



InfoBrief

Federally Funded R&D Centers Report 13% Increase in R&D Spending in FY 2023

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The nation’s 42 federally funded research and development centers (FFRDCs) spent \$29.3 billion on research and development (R&D) in FY 2023, an annual increase of 12.7% in current dollars ([table 1](#)). The federal government funded \$28.9 billion of the R&D total, which represented a 12.8% annual increase in federal support to FFRDCs. FY 2023 was the 10th consecutive year of nominal growth after 2 years of R&D expenditure declines in FYs 2011–13.¹ The most recent decline in constant dollars occurred from FY 2021 to FY 2022. In constant dollars, total FFRDC R&D expenditures rose an average of 2.6% annually from FY 2013 to FY 2023 ([figure 1](#)). Average annual growth in current dollars was 5.2% during the same period. (All amounts and calculations are reported in current dollars unless otherwise noted. All growth rates are compound annual growth rates.) These and the other statistics in this report come from the FY 2023 FFRDC Research and Development Survey, conducted by the National Center for Science and Engineering Statistics within the U.S. National Science Foundation.

Table 1

R&D expenditures at federally funded research and development centers, by source of funds: FYs 2013–23

(Thousands of current dollars)

Fiscal year	All R&D expenditures	Federal government	State and local governments	Businesses	Nonprofit organizations	All other sources
2013	17,667,184	17,284,513	50,449	186,911	39,390	105,921
2014	17,718,556	17,331,396	28,337	220,735	37,182	100,906
2015	18,458,257	18,097,189	18,427	208,780	27,984	105,877
2016	19,219,702	18,855,593	21,556	192,239	40,195	110,119
2017	20,038,307	19,667,804	29,029	192,107	46,526	102,841
2018	21,171,529	20,770,388	43,458	197,975	43,630	116,078
2019	22,737,500	22,338,855	51,167	180,583	48,238	118,657
2020	23,514,241	23,133,501	43,995	172,866	47,056	116,823
2021	24,921,476	24,509,691	43,774	195,954	49,016	123,041
2022	26,006,971	25,605,479	38,591	207,483	49,120	106,298

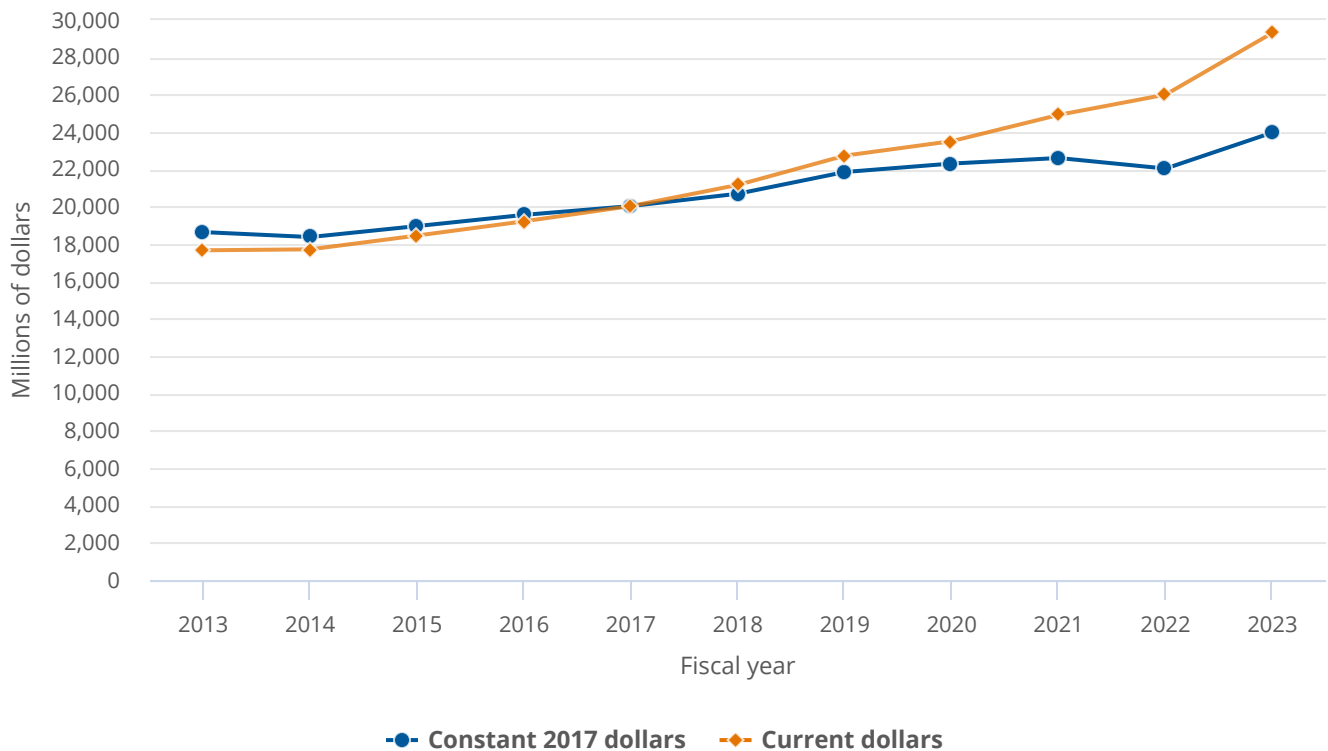
Table 1**R&D expenditures at federally funded research and development centers, by source of funds: FYs 2013–23**

