



National Center for Science and  
Engineering Statistics

# National Patterns of R&D Resources: 2019–20 Data Update

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## General Notes

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*National Patterns of R&D Resources* provides current data on the levels and key trends of the performance and funding of research and experimental development in the United States. These detailed statistical tables supplement analytical InfoBriefs available at <https://www.nsf.gov/statistics/natlpatterns/>, from the National Center for Science and Engineering Statistics (NCSES).

The *National Patterns* statistics draw primarily from NCSES's national surveys of the R&D expenditures and funding of the organizations that perform the bulk of U.S. R&D—including businesses, federal and nonfederal government, higher education, and nonprofit organizations. Additional details on levels and trends are provided by type of R&D performed (i.e., basic research, applied research, and experimental development). The *National Patterns* data are reported in both current and inflation-adjusted dollars, with comparisons to the historical record for U.S. R&D (back to 1953) and to the corresponding pace of overall U.S. economic growth.

The data for 2020 are estimates based mainly on early findings from the 2020 sectoral R&D expenditure surveys and evident recent trends. Data for 2019 were included in the previous edition (2018–19) of this report series but are now revised to reflect new, nearly final input from the sectoral surveys. The numbers for 1953–2018 reflect largely final survey data and, in general, exhibit minor revisions (if any).

The statistical tables are arranged to exhibit the U.S. R&D data from two differing perspectives. The first perspective (**tables 2–5**) is by type of R&D performer, with subsequent breakouts by the source of funds. The second perspective (**tables 6–9**) is by source of funds, with subsequent breakouts by type of performer. The data in both groups of tables sum to the same overall U.S. R&D performance totals. **Table 1** provides data mainly on the U.S. R&D-to-gross domestic product (GDP) ratio and its components. **Table 10** presents state-level breakdowns of the U.S. R&D totals, by performing sector and source of funds, for 2019.

For trend comparisons, use only the historical data from the most recent publication, which incorporates the latest revisions and corrections. Do not use data published earlier.

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TABLE 1

**U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2020**

(Billions of current and of constant 2012 dollars and R&amp;D as a percentage of GDP)

Year	GDP			Total R&D			R&D/ GDP (%)						
	Current \$billions	Constant 2012 \$billions	Deflator <sup>a</sup> (2012 = 1.00000)	Current \$billions	Constant 2012 \$billions	Total	R&D, by performer				R&D, by source of funding		
							Business	Federal <sup>b</sup>	Higher education	Other <sup>c</sup>	Business	Federal	Other <sup>d</sup>
1953	389.2	2,695.6	0.14438	5.2	35.7	1.33	0.93	0.29	0.07	0.03	0.58	0.71	0.03
1954	390.5	2,680.0	0.14571	5.6	38.6	1.44	1.04	0.29	0.08	0.03	0.61	0.79	0.04
1955	425.5	2,871.2	0.14820	6.2	41.7	1.45	1.04	0.30	0.08	0.03	0.59	0.82	0.04
1956	449.4	2,932.4	0.15325	8.5	55.5	1.89	1.40	0.38	0.09	0.03	0.74	1.11	0.04
1957	474.0	2,994.1	0.15831	9.9	62.6	2.09	1.55	0.42	0.09	0.04	0.73	1.31	0.04
1958	481.2	2,972.0	0.16191	10.9	67.4	2.27	1.68	0.45	0.10	0.04	0.77	1.45	0.05
1959	521.7	3,178.2	0.16415	12.5	76.1	2.39	1.76	0.47	0.11	0.04	0.78	1.57	0.05
1960	542.4	3,260.0	0.16638	13.7	82.4	2.53	1.85	0.50	0.13	0.05	0.83	1.64	0.05
1961	562.2	3,343.5	0.16815	14.6	86.6	2.59	1.84	0.55	0.15	0.05	0.85	1.69	0.06
1962	603.9	3,548.4	0.17019	15.6	91.9	2.59	1.83	0.54	0.16	0.06	0.85	1.68	0.06
1963	637.5	3,702.9	0.17216	17.5	101.8	2.75	1.92	0.58	0.18	0.06	0.86	1.83	0.07
1964	684.5	3,916.3	0.17478	19.1	109.3	2.79	1.91	0.62	0.20	0.06	0.86	1.86	0.07
1965	742.3	4,170.8	0.17798	20.3	113.8	2.73	1.86	0.59	0.21	0.06	0.88	1.78	0.07
1966	813.4	4,445.9	0.18296	22.1	120.6	2.71	1.87	0.56	0.22	0.07	0.90	1.74	0.07
1967	860.0	4,567.8	0.18827	23.3	124.0	2.71	1.86	0.56	0.24	0.07	0.95	1.69	0.07
1968	940.7	4,792.3	0.19629	24.7	125.7	2.62	1.81	0.52	0.23	0.06	0.96	1.59	0.07
1969	1,017.6	4,942.1	0.20590	26.0	126.3	2.55	1.75	0.51	0.22	0.06	0.98	1.50	0.07
1970	1,073.3	4,951.3	0.21677	26.3	121.2	2.45	1.64	0.52	0.23	0.06	0.97	1.40	0.08
1971	1,164.9	5,114.3	0.22777	27.0	118.3	2.31	1.53	0.50	0.22	0.06	0.93	1.31	0.08
1972	1,279.1	5,383.3	0.23761	28.7	121.0	2.25	1.49	0.49	0.22	0.06	0.92	1.25	0.08
1973	1,425.4	5,687.2	0.25063	31.0	123.5	2.17	1.45	0.45	0.21	0.06	0.93	1.16	0.07
1974	1,545.2	5,656.5	0.27317	33.4	122.1	2.16	1.44	0.45	0.21	0.06	0.96	1.12	0.08
1975	1,684.9	5,644.8	0.29849	35.7	119.5	2.12	1.39	0.45	0.21	0.06	0.94	1.10	0.08
1976	1,873.4	5,949.0	0.31491	39.4	125.2	2.10	1.39	0.44	0.21	0.06	0.94	1.08	0.08
1977	2,081.8	6,224.1	0.33447	43.3	129.6	2.08	1.39	0.43	0.21	0.06	0.94	1.06	0.08
1978	2,351.6	6,568.6	0.35801	48.7	136.1	2.07	1.37	0.43	0.21	0.06	0.95	1.04	0.08
1979	2,627.3	6,776.6	0.38770	55.4	142.8	2.11	1.41	0.42	0.22	0.06	0.99	1.04	0.08
1980	2,857.3	6,759.2	0.42273	63.2	149.6	2.21	1.51	0.42	0.23	0.06	1.08	1.05	0.08
1981	3,207.0	6,930.7	0.46272	72.3	156.2	2.25	1.57	0.41	0.22	0.06	1.12	1.05	0.08
1982	3,343.8	6,805.8	0.49132	80.7	164.4	2.41	1.71	0.42	0.23	0.06	1.22	1.11	0.09
1983	3,634.0	7,117.7	0.51056	89.9	176.2	2.48	1.75	0.44	0.23	0.06	1.25	1.14	0.09
1984	4,037.6	7,632.8	0.52898	102.2	193.3	2.53	1.81	0.43	0.23	0.06	1.29	1.15	0.09
1985	4,339.0	7,951.1	0.54571	114.7	210.1	2.64	1.90	0.44	0.24	0.06	1.34	1.21	0.09
1986	4,579.6	8,226.4	0.55670	120.2	216.0	2.63	1.88	0.43	0.25	0.06	1.33	1.19	0.10
1987	4,855.2	8,511.0	0.57046	126.4	221.5	2.60	1.86	0.42	0.26	0.06	1.29	1.21	0.11
1988	5,236.4	8,866.5	0.59058	133.9	226.7	2.56	1.81	0.41	0.27	0.06	1.30	1.15	0.11
1989	5,641.6	9,192.1	0.61374	141.9	231.2	2.52	1.77	0.40	0.28	0.07	1.33	1.07	0.11
1990	5,963.1	9,365.5	0.63671	152.0	238.7	2.55	1.80	0.39	0.28	0.07	1.40	1.03	0.12
1991	6,158.1	9,355.4	0.65824	160.9	244.4	2.61	1.86	0.38	0.30	0.08	1.50	0.99	0.13
1992	6,520.3	9,684.9	0.67324	165.4	245.6	2.54	1.79	0.37	0.30	0.08	1.48	0.93	0.13
1993	6,858.6	9,951.5	0.68920	165.7	240.5	2.42	1.68	0.36	0.30	0.08	1.41	0.88	0.13
1994	7,287.2	10,352.4	0.70391	169.2	240.4	2.32	1.61	0.34	0.30	0.08	1.36	0.83	0.13
1995	7,639.7	10,630.3	0.71867	183.6	255.5	2.40	1.70	0.33	0.30	0.08	1.45	0.82	0.13
1996	8,073.1	11,031.4	0.73183	197.3	269.7	2.44	1.76	0.31	0.29	0.08	1.53	0.79	0.13
1997	8,577.6	11,521.9	0.74446	211.9	284.6	2.47	1.81	0.29	0.29	0.08	1.59	0.75	0.13
1998	9,062.8	12,038.3	0.75283	225.8	299.9	2.49	1.84	0.29	0.28	0.08	1.63	0.73	0.13

TABLE 1

**U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2020**

(Billions of current and of constant 2012 dollars and R&amp;D as a percentage of GDP)

Year	GDP			Total R&D		Total	R&D/ GDP (%)						
	Current \$billions	Constant 2012 \$billions	Deflator <sup>a</sup> (2012 = 1.00000)	Current \$billions	Constant 2012 \$billions		R&D, by performer				R&D, by source of funding		
							Business	Federal <sup>b</sup>	Higher education	Other <sup>c</sup>	Business	Federal	Other <sup>d</sup>
1999	9,630.7	12,610.5	0.76370	244.5	320.1	2.54	1.89	0.28	0.29	0.08	1.71	0.69	0.14
2000	10,251.0	13,138.0	0.78026	267.9	343.4	2.61	1.95	0.28	0.29	0.09	1.81	0.66	0.14
2001	10,581.9	13,263.4	0.79783	278.5	349.1	2.63	1.91	0.31	0.31	0.10	1.78	0.70	0.15
2002	10,929.1	13,488.4	0.81026	277.9	343.0	2.54	1.77	0.32	0.34	0.11	1.65	0.72	0.17
2003	11,456.5	13,865.5	0.82626	291.4	352.6	2.54	1.75	0.33	0.35	0.11	1.63	0.74	0.18
2004	12,217.2	14,399.7	0.84843	302.7	356.8	2.48	1.70	0.31	0.35	0.11	1.57	0.74	0.17
2005	13,039.2	14,901.3	0.87504	325.3	371.7	2.49	1.73	0.30	0.35	0.11	1.59	0.73	0.17
2006	13,815.6	15,315.9	0.90204	350.9	389.0	2.54	1.79	0.30	0.34	0.10	1.64	0.72	0.17
2007	14,474.2	15,623.9	0.92641	377.9	407.9	2.61	1.86	0.30	0.34	0.10	1.71	0.73	0.18
2008	14,769.9	15,643.0	0.94419	404.8	428.7	2.74	1.97	0.31	0.35	0.11	1.75	0.80	0.20
2009	14,478.1	15,236.3	0.95024	402.9	424.0	2.78	1.95	0.33	0.38	0.12	1.70	0.87	0.21
2010	15,049.0	15,649.0	0.96166	406.6	422.8	2.70	1.85	0.34	0.39	0.12	1.65	0.84	0.21
2011	15,599.7	15,891.5	0.98164	426.2	434.2	2.73	1.89	0.34	0.39	0.12	1.71	0.81	0.21
2012	16,254.0	16,254.0	1.00000	433.7	433.7	2.67	1.86	0.32	0.37	0.11	1.70	0.76	0.21
2013	16,843.2	16,553.3	1.01751	454.3	446.5	2.70	1.91	0.30	0.37	0.11	1.76	0.71	0.22
2014	17,550.7	16,932.1	1.03653	476.0	459.2	2.71	1.94	0.30	0.36	0.12	1.81	0.67	0.22
2015	18,206.0	17,390.3	1.04691	494.5	472.3	2.72	1.95	0.29	0.36	0.12	1.83	0.66	0.23
2016	18,695.1	17,680.3	1.05740	521.7	493.4	2.79	2.03	0.27	0.36	0.12	1.93	0.63	0.23
2017	19,479.6	18,079.1	1.07747	554.0	514.2	2.84	2.08	0.27	0.37	0.13	1.98	0.62	0.24
2018	20,527.2	18,606.8	1.10321	604.8	548.3	2.95	2.17	0.28	0.36	0.13	2.08	0.63	0.24
2019	21,372.6	19,032.7	1.12294	666.9	593.9	3.12	2.33	0.29	0.37	0.13	2.25	0.63	0.24
2020 <sup>e</sup>	20,893.7	18,384.7	1.13647	708.0	623.0	3.39	2.55	0.31	0.39	0.14	2.48	0.66	0.25

GDP = gross domestic product.

<sup>a</sup> Implicit price deflator for GDP.<sup>b</sup> Includes federal intramural R&D and R&D by federally funded R&D centers.<sup>c</sup> Includes R&D in the United States performed by nonfederal government and nonprofit organizations.<sup>d</sup> Includes funding for U.S. R&D by nonfederal government, higher education, and nonprofit organizations.<sup>e</sup> Data for 2020 include estimates and are likely to be revised later.**Note(s):**

Detail may not add to total because of rounding.

