



NCSES

Federal R&D Funding, by Budget Function: Fiscal Years 2018–20

Detailed Statistical Tables | NSF 20-305 | December 04, 2019

General Notes	2
Data Tables	3
Technical Notes	44
Technical Table	47
Acknowledgments and Suggested Citation	50
Contact	51

General Notes

This report provides data on the budget authority conferred to U.S. federal agencies to fund the research and development and R&D plant components of their programs in FYs 2018–20. *Budget authority* is the primary source of legal authorization to enter into obligations that result in outlays. Budget authority is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function. These technical notes cover the main features of the new R&D budget authority data documented in this report.

Data Tables

Federal budget authority for R&D and R&D plant

Table Title

- | | |
|---|---|
| 1 | Federal budget authority for R&D and R&D plant, by budget function, ordered by FY 2018 R&D and R&D plant total: FYs 2018–20 |
| 2 | Distribution of federal budget authority for R&D and R&D plant, by budget function: FYs 2018–20 |
| 3 | Federal budget authority for R&D and R&D plant as percentage of total budget authority, by budget function: FYs 2018–20 |
| 4 | Federal budget authority for basic research, by budget function: FYs 2018–20 |

Agency and program detail for R&D and R&D plant

Table Title

- | | |
|----|--|
| 5 | Federal budget authority for National defense (050) R&D and R&D plant: FYs 2018–20 |
| 6 | Department of Defense, total obligational authority for research, development, test, and evaluation, by DOD budget activity: FYs 2018–20 |
| 7 | Federal budget authority for International affairs (150) R&D and R&D plant: FYs 2018–20 |
| 8 | Federal budget authority for General science and basic research (251) R&D and R&D plant: FYs 2018–20 |
| 9 | Federal budget authority for Space flight, research, and supporting activities (252) R&D and R&D plant: FYs 2018–20 |
| 10 | Federal budget authority for Energy (270) R&D and R&D plant: FYs 2018–20 |
| 11 | Federal budget authority for Natural resources and environment (300) R&D and R&D plant: FYs 2018–20 |
| 12 | Federal budget authority for Agriculture (350) R&D and R&D plant: FYs 2018–20 |
| 13 | Federal budget authority for Commerce and housing credit (370) R&D and R&D plant: FYs 2018–20 |
| 14 | Federal budget authority for Transportation (400) R&D and R&D plant: FYs 2018–20 |
| 15 | Federal budget authority for Community and regional development (450) R&D and R&D plant: FYs 2018–20 |
| 16 | Federal budget authority for Education, training, employment, and social services (500) R&D and R&D plant: FYs 2018–20 |
| 17 | Federal budget authority for Health (550) R&D and R&D plant: FYs 2018–20 |
| 18 | National Institutes of Health, federal budget authority for R&D and R&D plant: FYs 2018–20 |
| 19 | Federal budget authority for Medicare (570) R&D and R&D plant: FYs 2018–20 |

Table Title

[20](#) Federal budget authority for Income security (600) R&D and R&D plant: FYs 2018–20

[21](#) Federal budget authority for Veterans benefits and services (700) R&D and R&D plant: FYs 2018–20

[22](#) Federal budget authority for Administration of justice (750) R&D and R&D plant: FYs 2018–20

[History of budget authority for R&D and R&D plant](#)

Table Title

[23](#) Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

[24](#) Federal funding for R&D and R&D plant for national defense and civilian functions: FYs 1955–2020

TABLE 1

Federal budget authority for R&D and R&D plant, by budget function, ordered by FY 2018 R&D and R&D plant total: FYs 2018–20

(Millions of dollars and percent change)

Budget function	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	144,459	147,945	142,377	2.4	-3.8
National defense	68,916	70,587	75,421	2.4	6.8
Health	37,316	39,147	33,648	4.9	-14.0
General science and basic research	12,559	12,832	11,198	2.2	-12.7
Space flight, research, and supporting activities	10,552	10,128	10,686	-4.0	5.5
Energy	4,233	4,458	1,895	5.3	-57.5
Natural resources and environment	2,662	2,598	1,892	-2.4	-27.2
Agriculture	2,346	2,397	2,235	2.2	-6.8
Transportation	1,594	1,638	1,624	2.8	-0.9
Veterans benefits and services	1,286	1,342	1,325	4.4	-1.3
Commerce and housing credit	1,184	1,017	1,116	-14.1	9.7
Administration of justice	690	700	472	1.5	-32.6
Education, training, employment, and social services	614	594	533	-3.3	-10.3
International affairs	238	231	78	-2.9	-66.2
Income security	106	105	106	-0.9	1.0
Community and regional development	144	152	148	5.6	-2.6
Medicare	20	20	0	0.0	-100.0
R&D	140,700	144,074	139,000	2.4	-3.5
National defense	68,325	69,899	74,743	2.3	6.9
Health	37,151	38,894	33,399	4.7	-14.1
General science and basic research	10,692	10,791	9,689	0.9	-10.2
Space flight, research, and supporting activities	10,455	10,011	10,599	-4.2	5.9
Energy	4,212	4,435	1,872	5.3	-57.8
Natural resources and environment	2,383	2,347	1,689	-1.5	-28.1
Agriculture	2,074	2,135	2,064	2.9	-3.3
Transportation	1,551	1,600	1,586	3.1	-0.9
Veterans benefits and services	1,286	1,342	1,325	4.4	-1.3
Commerce and housing credit	840	887	743	5.6	-16.2
Administration of justice	690	700	472	1.5	-32.6
Education, training, employment, and social services	534	525	487	-1.7	-7.2
International affairs	238	231	78	-2.9	-66.2
Income security	106	105	106	-0.9	1.0
Community and regional development	144	152	148	5.6	-2.6
Medicare	20	20	0	0.0	-100.0
R&D plant	3,759	3,871	3,377	3.0	-12.8
National defense	591	688	678	16.5	-1.4
Health	165	253	249	53.5	-1.6
General science and basic research	1,866	2,041	1,509	9.4	-26.1
Space flight, research, and supporting activities	97	117	87	20.4	-25.6
Energy	21	23	23	5.7	2.2
Natural resources and environment	280	250	204	-10.6	-18.6
Agriculture	272	262	171	-3.7	-34.7
Transportation	43	38	38	-11.1	-0.3
Veterans benefits and services	0	0	0	–	–
Commerce and housing credit	344	131	372	-62.0	185.3
Administration of justice	0	0	0	–	–

TABLE 1

Federal budget authority for R&D and R&D plant, by budget function, ordered by FY 2018 R&D and R&D plant total: FYs 2018–20

(Millions of dollars and percent change)

Budget function	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
Education, training, employment, and social services	80	69	46	-13.8	-33.3
International affairs	0	0	0	--	--
Income security	0	0	0	--	--
Community and regional development	0	0	0	--	--
Medicare	0	0	0	--	--

^a The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data. The data for each of the years reflects the application of the narrowed definition of development described by OMB in its Circular A-11 of July 2016.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 2

Distribution of federal budget authority for R&D and R&D plant, by budget function: FYs 2018–20

(Percent distribution)

Budget function	2018 actual	2019 preliminary ^a	2020 proposed
R&D and R&D plant	100.0	100.0	100.0
National defense	47.7	47.7	53.0
Health	25.8	26.5	23.6
General science and basic research	8.7	8.7	7.9
Space flight, research, and supporting activities	7.3	6.8	7.5
Energy	2.9	3.0	1.3
Natural resources and environment	1.8	1.8	1.3
Agriculture	1.6	1.6	1.6
Transportation	1.1	1.1	1.1
Veterans benefits and services	0.9	0.9	0.9
Commerce and housing credit	0.8	0.7	0.8
Administration of justice	0.5	0.5	0.3
Education, training, employment, and social services	0.4	0.4	0.4
International affairs	0.2	0.2	0.1
Income security	0.1	0.1	0.1
Community and regional development	0.1	0.1	0.1
Medicare	*	*	*
R&D	100.0	100.0	100.0
National defense	48.6	48.5	53.8
Health	26.4	27.0	24.0
General science and basic research	7.6	7.5	7.0
Space flight, research, and supporting activities	7.4	6.9	7.6
Energy	3.0	3.1	1.3
Natural resources and environment	1.7	1.6	1.2
Agriculture	1.5	1.5	1.5
Transportation	1.1	1.1	1.1
Veterans benefits and services	0.9	0.9	1.0
Commerce and housing credit	0.6	0.6	0.5
Administration of justice	0.5	0.5	0.3
Education, training, employment, and social services	0.4	0.4	0.4
International affairs	0.2	0.2	0.1
Income security	0.1	0.1	0.1
Community and regional development	0.1	0.1	0.1
Medicare	*	*	*
R&D plant	100.0	100.0	100.0
National defense	15.7	17.8	20.1
Health	4.4	6.5	7.4
General science and basic research	49.7	52.7	44.7
Space flight, research, and supporting activities	2.6	3.0	2.6
Energy	0.6	0.6	0.7
Natural resources and environment	7.4	6.5	6.0
Agriculture	7.2	6.8	5.1
Transportation	1.1	1.0	1.1
Veterans benefits and services	0	0	0
Commerce and housing credit	9.1	3.4	11.0
Administration of justice	0	0	0
Education, training, employment, and social services	2.1	1.8	1.4
International affairs	0	0	0
Income security	0	0	0
Community and regional development	0	0	0
Medicare	0	0	0

* = value less than 0.05%.

^a The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Budget functions are ordered as under the **table 1** stub entry for R&D and R&D plant.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 3

Federal budget authority for R&D and R&D plant as percentage of total budget authority, by budget function: FYs 2018–20
(Percent share)

Budget function	2018 actual	2019 preliminary ^a	2020 proposed
All functions conducting R&D	4.5	4.5	4.4
National defense	9.5	9.7	9.9
Health	6.3	6.5	5.6
General science and basic research	88.2	89.1	88.1
Space flight, research, and supporting activities	52.4	50.5	52.5
Energy ^b	70.5	71.9	-61.4
Natural resources and environment	4.2	6.1	4.7
Agriculture	15.6	6.7	10.6
Transportation	1.5	1.6	1.8
Veterans benefits and services	0.7	0.7	0.6
Commerce and housing credit ^c	10.3	43.3	16.5
Administration of justice	1.0	1.1	0.7
Education, training, employment, and social services	0.6	0.4	0.5
International affairs	0.3	0.3	0.2
Income security	*	*	*
Community and regional development	0.1	0.6	0.5
Medicare	*	*	*

* = value less than 0.05%.

^a The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Total budget authority in the Energy function are negative numbers (i.e., less than zero) in FY 2020, due primarily to planned or proposed offsetting collections and receipts, repeal of the Advanced Technology Vehicles Manufacturing Loan Program, and other policy proposals. This makes the function's R&D and R&D plant as percentages of total budget authority difficult to interpret.