(Thousands of current dollars)

Fiscal year	All R&D expenditures	Federal government	State and local governments	Businesses	Nonprofit organizations	All other sources
2023	29,316,897	28,880,018	35,407	224,361	42,292	134,819

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

Figure 1**Total R&D expenditures at federally funded research and development centers: FYs 2013–23****Source(s):**

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

R&D by Funding Source

Federal funding sources accounted for 98.5% (\$28.9 billion) of FFRDC R&D expenditures in FY 2023 ([table 1](#)). This level of support is typical for FFRDCs, which are privately operated R&D organizations that are exclusively or substantially financed by the federal government. Nonfederal sources funded the remaining R&D, which totaled \$436.9 million: businesses (\$224.4 million); nonprofit organizations (\$42.3 million); state and local governments (\$35.4 million); and all other sources (\$134.8 million), such as funds from foreign governments and foreign or U.S. universities.

Federal Agency Sources of R&D Funding

The Department of Energy (DOE) and the Department of Defense (DOD) combined to account for 77.4% of federally funded R&D expenditures at FFRDCs (table 2). DOE accounted for 56.7% (\$16.4 billion) of the federally funded spending, and DOD accounted for 20.7% (\$6.0 billion). The National Aeronautics and Space Administration (NASA) (\$2.9 billion, or 10.1% of the total) and the Department of Health and Human Services (HHS) (\$1.3 billion, or 4.6% of the total), which includes the National Institutes of Health, were the only other agencies funding greater than \$1 billion. Almost \$2.3 billion of federally funded R&D came from agencies other than the largest four. FFRDCs identified 21 other agencies as sources of federal funding in FY 2023 (table 3).

Table 2

Federally financed R&D expenditures at federally funded research and development centers, by federal agency and FFRDC: FY 2023

(Thousands of current dollars)

