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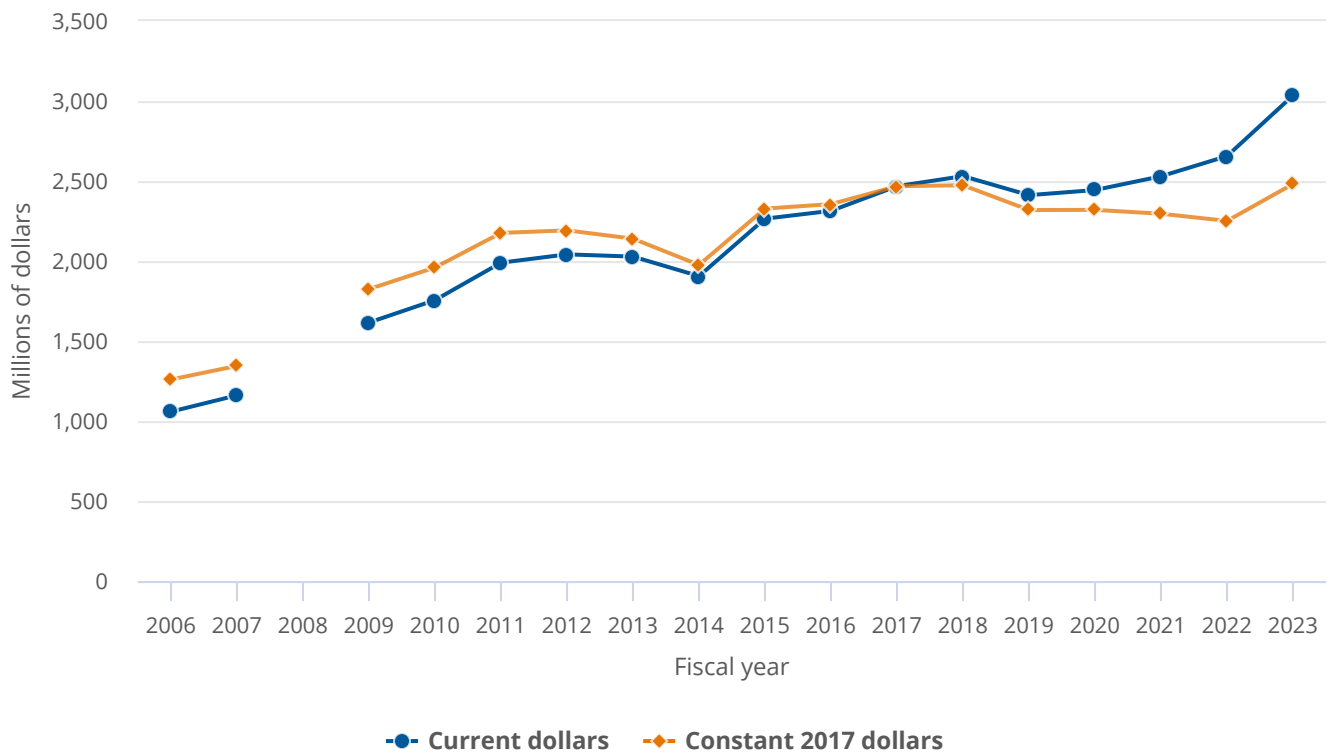
InfoBrief

State Government Agencies' Expenditures for R&D Total \$3.0 Billion in FY 2023, an Increase of 14% from FY 2022

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In FY 2023, state government agencies' expenditures on research and experimental development (R&D) totaled \$3.0 billion, an increase of 14.3% from FY 2022 expenditures of \$2.7 billion ([figure 1](#)). This is the largest year-to-year increase since FY 2015 when state government R&D expenditures increased 18.9% from FY 2014.¹ While some states show larger year-to-year changes than others, there is no one state or governmental function driving the increase; the increases are broadly observed across states and functions. However, when adjusted for inflation, FY 2023 state government agency R&D expenditures totaled \$2.5 billion in constant 2017 dollars, an increase of 10.2% from the adjusted FY 2022 amount of \$2.3 billion.²

Figure 1**State government expenditures for R&D: FYs 2006–23****Note(s):**

No survey was conducted for FY 2008. State R&D totals can display considerable volatility between survey years due to several national and state-specific factors. Large changes are not unusual, especially for discretionary spending items such as R&D. Data include all 50 states and the District of Columbia. Puerto Rico is not included due to its classification as a U.S. territory.