^c Total budget authority in the Commerce and housing credit function declined in FY 2019 and is expected to rise again in FY 2020 because of spending changes related to federal mortgage and housing programs, the decennial census, and other programs. These underlying shifts account for much of the year-to-year change in the function's R&D and R&D plant as percentages of total budget authority.

Note(s)

Total budget authority includes discretionary and mandatory budget authority, less offsets. Budget functions are ordered as under the table 1 stub entry for R&D and R&D plant.

Source(s)

Agencies' submissions to the Office of Management and Budget (OMB) per MAX Schedule C, agencies' budget justification documents, supplemental data obtained from agencies' budget offices, and Executive Office of the President, OMB, *Budget of the United States Government, Fiscal Year 2020*, U.S. Government Printing Office (2019).

TABLE 4

Federal budget authority for basic research, by budget function: FYs 2018–20

(Millions of dollars and percent change)

Budget function	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
All functions conducting R&D	36,208	39,194	34,968	8.2	-10.8
National defense	2,381	2,659	2,459	11.7	-7.5
Health	18,255	19,151	16,736	4.9	-12.6
General science and basic research	9,932	10,039	9,002	1.1	-10.3
Space flight, research, and supporting activities	3,281	4,939	4,481	50.5	-9.3
Energy	50	50	41	0.2	-16.9
Natural resources and environment	255	261	212	2.3	-19.0
Agriculture	909	933	930	2.6	-0.3
Transportation	0	0	0	--	--
Veterans benefits and services	530	553	546	4.3	-1.3
Commerce and housing credit	222	222	192	0.0	-13.5
Administration of justice	57	52	33	-8.8	-36.5
Education, training, employment, and social services	335	334	335	-0.3	0.3
International affairs	0	0	0	--	--
Income security	0	0	0	--	--
Community and regional development	1	1	1	0.0	0.0
Medicare	0	0	0	--	--

^a The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data. Budget functions are ordered as under the table 1 stub entry for R&D and R&D plant.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 5

Federal budget authority for National defense (050) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	68,916	70,587	75,421	2.4	6.8
Department of Defense, military (051)	61,766	63,651	67,655	3.1	6.3
R&D within RDT&E accounts ^a	58,377	60,393	65,609	3.5	8.6
Defense agencies	18,613	18,799	18,705	1.0	-0.5
Defense Advanced Research Projects Agency	3,089	3,427	3,556	11.0	3.8
Missile Defense Agency	7,749	7,249	7,370	-6.5	1.7
Other defense agencies	7,774	8,123	7,779	4.5	-4.2
Department of the Air Force	15,635	18,026	21,131	15.3	17.2
Department of the Army	9,803	9,580	10,345	-2.3	8.0
Department of the Navy	14,118	13,611	15,207	-3.6	11.7
Operational Test and Evaluation	209	377	221	80.7	-41.3
Other military funding ^b	3,389	3,257	2,046	-3.9	-37.2
Department of Energy, atomic energy defense activities (053)	7,131	6,902	7,713	-3.2	11.8
Defense environmental cleanup	38	28	13	-26.3	-53.6
Naval reactors development	1,420	1,530	1,474	7.8	-3.7
Nonproliferation	349	363	354	4.2	-2.5
Weapons activities	5,325	4,980	5,872	-6.5	17.9
Department of Justice, Federal Bureau of Investigation (054)	3	21	22	600.0	4.8
Department of Homeland Security, Cybersecurity and Infrastructure Security Agency (054) ^c	15	13	31	-13.2	132.5
R&D	68,325	69,899	74,743	2.3	6.9
Department of Defense, military (051)	61,728	63,629	67,655	3.1	6.3
R&D within RDT&E accounts ^a	58,377	60,393	65,609	3.5	8.6
Defense agencies	18,613	18,799	18,705	1.0	-0.5
Defense Advanced Research Projects Agency	3,089	3,427	3,556	11.0	3.8
Missile Defense Agency	7,749	7,249	7,370	-6.5	1.7
Other defense agencies	7,774	8,123	7,779	4.5	-4.2
Department of the Air Force	15,635	18,026	21,131	15.3	17.2
Department of the Army	9,803	9,580	10,345	-2.3	8.0
Department of the Navy	14,118	13,611	15,207	-3.6	11.7
Operational Test and Evaluation	209	377	221	80.7	-41.3
Other military funding ^b	3,351	3,235	2,046	-3.5	-36.8
Department of Energy, atomic energy defense activities (053)	6,578	6,236	7,035	-5.2	12.8
Defense environmental cleanup	38	28	13	-26.3	-53.6
Naval reactors development	1,206	1,226	1,187	1.7	-3.2
Nonproliferation	349	363	354	4.2	-2.5
Weapons activities	4,986	4,619	5,481	-7.4	18.7
Department of Justice, Federal Bureau of Investigation (054)	3	21	22	600.0	4.8
Department of Homeland Security, Cybersecurity and Infrastructure Security Agency (054) ^c	15	13	31	-13.2	132.5

RDT&E = research, development, test, and evaluation.

^a Totals for development spending across all years do not include Department of Defense (DOD) Budget Activity 7 (Operational Systems Development) due to implementation of the narrowed definition of development described by the Office of Management and Budget (OMB) in its Circular A-11 of July 2016. These funds support the development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate production funding in the current or subsequent fiscal year.

^b This item includes appropriate personnel costs in direct support of conduct of R&D, other appropriations funding certain DOD programs, and medical

research funded outside RDT&E accounts.

^c Formerly the National Protection and Programs Directorate.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to OMB per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 6

Department of Defense, total obligational authority for research, development, test, and evaluation, by DOD budget activity: FYs 2018–20

(Millions of dollars and percent change)

Funding category and agency	Budget activity	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
RDT&E total budget authority	--	91,957	95,507	104,508	3.9	9.4
R&D budget authority within RDT&E accounts	--	58,377	60,393	65,609	3.5	8.6
RDT&E total obligational authority ^a	--	92,159	95,961	104,294	4.1	8.7
Basic research		2,265	2,528	2,320	11.6	-8.2
Defense agencies		705	781	729	10.8	-6.6
Department of the Air Force	1	492	561	530	14.2	-5.6
Department of the Army		464	506	455	9.1	-10.2
Department of the Navy		605	680	606	12.4	-10.9
Applied research		5,547	6,025	5,317	8.6	-11.7
Defense agencies		1,775	1,947	2,051	9.7	5.3
Department of the Air Force	2	1,454	1,481	1,436	1.8	-3.0
Department of the Army		1,343	1,579	894	17.6	-43.4
Department of the Navy		975	1,019	936	4.4	-8.1
Advanced technology development		6,774	7,106	6,498	4.9	-8.6
Defense agencies		3,540	3,739	3,817	5.6	2.1
Department of the Air Force	3	830	929	839	12.0	-9.6
Department of the Army		1,504	1,586	1,100	5.4	-30.7
Department of the Navy		900	852	742	-5.4	-12.9
Advanced component development and prototypes		20,734	22,005	26,937	6.1	22.4
Defense agencies		9,997	9,924	9,911	-0.7	-0.1
Department of the Air Force	4	4,962	6,639	8,481	33.8	27.7
Department of the Army		1,564	1,269	2,946	-18.9	132.3
Department of the Navy		4,211	4,173	5,599	-0.9	34.2
System development and demonstration		14,735	15,577	17,765	5.7	14.0
Defense agencies		940	1,057	842	12.4	-20.4
Department of the Air Force	5	4,407	5,454	6,929	23.7	27.1
Department of the Army		3,349	3,202	3,661	-4.4	14.3
Department of the Navy		6,038	5,865	6,333	-2.9	8.0
RDT&E management support		8,323	7,152	6,771	-14.1	-5.3
Defense agencies		1,656	1,350	1,355	-18.4	0.3
Department of the Air Force	6	3,491	2,963	2,917	-15.1	-1.6
Department of the Army		1,579	1,439	1,289	-8.9	-10.4
Department of the Navy		1,389	1,023	990	-26.3	-3.2
Operational test and evaluation		209	377	221	80.7	-41.3
Operational system development		33,782	35,567	38,685	5.3	8.8
Defense agencies		5,161	5,263	6,470	2.0	22.9
Department of the Air Force	7	22,442	23,462	24,935	4.5	6.3
Department of the Army		1,830	1,795	2,052	-1.9	14.3
Department of the Navy		4,348	5,047	5,228	16.1	3.6
Adjustment for RDT&E budget authority ^b	--	-202	-454	214	na	na

na = not applicable.

DOD = Department of Defense; RDT&E = research, development, test, and evaluation.

^a RDT&E budget activity codes are broad categories reflecting different types of RDT&E efforts, as specified in DOD Financial Management Regulation.

^b Detailed budget information on DOD RDT&E activities is available only in total obligational authority (TOA), which is the sum of new budget authority, unobligated budget authority from previous years, and other authorized credits. The adjustment converts TOA to budget authority by subtracting unobligated budget authority from previous years and other authorized credits from TOA.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget (OMB) per MAX Schedule C, agencies' budget justification documents, supplemental data obtained from agencies' budget offices, and Executive Office of the President, OMB, *Budget of the United States Government, Fiscal Year 2020*, U.S. Government Printing Office (2019).

TABLE 7

Federal budget authority for International affairs (150) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	238	231	78	-2.9	-66.2
Agency for International Development (151)	160	153	0	-4.4	-100.0
Department of State (151)	62	62	62	0.0	0.0
International Security Assistance (152)	16	16	16	0.0	0.0
R&D	238	231	78	-2.9	-66.2
Agency for International Development (151)	160	153	0	-4.4	-100.0
Department of State (151)	62	62	62	0.0	0.0
International Security Assistance (152)	16	16	16	0.0	0.0

^a The FY 2019 data are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 8

Federal budget authority for General science and basic research (251) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	12,559	12,832	11,198	2.2	-12.7
Department of Energy					
Office of Science	6,201	6,517	5,475	5.1	-16.0
National Science Foundation ^{b,c}	6,358	6,315	5,723	-0.7	-9.4
Arctic Research Commission	1	NA	2	--	--
Biological Sciences	757	NA	683	--	--
Computer and Information Science and Engineering	961	NA	883	--	--
Education and Human Resources	904	910	823	0.7	-9.5
Engineering	978	NA	881	--	--
Geosciences	908	NA	787	--	--
Integrative Activities	471	NA	491	--	--
International Science and Engineering	49	NA	46	--	--
Major Research Equipment and Facilities and Construction	186	296	223	58.7	-24.5
Mathematical and Physical Sciences	1,503	NA	1,256	--	--
Social, Behavioral and Economic Sciences	251	NA	230	--	--
Budget authority adjustment ^d	-611	NA	-583	--	--
R&D	10,692	10,791	9,689	0.9	-10.2
Department of Energy					
Office of Science	4,843	4,979	4,472	2.8	-10.2
National Science Foundation ^{e,c}	5,849	5,812	5,217	-0.6	-10.2
Arctic Research Commission	1	NA	2	--	--
Biological Sciences	757	NA	683	--	--
Computer and Information Science and Engineering	961	NA	883	--	--
Education and Human Resources	904	910	823	0.7	-9.5
Engineering	978	NA	881	--	--
Geosciences	908	NA	787	--	--
Integrative Activities	471	NA	491	--	--
International Science and Engineering	49	NA	46	--	--
Major Research Equipment and Facilities Construction	186	296	223	58.7	-24.5
Mathematical and Physical Sciences	1,503	NA	1,256	--	--
Social, Behavioral and Economic Sciences	251	NA	230	--	--
Budget authority adjustment ^f	-1,119	NA	-1,089	--	--

NA = not available.