**Source(s):**GDP data from Bureau of Economic Analysis, National Economic Accounts, Gross Domestic Product, [https://apps.bea.gov/iTable/index\\_nipa.cfm](https://apps.bea.gov/iTable/index_nipa.cfm), accessed 28 October 2021; R&D data from National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

TABLE 2

## U.S. R&amp;D expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>				NPOs <sup>f</sup>					
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
Current \$millions																							
1953	5,160	1,146	1,015	131	131	NA	3,630	2,200	1,430	NA	NA	NA	NA	273	149	40	21	37	27	112	58	26	28
1954	5,621	1,127	963	165	165	NA	4,070	2,320	1,750	NA	NA	NA	NA	301	165	45	24	40	29	123	61	31	31
1955	6,185	1,292	973	319	319	NA	4,420	2,460	1,960	NA	NA	NA	NA	342	191	50	27	42	32	132	65	35	32
1956	8,501	1,692	1,131	561	561	NA	6,272	3,277	2,995	NA	NA	NA	NA	391	221	57	32	46	36	146	71	37	38
1957	9,908	1,985	1,297	688	688	NA	7,324	3,396	3,928	NA	NA	NA	NA	433	242	64	37	51	40	167	79	37	51
1958	10,915	2,163	1,507	657	657	NA	8,066	3,630	4,436	NA	NA	NA	NA	491	280	72	39	56	45	195	95	38	62
1959	12,490	2,470	1,681	789	789	NA	9,200	3,983	5,217	NA	NA	NA	NA	586	356	81	40	61	50	234	125	42	67
1960	13,711	2,711	1,801	910	910	NA	10,032	4,428	5,604	NA	NA	NA	NA	705	453	90	40	67	55	264	148	48	68
1961	14,564	3,074	1,987	1,087	1,087	NA	10,353	4,668	5,685	NA	NA	NA	NA	834	557	101	40	75	62	304	169	49	86
1962	15,636	3,244	2,188	1,056	1,056	NA	11,037	5,029	6,008	NA	NA	NA	NA	993	687	112	41	84	70	363	200	54	109
1963	17,519	3,717	2,559	1,159	1,159	NA	12,216	5,360	6,856	NA	NA	NA	NA	1,178	839	125	41	96	78	408	234	55	119
1964	19,103	4,263	2,966	1,297	1,297	NA	13,049	5,792	7,257	NA	NA	NA	NA	1,375	995	138	41	114	88	417	250	55	112
1965	20,253	4,374	3,157	1,218	1,218	NA	13,812	6,445	7,367	NA	NA	NA	NA	1,595	1,167	150	42	136	101	472	286	62	124
1966	22,072	4,525	3,308	1,217	1,217	NA	15,193	7,216	7,977	NA	NA	NA	NA	1,818	1,335	160	45	165	114	537	329	70	138
1967	23,347	4,785	3,445	1,340	1,340	NA	15,966	8,020	7,946	NA	NA	NA	NA	2,035	1,491	168	52	200	126	561	342	74	145
1968	24,667	4,870	3,498	1,372	1,372	NA	17,014	8,869	8,145	NA	NA	NA	NA	2,187	1,586	185	58	221	139	596	364	81	151
1969	25,996	5,230	3,790	1,440	1,440	NA	17,844	9,857	7,987	NA	NA	NA	NA	2,280	1,624	208	61	233	155	642	388	93	161
1970	26,271	5,583	4,154	1,430	1,430	NA	17,594	10,288	7,306	NA	NA	NA	NA	2,418	1,686	237	66	259	171	677	410	95	172
1971	26,952	5,849	4,409	1,441	1,441	NA	17,829	10,654	7,175	NA	NA	NA	NA	2,565	1,760	262	72	290	182	709	427	98	184
1972	28,740	6,209	4,676	1,533	1,533	NA	19,004	11,535	7,469	NA	NA	NA	NA	2,757	1,890	282	79	312	195	771	472	101	198
1973	30,952	6,413	4,837	1,576	1,576	NA	20,704	13,104	7,600	NA	NA	NA	NA	2,954	2,009	301	90	344	210	882	566	105	211
1974	33,359	6,916	5,132	1,784	1,784	NA	22,239	14,667	7,572	NA	NA	NA	NA	3,216	2,160	320	105	394	239	988	639	114	235
1975	35,671	7,580	5,561	2,019	2,019	NA	23,460	15,582	7,878	NA	NA	NA	NA	3,570	2,400	348	118	432	272	1,062	675	124	262
1976	39,435	8,291	5,890	2,401	2,401	NA	26,107	17,436	8,671	NA	NA	NA	NA	3,899	2,619	369	131	480	300	1,139	711	135	292
1977	43,338	8,916	6,211	2,704	2,704	NA	28,863	19,340	9,523	NA	NA	NA	NA	4,346	2,893	394	155	569	337	1,213	740	147	326
1978	48,719	10,148	6,962	3,186	3,186	NA	32,222	22,115	10,107	NA	NA	NA	NA	4,996	3,329	443	182	679	364	1,353	830	160	363
1979	55,379	11,038	7,471	3,567	3,567	NA	37,062	25,708	11,354	NA	NA	NA	NA	5,715	3,848	482	215	785	386	1,564	985	174	405
1980	63,224	11,882	7,831	4,052	4,052	NA	43,228	30,476	12,752	NA	NA	NA	NA	6,455	4,335	519	264	920	419	1,658	1,017	189	452
1981	72,292	12,998	8,605	4,393	4,393	NA	50,425	35,428	14,997	NA	NA	NA	NA	7,085	4,670	581	314	1,058	463	1,784	1,075	206	504
1982	80,748	14,065	9,501	4,563	4,563	NA	57,166	40,105	17,061	NA	NA	NA	NA	7,603	4,879	621	363	1,207	534	1,915	1,129	224	561
1983	89,949	15,840	10,830	5,011	5,011	NA	63,683	44,588	19,095	NA	NA	NA	NA	8,251	5,210	658	432	1,357	595	2,175	1,306	244	626



TABLE 2

## U.S. R&amp;D expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2016	521,700	51,187	31,762	19,424	19,059	620	379,529	310,391	24,154	195	14,649	29,017	1,123	67,792	34,688	3,937	4,049	18,415	6,704	22,573	8,257	1,993	12,323
2017	554,012	52,553	32,231	20,322	19,943	632	405,792	324,177	24,974	142	17,729	37,913	856	71,115	36,008	4,057	4,284	19,554	7,214	23,921	8,218	2,071	13,632
2018	604,837	58,356	36,793	21,563	21,163	643	445,563	357,862	25,192	120	19,283	42,057	1,049	74,914	37,758	4,224	4,586	20,679	7,668	25,361	8,451	2,189	14,721
2019	666,875	62,802	39,870	22,932	22,538	675	498,175	405,960	22,653	169	21,673	46,809	911	78,176	39,556	4,364	4,808	21,559	7,889	27,048	8,900	2,347	15,800
2020 <sup>g</sup>	707,967	65,685	41,936	23,749	23,365	696	531,941	436,135	20,996	180	23,312	50,339	979	81,111	40,919	4,458	5,002	22,604	8,128	28,533	10,304	2,444	15,786
Constant 2012 \$millions																							
1953	35,738	7,937	7,030	907	907	NA	25,141	15,237	9,904	NA	NA	NA	NA	1,887	1,032	274	142	253	187	772	398	180	194
1954	38,573	7,735	6,606	1,129	1,129	NA	27,932	15,922	12,010	NA	NA	NA	NA	2,066	1,129	305	161	271	199	841	415	213	213
1955	41,735	8,715	6,566	2,149	2,149	NA	29,825	16,600	13,226	NA	NA	NA	NA	2,308	1,289	337	182	283	216	887	435	236	216
1956	55,467	11,037	7,377	3,661	3,661	NA	40,926	21,383	19,543	NA	NA	NA	NA	2,551	1,442	369	206	300	235	953	463	241	248
1957	62,586	12,535	8,193	4,343	4,343	NA	46,263	21,451	24,812	NA	NA	NA	NA	2,735	1,525	404	231	322	253	1,052	496	234	322
1958	67,414	13,359	9,304	4,055	4,055	NA	49,817	22,420	27,398	NA	NA	NA	NA	3,033	1,729	445	241	343	275	1,204	587	235	383
1959	76,086	15,047	10,241	4,807	4,807	NA	56,046	24,264	31,782	NA	NA	NA	NA	3,570	2,166	490	241	372	302	1,422	758	256	408
1960	82,408	16,291	10,822	5,469	5,469	NA	60,296	26,614	33,682	NA	NA	NA	NA	4,234	2,720	541	240	403	331	1,587	890	288	409
1961	86,615	18,279	11,817	6,462	6,462	NA	61,571	27,761	33,810	NA	NA	NA	NA	4,957	3,310	598	238	443	369	1,808	1,005	291	511
1962	91,874	19,058	12,853	6,205	6,205	NA	64,851	29,549	35,302	NA	NA	NA	NA	5,832	4,034	658	238	494	408	2,133	1,175	317	640
1963	101,759	21,590	14,861	6,729	6,729	NA	70,956	31,133	39,823	NA	NA	NA	NA	6,842	4,870	726	235	558	453	2,370	1,359	319	691
1964	109,296	24,387	16,967	7,421	7,421	NA	74,659	33,138	41,520	NA	NA	NA	NA	7,864	5,693	787	232	649	503	2,386	1,430	315	641
1965	113,794	24,576	17,736	6,841	6,841	NA	77,606	36,213	41,393	NA	NA	NA	NA	8,959	6,557	840	233	764	565	2,652	1,607	348	697
1966	120,642	24,730	18,081	6,649	6,649	NA	83,042	39,441	43,601	NA	NA	NA	NA	9,937	7,297	875	246	899	620	2,932	1,796	383	754
1967	124,005	25,415	18,298	7,117	7,117	NA	84,802	42,597	42,204	NA	NA	NA	NA	10,809	7,917	892	274	1,060	667	2,980	1,816	393	770
1968	125,661	24,807	17,818	6,990	6,990	NA	86,676	45,182	41,494	NA	NA	NA	NA	11,141	8,080	940	293	1,123	706	3,036	1,854	413	769
1969	126,251	25,401	18,407	6,994	6,994	NA	86,662	47,872	38,790	NA	NA	NA	NA	11,073	7,885	1,010	294	1,132	753	3,116	1,882	452	782
1970	121,194	25,757	19,162	6,595	6,595	NA	81,164	47,460	33,704	NA	NA	NA	NA	11,152	7,775	1,093	302	1,193	789	3,121	1,889	438	793
1971	118,327	25,680	19,356	6,324	6,324	NA	78,275	46,775	31,501	NA	NA	NA	NA	11,261	7,725	1,150	316	1,271	799	3,111	1,872	430	808
1972	120,958	26,130	19,678	6,452	6,452	NA	79,981	48,547	31,434	NA	NA	NA	NA	11,603	7,954	1,187	332	1,311	819	3,243	1,984	425	833
1973	123,495	25,585	19,297	6,288	6,288	NA	82,607	52,284	30,323	NA	NA	NA	NA	11,784	8,014	1,201	359	1,373	838	3,519	2,258	419	842
1974	122,118	25,319	18,788	6,531	6,531	NA	81,410	53,691	27,719	NA	NA	NA	NA	11,773	7,907	1,170	383	1,440	873	3,617	2,337	418	861
1975	119,507	25,396	18,632	6,764	6,764	NA	78,596	52,203	26,393	NA	NA	NA	NA	11,959	8,041	1,166	395	1,446	911	3,556	2,261	416	879
1976	125,226	26,327	18,704	7,623	7,623	NA	82,903	55,368	27,535	NA	NA	NA	NA	12,380	8,317	1,172	416	1,524	951	3,616	2,258	429	928
1977	129,570	26,656	18,571	8,085	8,085	NA	86,294	57,822	28,472	NA	NA	NA	NA	12,994	8,648	1,178	462	1,700	1,006	3,628	2,213	440	975
1978	136,085	28,346	19,447	8,899	8,899	NA	90,004	61,773	28,231	NA	NA	NA	NA	13,954	9,297	1,237	507	1,897	1,015	3,781	2,318	447	1,015



