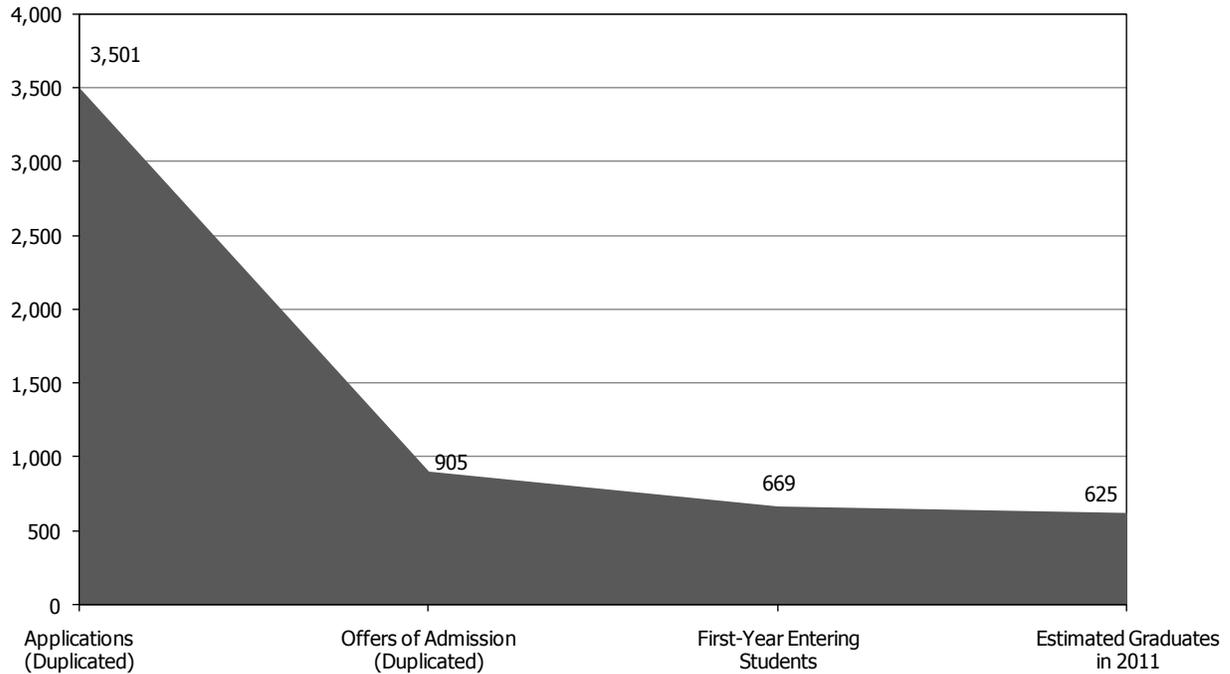


Source: American Association of Colleges of Pharmacy.

Educational Pipeline

Admission to pharmacy school is competitive. However, almost all entering students graduate. Based on a historical attrition rate of 6.5 percent, 93.4 percent of the class of 2011 is expected to graduate.

**Educational Pipeline to Obtaining a Pharm.D. in Texas
(2007-08)**



Sources: Applications, Offers of Admission, First-Year Entering Students: Texas Public and Independent Pharmacy Schools. Estimated Graduates: Texas Higher Education Coordinating Board.

Note: Degree estimate is based on an attrition rate of 6.55%, which is the attrition rate for First Professional Degrees for 2007 as determined by the American Association of Colleges of Pharmacy.

	Applications (Duplicated)	Offers of Admission (Duplicated)	First-Year Entering Students
TSU	581	144	114
TTUHSC	615	175	130
UH	723	178	128
UT-Austin	593	145	124
UIW	385	120	96
TAMUHSC	604	143	77
TOTAL	3,501	905	669

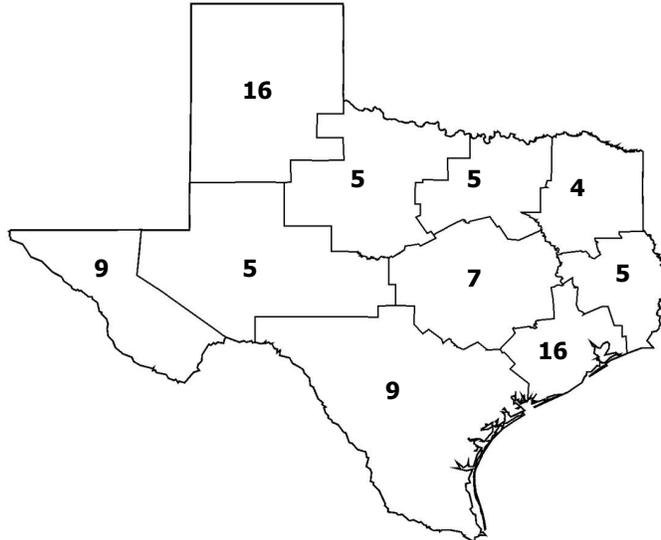
Sources: (2007-08 data) Applications, Offers of Admission, First-Year Entering Students: Texas Public and Independent Pharmacy Schools. Estimated Graduates: Texas Higher Education Coordinating Board.

Note: Texas Tech University Health Sciences Center School of Pharmacy did not begin enrolling students until 1996-97. University of the Incarnate Word and the Texas A&M University System Health Science Center - Kingsville did not begin enrolling students until 2006-07.

Current and Future Opportunities for Residents

The Gulf Coast Region and the High Plains have the highest number of students attending per 100,000 population, and the Upper East Texas region has the fewest.

Pharmacy Students per 100,000 by Region of Origin* (2007)



Source: Texas Higher Education Coordinating Board

*"Region of Origin" is derived from "County of Origin" data, which are based on the permanent address of the student as reported at the time he/she applies to the degree program.

When compared with their total population in Texas, residents of the Gulf Coast are the most over-represented in Texas pharmacy schools; residents of the Metroplex are the most under-represented. This parallels with the proximity and number of pharmacy schools in various regions: the Gulf Coast has two well-established pharmacy programs, while the Metroplex currently has only one small satellite program.

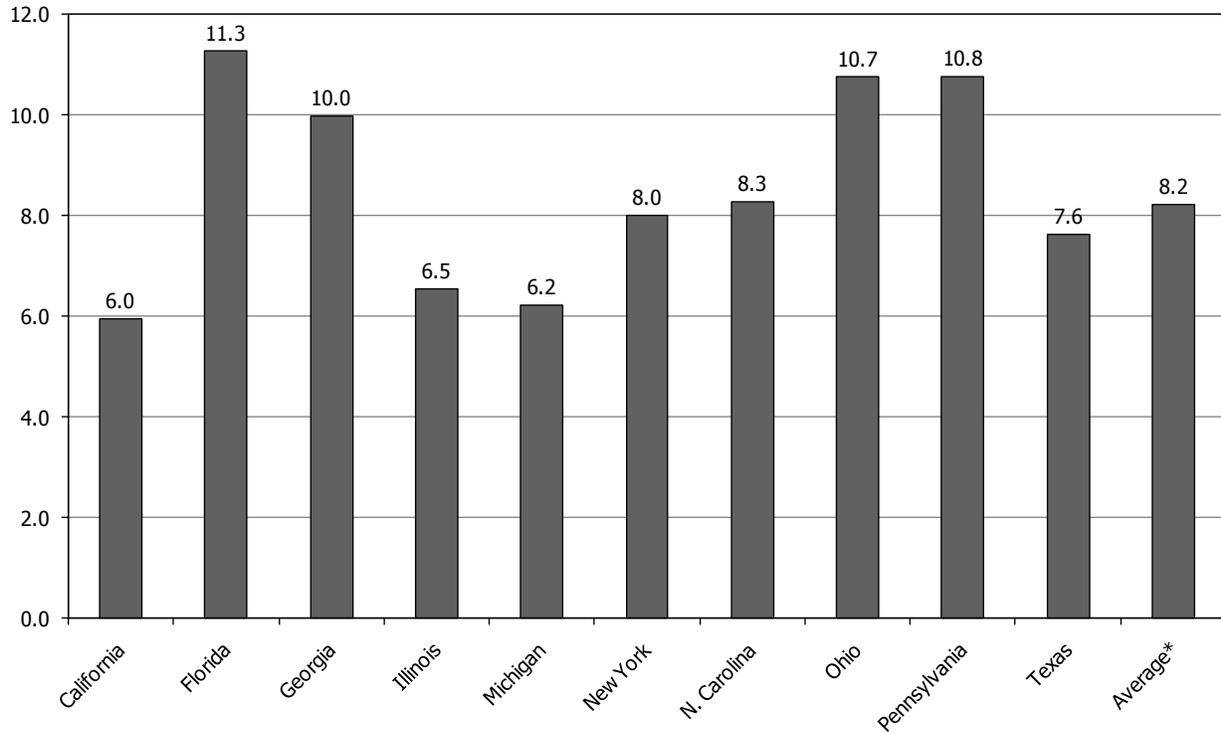
Comparison of the Regional Population and the Pharmacy School Population (2007)