^a The FY 2019 data for the National Science Foundation (NSF) are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b NSF budget shown here includes only R&D and R&D plant; however, subaccount budgets (Arctic Research Commission, Biological Sciences, etc.) include some non-R&D and non-R&D plant funding. FY 2019 R&D and R&D plant data come from the Office of Management and Budget (OMB) MAX Schedule C reporting; other years come from NSF budget justification.

^c NSF received an increase of 4% in the FY 2019 omnibus.

^d Budget authority adjustment subtracts non-R&D and non-R&D plant spending (such as support and overhead) from subaccount budgets.

^e NSF budget shown here includes only R&D; however, subaccount budgets (Arctic Research Commission, Biological Sciences, etc.) include some non-R&D funding. FY 2019 R&D data come from OMB MAX Schedule C reporting; other years come from NSF budget justification.

^f Budget authority adjustment subtracts non-R&D spending (such as support, overhead, and R&D plant) from subaccount budgets.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to OMB per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 9

Federal budget authority for Space flight, research, and supporting activities (252) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed ^b	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	10,552	10,128	10,686	-4.0	5.5
National Aeronautics and Space Administration ^c					
Safety, security, and mission services	273	272	242	-0.4	-11.0
Deep Space Exploration Systems	1,870	1,288	1,883	-31.1	46.3
Exploration R&D	370	766	723	107.0	-5.6
Exploration systems development	1,500	522	1,160	-65.2	122.3
Science	5,490	6,145	5,954	11.9	-3.1
Astrophysics ^d	641	964	1,152	50.5	19.4
Earth science	1,711	1,919	1,761	12.1	-8.3
Heliophysics	586	681	705	16.2	3.5
James Webb Space Telescope ^d	510	375	na	-26.5	--
Planetary science	2,042	2,206	2,337	8.0	6.0
LEO (low earth orbit) and spaceflight operations	2,153	1,586	1,611	-26.3	1.6
International Space Station	1,413	1,480	1,448	4.7	-2.2
Space flight and support	11	5	na	-48.7	--
Space transportation	730	101	13	-86.2	-86.9
Commercial LEO development	na	na	150	--	--
Exploration Technology ^e	669	721	909	7.8	26.0
Construction, environmental compliance, and restoration	97	117	87	20.4	-25.6
R&D	10,455	10,011	10,599	-4.2	5.9
National Aeronautics and Space Administration ^c					
Safety, security, and mission services	273	272	242	-0.4	-11.0
Deep Space Exploration Systems	1,870	1,288	1,883	-31.1	46.3
Exploration R&D	370	766	723	107.0	-5.6
Exploration systems development	1,500	522	1,160	-65.2	122.3
Science	5,490	6,145	5,954	11.9	-3.1
Astrophysics ^d	641	964	1,152	50.5	19.4
Earth science	1,711	1,919	1,761	12.1	-8.3
Heliophysics	586	681	705	16.2	3.5
James Webb Space Telescope ^d	510	375	na	-26.5	--
Planetary science	2,042	2,206	2,337	8.0	6.0
LEO (low earth orbit) and spaceflight operations	2,153	1,586	1,611	-26.3	1.6
International Space Station	1,413	1,480	1,448	4.7	-2.2
Space flight and support	11	5	na	-48.7	--
Space transportation	730	101	13	-86.2	-86.9
Commercial LEO development	na	na	150	--	--
Exploration Technology ^e	669	721	909	7.8	26.0
Construction, environmental compliance, and restoration	0	0	0	--	--

na = not applicable.

^a The FY 2019 data are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Along with the regular budget request, the Administration issued a supplement adding \$1.6 billion to the NASA budget request for FY 2020, primarily for Deep Space Exploration Systems, but with some for Science and Exploration Technology as well. This supplemental request likely includes

substantial R&D funding, but these additional sums for R&D are not reflected in the data presented here.

^c Although not reflected in the data presented here, NASA received an increase of 3.7% in the FY 2019 omnibus.

^d James Webb Space Telescope is included as part of Astrophysics in FY 2020.

^e Renamed from "Exploration Research and Technology" in FY 2019 and "Space Technology" in FY 2018.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 10

Federal budget authority for Energy (270) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	4,233	4,458	1,895	5.3	-57.5
Department of Energy (271)	4,151	4,370	1,807	5.3	-58.6
Energy programs	3,790	4,002	2,092	5.6	-47.7
Energy efficiency and renewable energy	1,757	1,842	636	4.8	-65.5
Electricity delivery and energy reliability ^a	178	na	na	--	--
Fossil energy	683	681	551	-0.3	-19.1
Nuclear energy	1,172	1,294	712	10.3	-45.0
Electricity delivery ^a	na	136	158	--	16.3
Cybersecurity, Energy Security, and Emergency Response ^a	na	49	35	--	-27.9
Advanced Research Projects Agency-Energy (ARPA-E) ^b	354	366	-287	3.4	-178.4
Bonneville Power Administration Fund	7	2	2	-71.4	0.0
Nuclear Regulatory Commission (276)	69	74	75	7.2	1.4
Tennessee Valley Authority (271)	13	14	13	7.7	-7.1
R&D	4,212	4,435	1,872	5.3	-57.8
Department of Energy (271)	4,130	4,347	1,784	5.3	-59.0
Energy programs	3,769	3,979	2,069	5.6	-48.0
Energy efficiency and renewable energy	1,757	1,842	636	4.8	-65.5
Electricity delivery and energy reliability ^a	178	na	na	--	--
Fossil energy	662	659	528	-0.4	-19.8
Nuclear energy	1,172	1,294	712	10.3	-45.0
Electricity delivery ^a	na	136	158	--	16.3
Cybersecurity, Energy Security, and Emergency Response ^a	na	49	35	--	-27.9
Advanced Research Projects Agency-Energy (ARPA-E) ^b	354	366	-287	3.4	-178.4
Bonneville Power Administration Fund	7	2	2	-71.4	0.0
Nuclear Regulatory Commission (276)	69	74	75	7.2	1.4
Tennessee Valley Authority (271)	13	14	13	7.7	-7.1

na = not applicable.

^a The Office of Electricity Delivery and Energy Reliability was split into two entities in FY 2019: the Office of Electricity Delivery and the Office of Cybersecurity, Energy Security, and Emergency Response.

^b The administration has proposed zero funding for ARPA-E in FY 2020. The tabulated -\$287 million for that year reflects rescinding unobligated balances.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 11

Federal budget authority for Natural resources and environment (300) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	2,662	2,598	1,892	-2.4	-27.2
Conservation and land management (302)	423	429	352	1.4	-17.9
Department of the Interior ^b	151	160	123	6.0	-23.1
Department of Agriculture	272	269	229	-1.1	-14.9
Forest Service	272	269	229	-1.1	-14.9
Pollution control and abatement (304)	494	500	287	1.2	-42.6
Environmental Protection Agency	492	498	285	1.2	-42.8
Oil spill response research	1	1	1	0.0	-10.0
Science and technology	476	482	266	1.2	-44.7
Superfund	16	16	18	0.0	14.8
Coast Guard (DHS)	2	2	2	0.0	0.0
Recreational resources (303)	26	27	26	3.8	-3.7
National Park Service (DOI)	26	27	26	3.8	-3.7
Water resources (301)	114	111	95	-2.6	-14.4
Army Corps of Engineers (DOD)	24	11	11	-54.2	0.0
Bureau of Reclamation (DOI)	90	100	84	11.1	-16.0
Other natural resources (306)	1,605	1,531	1,133	-4.6	-26.0
National Oceanic and Atmospheric Administration (DOC)	1,005	938	651	-6.6	-30.6
National Environmental Satellite, Data, and Information Service	40	31	28	-22.5	-10.2
National Marine Fisheries Service	68	85	55	25.1	-34.9
National Ocean Service	102	103	54	1.7	-47.5
National Weather Service	42	26	18	-37.4	-29.9
Office of Oceanic and Atmospheric Research	613	531	335	-13.3	-36.9
Office of Marine and Aviation Operations	140	161	160	14.9	-0.6
Geological Survey (DOI) ^c	600	593	481	-1.3	-18.8
Land resources ^d	NA	NA	NA	NA	NA
Core science systems	75	75	73	0.0	-2.7
Ecosystems	217	217	141	0.0	-35.1
Energy, minerals, and environmental health	70	70	75	0.0	8.0
Natural hazards	112	104	106	-7.1	2.5
Water resources	126	126	85	0.0	-32.4
R&D	2,383	2,347	1,689	-1.5	-28.1
Conservation and land management (302)	412	414	341	0.5	-17.6
Department of the Interior ^b	149	154	121	3.4	-21.4
Department of Agriculture	263	260	220	-1.1	-15.4
Forest Service	263	260	220	-1.1	-15.4
Pollution control and abatement (304)	492	500	287	1.7	-42.6
Environmental Protection Agency	490	498	285	1.7	-42.8
Oil spill response research	1	1	1	0.0	-10.0
Science and technology	473	482	266	1.8	-44.7
Superfund	16	16	18	0.0	14.8
Coast Guard (DHS)	2	2	2	0.0	0.0
Recreational resources (303)	26	27	26	3.8	-3.7
National Park Service (DOI) ^d	26	27	26	3.8	-3.7
Water resources (301)	114	111	95	-2.6	-14.4
Army Corps of Engineers (DOD)	24	11	11	-54.2	0.0
Bureau of Reclamation (DOI)	90	100	84	11.1	-16.0
Other natural resources (306)	1,339	1,295	940	-3.2	-27.4

TABLE 11

Federal budget authority for Natural resources and environment (300) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
National Oceanic and Atmospheric Administration (DOC)	738	703	459	-4.8	-34.8
National Environmental Satellite, Data, and Information Service	40	31	28	-22.5	-10.2
National Marine Fisheries Service	68	60	55	-11.6	-7.9
National Ocean Service	102	103	54	1.7	-47.5
National Weather Service	30	25	18	-14.3	-30.8
Office of Oceanic and Atmospheric Research	499	483	304	-3.2	-37.2
Office of Marine and Aviation Operations	0	0	0	--	--
Geological Survey (DOI) ^c	600	593	481	-1.3	-18.8
Land resources ^d	NA	NA	NA	NA	NA
Core science systems	75	75	73	0.0	-2.7
Ecosystems	217	217	141	0.0	-35.1
Energy, minerals, and environmental health	70	70	75	0.0	8.0
Natural hazards	112	104	106	-7.1	2.5
Water resources	126	126	85	0.0	-32.4

NA = not available.

