

**Research Expenditures Report
September 1, 2017 – August 31, 2018**

Texas Universities and Health-Related Institutions

September 2019

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Texas Higher Education Coordinating Board



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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 Coordinating Board'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.

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.

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Executive Summary

The Texas Higher Education Coordinating Board's annual Research Expenditures Report summarizes data submitted to the board, as required by Section 61.0662 of the Texas Education Code.

Data presented in this report were submitted by Texas public and independent universities and health-related institutions for Fiscal Year (FY) 2018 (September 1, 2017 through August 31, 2018). When comparing research expenditures from multiple fiscal years, dollar amounts are in Constant 2018 Dollar Terms, as calculated by the Bureau of Labor Statistics Consumer Price Index (2019) located at https://www.bls.gov/data/inflation_calculator.htm unless otherwise noted. This is the first Research Expenditure Report to use Constant Dollar Terms when comparing multiple fiscal years.

Highlights for Fiscal Year 2018 include:

- **All institutions.** Institutions reported research expenditures that totaled \$5,320,439,417 in FY 2018, a decline of -0.09 percent from the previous year, but an increase of 18.23 percent since FY 2009 in constant dollars.
- **Public institutions.** Research expenditures at public universities and health-related institutions totaled \$4,487,567,992 in FY 2018, a decrease of -0.03 percent from the previous year in constant dollars. The expenditures decreased by -\$15,659,465 at public universities (-0.66%) and increased by \$14,256,944 at public health-related institutions (0.67%).
- **Independent institutions.** Research expenditures at independent universities and health-related institutions totaled \$832,871,425 in FY 2018, a decrease of -0.38 percent over the previous year in constant dollars. The expenditures decreased by \$6,615,077 at independent universities (-2.66%) and increased by \$3,414,829 at independent health-related institutions (0.58%).
- **Research fields.** Research expenditures were greatest in these fields for FY 2018:
 - Medical Sciences: \$1,788,057,996
 - Biological and Other Life Sciences: \$1,181,699,842
 - Engineering: \$816,394,613
 - Physical Sciences: \$261,840,561
 - Environmental Sciences: \$250,178,278
- **Funding source.** The federal government, through the National Institutes of Health, the National Science Foundation, and other federal agencies, provided \$2,277,348,405 (42.8%) of the research funds expended. Expenditures from federal sources increased by \$11.5 million (0.51%) in constant dollars compared to FY 2017.

According to data provided by the **National Science Foundation** for FY 2017:

- Texas ranked third among all states in total research expenditures in all fields.
- Texas institutions of higher education ranked sixth in federal obligations for research and development in science and engineering and ranked sixth in federally financed research and development expenditures in all fields, after California, New York, Maryland, Pennsylvania, and Massachusetts.

The data presented in this report are available in the Online Report System at <http://www.theccb.state.tx.us/research>.¹

¹ Note, financial data presented in the Online Report System are as reported by the institutions and are not presented in constant dollars.

Overview

The annual Research Expenditures Report summarizes data submitted to the Texas Higher Education Coordinating Board (THECB), as required by Section 61.0662 of the Texas Education Code:

The board shall maintain an inventory of all institutional and programmatic research activities being conducted by the various institutions of higher education, whether state-financed or not. Once a year, on dates prescribed by the board, each institution of higher education shall report to the board all research conducted at that institution during the preceding year. Each institution's report must include the amounts spent by the institution on human embryonic stem cell research and adult stem cell research during the year covered by the report and the source of the funding for that research. All reports required by this section shall be made subject to the limitations imposed by security regulations governing defense contracts for research.

This report presents expenditure information, rather than award information, as expenditures more accurately reflect the current level of research activities. Research awards tend to fluctuate from year to year, which make them a less stable indicator for year-to-year comparisons. Institutions submit certified expenditure data in their Annual Financial Reports.

Definitions are provided in the research expenditures survey sent to the institutions. This approach ensures consistent reporting by institutions. However, even with these safeguards, institutions have some latitude in how they break out discipline-level expenditures.

Collection of research expenditure data is a challenging task for institutions. Administrators face many difficulties as they detail research expenditures at their institutions. For that reason, information reported by the institutions and the THECB's research expenditures report should be considered indicative rather than definitive.

A copy of the instructions and definitions for the survey completed by each institution is provided in the Appendix.

The data presented in this report are available in the Online Report System at <http://www.thecb.state.tx.us/research>.

Major Findings

Total research expenditures at Texas public and independent universities and health-related institutions declined 0.09 percent from \$5,325,042,186 in Fiscal Year (FY) 2017 to \$5,320,439,417 in FY 2018 in constant dollars. Research expenditures at public universities and health-related institutions declined 0.03 percent from \$4,488,970,513 in FY 2017 to \$4,487,567,992 in FY 2018 in constant dollars. The expenditures decreased by \$15,659,465 at public universities (0.66%) and increased by \$14,256,944 at public health-related institutions (0.67%). Research expenditures at independent universities and health-related institutions declined 0.38 percent from \$836,071,673 in FY 2017 to \$832,871,425 in FY 2018 in constant dollars. The expenditures decreased by \$6,615,077 at independent universities (2.66%) and increased by \$3,414,829 at independent health-related institutions (0.58%). A decrease of \$69.5 million (15%) in state funding (Appropriations and Contracts & Grants) accounts for majority of the decline in total research expenditures from the previous fiscal year.

Research and Development Expenditures

Table 1 lists the top-ranked institutions based on the total amount of research and development expenditures from all sources of funding. A complete list of funding by institution is provided in Table 8. The top five institutions in research and development expenditures accounted for 62.3 percent of total research expenditures. The top 10 institutions in research and development expenditures accounted for 79.3 percent of the total research expenditures. Five of the state’s health-related institutions ranked among the top 10 Texas public institutions in research and development expenditures. The University of Houston is in the list of top 10 institutions for the first time this fiscal year; in previous fiscal years the University of Houston ranked eleventh in research and development expenditures.

The first five institutions in Table 1 also appear in the top 100 rankings of the National Science Foundation’s list of institutions reporting the largest FY 2017 research and development expenditures in all fields (National Science Foundation, 2019a).

Table 1. Research and Development Expenditures Rankings, FY 2014-18

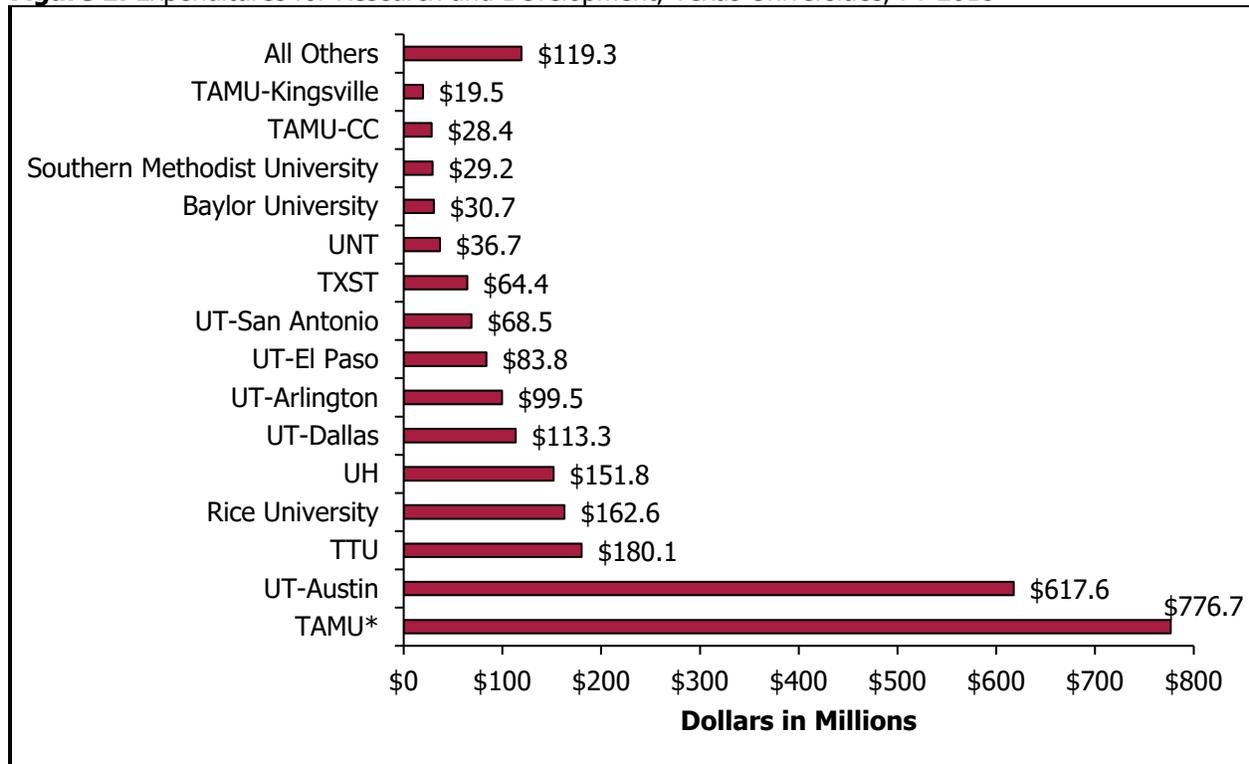
| Institution | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|------|------|------|------|------|
| The University of Texas M.D. Anderson Cancer Center | 1 | 1 | 1 | 1 | 1 |
| Texas A&M University (including Texas A&M Services) | 2 | 2 | 2 | 2 | 2 |
| The University of Texas at Austin | 3 | 3 | 3 | 3 | 3 |
| Baylor College of Medicine | 4 | 4 | 4 | 4 | 4 |
| The University of Texas Southwestern Medical Center | 5 | 5 | 5 | 5 | 5 |
| The University of Texas Health Science Center at Houston | 6 | 6 | 6 | 6 | 6 |
| Texas Tech University | 7 | 7 | 8 | 7 | 7 |
| The University of Texas Health Science Center at San Antonio | 8 | 9 | 7 | 8 | 8 |
| Rice University | 10 | 8 | 9 | 9 | 9 |
| University of Houston | 11 | 11 | 11 | 11 | 10 |
| The University of Texas Medical Branch at Galveston | 9 | 10 | 10 | 10 | 11 |

Source: Texas Higher Education Coordinating Board

Note: Research and development expenditures at institutions are ranked on the total amount of research from all sources of funding and include federal, state appropriations, state and local contracts and grants, institution sources, and private funds.