Region	Total Number of Students Attending Pharmacy Schools	Percent of Students Attending Pharmacy Schools	Texas Population	Percent of Texas Population	Percent Difference
High Plains	132	6.1%	833,764	3.6%	2.5%
Northwest	28	1.3%	567,635	2.4%	-1.1%
Metroplex	319	14.8%	6,226,815	26.8%	-12.0%
Upper East Texas	45	2.1%	1,069,458	4.6%	-2.5%
Southeast Texas	41	1.9%	777,670	3.3%	-1.4%
Gulf Coast	887	41.2%	5,436,942	23.4%	17.8%
Central Texas	193	9.0%	2,621,139	11.3%	-2.3%
South Texas	410	19.0%	4,380,974	18.8%	0.2%
West Texas	27	1.3%	552,621	2.4%	-1.1%
Upper Rio Grande	72	3.3%	792,899	3.4%	-0.1%
Total	2,154	100%	23,259,917	100%	-----

Source: Texas Higher Education Coordinating Board.

The opportunity for Texas residents to attend pharmacy school is measured by calculating the ratio of the number of pharmacy school seats available in Texas and bachelor's degrees awarded in the state. In 2007, Texas had 7.6 pharmacy school seats per 1,000 baccalaureate holders. However, unlike some of the other professional programs, such as medical and law schools, pharmacy schools do not require a baccalaureate degree as a requirement for admission.

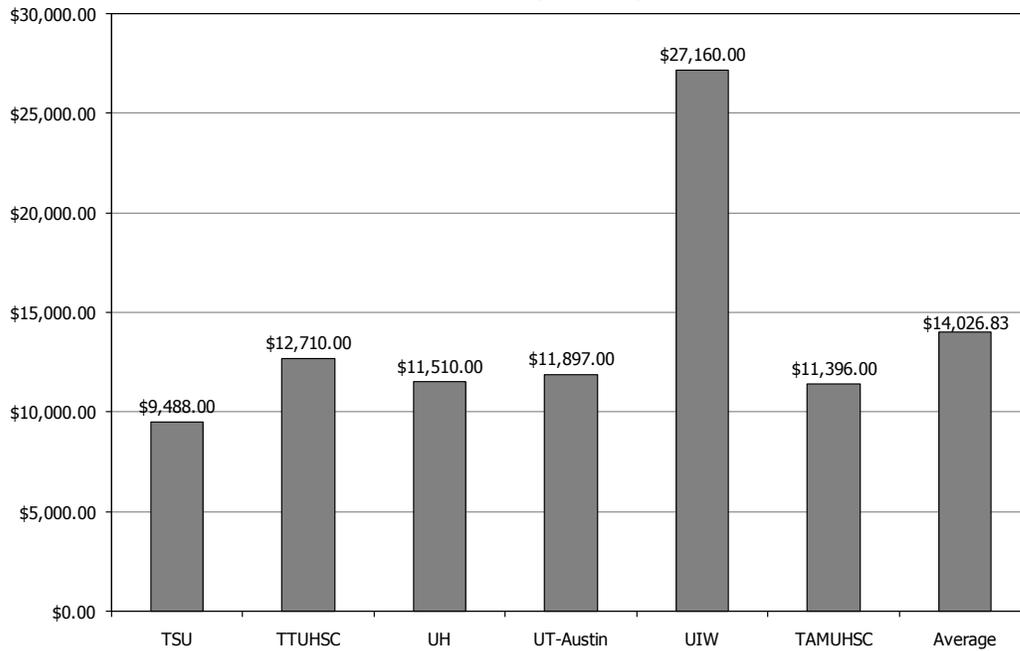
**Entering Pharmacy School Seats per 1,000
Baccalaureate Degrees**



Sources: Seats: American Association of Colleges of Pharmacy; Baccalaureate Degrees: National Center for Education Statistics.

University of the Incarnate Word's tuition and fees are substantially more than that of the other five pharmacy schools.

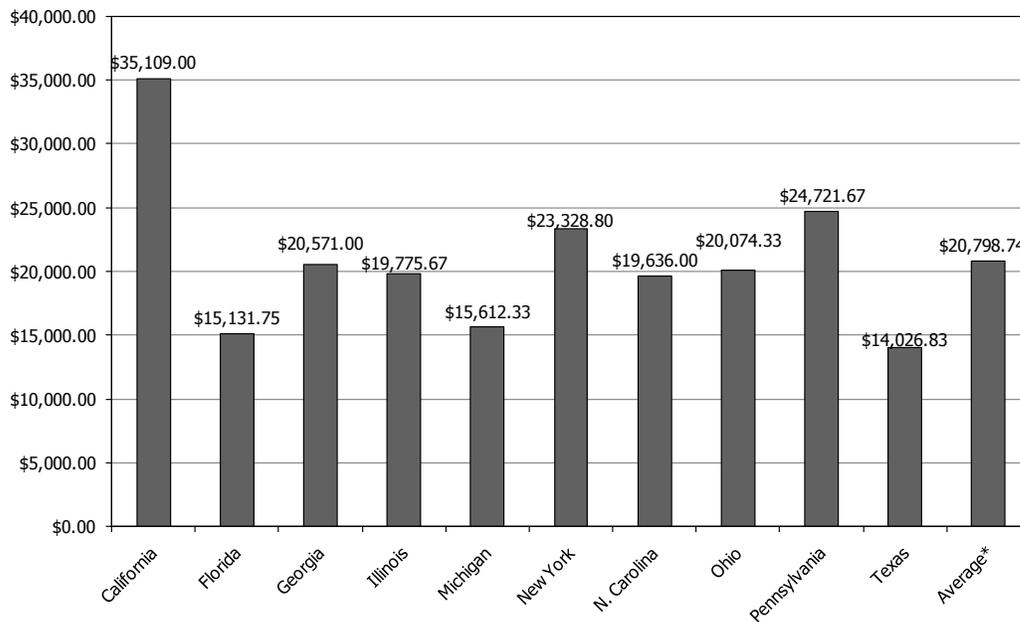
Annual Tuition and Fees at Pharmacy Schools in Texas (2007-08)



Source: American Association of Colleges of Pharmacy.

Tuition and fees at Texas pharmacy schools are below the average tuition and fees for pharmacy schools in the 10 most populous states.