TABLE 2

**U.S. R&D expenditures, by performing sector and source of funds: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1979	142,839	28,470	19,271	9,200	9,200	NA	95,594	66,309	29,285	NA	NA	NA	NA	14,739	9,925	1,242	553	2,025	994	4,035	2,541	449	1,045
1980	149,562	28,109	18,524	9,585	9,585	NA	102,260	72,094	30,166	NA	NA	NA	NA	15,270	10,254	1,227	623	2,175	991	3,923	2,406	448	1,069
1981	156,232	28,090	18,595	9,494	9,494	NA	108,974	76,564	32,410	NA	NA	NA	NA	15,312	10,091	1,256	679	2,285	1,001	3,856	2,322	445	1,088
1982	164,350	28,626	19,338	9,288	9,288	NA	116,353	81,628	34,725	NA	NA	NA	NA	15,474	9,929	1,264	739	2,456	1,086	3,897	2,298	456	1,143
1983	176,179	31,025	21,211	9,814	9,814	NA	124,732	87,332	37,400	NA	NA	NA	NA	16,161	10,205	1,289	846	2,657	1,164	4,261	2,557	478	1,226
1984	193,284	33,116	22,526	10,591	10,591	NA	138,117	97,176	40,941	NA	NA	NA	NA	17,304	10,865	1,363	978	2,862	1,235	4,747	2,926	502	1,319
1985	210,131	35,232	23,992	11,240	11,240	NA	150,952	104,530	46,422	NA	NA	NA	NA	18,888	11,706	1,527	1,154	3,194	1,307	5,059	3,104	529	1,426
1986	216,004	35,763	24,258	11,505	11,505	NA	154,361	107,657	46,704	NA	NA	NA	NA	20,729	12,624	1,741	1,338	3,626	1,401	5,151	3,028	564	1,558
1987	221,505	35,725	23,820	11,905	11,905	NA	158,047	107,637	50,410	NA	NA	NA	NA	22,450	13,617	1,866	1,457	3,965	1,545	5,282	2,988	599	1,695
1988	226,693	36,497	24,285	12,212	12,212	NA	160,677	112,892	47,785	NA	NA	NA	NA	24,080	14,550	1,973	1,580	4,279	1,698	5,439	2,984	630	1,826
1989	231,189	37,032	24,816	12,216	12,216	NA	162,706	119,758	42,948	NA	NA	NA	NA	25,473	15,180	2,076	1,728	4,647	1,843	5,978	3,360	659	1,959
1990	238,716	36,946	24,613	12,333	12,333	NA	168,686	128,162	40,524	NA	NA	NA	NA	26,604	15,610	2,197	1,831	5,005	1,962	6,480	3,684	691	2,105
1991	244,403	35,462	23,167	12,295	12,295	NA	174,215	137,609	36,605	NA	NA	NA	NA	27,659	16,205	2,252	1,886	5,253	2,063	7,067	4,070	728	2,270
1992	245,602	35,964	23,547	12,417	12,417	NA	173,425	140,199	33,226	NA	NA	NA	NA	28,798	17,122	2,265	1,960	5,300	2,150	7,416	4,167	774	2,474
1993	240,467	35,597	23,985	11,612	11,612	NA	167,491	137,247	30,244	NA	NA	NA	NA	29,737	17,857	2,259	2,019	5,381	2,221	7,643	4,125	823	2,695
1994	240,380	34,961	23,235	11,726	11,726	NA	166,770	137,987	28,783	NA	NA	NA	NA	30,695	18,462	2,305	2,068	5,594	2,265	7,954	4,136	876	2,941
1995	255,506	35,276	23,521	11,755	11,755	NA	180,653	151,184	29,468	NA	NA	NA	NA	31,471	18,913	2,436	2,153	5,719	2,249	8,108	3,962	934	3,212
1996	269,662	34,227	22,662	11,565	11,565	NA	194,541	165,360	29,182	NA	NA	NA	NA	32,409	19,245	2,543	2,284	6,061	2,276	8,485	3,970	998	3,517
1997	284,628	33,894	22,592	11,301	11,301	NA	208,754	179,474	29,280	NA	NA	NA	NA	33,080	19,232	2,555	2,402	6,517	2,374	8,901	4,049	1,086	3,766
1998	299,880	34,327	23,063	11,264	11,264	NA	221,965	192,628	29,337	NA	NA	NA	NA	33,982	19,525	2,551	2,522	6,898	2,486	9,606	4,358	1,141	4,107
1999	320,086	35,152	23,755	11,397	11,397	NA	238,430	211,592	26,838	NA	NA	NA	NA	35,975	20,576	2,667	2,646	7,403	2,684	10,528	4,924	1,219	4,385
2000	343,413	36,547	24,667	11,879	11,879	NA	256,276	234,339	21,938	NA	NA	NA	NA	38,341	21,910	2,797	2,706	8,035	2,894	12,248	5,780	1,307	5,161
2001	349,122	41,127	28,044	13,083	12,604	NA	253,209	232,028	21,181	NA	NA	NA	NA	41,049	23,785	2,907	2,657	8,615	3,085	13,738	6,879	1,290	5,569
2002	342,991	43,791	29,370	14,420	13,874	NA	239,267	219,025	20,242	NA	NA	NA	NA	45,274	26,726	3,111	2,596	9,470	3,372	14,659	7,131	1,232	6,296
2003	352,632	45,065	30,235	14,830	14,331	NA	242,931	221,391	21,540	NA	NA	NA	NA	49,109	29,732	3,335	2,530	10,028	3,484	15,527	7,195	1,235	7,097
2004	356,811	44,418	29,345	15,072	14,698	NA	245,512	221,626	23,886	NA	NA	NA	NA	51,031	31,380	3,413	2,531	10,179	3,527	15,851	7,704	1,227	6,919
2005	371,742	45,218	30,081	15,137	14,735	NA	258,456	233,419	25,038	NA	NA	NA	NA	51,986	31,704	3,366	2,604	10,688	3,623	16,081	7,479	1,265	7,337
2006	389,015	46,128	31,306	14,822	14,377	342	274,565	247,621	26,943	NA	NA	NA	NA	52,513	31,347	3,391	2,731	11,281	3,762	15,467	6,700	1,310	7,457
2007	407,906	47,637	32,231	15,407	14,945	419	290,655	261,958	28,697	NA	NA	NA	NA	53,356	31,006	3,571	2,911	11,801	4,066	15,839	6,455	1,356	8,028
2008	428,705	48,347	31,603	16,744	16,277	520	307,863	239,199	38,509	324	12,901	16,451	479	55,132	31,387	3,778	3,128	12,431	4,407	16,843	6,604	1,382	8,857
2009	424,033	50,064	32,160	17,904	17,438	637	297,182	232,683	41,645	205	10,068	12,064	721	57,785	33,403	3,872	3,191	12,688	4,631	18,366	7,469	1,323	9,573
2010	422,811	52,824	33,245	19,579	19,143	719	290,100	226,886	35,563	162	11,452	15,113	1,086	60,400	36,064	3,820	3,070	12,750	4,694	18,769	7,376	1,316	10,077

TABLE 2

**U.S. R&D expenditures, by performing sector and source of funds: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>				NPOs <sup>f</sup>					
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2011	434,187	54,525	35,604	18,921	18,516	707	299,593	239,830	31,895	327	11,332	15,636	901	61,211	36,410	3,683	3,055	13,348	4,716	18,150	6,687	1,365	10,098
2012	433,716	52,144	34,017	18,128	17,727	665	302,251	242,674	30,621	157	11,624	16,699	633	60,895	34,967	3,560	3,170	14,300	4,899	17,762	6,239	1,376	10,147
2013	446,452	50,207	32,831	17,376	16,999	609	316,977	255,435	28,857	191	13,219	18,472	995	60,488	33,258	3,579	3,317	15,113	5,221	18,171	5,867	1,438	10,865
2014	459,193	50,830	33,557	17,272	16,905	563	328,719	267,499	25,618	133	12,761	21,749	1,091	60,153	31,957	3,583	3,475	15,639	5,500	18,928	5,919	1,493	11,516
2015	472,344	50,480	32,666	17,813	17,467	568	339,879	276,904	25,781	121	13,941	22,067	1,186	61,739	32,060	3,613	3,672	16,517	5,878	19,678	5,967	1,533	12,178
2016	493,381	48,408	30,038	18,370	18,024	586	358,928	293,542	22,843	184	13,854	27,442	1,246	64,112	32,805	3,723	3,829	17,415	6,340	21,347	7,809	1,884	11,654
2017	514,181	48,774	29,914	18,861	18,510	587	376,617	300,870	23,178	132	16,455	35,187	926	66,002	33,419	3,765	3,976	18,148	6,695	22,201	7,627	1,922	12,652
2018	548,252	52,897	33,351	19,546	19,183	583	403,879	324,382	22,835	109	17,479	38,123	1,060	67,906	34,225	3,829	4,157	18,744	6,950	22,988	7,660	1,985	13,344
2019	593,865	55,926	35,505	20,421	20,070	601	443,634	361,515	20,173	150	19,300	41,684	962	69,617	35,225	3,886	4,282	19,198	7,025	24,086	7,925	2,090	14,070
2020 <sup>g</sup>	622,951	57,797	36,900	20,897	20,559	613	468,063	383,762	18,475	158	20,513	44,294	861	71,371	36,005	3,923	4,402	19,890	7,152	25,107	9,067	2,150	13,890

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> Includes expenditures for federal intramural R&D as well as costs associated with administering extramural R&D procurements. Beginning in 2016, the data on federal intramural R&D explicitly exclude expenditures for preproduction development. (Preproduction development is nonexperimental work on a product or system before it goes into full production. 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.) This change aligns the federal intramural R&D data with the U.S. Office of Management and Budget's recent clarification of its definition of R&D. In 2016–18, this intramural preproduction development totaled in the range of \$5–\$7 billion each year.

<sup>b</sup> The R&D expenditures of FFRDCs are chiefly federally funded; the small remainder (\$394 million of the \$22.9 billion total in 2019) reflects funding from state or local government, businesses, NPOs, and other sources. Prior to 2001, the data did not distinguish federal and nonfederal funding for FFRDC R&D and are reported as all federal funding; in 2001 and forward, the data provide detail on federal and nonfederal sources of funding (see [table 6](#)). The data for 1953–54 reflect the R&D performance of only university-administered FFRDCs. In 1953–54, the R&D performance and funding of industry-administered FFRDCs were not separately reported but are included instead in the business R&D data for these years. Similarly, in 1953–54, the R&D performance and funding for nonprofit-administered FFRDCs were not separately reported but are included instead in the NPO R&D data for these years.

<sup>c</sup> State intramural R&D performance includes state agency and department employees and services performed by others in support of internal R&D projects. Data on state government intramural R&D became available starting in 2006. Funding for this R&D is mainly states' own funds (\$333 million of the \$675 million total in 2019) or from the federal government (\$290 million in 2019), but other sources include other nonfederal governments (\$13 million), businesses (\$23 million), higher education (\$4 million), or NPOs (\$12 million).

<sup>d</sup> R&D performed by companies in the domestic United States. Data for 2008–15 come from the National Center for Science and Engineering Statistics' (NCSES's) annual Business Research and Development and Innovation Survey (BRDIS), which covered all publicly or privately held companies with 5 or more employees. Data for 2016 included the BRDIS data for that year plus the data from the 2016 Business R&D and Innovation Survey–Microbusiness (BRDI-M), which collected statistics on the R&D activities of companies with 1–4 employees. Data for 2017 and 2018 come from NCSES's annual Business Research and Development Survey (BRDS), which covers all publicly or privately held companies with 10 or more employees, plus the Annual Business Survey (ABS) for 2017 and 2018, which collected statistics on the R&D activities of businesses with 1–9 employees. BRDIS, BRDS, BRDI-M, and ABS distinguish R&D performed and paid for by the company from R&D performed by the company but paid for by one or more others (i.e., the federal government, state or local government, domestic companies, foreign companies, foreign governments, other organizations inside or outside the United States). Data for 2020 are estimates based on the 2019 surveys. Prior to 2008, the data collected by the predecessor survey (the Survey of Industrial Research and Development) distinguished only federally and nonfederally funded business R&D, and, for these years, the own-funding data column includes all nonfederal sources of funding. Some business R&D performance in the United States paid for by foreign businesses includes funding from both parent or unaffiliated businesses outside the United States (\$19.7 billion in 2019) and funding from U.S. businesses' foreign subsidiaries (\$27.1 billion in 2019). Business R&D performance funded by other sources includes state government, foreign government, domestic and foreign academic institutions, and all other sources in the United States and abroad.

<sup>e</sup> Before 2003, higher education R&D covered only science and engineering (S&E) fields; in 2003 and later years, R&D in non-S&E fields is also included. (Non-S&E R&D was \$1.4 billion in FY 2003 and \$4.6 billion in FY 2018.) In 1998 and later years, the higher education R&D data have been adjusted to eliminate double counting of R&D funds passed through from academic institutions to other academic and nonacademic (business, NPO, other) subrecipients. (In FY 1998, the total of pass-through funds reported was \$994 million, with \$479 million to other academic recipients and \$337 million nonacademic recipients. In FY 2019, total pass-through was \$6.711 billion, with \$3.732 billion to other academic

recipients and \$2.979 billion to nonacademic recipients.) The nonfederal government funding category includes support from state and local government. The other nonprofit funding category includes support from NPOs and other sources not elsewhere classified (in FY 2018, \$3.101 billion was from NPOs, and \$1.453 billion was from these unclassified other sources).

<sup>f</sup> Data on NPO R&D funded by the federal government come from NCSES's annual Survey of Federal Funds for Research and Development. NPO R&D funded by nonfederal government is included in the NPO-funded category. The data for NPO R&D, 1998–2020, funded by businesses and by the nonprofit sector itself, are estimated based on parameters from the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations and the 2016 Nonprofit Research Activities Survey.

<sup>g</sup> The data for 2020 include estimates and are likely to be revised later.

**Note(s):**

Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in NCSES's annual R&D expenditure surveys: Business Enterprise Research and Development Survey, ABS, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. For federal performers in 1977 and afterward, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. Prior to 1977, the federal fiscal year began on 1 July, not 1 October, and the approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. The fiscal year for higher education performers and state government performers generally begins 1 July, and the calendar year approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year.

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
Current \$millions																							
1953	460	138	102	36	36	NA	151	132	19	NA	NA	NA	NA	123	82	7	13	6	16	48	27	9	12
1954	509	141	96	45	45	NA	166	143	23	NA	NA	NA	NA	148	97	10	15	8	18	55	31	11	13
1955	570	160	98	62	62	NA	169	162	7	NA	NA	NA	NA	180	117	14	17	12	21	62	35	13	14
1956	718	203	114	89	89	NA	223	216	7	NA	NA	NA	NA	220	143	19	20	15	24	73	41	15	17
1957	813	234	124	110	110	NA	234	230	4	NA	NA	NA	NA	261	167	25	23	20	27	86	48	15	23
1958	943	264	149	115	115	NA	266	252	14	NA	NA	NA	NA	312	202	31	24	24	31	102	58	16	28
1959	1,087	298	165	134	134	NA	282	248	34	NA	NA	NA	NA	388	263	38	24	28	36	119	71	18	30
1960	1,286	334	184	150	150	NA	333	297	36	NA	NA	NA	NA	485	341	45	25	33	41	135	84	21	30
1961	1,511	407	230	177	177	NA	344	314	30	NA	NA	NA	NA	598	432	54	25	40	48	163	104	22	37
1962	1,824	441	252	189	189	NA	449	345	104	NA	NA	NA	NA	737	546	64	25	48	55	198	128	24	46
1963	2,115	501	285	216	216	NA	484	375	109	NA	NA	NA	NA	909	689	75	25	58	63	222	147	25	50
1964	2,396	584	339	245	245	NA	507	384	123	NA	NA	NA	NA	1,071	824	84	25	70	68	235	163	25	47
1965	2,664	625	375	250	250	NA	563	406	157	NA	NA	NA	NA	1,221	944	94	27	86	70	256	175	29	52
1966	2,930	683	410	273	273	NA	593	451	142	NA	NA	NA	NA	1,380	1,066	104	29	106	75	274	184	32	58
1967	3,168	735	434	301	301	NA	595	427	168	NA	NA	NA	NA	1,554	1,188	114	34	136	83	285	190	34	61
1968	3,376	797	482	315	315	NA	607	462	145	NA	NA	NA	NA	1,681	1,265	131	38	156	91	292	192	37	63
1969	3,491	858	545	313	313	NA	581	458	123	NA	NA	NA	NA	1,754	1,288	153	40	171	103	298	188	43	67
1970	3,594	866	562	304	304	NA	566	444	122	NA	NA	NA	NA	1,855	1,323	179	43	196	115	307	191	44	72
1971	3,720	870	581	289	289	NA	557	456	101	NA	NA	NA	NA	1,968	1,385	194	50	214	127	326	204	45	77
1972	3,850	915	603	313	313	NA	554	463	91	NA	NA	NA	NA	2,038	1,437	195	55	216	134	344	213	47	84
1973	4,099	1,034	652	382	382	NA	595	499	96	NA	NA	NA	NA	2,103	1,489	196	59	223	137	368	229	49	90
1974	4,511	1,182	715	467	467	NA	650	536	114	NA	NA	NA	NA	2,282	1,609	204	66	250	153	397	242	54	102
1975	4,875	1,292	760	533	533	NA	677	573	104	NA	NA	NA	NA	2,480	1,768	212	72	264	164	426	251	59	116
1976	5,373	1,479	850	629	629	NA	750	634	116	NA	NA	NA	NA	2,675	1,924	218	75	283	175	470	274	65	131
1977	6,008	1,689	943	746	746	NA	836	701	135	NA	NA	NA	NA	2,967	2,114	232	89	334	198	517	297	72	148
1978	6,959	2,049	1,044	1,005	1,005	NA	941	785	156	NA	NA	NA	NA	3,376	2,399	260	107	398	213	593	346	79	168
1979	7,836	2,272	1,112	1,160	1,160	NA	1,054	893	161	NA	NA	NA	NA	3,828	2,719	286	128	466	229	683	406	87	190
1980	8,747	2,506	1,212	1,294	1,294	NA	1,205	1,035	170	NA	NA	NA	NA	4,315	3,061	307	156	544	248	721	411	95	215
1981	9,658	2,773	1,343	1,430	1,430	NA	1,477	1,313	164	NA	NA	NA	NA	4,737	3,331	338	183	615	269	671	324	105	243
1982	10,651	3,025	1,522	1,503	1,503	NA	1,776	1,523	253	NA	NA	NA	NA	5,091	3,475	368	215	716	317	759	369	115	275
1983	11,880	3,393	1,733	1,661	1,661	NA	2,106	1,760	346	NA	NA	NA	NA	5,518	3,689	396	260	816	358	863	426	127	311