FFRDC	All federal R&D expenditures	DOD	DOE	HHS	DHS	DOT	NASA	NSF	Other
All FFRDCs	28,880,018	5,976,325	16,379,939	1,318,421	619,487	213,764	2,921,144	382,460	1,068,478
University-administered FFRDCs	8,010,234	1,304,978	3,400,432	45,944	68,927	34,755	2,704,050	374,958	76,190
Ames Laboratory	40,091	122	39,592	0	0	0	0	0	377
Argonne National Laboratory	1,205,264	30,665	1,114,827	8,694	20,967	6,802	683	0	22,626
Fermi National Accelerator Laboratory	400,573	1,353	399,204	0	0	0	3	13	0
Green Bank Observatory	11,909	0	0	0	0	0	75	11,834	0
Jet Propulsion Laboratory	2,671,305	0	0	0	0	0	2,671,305	0	0
Lawrence Berkeley National Laboratory	1,131,175	16,553	1,085,067	22,336	1,558	1,185	2,596	0	1,880
Lincoln Laboratory	1,234,615	1,154,563	8,511	2,466	15,692	22,246	15,181	0	15,956
National Center for Atmospheric Research	184,647	4,906	4,712	0	0	4,252	10,404	135,298	25,075
National Radio Astronomy Observatory	102,104	681	0	0	0	0	355	101,068	0
National Solar Observatory	39,719	24	0	0	0	0	843	38,852	0
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	92,841	87	4,261	0	0	0	1,299	87,194	0
Princeton Plasma Physics Laboratory	127,260	316	125,885	0	0	0	1,010	49	0
SLAC National Accelerator Laboratory	469,601	8,299	448,382	11,165	173	0	296	650	636
Software Engineering Institute	130,141	87,409	1,002	1,283	30,537	270	0	0	9,640
Thomas Jefferson National Accelerator Facility	168,989	0	168,989	0	0	0	0	0	0
Nonprofit-administered FFRDCs	9,879,651	3,173,584	4,839,352	321,207	445,675	177,059	145,341	7,337	770,096
Aerospace Federally Funded Research and Development Center	1,251,725	1,080,782	26,945	0	789	4,466	100,321	313	38,109
Arroyo Center	42,433	42,433	0	0	0	0	0	0	0
Brookhaven National Laboratory	678,623	3,782	646,750	5,130	714	0	9,353	0	12,894
Center for Advanced Aviation System Development	166,246	0	0	0	0	166,244	2	0	0
Center for Communications and Computing	77,391	77,391	0	0	0	0	0	0	0
Center for Enterprise Modernization	258,155	0	2	0	0	0	918	0	257,235
Center for Naval Analyses	96,103	96,103	0	0	0	0	0	0	0

Table 2**Federally financed R&D expenditures at federally funded research and development centers, by federal agency and FFRDC: FY 2023**

(Thousands of current dollars)

FFRDC	All federal R&D expenditures	DOD	DOE	HHS	DHS	DOT	NASA	NSF	Other
Center for Nuclear Waste Regulatory Analyses	3,467	11	129	0	0	87	0	0	3,240
CMS Alliance to Modernize Healthcare	281,709	0	0	281,709	0	0	0	0	0
Homeland Security Operational Analysis Center	66,264	0	0	0	65,674	0	0	0	590
Homeland Security Systems Engineering and Development Institute	216,456	0	0	0	201,186	0	0	0	15,270
Idaho National Laboratory	642,971	91,415	509,880	0	21,217	1,772	336	0	18,351
National Biodefense Analysis and Countermeasures Center	41,321	401	0	1,533	26,737	0	0	0	12,650
National Cybersecurity Center of Excellence	23,010	0	0	0	0	0	0	0	23,010
National Defense Research Institute	67,157	62,235	0	0	0	581	0	0	4,341
National Renewable Energy Laboratory	648,671	16,694	609,883	0	4,810	862	715	0	15,707
National Security Engineering Center	1,367,998	1,168,542	0	0	0	0	0	0	199,456
Oak Ridge National Laboratory	2,000,646	55,208	1,768,996	6,696	9,265	3,047	31,385	252	125,797
Pacific Northwest National Laboratory	1,424,969	199,322	1,068,347	25,432	99,217	0	1,453	317	30,881
Project Air Force	48,729	48,729	0	0	0	0	0	0	0
Savannah River National Laboratory	241,518	29,269	206,719	0	2,609	0	0	0	2,921
Science and Technology Policy Institute	9,977	202	119	707	0	0	699	6,455	1,795
Systems and Analyses Center	224,112	201,065	1,582	0	13,457	0	159	0	7,849
Industry-administered FFRDCs	10,990,133	1,497,763	8,140,155	951,270	104,885	1,950	71,753	165	222,192
Frederick National Laboratory for Cancer Research	929,754	118	0	929,635	0	0	0	0	1
Lawrence Livermore National Laboratory	2,079,762	360,585	1,673,949	8,069	22,915	0	7,886	0	6,358
Los Alamos National Laboratory	3,742,718	77,067	3,483,875	11,510	5,916	0	62,957	165	101,228
Sandia National Laboratories	4,237,899	1,059,993	2,982,331	2,056	76,054	1,950	910	0	114,605

DHS = Department of Homeland Security; DOD = Department of Defense; DOE = Department of Energy; DOT = Department of Transportation; FFRDC = federally funded research and development center; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

Table 3**Federally financed R&D expenditures at federally funded research and development centers, by federal agency: FY 2023**

(Thousands of current dollars)

Federal agency	All federal R&D expenditures
All federal agencies	28,880,018
Agency for International Development	15,211