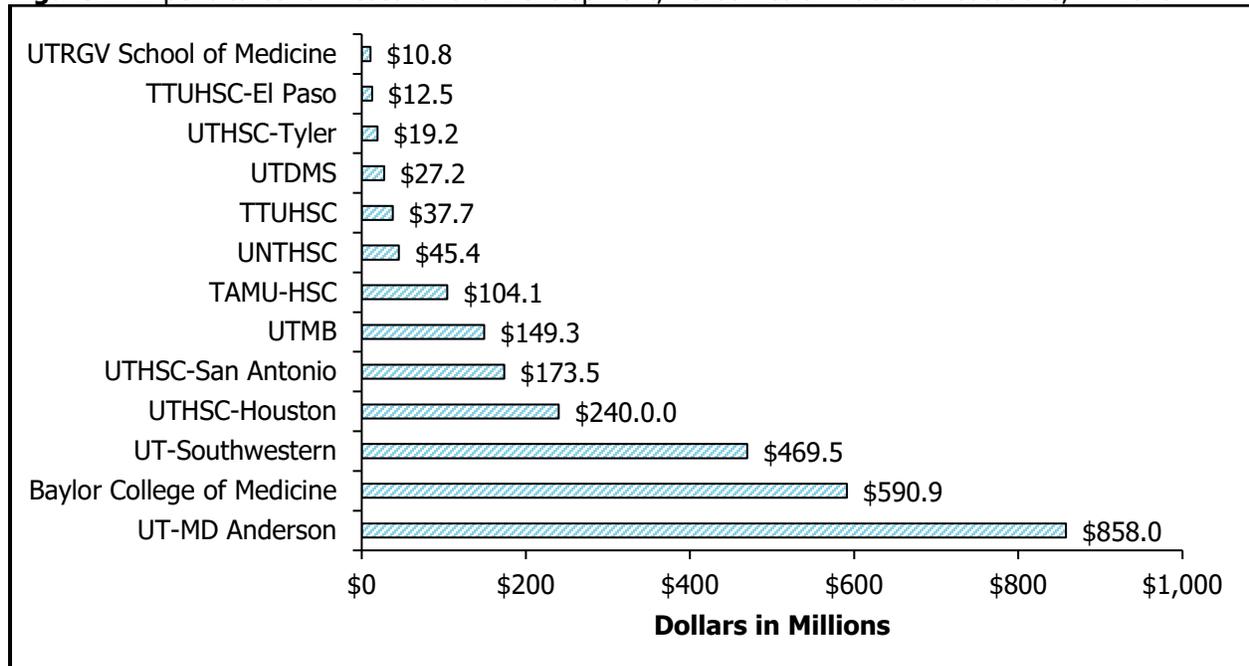
Figures 1 and 2 provide separate summaries of total research expenditures for public and private universities and health-related institutions.

Figure 1. Expenditures for Research and Development, Texas Universities, FY 2018



Source: Texas Higher Education Coordinating Board
 *TAMU includes Texas A&M University System Services

Figure 2. Expenditures for Research and Development, Texas Health-Related Institutions, FY 2018



Source: Texas Higher Education Coordinating Board

Table 2 shows the ratio of federal to state research and development expenditures for public and independent universities and health-related institutions. The University of Texas M.D. Anderson Cancer Center had the highest research and development rank. Rice University had the highest ratio rank.

Table 2. Federal/State Research and Development Expenditures Ratio Rankings, FY 2018*

| Institution | R&D Rank | Fed/State Ratio | Ratio Rank |
|--|---------------------|------------------------|-------------------|
| Rice University | 9 | 10.27 | 1 |
| Baylor College of Medicine | 4 | 9.90 | 2 |
| The University of Texas at Austin | 3 | 8.40 | 3 |
| The University of Texas Health Science Center at San Antonio | 8 | 4.35 | 4 |
| The University of Texas Health Science Center at Houston | 6 | 3.65 | 5 |
| The University of Texas Southwestern Medical Center | 5 | 2.59 | 6 |
| University of Houston | 10 | 1.89 | 7 |
| Texas A&M University** | 2 | 1.75 | 8 |
| The University of Texas M.D. Anderson Cancer Center | 1 | 0.67 | 9 |
| Texas Tech University | 7 | 0.37 | 10 |

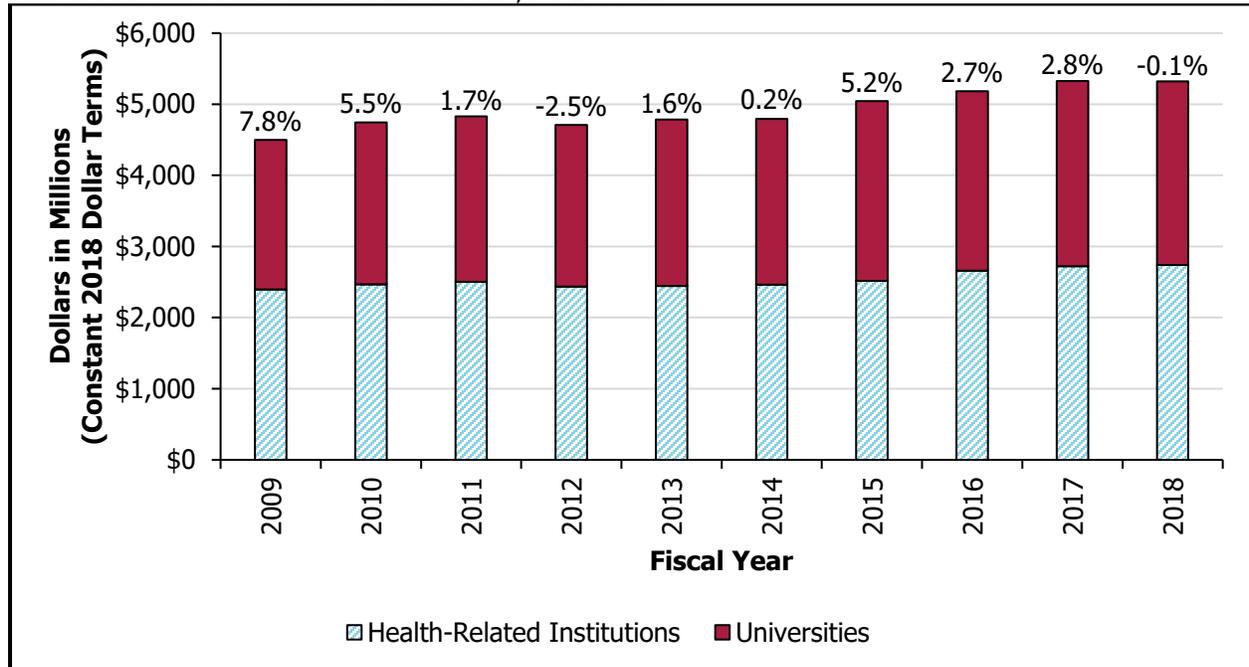
Source: Texas Higher Education Coordinating Board

**The ratio of federal funds to state-appropriated funds for each of the top 10 Texas institutions reporting the greatest research expenditures*

*** Texas A&M University includes Texas A&M University System Services*

Figure 3 shows growth rates in research and development expenditures for public and independent universities and health-related institutions. Expenditures were \$820 million more in FY 2018 than in FY 2009 in constant dollars, with increases of \$480 million at universities and \$341 million at health-related institutions. Negative growth from the previous year occurred in FY 2018; previous occurrences of negative growth were in FY 2012 and FY 1971.

Figure 3. Growth Rates in Research and Development Expenditures at Texas Public and Independent Universities and Health-Related Institutions, FY 2009-18



Source: Texas Higher Education Coordinating Board

Note: Dollar amounts are in Constant 2018 Dollar Terms, as calculated by the Bureau of Labor Statistics Consumer Price Index <https://data.bls.gov/cgi-bin/cpicalc.pl?cost1=4180&year1=201608&year2=201708>

Statewide Summary Data

Table 3 presents total expenditures and sources of funds for research and development at Texas public and independent universities and health-related institutions in FY 2018. Expenditures from federal sources increased overall by \$11.5 million (0.5%) in constant dollars compared with FY 2017. Expenditures from institution funds increased the most from FY 2017 to FY 2018, by \$36.7 million (3.9%) overall in constant dollars. Expenditures from state appropriations and state contracts and grants decreased from FY 2017 to FY 2018. Overall expenditures from state appropriations decreased by \$38.6 million (5.5%), and expenditures from state contracts and grants decreased by \$30.9 million (9.4%).