10 Most Populous States and Average Pharmacy School Annual Tuition and Fees (2007-08)

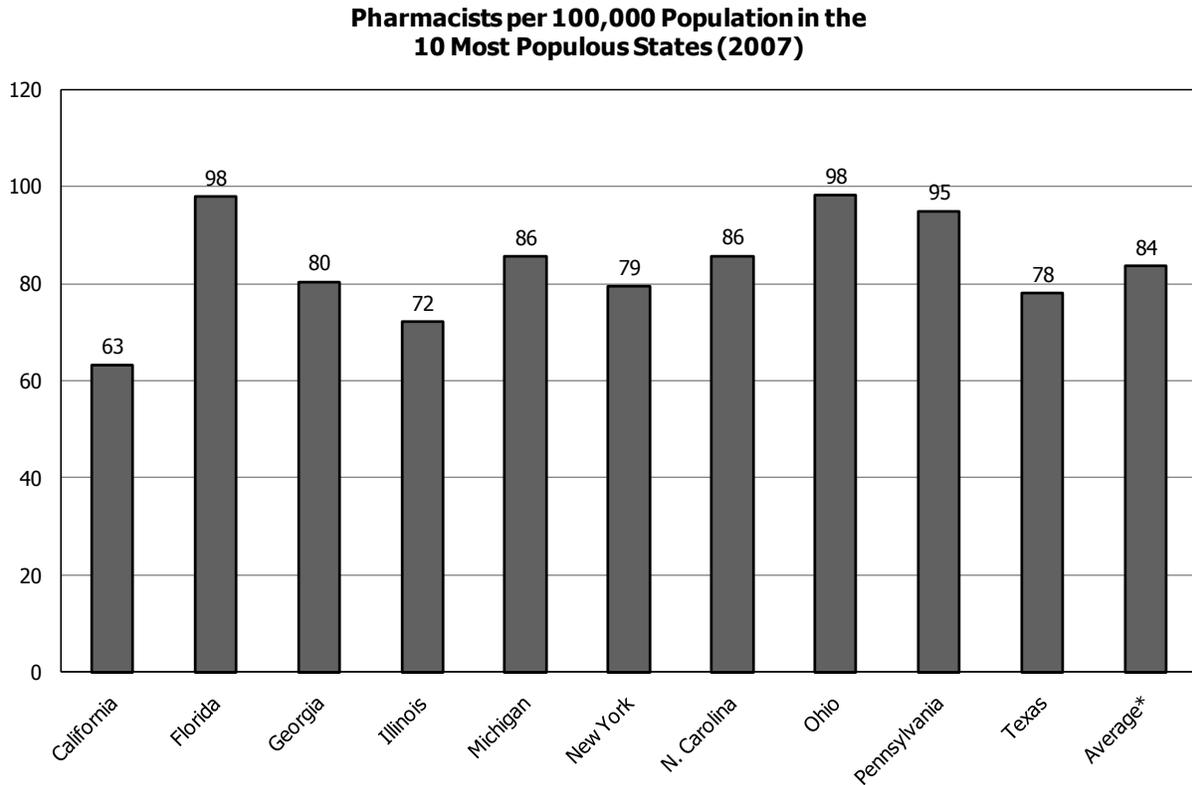


Source: American Association of Colleges of Pharmacy.

*Average is for the 10 most populous states.

Practitioner and Practice Trends

Texas has fewer pharmacists per 100,000 population (78) than the average of the 10 most populous states (84).

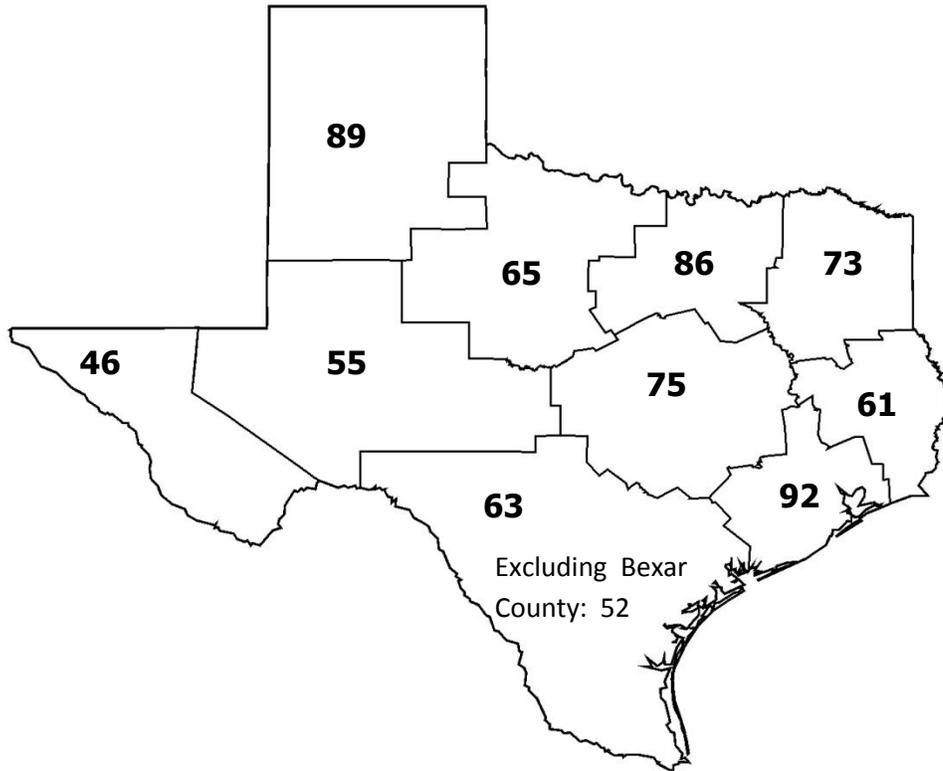


Sources: U.S. Census Bureau, Bureau of Labor Statistics, Texas State Demographer, and Texas State Board of Pharmacy.

*Average represents pharmacists per 100,000 population in the 10 most populous states.

The Gulf Coast region has the highest number of pharmacists per 100,000 in the state, and the Upper Rio Grande region has the fewest.

Pharmacists per 100,000 Population by Texas Region (2007)

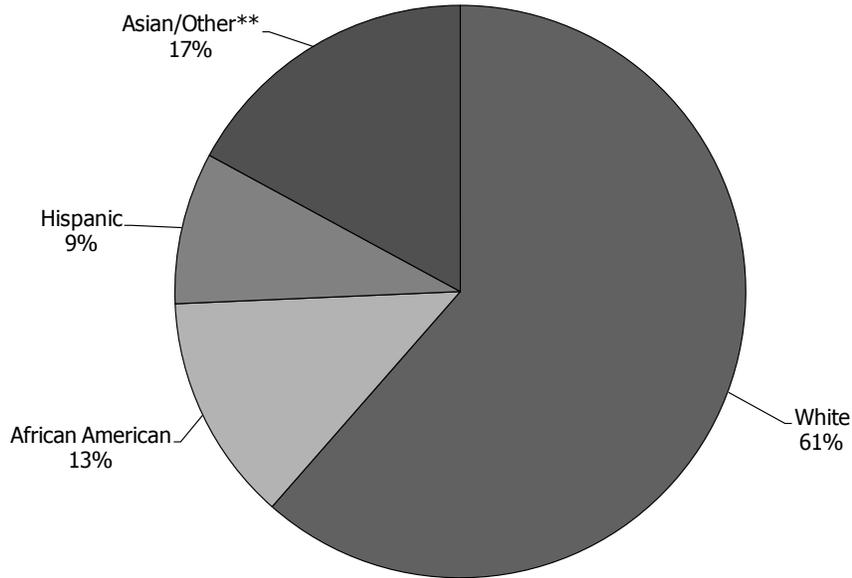


Source: Texas State Board of Pharmacy.

2007 Statewide Average: 78
10 Most Populous States Average: 84
National Average: 85

The majority of pharmacists in Texas tend to be white and male. Given current enrollment trends at Texas schools of pharmacy, however, this predominance will gradually diminish in the coming years as increasing numbers of female/non-white graduates gain their licenses and begin to enter the workforce.

