



NCSES

Federal R&D Funding, by Budget Function: Fiscal Years 2017–19

Detailed Statistical Tables | NSF 19-312 | February 27, 2019

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General Notes

This report contains data on the budget authority provided to U.S. federal agencies to fund the research and development and R&D plant components of their programs in FYs 2017–19. *Budget authority* is the primary source of legal authorization to enter into obligations that will result in outlays. It is most commonly granted in the form of appropriations by the congressional committees assigned to determine the budget for each function. The technical notes in this report cover the main features of the new R&D budget authority data.

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TABLE 1

Federal budget authority for R&D and R&D plant, by budget function, ordered by FY 2017 R&D and R&D plant total: FYs 2017–19

(Millions of dollars and percent change)

Budget function	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	127,306	130,541	123,767	2.5	-5.2
National defense	57,530	61,088	66,027	6.2	8.1
Health	34,393	34,572	25,259	0.5	-26.9
General science and basic research	11,289	11,337	11,456	0.4	1.0
Space flight, research, and supporting activities	10,187	9,735	10,163	-4.4	4.4
Energy	3,544	3,508	2,027	-1.0	-42.2
Natural resources and environment	2,533	2,582	1,876	1.9	-27.3
Agriculture	2,302	2,206	2,063	-4.2	-6.5
Transportation	1,479	1,473	1,344	-0.4	-8.7
Veterans benefits and services	1,346	1,338	1,345	-0.6	0.5
Commerce and housing credit	1,036	1,087	811	5.0	-25.4
Administration of justice	707	656	495	-7.2	-24.5
Education, training, employment, and social services	505	485	596	-4.0	22.9
International affairs	289	322	117	11.4	-63.7
Income security	74	63	105	-14.9	66.7
Community and regional development	71	70	65	-1.4	-7.1
Medicare	21	19	17	-9.5	-10.5
R&D	124,710	128,107	120,638	2.7	-5.8
National defense	57,055	60,775	65,329	6.5	7.5
Health	34,255	34,379	25,014	0.4	-27.2
General science and basic research	9,947	10,050	9,982	1.0	-0.7
Space flight, research, and supporting activities	10,134	9,713	10,109	-4.2	4.1
Energy	3,519	3,483	2,008	-1.0	-42.3
Natural resources and environment	2,378	2,389	1,691	0.4	-29.2
Agriculture	2,090	1,994	1,762	-4.6	-11.6
Transportation	1,444	1,439	1,308	-0.4	-9.1
Veterans benefits and services	1,346	1,338	1,345	-0.6	0.5
Commerce and housing credit	901	953	745	5.8	-21.8
Administration of justice	707	656	490	-7.2	-25.3
Education, training, employment, and social services	478	463	550	-3.1	18.8
International affairs	289	322	117	11.4	-63.7
Income security	74	63	105	-14.9	66.7
Community and regional development	71	70	65	-1.4	-7.1
Medicare	21	19	17	-9.5	-10.5
R&D plant	2,597	2,435	3,129	-6.2	28.5
National defense	475	313	698	-34.1	123.0
Health	138	193	245	39.9	26.9
Space flight, research, and supporting activities	52	22	54	-57.9	147.3
General science and basic research	1,342	1,287	1,474	-4.1	14.5
Energy	25	25	19	-0.6	-24.4
Natural resources and environment	155	193	185	24.5	-4.3
Agriculture	213	212	301	-0.3	42.0
Transportation	35	34	36	-3.4	5.9
Veterans benefits and services	0	0	0	--	--
Commerce and housing credit	135	134	66	-0.5	-50.6
Administration of justice	0	0	5	--	--

TABLE 1

Federal budget authority for R&D and R&D plant, by budget function, ordered by FY 2017 R&D and R&D plant total: FYs 2017–19

(Millions of dollars and percent change)

Budget function	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
Education, training, employment, and social services	27	22	46	-18.5	109.1
International affairs	0	0	0	--	--
Income security	0	0	0	--	--
Community and regional development	0	0	0	--	--
Medicare	0	0	0	--	--

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in some of the data above.

Note(s)

Detail may not add to total because of rounding. Percent change is calculated on unrounded data. The application of the new *experimental development* definition is shown across all years.

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 2017–19

(Percent distribution)

Budget function	2017 actual	2018 preliminary ^a	2019 proposed ^b
R&D and R&D plant	100.0	100.0	100.0
National defense	45.2	46.8	53.3
Health	27.0	26.5	20.4
General science and basic research	8.9	8.7	9.3
Space flight, research, and supporting activities	8.0	7.5	8.2
Energy	2.8	2.7	1.6
Natural resources and environment	2.0	2.0	1.5
Agriculture	1.8	1.7	1.7
Transportation	1.2	1.1	1.1
Veterans benefits and services	1.1	1.0	1.1
Commerce and housing credit	0.8	0.8	0.7
Administration of justice	0.6	0.5	0.4
Education, training, employment, and social services	0.4	0.4	0.5
International affairs	0.2	0.2	0.1
Income security	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	45.8	47.4	54.2
Health	27.5	28.8	20.7
General science and basic research	8.0	7.8	8.3
Space flight, research, and supporting activities	8.1	7.6	8.4
Energy	2.8	2.7	1.7
Natural resources and environment	1.9	1.9	1.4
Agriculture	1.7	1.6	1.5
Transportation	1.2	1.1	1.1
Veterans benefits and services	1.1	1.0	1.1
Commerce and housing credit	0.7	0.7	0.6
Administration of justice	0.6	0.5	0.4
Education, training, employment, and social services	0.4	0.4	0.5
International affairs	0.2	0.3	0.1
Income security	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	18.3	12.9	22.3
Health	5.3	7.9	7.8
General science and basic research	2.0	0.9	1.7
Space flight, research, and supporting activities	51.7	52.9	47.1
Energy	1.0	1.0	0.6
Natural resources and environment	6.0	7.9	5.9
Agriculture	8.2	8.7	9.6
Transportation	1.4	1.4	1.2
Veterans benefits and services	0.0	0.0	0.0
Commerce and housing credit	5.2	5.5	2.1
Administration of justice	0.0	0.0	0.2
Education, training, employment, and social services	1.0	0.9	1.5
International affairs	0.0	0.0	0.0
Income security	0.0	0.0	0.0
Community and regional development	0.0	0.0	0.0
Medicare	0.0	0.0	0.0

TABLE 2

Distribution of federal budget authority for R&D and R&D plant, by budget function: FYs 2017–19

(Percent distribution)

* = value less than 0.05%.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in some of the data above.

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 2017–19

(Percent share)

Budget function	2017 actual	2018 preliminary ^a	2019 proposed ^b
All functions conducting R&D	3.1	3.1	2.7
National defense	8.8	8.9	9.1
Health	6.2	5.9	4.4
General science and basic research ^c	86.7	88.2	120.8
Space flight, research, and supporting activities	53.1	51.6	53.5
Energy ^d	60.1	74.0	-65.1
Natural resources and environment	5.7	6.2	5.3
Agriculture	16.2	10.7	9.3
Transportation	1.6	1.6	1.5
Veterans benefits and services	0.8	0.7	0.7
Commerce and housing credit ^d	-7.3	16.7	-27.3
Administration of justice	1.1	1.1	0.8
Education, training, employment, and social services	0.3	0.5	0.7
International affairs	0.4	0.4	0.3
Income security	*	*	*
Community and regional development	0.2	0.2	0.1
Medicare	*	*	*

* = value less than 0.05%.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). These additional sums for R&D are reflected in some of the data above.