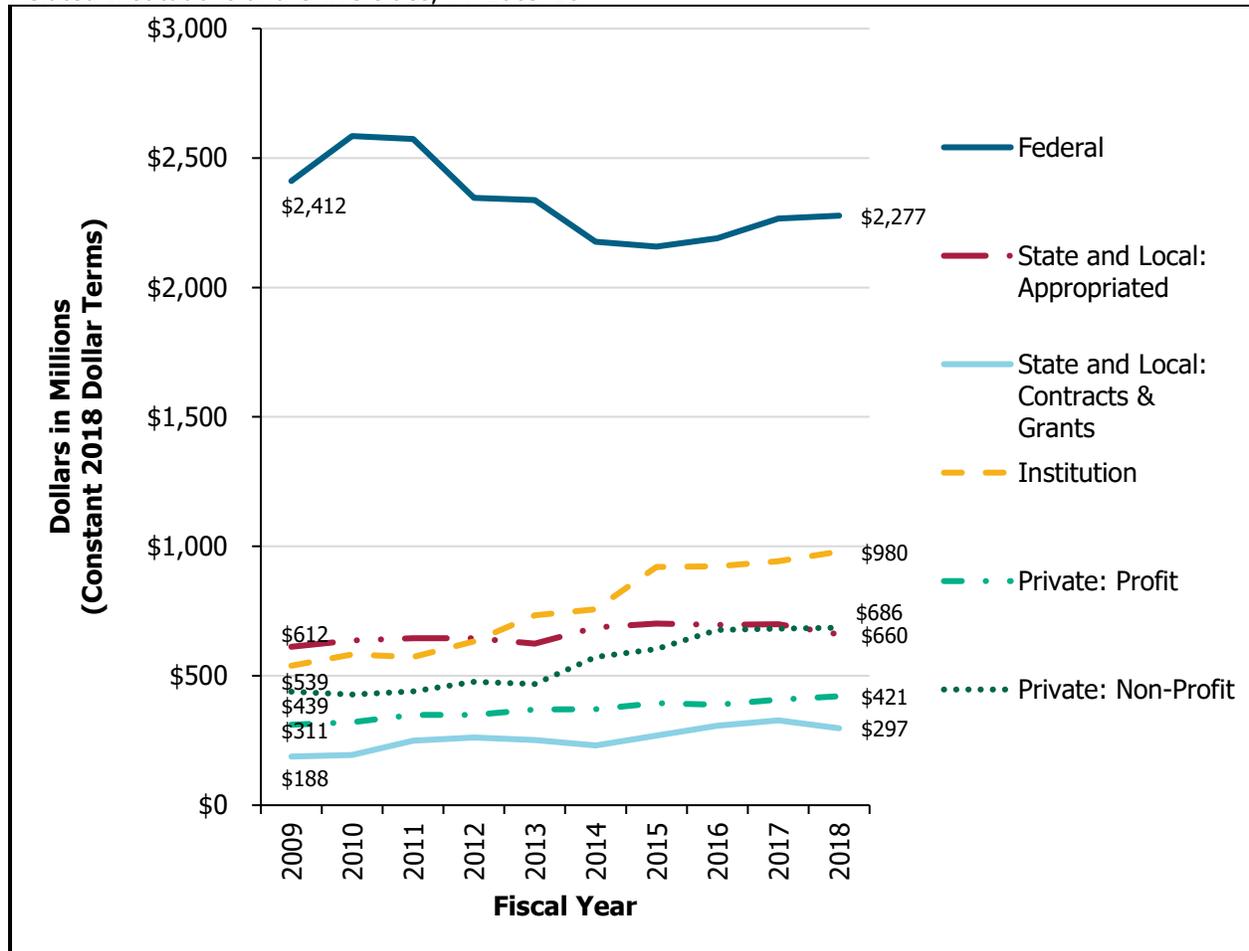
Table 3. Sources of funds for research and development, FY 2018

| | Federal | State and Local | | Institution | Private | | Total |
|-----------------------------------|------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------------------|
| | | Appropriated | Contracts & Grants | | Profit | Non-Profit | |
| Public | | | | | | | |
| Health-Related Institutions | \$813,398,461 | \$334,307,718 | \$132,353,834 | \$249,218,442 | \$215,221,935 | \$402,908,978 | \$2,147,409,368 |
| Universities | \$1,058,431,037 | \$322,847,473 | \$126,364,379 | \$463,466,168 | \$161,349,543 | \$207,700,024 | \$2,340,158,624 |
| Total for Public | \$1,871,829,498 | \$657,155,191 | \$258,718,213 | \$712,684,610 | \$376,571,478 | \$610,609,002 | \$4,487,567,992 |
| Independent | | | | | | | |
| Health-Related Institutions | \$300,098,005 | \$2,818,407 | \$27,479,530 | \$182,764,620 | \$29,619,709 | \$48,122,576 | \$590,902,847 |
| Universities | \$105,420,902 | \$54,538 | \$10,607,842 | \$84,311,440 | \$14,628,826 | \$26,945,030 | \$241,968,578 |
| Total for Independent | \$405,518,907 | \$2,872,945 | \$38,087,372 | \$267,076,060 | \$44,248,535 | \$75,067,606 | \$832,871,425 |
| All Institutions | | | | | | | |
| Health-Related Institutions | \$1,113,496,466 | \$337,126,125 | \$159,833,364 | \$431,983,062 | \$244,841,644 | \$451,031,554 | \$2,738,312,215 |
| Universities | \$1,163,851,939 | \$322,902,011 | \$136,972,221 | \$547,777,608 | \$175,978,369 | \$234,645,054 | \$2,582,127,202 |
| Total for All Institutions | \$2,277,348,405 | \$660,028,136 | \$296,805,585 | \$979,760,670 | \$420,820,013 | \$685,676,608 | \$5,320,439,417 |

| | | | |
|--------------------------|----------------------------------|------------------------------|--------------------------|
| Federal 42.8% | State and Local 18.0% | Institution 18.4% | Private 20.8% |
|--------------------------|----------------------------------|------------------------------|--------------------------|

Figure 4 shows sources of funds for research and development increased by \$820.3 million (18.2%) over the past ten years (FY 2009-18) in constant dollars. Institution funds increased by \$441.1 million (81.9%) while federal funds decreased by \$134.3 million (5.6%) in constant dollars from FY 2009 to FY 2018.

Figure 4. Sources of Funds for Research and Development, Texas Public and Independent Health-Related Institutions and Universities, FY 2009-18



Source: Texas Higher Education Coordinating Board

Table 4 presents expenditures in 17 different fields, as defined in the Instructions and Definitions for Survey (see Appendix). The THECB's instructions directed institutions to assign expenditures to only one field to avoid duplication.

Medical sciences led all other disciplines and accounted for 33.6 percent of the total research and development expenditures. The top five disciplines (medical sciences, biological and other life sciences, engineering, physical sciences, and environmental sciences), collectively accounted for 80.8 percent of all reported research expenditures.

For the most part, research fields in Table 4 reflect expenditures in particular academic disciplines. Some deviation may result as institutions categorize all research as belonging to only one field. For example, a college of agriculture could perform basic research in biological sciences and report expenses in that field rather than in agricultural sciences.

Table 4. Expenditures for Research and Development by Field, Texas Public and Independent Universities and Health-Related Institutions, FY 2018

| Field | Total | % Total |
|-------------------------------------|------------------------|----------------|
| Medical Sciences | \$1,788,057,996 | 33.6% |
| Biological and Other Life Sciences | \$1,181,699,842 | 22.2% |
| Engineering | \$816,394,613 | 15.3% |
| Physical Sciences | \$261,840,561 | 4.9% |
| Environmental Sciences | \$250,178,278 | 4.7% |
| Agricultural Sciences | \$239,086,895 | 4.5% |
| Computer Science | \$152,290,929 | 2.9% |
| Social Sciences | \$110,021,913 | 2.1% |
| Other Sciences not classified above | \$96,854,964 | 1.8% |
| Education | \$95,653,215 | 1.8% |
| Other Non-Science Activities | \$80,633,864 | 1.5% |
| Psychology | \$68,868,684 | 1.3% |
| Mathematical Sciences | \$65,087,524 | 1.2% |
| Business Administration | \$51,083,074 | 1.0% |
| Arts and Humanities | \$33,562,340 | 0.6% |
| Law | \$29,079,259 | 0.5% |
| Field of Study - Other ¹ | \$45,466 | 0.0% |
| Total for All Institutions | \$5,320,439,417 | 100% |

Source: Texas Higher Education Coordinating Board

¹ Reported by the University of the Incarnate Word

Tables 5 and 6 show research expenditures in areas of special interest at universities and health-related institutions. Human Stem Cells-Embryonic and Human Stem Cells-Adult were added to the Areas of Special Interest section in Fiscal Year 2013.

Table 5. Expenditures for Research and Development in Areas of Special Interest, Texas Public and Independent Universities, FY 2018

| Field | Total |
|--|----------------------|
| Aerospace Technology | \$43,301,145 |
| Biotechnology | \$94,026,533 |
| Cancer Research | \$60,709,205 |
| Energy | \$95,307,037 |
| Human Stem Cells - Adult | \$903,504 |
| Human Stem Cells – Embryonic | \$0 |
| Manufacturing Technology | \$32,062,736 |
| Materials Science | \$79,490,292 |
| Microelectronics and Computer Technology | \$94,676,074 |
| Univ Special Interest - Other ¹ | \$19,478 |
| Water Resources | \$45,725,216 |
| Total for All Universities | \$546,221,220 |

Source: Texas Higher Education Coordinating Board

¹ Reported by Jarvis Christian College

Table 6. Expenditures for Research and Development in Areas of Special Interest, Texas Public and Independent Health-Related Institutions, FY 2018.