Table 3**Federally financed R&D expenditures at federally funded research and development centers, by federal agency: FY 2023**

(Thousands of current dollars)

Federal agency	All federal R&D expenditures
Architect of the Capitol	132
Central Intelligence Agency	2,525
Consumer Product Safety Commission	491
Department of Agriculture	5,676
Department of Commerce	101,903
Department of Defense	5,976,325
Department of Energy	16,379,939
Department of Health and Human Services	1,318,421
Department of Homeland Security	619,487
Department of Justice	27,976
Department of Labor	373
Department of State	93,119
Department of the Interior	19,922
Department of the Treasury	151,893
Department of Transportation	213,764
Department of Veterans Affairs	127,237
Environmental Protection Agency	6,379
Executive Office of the President	539
General Services Administration	2,300
National Aeronautics and Space Administration	2,921,144
National Credit Union Administration	198
National Science Foundation	382,460
Nuclear Regulatory Commission	25,928
Office of the Director of National Intelligence	14,795
Other agencies not listed ^a	471,881

^a Some funding sources were not identified for security reasons or because the original source was not known.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

Expenditure Trends at Specific FFRDCs

FFRDCs spent \$6.6 billion more on R&D in FY 2023 than in FY 2019 ([table 4](#)). The majority of FFRDCs (37 centers) increased R&D spending in FY 2023 compared with FY 2022; 5 FFRDCs reported lower R&D totals in FY 2023. Eleven FFRDCs reported more than \$1 billion each (a combined \$22.6 billion) in R&D expenditures for FY 2023—the NASA-sponsored Jet Propulsion Laboratory; seven DOE-sponsored national laboratories specializing in energy and the environment, national security, and nuclear science (Argonne, Lawrence Berkeley, Lawrence Livermore, Los Alamos, Oak Ridge, Pacific Northwest, and Sandia National Laboratories); the DOD-sponsored National Security Engineering Center, Lincoln Laboratory, and Aerospace FFRDC.² Sandia National Laboratories and Los Alamos National Laboratory were the two largest performers with \$4.3 billion and \$3.8 billion in total R&D, respectively. Between FY 2022 and FY 2023, three FFRDCs each increased their R&D expenditures by more than \$400 million: Los Alamos (\$473.8 million), Sandia (\$464.0 million), and Lawrence Livermore (\$451.1 million). Three other FFRDCs reported R&D expenditure increases greater than \$200 million: Argonne National Laboratory (\$271.7 million), Jet Propulsion Laboratory (\$253.7 million), and Oak Ridge National Laboratory (\$215.7 million).

Table 4**R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2019–23**

(Thousands of current dollars and percent change)