Texas Pharmacists* by Ethnicity (2007)

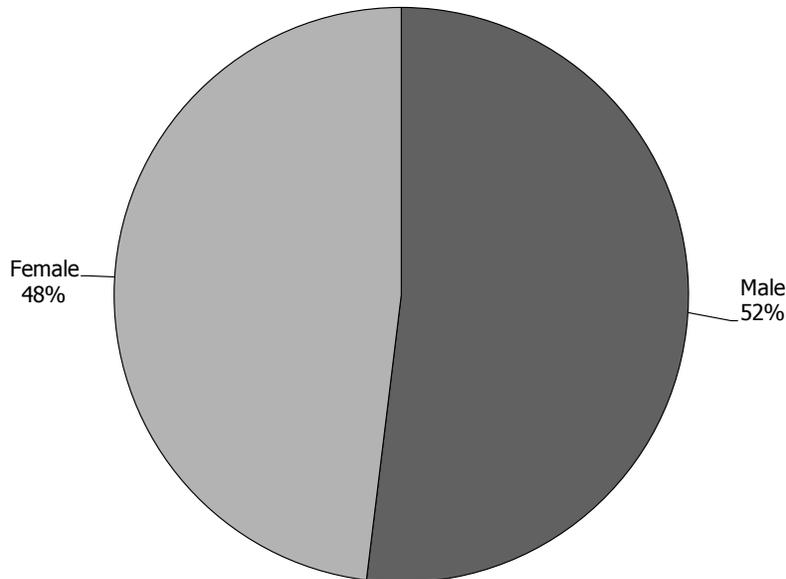


Source: Texas State Board of Pharmacy.

*Pharmacist data are based on current licenses as of March 21, 2007.

**"Other" includes Native American, International, and Unknown.

Texas Pharmacists* by Gender (2007)



Source: Texas State Board of Pharmacy.

*Pharmacist data are based on current licenses as of March 21, 2007.

Texas Population, Pharmacists, and Pharmacy Graduates 2000-2020

	2000	2001	2002	2003	2004	2005	2006	2007	2008*	2009*	2010*
Active Pharmacists	15,071	15,559	16,035	16,262	16,690	16,944	17,776	18,138	18,409	18,815	19,221
Population (millions)	20.9	21.2	21.5	21.9	22.2	22.6	23	23.3	23.6	24.0	24.3
Texas pharmacy graduates	270	354	381	382	423	435	393	403	516	551	733
Pharmacist per million population	754	734	746	743	752	750	773	778	780	784	791
TX pharmacy graduates per million population	14	17	18	17	19	19	17	17	22	23	30
New TX graduates as percent of active pharmacist	1.8%	2.3%	2.4%	2.3%	2.5%	2.6%	2.2%	2.2%	2.8%	2.9%	3.8%

	2011*	2012*	2013*	2014*	2015*	2016*	2017*	2018*	2019*	2020*
Active Pharmacists	19,628	20,034	20,440	20,846	21,252	21,658	22,064	22,470	22,877	23,283
Population (millions)	24.7	25.1	25.4	25.8	26.2	26.5	26.9	27.2	27.6	28.0
Texas pharmacy graduates	768	803	837	1,017	1,075	1,109	1,144	1,179	1,213	1,248
Pharmacist per million population	795	798	805	808	811	817	820	826	829	832
TX pharmacy graduates per million population	31	32	33	39	41	42	43	43	44	45
New TX graduates as percent of active pharmacist	3.9%	4.0%	4.1%	4.9%	5.1%	5.1%	5.2%	5.2%	5.3%	5.4%

Sources: Graduates: Texas Public and Independent Pharmacy Schools. Active Pharmacists: Texas Department of State Health Services. Population: Texas State Demographer.

*Projections: The expansion plans and methodology of the projections are available in A-2.

The chart above projects the number of active pharmacists in Texas through 2020. With three new programs producing graduates by 2014, the proportion of Texas pharmacy graduates will strongly increase in the coming decade, as will the ratio of pharmacists to the overall state population. The significant increase in the projected number of graduates from Texas pharmacy schools could easily outstrip workforce demand for pharmacists during the years 2015 to 2020, possibly changing the state from a net importer of pharmacists to a net exporter.

The Need for Additional Pharmacists in Texas

In March 2007, the Texas State Board of Pharmacy (TSBP) had 23,939 pharmacists on record, 22,627 of which were considered active and practicing in Texas. About one-half of the state’s pharmacists worked in community pharmacies, either independently owned or part of a drug store chain, grocery store, department store, or mass merchandiser. About 20 percent worked in hospitals, and about 30 percent worked in clinics, mail-order pharmacies, pharmaceutical wholesalers, education, government, and other healthcare facilities and enterprises.

In 2007, TSBP licensed 1024 new pharmacists from domestic schools of pharmacy, and 40 percent of those (404) were Texas graduates. In addition, TSBP licensed 110 new pharmacists

from foreign schools of pharmacy. The state continues to import most of its pharmacists, as it did in 2004 when the previous version of this report was issued.

According to the TSBP, the number of licensed pharmacies in Texas has increased at an average rate of 122 per year since Fiscal Year 2004, and many of these new licenses are due to the expansion of large corporate pharmacy chains, some of which provide full pharmacy services 24 hours a day. The TSBP notes that "while the actual number of new pharmacy licenses does not appear to be unusually large, the drain on available pharmacists and pharmacy technicians is considerable."

Texas Workforce Commission

The Texas Workforce Commission (TWC) statewide projections for pharmacist job openings indicate there will be 805 openings annually through 2014, 300 of which are due to the need for replacements and 505 are due to growth in demand. That compares with a current annual production in Texas of less than 500 Pharm.D. graduates per year. By 2014 the production of pharmacists by Texas pharmacy schools is expected to equal or exceed the number of annual job openings for pharmacists.

Pharmacy Manpower Project, Inc.

Employers in many parts of the state continue to report difficulty in hiring new pharmacists. Evidence of that difficulty is based primarily on anecdotal information. However, the Aggregate Demand Index (ADI), a project supported by the Pharmacy Manpower Project, Inc. (an entity comprised of 15 national pharmacy organizations, including the American Pharmaceutical Association and the National Association of Chain Drug Stores) identifies the West South Central Region (Arkansas, Louisiana, Oklahoma, and Texas) as having a demand index rating of 4.16 (out of a possible 5). This puts Texas in the ADI category of "moderate demand: some difficulty filling open positions." This demand figure is based on monthly survey responses from a small group of key employers in each state. While surveying small populations may not be the most valid method of measuring demand, other organizations representing drug store chains also report similar shortages.

Special Issues

Technology's Impact on Pharmacy Practice and Staffing Levels

A variety of new, computer-based technologies are being developed to assist pharmacists in their work. While some of them are still in the experimental stages, a number of innovations are available now and are being implemented at hospitals, medical research centers, and other "early adopter" locations. These new developments include centralized prescription processing and dispensing, robotic dispensing systems, and barcode tracking systems. Some of these new systems are not yet widely utilized due to cost barriers, but as the technologies improve with time and testing, costs are likely to drop and more companies and entrepreneurs are likely to adopt them.

The Texas State Board of Pharmacy predicts that "the use of new technologies will continue to increase in the practice of pharmacy over the next five years...it is clear that technology has the

capacity to greatly enhance the provision of pharmaceutical services.¹ What is not yet clear is the direct impact that these new technologies will have on the need for pharmacists and on staffing levels at various facilities where pharmacists are employed. Studies conducted on the impact of new technologies on pharmacy practice usually show a decrease in prescription-error rates,² but not a change in the amount of time that pharmacists spend interacting with patients. A vision statement published in the *American Journal of Health-System Pharmacists* stated that “shortages of pharmacists and pharmacy technicians qualified for work in hospitals and health systems are expected to be chronic. Technologies will not eliminate these shortages. The use of technology will remain incomplete and nonstandardized...for some time.” Given that experts in the field of pharmacy cannot estimate the impact of new technologies on staffing levels, this study makes no assumptions or projections regarding this topic and its effect on the need for pharmacists in Texas. However, within the next decade it seems likely that automation will play a more important role in pharmacy practice, and the topic should be reexamined in future studies of the need for pharmacy schools and practitioners.