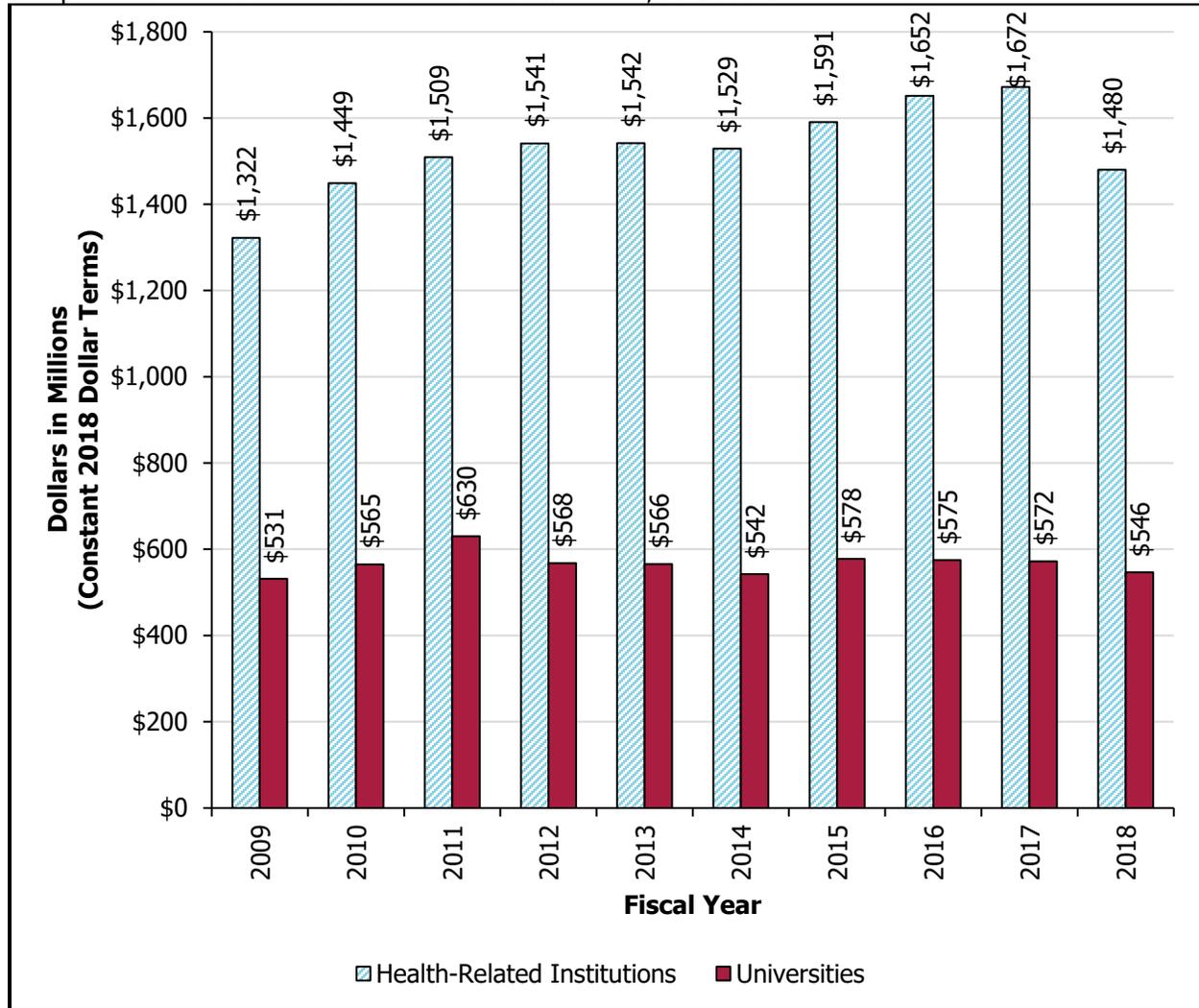
| Field | Total |
|--|------------------------|
| Aerospace Technology ¹ | \$8,709,299 |
| Aging | \$61,118,945 |
| Cancer Research | \$1,213,039,369 |
| Cardiovascular Research | \$62,833,358 |
| Child Health and Human Development | \$60,305,190 |
| Human Stem Cells - Adult | \$15,908,309 |
| Human Stem Cells - Embryonic | \$2,181,418 |
| Mental Health | \$55,839,193 |
| Total for All Health-Related Institutions | \$1,479,935,081 |

Source: Texas Higher Education Coordinating Board

¹ Aerospace Technology research expenditures reported by Baylor College of Medicine

Figure 5 shows expenditures for conduct of research and development in areas of special interest remained relatively stable over the past ten years (FY 2009-FY 2018). Expenditures increased by \$157.8 million for Texas public and independent health-related institutions and \$14.8 million for Texas public and independent universities in constant dollars from FY 2009 to FY 2018.

Figure 5. Expenditures for Research and Development in Areas of Special Interest, Texas Public and Independent Health-Related Institutions and Universities, FY 2009-18.



Source: Texas Higher Education Coordinating Board

Table 7 shows research expenditures in the area of stem cell research by source of funds, as required by Texas Education Code, Section 61.0662(d).

Expenditures increased from FY 2017 to FY 2018 by \$878,489 (67.4%) in Human Stem Cells–Embryonic and increased \$3,370,043 (25.1%) in Human Stem Cells–Adult. Increases by source of funds from FY 2017 to FY 2018 were greatest for federal funds (\$1,768,131; 21.6%) and institution funds (\$1,406,220; 78.7%).

Table 7. Expenditures for Stem Cell Research by Source of Funds, Texas Public and Independent Universities and Health-Related Institutions, FY 2018

| | Federal | State and Local | | Institution | Private | | Total |
|--|--------------------|-----------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| | | Appropriated | Contracts & Grants | | Profit | Non-Profit | |
| Human Stem Cells - Adult | | | | | | | |
| Independent - Universities | | | | | | | |
| Total for Independent – Universities | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Public – Universities | | | | | | | |
| Texas A&M AgriLife Research | \$0 | \$0 | \$0 | \$0 | \$60,557 | \$0 | \$60,557 |
| Texas A&M Engineering Experiment Station | \$356,247 | \$0 | \$0 | \$0 | \$0 | \$0 | \$356,247 |
| Texas A&M University | \$0 | \$0 | \$0 | \$0 | \$0 | \$5,249 | \$5,249 |
| The University of Texas at Austin | \$384,874 | \$0 | \$0 | \$0 | \$0 | \$96,577 | \$481,451 |
| Total for Public – Universities | \$741,121 | \$0 | \$0 | \$0 | \$60,557 | \$101,826 | \$903,504 |
| Independent – Health-Related | | | | | | | |
| Total for Independent – Health-Related | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Public – Health-Related | | | | | | | |
| The University of Texas Health Science Center at Houston | \$6,143,460 | \$0 | \$0 | \$3,074,523 | \$1,355,847 | \$1,523,618 | \$12,097,448 |
| The University of Texas Health Science Center at San Antonio | \$2,086,523 | \$0 | \$785 | \$118,500 | \$90,708 | \$879,400 | \$3,175,916 |
| The University of Texas M.D. Anderson Cancer Center | \$355,702 | \$0 | \$0 | \$0 | \$142,908 | \$136,335 | \$634,945 |
| Total for Public - Health-Related | \$8,585,685 | \$0 | \$785 | \$3,193,023 | \$1,589,463 | \$2,539,353 | \$15,908,309 |
| Total for Human Stem Cells - Adult | \$9,326,806 | \$0 | \$785 | \$3,193,023 | \$1,650,020 | \$2,641,179 | \$16,811,813 |
| Human Stem Cells - Embryonic | | | | | | | |
| Independent – Universities | | | | | | | |
| Total for Independent – Universities | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Public – Universities | | | | | | | |
| Total for Public - Universities | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Independent – Health-Related | | | | | | | |
| Baylor College of Medicine | \$0 | \$0 | \$0 | \$0 | \$0 | \$88,892 | \$88,892 |
| Total for Independent – Health-Related | \$0 | \$0 | \$0 | \$0 | \$0 | \$88,892 | \$88,892 |
| Public – Health-Related | | | | | | | |
| Texas Tech University Health Sciences Center | \$4,888 | \$0 | \$0 | \$0 | \$0 | \$0 | \$4,888 |
| The University of Texas Health Science Center at Houston | \$455,384 | \$0 | \$956,544 | \$0 | \$55,477 | \$437,613 | \$1,905,018 |
| The University of Texas Health Science Center at San Antonio | \$172,077 | \$0 | \$0 | \$0 | \$0 | \$10,543 | \$182,620 |
| Total for Public - Health-Related | \$632,349 | \$0 | \$956,544 | \$0 | \$55,477 | \$448,156 | \$2,092,526 |
| Total for All Health-Related Institutions | \$632,349 | \$0 | \$956,544 | \$0 | \$55,477 | \$537,048 | \$2,181,418 |
| Total for Human Stem Cells - Embryonic | \$632,349 | \$0 | \$956,544 | \$0 | \$55,477 | \$537,048 | \$2,181,418 |

Source: Texas Higher Education Coordinating Board

Institutional Data

Table 8 details information on research expenditures reported by institution. Definitions for sources of funds and research fields are found in the Appendix.

Table 8. Total Expenditures for Research by Source of Funds, Texas Public and Independent Universities and Health-Related Institutions, FY 2018