DHS = Department of Homeland Security; DOC = Department of Commerce; DOD = Department of Defense; DOI = Department of the Interior.

^a The FY 2019 data for Coast Guard and the National Oceanic and Atmospheric Administration reflect the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Figures for the other agencies are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus. Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Includes Bureau of Land Management, Office of Surface Mining Reclamation and Enforcement, Fish and Wildlife Service, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, and Wildland Fire Management.

^c Although not reflected in the data displayed here, the U.S. Geological Survey budget was increased by 1.1% in the FY 2019 omnibus.

^d Land Resources is recommended for elimination in the FY 2020 budget request. The R&D and R&D plant spending for all years is presented on a comparable basis.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 12

Federal budget authority for Agriculture (350) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	2,346	2,397	2,235	2.2	-6.8
Agricultural research and services (352)					
Department of Agriculture	2,346	2,397	2,235	2.2	-6.8
Agricultural Research Service ^b	1,387	1,421	1,275	2.5	-10.3
Animal and Plant Health Inspection Service	39	34	34	-12.8	0.0
Economic Research Service	87	87	61	0.0	-30.3
National Agricultural Statistics Service	9	9	9	0.0	0.0
National Institute of Food and Agriculture ^c	824	846	856	2.7	1.2
R&D	2,074	2,135	2,064	2.9	-3.3
Agricultural research and services (352)					
Department of Agriculture	2,074	2,135	2,064	2.9	-3.3
Agricultural Research Service ^b	1,115	1,159	1,104	3.9	-4.7
Animal and Plant Health Inspection Service	39	34	34	-12.8	0.0
Economic Research Service	87	87	61	0.0	-30.3
National Agricultural Statistics Service	9	9	9	0.0	0.0
National Institute of Food and Agriculture ^c	824	846	856	2.7	1.2

^a The FY 2019 data are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Although not reflected in the data displayed here, the Agricultural Research Service budget was increased by 25.4% in the FY 2019 omnibus. This was mainly the result of a large increase in R&D plant funding.

^c Although not reflected in the data displayed here, the National Institute of Food and Agriculture budget was increased by 4.5% in the FY 2019 omnibus.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 13

Federal budget authority for Commerce and housing credit (370) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	1,184	1,017	1,116	-14.1	9.7
Other advancement of commerce (376)					
Department of Commerce	1,116	946	1,044	-15.2	10.3
Census Bureau	122	165	138	35.2	-16.4
National Institute of Standards and Technology	973	759	898	-21.9	18.2
Construction of research facilities	319	106	348	-66.8	228.2
Industrial technology services	11	11	11	-2.9	0.0
Scientific and technical research and services	643	643	539	0.0	-16.1
National Oceanic and Atmospheric Administration	12	14	0	16.7	-100.0
National Marine Fisheries Service	12	14	0	16.7	-100.0
National Telecommunications and Information Administration	9	8	8	-11.1	0.0
Postal Service	68	71	72	4.4	1.4
R&D	840	887	743	5.6	-16.2
Other advancement of commerce (376)					
Department of Commerce	772	816	671	5.7	-17.7
Census Bureau	122	165	138	35.2	-16.4
National Institute of Standards and Technology	629	629	525	-0.1	-16.4
Construction of research facilities	0	0	0	--	--
Industrial technology services	11	11	11	-2.9	0.0
Scientific and technical research and services	618	618	515	0.0	-16.7
National Oceanic and Atmospheric Administration	12	14	0	16.7	-100.0
National Marine Fisheries Service	12	14	0	16.7	-100.0
National Telecommunications and Information Administration	9	8	8	-11.1	0.0
Postal Service	68	71	72	4.4	1.4

^a The FY 2019 data for the National Institute of Standards and Technology reflect the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Figures for the other agencies are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus. Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 14

Federal budget authority for Transportation (400) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	1,594	1,638	1,624	2.8	-0.9
Air transportation (402)	1,013	1,076	1,099	6.2	2.1
Federal Aviation Administration (DOT)	460	491	503	6.7	2.5
National Aeronautics and Space Administration					
Aeronautics research ^b	533	565	575	5.9	1.8
Transportation Security Administration (DHS)	20	21	21	2.0	1.5
Ground transportation (401) (DOT)	495	498	491	0.4	-1.4
Federal Highway Administration	374	376	403	0.5	7.4
Federal Motor Carrier Safety Administration	9	9	9	0.0	0.0
Federal Railroad Administration	40	41	19	0.4	-53.6
Federal Transit Administration	12	12	12	0.0	0.0
National Highway Traffic Safety Administration	60	60	47	0.2	-21.6
Water transportation (403)	29	20	5	-30.6	-75.2
Coast Guard (DHS)	29	20	5	-30.6	-75.2
Other transportation (407) (DOT) ^c	56	44	29	-21.5	-33.2
R&D	1,551	1,600	1,586	3.1	-0.9
Air transportation (402)	974	1,040	1,064	6.7	2.3
Federal Aviation Administration (DOT)	421	455	468	8.1	3.0
National Aeronautics and Space Administration					
Aeronautics research ^b	533	565	575	5.9	1.8
Transportation Security Administration (DHS)	20	21	21	2.0	1.5
Ground transportation (401) (DOT)	492	496	488	0.8	-1.6
Federal Highway Administration	372	374	402	0.5	7.4
Federal Motor Carrier Safety Administration	9	9	9	0.0	0.0
Federal Railroad Administration	39	41	18	4.9	-55.8
Federal Transit Administration	12	12	12	0.0	0.0
National Highway Traffic Safety Administration	60	60	47	0.2	-21.7
Water transportation (403)	29	20	5	-30.6	-75.2
Coast Guard (DHS)	29	20	5	-30.6	-75.2
Other transportation (407) (DOT) ^c	56	44	29	-21.5	-33.2

DHS = Department of Homeland Security; DOT = Department of Transportation.

^a The FY 2019 data for the National Aeronautics and Space Administration, the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, the Federal Transit Administration, and the Office of the Secretary are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Although not reflected in the data displayed here, the National Aeronautics and Space Administration Aeronautics research directorate received an increase of 5.8% in the FY 2019 omnibus.

^c Includes the Office of the Secretary of DOT, the Pipeline and Hazardous Materials Safety Administration, and the Maritime Administration.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 15

Federal budget authority for Community and regional development (450) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	144	152	148	5.6	-2.6
Department of Housing and Urban Development (451)	61	64	60	4.9	-6.3
Department of the Interior (452)	5	5	5	0.0	0.0
Bureau of Indian Affairs and Bureau of Indian Education	5	5	5	0.0	0.0
Appalachian Regional Commission	78	83	83	6.4	0.0
R&D	144	152	148	5.6	-2.6
Department of Housing and Urban Development (451)	61	64	60	4.9	-6.3
Department of the Interior (452)	5	5	5	0.0	0.0
Bureau of Indian Affairs and Bureau of Indian Education	5	5	5	0.0	0.0
Appalachian Regional Commission	78	83	83	6.4	0.0

^a The FY 2019 data for most agencies are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 16

Federal budget authority for Education, training, employment, and social services (500) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	614	594	533	-3.3	-10.3
Research and general education aids (501, 502, 503)	614	594	533	-3.3	-10.3
Department of Education programs	257	258	218	0.4	-15.5
Smithsonian Institution programs	357	336	315	-5.9	-6.3
R&D	534	525	487	-1.7	-7.2
Research and general education aids (501, 502, 503)	534	525	487	-1.7	-7.2
Department of Education programs	257	258	218	0.4	-15.5
Smithsonian Institution programs	277	267	269	-3.6	0.7

^a The FY 2019 data for Smithsonian are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 17

Federal budget authority for Health (550) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	37,316	39,147	33,648	4.9	-14.0
Consumer and occupational health and safety (554)	496	411	411	-17.1	0.0
Consumer Product Safety Commission	1	1	1	0.0	0.0
Food and Drug Administration (HHS) ^b	495	410	410	-17.2	0.0
Health care services and health research and training (551, 552)	36,820	38,736	33,237	5.2	-14.2
Department of Health and Human Services	36,328	38,173	33,237	5.1	-12.9
Agency for Healthcare Research and Quality	351	356	0	1.4	-100.0
Centers for Disease Control and Prevention	437	435	435	-0.5	0.0
Departmental management (other)	131	154	18	17.6	-88.3
Health Resources and Services Administration	30	30	26	0.0	-13.3
National Institutes of Health	35,379	37,198	32,758	5.1	-11.9
Patient-Centered Outcomes Research Trust Fund ^c	492	563	0	14.4	-100.0
R&D	37,151	38,894	33,399	4.7	-14.1
Consumer and occupational health and safety (554)	478	376	376	-21.3	0.0
Consumer Product Safety Commission	1	1	1	0.0	0.0
Food and Drug Administration (HHS) ^b	477	375	375	-21.4	0.0
Health care services and health research and training (551, 552)	36,673	38,518	33,023	5.0	-14.3
Department of Health and Human Services	36,181	37,955	33,023	4.9	-13.0
Agency for Healthcare Research and Quality	351	356	0	1.4	-100.0
Centers for Disease Control and Prevention	437	435	435	-0.5	0.0
Departmental management (other)	131	154	18	17.6	-88.3
Health Resources and Services Administration	30	30	26	0.0	-13.3
National Institutes of Health	35,232	36,980	32,544	5.0	-12.0
Patient-Centered Outcomes Research Trust Fund ^c	492	563	0	14.4	-100.0

HHS = Department of Health and Human Services.

^a The FY 2019 data for the Food and Drug Administration are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Although not reflected in the data displayed here, the Food and Drug Administration budget was increased by 9% (including user fees) in the FY 2019 omnibus.