^c R&D and R&D plant budget authority in the General science and basic research function are greater than 100% in FY 2019 because the R&D and R&D plant figures include addendum funding, while the underlying figures for total budget authority do not.

^d Total budget authority in the Commerce and housing credit function and the Energy function are negative numbers (i.e., less than zero) in some years, due primarily to large offsetting collections and receipts leading to negative balances in the subfunctions for federal mortgage and credit programs and government-sponsored enterprise (e.g., Fannie Mae or Freddie Mac) purchase programs; repeal of the Advanced Technology Vehicles Manufacturing Loan Program; and other policy proposals. This makes these functions' R&D and R&D plant as percentages of total budget authority difficult to interpret.

Note(s)

Total budget authority includes discretionary and mandatory budget authority, less offsets. Budget functions are ordered as under the table 1 stub entries 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 2019, U.S. Government Printing Office (2018).

TABLE 4

Federal budget authority for basic research, by budget function: FYs 2017–19

(Millions of dollars and percent change)

Budget function	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
All functions conducting R&D	34,061	34,393	30,040	1.0	-12.7
National defense	2,304	2,336	2,380	1.4	1.9
Health	16,701	16,859	12,114	0.9	-28.1
General science and basic research	9,168	9,277	9,220	1.2	-0.6
Space flight, research, and supporting activities	3,606	3,713	4,300	3.0	15.8
Energy	21	34	33	63.1	-1.7
Natural resources and environment	268	240	190	-10.6	-20.9
Agriculture	903	853	772	-5.5	-9.5
Transportation	0	0	0	--	--
Veterans benefits and services	538	538	540	0.0	0.4
Commerce and housing credit	234	232	197	-0.7	-15.4
Administration of justice	59	63	41	6.8	-34.9
Education, training, employment, and social services	258	248	253	-3.9	2.0
International affairs	0	0	0	--	--
Income security	0	0	0	--	--
Community and regional development	0	0	0	--	--
Medicare	0	0	0	--	--

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in some of the data above.

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 entries 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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	57,530	61,088	66,027	6.2	8.1
Department of Defense, military (051) ^b	51,062	54,623	59,085	7.0	8.2
R&D within RDT&E accounts ^c	47,868	52,613	56,978	9.9	8.3
Defense agencies	14,964	16,614	17,324	11.0	4.3
Defense Advanced Research Projects Agency	2,888	3,170	3,439	9.8	8.5
Missile Defense Agency	6,201	6,798	6,777	9.6	-0.3
Other defense agencies	5,875	6,645	7,108	13.1	7.0
Department of the Air Force	11,125	14,433	17,300	29.7	19.9
Department of the Army	7,556	7,644	8,502	1.2	11.2
Department of the Navy	14,034	13,735	13,631	-2.1	-0.8
Operational Test and Evaluation	189	187	221	-0.9	17.9
Other military funding ^d	3,194	2,010	2,107	-37.1	4.8
Department of Energy, atomic energy defense activities (053) ^e	6,460	6,454	6,889	-0.1	6.7
Defense environmental cleanup	28	28	28	0.0	0.0
Naval reactors development	1,420	1,410	1,789	-0.7	26.9
Nonproliferation	312	316	326	1.3	3.2
Weapons activities	4,700	4,700	4,746	0.0	1.0
Department of Justice, Federal Bureau of Investigation (054)	2	5	5	150.0	0.0
Department of Homeland Security, National Protection and Programs Directorate (054)	6	6	48	0.0	700.0
R&D	57,055	60,775	65,329	6.5	7.5
Department of Defense, military (051) ^b	50,907	54,623	59,032	7.3	8.1
R&D within RDT&E accounts ^c	47,868	52,613	56,978	9.9	8.3
Defense agencies	14,964	16,614	17,324	11.0	4.3
Defense Advanced Research Projects Agency	2,888	3,170	3,439	9.8	8.5
Missile Defense Agency	6,201	6,798	6,777	9.6	-0.3
Other defense agencies	5,875	6,645	7,108	13.1	7.0
Department of the Air Force	11,125	14,433	17,300	29.7	19.9
Department of the Army	7,556	7,644	8,502	1.2	11.2
Department of the Navy	14,034	13,735	13,631	-2.1	-0.8
Operational Test and Evaluation	189	187	221	-0.9	17.9
Other military funding ^d	3,039	2,010	2,054	-33.9	2.2
Department of Energy, atomic energy defense activities (053) ^e	6,140	6,141	6,244	0.0	1.7
Defense environmental cleanup	28	28	28	0.0	0.0
Naval reactors development	1,235	1,232	1,406	-0.2	14.1
Nonproliferation	312	316	325	1.3	2.8
Weapons activities	4,565	4,565	4,485	0.0	-1.8
Department of Justice, Federal Bureau of Investigation (054)	2	5	5	150.0	0.0
Department of Homeland Security, National Protection and Programs Directorate (054)	6	6	48	0.0	700.0

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

TABLE 5

Federal budget authority for National defense (050) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b While not reflected in the data displayed above, the Department of Defense (DOD) R&D accounts received an approximately 18% increase in the FY 2018 omnibus.

^c Totals for development spending across all years do not include DOD Budget Activity 7 (Operational System Development) due to changes in the definition of development. 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.

^d 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.

^e While not reflected in the data displayed above, most Department of Energy atomic energy defense R&D accounts received increases of 10% or more in the FY 2018 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 6

Department of Defense, total obligational authority for research, development, test, and evaluation, by DOD budget activity: FYs 2017–19

(Millions of dollars and percent change)

Funding category and agency	Budget activity	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
RDT&E total budget authority	--	74,128	74,853	92,633	1.0	23.8
R&D budget authority within RDT&E accounts ^b	--	47,868	52,613	56,978	9.9	8.3
RDT&E total obligational authority ^{c,d}	--	74,817	74,592	92,365	-0.3	23.8
Basic research		2,198	2,229	2,269	1.4	1.8
Defense agencies		654	697	708	6.6	1.5
Department of the Air Force	1	522	505	518	-3.1	2.5
Department of the Army		473	430	446	-9.1	3.7
Department of the Navy		549	596	597	8.5	0.2
Applied research		5,125	4,973	5,100	-3.0	2.6
Defense agencies		1,660	1,914	1,977	15.3	3.3
Department of the Air Force	2	1,314	1,284	1,312	-2.3	2.2
Department of the Army		1,196	889	920	-25.7	3.4
Department of the Navy		955	886	891	-7.2	0.6
Advanced technology development		6,072	6,039	6,331	-0.5	4.8
Defense agencies		3,117	3,476	3,738	11.5	7.5
Department of the Air Force	3	792	794	815	0.2	2.6
Department of the Army		1,351	1,083	1,027	-19.8	-5.2
Department of the Navy		811	686	751	-15.4	9.4
Advanced component development and prototypes		15,593	18,547	21,181	18.9	14.2
Defense agencies		7,639	8,667	8,952	13.5	3.3
Department of the Air Force	4	2,823	4,709	6,543	66.8	39.0
Department of the Army		620	918	1,358	48.0	48.0
Department of the Navy		4,511	4,253	4,327	-5.7	1.7
System development and demonstration		13,035	14,734	15,577	13.0	5.7
Defense agencies		621	819	831	31.9	1.5
Department of the Air Force	5	3,983	4,477	5,272	12.4	17.8
Department of the Army		2,503	3,071	3,430	22.7	11.7
Department of the Navy		5,928	6,368	6,044	7.4	-5.1
RDT&E management support		5,845	6,091	6,521	4.2	7.0
Defense agencies		1,273	1,041	1,117	-18.2	7.4
Department of the Air Force	6	1,691	2,664	2,840	57.5	6.6
Department of the Army		1,413	1,254	1,322	-11.3	5.5
Department of the Navy		1,279	946	1,021	-26.1	7.9
Operational test and evaluation		189	187	221	-0.7	17.9
Operational system development		26,950	32,050	35,387	18.9	10.4
Defense agencies		4,579	5,113	5,193	11.7	1.6
Department of the Air Force	7	17,257	20,873	23,193	21.0	11.1
Department of the Army		1,296	1,921	1,982	48.2	3.2
Department of the Navy		3,818	4,143	5,018	8.5	21.1
Adjustment for undistributed budget authority ^e	--	na	-10,071	na	na	na
Adjustment for RDT&E budget authority ^f	--	-689	261	268	na	na