Source(s):

National Center for Science and Engineering Statistics, Survey of State Government Research and Development.

This InfoBrief presents summary statistics from the FY 2023 Survey of State Government Research and Development, sponsored by the National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation. Amounts reported do not include direct appropriations from state legislatures to universities, colleges, and private organizations. Data presented in this InfoBrief are in current dollars unless otherwise noted.

Summary of State Government R&D Totals

State governments' FY 2023 expenditures for both R&D and R&D plant totaled \$3.1 billion ([table 1](#)). R&D accounted for 98.9% of these expenditures at \$3.0 billion. R&D plant accounted for just \$34 million.³ State governments served as the largest source of funds for agency R&D at \$2.3 billion (76%), while federal funds accounted for \$742 million (24%).⁴ In FY 2022, expenditures from state government funds accounted for 74% and federal funding accounted for 26% of all state R&D expenditures.

Table 1**State government agency R&D and R&D plant expenditures: FYs 2022–23**

(Thousands of current dollars)

Characteristic	FY 2022	FY 2023	% change
All R&D and R&D plant expenditures	2,689,023	3,068,515	14.1
All R&D expenditures	2,655,773	3,034,601	14.3
All R&D plant expenditures	33,250	33,914	2.0
R&D expenditures			
By source of funds			
Federal government	701,257	742,246	5.8
State government and other nonfederal sources	1,954,516	2,292,355	17.3
By performer			
Intramural ^a	695,883	741,613	6.6
Extramural	1,959,891	2,292,988	17.0
Higher education institutions	1,046,082	1,229,895	17.6
Companies and individuals	453,901	597,852	31.7
Nonprofit organizations	312,046	325,966	4.5
Other governments ^b	61,660	58,292	-5.5
All other ^c	86,202	80,984	-6.1
Intramural performers, by type of R&D			
Basic research	121,065	120,980	-0.1
Applied research	534,997	577,326	7.9
Experimental development	39,821	43,308	8.8
By government function			
Agriculture	127,264	147,888	16.2
Energy	325,616	373,458	14.7
Environment and natural resources	556,643	591,277	6.2
Health	1,099,492	1,292,801	17.6
Transportation	290,871	315,134	8.3
Other ^d	255,888	314,043	22.7

^a Intramural performers include employees within the same state department or agency and services performed by others in support of internal R&D projects.

^b Other governments include federal government departments and agencies; other departments or agencies within the state; other state governments; and county, city, special district, or regional local governments.

^c All other is performers not elsewhere classified.

^d Other government function includes corrections, criminal justice, education, forensic sciences, labor, public safety, and social services.

Note(s):

R&D plant includes acquisition of land, facilities, major equipment, and major building renovations intended primarily for R&D use. Detail may not add to total due to rounding. Data include all 50 states and the District of Columbia. Puerto Rico is not included due to its classification as a U.S. territory.

Source(s):

National Center for Science and Engineering Statistics, Survey of State Government Research and Development, FY 2023.

Of the six functional categories of state agency R&D expenditures, health-related R&D remained the largest with over \$1.3 billion in expenditures, increasing 17.6% from FY 2022. Environment and natural resources-related R&D remained the second-largest functional category with \$591 million, while energy-related R&D followed with \$373 million. Transportation-related R&D totaled \$315 million, while agriculture-related R&D totaled \$148 million. Other R&D, a combination of activities including but not limited to corrections, criminal justice, education, forensic science, labor, public safety, and social services, totaled \$314 million in FY 2023.