| | Federal | State and Local | | Institution | Private | | Total |
|---|----------------------|-----------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| | | Appropriated | Contracts & Grants | | Profit | Non-Profit | |
| Independent - Universities | | | | | | | |
| Abilene Christian University | \$368,838 | \$0 | \$0 | \$123,976 | \$0 | \$308,076 | \$800,890 |
| Baylor University | \$5,781,833 | \$0 | \$1,152,249 | \$19,317,603 | \$1,499,790 | \$2,971,973 | \$30,723,448 |
| Jarvis Christian College | \$86,976 | \$0 | \$0 | \$0 | \$0 | \$19,478 | \$106,454 |
| Letourneau University | \$95,473 | \$0 | \$0 | \$231,637 | \$13,256 | \$515,408 | \$855,774 |
| Parker University | \$0 | \$0 | \$0 | \$219,000 | \$0 | \$0 | \$219,000 |
| Rice University | \$78,174,632 | \$0 | \$7,609,139 | \$47,769,576 | \$10,053,425 | \$18,946,792 | \$162,553,564 |
| Southern Methodist University | \$13,439,074 | \$0 | \$1,092,094 | \$10,558,530 | \$2,836,492 | \$1,231,284 | \$29,157,474 |
| Southwestern University | \$1,034 | \$0 | \$0 | \$278,343 | \$72,276 | \$0 | \$351,653 |
| St. Edward's University | \$2,618,111 | \$54,538 | \$100,877 | \$600,000 | \$90,000 | \$132,869 | \$3,596,395 |
| Texas Christian University | \$2,559,703 | \$0 | \$632,145 | \$4,088,804 | \$0 | \$1,423,496 | \$8,704,148 |
| Texas Lutheran University | \$311,979 | \$0 | \$0 | \$1,500 | \$537 | \$126,762 | \$440,778 |
| Trinity University | \$1,187,008 | \$0 | \$21,338 | \$915,914 | \$0 | \$1,119,958 | \$3,244,218 |
| University of Dallas | \$34,135 | \$0 | \$0 | \$0 | \$775 | \$34,660 | \$69,570 |
| University of Mary Hardin-Baylor | \$0 | \$0 | \$0 | \$15,666 | \$62,275 | \$23,179 | \$101,120 |
| University of the Incarnate Word | \$762,106 | \$0 | \$0 | \$166,132 | \$0 | \$66,876 | \$995,114 |
| Wayland Baptist University | \$0 | \$0 | \$0 | \$24,759 | \$0 | \$24,219 | \$48,978 |
| Total for Independent - Universities | \$105,420,902 | \$54,538 | \$10,607,842 | \$84,311,440 | \$14,628,826 | \$26,945,030 | \$241,968,578 |
| Public - Universities | | | | | | | |
| Angelo State University | \$141,129 | \$429,253 | \$435 | \$671 | \$53,934 | \$126,990 | \$752,412 |
| Lamar University | \$1,730,421 | \$8,124 | \$62,087 | \$126,638 | \$412,582 | \$109,336 | \$2,449,188 |
| Midwestern State University | \$259,916 | \$0 | \$0 | \$0 | \$0 | \$233,932 | \$493,848 |
| Prairie View A&M University | \$8,420,378 | \$4,718,764 | \$49,283 | \$3,591,749 | \$153,376 | \$209,217 | \$17,142,767 |
| Sam Houston State University | \$2,194,365 | \$0 | \$496,879 | \$4,072,395 | \$87,470 | \$172,249 | \$7,023,358 |
| Stephen F. Austin State University | \$970,451 | \$1,085,895 | \$72,645 | \$361,596 | \$42,473 | \$398,819 | \$2,931,879 |
| Sul Ross State University | \$514,801 | \$401,188 | \$69,815 | \$562,792 | \$14,101 | \$763,413 | \$2,326,110 |
| Tarleton State University | \$4,233,743 | \$1,569,669 | \$1,989,650 | \$3,475,575 | \$21,463 | \$303,163 | \$11,593,263 |
| Texas A&M International University | \$2,007,455 | \$1,052,465 | \$2,311 | \$496,447 | \$47,143 | \$1,340,737 | \$4,946,558 |
| Texas A&M University | \$305,367,599 | \$118,528,055 | \$55,809,869 | \$179,944,691 | \$43,965,038 | \$73,119,644 | \$776,734,896 |
| Texas A&M University at Galveston | \$2,463,685 | \$520,765 | \$2,165,361 | \$1,443,735 | \$293,103 | \$2,532,778 | \$9,419,427 |
| Texas A&M University-Central Texas | \$153,277 | \$0 | \$76,682 | \$751,084 | \$0 | \$97,117 | \$1,078,160 |
| Texas A&M University-Commerce | \$985,734 | \$596,544 | \$60,180 | \$1,082,805 | \$157,757 | \$211,814 | \$3,094,834 |
| Texas A&M University-Corpus Christi | \$12,449,367 | \$3,847,161 | \$2,723,521 | \$1,874,376 | \$2,362,566 | \$5,153,686 | \$28,410,677 |
| Texas A&M University-Kingsville | \$7,459,460 | \$3,473,548 | \$1,108,178 | \$1,863,038 | \$243,789 | \$5,381,255 | \$19,529,268 |
| Texas A&M University-San Antonio | \$55,811 | \$0 | \$0 | \$0 | \$29,061 | \$40,236 | \$125,108 |
| Texas A&M University-Texarkana | \$0 | \$13,396 | \$0 | \$21,123 | \$0 | \$0 | \$34,519 |
| Texas Southern University | \$2,838,638 | \$165,736 | -\$14,411 | \$514,717 | \$71,978 | \$163,622 | \$3,740,280 |
| Texas State University | \$30,398,282 | \$9,565,719 | \$5,362,476 | \$12,753,995 | \$524,595 | \$5,801,649 | \$64,406,716 |

Table 8. Total Expenditures for Research by Source of Funds, Texas Public and Independent Universities and Health-Related Institutions, FY 2018 (cont.)

| | Federal | State and Local | | Institution | Private | | Total |
|--|------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------------------|
| | | Appropriated | Contracts & Grants | | Profit | Non-Profit | |
| Texas Tech University | \$31,636,329 | \$79,481,322 | \$4,885,123 | \$32,946,294 | \$16,972,789 | \$14,149,361 | \$180,071,218 |
| Texas Woman's University | \$1,422,262 | \$740,418 | \$0 | \$1,620,863 | \$108,646 | \$929,799 | \$4,821,988 |
| The University of Texas Permian Basin | \$332,620 | \$787,217 | \$230,183 | \$100,444 | \$12,134 | \$125,159 | \$1,587,757 |
| The University of Texas at Arlington | \$34,446,108 | \$11,893,713 | \$4,105,789 | \$31,025,887 | \$9,529,651 | \$8,486,309 | \$99,487,457 |
| The University of Texas at Austin | \$398,310,997 | \$21,373,750 | \$26,034,678 | \$70,696,875 | \$66,572,001 | \$34,607,368 | \$617,595,669 |
| The University of Texas at Dallas | \$40,045,792 | \$9,086,103 | \$3,156,253 | \$33,339,329 | \$5,334,077 | \$22,353,879 | \$113,315,433 |
| The University of Texas at El Paso | \$44,352,723 | \$13,037,639 | \$2,880,413 | \$9,781,199 | \$933,881 | \$12,851,920 | \$83,837,775 |
| The University of Texas at San Antonio | \$29,824,525 | \$11,970,090 | \$2,721,595 | \$15,201,983 | \$4,193,701 | \$4,596,622 | \$68,508,516 |
| The University of Texas at Tyler | \$810,844 | \$57,396 | \$122,600 | \$479,015 | \$84,833 | \$498,008 | \$2,052,696 |
| The University of Texas-Rio Grande Valley | \$9,108,240 | \$2,548,672 | \$627,396 | \$2,503,933 | \$240,656 | \$228,424 | \$15,257,321 |
| University of Houston | \$62,139,033 | \$22,048,387 | \$10,891,813 | \$38,986,754 | \$6,895,701 | \$10,872,409 | \$151,834,097 |
| University of Houston-Clear Lake | \$913,718 | \$355,870 | \$143,758 | -\$20,836 | \$27,331 | \$71,527 | \$1,491,368 |
| University of Houston-Downtown | \$1,891,830 | \$216,003 | \$46,839 | \$267,631 | \$140,701 | \$9,713 | \$2,572,717 |
| University of Houston-Victoria | \$155,974 | \$0 | \$0 | \$0 | \$0 | \$7,586 | \$163,560 |
| University of North Texas | \$19,026,304 | \$1,717,661 | \$383,815 | \$12,490,171 | \$1,330,406 | \$1,707,959 | \$36,656,316 |
| University of North Texas at Dallas | \$14,321 | \$0 | \$5,397 | \$5,345 | \$10,863 | \$381 | \$36,307 |
| West Texas A&M University | \$1,354,905 | \$1,556,950 | \$93,766 | \$1,103,854 | \$481,743 | \$43,943 | \$4,635,161 |
| Total for Public - Universities | \$1,058,431,037 | \$322,847,473 | \$126,364,379 | \$463,466,168 | \$161,349,543 | \$207,700,024 | \$2,340,158,624 |
| Total for All Universities | \$1,163,851,939 | \$322,902,011 | \$136,972,221 | \$547,777,608 | \$175,978,369 | \$234,645,054 | \$2,582,127,202 |
| Independent - Health-Related | | | | | | | |
| Baylor College of Medicine-Medical School | \$300,098,005 | \$2,818,407 | \$27,479,530 | \$182,764,620 | \$29,619,709 | \$48,122,576 | \$590,902,847 |
| Public - Health-Related | | | | | | | |
| Texas A&M University System Health Science Center | \$43,455,981 | \$18,191,466 | \$6,623,497 | \$11,209,964 | \$3,626,883 | \$20,978,503 | \$104,086,294 |
| Texas Tech University Health Sciences Center | \$7,546,211 | \$13,557,299 | \$2,678,064 | \$8,751,450 | \$542,223 | \$4,667,200 | \$37,742,447 |
| Texas Tech University Health Sciences Center-El Paso | \$2,532,444 | \$7,226,476 | \$306,777 | \$1,102,599 | \$324,690 | \$1,037,068 | \$12,530,054 |
| The University of Texas Health Science Center at Houston | \$128,232,487 | \$20,312,154 | \$14,805,623 | \$23,070,757 | \$14,967,104 | \$38,642,619 | \$240,030,744 |
| The University of Texas Health Science Center at San Antonio | \$97,575,798 | \$12,937,030 | \$9,517,484 | \$21,279,207 | \$17,451,892 | \$14,761,404 | \$173,522,815 |
| The University of Texas Health Science Center at Tyler | \$10,226,513 | \$1,558,750 | \$1,134,602 | \$1,440,314 | \$1,416,449 | \$3,465,901 | \$19,242,529 |
| The University of Texas M.D. Anderson Cancer Center | \$173,899,855 | \$210,703,560 | \$48,997,871 | \$111,338,720 | \$141,656,018 | \$171,354,487 | \$857,950,511 |
| The University of Texas Medical Branch at Galveston | \$105,044,948 | \$641,805 | \$4,839,855 | \$17,991,936 | \$3,081,611 | \$17,690,574 | \$149,290,729 |
| The University of Texas Southwestern Medical Center | \$203,290,633 | \$37,476,367 | \$41,068,056 | \$32,000,197 | \$28,266,290 | \$127,403,116 | \$469,504,659 |
| The University of Texas at Austin Dell Medical School | \$9,793,576 | \$0 | \$1,292,683 | \$13,792,737 | \$1,336,099 | \$1,023,490 | \$27,238,585 |
| The University of Texas-Rio Grande Valley - Medical School | \$4,220,816 | \$3,522,464 | \$122,320 | \$2,489,804 | \$76,079 | \$415,763 | \$10,847,246 |
| University of North Texas Health Science Center | \$27,579,199 | \$8,180,347 | \$967,002 | \$4,750,757 | \$2,476,597 | \$1,468,853 | \$45,422,755 |
| Total for Public - Health-Related | \$813,398,461 | \$334,307,718 | \$132,353,834 | \$249,218,442 | \$215,221,935 | \$402,908,978 | \$2,147,409,368 |
| Total for All Health-Related Institutions | \$1,113,496,466 | \$337,126,125 | \$159,833,364 | \$431,983,062 | \$244,841,644 | \$451,031,554 | \$2,738,312,215 |
| Grand Total | \$2,277,348,405 | \$660,028,136 | \$296,805,585 | \$979,760,670 | \$420,820,013 | \$685,676,608 | \$5,320,439,417 |

Source: Texas Higher Education Coordinating Board

Table 9 presents the ratio of federal research and development expenditures to the number of full-time-equivalent faculty at Texas public universities. Universities with the greatest ratio in FY 2018 are The University of Texas at Austin, Texas A&M University, and Texas A&M University-Corpus Christi).