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1984	13,332	3,731	1,877	1,854	1,854	NA	2,472	2,132	340	NA	NA	NA	NA	6,145	4,087	436	313	915	395	984	494	139	351
1985	14,748	3,884	1,947	1,936	1,936	NA	2,731	2,373	358	NA	NA	NA	NA	7,024	4,606	514	389	1,075	440	1,110	560	153	397
1986	17,154	4,071	2,026	2,045	2,045	NA	3,930	3,496	434	NA	NA	NA	NA	7,943	5,122	606	466	1,262	488	1,210	594	168	449
1987	18,481	4,290	2,047	2,242	2,242	NA	4,181	3,583	598	NA	NA	NA	NA	8,644	5,527	659	514	1,399	545	1,367	675	185	507
1988	19,787	4,749	2,116	2,633	2,633	NA	4,163	3,507	656	NA	NA	NA	NA	9,344	5,937	705	565	1,530	607	1,531	756	203	573
1989	21,891	5,124	2,309	2,815	2,815	NA	4,818	3,832	986	NA	NA	NA	NA	10,219	6,422	766	637	1,714	680	1,730	860	223	647
1990	23,029	5,352	2,319	3,033	3,033	NA	4,629	3,760	869	NA	NA	NA	NA	11,126	6,889	847	705	1,929	756	1,922	947	245	730
1991	27,140	5,573	2,378	3,195	3,195	NA	7,376	6,125	1,251	NA	NA	NA	NA	12,062	7,423	912	764	2,127	836	2,129	1,036	269	825
1992	27,604	5,826	2,419	3,408	3,408	NA	6,528	5,816	712	NA	NA	NA	NA	12,910	8,058	941	814	2,203	893	2,340	1,114	295	931
1993	28,743	6,138	2,621	3,517	3,517	NA	6,427	5,961	466	NA	NA	NA	NA	13,646	8,638	952	851	2,268	936	2,532	1,157	324	1,051
1994	29,651	6,058	2,547	3,512	3,512	NA	6,514	6,078	436	NA	NA	NA	NA	14,401	9,139	992	890	2,406	974	2,678	1,137	356	1,186
1995	29,610	5,996	2,689	3,307	3,307	NA	5,569	5,379	190	NA	NA	NA	NA	15,146	9,634	1,070	945	2,511	987	2,899	1,170	390	1,338
1996	32,799	6,073	2,680	3,393	3,393	NA	7,498	6,848	650	NA	NA	NA	NA	16,042	10,092	1,149	1,032	2,740	1,028	3,187	1,248	428	1,510
1997	36,717	6,150	2,746	3,404	3,404	NA	9,795	8,766	1,029	NA	NA	NA	NA	17,449	10,758	1,233	1,161	3,150	1,147	3,322	1,317	449	1,557
1998	34,842	6,444	3,003	3,441	3,441	NA	5,853	4,851	1,002	NA	NA	NA	NA	18,891	11,567	1,292	1,278	3,495	1,259	3,654	1,461	477	1,717
1999	38,282	7,066	3,347	3,719	3,719	NA	6,645	5,537	1,108	NA	NA	NA	NA	20,462	12,456	1,386	1,375	3,848	1,396	4,110	1,734	517	1,860
2000	42,033	7,801	3,765	4,037	4,037	NA	7,040	6,115	925	NA	NA	NA	NA	22,290	13,469	1,501	1,453	4,314	1,553	4,902	2,099	566	2,236
2001	46,843	8,832	4,260	4,571	4,404	NA	8,053	7,299	754	NA	NA	NA	NA	24,455	14,919	1,606	1,467	4,759	1,704	5,503	2,464	571	2,467
2002	50,789	9,737	4,511	5,227	5,029	NA	7,547	6,659	888	NA	NA	NA	NA	27,543	17,139	1,745	1,456	5,311	1,891	5,962	2,575	554	2,833
2003	54,823	9,739	4,664	5,075	4,904	NA	8,330	6,944	1,386	NA	NA	NA	NA	30,217	19,220	1,893	1,436	5,692	1,978	6,537	2,714	567	3,256
2004	56,379	9,672	4,697	4,976	4,852	NA	7,835	6,763	1,072	NA	NA	NA	NA	32,246	20,730	2,000	1,483	5,965	2,067	6,626	2,788	578	3,259
2005	59,904	9,907	4,770	5,136	5,000	NA	8,667	7,559	1,108	NA	NA	NA	NA	34,248	21,786	2,068	1,600	6,568	2,226	7,082	2,902	614	3,565
2006	61,568	9,953	4,716	5,238	5,080	46	8,384	6,940	1,444	NA	NA	NA	NA	35,944	22,270	2,191	1,765	7,288	2,431	7,240	2,849	656	3,735
2007	64,603	8,053	4,621	3,432	3,298	58	11,268	8,488	2,780	NA	NA	NA	NA	37,568	22,546	2,400	1,956	7,932	2,733	7,656	2,829	698	4,130
2008	68,542	8,533	4,957	3,576	3,432	73	12,369	9,741	1,475	12	484	639	18	39,127	22,954	2,573	2,131	8,467	3,002	8,441	3,073	724	4,643
2009	72,883	10,012	5,441	4,571	4,432	90	14,784	11,999	1,340	13	662	736	34	38,749	23,008	2,457	1,995	8,257	3,032	9,248	3,498	698	5,051
2010	76,388	11,748	5,111	6,637	6,475	103	16,371	13,239	1,406	10	722	935	58	38,669	23,618	2,277	1,783	8,010	2,983	9,498	3,414	703	5,381
2011	73,552	11,522	5,047	6,475	6,333	103	13,020	10,585	677	21	745	954	38	39,578	23,999	2,244	1,804	8,496	3,035	9,329	3,081	744	5,504
2012	73,843	11,150	5,489	5,661	5,530	99	13,294	10,955	644	10	710	946	29	39,810	23,312	2,200	1,866	9,244	3,189	9,490	3,092	764	5,634
2013	79,137	9,519	5,330	4,188	4,085	92	19,508	14,986	1,196	21	1,446	1,771	88	40,036	22,502	2,206	1,976	9,927	3,425	9,982	3,031	813	6,139
2014	82,769	9,875	5,705	4,170	4,077	99	21,936	15,805	2,044	17	1,584	2,367	119	40,282	21,991	2,240	2,088	10,350	3,614	10,577	3,090	859	6,628
2015	84,273	10,017	5,890	4,127	4,043	100	21,792	15,933	2,038	14	1,565	2,123	120	41,360	22,084	2,297	2,205	10,978	3,798	11,004	3,034	891	7,079

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2016	85,689	10,315	6,119	4,196	4,112	93	25,053	18,792	2,037	20	1,535	2,551	117	42,679	22,450	2,355	2,286	11,577	4,012	7,548	2,401	716	4,431
2017	88,696	10,388	6,259	4,128	4,054	100	25,617	18,299	1,853	17	2,085	3,260	103	44,556	23,197	2,387	2,407	12,228	4,337	8,036	2,390	745	4,901
2018	96,043	11,096	6,827	4,269	4,188	107	29,204	21,100	2,535	12	2,069	3,377	112	47,099	24,361	2,449	2,599	12,971	4,720	8,538	2,457	787	5,293
2019	102,874	11,932	7,352	4,580	4,501	120	32,582	24,558	2,349	15	2,062	3,513	86	49,126	25,358	2,531	2,729	13,594	4,916	9,113	2,588	844	5,681
2020 <sup>g</sup>	107,895	12,598	7,839	4,759	4,683	131	34,682	26,381	2,174	17	2,229	3,789	93	50,933	26,051	2,610	2,843	14,333	5,096	9,551	2,996	879	5,676
Constant 2012 \$millions																							
1953	3,182	952	703	249	249	NA	1,046	914	132	NA	NA	NA	NA	852	564	45	90	42	111	332	187	62	83
1954	3,490	964	659	305	305	NA	1,139	981	158	NA	NA	NA	NA	1,012	662	66	103	58	124	374	209	75	89
1955	3,846	1,076	658	418	418	NA	1,140	1,093	47	NA	NA	NA	NA	1,211	786	94	115	78	138	418	236	88	94
1956	4,683	1,321	741	581	581	NA	1,453	1,409	44	NA	NA	NA	NA	1,436	930	124	127	101	153	473	264	98	111
1957	5,138	1,475	783	692	692	NA	1,478	1,453	25	NA	NA	NA	NA	1,645	1,052	157	142	125	171	540	300	95	145
1958	5,825	1,631	920	710	710	NA	1,640	1,556	84	NA	NA	NA	NA	1,927	1,248	192	148	148	191	627	355	99	173
1959	6,622	1,815	1,002	813	813	NA	1,718	1,511	207	NA	NA	NA	NA	2,364	1,599	229	146	173	216	725	433	110	183
1960	7,727	2,004	1,103	902	902	NA	1,999	1,785	214	NA	NA	NA	NA	2,912	2,047	271	147	201	246	811	505	126	180
1961	8,986	2,418	1,365	1,053	1,053	NA	2,049	1,867	181	NA	NA	NA	NA	3,553	2,566	319	149	237	282	966	616	131	220
1962	10,719	2,591	1,481	1,111	1,111	NA	2,640	2,027	612	NA	NA	NA	NA	4,328	3,205	374	147	281	320	1,160	749	141	270
1963	12,287	2,907	1,653	1,255	1,255	NA	2,813	2,178	635	NA	NA	NA	NA	5,277	4,002	435	142	334	363	1,289	854	145	290
1964	13,708	3,341	1,940	1,402	1,402	NA	2,901	2,197	704	NA	NA	NA	NA	6,125	4,712	483	143	398	389	1,342	930	143	269
1965	14,968	3,509	2,104	1,405	1,405	NA	3,163	2,281	882	NA	NA	NA	NA	6,858	5,301	531	149	483	393	1,438	983	163	292
1966	16,015	3,733	2,241	1,492	1,492	NA	3,241	2,465	776	NA	NA	NA	NA	7,543	5,827	566	159	582	410	1,498	1,006	175	317
1967	16,824	3,901	2,302	1,599	1,599	NA	3,160	2,268	892	NA	NA	NA	NA	8,251	6,307	605	178	720	441	1,511	1,007	181	324
1968	17,199	4,058	2,455	1,602	1,602	NA	3,092	2,354	739	NA	NA	NA	NA	8,561	6,444	666	191	796	464	1,488	978	188	321
1969	16,953	4,168	2,648	1,520	1,520	NA	2,822	2,224	597	NA	NA	NA	NA	8,516	6,253	742	192	831	498	1,447	913	209	325
1970	16,579	3,995	2,592	1,402	1,402	NA	2,611	2,048	563	NA	NA	NA	NA	8,557	6,101	827	198	903	528	1,416	881	203	332
1971	16,333	3,818	2,552	1,267	1,267	NA	2,445	2,002	443	NA	NA	NA	NA	8,640	6,078	850	217	939	555	1,429	893	198	338
1972	16,203	3,851	2,536	1,315	1,315	NA	2,332	1,949	383	NA	NA	NA	NA	8,575	6,048	822	231	909	564	1,446	894	198	354
1973	16,357	4,126	2,601	1,524	1,524	NA	2,374	1,991	383	NA	NA	NA	NA	8,391	5,939	783	233	890	545	1,466	912	196	359
1974	16,512	4,326	2,616	1,710	1,710	NA	2,379	1,962	417	NA	NA	NA	NA	8,352	5,890	746	242	916	558	1,455	884	197	373
1975	16,331	4,329	2,545	1,784	1,784	NA	2,268	1,920	348	NA	NA	NA	NA	8,307	5,923	712	240	883	549	1,427	841	199	387
1976	17,062	4,697	2,699	1,997	1,997	NA	2,382	2,013	368	NA	NA	NA	NA	8,493	6,110	691	238	900	554	1,491	869	207	415
1977	17,963	5,049	2,819	2,230	2,230	NA	2,499	2,096	404	NA	NA	NA	NA	8,869	6,320	693	266	999	590	1,545	888	214	443
1978	19,438	5,724	2,917	2,807	2,807	NA	2,628	2,193	436	NA	NA	NA	NA	9,430	6,701	726	297	1,112	594	1,655	966	220	468