na = not applicable.

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

TABLE 6

Department of Defense, total obligational authority for research, development, test, and evaluation, by DOD budget activity: FYs 2017–19

(Millions of dollars and percent change)

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Totals for development spending across all years do not include DOD Budget Activity 7 (Operational System Development) due to changes in the definition of development. 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.

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

^d While not reflected in the data displayed above, DOD R&D accounts within RDT&E received an approximately 18% increase in the FY 2018 omnibus.

^e "Undistributed budget authority" adjustment brings RDT&E funding figures into alignment with overall continuing resolution spending levels.

^f 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 2019, U.S. Government Printing Office (2018).

TABLE 7

Federal budget authority for International affairs (150) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	289	322	117	11.4	-63.7
Agency for International Development (151)	234	205	0	-12.4	-100.0
Department of State (151)	42	44	44	4.8	0.0
International Security Assistance (152)	13	73	73	461.5	0.0
R&D	289	322	117	11.4	-63.7
Agency for International Development (151)	234	205	0	-12.4	-100.0
Department of State (151)	42	44	44	4.8	0.0
International Security Assistance (152)	13	73	73	461.5	0.0

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the 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 8

Federal budget authority for General science and basic research (251) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	11,289	11,337	11,456	0.4	1.0
Department of Energy					
Office of Science ^{c,d}	5,342	5,307	5,335	-0.7	0.5
National Science Foundation ^{e,f,g}	5,946	6,030	6,121	1.4	1.5
Arctic Research Commission	1	NA	1	NA	NA
Biological Sciences	742	NA	738	NA	NA
Computer and Information Science and Engineering	936	NA	925	NA	NA
Education and Human Resources	873	874	873	0.1	-0.1
Engineering	931	NA	921	NA	NA
Geosciences	826	NA	853	NA	NA
Integrative Activities	420	NA	537	NA	NA
International Science and Engineering	49	NA	49	NA	NA
Major Research Equipment and Facilities	223	208	95	-6.8	-54.4
Mathematical and Physical Sciences	1,362	NA	1,345	NA	NA
Social, Behavioral and Economic Sciences	271	NA	246	NA	NA
Budget authority adjustment ^h	-688	NA	-463	NA	NA
R&D	9,947	10,050	9,982	1.0	-0.7
Department of Energy					
Office of Science ^{c,d}	4,429	4,459	4,302	0.7	-3.5
National Science Foundation ^{i,f,g}	5,518	5,591	5,680	1.3	1.6
Arctic Research Commission	1	NA	1	NA	NA
Biological Sciences	742	NA	738	NA	NA
Computer and Information Science and Engineering	936	NA	925	NA	NA
Education and Human Resources	873	874	873	0.1	-0.1
Engineering	931	NA	921	NA	NA
Geosciences	826	NA	853	NA	NA
Integrative Activities	420	NA	537	NA	NA
International Science and Engineering	49	NA	49	NA	NA
Major Research Equipment and Facilities	223	208	95	-6.8	-54.4
Mathematical and Physical Sciences	1,362	NA	1,345	NA	NA
Social, Behavioral and Economic Sciences	271	NA	246	NA	NA
Budget authority adjustment ^j	-1,117	NA	-904	NA	NA

NA = not available.

TABLE 8

Federal budget authority for General science and basic research (251) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in the data above.

^c The Office of Science received an increase of 16% in the FY 2018 omnibus.

^d The Office of Science received an additional \$1.2 billion in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

^e Total National Science Foundation (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 2018 R&D and R&D plant figures come from the Office of Management and Budget (OMB) MAX Schedule C reporting; other years come from NSF budget justification.

^f NSF received an increase of 4% in the FY 2018 omnibus.

^g NSF received an additional \$2.2 billion in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

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

ⁱ Total NSF budget shown here includes funding for only R&D; however, subaccount budgets (Arctic Research Commission, Biological Sciences, etc.) include some non-R&D funding. FY 2018 R&D data come from OMB MAX Schedule C reporting; other years come from NSF budget justification.

^j 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 the 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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	10,187	9,735	10,163	-4.4	4.4
National Aeronautics and Space Administration ^{c,d}					
Safety, security, and mission services	269	262	257	-2.6	-1.8
Deep space exploration systems ^e	976	937	1,392	-4.0	48.5
Exploration R&D	338	na	na	na	na
Exploration systems development	638	NA	503	NA	NA
Advanced exploration systems	na	NA	889	na	NA
Science	5,668	5,666	5,820	-0.0	2.7
Astrophysics ^f	596	NA	1,141	NA	NA
Earth science	2,533	NA	1,784	NA	NA
Heliophysics	554	NA	691	NA	NA
James Webb Space Telescope ^f	569	NA	NA	NA	NA
Planetary science	1,416	NA	2,205	NA	NA
LEO (low earth orbit) and spaceflight operations ^g	2,542	2,166	1,727	-14.8	-20.3
International Space Station	1,451	NA	1,462	NA	NA
Space flight and support	0	NA	5	NA	NA
Space transportation	1,091	NA	110	NA	NA
Commercial LEO development	na	na	150	na	na
Exploration research and technology ^h	680	682	913	0.3	33.8
Construction, environmental compliance, and remediation	52	22	54	-57.9	147.3
R&D	10,134	9,713	10,109	-4.2	4.1
National Aeronautics and Space Administration ^{c,d}					
Safety, security, and mission services	269	262	257	-2.6	-1.8
Deep space exploration systems ^e	976	937	1,392		
Exploration R&D	338	na	na	na	na
Exploration systems development	638	NA	503	NA	NA
Advanced exploration systems	na	NA	889	na	NA
Science	5,668	5,666	5,820	-0.0	2.7
Astrophysics ^f	596	NA	1,141	NA	NA
Earth science	2,533	NA	1,784	NA	NA
Heliophysics	554	NA	691	NA	NA
James Webb Space Telescope ^f	569	NA	NA	NA	NA
Planetary science	1,416	NA	2,205	NA	NA
LEO (low earth orbit) and spaceflight operations ^g	2,542	2,166	1,727	-14.8	-20.3
International Space Station	1,451	NA	1,462	NA	NA
Space flight and support	0	NA	5	NA	NA
Space transportation	1,091	NA	110	NA	NA
Commercial LEO development	na	na	150	na	na
Exploration research and technology ^h	680	682	913	0.3	33.8
Construction, environmental compliance, and remediation	0	0	0	--	--

na = not applicable; NA = not available.