Pharmacy Technicians

According to the Pharmacy Technician Certification Board (PTCB), the organization that produces the national certification exam, a pharmacy technician is “an individual working in a pharmacy who, under the supervision of a licensed pharmacist, assists in pharmacy activities that do not require the professional judgment of a pharmacist.” As of FY 2007 Texas had 32,106 active registered pharmacy technicians, more than any other state. Pharmacy technicians perform a wide variety of tasks, including handling prescription information, preparing and packaging drug orders, packaging and labeling medications, compounding preparations, and operating automated drug dispensing systems.

Studies on time and workload distribution in pharmacies have found that the adoption of the automated systems discussed in the previous section of this report usually results in a shift of staffing from pharmacists to pharmacy technicians.³ Thus, having a staff of certified pharmacy technicians enables a pharmacist to get much more work done than if they worked alone or with untrained aides. Currently, the TSBP rules require a pharmacist-to-technician ratio of 1 to 3, provided that at least one of the technicians is certified, an increase from the previous standard of 1 to 2. According to the TSBP, this change was promulgated “as a means to alleviate the demands on dispensing pharmacists.” Therefore, it is reasonable to assume that to a limited degree, pharmacy technician staffing levels are an important part of the picture in understanding overall staffing levels at pharmacies. The latest TSBP Strategic Plan observes that “there is ongoing discussion within the profession of pharmacy about allowing technicians with more education and training to perform higher-level duties.” This could lessen the effect of the pharmacist shortage, but until such changes in rules are made, this study does not assume that pharmacy technician staffing levels will directly affect the need for pharmacists.

¹ Texas State Board of Pharmacy: “Policy Issue #2—Increased Use of Technology in the Practice of Pharmacy.” Strategic Plan 2009-2013, p.20.

² Oswald and Caldwell: “Dispensing Error Rate after Implementation of an Automated Pharmacy Carousel System.” *American Journal of Health-System Pharmacists*, Vol 64, July 1, 2007.

³ Lin, Huang, Panches, and Chen: “Effect of a Robotic Prescription-filling System on Pharmacy Staff Activities and Prescription-filling Time.” *American Journal of Health-System Pharmacists*, Vol 64, Sept. 1, 2007.

Summary of Key Findings, Conclusions, and Recommendations

Key Findings

Pharmacy Education

- Texas has six schools of pharmacy: The University of Texas at Austin, University of Houston, Texas Southern University, Texas Tech University Health Sciences Center—Amarillo, Texas A&M University Health Science Center at Kingsville, and University of the Incarnate Word. In addition to these schools, there are also satellite programs operated by The University of Texas at Austin in Edinburg, San Antonio, and El Paso, as well as satellite programs operated by Texas Tech University Health Sciences Center in Abilene, Lubbock, and Dallas.
- Texas has more pharmacy schools than the majority of the ten most populous states, with the exception of California, which currently has seven pharmacy schools.
- Pharmacy is a high-demand program. From 1998 to 2008, applications to Texas pharmacy schools have increased 173 percent, reflecting the trend at the national level.
- From 1998 to 2008, first-year entering enrollment in Texas pharmacy schools has increased 63 percent, due to both expansion of existing programs and the creation of the two new programs at University of the Incarnate Word and Texas A&M Health Science Center in Kingsville.
- The entering class of Texas' pharmacy schools is smaller than the national average and six of the ten most populous states.
- From 1999 to 2007, the number of Texas pharmacy graduates increased 49 percent.
- The Hispanic population is dramatically under-represented among Texas pharmacy school graduates, while the proportion of African-Americans graduating is somewhat greater than their share of the Texas population as a whole.
- The percentages of women earning pharmacy degrees in the U.S. and in Texas are substantially higher than the percentages of men earning pharmacy degrees.
- When compared with their total population in Texas, residents of the Gulf Coast are the most over-represented in Texas pharmacy schools; residents of the Metroplex are the most under-represented.

Pharmacy Practice

- Texas has fewer pharmacists per 100,000 population (78) than the average of the 10 most populous states (84).

- Pharmacists are not evenly distributed throughout the various regions of the state. The Gulf Coast, High Plains, and Metroplex regions have the most pharmacists per 100,000 population, while the Upper Rio Grande, West Texas, and South Texas (excluding Bexar county) regions have the least.
- In March 2007, the Texas State Board of Pharmacy (TSBP) had 23,939 pharmacists on record, 22,627 of which were considered active and practicing in Texas. About one-half of the state's pharmacists worked in community pharmacies. About 20 percent work in hospitals, and about 30 percent work in clinics, mail-order pharmacies, pharmaceutical wholesalers, education, government, and other healthcare facilities.
- In 2007, TSBP licensed 1,024 new pharmacists from domestic schools of pharmacy, and 40 percent of those (404) were Texas graduates. In addition, TSBP also licensed 110 new pharmacists from foreign schools of pharmacy. These supply figures are contrasted by the Texas Workforce Commission (TWC) statewide projections for pharmacist job openings, which indicate there will be 805 openings annually through 2014, 300 of which will be due to the need for replacements and 505 will be due to growth in demand. Because of this imbalance between the 805 pharmacists needed annually to fill openings and the 404 produced by Texas, the state continues to import most of its pharmacists.

Conclusions

- There are fewer pharmacists in the Upper Rio Grande, West Texas, South Texas, and Southeast Texas regions of the state.
- The current decline in the number of pharmacy graduates produced by Texas schools is primarily the result of the decision by pharmacy programs nationwide to change from a five-year curriculum to a six-year Pharm.D. curriculum in the late 1990s.
- The growth of the Texas population, the significant increase in the number of medications prescribed and dispensed to patients in Texas and the United States, and the continued expansion of retail chain pharmacy outlets are factors that contribute significantly to the demand for pharmacists.
- Texas currently meets its workforce needs for pharmacists through a combination of domestic production (approximately 404 per year) and importation from other states and nations (about 730 per year). In 2007, Texas licensed 329 more pharmacists than were necessary to satisfy the workforce demand of 805 job openings.
- The number of students in Texas pharmacy schools is increasing as two new schools began enrolling students in 2006. A third new school at the University of Dallas will begin enrolling students in 2010 and will increase access to pharmacy education for residents of the Metroplex.
- The number of Pharm.D. graduates will increase markedly when new pharmacy schools in Kingsville and San Antonio begin producing graduates in 2010. The state's demand for additional pharmacists and the supply of new pharmacists from Texas pharmacy schools are

expected to be balanced by 2014. If state workforce demand for pharmacists does not increase proportionally to match the rise in the number of pharmacy graduates produced, it is possible that the state could shift from a net importer of pharmacists to a net exporter in the years following 2014.

Recommendations

- The Coordinating Board does not recommend a new pharmacy school. By 2014, Texas will be producing enough pharmacists from its own pharmacy schools to meet or exceed state workforce needs without importing pharmacists from other states.
- As a remedy for those regions of the state where the ratio of pharmacists to residents is significantly lower than the state average, the Legislature could fund a pharmacist residency program to help bring practicing pharmacists to underserved communities in Texas. An example of an existing but unfunded program, the Roberta High Memorial Pharmacy Residency Program, is given in Appendix A-3.