^c Established by the Patient Protection and Affordable Care Act of 2010 (P.L. 111-148) to prioritize and fund comparative effectiveness research. Funds are partially managed by the private, nonprofit Patient-Centered Outcomes Research Institute.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 18

National Institutes of Health, federal budget authority for R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Organization and program by FY 2018 rank order	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	35,379	37,198	32,758	5.1	-11.9
National Cancer Institute	5,861	6,055	5,162	3.3	-14.7
National Institute of Allergy and Infectious Diseases	5,204	5,457	4,745	4.9	-13.0
National Heart, Lung, and Blood Institute	3,257	3,371	2,909	3.5	-13.7
National Institute on Aging	2,543	3,049	2,626	19.9	-13.9
National Institute of Diabetes and Digestive and Kidney Diseases	2,048	2,113	1,840	3.2	-12.9
National Institute of Neurological Disorders and Stroke	2,113	2,241	1,992	6.1	-11.1
Office of the Director	1,881	2,079	1,899	10.5	-8.7
National Institute of Mental Health	1,713	1,828	1,588	6.7	-13.1
National Institute of General Medical Sciences	1,644	1,505	1,527	-8.4	1.4
National Institute of Child Health and Human Development	1,422	1,465	1,261	3.0	-13.9
National Institute on Drug Abuse	1,349	1,394	1,273	3.3	-8.7
National Institute of Environmental Health Sciences ^a	806	833	717	3.4	-13.9
National Eye Institute	759	784	674	3.4	-14.1
National Center for Advancing Translational Sciences	729	774	667	6.2	-13.9
National Institute of Arthritis and Musculoskeletal and Skin Diseases	569	587	504	3.1	-14.2
National Human Genome Research Institute	547	565	486	3.3	-13.9
National Institute on Alcohol Abuse and Alcoholism	492	509	439	3.5	-13.9
National Institute on Deafness and Other Communication Disorders	444	459	394	3.4	-14.2
National Institute of Dental and Craniofacial Research	434	449	386	3.4	-13.9
National Library of Medicine	427	442	380	3.4	-13.9
National Institute of Biomedical Imaging and Bioengineering	340	348	300	2.5	-13.7
National Institute on Minority Health and Health Disparities	304	314	270	3.4	-13.9
National Institute of Nursing Research	149	154	132	3.6	-14.5
National Center for Complementary and Integrative Health	139	142	123	2.5	-13.8
John E. Fogarty International Center	76	78	67	3.4	-13.9
National Institute for Research on Safety and Quality ^b	na	na	197	–	–
Buildings and facilities	129	200	200	55.2	0.0
R&D	35,232	36,980	32,544	5.0	-12.0
National Cancer Institute	5,843	6,037	5,148	3.3	-14.7
National Institute of Allergy and Infectious Diseases	5,204	5,457	4,745	4.9	-13.0
National Heart, Lung, and Blood Institute	3,257	3,371	2,909	3.5	-13.7
National Institute on Aging	2,543	3,049	2,626	19.9	-13.9
National Institute of Diabetes and Digestive and Kidney Diseases	2,048	2,113	1,840	3.2	-12.9
National Institute of Neurological Disorders and Stroke	2,113	2,241	1,992	6.1	-11.1
Office of the Director	1,881	2,079	1,899	10.5	-8.7
National Institute of Mental Health	1,713	1,828	1,588	6.7	-13.1
National Institute of General Medical Sciences	1,644	1,505	1,527	-8.4	1.4
National Institute of Child Health and Human Development	1,422	1,465	1,261	3.0	-13.9
National Institute on Drug Abuse	1,349	1,394	1,273	3.3	-8.7
National Institute of Environmental Health Sciences ^a	806	833	717	3.4	-13.9
National Eye Institute	759	784	674	3.4	-14.1

TABLE 18

National Institutes of Health, federal budget authority for R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Organization and program by FY 2018 rank order	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
National Center for Advancing Translational Sciences	729	774	667	6.2	-13.9
National Institute of Arthritis and Musculoskeletal and Skin Diseases	569	587	504	3.1	-14.2
National Human Genome Research Institute	547	565	486	3.3	-13.9
National Institute on Alcohol Abuse and Alcoholism	492	509	439	3.5	-13.9
National Institute on Deafness and Other Communication Disorders	444	459	394	3.4	-14.2
National Institute of Dental and Craniofacial Research	434	449	386	3.4	-13.9
National Library of Medicine	427	442	380	3.4	-13.9
National Institute of Biomedical Imaging and Bioengineering	340	348	300	2.5	-13.7
National Institute on Minority Health and Health Disparities	304	314	270	3.4	-13.9
National Institute of Nursing Research	149	154	132	3.6	-14.5
National Center for Complementary and Integrative Health	139	142	123	2.5	-13.8
John E. Fogarty International Center	76	78	67	3.4	-13.9
National Institute for Research on Safety and Quality ^b	na	na	197	--	--
Buildings and facilities	0	0	0	--	--

na = not applicable.

^a Includes funding from Superfund-related transfers and appropriations.^b The budget request recommends consolidating and renaming the Agency for Healthcare Research and Quality within the National Institutes of Health from elsewhere in the Department of Health and Human Services in FY 2020.**Note(s)**

Detail may not add to total because of rounding. Percent change is calculated on unrounded data. Institute totals exclude non-R&D components of institute budgets.

Source(s)

Agencies' submissions to OMB per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 19

Federal budget authority for Medicare (570) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	20	20	0	0.0	-100.0
Department of Health and Human Services (571)					
Centers for Medicare and Medicaid Services	20	20	0	0.0	-100.0
R&D	20	20	0	0.0	-100.0
Department of Health and Human Services (571)					
Centers for Medicare and Medicaid Services	20	20	0	0.0	-100.0

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 20

Federal budget authority for Income security (600) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	106	105	106	-0.9	1.0
Department of Health and Human Services (609)					
Administration for Children and Families	5	4	5	-20.0	25.0
Social Security Administration (609)	101	101	101	0.0	0.0
R&D	106	105	106	-0.9	1.0
Department of Health and Human Services (609)					
Administration for Children and Families	5	4	5	-20.0	25.0
Social Security Administration (609)	101	101	101	0.0	0.0

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 21

Federal budget authority for Veterans benefits and services (700) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	1,286	1,342	1,325	4.4	-1.3
Department of Veterans Affairs					
Medical and prosthetic research (703)	723	779	762	7.7	-2.2
Medical services (703)	563	563	563	0.0	0.0
R&D	1,286	1,342	1,325	4.4	-1.3
Department of Veterans Affairs					
Medical and prosthetic research (703)	723	779	762	7.7	-2.2
Medical services (703)	563	563	563	0.0	0.0

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data. Data include administration and operating expenses related to Department of Veterans Affairs research.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 22

Federal budget authority for Administration of justice (750) R&D and R&D plant: FYs 2018–20

(Millions of dollars and percent change)

Budget function and agency	2018 actual	2019 preliminary ^a	2020 proposed	2018–19 (% change)	2019–20 (% change)
R&D and R&D plant	690	700	472	1.5	-32.6
Department of Homeland Security (751) ^b	657	676	448	2.9	-33.7
Department of Justice	33	24	24	-27.3	0.0
Federal correctional activities (753)	11	2	2	-81.8	0.0
Office of Justice Programs (754)	22	22	22	0.0	0.0
R&D	690	700	472	1.5	-32.6
Department of Homeland Security (751) ^b	657	676	448	2.9	-33.7
Department of Justice	33	24	24	-27.3	0.0
Federal Prison System (753)	11	2	2	-81.8	0.0
Office of Justice Programs (754)	22	22	22	0.0	0.0

^a The FY 2019 data are official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^b Although not reflected in the data displayed here, the Department of Homeland Security Science and Technology Directorate budget was reduced by 2.5% in the FY 2019 omnibus.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
R&D and R&D plant ^b																			
2000	83,581	43,161	200	5,593	8,437	1,000	2,082	1,561	530	1,664	46	429	18,121	na	25	645	73	14	na
2001	91,505	46,202	252	6,353	8,951	1,320	2,138	1,826	468	1,654	54	424	21,023	na	30	719	88	3	na
2002	103,057	53,731	279	6,605	9,227	1,332	2,175	1,909	549	1,889	50	426	23,998	na	37	756	91	3	na
2003	118,065	63,708	269	6,999	9,677	1,412	2,198	2,042	534	1,888	48	444	27,677	na	38	817	316	0	na
2004	126,270	70,344	264	7,352	9,746	1,369	2,244	1,910	499	1,881	47	469	28,480	na	47	866	752	0	na
2005	131,259	74,641	255	7,477	9,656	1,324	2,245	2,094	475	1,866	45	495	29,129	na	35	742	779	0	na
2006	136,019	78,737	255	7,539	10,401	1,244	2,219	2,118	461	1,730	55	523	28,932	na	27	769	1,008	0	na
2007	141,890	82,658	246	8,712	10,988	1,922	2,096	1,950	516	1,380	49	577	29,581	na	27	820	369	0	na
2008	144,391	85,129	255	9,007	10,672	2,076	2,202	1,997	560	1,413	50	549	29,212	na	27	886	355	0	na
2009 ^c	164,292	85,642	255	14,128	9,060	3,794	2,615	2,249	1,051	1,461	62	553	42,051	30	63	943	335	0	na
Non-ARRA	145,553	85,342	255	9,941	8,374	2,234	2,371	2,073	641	1,357	62	543	30,989	30	63	943	335	0	na
ARRA	18,739	300	0	4,187	686	1,560	244	176	410	104	0	10	11,062	0	0	0	0	0	na
2010	148,962	86,789	194	10,509	8,232	2,570	2,430	2,206	668	1,517	109	581	31,693	36	77	1,034	318	0	na
2011	144,379	83,226	196	10,581	8,658	2,265	2,314	1,768	650	1,420	83	636	30,990	180	68	1,160	184	0	na
2012	143,737	79,875	269	10,536	10,801	2,231	2,300	2,005	698	1,511	58	640	31,411	80	18	1,160	143	1	na
2013	132,477	70,781	350	9,620	10,476	2,289	2,169	1,818	795	1,359	54	572	30,200	72	26	1,164	730	0	na
2014	136,159	70,992	410	10,524	11,228	2,407	2,328	2,077	957	1,278	66	542	31,099	25	58	1,101	1,067	0	na
2015	138,544	72,950	290	11,088	10,928	3,173	2,358	2,149	889	1,389	55	527	30,495	71	55	1,178	949	0	na
2016	150,393	80,202	288	11,328	12,811	3,492	2,471	2,350	1,033	1,361	65	505	32,526	21	105	1,222	613	0	na
2017 ^d	127,306	57,530	289	11,289	10,187	3,544	2,533	2,302	1,036	1,479	71	505	34,393	21	74	1,346	707	0	na
2018	144,460	68,916	238	12,559	10,552	4,233	2,662	2,346	1,184	1,594	144	614	37,316	20	106	1,286	690	0	na
2019 preliminary ^e	147,946	70,587	231	12,832	10,128	4,458	2,598	2,397	1,017	1,638	152	594	39,147	20	105	1,342	700	0	na
2020 proposed	142,377	75,421	78	11,198	10,686	1,895	1,892	2,235	1,116	1,624	148	533	33,648	0	106	1,325	472	0	na
R&D ^f																			
1955	2,533	2,151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	67	na	NA	NA	NA	NA	315
1956	2,988	2,535	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	83	na	NA	NA	NA	NA	370