State Government R&D Performance

Overview

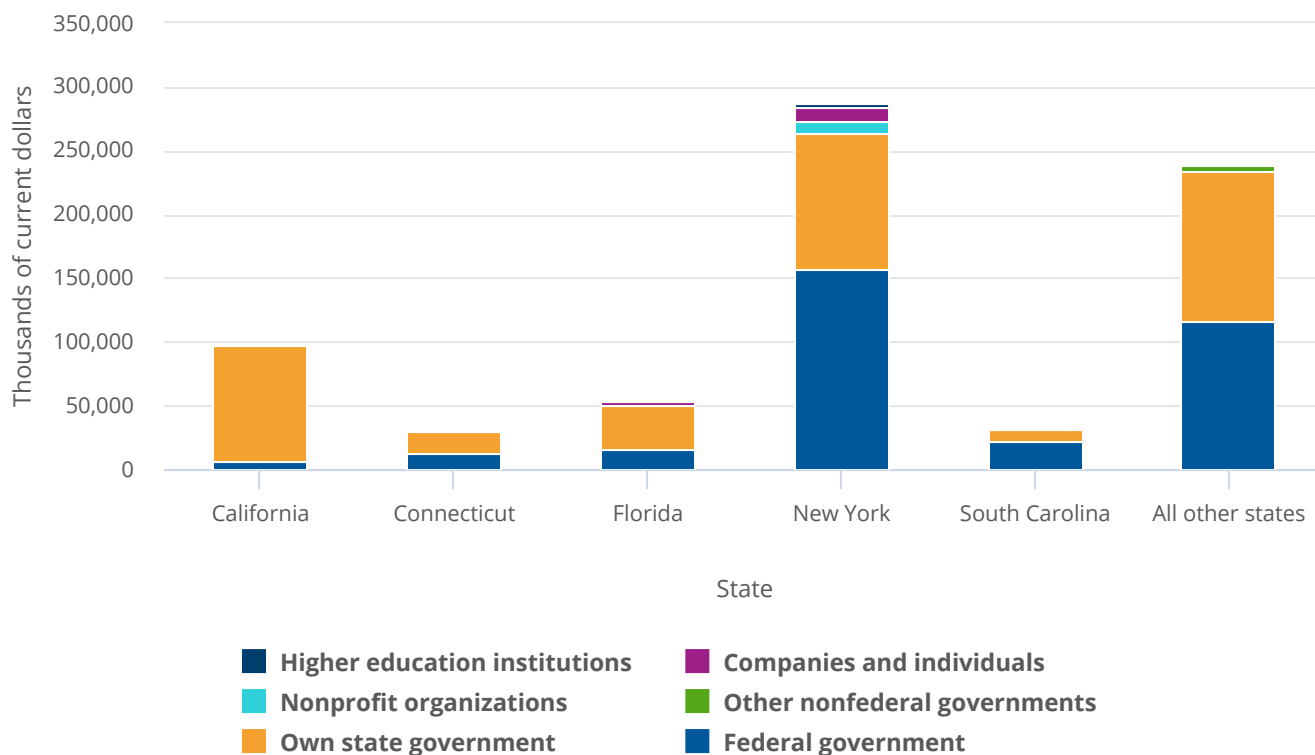
Although state governments are both funders and performers of R&D, the majority (76%) of their expenditures support extramural R&D (i.e., performers other than state agencies). Higher education institutions were the primary recipients of these expenditures, receiving 54% of all extramural funding, followed by companies and individuals (26%), and nonprofit organizations (14%). All other extramural performers, including other governments, accounted for the remaining 6% of extramural R&D support. Intramural performers of R&D, the state agencies themselves, totaled \$742 million in FY 2023, an increase of 6.6% from \$696 million in FY 2022.

Intramural R&D Performance

Five states accounted for 67% of the \$742 million in total expenditures for intramural R&D performed by state agencies in FY 2023: New York (\$286 million), California (\$98 million), Florida (\$54 million), South Carolina (\$33 million), and Connecticut (\$29 million) (figure 2). New York State's own intramural R&D expenditures accounted for nearly 39% of all state governments' intramural R&D performance. In FY 2023, 50% (\$374 million) of total state government intramural R&D expenditures came from each state's own funds, while 45% (\$330 million) was supported by federal funds. New York State accounted for 48% (\$157 million) of all intramural R&D expenditures sourced from federal funds across all states.⁵

Figure 2

State government expenditures for R&D for intramural performers, by state and source of funds: FY 2023



Note(s):

Data include all 50 states and the District of Columbia. Puerto Rico is not included due to its classification as a U.S. territory. Intramural performers include a department's or agency's own employees who perform R&D and services performed by others in support of an internal R&D project.