FFRDC	2019	2020	2021	2022	2023	% change 2022–23
All FFRDCs	22,737,500	23,514,241	24,921,476	26,006,971	29,316,897	12.7
Aerospace Federally Funded Research and Development Center	1,065,989	1,114,741	1,128,241	1,152,833	1,259,428	9.2
Ames Laboratory	33,612	32,844	34,214	38,520	40,638	5.5
Argonne National Laboratory	810,693	859,658	856,568	962,973	1,234,635	28.2
Arroyo Center	37,956	35,248	38,304	40,856	42,433	3.9
Brookhaven National Laboratory	590,470	595,466	637,658	655,988	691,417	5.4
Center for Advanced Aviation System Development	174,123	180,634	230,484	189,490	186,163	-1.8
Center for Communications and Computing	68,371	67,072	65,255	74,759	77,391	3.5
Center for Enterprise Modernization	174,712	190,408	263,661	235,436	258,155	9.6
Center for Naval Analyses	96,697	95,874	96,391	93,567	96,103	2.7
Center for Nuclear Waste Regulatory Analyses	6,987	6,762	5,630	4,323	4,405	1.9
CMS Alliance to Modernize Healthcare	213,369	228,162	348,269	286,693	281,709	-1.7
Fermi National Accelerator Laboratory	334,258	300,002	319,051	330,294	402,122	21.7
Frederick National Laboratory for Cancer Research	751,452	745,726	861,605	904,182	929,754	2.8
Green Bank Observatory ^a	NA	NA	8,629	10,752	12,326	14.6
Homeland Security Operational Analysis Center	54,751	44,736	34,888	52,984	66,264	25.1
Homeland Security Systems Engineering and Development Institute	115,813	136,874	183,588	183,261	217,908	18.9
Idaho National Laboratory	478,324	494,094	516,691	637,579	653,100	2.4
Jet Propulsion Laboratory	2,709,063	2,638,412	2,388,355	2,417,556	2,671,305	10.5
Judiciary Engineering and Modernization Center ^b	7,331	6,765	5,493	na	na	na
Lawrence Berkeley National Laboratory	872,237	916,082	966,972	1,031,716	1,190,504	15.4
Lawrence Livermore National Laboratory	1,517,429	1,558,071	1,613,673	1,659,808	2,110,938	27.2
Lincoln Laboratory	1,103,870	1,115,927	1,136,133	1,142,615	1,265,060	10.7
Los Alamos National Laboratory	2,461,275	2,722,375	2,974,164	3,294,559	3,768,323	14.4
National Biodefense Analysis and Countermeasures Center	39,003	42,330	44,968	45,870	41,321	-9.9
National Center for Atmospheric Research	199,476	188,484	181,010	188,238	210,233	11.7
National Cybersecurity Center of Excellence	22,205	23,557	33,671	27,955	23,010	-17.7
National Defense Research Institute	67,647	64,134	66,170	61,097	67,157	9.9
National Radio Astronomy Observatory	101,901	100,078	94,202	92,476	102,863	11.2
National Renewable Energy Laboratory	455,016	511,585	559,151	603,356	718,852	19.1
National Security Engineering Center	1,124,861	1,143,701	1,468,298	1,286,520	1,370,949	6.6
National Solar Observatory	15,931	16,892	17,684	33,849	39,856	17.7
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	38,262	72,686	75,251	81,505	94,257	15.6
Oak Ridge National Laboratory	1,470,372	1,632,684	1,760,578	1,803,543	2,019,259	12.0
Pacific Northwest National Laboratory	1,012,136	1,071,249	1,168,268	1,294,614	1,449,496	12.0
Princeton Plasma Physics Laboratory	91,271	107,662	115,505	120,347	131,042	8.9
Project Air Force	48,325	46,936	47,966	46,517	48,729	4.8
Sandia National Laboratories	3,373,217	3,395,241	3,542,756	3,811,529	4,275,484	12.2
Savannah River National Laboratory	176,379	176,093	191,803	182,654	244,736	34.0
Science and Technology Policy Institute	9,080	9,256	9,784	10,593	9,977	-5.8
SLAC National Accelerator Laboratory	368,938	382,264	396,780	432,078	483,193	11.8
Software Engineering Institute	140,954	141,291	120,443	129,316	130,141	0.6
Systems and Analyses Center	177,948	171,335	173,792	201,338	224,574	11.5
Thomas Jefferson National Accelerator Facility	125,796	130,850	139,479	152,832	171,687	12.3

NA = not available; na = not applicable.

FFRDC = federally funded research and development center; NSF = National Science Foundation.

^a Prior to the FY 2021 collection, the National Center for Science and Engineering Statistics discovered that the Green Bank Observatory had split from the National Radio Astronomy Observatory on 1 October 2016; both retained FFRDC status. For FYs 2017–20, R&D expenditures reported for the National Radio Astronomy Observatory include the expenditures for the Green Bank Observatory. The Green Bank Observatory began reporting separately on the FY 2021 survey.

^b The Judiciary Modernization Engineering Center was decertified as an FFRDC on 31 January 2021.

Source(s):