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
1957	3,932	3,327	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	140	na	NA	NA	NA	NA	465
1958	4,570	3,801	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	177	na	NA	NA	NA	NA	592
1959	6,694	5,556	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	233	na	NA	NA	NA	NA	904
1960	7,552	6,107	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	305	na	NA	NA	NA	NA	1,140
1961	9,059	7,005	NA	137	777	373	73	125	NA	55	NA	NA	405	na	NA	NA	NA	NA	108
1962	10,290	7,238	NA	187	1,413	448	108	136	NA	101	NA	NA	551	na	NA	NA	NA	NA	107
1963	12,495	7,764	NA	246	2,812	515	120	146	NA	142	NA	NA	626	na	NA	NA	NA	NA	125
1964	14,225	7,829	NA	277	4,241	571	134	165	NA	122	NA	NA	728	na	NA	NA	NA	NA	160
1965	14,614	7,342	NA	304	4,887	585	159	195	NA	147	NA	NA	792	na	NA	NA	NA	NA	203
1966	15,320	7,536	NA	377	4,976	575	189	201	NA	251	NA	NA	900	na	NA	NA	NA	NA	315
1967	16,529	8,566	18	409	4,778	600	320	218	43	380	37	154	915	na	48	41	*	3	na
1968	15,921	8,275	17	437	4,304	657	331	217	48	304	44	166	1,021	na	50	45	1	5	na
1969	15,641	8,356	26	433	3,799	597	323	221	54	404	32	169	1,088	na	78	50	5	5	na
1970	15,339	7,981	32	452	3,606	574	340	238	79	535	47	164	1,084	na	136	59	9	6	na
1971	15,543	8,110	32	513	3,048	556	416	259	90	728	65	215	1,288	na	145	63	10	7	na
1972	16,496	8,902	29	625	2,932	574	479	294	50	558	66	235	1,547	na	106	69	23	8	na
1973	16,800	9,002	28	658	2,824	630	554	308	50	572	78	290	1,585	na	106	74	33	7	na
1974	17,410	9,016	24	749	2,702	759	516	313	51	693	82	236	2,069	na	71	85	35	9	na
1975	19,039	9,679	29	813	2,764	1,363	624	342	65	635	93	239	2,170	na	72	95	44	12	na
1976	20,780	10,430	42	858	3,130	1,649	683	383	69	631	109	255	2,351	na	48	98	35	12	na
1977	23,450	11,864	66	974	2,832	2,562	753	457	71	708	101	230	2,629	na	55	107	30	13	na
1978	25,976	12,899	57	1,050	2,939	3,134	904	501	77	768	92	345	2,968	na	67	111	44	20	na
1979	28,208	13,791	117	1,119	3,136	3,461	1,010	552	93	798	127	354	3,401	na	57	123	47	23	na
1980	29,739	14,946	125	1,233	2,738	3,603	999	585	101	887	119	468	3,694	na	47	126	45	22	na
1981	33,735	18,413	160	1,340	3,111	3,501	1,061	659	106	869	104	298	3,871	na	43	143	34	22	na
1982	36,115	22,070	165	1,359	2,584	3,012	965	693	104	791	63	228	3,869	na	32	139	31	10	na
1983	38,768	24,936	177	1,502	2,134	2,578	952	745	107	876	44	189	4,298	na	32	157	37	6	na

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
1984	44,214	29,287	192	1,676	2,300	2,581	963	762	110	1,040	46	200	4,779	na	26	218	24	8	na
1985	49,887	33,698	210	1,862	2,725	2,389	1,059	836	114	1,030	50	220	5,418	na	21	193	47	17	na
1986	53,249	36,926	211	1,873	2,894	2,286	1,062	815	111	917	88	248	5,565	na	14	183	41	14	na
1987	57,069	39,152	223	2,042	3,398	2,053	1,133	822	110	908	99	267	6,556	na	25	215	49	17	na
1988	59,106	40,099	224	2,160	3,683	2,126	1,160	882	122	896	108	285	7,076	na	23	195	51	17	na
1989	62,115	40,642	279	2,373	4,555	2,419	1,255	907	128	1,064	74	347	7,773	na	27	212	45	15	na
1990	63,781	39,925	375	2,410	5,765	2,726	1,386	950	140	1,045	67	374	8,308	na	33	216	44	17	na
1991	65,898	39,328	378	2,635	6,511	2,953	1,582	1,052	178	1,231	88	433	9,226	na	30	219	51	4	na
1992	68,398	40,083	371	2,659	6,744	3,099	1,688	1,155	192	1,523	127	365	10,055	na	37	245	51	4	na
1993	69,884	41,249	382	2,691	6,988	2,677	1,802	1,152	220	1,703	57	348	10,280	na	36	250	49	*	na
1994	68,331	37,764	254	2,712	7,414	2,873	2,062	1,193	380	1,888	68	373	10,993	na	45	265	46	0	na
1995	68,791	37,204	287	2,794	7,916	2,844	1,988	1,194	525	1,833	70	369	11,407	na	43	257	59	1	na
1996	69,049	37,801	252	2,846	7,844	2,521	1,802	1,176	432	1,795	50	331	11,867	na	16	259	56	2	na
1997	71,653	39,591	190	2,944	7,844	2,372	1,886	1,203	409	1,785	48	373	12,670	na	9	267	59	2	na
1998	73,569	39,823	163	4,360	8,198	948	1,855	1,249	398	1,833	42	444	13,576	na	18	587	72	2	na
1999	77,637	41,306	190	4,690	8,245	1,131	1,842	1,288	432	1,725	59	403	15,553	na	38	644	88	3	na
2000	78,664	42,580	200	4,977	5,363	996	1,999	1,426	406	1,636	46	418	17,869	na	25	645	73	6	na
2001	86,756	45,713	252	5,468	6,126	1,314	2,096	1,657	429	1,640	54	411	20,758	na	30	719	88	3	na
2002	97,624	53,016	279	5,753	6,270	1,327	2,160	1,606	467	1,838	50	411	23,560	na	37	756	91	3	na
2003	112,544	63,048	269	6,129	7,355	1,403	2,151	1,708	463	1,869	48	430	26,517	na	38	817	299	0	na
2004	121,867	69,593	264	6,466	7,612	1,343	2,168	1,750	454	1,863	47	459	28,251	na	47	866	684	0	na
2005	126,601	74,047	255	6,570	7,300	1,296	2,168	1,820	423	1,847	45	470	28,824	na	35	742	758	0	na
2006	131,624	78,037	255	6,691	8,204	1,195	2,120	1,869	390	1,711	55	495	28,797	na	27	769	1,008	0	na
2007	138,087	82,272	246	7,809	9,024	1,893	1,936	1,857	428	1,361	49	536	29,461	na	27	819	369	0	na
2008	140,113	84,713	255	8,234	8,323	1,896	2,106	1,864	450	1,394	50	497	29,063	na	27	886	355	0	na
2009 ^c	156,009	85,166	255	11,840	6,891	3,318	2,245	1,935	618	1,440	62	479	40,389	30	63	943	335	0	na
Non-ARRA	140,903	84,866	255	8,885	6,205	2,014	2,171	1,935	507	1,336	62	469	30,827	30	63	943	335	0	na

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
ARRA	15,106	300	0	2,955	686	1,304	74	0	111	104	0	10	9,562	0	0	0	0	0	na
2010	146,596	86,517	194	9,280	8,232	2,455	2,237	2,043	550	1,496	109	535	31,488	36	77	1,034	313	0	na
2011	142,457	82,972	196	9,483	8,398	2,233	2,171	1,916	548	1,420	83	578	30,903	180	68	1,160	172	0	na
2012	141,450	79,559	269	9,304	10,661	2,197	2,147	1,920	607	1,486	58	597	31,243	80	18	1,160	143	1	na
2013	130,861	70,620	350	8,802	10,476	2,269	2,020	1,753	719	1,337	54	536	30,044	72	26	1,164	618	0	na
2014	133,547	70,611	410	9,482	11,055	2,387	2,172	1,967	877	1,261	66	515	30,927	25	58	1,101	634	0	na
2015	136,090	72,560	290	10,068	10,875	3,153	2,161	1,989	809	1,363	55	491	30,331	71	55	1,178	639	0	na
2016	147,813	79,828	288	10,042	12,789	3,473	2,294	2,030	887	1,326	65	474	32,365	21	105	1,222	605	0	na
2017 ^d	124,710	57,055	289	9,947	10,134	3,519	2,378	2,090	901	1,444	71	478	34,255	21	74	1,346	707	0	na
2018	140,701	68,325	238	10,692	10,455	4,212	2,383	2,074	840	1,551	144	534	37,151	20	106	1,286	690	0	na
2019 preliminary ^e	144,074	69,899	231	10,791	10,011	4,435	2,347	2,135	887	1,600	152	525	38,894	20	105	1,342	700	0	na
2020 proposed	139,000	74,743	78	9,689	10,599	1,872	1,689	2,064	743	1,586	148	487	33,399	0	106	1,325	472	0	na
Basic research ^g																			
1978	3,665	320	*	962	412	157	207	197	9	70	8	57	1,246	0	2	9	10	0	na
1979	4,108	365	0	1,026	440	172	131	222	10	75	8	59	1,579	0	1	10	10	*	na
1980	4,716	552	0	1,152	482	200	136	246	15	79	8	61	1,761	0	1	14	9	*	na
1981	5,107	610	12	1,256	445	220	131	281	17	89	5	66	1,951	0	3	15	5	3	na
1982	5,305	696	10	1,296	434	260	139	295	17	102	7	78	1,953	0	0	13	4	2	na
1983	6,247	788	10	1,439	501	320	156	326	19	117	6	70	2,475	0	0	14	4	3	na
1984	7,072	845	3	1,606	646	365	192	353	20	125	5	77	2,813	0	0	15	5	3	na
1985	7,810	856	4	1,779	498	428	206	406	23	255	6	86	3,243	0	0	15	4	4	na
1986	8,193	960	5	1,795	737	456	204	390	26	184	6	83	3,324	0	0	15	5	5	na
1987	9,021	900	3	1,942	843	511	206	397	26	231	4	78	3,851	0	0	17	8	4	na
1988	9,553	905	3	2,061	944	571	210	428	28	197	7	83	4,087	0	0	17	8	5	na
1989	10,648	965	3	2,265	1,099	703	331	433	29	287	3	92	4,413	0	0	16	7	3	na
1990	11,288	964	4	2,306	1,389	761	336	456	31	242	3	106	4,661	0	0	16	9	3	na