Data Sources

Data and information included in this report came from the following sources:

American Association of Colleges of Pharmacy
National Center for Education Statistics
Pharmacy Manpower Project, Inc.
Texas A&M University Health Sciences Center – Kingsville
Texas Department of State Health Services
Texas Higher Education Coordinating Board
Texas Southern University
Texas State Board of Pharmacy
Texas State Demographer
Texas Tech University Health Sciences Center
Texas Workforce Commission
The University of Texas at Austin
U.S. Bureau of Labor Statistics
U.S. Census Bureau
University of Houston
University of the Incarnate Word

A-1: Methodology for Projecting the Need Studies

Approved by Board April 19, 2002

Texas Higher Education Coordinating Board April 2002

I. Introduction

A. Projected Need/Demand for Services

The physical, economic, and social well being of Texas requires sufficient numbers of physicians, attorneys, dentists, pharmacists, veterinarians, and other professionals to meet the needs of our diverse, rapidly increasing population. In simplest terms, to meet growing needs we can produce those professionals in our own schools, or we can "import" them after they have been educated elsewhere. In practice, we do both. A mobile society and a healthy Texas economy will ensure that we continue to attract professionals educated elsewhere. And we will, of course, continue to produce our own.

Having enough professionals in the state to provide needed services is only one aspect of a complex issue. We must also have an appropriate balance of generalists versus specialists and an appropriate balance of specialists themselves (among physicians, for example, appropriate numbers of cardiologists, orthopedic surgeons, oncologists, etc.). In addition to having the appropriate numbers and types of providers, we also need to have them geographically distributed in such a way as to ensure everyone fair access to needed services. Achieving that broad distribution of professionals is one of our greatest challenges.

B. Projected Need/Demand for Opportunities

Points mentioned above are essentially supply and distribution issues, obviously important and of great concern. But there is another important issue. Providing the people of Texas access to professional education – opportunities to become doctors, lawyers, dentists – is a responsibility the state has long assumed, and that responsibility must be carried out with equity and fairness. A growing population requires periodic re-examination on a statewide and regional basis of how the state will do that.

These two broad issues – supplying professionals and providing opportunities for professional education – greatly influence one another and are connected to the goals of closing gaps in participation, success, and excellence. Each stems from the large population growth projected for Texas. Addressing them will continue to require the attention of the state's people and its institutions, agencies, professional groups, and Legislature. To provide a framework for that continuing attention based on the latest available demographic and other data, the Board and its staff have

developed the following methodology for projecting the need for new professional schools, along with directives to staff for its application.

II. The Board's Role

Although legislators will continue to introduce initiatives calling for the creation of new professional schools, and the Legislature, of course, has the authority to approve or disapprove those initiatives, general statutory directives indicate that the Legislature relies on the Coordinating Board to provide guidance, oversight, and advice for the provision of a statewide system of high-quality higher education. Professional schools are an important part of such a system, and the Board, therefore, has an obligation to periodically provide the Legislature an objective, impartial analysis of the need for new professional schools to inform their deliberations and decisions.

III. Two Key Points – A Framework for an Analysis of Need

The methodology presented here principally projects the need for professional education on the basis of only two factors: the need for services and the need for opportunity. *It does not presume that those are the only factors on which a decision to create a new professional school should be based.* Before such a decision is made, a range of other factors should be considered, including, but not limited to, the costs and benefits of meeting any identified needs (including economic development benefits to the region in which the school would be located); the examination of various approaches to meeting those needs; the effects the creation of a new professional school would have on existing schools; the priority needs of the state at the time a decision is made; and the state's ability to create and maintain a new school while meeting other needs (for higher education and/or other areas of state responsibility). This methodology does not include consideration of those factors, but, to the extent possible, the staff shall provide the Board, and others, information on those points, as well.

The methodology builds a framework for analysis through two questions:

A. Is there an increasing need/demand for services?

Analysis shall focus on statewide and regional trends in population, practitioners, and graduates of professional schools.

a. Population growth

At least once every five years, the staff is directed to report to the Board on the state's population and demographic changes (statewide and regional, current and projected). Comparisons to national averages and those of the 10 most populous states shall be provided. The staff shall use the latest available data and projections.

b. Supply of professional services

At least once every five years, the staff is directed to bring to the Board an analysis of the distribution of doctors, dentists, lawyers, pharmacists, veterinarians, and other important professional service providers. Analysis shall include examining practitioner/population ratios on a statewide and regional basis and comparisons to national averages and those of the 10 most populous states. When available, comparison to recommended norms by professional associations (e.g. American Medical Association) shall also be made. The staff shall use the latest available data and projections and engage practicing professionals in the fields addressed.

B. Is there increasing demand from people who want to be “professionals?”

Analysis shall examine access to educational opportunities, from statewide and regional perspectives.

a. Opportunity – people aspire to the professions

At least once every five years, the staff is directed to bring to the Board an analysis of the patterns of student application, offers of admission, enrollments, retention, and graduation for the state’s schools of medicine, dentistry, pharmacy, veterinary medicine, law, and other important professional schools (both public and independent). Analysis of trends in the number of baccalaureate graduates (the pool from which professional school students come) shall also be provided, both statewide and by region. Staff shall use the latest available data and projections and provide comparisons to national averages and those of the 10 most populous states.

b. Geographic access

The analysis mentioned immediately above shall include an examination of the geographic origin of students applying to and enrolling in the state’s professional schools.

IV. Developing Board Policy

At least once every five years, the Board shall consider the following *General Policy Questions* as a basis for general policy recommendations about the development of professional schools.

- A. As Texas' population increases, should the state try to ensure proportional increases in doctors, lawyers, dentists, pharmacists, veterinarians, and other professionals?
- B. If we increase the numbers of professionals, should we do that by:
 - a. Producing more ourselves?
 - b. Importing them from outside Texas?
 - c. Both?
- C. If Texas baccalaureate graduates increase, should available spaces in Texas professional schools increase proportionally?
- D. If available spaces are increased, should we do that by:
 - a. Increasing the size of existing schools?
 - b. Creating new schools?
 - c. Both?

V. Key Questions and Answers

- A. Staff shall analyze regional and statewide population projections and the consequent projected increases in 1) demand for services, and 2) demand for opportunities for Texas students to attend professional schools. If the analysis indicates that additional capacity is needed, the staff shall recommend answers to the following questions:
 - a. On the basis of projected population growth, what type of additional professional school capacity (medical, law, etc.) is needed, and by when?
 - b. On the basis of projected population growth, when should the state begin planning for the creation of a new school or an increase in size for an existing school?
 - c. On the basis of projected population growth, where should a new school be located, or which existing school should increase its capacity?
- B. Staff recommendations shall be guided by Board views developed through Section IV (above).

- C. Following Board consideration, the Board will provide its recommendations to the Legislature and to boards of regents, along with its acknowledgement that any decision to create a new professional school should be based not only on needs identified through an analysis of projected demand for services and demand for opportunity, but on consideration of the factors mentioned in Section III above (costs and benefits; examination of various approaches; effects on existing schools; and the state's priorities, needs, and financial capabilities at the time a decision is made).

A-2: Projections Methodology and Texas Pharmacy School Expansion Plans

Projection rates were obtained by calculating the step value, or the difference between the first and next value in a series, and then calculating a trend line. One year increments were used to simplify projections and provide consistency with prior *Projecting the Needs* reports. Microsoft Excel was used to calculate a trend line (slope) using a basic regression equation, $y=mx+b$.