TABLE 9

Federal budget authority for Space flight, research, and supporting activities (252) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are not reflected in the data above.

^c While not reflected in the data displayed above, the National Aeronautics and Space Administration (NASA) received an increase of more than 5% in the FY 2018 omnibus.

^d NASA received an additional \$275 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do not reflect this additional funding.

^e Renamed from "Exploration." Due to some programmatic changes, data across all years are not directly comparable.

^f James Webb Space Telescope is included as part of Astrophysics in FY 2019.

^g Renamed from "Space Operations."

^h Renamed from "Space Technology." Due to some programmatic changes, data across all years are not directly comparable.

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	3,544	3,508	2,027	-1.0	-42.2
Department of Energy (271)	3,472	3,440	1,940	-0.9	-43.6
Energy programs	3,151	3,130	1,925	-0.7	-38.5
Energy efficiency and renewable energy ^{c,d}	1,487	1,492	650	0.3	-56.5
Electricity delivery and energy reliability ^{c,e}	150	144	na	-4.1	na
Fossil energy ^{c,f}	623	619	436	-0.7	-29.6
Nuclear energy ^c	891	875	754	-1.8	-13.8
Electricity delivery ^e	na	na	53	na	na
Cybersecurity, Energy Security, and Emergency Response ^e	na	na	33	na	na
Advanced Research Projects Agency-Energy (ARPA-E) ^g	306	295	0	-3.6	-100.0
Bonneville Power Administration Fund	15	15	15	0.0	0.0
Nuclear Regulatory Commission (276)	56	55	74	-1.8	34.5
Tennessee Valley Authority (271)	13	13	13	0.0	0.0
Department of Agriculture (271)					
National Institute of Food and Agriculture: Biomass R&D ^h	3	0	0	-100.0	--
R&D	3,519	3,483	2,008	-1.0	-42.3
Department of Energy (271)	3,447	3,415	1,921	-0.9	-43.7
Energy programs	3,126	3,105	1,906	-0.7	-38.6
Energy efficiency and renewable energy ^{c,d}	1,483	1,488	646	0.3	-56.6
Electricity delivery and energy reliability ^{c,e}	150	144	na	-4.1	
Fossil energy ^{c,f}	602	598	421	-0.7	-29.6
Nuclear energy ^c	891	875	754	-1.8	-13.8
Electricity delivery ^e	na	na	53	na	na
Cybersecurity, Energy Security, and Emergency Response ^e	na	na	33	na	na
Advanced Research Projects Agency-Energy (ARPA-E) ^g	306	295	0	-3.6	-100.0
Bonneville Power Administration Fund	15	15	15	0.0	0.0
Nuclear Regulatory Commission (276)	56	55	74	-1.8	34.5
Tennessee Valley Authority (271)	13	13	13	0.0	0.0
Department of Agriculture (271)					
National Institute of Food and Agriculture: Biomass R&D ^h	3	0	0	-100.0	--

na = not applicable.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in the data above.

^c While not reflected in the data displayed above, these programs received FY 2018 omnibus increases of at least 8%.

^d The Office of Energy Efficiency and Renewable Energy received an additional \$120 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

^e The Administration has proposed splitting the Office of Electricity Delivery and Energy Reliability into two entities in FY 2019: the Office of Electricity Delivery, and the Office of Cybersecurity, Energy Security, and Emergency Response.

^f The Office of Fossil Energy R&D received an additional \$200 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

^g While not reflected in the data displayed above, ARPA-E received an FY 2018 omnibus increase of approximately 15%.

^h The Biomass R&D program is a mandatory program last authorized in the Agricultural Act of 2014 (Farm Bill).

TABLE 10

Federal budget authority for Energy (270) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	2,533	2,582	1,876	1.9	-27.3
Conservation and land management (302)	431	425	355	-1.4	-16.5
Department of the Interior ^c	149	144	120	-3.4	-16.7
Department of Agriculture	282	281	235	-0.4	-16.4
Forest Service	282	281	235	-0.4	-16.4
Pollution control and abatement (304)	500	497	277	-0.7	-44.3
Environmental Protection Agency	498	495	275	-0.7	-44.5
Oil spill response research	1	1	1	0.0	-20.0
Science and technology	482	479	256	-0.7	-46.4
Superfund	15	15	17	-0.6	13.1
Coast Guard (DHS)	2	2	2	0.0	0.0
Recreational resources (303)	27	26	24	-3.7	-7.7
National Park Service (DOI) ^d	27	26	24	-3.7	-7.7
Water resources (301)	81	113	94	39.5	-16.8
Army Corps of Engineers (DOD)	9	9	11	0.0	22.2
Bureau of Reclamation (DOI)	72	104	83	44.4	-20.2
Other natural resources (306)	1,494	1,521	1,126	1.8	-25.9
National Oceanic and Atmospheric Administration (DOC) ^e	806	838	624	3.9	-25.6
National Environmental Satellite, Data, and Information Service	30	31	29	3.0	-4.4
National Marine Fisheries Service	70	81	55	15.7	-32.6
National Ocean Service	82	94	75	14.7	-20.3
National Weather Service	23	22	13	-5.4	-39.4
Office of Oceanic and Atmospheric Research	501	481	322	-4.0	-33.1
Office of Marine and Aviation Operations	100	129	129	28.7	0.4
Geological Survey (DOI) ^f	688	683	503	-0.7	-26.4
Administration and enterprise information	0.5	0.5	0.4	-0.8	-16.0
Land resources ^g	104	103	63	-0.8	-38.6
Core science systems	88	88	71	-0.7	-18.7
Ecosystems	160	159	96	-0.7	-39.4
Energy, minerals, and environmental health	94	94	84	-0.7	-10.2
Natural hazards	118	117	98	-0.7	-16.8
Water resources	123	122	90	-0.7	-26.4
R&D	2,378	2,389	1,691	0.4	-29.2
Conservation and land management (302)	420	416	344	-1.0	-17.3
Department of the Interior ^c	147	144	118	-2.0	-18.1
Department of Agriculture	273	272	226	-0.4	-16.9
Forest Service	273	272	226	-0.4	-16.9
Pollution control and abatement (304)	498	495	276	-0.7	-44.2
Environmental Protection Agency	496	493	274	-0.7	-44.3
Oil spill response research	1	1	1	0.0	-20.0
Science and technology	480	476	256	-0.7	-46.3
Superfund	15	15	17	-0.6	13.7
Coast Guard (DHS)	2	2	2	0.0	0.0
Recreational resources (303)	27	26	24	-3.7	-7.7
National Park Service (DOI) ^d	27	26	24	-3.7	-7.7
Water resources (301)	83	115	94	38.6	-18.3
Army Corps of Engineers (DOD)	11	11	11	0.0	0.0
Bureau of Reclamation (DOI)	72	104	83	44.4	-20.2
Other natural resources (306)	1,350	1,337	953	-1.0	-28.7

TABLE 11

Federal budget authority for Natural resources and environment (300) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
National Oceanic and Atmospheric Administration (DOC) ^e	663	654	450	-1.3	-31.2
National Environmental Satellite, Data, and Information Service	30	31	29	3.0	-4.4
National Marine Fisheries Service	70	81	55	15.7	-32.6
National Ocean Service	82	94	75	15.1	-20.3
National Weather Service	21	21	12	-0.2	-40.8
Office of Oceanic and Atmospheric Research	459	427	278	-7.1	-34.7
Office of Marine and Aviation Operations	0	0	0	–	–
Geological Survey (DOI) ^f	688	683	503	-0.7	-26.4
Administration and enterprise information	0.5	0.5	0.4	-0.8	-16.0
Land resources ^g	104	103	63	-0.8	-38.6
Core science systems	88	88	71	-0.7	-18.7
Ecosystems	160	159	96	-0.7	-39.4
Energy, minerals, and environmental health	94	94	84	-0.7	-10.2
Natural hazards	118	117	98	-0.7	-16.8
Water resources	123	122	90	-0.7	-26.4

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

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in the data above.