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1979	20,213	5,861	2,869	2,991	2,991	NA	2,719	2,303	415	NA	NA	NA	NA	9,872	7,013	737	329	1,202	591	1,761	1,048	224	489
1980	20,691	5,929	2,868	3,061	3,061	NA	2,851	2,448	402	NA	NA	NA	NA	10,208	7,240	726	369	1,287	587	1,705	971	226	508
1981	20,871	5,992	2,902	3,090	3,090	NA	3,192	2,838	354	NA	NA	NA	NA	10,236	7,199	731	395	1,330	582	1,451	700	226	525
1982	21,678	6,156	3,097	3,059	3,059	NA	3,615	3,100	515	NA	NA	NA	NA	10,362	7,072	749	439	1,458	645	1,545	751	234	559
1983	23,269	6,646	3,394	3,252	3,252	NA	4,125	3,447	678	NA	NA	NA	NA	10,808	7,224	775	509	1,599	701	1,690	834	248	608
1984	25,203	7,053	3,548	3,505	3,505	NA	4,673	4,030	643	NA	NA	NA	NA	11,616	7,725	823	591	1,729	746	1,861	934	263	664
1985	27,026	7,117	3,568	3,548	3,548	NA	5,004	4,348	656	NA	NA	NA	NA	12,871	8,439	943	713	1,971	806	2,033	1,026	280	727
1986	30,813	7,313	3,639	3,674	3,674	NA	7,060	6,280	780	NA	NA	NA	NA	14,267	9,200	1,088	837	2,267	876	2,174	1,066	302	806
1987	32,396	7,520	3,589	3,931	3,931	NA	7,329	6,281	1,048	NA	NA	NA	NA	15,152	9,688	1,154	901	2,453	956	2,396	1,184	323	888
1988	33,504	8,041	3,583	4,458	4,458	NA	7,049	5,938	1,111	NA	NA	NA	NA	15,821	10,052	1,194	956	2,590	1,028	2,593	1,280	343	970
1989	35,668	8,349	3,762	4,587	4,587	NA	7,850	6,244	1,607	NA	NA	NA	NA	16,650	10,464	1,248	1,039	2,793	1,108	2,818	1,402	363	1,054
1990	36,169	8,406	3,642	4,764	4,764	NA	7,270	5,905	1,365	NA	NA	NA	NA	17,474	10,819	1,330	1,108	3,030	1,187	3,018	1,487	384	1,147
1991	41,231	8,467	3,613	4,854	4,854	NA	11,206	9,305	1,901	NA	NA	NA	NA	18,324	11,277	1,385	1,160	3,232	1,269	3,235	1,574	408	1,253
1992	41,001	8,654	3,593	5,062	5,062	NA	9,696	8,639	1,058	NA	NA	NA	NA	19,175	11,969	1,398	1,210	3,272	1,327	3,476	1,655	438	1,383
1993	41,704	8,906	3,803	5,103	5,103	NA	9,325	8,649	676	NA	NA	NA	NA	19,800	12,533	1,382	1,235	3,291	1,358	3,673	1,679	470	1,525
1994	42,123	8,607	3,618	4,989	4,989	NA	9,254	8,635	619	NA	NA	NA	NA	20,458	12,982	1,409	1,264	3,419	1,384	3,805	1,615	505	1,685
1995	41,202	8,344	3,742	4,601	4,601	NA	7,749	7,485	264	NA	NA	NA	NA	21,076	13,405	1,488	1,315	3,493	1,374	4,033	1,628	543	1,862
1996	44,818	8,298	3,662	4,636	4,636	NA	10,246	9,357	888	NA	NA	NA	NA	21,920	13,790	1,570	1,410	3,744	1,405	4,355	1,706	585	2,064
1997	49,320	8,261	3,688	4,572	4,572	NA	13,157	11,775	1,382	NA	NA	NA	NA	23,439	14,451	1,657	1,559	4,231	1,541	4,463	1,769	603	2,091
1998	46,281	8,559	3,989	4,571	4,571	NA	7,775	6,444	1,331	NA	NA	NA	NA	25,093	15,365	1,717	1,697	4,642	1,673	4,854	1,940	634	2,280
1999	50,127	9,252	4,382	4,869	4,869	NA	8,701	7,250	1,451	NA	NA	NA	NA	26,793	16,310	1,815	1,801	5,039	1,828	5,382	2,270	677	2,435
2000	53,871	9,998	4,825	5,173	5,173	NA	9,023	7,837	1,186	NA	NA	NA	NA	28,568	17,262	1,924	1,862	5,529	1,991	6,282	2,691	726	2,866
2001	58,713	11,070	5,340	5,730	5,520	NA	10,094	9,149	945	NA	NA	NA	NA	30,652	18,700	2,012	1,839	5,965	2,136	6,897	3,089	716	3,092
2002	62,682	12,018	5,567	6,451	6,207	NA	9,314	8,218	1,096	NA	NA	NA	NA	33,992	21,152	2,154	1,797	6,555	2,334	7,358	3,178	684	3,496
2003	66,351	11,787	5,645	6,142	5,935	NA	10,082	8,404	1,677	NA	NA	NA	NA	36,571	23,261	2,291	1,738	6,888	2,393	7,912	3,285	686	3,941
2004	66,451	11,400	5,536	5,864	5,719	NA	9,235	7,971	1,264	NA	NA	NA	NA	38,006	24,434	2,357	1,748	7,031	2,436	7,809	3,286	681	3,842
2005	68,459	11,321	5,452	5,870	5,714	NA	9,905	8,638	1,266	NA	NA	NA	NA	39,139	24,897	2,363	1,829	7,506	2,544	8,093	3,317	702	4,074
2006	68,254	11,034	5,228	5,806	5,632	51	9,294	7,694	1,601	NA	NA	NA	NA	39,848	24,688	2,429	1,956	8,079	2,695	8,026	3,158	728	4,140
2007	69,735	8,693	4,988	3,705	3,560	62	12,163	9,162	3,001	NA	NA	NA	NA	40,552	24,337	2,591	2,112	8,562	2,950	8,265	3,054	753	4,458
2008	72,594	9,037	5,250	3,787	3,634	77	13,100	10,317	1,562	13	512	677	19	41,440	24,311	2,726	2,256	8,968	3,179	8,940	3,255	767	4,918
2009	76,700	10,536	5,726	4,811	4,664	95	15,558	12,627	1,410	14	696	775	36	40,779	24,213	2,585	2,100	8,690	3,191	9,732	3,682	735	5,316
2010	79,434	12,216	5,314	6,902	6,734	107	17,024	13,767	1,462	11	751	973	60	40,211	24,559	2,367	1,854	8,329	3,101	9,877	3,551	731	5,595

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>				NPOs <sup>f</sup>					
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2011	74,927	11,738	5,142	6,596	6,451	105	13,264	10,783	690	22	759	972	38	40,318	24,448	2,286	1,837	8,655	3,092	9,503	3,138	758	5,607
2012	73,843	11,150	5,489	5,661	5,530	99	13,294	10,955	644	10	710	946	29	39,810	23,312	2,200	1,866	9,244	3,189	9,490	3,092	764	5,634
2013	77,775	9,355	5,239	4,116	4,015	90	19,172	14,728	1,175	20	1,421	1,740	87	39,347	22,115	2,168	1,942	9,756	3,366	9,810	2,979	799	6,033
2014	79,852	9,527	5,504	4,023	3,933	95	21,163	15,248	1,972	16	1,528	2,284	115	38,862	21,216	2,161	2,014	9,985	3,486	10,204	2,981	829	6,394
2015	80,497	9,568	5,626	3,942	3,862	96	20,816	15,219	1,947	13	1,495	2,028	114	39,506	21,094	2,194	2,106	10,486	3,627	10,511	2,898	851	6,761
2016	81,037	9,755	5,787	3,968	3,889	88	23,693	17,772	1,927	19	1,452	2,413	111	40,362	21,231	2,227	2,162	10,948	3,794	7,139	2,271	678	4,190
2017	82,319	9,641	5,809	3,831	3,763	93	23,775	16,983	1,720	16	1,935	3,025	95	41,353	21,529	2,215	2,234	11,349	4,025	7,458	2,218	691	4,549
2018	87,058	10,058	6,188	3,870	3,796	97	26,472	19,126	2,298	11	1,875	3,061	101	42,692	22,081	2,219	2,356	11,758	4,278	7,739	2,227	714	4,798
2019	91,611	10,626	6,547	4,079	4,008	107	29,015	21,869	2,091	14	1,836	3,128	77	43,748	22,581	2,254	2,430	12,105	4,377	8,115	2,305	752	5,059
2020 <sup>g</sup>	94,938	11,085	6,898	4,188	4,121	115	30,517	23,213	1,913	15	1,961	3,334	82	44,817	22,923	2,297	2,502	12,612	4,484	8,404	2,636	773	4,994

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> See [table 2](#), footnote a.<sup>b</sup> Type-of-R&D data for FFRDC R&D in 1953–63 reflect the R&D performance of only university-administered FFRDCs. In 1953–63, the R&D performance and funding of industry-administered FFRDCs were not separately reported but are included instead in the business R&D data for these years. Similarly, in 1953–63, the R&D performance and funding for nonprofit-administered FFRDCs were not separately reported but are included instead in the NPO R&D data for these years. The data for 1964–80 reflect the R&D performance of only university-administered FFRDCs and industry-administered FFRDCs; the R&D performance for nonprofit-administered FFRDCs is included in the NPO R&D data for these years. Starting in 2001, type-of-R&D data provide detail on federal and nonfederal sources of funding for FFRDC R&D. (See also [table 2](#), footnote b.)<sup>c</sup> Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)<sup>d</sup> Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and later years, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.)<sup>e</sup> The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. The pass-through adjusted data on higher education R&D, applied in 1998 and forward, reflect institution-specific detail on the type-of-R&D performed. Type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.)<sup>f</sup> Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for the R&D that is federally funded. (See also [table 2](#), footnote f.)<sup>g</sup> The data for 2020 include estimates and are likely to be revised later.**Note(s):**

Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. For federal performers in 1977 and afterward, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. Prior to 1977, the federal fiscal year began on 1 July, not 1 October, and the approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. The fiscal year for higher education performers and state government performers generally begins 1 July, and the calendar year approximation is 50% of the amount reported in the same fiscal year plus 50% of amount reported in the subsequent fiscal year.



**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
Current \$millions																							
1953	1,289	395	347	48	48	NA	726	438	288	NA	NA	NA	NA	134	59	30	7	28	10	35	14	11	10
1954	1,378	388	330	59	59	NA	814	492	322	NA	NA	NA	NA	137	60	32	8	28	10	40	16	13	11
1955	1,502	419	333	86	86	NA	899	560	339	NA	NA	NA	NA	142	63	32	9	27	11	43	18	14	11
1956	1,929	511	387	125	125	NA	1,224	794	430	NA	NA	NA	NA	146	65	33	10	27	11	48	20	14	14
1957	2,413	595	446	149	149	NA	1,616	992	624	NA	NA	NA	NA	147	63	34	12	27	11	57	23	14	20
1958	2,759	672	516	156	156	NA	1,868	1,137	731	NA	NA	NA	NA	152	66	35	12	27	12	68	29	14	25
1959	2,940	756	577	179	179	NA	1,935	1,178	757	NA	NA	NA	NA	167	78	37	13	28	12	82	40	15	27
1960	3,065	816	615	201	201	NA	1,965	1,196	769	NA	NA	NA	NA	186	93	39	13	29	12	99	54	17	28
1961	3,123	908	668	240	240	NA	1,903	1,165	738	NA	NA	NA	NA	199	104	40	13	30	13	114	62	17	35
1962	3,698	958	709	249	249	NA	2,392	1,438	954	NA	NA	NA	NA	216	119	41	14	30	13	132	68	19	45
1963	3,864	1,084	809	275	275	NA	2,402	1,450	952	NA	NA	NA	NA	230	128	42	14	32	14	150	82	19	49
1964	4,201	1,260	947	313	313	NA	2,538	1,560	978	NA	NA	NA	NA	256	142	45	14	37	18	148	82	19	47
1965	4,374	1,287	994	294	294	NA	2,612	1,620	992	NA	NA	NA	NA	304	176	46	13	42	27	171	98	21	52
1966	4,653	1,302	1,012	290	290	NA	2,790	1,804	986	NA	NA	NA	NA	351	208	47	14	48	34	210	129	24	57
1967	4,848	1,402	1,069	334	334	NA	2,832	1,849	983	NA	NA	NA	NA	389	238	46	16	54	36	226	141	25	60
1968	5,137	1,446	1,112	334	334	NA	3,037	2,081	956	NA	NA	NA	NA	405	250	46	16	55	39	250	160	28	62
1969	5,454	1,565	1,229	336	336	NA	3,192	2,272	920	NA	NA	NA	NA	417	257	48	16	54	43	281	183	32	66
1970	5,752	1,670	1,334	336	336	NA	3,330	2,378	952	NA	NA	NA	NA	451	280	51	18	56	47	302	199	33	70
1971	5,833	1,666	1,355	312	312	NA	3,348	2,441	907	NA	NA	NA	NA	499	306	61	19	67	47	320	212	34	74
1972	6,147	1,792	1,434	358	358	NA	3,407	2,562	845	NA	NA	NA	NA	619	391	74	21	82	52	330	216	35	79
1973	6,655	1,861	1,527	334	334	NA	3,715	2,832	883	NA	NA	NA	NA	725	450	88	26	100	62	355	236	36	83
1974	7,344	1,987	1,652	335	335	NA	4,168	3,263	905	NA	NA	NA	NA	794	477	96	32	118	72	396	266	39	91
1975	8,091	2,295	1,912	384	384	NA	4,431	3,440	991	NA	NA	NA	NA	934	550	113	39	141	92	431	290	42	100
1976	8,976	2,525	2,068	457	457	NA	4,945	3,912	1,033	NA	NA	NA	NA	1,042	596	127	45	166	109	464	310	45	109
1977	9,662	2,621	2,081	540	540	NA	5,424	4,311	1,113	NA	NA	NA	NA	1,126	626	134	51	194	121	492	324	48	120
1978	10,704	2,838	2,242	597	597	NA	6,065	4,870	1,195	NA	NA	NA	NA	1,247	676	151	61	232	128	554	371	52	132
1979	12,097	3,069	2,415	654	654	NA	6,975	5,670	1,305	NA	NA	NA	NA	1,418	793	161	71	263	129	635	436	55	144
1980	13,729	3,295	2,546	749	749	NA	8,175	6,550	1,625	NA	NA	NA	NA	1,622	912	174	88	308	140	637	420	60	158
1981	16,329	3,520	2,731	788	788	NA	10,401	8,359	2,042	NA	NA	NA	NA	1,781	953	199	108	363	159	628	391	64	173
1982	18,218	3,692	2,802	890	890	NA	11,956	9,363	2,593	NA	NA	NA	NA	1,915	1,007	207	121	402	178	655	398	69	189
1983	20,298	3,956	2,991	965	965	NA	13,513	10,286	3,227	NA	NA	NA	NA	2,116	1,122	215	141	443	194	713	433	74	207