Expansion Plans for Texas Pharmacy Schools:

University of Dallas (Starting 2010)	75
Attrition Rate	6.55%
Total Students minus attrition (Grads 2014)	70
Texas Tech University Health Sciences Center (2010)	40
UT-Austin at El Paso Expansion 2010	40
Total Expansion	80
Attrition Rate	6.55%
Total Students minus attrition (Grads 2014)	75
Texas A&M University Health Sciences Center - Kingsville (2015)	25
Attrition Rate	6.55%
Total students minus attrition (Grads 2015)	23

A-3: Roberta High Memorial Pharmacy Residency Program

Sec. 61.921. DEFINITIONS. In this subchapter:

- (1) "College of pharmacy" means a college, school, or university of pharmacy in this state that has an accredited pharmacy degree program approved by the Texas State Board of Pharmacy as provided by Subtitle J, Title 3, Occupations Code.
- (2) "Community pharmacy" means a pharmacy that holds a Class A pharmacy license or a community pharmacy license as those terms are defined by Section 551.003, Occupations Code.
- (3) "Compensation" includes a stipend, a payment for services rendered, and a fringe benefit.
- (4) "Institutional pharmacy" means a pharmacy that holds a Class C pharmacy license or an institutional pharmacy license as those terms are defined by Section 551.003, Occupations Code.
- (5) "Nuclear pharmacy" means a pharmacy that holds a Class B pharmacy license or a nuclear pharmacy license as those terms are defined by Section 551.003, Occupations Code.
- (6) "Pharmacy residency program" means a postgraduate residency program approved by the Texas State Board of Pharmacy as provided by Subtitle J, Title 3, Occupations Code.
- (7) "Primary teaching pharmacy" means a pharmacy that holds a permit issued by the Texas State Board of Pharmacy at which a college of pharmacy educates and trains both resident pharmacists and undergraduate pharmacy students, pursuant to a resident pharmacist affiliation agreement between the pharmacy and the college.
- (8) "Residency preceptor" means a licensed pharmacist who:
 - (A) is affiliated with a college of pharmacy;
 - (B) meets the qualifications established by the board to teach resident pharmacists; and
 - (C) has been designated as a preceptor by the Texas State Board of Pharmacy.
- (9) "Resident pharmacist" means a person who:
 - (A) has received a professional practice degree from an accredited pharmacy degree program approved by the Texas State Board of Pharmacy as provided by Subtitle J, Title 3, Occupations Code;
 - (B) is licensed to practice pharmacy by the Texas State Board of Pharmacy; and
 - (C) is appointed to a resident pharmacist position by a college of pharmacy.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Amended by Acts 2001, 77th Leg., ch. 1420, Sec. 14.739, eff. Sept. 1, 2001. Renumbered from Education Code Sec. 61.851 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

EDUCATION CODE

TITLE 3. HIGHER EDUCATION

SUBTITLE B. STATE COORDINATION OF HIGHER EDUCATION

CHAPTER 61. TEXAS HIGHER EDUCATION COORDINATING BOARD

SUBCHAPTER W. ROBERTA HIGH MEMORIAL PHARMACY RESIDENCY PROGRAM

Sec. 61.922. COMPENSATION OF RESIDENT PHARMACIST. A college of pharmacy shall compensate each resident pharmacist being educated, trained, developed, and prepared for a career in pharmacy while the person is undergoing education, training, development, and preparation at or under the direction and supervision of the college.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.852 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.923. NUMBER OF AVAILABLE RESIDENT PHARMACIST POSITIONS. (a) In each year, the total number of compensated first-year resident pharmacists may not exceed the total number of persons in the preceding year's combined graduating classes of all colleges of pharmacy.

(b) At least 50 percent of the combined total number of resident pharmacist positions must be in community pharmacy practice.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.853 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.924. PREFERENCE TO APPLICANT FOR PRACTICE IN MEDICALLY UNDERSERVED AREAS. Each college of pharmacy shall give priority consideration to an applicant for a resident pharmacist position who demonstrates a willingness to practice pharmacy in medically underserved areas of this state, as defined by the Texas Department of Health.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.854 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.925. DURATION OF PHARMACIST RESIDENCY. A person may not hold a resident pharmacist position for more than two years, or for a period longer than the period usually required for a resident pharmacist to complete a graduate pharmacy education program approved by the Texas State Board of Pharmacy for the specialty in which the resident pharmacist seeks certification.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from

Education Code Sec. 61.855 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.926. PROGRAM FUNDING. (a) The legislature may appropriate revenue to the board to fund the pharmacy residency program.

(b) Funds appropriated and distributed under this subchapter may not be transferred or diverted from the pharmacy residency program.

(c) From program funds, the comptroller shall issue a warrant to a college of pharmacy or other entity designated by the board to receive funds under this subchapter.

(d) After August 31, 2001, general revenue funds may not be used to fund pharmacy residencies other than in the manner prescribed by this subchapter.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.856 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.927. STATE SUPPORT OF RESIDENT PHARMACIST COMPENSATION. (a) To supplement the compensation of resident pharmacists, the board may provide grants to colleges of pharmacy in amounts not to exceed \$10,000 in a fiscal year for each resident pharmacist position approved by the board and filled by the applicable college for that year.

(b) A college of pharmacy may receive funds under this section for a resident pharmacist position in any year only if the college and the primary teaching pharmacy each contribute at least \$10,000 toward the compensation of the resident pharmacist for that year.

(c) If a resident pharmacist does not perform in that capacity during an entire fiscal year, the college of pharmacy shall reduce proportionately the compensation paid to the person to cover only the part of the fiscal year during which the person performed the person's duties as a resident pharmacist.

(d) If a person is compensated by an agency or institution of the federal government or by any other agency or institution, other than a primary teaching pharmacy, for the person's performance of the person's duties as a resident pharmacist, the college of pharmacy shall reduce the compensation that would otherwise be paid to the person by an amount equal to the amount of the compensation received by the person from the agency or institution.

(e) If the college receives from an agency or institution of the federal government or from any other agency or institution, other than a primary teaching pharmacy, compensation for a person's performance of the person's duties as a resident pharmacist to or for the benefit of the agency or institution, the compensation that may be paid to the resident pharmacist from funds awarded for that position under this section is reduced by the amount received from the other agency or institution.

(f) To qualify for supplemental compensation provided under this section, a resident pharmacist must enroll for at least nine semester credit hours each fall and spring semester and for at least six semester credit hours each summer term in graduate pharmacy education experiential courses. The resident pharmacist is exempt from fees required for enrollment, other than tuition.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.857 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.928. PLACEMENT OF RESIDENT PHARMACISTS IF FULL FUNDING NOT AVAILABLE. (a) If a college of pharmacy determines that it does not have sufficient available funds from legislative appropriations and other sources to support adequately the full number of resident pharmacists that the college considers necessary to carry out the purposes of the college, the college may assign and place for education and training a resident pharmacist who cannot be supported adequately with available funds in a primary teaching pharmacy with which the college has a resident pharmacist affiliation agreement.

(b) During the period for which a resident pharmacist is assigned and placed in a primary teaching pharmacy under this section, the resident pharmacist shall receive compensation primarily from the pharmacy.

(c) A resident pharmacist affiliation agreement between the college of pharmacy and the primary teaching pharmacy must describe the exact method and manner of compensating the resident pharmacist.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.858 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.929. ADDITIONAL FUNDING TO SUPPORT GRADUATE PHARMACY EDUCATION PROGRAMS. (a) The board shall administer a program to support graduate pharmacy education programs in this state consistent with the needs of this state for graduate pharmacy education and the training of resident pharmacists in appropriate fields and specialties.

(b) From funds available to the program, the board may make grants or formula distributions to a college of pharmacy or other entity to:

(1) support appropriate graduate pharmacy education programs or activities for which adequate funds are not otherwise available; or

(2) foster new or expanded graduate pharmacy education programs or activities that the board determines will address the state's needs for graduate pharmacy education.

(c) To be eligible for a grant or distribution under this section, a college of pharmacy or other entity must incur the costs of faculty education or supervision in a graduate pharmacy education program or the costs of compensating a resident pharmacist in the program. The board shall take those incurred costs into account in making grants or formula distributions under this section.

(d) The program is funded by appropriations, by gifts, grants, and donations made to support the program, and by any other funds the board obtains for the program, including federal funds.