^c 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.

^d The National Park Service received an additional \$271 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

^e While not reflected in the data displayed above, the overall National Oceanic and Atmospheric Administration budget was increased by approximately 4% in the FY 2018 omnibus; the Office of Oceanic and Atmospheric Research budget was increased by approximately 7%.

^f While not reflected in the data displayed above, the U.S. Geological Survey budget was increased by approximately 6% in the FY 2018 omnibus.

^g Renamed from "Climate and Land Use Change."

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	2,302	2,206	2,063	-4.2	-6.5
Agricultural research and services (352)					
Department of Agriculture	2,302	2,206	2,063	-4.2	-6.5
Agricultural Research Service ^{c,d}	1,298	1,289	1,239	-0.7	-3.9
Animal and Plant Health Inspection Service	40	39	34	-2.5	-12.8
Economic Research Service	87	86	45	-0.7	-47.8
National Agricultural Statistics Service	9	9	9	0.0	0.0
National Institute of Food and Agriculture ^e	869	783	736	-9.9	-6.0
R&D	2,090	1,994	1,762	-4.6	-11.6
Agricultural research and services (352)					
Department of Agriculture	2,090	1,994	1,762	-4.6	-11.6
Agricultural Research Service ^{c,d}	1,085	1,077	938	-0.7	-12.9
Animal and Plant Health Inspection Service	40	39	34	-2.5	-12.8
Economic Research Service	87	86	45	-0.7	-47.8
National Agricultural Statistics Service	9	9	9	0.0	0.0
National Institute of Food and Agriculture ^e	869	783	736	-9.9	-6.0

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in the data above.

^c While not reflected in the data displayed above, the Agricultural Research Service (ARS) budget was increased by nearly 6% in the FY 2018 omnibus.

^d ARS received an additional \$192 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do reflect this additional funding.

^e While not reflected in the data displayed above, the National Institute of Food and Agriculture budget was increased by approximately 3% in the FY 2018 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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	1,036	1,087	811	5.0	-25.4
Other advancement of commerce (376)					
Department of Commerce	1,003	1,019	741	1.6	-27.3
Census Bureau ^b	232	237	165	2.2	-30.4
National Institute of Standards and Technology ^c	750	746	563	-0.5	-24.5
Construction of research facilities	109	108	41	-0.7	-62.5
Industrial technology services	22	22	9	-0.7	-56.9
Scientific and technical research and services	619	616	513	-0.4	-16.7
National Oceanic and Atmospheric Administration	13	25	0	92.3	-100.0
National Marine Fisheries Service	13	25	0	92.3	-100.0
National Telecommunications and Information Administration	8	11	13	37.5	18.2
Postal Service	33	68	70	106.1	2.9
R&D	901	953	745	5.8	-21.8
Other advancement of commerce (376)					
Department of Commerce	868	885	675	2.0	-23.7
Census Bureau ^b	232	237	165	2.2	-30.4
National Institute of Standards and Technology ^c	615	612	497	-0.5	-18.8
Construction of research facilities	0	0	0	--	--
Industrial technology services	22	22	9	-0.7	-56.9
Scientific and technical research and services	593	590	488	-0.5	-17.4
National Oceanic and Atmospheric Administration	13	25	0	92.3	-100.0
National Marine Fisheries Service	13	25	0	92.3	-100.0
National Telecommunications and Information Administration	8	11	13	37.5	18.2
Postal Service	33	68	70	106.1	2.9

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b While not reflected in the data displayed above, the Census Bureau budget was nearly doubled in the FY 2018 omnibus.

^c While not reflected in the data displayed above, the National Institute of Standards and Technology budget was increased by approximately 26% in the FY 2018 omnibus.

Note(s)

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

Source(s)

Agencies' submission 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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	1,479	1,473	1,344	-0.4	-8.7
Air transportation (402)	955	953	860	-0.2	-9.8
Federal Aviation Administration (DOT) ^c	433	440	351	1.6	-20.2
National Aeronautics and Space Administration					
Aeronautics research ^{d,e}	517	508	488	-1.7	-3.9
Transportation Security Administration (DHS)	5	5	21	0.0	311.9
Ground transportation (401) (DOT)	451	447	443	-1.0	-0.9
Federal Highway Administration	318	315	336	-0.8	6.8
Federal Motor Carrier Safety Administration	9	9	6	-1.6	-31.8
Federal Railroad Administration	44	44	23	-0.5	-46.4
Federal Transit Administration	28	28	28	0.0	0.0
National Highway Traffic Safety Administration	53	51	49	-2.6	-4.4
Water transportation (403)	36	36	19	0.0	-47.2
Coast Guard (DHS)	36	36	19	0.0	-47.2
Other transportation (407) (DOT) ^f	37	37	23	-0.3	-38.4
R&D	1,444	1,439	1,308	-0.4	-9.1
Air transportation (402)	923	922	827	-0.1	-10.3
Federal Aviation Administration (DOT) ^c	401	409	318	2.1	-22.2
National Aeronautics and Space Administration					
Aeronautics research ^{d,e}	517	508	488	-1.7	-3.9
Transportation Security Administration (DHS)	5	5	21	0.0	311.9
Ground transportation (401) (DOT)	448	444	440	-1.0	-0.9
Federal Highway Administration	318	315	336	-0.8	6.8
Federal Motor Carrier Safety Administration	9	9	6	-1.6	-31.8
Federal Railroad Administration	41	41	20	-0.5	-49.9
Federal Transit Administration	28	28	28	0.0	0.0
National Highway Traffic Safety Administration	53	51	49	-2.6	-4.4
Water transportation (403)	36	36	19	0.0	-47.2
Coast Guard (DHS)	36	36	19	0.0	-47.2
Other transportation (407) (DOT) ^f	37	37	23	-0.3	-38.4

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

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are not reflected in the data above.

^c While not reflected in the data displayed above, the Federal Aviation Administration's primary R&D accounts received an increase of approximately 5% in the FY 2018 omnibus.

^d While not reflected in the data displayed above, the National Aeronautics and Space Administration (NASA) Aeronautics research received an increase of approximately 4% in the FY 2018 omnibus.

^e NASA Aeronautics research received an additional \$25 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do not reflect this additional funding.

^f Includes the Office of the Secretary of DOT and the Pipeline and Hazardous Materials Safety Administration.