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
1991	12,405	1,188	6	2,526	1,479	878	389	486	39	246	10	115	5,021	0	0	16	6	0	na
1992	12,973	1,147	6	2,532	1,499	921	383	528	35	266	11	118	5,506	0	0	16	5	0	na
1993	13,440	1,323	8	2,553	1,588	917	376	553	34	238	10	121	5,700	0	0	16	5	0	na
1994	13,552	1,174	6	2,542	1,796	921	224	567	38	220	9	145	5,889	0	0	16	5	0	na
1995	13,772	1,181	0	2,622	1,614	930	187	565	35	389	3	153	6,068	0	0	16	9	0	na
1996	14,442	1,165	2	2,662	1,685	1,182	147	547	37	456	0	140	6,395	0	0	13	12	0	na
1997	14,961	1,090	2	2,753	1,653	1,288	153	548	34	420	0	142	6,852	0	0	14	13	0	na
1998	15,523	1,067	1	4,121	1,610	34	145	571	35	411	0	133	7,356	0	0	23	16	0	na
1999	17,433	1,110	0	4,464	1,667	36	142	602	41	358	0	99	8,634	0	0	263	18	0	na
2000	19,470	1,184	42	4,722	1,616	36	146	651	39	542	0	107	10,099	0	0	266	20	0	na
2001	21,376	1,303	50	5,187	1,695	40	215	749	50	17	0	112	11,642	0	0	289	27	0	na
2002	23,848	1,404	53	5,561	1,912	45	471	762	56	17	0	115	12,957	0	0	465	30	0	na
2003	25,323	1,409	18	5,907	2,206	40	185	824	53	23	1	125	14,162	0	0	327	42	0	na
2004	26,529	1,380	18	6,198	2,473	32	201	780	46	20	0	125	14,850	0	0	347	58	0	na
2005	27,678	1,508	18	6,238	2,486	31	195	789	53	65	0	130	15,826	0	0	297	42	0	na
2006	27,336	1,490	18	6,406	2,299	8	195	805	66	0	0	131	15,532	0	0	318	68	0	na
2007	28,166	1,533	18	6,887	2,318	7	260	821	92	2	0	149	15,637	0	0	335	106	0	na
2008	28,740	1,631	18	7,260	2,183	16	210	790	98	0	0	146	15,909	0	0	354	125	0	na
2009 ^c	36,400	1,772	18	10,727	932	28	219	799	152	0	0	155	21,108	0	0	375	115	0	na
Non-ARRA	28,161	1,769	18	7,913	900	28	219	799	112	0	0	145	15,767	0	0	375	115	0	na
ARRA	8,240	3	0	2,814	32	0	0	0	40	0	0	10	5,341	0	0	0	0	0	na
2010	29,614	1,849	0	8,578	1,109	57	223	881	131	0	0	174	16,125	0	0	413	74	0	na
2011	29,888	1,940	0	8,738	1,199	47	218	823	154	0	0	207	16,002	0	0	438	122	0	na
2012	31,846	2,066	0	8,491	3,181	57	135	847	163	0	0	206	16,196	0	0	470	33	0	na
2013	30,202	1,950	0	8,147	2,950	17	120	762	192	0	0	208	15,317	0	0	476	63	0	na
2014	32,086	2,167	0	8,739	3,320	16	252	790	213	0	0	227	15,853	0	0	451	58	0	na
2015	31,821	2,213	1	9,308	3,210	55	254	793	214	0	0	217	15,014	0	0	484	58	0	na

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2020

(Millions of dollars)

Fiscal year	Total for all budget functions	National defense (050)	International affairs (150)	General science and basic research (251)	Space flight, research, and supporting activities (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Commerce and housing credit (370)	Transportation (400)	Community and regional development (450)	Education, training, employment, and social services (500)	Health (550)	Medicare (570)	Income security (600)	Veterans benefits and services (700)	Administration of justice (750)	General government (800)	Other ^a
2016	32,821	2,335	1	9,282	3,578	51	257	829	235	0	0	244	15,565	0	0	386	58	0	na
2017 ^d	34,061	2,304	0	9,168	3,606	21	268	903	234	0	0	258	16,701	0	0	538	59	0	na
2018	36,208	2,381	0	9,932	3,281	50	255	909	222	0	1	335	18,255	0	0	530	57	0	na
2019 preliminary ^e	39,194	2,659	0	10,039	4,939	50	261	933	222	0	1	334	19,151	0	0	553	52	0	na
2020 proposed	34,968	2,459	0	9,002	4,481	41	212	930	192	0	1	335	16,736	0	0	546	33	0	na

* = amount less than \$500,000. na = not applicable. NA = not available; data were not collected for all budget functions in all years.

ARRA = American Recovery and Reinvestment Act of 2009.

^a Other includes amounts not explicitly tallied in one of the separately identified categories.

^b Data on budget authority for R&D plant were not tabulated before FY 2000.

^c Total for FY 2009 is the sum of non-ARRA and ARRA funds.

^d The data for FY 2017 and onward reflect application of the narrowed definitions of *development* described by the Office of Management and Budget (OMB) in its Circular A-11 of July 2016. The previous years' numbers reflect use of the former *development* definition.

^e The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.

^f Data for 1955–77 are obligations; data for 1978–2017 are budget authority.

^g Not all basic research funded by the federal government falls into the General science and basic research (251) category. Federal funding for basic research arises in other functional categories—such as National defense or Health—and is included in the category funding totals there.

Note(s)

Detail may not add to total because of rounding. In FY 2007, the Department of Homeland Security (DHS) changed its R&D portfolio to reclassify funding in National defense and most Administration of justice as General science and basic research; in FY 2013, this was reclassified back to Administration of justice. In FY 2004, DHS changed its R&D portfolio to reclassify funding in General science and basic research and in Agriculture as Administration of justice. In FY 2000, the National Aeronautics and Space Administration (NASA) transferred funding for the International Space Station program from R&D to R&D plant; the change is reflected in the budget authority for Space flight, research, and supporting activities. In FYs 2009 and 2012, NASA revised the classification of its R&D and non-R&D funding. In FY 2000, the National Institutes of Health in the Department of Health and Human Services classified all of its previous development activities as basic research or applied research, with a resulting increase in Health basic research. In FY 1998, many Department of Energy programs were reclassified from Energy to General science and basic research. In FY 1998, the Department of Veterans Affairs began reporting medical care support funds as a part of its total research budgetary resources; the change is reflected in the budget authority for Veterans benefits and services.

Source(s)

Data from FYs 1955–94 are from agencies' submissions to OMB, Circular No. A-11, exhibit 44A, "Research and development activities," and from supplemental data obtained from agencies' budget offices. Data from FYs 1995–2017 are from agencies' submissions to OMB per MAX Schedule C, budget justification documents, and supplemental data obtained from agencies' budget offices.

TABLE 24

Federal funding for R&D and R&D plant for national defense and civilian functions: FYs 1955–2020

(Millions of current dollars and percent distribution)

Fiscal year	Current \$millions			% distribution		
	Total	National defense	Civilian functions	Total	National defense	Civilian functions
R&D obligations						
1955	2,533	2,151	382	100.0	84.9	15.1
1956	2,988	2,535	453	100.0	84.8	15.2
1957	3,932	3,327	605	100.0	84.6	15.4
1958	4,570	3,801	769	100.0	83.2	16.8
1959	6,694	5,556	1,138	100.0	83.0	17.0
1960	7,552	6,107	1,445	100.0	80.9	19.1
1961	9,059	7,005	2,054	100.0	77.3	22.7
1962	10,290	7,238	3,052	100.0	70.3	29.7
1963	12,495	7,764	4,731	100.0	62.1	37.9
1964	14,225	7,829	6,396	100.0	55.0	45.0
1965	14,614	7,342	7,272	100.0	50.2	49.8
1966	15,320	7,536	7,784	100.0	49.2	50.8
1967	16,529	8,566	7,963	100.0	51.8	48.2
1968	15,921	8,275	7,646	100.0	52.0	48.0
1969	15,641	8,356	7,285	100.0	53.4	46.6
1970	15,339	7,981	7,358	100.0	52.0	48.0
1971	15,543	8,110	7,433	100.0	52.2	47.8
1972	16,496	8,902	7,594	100.0	54.0	46.0
1973	16,800	9,002	7,798	100.0	53.6	46.4
1974	17,410	9,016	8,394	100.0	51.8	48.2
1975	19,039	9,679	9,360	100.0	50.8	49.2
1976	20,780	10,430	10,350	100.0	50.2	49.8
1977	23,450	11,864	11,586	100.0	50.6	49.4
R&D budget authority						
1978	25,976	12,899	13,077	100.0	49.7	50.3
1979	28,208	13,791	14,417	100.0	48.9	51.1
1980	29,739	14,946	14,793	100.0	50.3	49.7
1981	33,735	18,413	15,322	100.0	54.6	45.4
1982	36,115	22,070	14,045	100.0	61.1	38.9
1983	38,768	24,936	13,832	100.0	64.3	35.7
1984	44,214	29,287	14,927	100.0	66.2	33.8
1985	49,887	33,698	16,189	100.0	67.5	32.5
1986	53,249	36,926	16,323	100.0	69.3	30.7
1987	57,069	39,152	17,917	100.0	68.6	31.4
1988	59,106	40,099	19,007	100.0	67.8	32.2
1989	62,115	40,642	21,473	100.0	65.5	34.5
1990	63,781	39,925	23,856	100.0	62.6	37.4
1991	65,898	39,328	26,570	100.0	59.7	40.3
1992	68,398	40,083	28,315	100.0	58.6	41.4
1993	69,884	41,249	28,635	100.0	59.0	41.0
1994	68,331	37,764	30,566	100.0	55.3	44.7
1995	68,791	37,204	31,587	100.0	54.1	45.9
1996	69,049	37,801	31,248	100.0	54.7	45.3
1997	71,653	39,591	32,062	100.0	55.3	44.7
1998	73,569	39,823	33,746	100.0	54.1	45.9
1999	77,637	41,306	36,332	100.0	53.2	46.8
R&D and R&D plant budget authority						
2000	83,581	43,161	40,420	100.0	51.6	48.4
2001	91,505	46,202	45,303	100.0	50.5	49.5

TABLE 24

Federal funding for R&D and R&D plant for national defense and civilian functions: FYs 1955–2020

(Millions of current dollars and percent distribution)

Fiscal year	Current \$millions			% distribution		
	Total	National defense	Civilian functions	Total	National defense	Civilian functions
2002	103,057	53,731	49,326	100.0	52.1	47.9
2003	118,065	63,708	54,357	100.0	54.0	46.0
2004	126,270	70,344	55,926	100.0	55.7	44.3
2005	131,259	74,641	56,618	100.0	56.9	43.1
2006	136,019	78,737	57,282	100.0	57.9	42.1
2007	141,890	82,658	59,232	100.0	58.3	41.7
2008	144,391	85,129	59,262	100.0	59.0	41.0
2009 ^a	164,292	85,642	78,650	100.0	52.1	47.9
Non-ARRA	145,553	85,342	60,211	100.0	58.6	41.4
ARRA	18,739	300	18,439	100.0	1.6	98.4
2010	148,962	86,789	62,173	100.0	58.3	41.7
2011	144,379	83,226	61,153	100.0	57.6	42.4
2012	143,737	79,875	63,862	100.0	55.6	44.4
2013	132,477	70,781	61,696	100.0	53.4	46.6
2014	136,159	70,992	65,167	100.0	52.1	47.9
2015	138,544	72,950	65,594	100.0	52.7	47.3
2016	150,393	80,202	70,191	100.0	53.3	46.7
2017 ^b	127,306	57,530	69,776	100.0	45.2	54.8
2018	144,459	68,916	75,543	100.0	47.7	52.3
2019 preliminary ^c	147,945	70,587	77,358	100.0	47.7	52.3
2020 proposed	142,377	75,421	66,956	100.0	53.0	47.0

ARRA = American Recovery and Reinvestment Act of 2009.