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1984	22,451	4,137	2,961	1,176	1,176	NA	15,218	11,541	3,677	NA	NA	NA	NA	2,332	1,226	234	168	491	212	764	459	79	226
1985	25,401	4,427	3,135	1,292	1,292	NA	17,625	12,908	4,717	NA	NA	NA	NA	2,527	1,296	262	198	547	224	822	490	85	247
1986	27,240	4,462	3,204	1,258	1,258	NA	19,131	15,082	4,049	NA	NA	NA	NA	2,780	1,393	298	229	620	240	867	506	91	270
1987	27,951	4,594	3,366	1,228	1,228	NA	19,190	15,153	4,037	NA	NA	NA	NA	3,219	1,643	333	260	707	276	948	555	98	295
1988	29,528	4,346	3,362	984	984	NA	20,377	16,531	3,846	NA	NA	NA	NA	3,779	1,958	377	302	818	325	1,026	599	105	322
1989	32,277	4,613	3,566	1,047	1,047	NA	22,317	17,993	4,324	NA	NA	NA	NA	4,188	2,121	417	347	933	370	1,159	695	112	352
1990	34,897	4,808	3,652	1,156	1,156	NA	24,399	18,432	5,967	NA	NA	NA	NA	4,406	2,140	453	377	1,031	404	1,284	780	120	384
1991	38,631	5,539	4,093	1,446	1,446	NA	27,013	21,425	5,588	NA	NA	NA	NA	4,611	2,232	468	392	1,091	428	1,468	921	129	419
1992	37,936	5,866	4,337	1,529	1,529	NA	25,660	21,184	4,476	NA	NA	NA	NA	4,882	2,415	479	414	1,120	454	1,528	933	138	456
1993	37,283	6,338	4,838	1,500	1,500	NA	24,251	19,956	4,295	NA	NA	NA	NA	5,149	2,542	496	443	1,181	487	1,544	900	148	497
1994	36,618	6,581	4,985	1,596	1,596	NA	22,988	19,372	3,616	NA	NA	NA	NA	5,390	2,644	517	464	1,256	509	1,659	960	158	541
1995	40,936	6,666	4,952	1,714	1,714	NA	26,919	23,755	3,164	NA	NA	NA	NA	5,659	2,779	559	494	1,311	516	1,692	934	170	589
1996	43,170	6,495	4,872	1,623	1,623	NA	29,010	25,370	3,640	NA	NA	NA	NA	5,885	2,864	584	524	1,390	522	1,781	960	182	640
1997	46,516	6,675	4,997	1,679	1,679	NA	32,430	29,782	2,648	NA	NA	NA	NA	5,485	2,518	548	515	1,396	508	1,926	1,011	205	711
1998	46,247	6,871	5,146	1,725	1,725	NA	32,208	29,576	2,632	NA	NA	NA	NA	5,108	2,189	515	509	1,393	502	2,061	1,060	218	784
1999	51,853	7,181	5,530	1,651	1,651	NA	36,638	33,821	2,817	NA	NA	NA	NA	5,650	2,571	533	529	1,480	537	2,384	1,300	236	849
2000	56,503	7,856	6,105	1,750	1,750	NA	39,176	36,494	2,682	NA	NA	NA	NA	6,361	3,081	558	540	1,604	578	3,110	1,831	258	1,021
2001	63,956	9,522	7,052	2,469	2,379	NA	44,012	40,409	3,603	NA	NA	NA	NA	6,886	3,411	585	535	1,734	621	3,537	2,150	261	1,126
2002	50,521	10,506	7,487	3,019	2,905	NA	28,533	26,081	2,452	NA	NA	NA	NA	7,670	3,877	636	531	1,937	689	3,812	2,267	253	1,293
2003	61,059	10,933	7,672	3,262	3,152	NA	37,334	32,861	4,473	NA	NA	NA	NA	8,560	4,450	708	537	2,127	739	4,232	2,487	259	1,486
2004	69,132	10,589	7,455	3,135	3,057	NA	45,432	40,657	4,775	NA	NA	NA	NA	8,911	4,682	735	545	2,190	759	4,200	2,448	264	1,488
2005	69,653	10,886	7,557	3,329	3,241	NA	45,284	39,995	5,289	NA	NA	NA	NA	9,144	4,810	719	557	2,283	774	4,339	2,432	280	1,627
2006	76,622	11,075	7,435	3,640	3,531	255	51,173	45,033	6,140	NA	NA	NA	NA	9,522	5,080	712	573	2,368	789	4,596	2,592	300	1,705
2007	85,319	12,697	7,222	5,475	5,293	321	57,570	48,625	8,945	NA	NA	NA	NA	9,945	5,284	745	607	2,461	848	4,786	2,583	318	1,885
2008	76,639	13,356	7,316	6,040	5,843	407	46,864	35,382	5,397	71	2,815	3,094	105	10,962	5,840	815	675	2,682	951	5,050	2,600	331	2,119
2009	74,117	14,063	7,874	6,189	5,979	502	41,055	29,264	7,797	38	1,865	1,996	96	12,824	7,207	942	757	2,913	1,006	5,673	3,049	319	2,305
2010	79,017	13,203	8,016	5,187	5,025	572	44,906	34,912	4,705	32	2,256	2,819	182	14,518	8,645	1,002	763	3,074	1,034	5,818	3,041	321	2,456
2011	81,891	13,251	8,024	5,227	5,057	575	47,186	37,047	4,404	70	2,413	3,130	122	15,335	9,168	981	781	3,333	1,073	5,545	2,693	340	2,512
2012	86,822	14,328	8,587	5,741	5,566	550	50,755	38,891	4,137	45	3,336	4,209	137	15,640	9,053	994	861	3,602	1,132	5,549	2,629	349	2,571
2013	88,158	15,132	8,309	6,823	6,639	513	51,013	37,385	6,028	47	3,275	4,078	199	15,862	8,771	1,051	918	3,854	1,268	5,638	2,465	371	2,802
2014	91,771	15,727	8,775	6,952	6,765	471	53,415	38,281	6,445	35	3,331	5,074	250	16,167	8,594	1,075	979	4,127	1,392	5,991	2,574	392	3,025
2015	97,249	16,698	9,347	7,351	7,182	481	56,472	43,330	6,102	24	2,735	4,072	209	17,170	8,964	1,085	1,086	4,457	1,579	6,429	2,791	407	3,231

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2016	110,484	17,433	9,805	7,628	7,469	509	62,871	48,543	5,327	45	3,174	5,536	245	18,731	9,665	1,162	1,202	4,877	1,826	10,940	4,541	891	5,508
2017	114,069	18,170	10,124	8,046	7,868	510	64,040	47,727	5,386	33	3,852	6,849	193	19,811	10,146	1,223	1,270	5,230	1,943	11,538	4,520	926	6,093
2018	119,837	19,704	11,111	8,593	8,407	514	66,587	50,898	5,355	23	3,469	6,651	191	20,826	10,616	1,290	1,363	5,523	2,034	12,206	4,648	979	6,579
2019	132,021	20,523	11,264	9,258	9,075	524	76,176	57,549	5,246	42	4,907	8,223	209	21,793	11,144	1,341	1,449	5,763	2,097	13,006	4,895	1,049	7,062
2020 <sup>g</sup>	139,527	21,560	12,032	9,527	9,350	526	81,007	61,748	4,877	44	5,273	8,840	224	22,620	11,565	1,366	1,504	6,033	2,151	13,815	5,667	1,092	7,055
Constant 2012 \$millions																							
1953	8,928	2,732	2,403	329	329	NA	5,028	3,034	1,995	NA	NA	NA	NA	925	409	209	45	193	69	242	97	76	69
1954	9,457	2,663	2,261	401	401	NA	5,586	3,377	2,210	NA	NA	NA	NA	937	408	216	51	192	69	271	106	89	75
1955	10,133	2,827	2,247	580	580	NA	6,064	3,779	2,285	NA	NA	NA	NA	955	425	218	57	183	71	287	118	94	74
1956	12,584	3,334	2,522	812	812	NA	7,984	5,181	2,803	NA	NA	NA	NA	953	424	216	65	176	72	313	131	91	91
1957	15,243	3,755	2,814	941	941	NA	10,206	6,266	3,940	NA	NA	NA	NA	925	398	214	73	171	69	357	142	88	126
1958	17,040	4,150	3,187	963	963	NA	11,537	7,022	4,514	NA	NA	NA	NA	936	405	218	74	168	71	417	176	86	154
1959	17,909	4,603	3,512	1,090	1,090	NA	11,789	7,176	4,613	NA	NA	NA	NA	1,017	472	225	76	171	73	500	244	91	164
1960	18,424	4,901	3,693	1,208	1,208	NA	11,813	7,188	4,624	NA	NA	NA	NA	1,115	559	233	78	173	72	595	325	102	168
1961	18,573	5,397	3,973	1,424	1,424	NA	11,317	6,928	4,389	NA	NA	NA	NA	1,181	616	237	77	176	74	678	369	101	208
1962	21,727	5,626	4,163	1,463	1,463	NA	14,056	8,449	5,607	NA	NA	NA	NA	1,269	696	238	79	179	76	776	400	112	264
1963	22,446	6,293	4,699	1,594	1,594	NA	13,951	8,422	5,528	NA	NA	NA	NA	1,333	741	245	81	188	78	868	473	110	285
1964	24,036	7,206	5,415	1,791	1,791	NA	14,521	8,925	5,596	NA	NA	NA	NA	1,462	812	259	77	213	100	847	469	109	269
1965	24,574	7,231	5,582	1,649	1,649	NA	14,676	9,102	5,574	NA	NA	NA	NA	1,705	986	261	73	237	149	961	551	118	292
1966	25,430	7,117	5,531	1,585	1,585	NA	15,250	9,860	5,389	NA	NA	NA	NA	1,919	1,137	257	77	265	183	1,145	702	131	312
1967	25,750	7,447	5,675	1,771	1,771	NA	15,042	9,821	5,221	NA	NA	NA	NA	2,063	1,261	242	82	286	191	1,198	746	133	319
1968	26,170	7,364	5,662	1,702	1,702	NA	15,472	10,601	4,870	NA	NA	NA	NA	2,063	1,271	234	82	280	196	1,271	813	143	316
1969	26,489	7,599	5,970	1,629	1,629	NA	15,502	11,034	4,468	NA	NA	NA	NA	2,025	1,246	234	78	262	206	1,362	886	155	321
1970	26,537	7,704	6,154	1,550	1,550	NA	15,362	10,970	4,392	NA	NA	NA	NA	2,078	1,289	236	81	257	215	1,393	918	152	323
1971	25,609	7,316	5,949	1,368	1,368	NA	14,699	10,717	3,982	NA	NA	NA	NA	2,191	1,343	266	81	294	206	1,403	929	149	325
1972	25,870	7,542	6,035	1,507	1,507	NA	14,339	10,783	3,556	NA	NA	NA	NA	2,603	1,643	312	86	344	217	1,387	907	147	332
1973	26,554	7,427	6,094	1,333	1,333	NA	14,822	11,299	3,523	NA	NA	NA	NA	2,891	1,793	350	104	398	245	1,414	940	144	331
1974	26,884	7,273	6,048	1,225	1,225	NA	15,258	11,945	3,313	NA	NA	NA	NA	2,905	1,744	352	115	432	262	1,449	974	142	333
1975	27,107	7,689	6,405	1,285	1,285	NA	14,845	11,525	3,320	NA	NA	NA	NA	3,129	1,841	380	129	471	308	1,444	970	139	335
1976	28,505	8,019	6,568	1,451	1,451	NA	15,703	12,423	3,280	NA	NA	NA	NA	3,309	1,891	404	141	526	346	1,474	984	142	348
1977	28,888	7,835	6,220	1,614	1,614	NA	16,217	12,889	3,328	NA	NA	NA	NA	3,365	1,870	402	152	580	360	1,472	969	144	359
1978	29,900	7,928	6,261	1,666	1,666	NA	16,941	13,603	3,338	NA	NA	NA	NA	3,482	1,888	422	169	647	356	1,549	1,037	144	367