Table 9. Federal Research and Development Expenditures/FTE Faculty Ratio, Texas Public Universities, FY 2018

| Institution | Federal R&D Expenditures | FTE Faculty* | Federal R&D Expenditures / FTE |
|---|--------------------------|----------------|--------------------------------|
| Angelo State University | \$141,129 | 194.8 | \$725 |
| Lamar University | \$1,730,421 | 301.3 | \$5,744 |
| Midwestern State University | \$259,916 | 179.7 | \$1,447 |
| Prairie View A&M University | \$8,420,378 | 172.1 | \$48,936 |
| Sam Houston State University | \$2,194,365 | 420.1 | \$5,223 |
| Stephen F. Austin State University | \$970,451 | 381.6 | \$2,543 |
| Sul Ross State University | \$514,801 | 83.8 | \$6,143 |
| Tarleton State University | \$4,233,743 | 279.8 | \$15,131 |
| Texas A&M International University | \$2,007,455 | 133.0 | \$15,094 |
| Texas A&M University** | \$305,367,599 | 2022.6 | \$150,980 |
| Texas A&M University at Galveston | \$2,463,685 | 46.4 | \$53,074 |
| Texas A&M University-Central Texas | \$153,277 | 63.7 | \$2,406 |
| Texas A&M University-Commerce | \$985,734 | 237.4 | \$4,152 |
| Texas A&M University-Corpus Christi | \$12,449,367 | 98.7 | \$126,185 |
| Texas A&M University-Kingsville | \$7,459,460 | 269.2 | \$27,707 |
| Texas A&M University-San Antonio | \$55,811 | 92.5 | \$603 |
| Texas A&M University-Texarkana | \$0 | 58.9 | \$0 |
| Texas Southern University | \$2,838,638 | 234.7 | \$12,096 |
| Texas State University | \$30,398,282 | 495.9 | \$61,297 |
| Texas Tech University | \$31,636,329 | 988.9 | \$31,991 |
| Texas Woman's University | \$1,422,262 | 323.4 | \$4,398 |
| The University of Texas Permian Basin | \$332,620 | 63.8 | \$5,218 |
| The University of Texas at Arlington | \$34,446,108 | 518.4 | \$66,444 |
| The University of Texas at Austin | \$398,310,997 | 1614.7 | \$246,683 |
| The University of Texas at Dallas | \$40,045,792 | 504.5 | \$79,371 |
| The University of Texas at El Paso | \$44,352,723 | 482.7 | \$91,885 |
| The University of Texas at San Antonio | \$29,824,525 | 572.8 | \$52,072 |
| The University of Texas at Tyler | \$810,844 | 207.8 | \$3,903 |
| The University of Texas-Rio Grande Valley | \$9,108,240 | 407.0 | \$22,380 |
| University of Houston | \$62,139,033 | 951.8 | \$65,289 |
| University of Houston-Clear Lake | \$913,718 | 250.3 | \$3,651 |
| University of Houston-Downtown | \$1,891,830 | 229.5 | \$8,244 |
| University of Houston-Victoria | \$155,974 | 109.8 | \$1,421 |
| University of North Texas | \$19,026,304 | 567.9 | \$33,503 |
| University of North Texas at Dallas | \$14,321 | 31.9 | \$449 |
| West Texas A&M University | \$1,354,905 | 166.0 | \$8,162 |
| Total for Public - Universities | \$1,058,431,037 | 13756.9 | \$76,938 |

Source: Texas Higher Education Coordinating Board

* FTE Faculty indicates number of full-time equivalents (FTE) for tenured and tenure-track faculty with teaching responsibilities based on fall 2017 (FY 2018) THECB Accountability System reports.

** FTE faculty for Texas A&M University is based on its FTE faculty plus faculty from Texas AgriLife Research and the Texas Engineering Experiment Station. Service agency counts come from [Legislative Appropriations Requests](#) for FY 2020 and 2021 include 141 FTEs from Texas AgriLife Research and 334.1 from Texas Engineering Experiment Station reported as actual FTE for FY 2018.

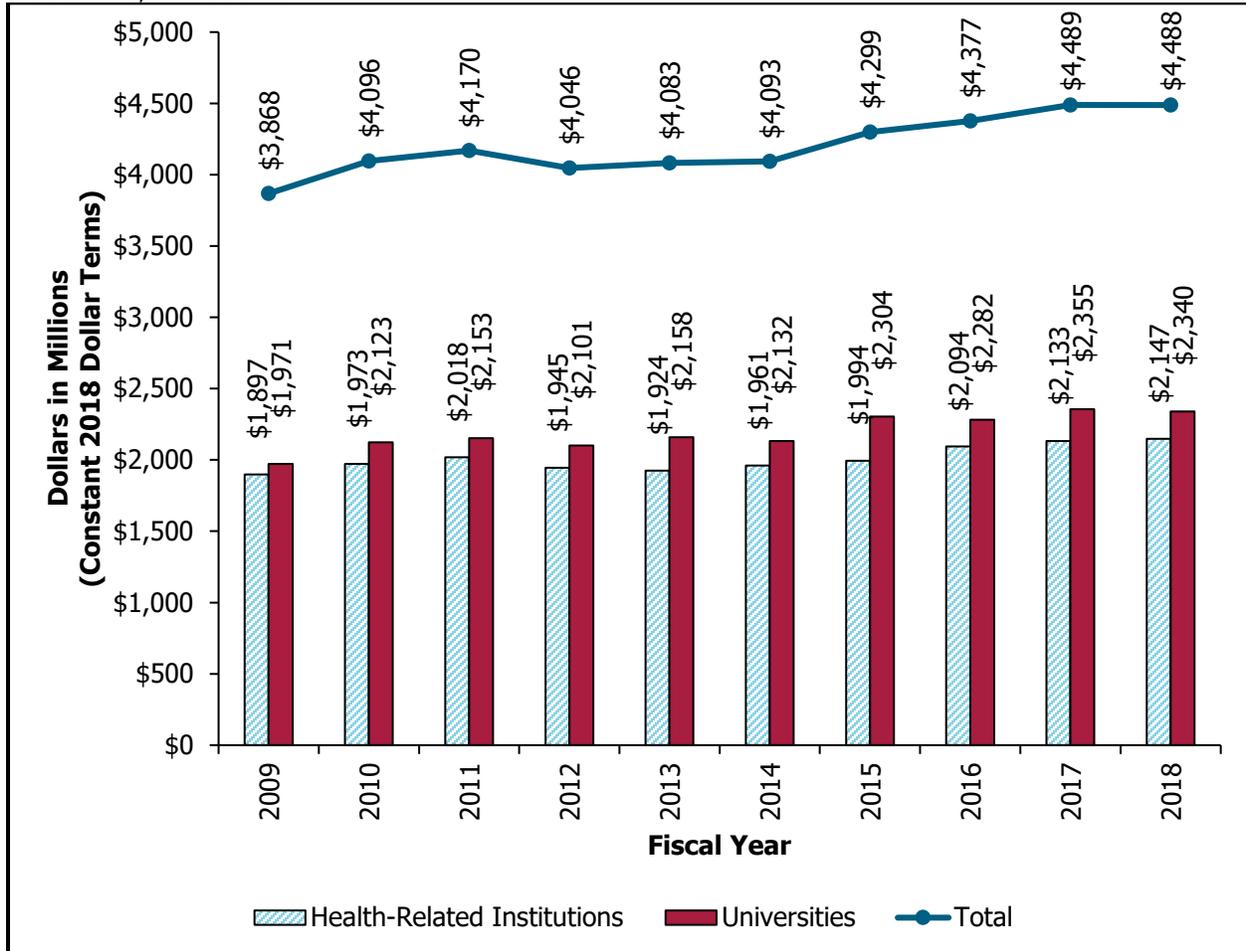
Historical Data for Public Institutions

Figure 6 presents total research and development expenditures since FY 2009 in constant dollars. From FY 2017 to FY 2018, research expenditures declined by \$1 million; this was the first decline in research expenditures since FY 2012.

By source of funds, the largest percentage and dollar amount increases were \$32.6 million (4.8%) in institution funds, \$22.8 million (1.2%) in federal funds, and \$11.6 million (3.2%) in private-profit funds. The largest declines in research expenditures were a decrease of \$37.4 million (5.4%) in state appropriations and \$30.8 million (10.6%) in state contracts and grants.

By sector, expenditures at health-related institutions increased by \$14.3 million (0.7%), while universities decreased by \$15.7 million (0.7%). The majority of growth in expenditures for the public health-related institutions from FY 2017 to FY 2018 (6%) was due to increases of \$12.3 million at The University of Texas at Austin Dell Medical School and \$10.6 million at The University of Texas M.D. Anderson Cancer Center.