Note(s)

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

TABLE 14

Federal budget authority for Transportation (400) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	71	70	65	-1.4	-7.1
Department of Housing and Urban Development (451)	66	65	60	-1.5	-7.7
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
R&D	71	70	65	-1.4	-7.1
Department of Housing and Urban Development (451)	66	65	60	-1.5	-7.7
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

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

Note(s)

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

Source(s)

Agencies' submission 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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	505	485	596	-4.0	22.9
Research and general education aids (501, 502, 503)	505	485	511	-4.0	5.4
Department of Education programs	254	243	240	-4.3	-1.2
Smithsonian Institution programs	251	242	271	-3.6	12.0
Social services (506)	na	na	85	na	na
Administration for Children and Families	na	na	85	na	na
R&D	478	463	550	-3.1	18.8
Research and general education aids (501, 502, 503)	478	463	465	-3.1	0.4
Department of Education programs	254	243	240	-4.3	-1.2
Smithsonian Institution programs	224	220	225	-1.8	2.3
Social services (506)	na	na	85	na	na
Administration for Children and Families	na	na	85	na	na

na = not applicable.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	34,393	34,572	25,259	0.5	-26.9
Consumer and occupational health and safety (554)	392	411	411	4.8	0.0
Consumer Product Safety Commission	2	1	1	-50.0	0.0
Food and Drug Administration (HHS) ^{c,d}	390	410	410	5.1	0.0
Health care services and health research and training (551, 552)	34,001	34,161	24,848	0.5	-27.3
Department of Health and Human Services	33,538	33,660	24,226	0.4	-28.0
Agency for Healthcare Research and Quality	339	322	0	-5.0	-100.0
Centers for Disease Control and Prevention ^{e,f}	511	464	296	-9.2	-36.2
Departmental management (other)	116	131	158	12.9	20.6
Health Resources and Services Administration	30	30	22	0.0	-26.7
National Institutes of Health ^{g,h}	32,542	32,713	23,750	0.5	-27.4
Patient-Centered Outcomes Research Trust Fund ⁱ	463	501	622	8.2	24.2
R&D	34,255	34,379	25,014	0.4	-27.2
Consumer and occupational health and safety (554)	377	376	376	-0.3	0.0
Consumer Product Safety Commission	2	1	1	-50.0	0.0
Food and Drug Administration (HHS) ^{c,d}	375	375	375	0.0	0.0
Health care services and health research and training (551, 552)	33,878	34,003	24,638	0.4	-27.5
Department of Health and Human Services	33,415	33,502	24,016	0.3	-28.3
Agency for Healthcare Research and Quality	339	322	0	-5.0	-100.0
Centers for Disease Control and Prevention ^{e,f}	511	464	296	-9.2	-36.2
Departmental management (other)	116	131	158	12.9	20.6
Health Resources and Services Administration	30	30	22	0.0	-26.7
National Institutes of Health ^{g,h}	32,419	32,555	23,540	0.4	-27.7
Patient-Centered Outcomes Research Trust Fund ⁱ	463	501	622	8.2	24.2

HHS = Department of Health and Human Services.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b Along with the regular budget request, the Administration issued an addendum adding \$75 billion into the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are not reflected in the data above.

^c While not reflected in the data displayed above, the Food and Drug Administration (FDA) budget was increased by approximately 9% (including user fees) in the FY 2018 omnibus.

^d FDA received an additional \$500 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do not reflect this additional funding.

^e While not reflected in the data displayed above, the Centers for Disease Control and Prevention (CDC) budget was increased by approximately 14% in the FY 2018 omnibus.

^f CDC received an additional \$319 million in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do not reflect this additional funding.

^g While not reflected in the figures displayed above, the National Institutes of Health (NIH) budget was increased by approximately 9% in the FY 2018 omnibus.

^h NIH received an additional \$9.2 billion in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 data above do not reflect this additional funding.

ⁱ 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)

TABLE 17

Federal budget authority for Health (550) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

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 2017–19

(Millions of dollars and percent change)

Organization and program by FY 2017 rank order	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant ^{c,d}	32,542	32,713	23,750	0.5	-27.4
National Cancer Institute	5,660	5,651	5,626	-0.2	-0.4
National Institute of Allergy and Infectious Diseases	4,906	4,873	4,762	-0.7	-2.3
National Heart, Lung, and Blood Institute	3,210	3,185	3,112	-0.8	-2.3
National Institute of General Medical Sciences	2,646	2,633	2,573	-0.5	-2.3
National Institute on Aging	2,049	2,035	1,988	-0.7	-2.3
National Institute of Diabetes and Digestive and Kidney Diseases	2,010	2,008	1,965	-0.1	-2.1
National Institute of Neurological Disorders and Stroke	1,779	1,772	1,839	-0.4	3.8
Office of the Director	1,729	1,706	2,004	-1.3	17.5
National Institute of Mental Health	1,605	1,591	1,612	-0.8	1.3
National Institute of Child Health and Human Development	1,377	1,371	1,340	-0.4	-2.3
National Institute on Drug Abuse	1,071	1,083	1,137	1.2	5.0
National Institute of Environmental Health Sciences ^e	790	786	747	-0.5	-5.0
National Eye Institute	731	728	711	-0.5	-2.3
National Center for Advancing Translational Sciences	704	701	685	-0.5	-2.3
National Institute of Arthritis and Musculoskeletal and Skin Diseases	557	554	545	-0.5	-1.5
National Human Genome Research Institute	528	525	513	-0.6	-2.3
National Institute on Alcohol Abuse and Alcoholism	482	480	469	-0.5	-2.3
National Institute on Deafness and Other Communication Disorders	436	434	424	-0.5	-2.3
National Institute of Dental and Craniofacial Research	425	423	413	-0.5	-2.3
National Library of Medicine	407	405	395	-0.5	-2.3
National Institute of Biomedical Imaging and Bioengineering	357	355	347	-0.7	-2.3
National Institute on Minority Health and Health Disparities	288	287	281	-0.2	-2.3
National Institute of Nursing Research	150	149	146	-0.5	-2.3
National Center for Complementary and Integrative Health	134	134	131	-0.5	-2.3
John E. Fogarty International Center	72	72	70	-0.2	-2.3
National Institute for Research on Safety and Quality ^f	na	na	380	na	na
National Institute for Occupational Safety and Health ^f	na	na	255	na	na
National Institute on Disability, Independent Living, and Rehabilitation Research ^f	na	na	95	na	na
Buildings and facilities	129	128	200	-0.5	56.3
Budget adjustment ^g	-1,687	-1,354	-11,017	na	na
R&D ^h	32,419	32,555	23,540	0.4	-27.7
National Cancer Institute	5,660	5,651	5,626	-0.2	-0.4
National Institute of Allergy and Infectious Diseases	4,906	4,873	4,762	-0.7	-2.3
National Heart, Lung, and Blood Institute	3,210	3,185	3,112	-0.8	-2.3
National Institute of General Medical Sciences	2,646	2,633	2,573	-0.5	-2.3
National Institute on Aging	2,049	2,035	1,988	-0.7	-2.3
National Institute of Diabetes and Digestive and Kidney Diseases	2,010	2,008	1,965	-0.1	-2.1
National Institute of Neurological Disorders and Stroke	1,779	1,772	1,839	-0.4	3.8
Office of the Director	1,729	1,706	2,004	-1.3	17.5
National Institute of Mental Health	1,605	1,591	1,612	-0.8	1.3
National Institute of Child Health and Human Development	1,377	1,371	1,340	-0.4	-2.3