Source(s):

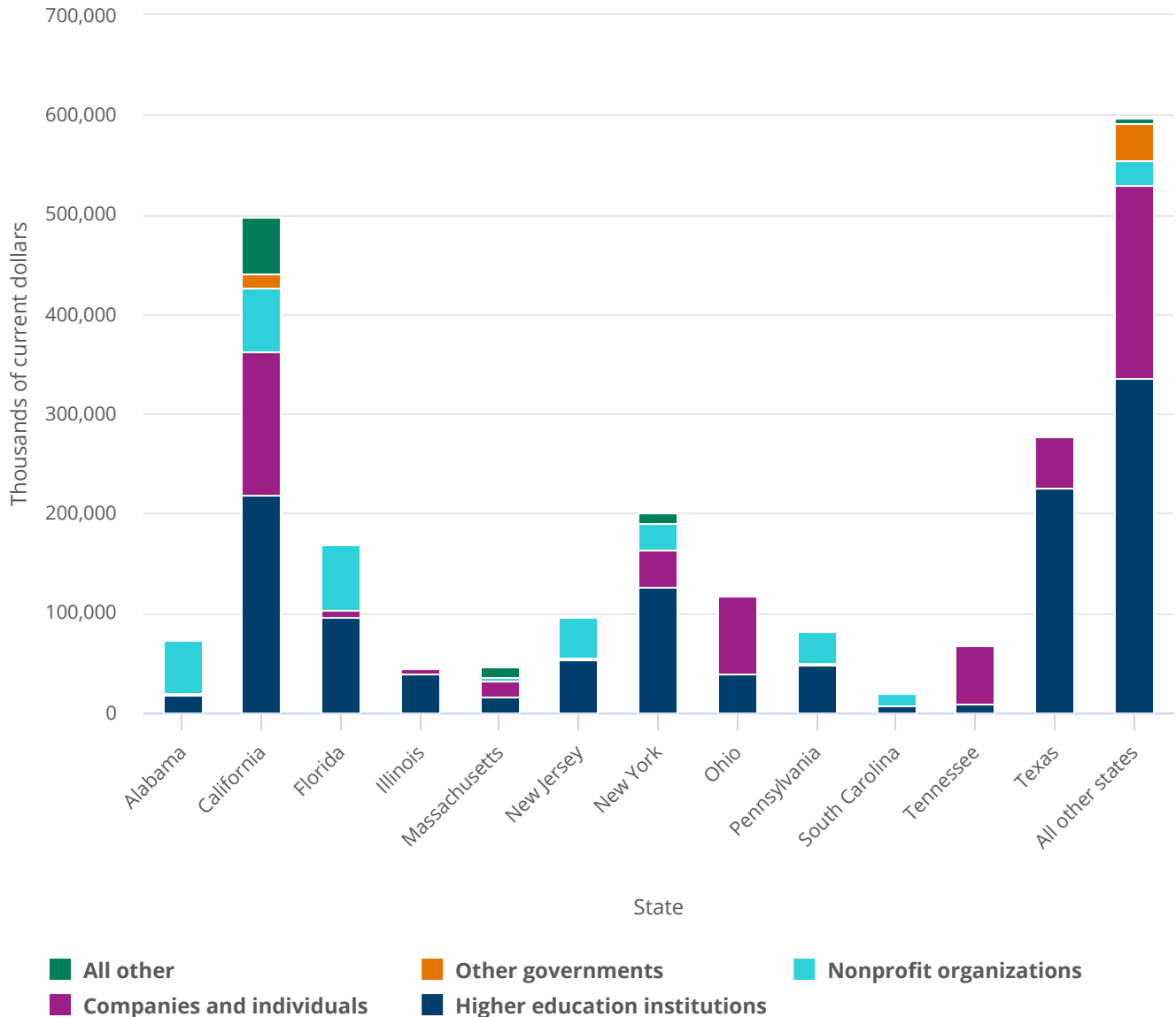
National Center for Science and Engineering Statistics, Survey of State Government Research and Development, FY 2023.