^a Total for FY 2009 is the sum of non-ARRA and ARRA funds.^b The application of a new *experimental development* definition is shown starting in FY 2017. The previous years' numbers reflect use of the former *development* definition.^c The FY 2019 data for some functions include official estimates reflecting continuing resolution funding for FY 2019 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2019, signed 15 February 2019). Most federal agencies included in this omnibus did not prepare R&D estimates based on the final spending figures for FY 2019.**Note(s)**

The National defense function includes Department of Defense military activities and Department of Energy atomic energy defense programs; some years also include defense-related R&D in the Department of Homeland Security and the Department of Justice. Civilian functions include all other federally funded R&D activities.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

Technical Notes

Overview

All activities covered by the federal budget, including R&D, are classified into 20 broad functional categories (see section **Budget Functions and Classifying R&D**). R&D activities currently are in 15 of the 20 categories.

The tables in this report provide R&D budget authority detail for FYs 2018–20 by agency and major programs for each of the categories in which R&D is present. Several concluding tables also show budget authority data for R&D in FY 2017 and earlier years.

The data for FY 2018 are the *actual* budget authorities received by federal agencies for R&D that year. These numbers update the preliminary data for FY 2018 published in the previous edition (FYs 2017–19) of this report series.

The data for FY 2019 are *preliminary*. Normally, these preliminary numbers are agency estimates based on final congressional appropriations for the fiscal year. Due, however, to the relatively late date at which all 12 of the spending bills were enacted (Consolidated Appropriations Act, 2019, signed 15 February 2019), many agencies did not prepare R&D estimates based on the enacted spending levels. The FY 2019 data available from the agencies for this report reflect, in many cases, only the spending levels of the continuing resolutions for FY 2019 that preceded the enacted levels. (Notes accompanying each of the tables in this report indicate the basis for the tabulated FY 2019 numbers for each agency.)

The data for FY 2020 are the funding levels *proposed* by the president’s *Budget of the United States Government, Fiscal Year 2020* (released 11 March 2019). At the time of this present report, the funding levels for FY 2020 remain the subject of ongoing legislation by Congress.

The data throughout this report reflect agency documents and other Office of Management and Budget (OMB) data available through August 2019. Data reported here as “preliminary” or “proposed” will be revised in subsequent editions of this report to reflect the eventual congressional appropriation actions and agency program funding decisions.

Definitions

R&D and R&D Plant

In this report, R&D refers to basic research, applied research, and experimental development activities in science and engineering.

Research and experimental development is creative and systematic work undertaken in order to increase the stock of knowledge—including knowledge of people, culture, and society—and to devise new applications using available knowledge.

R&D includes administrative expenses, such as the operating costs of research facilities and equipment and other overhead costs. It also includes funds for the purchase of minor equipment—such as personal computers, standard microscopes, and simple spectrometers.

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts. Basic research may include activities with broad or general applications in mind, such as the study of how plant genomes change, but should exclude research directed toward a specific application or requirement, such as the optimization of the genome of a specific crop species.

Applied research is original investigation undertaken in order to acquire new knowledge. Applied research is, however, directed primarily toward a specific, practical aim or objective.

Experimental development is creative and systematic work, drawing on knowledge gained from research and practical experience, which is directed at producing new products or processes or improving existing products or processes. Like research, experimental development will result in gaining additional knowledge.

Experimental development activities include (1) the production of materials, devices, and systems or methods, including the design, construction, and testing of experimental prototypes; and (2) technology demonstrations, where a system or component is being demonstrated at scale for the first time and it is realistic to expect additional refinements to the design (feedback R&D) following the demonstration.

Before FY 2018, a more expansive definition of development was used. The present guidance now identifies several specific exclusions. Experimental development does *not* include (1) *user demonstrations*, where the cost and benefits of a system are being validated for a specific use case (e.g., low-rate initial production activities); or (2) *preproduction development*, which is defined as nonexperimental work on a product or system before it goes into full production, including activities such as tooling and development of production facilities. For example, activities and programs that are categorized as “Operational Systems Development” in the Department of Defense’s Research, Development, Test and Evaluation (RDT&E) budget activity structure are no longer included as R&D. Activities and programs of that type generally are now reported as investments in other major non-R&D equipment.

R&D plant includes facilities and major equipment necessary for the execution of an R&D program. It includes the purchase, construction, manufacture, rehabilitation, or major improvement of physical assets such as land, major fixed equipment, and supporting infrastructure like a sewer line or housing at a remote location. It also includes the acquisition, design, or production of major movable equipment, such as mass spectrometers, research vessels, DNA sequencers, and other movable major instruments for use in R&D activities.

The data in this report exclude (1) all non-R&D activities performed within budget functions that conduct R&D and (2) all functions in which no R&D is conducted. One exception, however, is **table 6**, which continues to report RDT&E totals that previously would have been classified as R&D. This is done to provide a sense of the impact of the narrowed definition of development (as detailed above) on defense R&D totals.

Budget Authority, Obligations, and Outlays

The federal R&D funding data presented here (with only a few noted exceptions) are provided in terms of *budget authority*. Budget authority is used because it is the initial budget stage for congressional action on the president’s proposed budget. Budget authority imposes a ceiling on obligations and outlays; obligations and outlays flow from budget authority.

Budget authority is the primary source of legal authorization to enter into obligations that will result in outlays. Budget authority is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function.

Obligations represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and when the future payment of money is required.

Outlays represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated.

Budget Functions and Classifying R&D

The federal budget total is the sum of funding across the 20 broad functional categories. These categories are National defense (function 050); International affairs (150); General science, space, and technology (250); Energy (270); Natural resources and environment (300); Agriculture (350); Commerce and housing credit (370); Transportation (400); Community and regional development (450); Education, training, employment, and social services (500); Health (550); Medicare (570); Income security (600); Social security (650); Veterans benefits and services (700); Administration of justice (750); General government (800); Net interest (900); Allowances (920); and Undistributed offsetting receipts (950).

R&D has never been reported in 4 of these 20 functions: Social security (650), Net interest (900), Allowances (920), and Undistributed offsetting receipts (950). As such, these categories are not present in this report's data—except indirectly, where R&D is described as a proportion of total federal budget authority.

Small amounts of R&D had been reported in the General government (800) category up through FY 2002 but turned to zero thereafter. A small amount of R&D was again reported in FY 2012 but has been zero throughout the FY 2018–20 period covered in this report.

To better highlight R&D areas of high interest, the tables in this report split the General science, space, and technology (250) category into its two subfunctions: General science and basic research (251), and Space flight, research, and supporting activities (252).

Overall, this report's tables separately cover 16 functional categories: 14 at the broad functional category level and 2 at the subcategory level.

Each R&D activity is assigned to only one functional category—which is consistent with the official codes used in budget documents, even though the R&D activity may address the objectives of several functions. For example, all R&D activities sponsored by the Department of Defense (except for those of the U.S. Army Corps of Engineers) are classified as National defense (050), even though some of these have secondary objectives, such as Space flight, research, and supporting activities (252) or Health (550). Nonetheless, an agency's overall R&D effort can involve multiple activities spread across several functional categories, which means that a functional category can show the presence of several agencies.

Finally, not all federally sponsored basic research is categorized in the General science and basic research (251) subfunction. Some basic research is included in many of the other functional categories. Also, not all the R&D included in the General science and basic research (251) subfunction is basic research—some is applied research.

Technical table A-1 maps the mix of agency funding of R&D activities in FYs 2018–20 across the budget function categories.

Data Sources

The federal budget does not include a separately identified R&D account. Furthermore, most appropriations for R&D are not directly labeled as such (except in certain program areas, such as defense, energy, health, and environment). Thus, most funds for R&D are not line items in agency budget submissions but are included instead as part of general program funding.

To provide information on federal R&D funding, OMB requires all agencies with R&D funding levels greater than \$10 million annually to submit data on their R&D programs as part of their annual budget submissions. Such agencies are requested to provide data on their funding levels for basic research, applied research, experimental development, R&D facilities, and capital equipment for R&D, in accordance with OMB's Circular No. A-11, Section 84: "Character Classification (Schedule C)" at <https://www.whitehouse.gov/wp-content/uploads/2018/06/s84.pdf>.

The data in this report were collected mainly in July through August 2019 and represent the agencies' official estimates of actual and proposed federal funding for R&D over the FY 2018–20 period. The data are based primarily on information provided to OMB by 26 agencies, which account for about 99% of all federally sponsored R&D activities. (OMB has routinely tracked the R&D budget authority for these 26 agencies; other agencies with negligible levels of R&D budget authority are excluded.) The data reflect R&D funding information that became available from individual agencies after the administration's FY 2020 budget proposal, *Budget of the United States Government, Fiscal Year 2020*, was prepared and transmitted to Congress on 11 March 2019. This information consists of budget justification documents that agencies submit to Congress and supplemental, program-specific information obtained from agency budget and program staff through August 2019. Accordingly, the budget numbers reported for individual activities, programs, or agencies may differ somewhat from those published in the president's budget or in agency budget documents.

Technical Table

Table Title

A-1 Agency and budget function crosswalk, federal R&D funding, by budget function: FYs 2018–20

X = R&D function funded by specified agency.

Source(s)

Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

Acknowledgments and Suggested Citation

Acknowledgments

Mark Boroush of the National Center for Science and Engineering Statistics (NCSES) developed and oversaw preparation of this report, under the leadership of Emilda B. Rivers, NCSES Director; Vipin Arora, NCSES Deputy Director; Samson Adeshiyan, NCSES Chief Statistician; and John Jankowski, NCSES Program Director. Mark Fiegenger (NCSES) reviewed the report.

Under NCSES contract with SRI International, Matthew Hourihan, Director of the R&D Budget and Policy Program at the American Association for the Advancement of Science (AAAS), compiled the tables in this report. Publication processing support was provided by Catherine Corlies, Tanya Gore, and Joe Newman (NCSES).

NCSES thanks the program and budget offices at the federal agencies that provided information for this report.

Suggested Citation

National Center for Science and Engineering Statistics, National Science Foundation. 2019. *Federal R&D Funding, by Budget Function: Fiscal Years 2018–20*. Detailed Statistical Tables NSF 20-305. Alexandria, VA. Available at <https://ncses.nsf.gov/pubs/nsf20305/>.

Contact

Mark Boroush
Project Officer
Research and Development Statistics Program
mboroush@nsf.gov

National Center for Science and Engineering Statistics
Directorate for Social, Behavioral and Economic Sciences
National Science Foundation
2415 Eisenhower Avenue, Suite W14200, Alexandria, VA 22314
Tel: (703) 292-8726
FIRS: (800) 877-8339
TDD: (800) 281-8749