TABLE 18

National Institutes of Health, federal budget authority for R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Organization and program by FY 2017 rank order	2017 actual	2018 preliminary ^a	2019 proposed ^b	2017–18 (% change)	2018–19 (% change)
National Institute on Drug Abuse	1,071	1,083	1,137	1.2	5.0
National Institute of Environmental Health Sciences ^e	790	786	747	-0.5	-5.0
National Eye Institute	731	728	711	-0.5	-2.3
National Center for Advancing Translational Sciences	704	701	685	-0.5	-2.3
National Institute of Arthritis and Musculoskeletal and Skin Diseases	557	554	545	-0.5	-1.5
National Human Genome Research Institute	528	525	513	-0.6	-2.3
National Institute on Alcohol Abuse and Alcoholism	482	480	469	-0.5	-2.3
National Institute on Deafness and Other Communication Disorders	436	434	424	-0.5	-2.3
National Institute of Dental and Craniofacial Research	425	423	413	-0.5	-2.3
National Library of Medicine	407	405	395	-0.5	-2.3
National Institute of Biomedical Imaging and Bioengineering	357	355	347	-0.7	-2.3
National Institute on Minority Health and Health Disparities	288	287	281	-0.2	-2.3
National Institute of Nursing Research	150	149	146	-0.5	-2.3
National Center for Complementary and Integrative Health	134	134	131	-0.5	-2.3
John E. Fogarty International Center	72	72	70	-0.2	-2.3
National Institute for Research on Safety and Quality ^f	na	na	380	na	na
National Institute for Occupational Safety and Health ^f	na	na	255	na	na
National Institute on Disability, Independent Living, and Rehabilitation Research ^f	na	na	95	na	na
Buildings and facilities	129	128	200	-0.5	56.3
Budget adjustment ⁱ	-1,810	-1,512	-11,227	na	na

na = not applicable.

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b The National Institutes of Health (NIH) received an additional \$9.2 billion in discretionary spending in the Administration's addendum to the FY 2019 request. The FY 2019 budgets for individual institutes reflect this additional funding; however, the R&D and R&D plant figures do not.

^c Total NIH budget shown here includes only R&D and R&D plant; however, the budgets for individual institutes include some non-R&D and non-R&D plant funding.

^d While not reflected in the data displayed above, the NIH budget was increased by approximately 9% in the FY 2018 omnibus.

^e Includes funding from Superfund-related transfers and appropriations.

^f The budget request recommendations consolidating these three agencies within NIH from elsewhere in the Department of Health and Human Services in FY 2019.

^g Budget adjustment subtracts non-R&D and non-R&D plant spending (such as support and overhead) from individual institute budgets.

^h Total NIH budget shown here includes only R&D; however, the budgets for individual institutes include some non-R&D funding.

ⁱ Budget adjustment subtracts non-R&D spending (such as support and overhead) from individual institute budgets.

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	21	19	17	-9.5	-10.5
Department of Health and Human Services (571)					
Centers for Medicare and Medicaid Services	21	19	17	-9.5	-10.5
R&D	21	19	17	-9.5	-10.5
Department of Health and Human Services (571)					
Centers for Medicare and Medicaid Services	21	19	17	-9.5	-10.5

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the 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 20

Federal budget authority for Income security (600) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	74	63	105	-14.9	66.7
Department of Health and Human Services (609)					
Administration for Children and Families	16	5	4	-68.8	-20.0
Social Security Administration (609)	58	58	101	0.0	74.1
R&D	74	63	105	-14.9	66.7
Department of Health and Human Services (609)					
Administration for Children and Families	16	5	4	-68.8	-20.0
Social Security Administration (609)	58	58	101	0.0	74.1

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the 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 21

Federal budget authority for Veterans benefits and services (700) R&D and R&D plant: FYs 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	1,346	1,338	1,345	-0.6	0.5
Department of Veterans Affairs					
Medical and prosthetic research (703) ^b	673	669	727	-0.6	8.7
Medical services (703)	673	669	618	-0.6	-7.6
R&D	1,346	1,338	1,345	-0.6	0.5
Department of Veterans Affairs					
Medical and prosthetic research (703) ^b	673	669	727	-0.6	8.7
Medical services (703)	673	669	618	-0.6	-7.6

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b While not reflected in the data displayed above, Medical and prosthetic research received an approximately 7% increase in the FY 2018 omnibus.

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 2017–19

(Millions of dollars and percent change)

Budget function and agency	2017 actual	2018 preliminary ^a	2019 proposed	2017–18 (% change)	2018–19 (% change)
R&D and R&D plant	707	656	495	-7.2	-24.5
Department of Homeland Security (751) ^b	674	623	457	-7.6	-26.6
Department of Justice	33	33	38	0.0	15.2
Federal Prison System (753)	11	11	16	0.0	45.5
Office of Justice Programs (754)	22	22	22	0.0	0.0
R&D	707	656	490	-7.2	-25.3
Department of Homeland Security (751) ^b	674	623	457	-7.6	-26.6
Department of Justice	33	33	33	0.0	0.0
Federal Prison System (753)	11	11	11	0.0	0.0
Office of Justice Programs (754)	22	22	22	0.0	0.0

^a The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.

^b While not reflected in the data displayed above, the Department of Homeland Security Science and Technology Directorate budget received an approximately 8% increase in the FY 2018 omnibus, while the Domestic Nuclear Detection Office budget was reduced by approximately 5%.

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 1955–2019

(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 preliminary ^e	130,541	61,088	322	11,337	9,735	3,508	2,582	2,206	1,087	1,473	70	485	34,572	19	63	1,338	656	0	na
2019 proposed ^f	123,766	66,027	117	11,456	10,163	2,027	1,876	2,063	811	1,344	65	596	25,259	17	105	1,345	495	0	na
R&D ^g																			
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
1957	3,932	3,327	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	140	na	NA	NA	NA	NA	465

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2019

(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
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
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

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2019

(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
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
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

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2019

(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
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 preliminary ^e	128,107	60,775	322	10,050	9,713	3,483	2,389	1,994	953	1,439	70	463	34,379	19	63	1,338	656	0	na
2019 proposed ^f	120,638	65,329	117	9,982	10,109	2,008	1,691	1,762	745	1,308	65	550	25,014	17	105	1,345	490	0	na
Basic research ^h																			
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
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

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2019

(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
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
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 preliminary ^e	34,393	2,336	0	9,277	3,713	34	240	853	232	0	0	248	16,859	0	0	538	63	0	na
2019 proposed ^f	30,040	2,380	0	9,220	4,300	33	190	772	197	0	0	253	12,114	0	0	540	41	0	na

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

TABLE 23

Federal funding for R&D, R&D plant, and basic research, by budget function: FYs 1955–2019

(Millions of dollars)

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 application of a new *experimental development* definition is shown starting in FY 2017. The previous years' numbers reflect use of the former Development definition.^e The FY 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.^f Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in some of the data above.^g Data for 1955–77 are obligations; data for 1978–2017 are budget authority.^h 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 both FY 2009 and FY 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. The proposed FY 2017 budget includes multiple mandatory components totaling \$4.2 billion. These components affect several categories: Health; General science and basic research; Space flight, research, and supporting activities; Energy; Agriculture; and Transportation.