Figure 6. Expenditures for Research and Development, Texas Public Universities and Health-Related Institutions, FY 2009-18



Source: Texas Higher Education Coordinating Board

National Indicators

National indicators are based on data provided by the National Science Foundation (NSF). Figures are not entirely consistent with data provided in earlier sections of this report because these statistics are based on a previous year and reporting requirements, which differ.

One difference in the reporting requirements is the way the NSF survey allows institutions to calculate unreimbursed indirect costs. The THECB’s survey allows only tracked indirect costs as reported in the institution’s annual financial report. Thus, the NSF calculation will have a considerably higher total in the institution source of funding (see <https://ncesdata.nsf.gov/ids/> to compare individual institutions with the THECB’s reports). NSF may impute data for institutions that do not respond to or fully complete the survey, which is another difference in the reporting requirements.²

In data collected by the NSF’s Higher Education Research and Development (HERD) Survey for FY 2017, Texas ranked third among the states in total research expenditures in all fields with \$5.5 billion, behind California (\$9.2 billion) and New York (\$6.4 billion) in constant dollars (National Science Foundation, 2019b).

The NSF publishes several reports on research expenditures and research obligations. Two of the reports look at somewhat different information.

Federally Financed Research and Development Expenditures in All Fields summarizes federal funds expenditures by higher education institutions that support research and development in any given year. This report is based on data reported by institutions and summarized by the NSF. In data collected by the National Center for Science and Engineering Statistics *Higher Education Research and Development Survey* for FY 2017, Texas ranked sixth among the states in federally financed research and development expenditures in all fields with \$2.15 billion in constant dollars (Table 10).

Table 10. State Rank in Federally Financed Research and Development Expenditures in All Fields at Colleges and Universities, FY 2017

| Rank | State | \$ |
|----------|----------------|---------------|
| 1 | California | \$4.78 |
| 2 | New York | \$3.21 |
| 3 | Maryland | \$3.04 |
| 4 | Pennsylvania | \$2.33 |
| 5 | Massachusetts | \$2.17 |
| 6 | Texas | \$2.15 |
| 7 | North Carolina | \$1.75 |
| 8 | Illinois | \$1.45 |
| 9 | Ohio | \$1.35 |
| 10 | Michigan | \$1.34 |

Source: National Science Foundation, 2019b
 Note: Dollars in billions, Constant 2018 Dollar Terms

Federal Obligations for Research and Development in Science and Engineering includes only federal funds obligated during a year to support, directly or indirectly, basic and applied research and development in science and engineering disciplines at higher education institutions. Funds obligated in any given year may be expended over several years, so obligations differ from

² In 2018, the NSF updated the HERD Survey reporting to an interactive report system. Available fiscal year data varies by report while the NSF updates the application. Wherever possible, the most current fiscal year available is presented in Constant 2018 Dollar Terms.

expenditures. The amount of support is reported by federal agencies. In data collected by the National Center for Science and Engineering Statistics *Survey of Federal Funds for Research and Development* (2016) for FY 2016, Texas ranked sixth among the states in total federal obligations for research and development in science and engineering with \$1.53 billion in constant dollars (Table 11).

Table 11. State Rank in Federal Obligations for Research and Development in Science and Engineering to Colleges and Universities, FY 2016

| Rank | State | \$ |
|----------|----------------|---------------|
| 1 | California | \$4.07 |
| 2 | New York | \$2.39 |
| 3 | Maryland | \$1.90 |
| 4 | Pennsylvania | \$1.81 |
| 5 | Massachusetts | \$1.71 |
| 6 | Texas | \$1.53 |
| 7 | North Carolina | \$1.33 |
| 8 | Illinois | \$1.21 |
| 9 | Michigan | \$0.98 |
| 10 | Georgia | \$0.82 |

Source: National Science Foundation, 2019b

Note: Dollars in billions, Constant 2018 Dollar Terms

Table 12 shows the ranking of the top 10 states in federal research and development expenditures in selected science and engineering fields for FY 2017. Texas ranked fourth in life sciences, sixth in engineering, seventh in physical sciences, and fourth in environmental sciences.

Table 12. Top 10 States in Federal Research and Development Expenditures in Selected Science and Engineering Fields, FY 2017

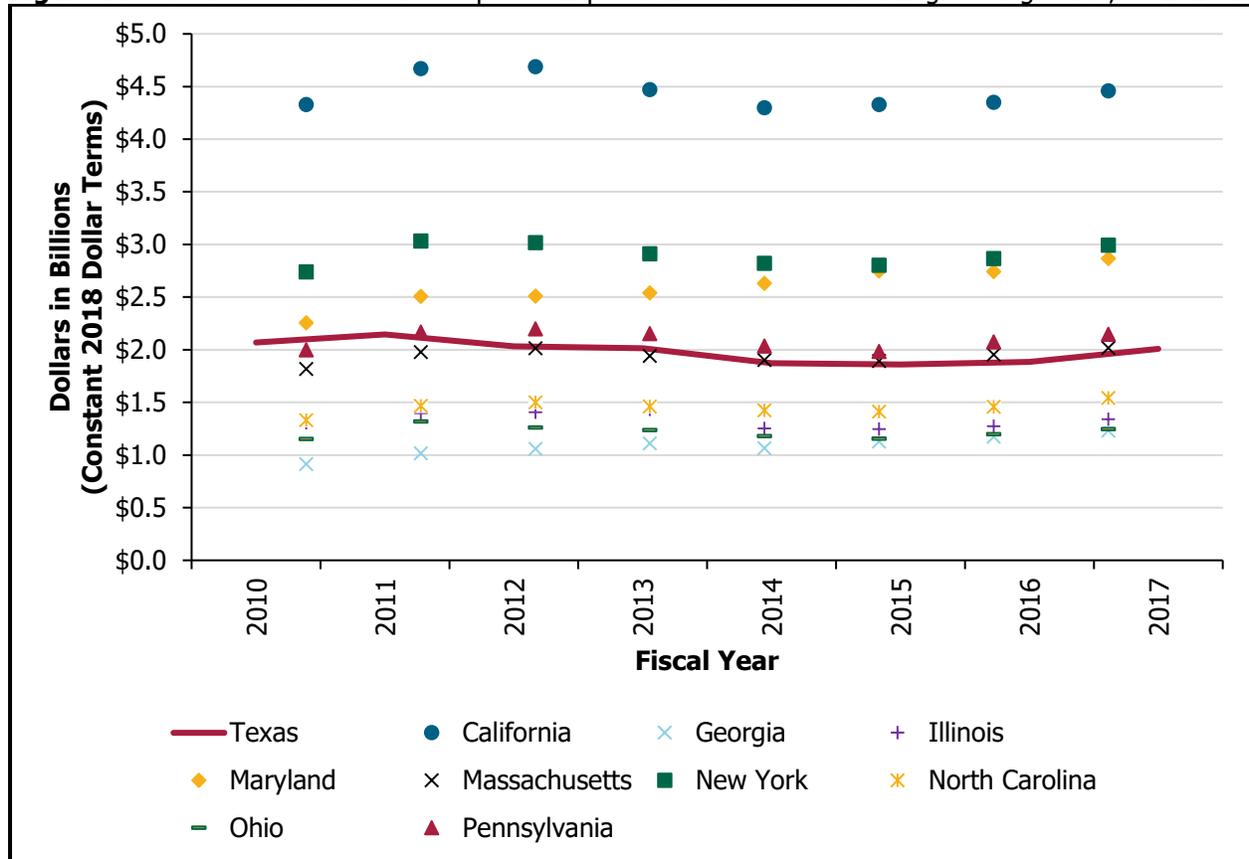
| Rank | Life Sciences | \$ | Engineering | \$ | Physical Sciences | \$ | Environmental Sciences | \$ |
|------|----------------|---------------|---------------|---------------|-------------------|---------------|------------------------|---------------|
| 1 | California | \$2.90 | Maryland | \$1.11 | California | \$0.58 | California | \$0.25 |
| 2 | New York | \$2.15 | California | \$0.51 | New York | \$0.30 | Colorado | \$0.23 |
| 3 | Pennsylvania | \$1.41 | Massachusetts | \$0.47 | Maryland | \$0.27 | Massachusetts | \$0.17 |
| 4 | Texas | \$1.24 | Georgia | \$0.45 | Massachusetts | \$0.23 | Texas | \$0.14 |
| 5 | North Carolina | \$1.20 | Pennsylvania | \$0.39 | Michigan | \$0.19 | New York | \$0.12 |
| 6 | Maryland | \$1.13 | Texas | \$0.35 | Illinois | \$0.16 | Maryland | \$0.11 |
| 7 | Massachusetts | \$1.03 | New York | \$0.31 | Texas | \$0.14 | Washington | \$0.10 |
| 8 | Illinois | \$0.84 | Ohio | \$0.30 | Pennsylvania | \$0.13 | Florida | \$0.08 |
| 9 | Ohio | \$0.84 | Michigan | \$0.23 | Florida | \$0.10 | Hawaii | \$0.06 |
| 10 | Michigan | \$0.71 | Illinois | \$0.20 | Colorado | \$0.09 | Alaska | \$0.05 |

Source: National Science Foundation, 2019b

Note: Dollars in billions, Constant 2018 Dollar Terms

Figure 7 shows federal research and development expenditures from FY 2010-17. During this period, Texas' average annual growth rate was -0.38 percent. The greatest average annual growth rates were Georgia (3.79%) and Maryland (3.05%). The overall highest federal research and development expenditures in science and engineering fields were from California.

Figure 7. Federal Research and Development Expenditures in Science and Engineering Fields, FY 2010-17



Source: *National Science Foundation, 2019b*

Note: Federal R&D Expenditures in Science and Engineering fields include: computer and information sciences; engineering; geosciences, atmospheric sciences, and ocean sciences; life sciences; mathematics and statistics; and physical sciences.