(e) An amount granted or distributed to a college of pharmacy or other entity under the program may be used only to cover expenses of training resident pharmacists participating in the particular program or activity for which the grant or distribution is made in accordance with any conditions imposed by the board. The amount may not be spent for the general support of the college or other entity.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.859 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.930. ADVISORY COMMITTEE. (a) The board shall establish an advisory committee to advise the board regarding the development and administration of the pharmacy residency program, including evaluating requests for grants and establishing formulas for distribution of funds under the program.

(b) The advisory committee consists of:

(1) the executive director of the Texas State Board of Pharmacy or the executive director's designee;

(2) a physician serving as a program director of a health-related residency program appointed by the Texas State Board of Medical Examiners;

(3) the dean of each college of pharmacy, or the dean's designee, who serve as nonvoting members; and

(4) the following members appointed by the board:

(A) four pharmacists in private practice, who are recommended to the board by the Texas State Board of Pharmacy;

(B) one resident pharmacist, who serves as a nonvoting member; and

(C) one pharmacy student, who serves as a nonvoting member.

(c) Of the pharmacist members in private practice, two must be active in community pharmacy practice, and two must be active in hospital pharmacy practice.

(d) The appointed voting members of the advisory committee serve staggered three-year terms. The Texas State Board of Medical Examiners shall appoint the initial member appointed under Subsection (b)(2) to a three-year term. The board shall appoint the initial members appointed under Subsection (b)(4) to terms of one, two, or three years as necessary so that one-third of the appointed committee members' terms expire each year, as nearly as practicable.

(e) The advisory committee shall elect one of its members as presiding officer for a one-year term.

(f) The advisory committee shall meet at least once each year and as often as requested by the board or called into meeting by the committee's presiding officer.

(g) A member of the advisory committee may not receive compensation for committee service but may receive reimbursement for travel to official meetings according to policies established by the board.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.860 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.931. DUTIES OF ADVISORY COMMITTEE. The advisory committee shall:

(1) review applications for the funding of graduate pharmacy education programs and make recommendations for approval or disapproval of those applications;

(2) make recommendations relating to the standards and criteria for approval of grants and for the development of formulas for distribution of funds under the pharmacy residency program;

(3) recommend to the board an allocation of funds among colleges of pharmacy;

(4) review applications for the funding of residency preceptor positions, make recommendations for approval or disapproval of those applications, make recommendations relating to the standards and criteria for approval of those applications, monitor compliance with the contractual conditions associated with funding residency preceptor positions, and evaluate success in increasing the number of those positions; and

- (5) perform other duties assigned by the board.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.861 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.932. APPLICATION BY COLLEGE OF PHARMACY FOR FUNDING. A college of pharmacy must include in an application for funds under this subchapter:

- (1) the names of the college and the dean of the college, the mailing address of the college, and the accreditation status for the undergraduate and graduate pharmacy programs of the college;
- (2) the number of resident pharmacist positions and primary teaching pharmacies for which the college is requesting funding;
- (3) for each primary teaching pharmacy, the names of the pharmacy, as recorded on its permit, and of the pharmacist-in-charge, the mailing address of the pharmacy, and the accreditation status of the pharmacy;
- (4) a description of the learning objectives and minimum competencies required of resident pharmacists at each primary teaching pharmacy;
- (5) a description of the learning activities and resident pharmacists' duties at each primary teaching pharmacy, and the time associated with each activity or duty;
- (6) the name of the residency preceptor responsible for the learning program at each primary teaching pharmacy, and a description of the preceptor's credentials;
- (7) the amount and form of compensation to be provided to each resident pharmacist;
- (8) a copy of the resident pharmacist affiliation agreement between the college and the primary teaching pharmacy; and
- (9) other information required by the board.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.862 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

Sec. 61.933. FUNDING OF RESIDENCY PRECEPTOR POSITIONS. (a) A college of pharmacy may apply and receive a grant under this section to support full-time faculty members who are residency preceptors supervising accredited pharmacy residencies.

(b) The advisory committee shall recommend to the board an allocation of residency preceptor positions that are to receive funds under this section.

(c) An allocation of funds under this section must take into account the following factors:

- (1) the faculty-student ratio in community pharmacy residencies at each applicant college of pharmacy;
- (2) the length of time a budgeted residency preceptor position has gone unfilled and whether the position is a new residency preceptor position; and
- (3) other factors determined by the board.

(d) Once funds are granted to support a residency preceptor position affiliated with a college of pharmacy, the board shall continue to grant funds to support that position for a period not to exceed one additional calendar year. After that time, the college shall provide an amount equal to the annualized amount of the grant in its operating budget to maintain the

level of compensation for the position for two years after the grant period has ended.

(e) The board may use not more than 10 percent of the total amount appropriated for the pharmacy residency program under this subchapter to fund residency preceptor positions under this section.

(f) The board may solicit, receive, and spend grants, gifts, and donations from public and private sources for purposes of this section.

Added by Acts 1999, 76th Leg., ch. 1243, Sec. 1, eff. Sept. 1, 1999. Renumbered from Education Code Sec. 61.863 by Acts 2003, 78th Leg., ch. 1275, Sec. 2(41), eff. Sept. 1, 2003.

A-4: Pharmacists per 100,000 Population by State

State	Pharmacists	Population	Pharmacists Per 100,000 Population
Alabama	4,440	4,599,030	97
Alaska	360	670,053	54
Arizona	4,940	6,166,318	80
Arkansas	2,580	2,810,872	92
California	23,030	36,457,549	63
Colorado	4,080	4,753,377	86
Connecticut	2,820	3,504,809	80
Delaware	780	853,476	91
Dist. of Columbia	590	581,530	101
Florida	17,690	18,089,888	98
Georgia	7,530	9,363,941	80
Hawaii	1,310	1,285,498	102
Idaho	1,410	1,466,465	96
Illinois	9,250	12,831,970	72
Indiana	5,680	6,313,520	90
Iowa	2,820	2,982,085	95
Kansas	2,480	2,764,075	90
Kentucky	4,000	4,206,074	95
Louisiana	3,820	4,287,768	89
Maine	1,190	1,321,574	90
Maryland	4,640	5,615,727	83
Massachusetts	6,780	6,437,193	105
Michigan	8,640	10,095,643	86
Minnesota	4,990	5,167,101	97
Mississippi	2,250	2,910,540	77
Missouri	5,360	5,842,713	92
Montana	1,020	944,632	108
Nebraska	1,980	1,768,331	112
Nevada	2,240	2,495,529	90
New Hampshire	1,140	1,314,895	87
New Jersey	7,900	8,724,560	91
New Mexico	1,510	1,954,599	77
New York	15,310	19,306,183	79
North Carolina	7,590	8,856,505	86
North Dakota	810	635,867	127
Ohio	11,260	11,478,006	98
Oklahoma	3,280	3,579,212	92
Oregon	3,100	3,700,758	84
Pennsylvania	11,810	12,440,621	95
Rhode Island	1,150	1,067,610	108
South Carolina	3,850	4,321,249	89
South Dakota	1,040	781,919	133
Tennessee	6,130	6,038,803	102
Texas	18,138	23,259,917	78
Utah	1,840	2,550,063	72
Vermont	450	623,908	72
Virginia	5,790	7,642,884	76
Washington	5,250	6,395,798	82
West Virginia	1,890	1,818,470	104
Wisconsin	5,060	5,556,506	91
Wyoming	480	515,004	93
Total	253,478	299,150,618	85

Sources: Pharmacists: Bureau of Labor Statistics. Texas Pharmacists (2006-07): Texas State Board of Pharmacy. Population (2006 estimate): U.S. Census Bureau. Texas Population (2007): Texas State Demographer.

This document is available on the Texas Higher Education Coordinating Board Website:
<http://www.thecb.state.tx.us>

For more information, contact:

Dr. James Goeman
Senior Education Specialist
Texas Higher Education Coordinating Board
P.O. Box 12788
Austin, TX 78711
512/427-6101