Source(s)

Data from FYs 1955–94 are from agencies' submissions to the Office of Management and Budget (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 1955–2019

(Millions of 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
2002	103,057	53,731	49,326	100.0	52.1	47.9

TABLE 24

Federal funding for R&D and R&D plant for national defense and civilian functions: FYs 1955–2019

(Millions of dollars and percent distribution)

Fiscal year	Current \$millions			% distribution		
	Total	National defense	Civilian functions	Total	National defense	Civilian functions
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 preliminary ^c	130,541	61,088	69,453	100.0	46.8	53.2
2019 proposed ^d	123,767	66,027	57,740	100.0	53.3	46.7

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 2018 data are official estimates reflecting continuing resolution funding for FY 2018 and not the enacted omnibus spending bill for that year (Consolidated Appropriations Act, 2018, signed 23 March 2018). Most federal agencies did not prepare R&D estimates for FY 2018 based on the final spending figures in the omnibus.^d Along with the regular budget request, the Administration issued an addendum adding \$75 billion to the total of nondefense spending in FY 2019, distributed among several agencies (but not all for increased R&D spending). The additional sums for R&D are reflected in some of the data above.**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 “Budget Functions and Classifying R&D”). Currently, R&D activities are present in 15 of the 20 categories.

The data tables in this report provide R&D budget authority detail for FYs 2017–19 by agency and major programs for each of the categories in which R&D is present. Several concluding tables also show budget authority figures for R&D in FY 2016 and earlier years.

The data for FY 2017 are the *actual* budget authority received by federal agencies for R&D that year. These data update the FY 2017 preliminary data published in the previous edition of this report series.

The data for FY 2018 are *preliminary*. Normally, these preliminary data would reflect agency estimates based on final congressional appropriations for the fiscal year. Due, however, to the late date at which the FY 2018 spending bill was enacted (Consolidated Appropriations Act, 2018, signed 23 March 2018), most agencies did not prepare R&D estimates based on the enacted spending levels. The FY 2018 data available from the agencies for this report edition reflect, for the most part, the spending levels of the continuing resolution for FY 2018 that preceded the March-enacted levels. (Notes accompanying each of the statistical tables in this report provide guidance on the basis for the FY 2018 numbers from each agency.)

The data for FY 2019 data are the *proposed* funding levels of the president’s *Budget of the United States Government, Fiscal Year 2019* (released 12 February 2018). The president’s proposal came, however, in two parts. The first part was a regular request. The second part was an addendum (released the same day) that added \$75 billion in nondefense discretionary spending to the regular request for FY 2019, spread among several agencies, but only some of which represented increased agency funding for R&D. This addendum funding reflected the administration’s recognition of the higher caps on discretionary spending for FYs 2018 and 2019 authorized by the Bipartisan Budget Act of 2018 (enacted 9 February 2018). Some agencies prepared FY 2019 spending including the addendum funding; some did not. (Notes accompanying each of the statistical tables in this report provide guidance on the basis for the FY 2019 numbers from each agency.)

The data generally reflect agency documents and other Office of Management and Budget (OMB) data available through October 2018. At the time of this report, the proposed figures for FY 2019 remain the subject of ongoing legislative activity in Congress to enact the federal government’s annual budget.

Data reported here as “preliminary” or “proposed” will be revised in subsequent editions of this report to reflect the later congressional appropriation actions and agency program-funding decisions.

Definitions

Research, Development, 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.

Funds for R&D include administrative expenses for R&D, such as the operating costs of research facilities and equipment and other overhead costs. They also include 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 towards 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 towards 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.

Prior to FY 2018, a more expansive definition of development was used, so that guidance is now given on 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 both 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 all non-R&D activities performed within budget functions that conduct R&D and all functions in which no R&D is conducted, with the following exception: table 6 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 change in the 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, benefits, and 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 2016–18 period covered in this report.

To better highlight R&D areas of high interest, the data 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 data 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. For example, the federal funding for the past national project to map the human genome, which involved the activities of several agencies and many R&D programs, appeared in the categories of Health (550) and General science and basic research (251).

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 2016–18 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/sites/whitehouse.gov/files/omb/assets/a11_current_year/a11_2016.pdf.

The data in this report were collected between July and September 2018 and represent the agencies' official estimates of actual and proposed federal funding for R&D over the FY 2017–19 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 2019 budget proposal, *An American Budget, Budget of the United States Government, Fiscal Year 2019*, was prepared and transmitted to Congress on 12 February 2018. This information consists of budget justification documents that agencies submit to Congress and supplemental, program-specific information obtained from agency budget and program staff, collected through October 2018. 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 Tables

Table Title

A-1 Agency and budget function crosswalk, federal R&D funding, by budget function: FYs 2017–19

TABLE A-1

Agency and budget function crosswalk, federal R&D funding, by budget function: FYs 2017–19

(Crosswalk)

Agency	Budget function															
	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)
Agency for International Development		X														
Army Corps of Engineers (civil)						X										
Consumer Product Safety Commission												X				
Department of Agriculture					X	X	X									
Department of Commerce						X	X									
Department of Defense (military)	X															
Department of Education											X					
Department of Energy	X		X		X											
Department of Health and Human Services											X	X	X	X		
Department of Homeland Security	X					X			X							X
Department of Housing and Urban Development										X						
Department of the Interior						X				X						
Department of Justice	X															X
Department of State		X														
Department of Transportation									X							
Department of Veterans Affairs																X
Environmental Protection Agency						X										
International Security Assistance		X														
National Aeronautics and Space Administration				X					X							
National Science Foundation			X													
Nuclear Regulatory Commission					X											
Patient-Centered Outcomes Research Trust Fund												X				
Postal Service								X								
Smithsonian Institution											X					
Social Security Administration														X		
Tennessee Valley Authority					X											

X = R&D function funded by specified agency.

TABLE A-1

Agency and budget function crosswalk, federal R&D funding, by budget function: FYs 2017–19

(Crosswalk)

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.

Suggested Citation and Acknowledgments

National Science Foundation, National Center for Science and Engineering Statistics. 2019. *Federal R&D Funding, by Budget Function: Fiscal Years 2017–19*. Detailed Statistical Tables NSF 19-312. Alexandria, VA. Available at <https://nces.nsf.gov/pubs/nsf19312/>.

The statistical tables in this report were compiled for the National Center for Science and Engineering Statistics (NCSES) by the American Association for the Advancement of Science (AAAS), R&D Budget and Policy Program (Matthew Hourihan, Director). NCSES and AAAS thank the program and budget offices at the agencies that provided information for this report.

This report was developed and coordinated by Mark Boroush of the NCSES's Research and Development Statistics Program under the direction of John E. Jankowski. Emilda Rivers, division director, reviewed and provided overall guidance. Statistical review of the draft manuscript was performed by Jock Black, mathematical statistician, and Samson Adeshian, chief statistician. Publication processing support was provided by Catherine Corlies and Joseph Newman in NCSES's Information and Technology Services Program under the direction of May Aydin.

Contact

Mark Boroush

Project Officer

Research and Development Statistics Program

mboroush@nsf.gov

National Science Foundation

Directorate for Social, Behavioral and Economic Sciences

National Center for Science and Engineering Statistics

2415 Eisenhower Avenue, Suite W14200

Alexandria, VA 22314

Tel: (703) 292-8726

FIRS: (800) 877-8339

TDD: (800) 281-8749