Note: Data available for FY 2010 to FY 2017 only

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Appendix

Texas Higher Education Coordinating Board Survey of Research Expenditures, FY 2018 Universities and Health-Related Institutions Instructions and Definitions for Survey

About This Survey

The Texas Higher Education Coordinating Board collects data from Texas higher education institutions annually through the Survey of Research Expenditures. Beginning in Fiscal Year 2010, the survey was issued as part of the Academic Sources and Uses Template. The collection of these data is mandated by the Texas Legislature. The data collected are published and accessible in an on-line report system <http://www.theccb.state.tx.us/Research>.

The figures from this survey are used by institutions of higher education and other state agencies. In addition, the data provides the basis for public policy and management decisions. Therefore, it is critical that the data reported are accurate and complete.

The information provided in the report should be consistent with the Annual Financial Report (AFR) of the institution. For additional information, please refer to College and University Business Administration, NACUBO.

The data collection form and definitions are modeled after similar forms used by the National Science Foundation. This approach is an effort to provide comparability of data with national data and reduce the data collection efforts of the institutions.

General Concepts and Definitions

A. Research and Development (R&D) activities are defined as follows:

1. Research is systematic study directed toward fuller scientific knowledge or understanding of the subject studied (reference [OMB Circular A-110](#), subpart A, definitions, A.2dd).
2. Development is systematic use of knowledge or understanding gained from research, directed toward the production of useful materials, devices, systems, or methods including design and development of prototypes and processes (reference [OMB Circular A-110](#), subpart A, definition A.2dd).

Research and Development (R&D) also includes activities involving the training of individuals in research techniques where such activities utilize the same facilities as other research and development activities and where such activities are not included in the instruction function (reference [OMB Circular A-21](#), B.1.b).

Exclusions from research and development:

- Training of scientific manpower
- Mapping and surveys
- Routine product testing
- Quality Control
- Experimental production
- Collection of general purpose statistics (statistics not collected as part of a specific R&D project)

NOTE: Certain activities may or may not be classified as research and development depending upon circumstances. Examples of such activities are given below in section B, Reporting Guidelines for R&D versus Non-R&D Activities.

B. Selected financial terms

Fiscal Year - The 12-month accounting period ending August 31 of each year.

Expenditures - All amounts of money paid out by your institution to support R&D activities. Include funds "passed through" to other institutions of higher education. Include earned indirect costs and fringe benefits. Do not include non-monetary awards.

Federal Funds - All Federal monies used in support of the R&D activities of your institution. These include reimbursements, contracts, grants, and any identifiable amounts spent from Federal programs including Federal monies passed through state agencies.

State Sources - Include all expenditures of funds appropriated by the State of Texas not included in institutionally controlled funds listed in paragraph 5 below. Included in this category are state appropriated "Special Items" and state research contracts and grants, interagency contracts, contracts with Texas local governments, etc.

Institution Resources - Include expenditures of funds that are locally controlled. This would include PUF and AUF funds, other local funds, etc.

Private - Include expenditures of funds from both for-profit and non-profit corporations and individuals. Also, include in this category funds from agencies from other states.

Definitions for Specific Items

Total R&D Expenditures - Defined For Survey - All expenditures except those for R&D plant.

Capital outlay for research equipment

According to the Government Accounting Standards Board, annual financial reports use expenses rather than expenditures. The major difference is that capital outlays for research equipment will be depreciated over the life of the equipment and will not be separately identified as research items in the annual financial reports. This line allows inclusion of expenditures for equipment that are not included in research expenses. The research definition used for this report does not allow inclusion of expenses for R&D plant or construction.

R&D Expenses not meeting the narrow definition of R&D used in the Research Expenditure Survey. Externally-funded activities that cannot be classified as R&D using the definitions appearing in A, above, are included. Do not include projects funded with "development" funds unless they are related to research activities.

Notes: Reporting Guidelines for R&D versus Non-R&D Activities:

Economic studies - To be classified as research, the activities under this heading should be systematic and intensive. They should not include program planning, implementation, and evaluation unless these activities are designed as a fairly rigorous research effort. For example, a study to determine the impact of proposed tax changes on State revenues, or on Statewide employment, consumption, or industrial output could be reported as economic research. But the collection of economic data on tax revenues, personal income, or industrial output would be reported as economic research only if collected as part of the research project.

Evaluation - Evaluation qualifies as research when it is part of a specific research undertaking. Evaluation conducted separately from a research project is considered research when it involves scientific method and hypothesis testing procedures with fairly rigorous standards. Evaluation activities that do not involve systematic design and testing should not be included.

Demonstration - Demonstration activities that are part of research or development (i.e., that are intended to prove or to test whether a technology or method does, in fact, work) should be included. Demonstration intended to make available information about new technologies or methods should not be included. For example, an educational demonstration on new teaching methods should be reported as an R&D activity if the demonstration is established as an experiment to produce new information, is accomplished within a definite time period, and is accompanied by a thorough evaluation. An educational demonstration to apply or exhibit new teaching methods, or a demonstration without a scheduled termination or a thorough evaluation, should not be reported as an R&D activity.

Collection of statistical data - The collection of statistics is an R&D activity only if conducted as part of a specific research or development program. For example, the regular collection and publication of statistics on the incidence of various diseases within a State by a State health department is general purpose data collection and not research or development. The data gathering is not part of a research program and is designed for use by a range of persons, such as practicing physicians, public health officials, and school officials. If the data on incidence of diseases are gathered as part of a project on the origin and nature of

particular diseases, however, or to establish generalizations on why certain individuals or groups contract certain diseases, this would be research.

Satellite information - Photographs and tapes purchased from Federal agencies (or others) sponsoring satellite operations are not considered research and development unless they are used primarily in support of a research or development program. Tapes and photographs that are stored in documentation centers or used primarily for the formulation of regulations are excluded from this survey.

Technology transfer - Technology transfer involves the adoption, and perhaps adaptation, of new techniques or products that have already been brought to a usable condition. The adoption and use of a technology is not research and development, but the adaptation of a technology to meet unique regional or local needs could involve R&D activities. For example, a new method of treating water to make it potable is developed in one State. If another State adopts the same treatment process, the adoption costs for facilities, equipment, personnel, etc., are not R&D expenditures. However, if further systematic, intensive study is required by the second State to modify the treatment process to adapt it to unique local conditions, the costs of modification and adaptation could be R&D expenditures.

Agricultural sciences deal with the production of food and fiber. They include work in plant sciences, animal sciences, aquaculture, agricultural economics, and other topics related to the agricultural enterprise.

Biological sciences are those life sciences (apart from medical sciences and agricultural sciences described above) that deal with the origin, development, structure, function, and interaction of living things. Examples of biological sciences are as follows: anatomy; animal sciences; bacteriology; biochemistry; biogeography; biophysics; ecology; embryology; entomology; evolutionary biology; genetics; immunology; microbiology; molecular biology; nutrition and metabolism; parasitology; pathology; pharmacology; physical anthropology; physiology; plant sciences; radiobiology; systematics.

Computer science is concerned with the application of mathematical methods to automated information systems, the development of computer technology, and advanced applications of computers.

Engineering is concerned with studies directed toward developing engineering principles or toward making specific principles usable in engineering practice. Engineering fields include aeronautical, astronautical, chemical, civil, electrical, mechanical, metallurgy and materials, and engineering not elsewhere classified, such as agricultural, bioengineering, biomedical, industrial, nuclear, ocean and systems.

Environmental sciences (terrestrial and extraterrestrial) are concerned with the gross, non-biological properties (with one exception) of the areas of the solar system that directly or indirectly affect man's survival and welfare. They comprise the fields of atmospheric sciences, geological sciences, and oceanography. The one exception is that expenditures for studies pertaining to life in the sea or other bodies of water are to be reported as support of oceanography and not biology.

Mathematical sciences employ logical reasoning with the aid of symbols and are concerned with the development of methods of operation employing such symbols.

Medical sciences are concerned with the causes, effects, prevention, or control of abnormal conditions in man or his environment as they relate to health. Included are the clinical medical sciences, which are concerned with the study of the origins, diagnosis, or treatment of a particular

disease in living human subjects under controlled conditions, and other medical sciences. Examples of the medical sciences are as follows: internal medicine; neurology; ophthalmology; preventive medicine and public health; psychiatry; radiology; surgery; veterinary medicine; dentistry; physical medicine and rehabilitation; podiatry.

Physical sciences are concerned with the understanding of the material universe and its phenomena. They comprise the fields of astronomy, chemistry; physics, and physical sciences not elsewhere classified.

Psychology deals with behavior, mental processes, and individual and group characteristics and abilities. Examples of disciplines within psychology are as follows: experimental psychology; animal behavior; clinical psychology; comparative psychology; ethnology; social psychology; educational personnel, vocational psychology and testing; industrial and engineering psychology; development and personality.

Social sciences are directed toward an understanding of the behavior of social institutions and groups and of individuals as members of a group. These include anthropology, economics, history, linguistics, political sciences, and sociology.

Other sciences not elsewhere classified is a category to be used for multidisciplinary and interdisciplinary projects and cannot be classified within one of the broad fields of science listed above.

Arts and humanities include topics such as art, music, history, languages, religion, and other aspects of man's culture and heritage.

Business administration deals with the management and operation of business enterprises. It includes work in management, marketing, accounting, and related topics.

Education includes research related to any aspect of education. This includes elementary, secondary, and higher education; educational policy; education administration; etc.

Law and public administration includes research related to legal systems and to public policy at the federal, state, or local levels.

Other non-science activities should include all non-science disciplines not appropriately categorized above.

Areas of Special Interest - This section is intended to provide information on expenditures in areas of special interest to the public. The list is not all-inclusive. The totals of the Areas of Special Interest will not normally be equal to the "Total Expenditures for Conduct of R&D". Further, expenditures may overlap two or more categories (e.g., a given project may be reported both as materials science and microelectronics or as aging and mental health). Institutions may need to use ad hoc estimators to come up with these numbers.

Human embryonic stem cell research and adult stem cell research were added to the areas of special interest section beginning in FY 2013.

Pass Throughs - Determines the amounts of expenditures your institution received as a subrecipient and passed through to subrecipients.



This document is available on the [Texas Higher Education Coordinating Board website](#).

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