Extramural R&D Performance

In FY 2023, all state government expenditures for extramural performance of R&D totaled \$2.3 billion. The 10 states with the largest amount of extramural R&D expenditures were California (\$497 million), Texas (\$280 million), New York (\$200 million), Florida (\$169 million), Ohio (\$117 million), Pennsylvania (\$83 million), New Jersey (\$96 million), Alabama (\$75 million), Tennessee (\$67 million), and Massachusetts (\$47 million). Combined, they accounted for \$1.6 billion or 71% of all extramural R&D (figure 3).

Figure 3

State government expenditures for extramural R&D, by state and performer: FY 2023



Note(s):

Data include all 50 states and the District of Columbia. Puerto Rico is not included due to its classification as a U.S. territory. Other governments include federal government departments and agencies; other departments or agencies within the state; other state governments; and county, city, special district, or regional local governments. All other is performers not elsewhere classified.

Source(s):

National Center for Science and Engineering Statistics, Survey of State Government Research and Development, FY 2023.

However, states varied in how they distributed extramural R&D. For example, Texas state agencies directed \$225 million of the state's total extramural R&D of \$280 million toward higher education institutions, compared with \$53 million to companies and individuals. By comparison, California's extramural R&D funding is distributed across three sectors, with \$218 million directed toward higher education institutions, \$143 million toward companies and individuals, and \$64 million toward nonprofit organizations.

R&D by State Government Functions

Whether performed by state agencies themselves or by other performers outside the agency, most states reported a broad mix of R&D related to state government functions (table 2). Health-related R&D expenditures accounted for the largest share (43%) of state agencies' R&D. R&D expenditures related to environment and natural resources and to energy accounted for 19% and 12%, respectively, of total state government R&D expenditures in FY 2023. The share of total R&D expenditures related to transportation, agriculture, and all other functions in FY 2022 were 10%, 5%, and 10%, respectively.

Table 2

Individual state agency expenditures for R&D, by total R&D and function, for the 20 largest agencies: FY 2023

(Thousands of current dollars)

Agency and state	Total	Agriculture	Energy	Environment and natural resources	Health	Transportation	Other
United States ^a	3,034,601	147,888	373,458	591,277	1,292,801	315,134	314,043
Cancer Prevention and Research Institute (Texas)	237,998	0	0	0	237,998	0	0
Energy Commission (California)	170,673	0	170,673	0	0	0	0
Mental Health, Office of (New York)	170,363	0	0	0	170,363	0	0
Institute for Regenerative Medicine (California)	152,261	0	0	0	152,261	0	0
Health, Department of (Florida)	121,559	0	0	0	121,559	0	0
Economic Development, Department of (New York)	98,661	2,000	4,000	2,000	6,000	0	84,661
Development, Department of (Ohio)	88,778	0	5,975	46,369	0	0	36,434
Health, Department of (New Jersey)	79,122	0	0	0	79,122	0	0
Roswell Park Comprehensive Cancer Center (New York)	76,048	0	0	0	76,048	0	0
Fish and Wildlife Conservation Commission (Florida)	60,990	0	0	60,990	0	0	0
Education, Department of (Tennessee)	57,172	0	0	0	0	0	57,172
Energy Research and Development Authority (New York)	55,116	0	40,585	3,744	0	10,787	0
Public Utilities Commission, Executive Division (California)	55,036	0	55,036	0	0	0	0
Commerce, Department of (Alabama)	54,419	0	0	44,419	10,000	0	0
Health, Department of (Pennsylvania)	54,142	0	0	0	54,142	0	0
Transportation, Department of (California)	49,447	0	0	0	0	49,447	0
Health, Department of (New York)	42,200	261	0	1,568	40,370	0	0
Technology Institute (Maine)	31,924	9,595	0	1,355	4,067	0	16,906
Natural Resources, Department of (South Carolina)	29,190	0	0	29,190	0	0	0
Technology Development Corp (Maryland)	28,682	0	0	0	28,682	0	0
All other agencies	1,320,821	136,031	97,189	401,641	312,188	254,901	118,870

^a U.S. total reflects all 50 states and the District of Columbia. Puerto Rico is not included due to its classification as a U.S. territory.

Note(s):

Includes state agency funding from all sources for both intramural and extramural performance. Detail may not add to total because of rounding.

Source(s):

National Center for Science and Engineering Statistics, Survey of State Government Research and Development, FY 2023.