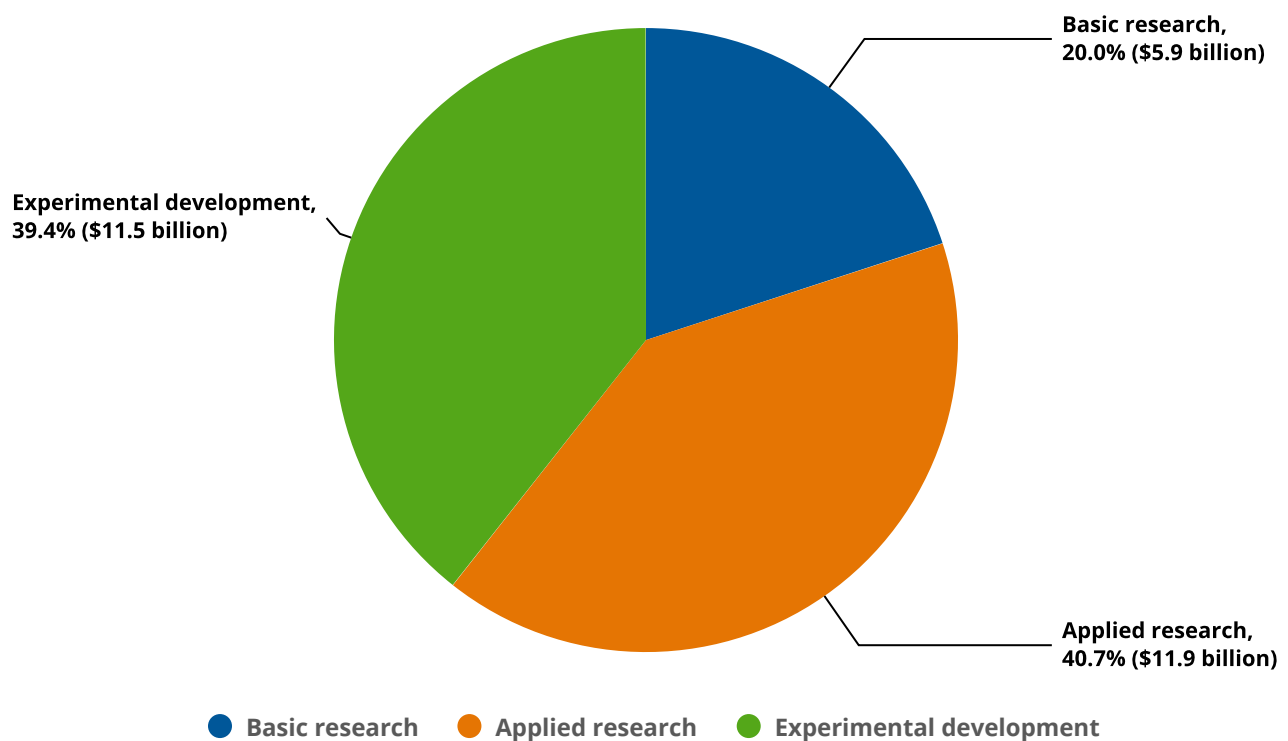
National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

Expenditures, by Type of R&D

In FY 2023, basic research activities accounted for 20% of total FFRDC R&D expenditures or \$5.9 billion (figure 2). The remaining R&D expenditures were closely divided between applied research (40.7%, or \$11.9 billion) and experimental development (39.4%, or \$11.5 billion). These shares have changed only slightly over the last 5 fiscal years.³

Figure 2

R&D expenditures at federally funded research and development centers, by type of R&D: FY 2023



Note(s):

Percentages are based on unrounded data available in the survey's [data tables](#). Because of rounding, detail may not add to total.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

Data Sources, Limitations, and Availability

The statistics on FFRDC R&D expenditures presented in this report come from the FY 2023 FFRDC Research and Development Survey. This annual survey is completed by FFRDC administrators and collects data from FFRDCs on R&D expenditures by source of funds (federal government, state and local governments, businesses, nonprofit organizations, or other); federal agency source; type of R&D (basic research, applied research, or experimental development); type of cost (salaries, software, equipment, subcontracts, other direct costs, and indirect costs); R&D personnel headcounts and full-time equivalents; and total operating budget. This survey has been a census of the full population of FFRDCs since FY 2001. For a list of criteria used to define the set of FFRDCs, see the general guidelines of the Master Government List of FFRDCs at <https://nces.nsf.gov/resource/master-gov-lists-ffrdc/general-notes>.

The full set of data tables from this survey and more information on the survey methodology are available at <https://nces.nsf.gov/surveys/ffrdc-research-development/2023>.

Notes

- 1 For annual totals from FY 2001 to FY 2023, see the full set of data tables: [table 1](#).
- 2 For FFRDC sponsoring agencies and locations, see the full set of data tables: [table 6](#). The [Master Government List of FFRDCs](#) also provides details on sponsoring agencies, administrator types, locations, general and historical notes.
- 3 For type of R&D from FY 2001 to FY 2023, see the full set of data tables: [table 2](#).

Suggested Citation

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