Agency-Specific R&D Details

Of the 578 state agencies that responded to the survey in FY 2023, the largest 20 state agencies, by total expenditures, accounted for 56% (\$1.7 billion) of all agency R&D expenditures. Although many states invested in health-related R&D, expenditures were highly concentrated among the largest funding agencies. For example, among the 20 largest state agencies, 12 funded health-related R&D. These 12 agencies accounted for \$981 million (76%) of the \$1.3 billion total for health-related R&D while the four largest agencies constituted 53% (\$682 million) of all FY 2023 state government health-related R&D. State expenditures for energy-related R&D were even more highly concentrated: the California Energy Commission alone accounted for 46% (\$171 million) of all state agencies' energy-related R&D expenditures (\$373 million).

Data Sources, Limitations, and Availability

All 50 states, the District of Columbia, and Puerto Rico participated in the FY 2023 survey; 578 of the 589 surveyed agencies responded. Puerto Rico is not included in the U.S. total due to its classification as a U.S. territory. Data for the FY 2023 survey were collected for NCSES by the Census Bureau under an interagency agreement.

For most states, the fiscal year begins on 1 July and ends the following 30 June. For example, FY 2023 begins on 1 July 2022 and ends on 30 June 2023. There are, however, five exceptions to the 30 June fiscal year end: New York (ends 31 March); Texas (ends 31 August); and Alabama, Michigan, and the District of Columbia (all end 30 September). Data presented in this InfoBrief are for each of the respective fiscal year periods as defined by the states.

Terms such as state, state government, and state agencies have equivalent meaning and are used interchangeably throughout this InfoBrief. The amounts reported here are for R&D expenditures of state government departments, agencies, public authorities, commissions, and other dependent entities that operate separately or somewhat autonomously from the central state government. State government R&D totals can display considerable volatility between survey years due to several national and state-specific factors. Large changes are not unusual, especially for discretionary spending items such as R&D. R&D plant expenditures can be highly variable year to year and will increase or decrease as capital projects begin or end.

Amounts reported do not include direct appropriations from state legislatures to universities, colleges, and private organizations. As a result, the \$1.2 billion in FY 2023 expenditures reported by state agencies to support R&D performance by higher education institutions differs from the figure reported by universities and colleges in the NCSES Higher Education R&D Survey for R&D expenditures funded by state and local government sources because the latter includes direct state appropriations.

Although this survey is a census of state government agencies that fund R&D and there is no sampling error, survey data are still subject to some degree of unmeasurable nonsampling error, which may include errors in classification or measurement of certain aspects of an agency's R&D. For additional information see the Survey Quality Measures within the "Technical Notes" of the survey.⁶

State- and agency-specific data not available in this InfoBrief are available in the full set of data tables from this survey at <https://nces.nsf.gov/surveys/state-government-research-development/2023#data>. For more information, please contact the survey manager.

NCSES has reviewed this product for unauthorized disclosure of confidential information and approved its release (NCSES-DRN24-047).

Notes

1 There may be some differences in the rounding of percentages based on total dollar values reported compared to rounded values presented in this InfoBrief.

2 In this report, dollars adjusted for inflation (i.e., constant dollars) are based on the gross domestic product (GDP) implicit price deflator (currently in 2017 dollars) as published by the Bureau of Economic Analysis at https://www.bea.gov/iTable/index_nipa.cfm, Table 1.1.9 Implicit Price Deflators for Gross Domestic Product, accessed on 4 August 2024. Note that GDP deflators are calculated on an economy-wide scale and do not explicitly focus on R&D.

3 Expenditures for R&D do not include expenditures for R&D plant because the two are separate funding activities.

4 State sources of funding include, but are not necessarily limited to, appropriations from the state legislature, agricultural commodity assessments (checkoffs), bond funds, general funds, restricted funds, revenue funds, tobacco settlement funds, and revenue from charges, fees, or fines.

5 Data on intramural R&D by source of funds are available in data table 5 of the full set of tables available at <https://nces.nsf.gov/surveys/state-government-research-development/2023#data>.

6 Survey technical notes are available at <https://nces.nsf.gov/surveys/state-government-research-development/2023#technical-notes>.

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