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1979	31,202	7,916	6,229	1,687	1,687	NA	17,991	14,625	3,366	NA	NA	NA	NA	3,656	2,044	417	184	679	333	1,639	1,124	143	372
1980	32,478	7,794	6,023	1,772	1,772	NA	19,339	15,495	3,844	NA	NA	NA	NA	3,838	2,158	411	209	729	332	1,507	993	141	373
1981	35,289	7,607	5,903	1,703	1,703	NA	22,478	18,065	4,413	NA	NA	NA	NA	3,849	2,059	431	233	784	343	1,357	845	138	373
1982	37,080	7,514	5,702	1,812	1,812	NA	24,335	19,057	5,278	NA	NA	NA	NA	3,897	2,049	422	246	818	362	1,334	810	140	385
1983	39,756	7,748	5,859	1,890	1,890	NA	26,467	20,147	6,321	NA	NA	NA	NA	4,144	2,198	421	277	868	380	1,397	848	144	405
1984	42,442	7,820	5,597	2,223	2,223	NA	28,769	21,817	6,951	NA	NA	NA	NA	4,408	2,318	443	317	929	401	1,445	868	149	428
1985	46,546	8,112	5,745	2,367	2,367	NA	32,297	23,654	8,644	NA	NA	NA	NA	4,631	2,376	479	362	1,003	411	1,506	897	155	453
1986	48,931	8,015	5,755	2,260	2,260	NA	34,365	27,092	7,273	NA	NA	NA	NA	4,993	2,502	535	411	1,114	431	1,557	908	163	486
1987	48,997	8,053	5,900	2,153	2,153	NA	33,639	26,563	7,077	NA	NA	NA	NA	5,643	2,880	584	456	1,240	483	1,662	973	171	518
1988	49,998	7,358	5,693	1,665	1,665	NA	34,503	27,991	6,512	NA	NA	NA	NA	6,400	3,316	638	511	1,385	550	1,737	1,014	177	546
1989	52,590	7,516	5,811	1,705	1,705	NA	36,362	29,317	7,045	NA	NA	NA	NA	6,824	3,456	679	565	1,520	603	1,888	1,132	183	573
1990	54,808	7,552	5,736	1,816	1,816	NA	38,320	28,949	9,372	NA	NA	NA	NA	6,920	3,362	711	592	1,619	635	2,016	1,224	189	603
1991	58,689	8,415	6,219	2,196	2,196	NA	41,038	32,549	8,489	NA	NA	NA	NA	7,004	3,390	711	595	1,657	651	2,231	1,399	196	636
1992	56,347	8,712	6,442	2,271	2,271	NA	38,114	31,466	6,648	NA	NA	NA	NA	7,252	3,587	711	615	1,664	675	2,269	1,387	205	678
1993	54,095	9,196	7,020	2,176	2,176	NA	35,187	28,955	6,232	NA	NA	NA	NA	7,471	3,688	719	643	1,714	707	2,241	1,305	215	721
1994	52,020	9,349	7,082	2,267	2,267	NA	32,657	27,520	5,137	NA	NA	NA	NA	7,657	3,756	735	660	1,784	722	2,357	1,363	225	769
1995	56,961	9,276	6,891	2,385	2,385	NA	37,457	33,054	4,403	NA	NA	NA	NA	7,874	3,867	777	687	1,825	718	2,354	1,299	236	819
1996	58,989	8,874	6,657	2,217	2,217	NA	39,640	34,667	4,974	NA	NA	NA	NA	8,041	3,913	798	716	1,900	714	2,434	1,311	248	875
1997	62,483	8,967	6,712	2,255	2,255	NA	43,562	40,005	3,557	NA	NA	NA	NA	7,367	3,382	737	691	1,875	683	2,588	1,358	275	954
1998	61,431	9,126	6,835	2,291	2,291	NA	42,783	39,286	3,496	NA	NA	NA	NA	6,785	2,908	684	676	1,850	667	2,738	1,408	289	1,041
1999	67,897	9,402	7,241	2,161	2,161	NA	47,974	44,285	3,689	NA	NA	NA	NA	7,399	3,367	698	693	1,938	703	3,122	1,702	309	1,111
2000	72,415	10,068	7,825	2,243	2,243	NA	50,209	46,772	3,437	NA	NA	NA	NA	8,153	3,949	715	692	2,055	740	3,986	2,347	331	1,308
2001	80,163	11,934	8,839	3,095	2,982	NA	55,165	50,649	4,516	NA	NA	NA	NA	8,631	4,276	733	671	2,173	778	4,433	2,695	327	1,411
2002	62,352	12,967	9,241	3,726	3,585	NA	35,215	32,188	3,026	NA	NA	NA	NA	9,465	4,784	785	655	2,390	851	4,705	2,797	312	1,596
2003	73,898	13,232	9,285	3,948	3,815	NA	45,184	39,771	5,414	NA	NA	NA	NA	10,360	5,386	856	649	2,574	894	5,121	3,010	313	1,799
2004	81,482	12,481	8,786	3,695	3,603	NA	53,548	47,920	5,628	NA	NA	NA	NA	10,502	5,519	866	642	2,582	894	4,950	2,885	311	1,753
2005	79,600	12,441	8,637	3,804	3,703	NA	51,751	45,707	6,044	NA	NA	NA	NA	10,450	5,497	822	636	2,609	885	4,959	2,779	321	1,859
2006	84,942	12,277	8,242	4,035	3,914	283	56,730	49,923	6,807	NA	NA	NA	NA	10,557	5,632	789	635	2,625	875	5,095	2,873	332	1,890
2007	92,096	13,706	7,795	5,910	5,714	347	62,143	52,487	9,656	NA	NA	NA	NA	10,735	5,704	804	655	2,656	915	5,166	2,788	344	2,035
2008	81,169	14,145	7,749	6,397	6,188	431	49,634	37,474	5,716	75	2,982	3,277	111	11,610	6,185	863	715	2,840	1,007	5,349	2,754	350	2,245
2009	77,999	14,800	8,286	6,514	6,292	528	43,205	30,796	8,205	40	1,962	2,100	101	13,496	7,584	991	796	3,065	1,059	5,970	3,209	335	2,426
2010	82,167	13,730	8,336	5,394	5,225	595	46,696	36,304	4,893	33	2,346	2,932	189	15,096	8,990	1,041	793	3,197	1,075	6,050	3,162	334	2,554

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2011	83,423	13,499	8,174	5,325	5,152	585	48,069	37,740	4,486	71	2,458	3,189	124	15,621	9,339	999	795	3,395	1,093	5,649	2,744	346	2,559
2012	86,822	14,328	8,587	5,741	5,566	550	50,755	38,891	4,137	45	3,336	4,209	137	15,640	9,053	994	861	3,602	1,132	5,549	2,629	349	2,571
2013	86,640	14,871	8,166	6,706	6,524	504	50,135	36,742	5,924	46	3,219	4,008	196	15,588	8,620	1,033	902	3,788	1,246	5,541	2,423	365	2,754
2014	88,537	15,173	8,466	6,707	6,527	454	51,532	36,931	6,218	34	3,213	4,895	241	15,597	8,291	1,037	944	3,982	1,343	5,780	2,483	378	2,919
2015	92,892	15,950	8,928	7,021	6,860	459	53,942	41,389	5,829	23	2,613	3,890	200	16,401	8,562	1,036	1,037	4,257	1,508	6,141	2,666	389	3,086
2016	104,487	16,487	9,273	7,214	7,063	481	59,458	45,908	5,038	43	3,002	5,235	232	17,714	9,140	1,098	1,137	4,612	1,727	10,346	4,295	842	5,209
2017	105,868	16,863	9,396	7,468	7,303	474	59,436	44,296	4,998	30	3,575	6,356	179	18,386	9,416	1,135	1,178	4,854	1,803	10,709	4,195	859	5,655
2018	108,626	17,861	10,072	7,789	7,621	466	60,358	46,136	4,854	21	3,145	6,029	173	18,877	9,622	1,169	1,235	5,006	1,844	11,064	4,213	887	5,964
2019	117,567	18,276	10,031	8,245	8,081	466	67,836	51,248	4,672	37	4,370	7,323	186	19,407	9,923	1,194	1,290	5,132	1,867	11,582	4,359	934	6,289
2020 <sup>g</sup>	122,772	18,971	10,588	8,383	8,227	463	71,279	54,333	4,292	39	4,640	7,778	197	19,904	10,177	1,202	1,324	5,308	1,893	12,156	4,987	961	6,208

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> See [table 2](#), footnote a.<sup>b</sup> Type-of-R&D data for FFRDC R&D in 1953–63 reflect the R&D performance of only university-administered FFRDCs. In 1953–63, the R&D performance and funding of industry-administered FFRDCs were not separately reported but are included instead in the business R&D data for these years. Similarly, in 1953–63, the R&D performance and funding for nonprofit-administered FFRDCs were not separately reported but are included instead in the NPO R&D data for these years. The data for 1964–80 reflect the R&D performance of only university-administered FFRDCs and industry-administered FFRDCs; the R&D performance for nonprofit-administered FFRDCs is included in the NPO R&D data for these years. Starting in 2001, type-of-R&D data provide detail on federal and nonfederal sources of funding for FFRDC R&D. (See also [table 2](#), footnote b.)<sup>c</sup> Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)<sup>d</sup> Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and later years, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.)<sup>e</sup> The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. The pass-through adjusted data on higher education R&D, applied 1998 and forward, reflect institution-specific detail on the type-of-R&D performed. Type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.)<sup>f</sup> Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for the R&D that is federally funded. (See also [table 2](#), footnote f.)<sup>g</sup> The data for 2020 include estimates and are likely to be revised later.**Note(s):**

Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. For federal performers in 1977 and afterward, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. Prior to 1977, the federal fiscal year began on 1 July, not 1 October, and the approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. The fiscal year for higher education performers and state government performers generally begins 1 July, and the calendar year approximation is 50% of the amount reported in the same fiscal year plus 50% of amount reported in the subsequent fiscal year.

**Source(s):**  
National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
Current \$millions																							
1953	3,412	614	567	48	48	NA	2,753	1,630	1,123	NA	NA	NA	NA	16	9	3	1	3	1	29	17	6	6
1954	3,734	599	537	62	62	NA	3,090	1,685	1,405	NA	NA	NA	NA	17	9	3	1	3	1	29	15	7	7
1955	4,113	713	543	171	171	NA	3,352	1,738	1,614	NA	NA	NA	NA	21	12	4	2	3	1	27	12	8	7
1956	5,854	978	631	348	348	NA	4,826	2,267	2,559	NA	NA	NA	NA	25	14	4	2	4	2	26	11	8	7
1957	6,681	1,157	728	429	429	NA	5,474	2,174	3,300	NA	NA	NA	NA	26	12	5	3	4	2	25	9	8	8
1958	7,213	1,227	842	386	386	NA	5,932	2,241	3,691	NA	NA	NA	NA	28	13	6	3	4	2	26	9	8	9
1959	8,463	1,417	940	477	477	NA	6,983	2,557	4,426	NA	NA	NA	NA	31	16	6	3	5	2	33	14	9	10
1960	9,360	1,562	1,003	559	559	NA	7,734	2,935	4,799	NA	NA	NA	NA	35	19	6	3	5	2	30	10	10	10
1961	9,930	1,760	1,090	670	670	NA	8,106	3,189	4,917	NA	NA	NA	NA	37	22	7	2	5	2	28	4	10	14
1962	10,114	1,845	1,227	618	618	NA	8,196	3,246	4,950	NA	NA	NA	NA	40	23	8	2	6	2	34	5	11	18
1963	11,539	2,133	1,465	668	668	NA	9,330	3,535	5,795	NA	NA	NA	NA	40	22	8	2	6	2	37	6	11	20
1964	12,506	2,419	1,680	739	739	NA	10,004	3,848	6,156	NA	NA	NA	NA	49	30	8	2	7	3	35	6	11	18
1965	13,215	2,463	1,789	674	674	NA	10,637	4,419	6,218	NA	NA	NA	NA	71	48	9	2	8	4	45	13	12	20
1966	14,490	2,540	1,886	654	654	NA	11,810	4,961	6,849	NA	NA	NA	NA	87	61	9	2	10	5	53	16	14	23
1967	15,332	2,649	1,943	706	706	NA	12,539	5,744	6,795	NA	NA	NA	NA	93	66	9	3	10	7	51	12	15	24
1968	16,154	2,628	1,904	724	724	NA	13,370	6,326	7,044	NA	NA	NA	NA	102	72	8	4	9	9	55	13	16	26
1969	17,051	2,807	2,016	792	792	NA	14,071	7,127	6,944	NA	NA	NA	NA	110	80	7	5	8	10	63	17	18	28
1970	16,925	3,047	2,258	790	790	NA	13,698	7,466	6,232	NA	NA	NA	NA	112	84	6	5	7	10	68	20	18	30
1971	17,399	3,313	2,473	841	841	NA	13,924	7,757	6,167	NA	NA	NA	NA	98	69	8	4	9	9	64	12	19	33
1972	18,743	3,502	2,639	863	863	NA	15,043	8,510	6,533	NA	NA	NA	NA	101	63	12	4	14	9	98	44	19	35
1973	20,197	3,517	2,657	860	860	NA	16,394	9,773	6,621	NA	NA	NA	NA	126	71	18	5	20	13	160	102	20	38
1974	21,504	3,748	2,765	983	983	NA	17,421	10,868	6,553	NA	NA	NA	NA	141	75	20	7	25	15	195	131	22	42
1975	22,706	3,993	2,890	1,103	1,103	NA	18,352	11,569	6,783	NA	NA	NA	NA	156	83	22	8	27	16	205	135	23	47
1976	25,085	4,286	2,972	1,315	1,315	NA	20,412	12,890	7,522	NA	NA	NA	NA	182	100	24	12	31	16	205	128	25	52
1977	27,667	4,606	3,188	1,418	1,418	NA	22,603	14,328	8,275	NA	NA	NA	NA	254	153	28	15	40	19	204	119	27	58
1978	31,056	5,261	3,676	1,584	1,584	NA	25,216	16,460	8,756	NA	NA	NA	NA	373	254	32	15	49	24	207	113	30	64
1979	35,445	5,697	3,944	1,753	1,753	NA	29,033	19,145	9,888	NA	NA	NA	NA	469	336	34	16	56	28	246	143	32	71
1980	40,748	6,081	4,072	2,009	2,009	NA	33,848	22,891	10,957	NA	NA	NA	NA	518	362	38	19	68	31	301	187	35	79
1981	46,305	6,705	4,530	2,175	2,175	NA	38,547	25,756	12,791	NA	NA	NA	NA	568	386	44	24	80	35	485	360	37	88
1982	51,879	7,348	5,178	2,170	2,170	NA	43,434	29,219	14,215	NA	NA	NA	NA	597	397	46	27	88	39	500	362	40	98
1983	57,771	8,491	6,106	2,385	2,385	NA	48,064	32,542	15,522	NA	NA	NA	NA	617	399	47	31	97	43	599	447	44	109



TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1984	66,461	9,651	7,078	2,572	2,572	NA	55,371	37,731	17,640	NA	NA	NA	NA	677	435	51	37	108	47	762	594	47	120
1985	74,522	10,916	8,011	2,906	2,906	NA	62,020	41,762	20,258	NA	NA	NA	NA	756	486	57	43	120	49	829	644	51	134
1986	75,855	11,376	8,275	3,101	3,101	NA	62,871	41,354	21,517	NA	NA	NA	NA	818	513	65	50	136	53	790	587	55	149
1987	79,929	11,496	8,176	3,321	3,321	NA	66,789	42,667	24,122	NA	NA	NA	NA	945	599	73	57	155	61	698	474	60	165
1988	84,567	12,460	8,864	3,596	3,596	NA	70,353	46,634	23,719	NA	NA	NA	NA	1,098	698	83	66	180	71	655	407	65	183
1989	87,723	12,991	9,355	3,635	3,635	NA	72,725	51,676	21,049	NA	NA	NA	NA	1,227	773	91	76	205	81	780	507	70	203
1990	94,067	13,363	9,700	3,663	3,663	NA	78,376	59,410	18,966	NA	NA	NA	NA	1,407	910	99	83	226	89	920	619	75	226
1991	95,105	12,230	8,778	3,452	3,452	NA	80,286	63,030	17,256	NA	NA	NA	NA	1,534	1,012	103	86	239	94	1,054	722	82	251
1992	99,811	12,521	9,098	3,423	3,423	NA	84,569	67,388	17,181	NA	NA	NA	NA	1,596	1,055	105	91	246	100	1,125	758	88	279
1993	99,705	12,058	9,071	2,986	2,986	NA	84,757	68,674	16,083	NA	NA	NA	NA	1,700	1,127	109	97	259	107	1,191	787	95	309
1994	102,938	11,970	8,823	3,147	3,147	NA	87,890	71,681	16,209	NA	NA	NA	NA	1,816	1,213	114	102	276	112	1,261	815	103	343
1995	113,079	12,689	9,262	3,427	3,427	NA	97,342	79,518	17,824	NA	NA	NA	NA	1,812	1,180	123	108	288	113	1,236	744	111	381
1996	121,377	12,481	9,033	3,448	3,448	NA	105,863	88,797	17,066	NA	NA	NA	NA	1,791	1,128	128	115	305	115	1,241	698	120	423
1997	128,661	12,407	9,077	3,331	3,331	NA	113,184	95,063	18,121	NA	NA	NA	NA	1,693	1,041	120	113	306	112	1,378	687	155	536
1998	144,669	12,528	9,214	3,314	3,314	NA	129,041	110,589	18,452	NA	NA	NA	NA	1,584	943	113	112	306	110	1,516	760	164	592
1999	154,315	12,600	9,265	3,335	3,335	NA	138,807	122,236	16,571	NA	NA	NA	NA	1,362	686	117	116	325	118	1,546	727	178	641
2000	169,414	12,859	9,377	3,482	3,482	NA	153,745	140,235	13,510	NA	NA	NA	NA	1,265	545	123	119	352	127	1,545	580	195	771
2001	167,740	14,459	11,062	3,397	3,273	NA	149,952	137,410	12,542	NA	NA	NA	NA	1,409	646	128	117	381	136	1,921	874	197	850
2002	176,601	15,238	11,800	3,438	3,308	NA	157,788	144,727	13,061	NA	NA	NA	NA	1,472	639	140	116	425	151	2,104	937	191	976
2003	175,483	16,563	12,646	3,917	3,785	NA	155,060	143,121	11,939	NA	NA	NA	NA	1,799	897	155	118	467	162	2,060	743	195	1,122
2004	177,220	17,424	12,746	4,677	4,561	NA	155,034	140,615	14,419	NA	NA	NA	NA	2,140	1,211	161	120	481	167	2,623	1,300	199	1,123
2005	195,731	18,775	13,994	4,781	4,654	NA	172,208	156,696	15,512	NA	NA	NA	NA	2,098	1,146	158	122	501	170	2,651	1,211	212	1,228
2006	212,719	20,582	16,089	4,493	4,358	7	188,112	171,392	16,720	NA	NA	NA	NA	1,902	927	156	126	520	173	2,116	603	226	1,287
2007	227,968	23,381	18,016	5,365	5,254	9	200,429	185,569	14,860	NA	NA	NA	NA	1,917	894	163	133	540	186	2,231	568	240	1,423
2008	259,596	23,760	17,566	6,194	6,094	11	231,447	180,724	29,488	223	8,882	11,799	330	1,965	841	179	148	589	209	2,412	562	250	1,600
2009	255,931	23,497	17,245	6,252	6,159	14	226,554	179,841	30,435	144	7,041	8,732	361	3,336	1,526	282	280	887	361	2,531	550	241	1,740
2010	251,195	25,847	18,844	7,004	6,909	16	217,700	170,036	28,089	114	8,035	10,779	647	4,898	2,419	396	407	1,178	498	2,734	638	242	1,854
2011	270,772	28,751	21,879	6,872	6,786	16	233,886	187,794	26,228	230	7,966	11,264	403	5,176	2,575	391	415	1,274	521	2,943	790	256	1,897
2012	273,051	26,666	19,941	6,725	6,631	15	238,202	192,828	25,840	102	7,578	11,543	310	5,445	2,603	367	444	1,454	579	2,723	518	263	1,941
2013	286,976	26,436	19,767	6,668	6,572	14	252,007	207,537	22,137	126	8,729	12,947	532	5,650	2,568	385	482	1,597	620	2,869	474	280	2,115
2014	301,428	27,084	20,303	6,781	6,681	13	265,377	223,186	18,065	87	8,312	15,103	624	5,903	2,540	399	536	1,733	696	3,051	471	296	2,284
2015	312,977	26,132	18,961	7,171	7,062	14	277,557	230,629	18,850	90	10,295	16,907	786	6,106	2,517	401	554	1,857	778	3,168	422	307	2,439

TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>				NPOs <sup>f</sup>					
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2016	325,528	23,439	15,838	7,601	7,479	18	291,605	243,056	16,790	129	9,940	20,930	760	6,382	2,573	420	561	1,962	866	4,084	1,314	386	2,384
2017	351,248	23,995	15,848	8,147	8,021	22	316,136	258,151	17,736	92	11,792	27,805	560	6,749	2,665	448	607	2,096	934	4,347	1,308	401	2,638
2018	388,957	27,556	18,856	8,701	8,567	23	349,771	285,863	17,301	85	13,745	32,029	748	6,990	2,782	486	624	2,185	914	4,617	1,345	424	2,848
2019	431,981	30,347	21,253	9,094	8,962	31	389,418	323,854	15,058	112	14,704	35,073	617	7,257	3,055	492	631	2,202	877	4,928	1,417	454	3,057
2020 <sup>g</sup>	460,545	31,527	22,064	9,463	9,331	40	416,253	348,007	13,945	119	15,810	37,710	662	7,558	3,303	482	654	2,239	881	5,167	1,640	473	3,054
Constant 2012 \$millions																							
1953	23,628	4,253	3,924	329	329	NA	19,067	11,289	7,778	NA	NA	NA	NA	111	59	20	7	18	7	197	114	42	42
1954	25,626	4,108	3,685	422	422	NA	21,207	11,564	9,643	NA	NA	NA	NA	117	58	24	7	21	7	196	100	48	48
1955	27,756	4,811	3,661	1,151	1,151	NA	22,621	11,728	10,893	NA	NA	NA	NA	142	78	26	10	22	7	182	81	54	47
1956	38,200	6,382	4,114	2,267	2,267	NA	31,489	14,793	16,696	NA	NA	NA	NA	163	88	29	13	23	10	166	69	52	46
1957	42,204	7,305	4,595	2,710	2,710	NA	34,580	13,732	20,847	NA	NA	NA	NA	164	76	33	16	27	13	155	54	51	51
1958	44,549	7,578	5,197	2,381	2,381	NA	36,640	13,841	22,799	NA	NA	NA	NA	170	77	35	19	27	12	161	56	49	56
1959	51,555	8,629	5,726	2,903	2,903	NA	42,539	15,577	26,962	NA	NA	NA	NA	189	94	36	18	28	12	198	82	55	61
1960	56,257	9,385	6,025	3,360	3,360	NA	46,484	17,640	28,844	NA	NA	NA	NA	207	114	38	15	28	12	180	60	60	60
1961	59,056	10,464	6,479	3,985	3,985	NA	48,205	18,966	29,240	NA	NA	NA	NA	223	128	41	12	30	12	164	21	59	83
1962	59,428	10,841	7,210	3,631	3,631	NA	48,156	19,073	29,083	NA	NA	NA	NA	235	132	45	12	34	12	197	26	65	106
1963	67,026	12,389	8,509	3,880	3,880	NA	54,192	20,533	33,660	NA	NA	NA	NA	232	128	46	12	35	12	212	32	64	116
1964	71,552	13,840	9,612	4,228	4,228	NA	57,237	22,016	35,221	NA	NA	NA	NA	277	169	45	11	37	14	197	31	63	103
1965	74,252	13,836	10,049	3,787	3,787	NA	59,767	24,829	34,937	NA	NA	NA	NA	396	270	49	11	44	22	253	73	67	112
1966	79,197	13,880	10,309	3,572	3,572	NA	64,551	27,116	37,435	NA	NA	NA	NA	476	333	51	11	53	27	290	87	77	126
1967	81,432	14,067	10,320	3,747	3,747	NA	66,600	30,509	36,091	NA	NA	NA	NA	494	348	45	13	53	35	271	64	80	127
1968	82,292	13,386	9,700	3,686	3,686	NA	68,112	32,227	35,885	NA	NA	NA	NA	517	364	39	20	47	46	278	64	82	132
1969	82,809	13,634	9,790	3,844	3,844	NA	68,338	34,613	33,724	NA	NA	NA	NA	532	386	34	24	39	49	306	83	87	136
1970	78,077	14,058	10,416	3,642	3,642	NA	63,191	34,442	28,749	NA	NA	NA	NA	517	385	30	23	32	46	311	90	83	138
1971	76,386	14,546	10,855	3,690	3,690	NA	61,131	34,056	27,075	NA	NA	NA	NA	430	303	34	18	38	37	279	50	83	145
1972	78,884	14,738	11,108	3,630	3,630	NA	63,311	35,816	27,495	NA	NA	NA	NA	425	263	52	15	57	38	410	183	80	147
1973	80,583	14,033	10,602	3,431	3,431	NA	65,410	38,993	26,417	NA	NA	NA	NA	501	281	70	20	80	50	638	407	80	152
1974	78,721	13,720	10,123	3,597	3,597	NA	63,773	39,784	23,989	NA	NA	NA	NA	514	273	73	24	90	55	713	480	79	155
1975	76,069	13,377	9,682	3,695	3,695	NA	61,483	38,759	22,725	NA	NA	NA	NA	523	276	74	27	92	54	686	451	78	157
1976	79,658	13,611	9,437	4,174	4,174	NA	64,819	40,932	23,886	NA	NA	NA	NA	578	316	76	37	99	51	651	405	80	165
1977	82,719	13,771	9,531	4,240	4,240	NA	67,578	42,837	24,740	NA	NA	NA	NA	759	457	83	43	120	55	610	356	82	173
1978	86,747	14,694	10,269	4,426	4,426	NA	70,435	45,977	24,458	NA	NA	NA	NA	1,041	709	89	41	137	66	577	315	83	179

TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1979	91,425	14,693	10,172	4,521	4,521	NA	74,885	49,381	25,504	NA	NA	NA	NA	1,211	868	88	40	144	71	635	369	83	184
1980	96,393	14,386	9,634	4,752	4,752	NA	80,070	54,151	25,920	NA	NA	NA	NA	1,225	856	90	46	160	73	711	442	82	187
1981	100,071	14,491	9,791	4,701	4,701	NA	83,305	55,662	27,643	NA	NA	NA	NA	1,227	834	95	51	172	75	1,048	777	81	190
1982	105,592	14,956	10,539	4,417	4,417	NA	88,403	59,471	28,932	NA	NA	NA	NA	1,215	809	93	54	180	79	1,018	737	82	199
1983	113,153	16,630	11,959	4,671	4,671	NA	94,140	63,738	30,402	NA	NA	NA	NA	1,209	782	92	61	191	83	1,174	876	86	213
1984	125,640	18,244	13,381	4,863	4,863	NA	104,675	71,328	33,347	NA	NA	NA	NA	1,281	822	97	70	204	88	1,441	1,124	89	228
1985	136,559	20,004	14,679	5,325	5,325	NA	113,650	76,528	37,122	NA	NA	NA	NA	1,386	891	105	80	220	90	1,519	1,180	94	245
1986	136,260	20,435	14,864	5,571	5,571	NA	112,936	74,285	38,651	NA	NA	NA	NA	1,469	922	117	90	245	95	1,420	1,054	99	267
1987	140,112	20,153	14,331	5,821	5,821	NA	117,079	74,794	42,285	NA	NA	NA	NA	1,656	1,049	128	100	272	106	1,224	830	105	289
1988	143,192	21,098	15,009	6,089	6,089	NA	119,125	78,963	40,162	NA	NA	NA	NA	1,859	1,182	140	112	304	121	1,109	690	109	310
1989	142,931	21,166	15,243	5,923	5,923	NA	118,494	84,198	34,296	NA	NA	NA	NA	1,999	1,260	149	124	334	132	1,271	826	114	332
1990	147,740	20,988	15,235	5,753	5,753	NA	123,095	93,308	29,788	NA	NA	NA	NA	2,210	1,429	156	130	355	139	1,446	972	118	355
1991	144,483	18,580	13,335	5,245	5,245	NA	121,971	95,755	26,215	NA	NA	NA	NA	2,330	1,537	156	131	364	143	1,602	1,097	124	381
1992	148,253	18,598	13,513	5,084	5,084	NA	125,614	100,094	25,520	NA	NA	NA	NA	2,371	1,567	156	135	365	148	1,671	1,126	131	414
1993	144,668	17,495	13,162	4,333	4,333	NA	122,978	99,643	23,336	NA	NA	NA	NA	2,466	1,636	158	141	376	155	1,728	1,141	138	449
1994	146,236	17,005	12,535	4,471	4,471	NA	124,859	101,832	23,027	NA	NA	NA	NA	2,580	1,724	161	145	392	159	1,792	1,158	146	488
1995	157,344	17,656	12,888	4,769	4,769	NA	135,447	110,646	24,801	NA	NA	NA	NA	2,521	1,641	171	151	401	158	1,720	1,035	155	531
1996	165,854	17,055	12,343	4,712	4,712	NA	144,655	121,336	23,320	NA	NA	NA	NA	2,448	1,542	175	157	417	157	1,696	953	164	579
1997	172,825	16,666	12,192	4,474	4,474	NA	152,035	127,694	24,341	NA	NA	NA	NA	2,274	1,399	162	152	411	150	1,851	922	208	721
1998	192,167	16,642	12,239	4,402	4,402	NA	171,408	146,898	24,510	NA	NA	NA	NA	2,104	1,253	150	148	406	146	2,014	1,010	218	786
1999	202,061	16,498	12,132	4,367	4,367	NA	181,755	160,057	21,698	NA	NA	NA	NA	1,784	899	153	152	425	154	2,024	952	233	839
2000	217,126	16,480	12,017	4,463	4,463	NA	197,044	179,730	17,315	NA	NA	NA	NA	1,621	698	157	152	451	162	1,980	743	250	988
2001	210,246	18,123	13,865	4,258	4,102	NA	187,950	172,230	15,720	NA	NA	NA	NA	1,766	810	161	147	477	171	2,408	1,095	247	1,066
2002	217,957	18,806	14,563	4,243	4,083	NA	194,738	178,618	16,120	NA	NA	NA	NA	1,816	789	172	144	525	187	2,596	1,156	236	1,205
2003	212,382	20,045	15,305	4,740	4,581	NA	187,665	173,216	14,449	NA	NA	NA	NA	2,178	1,086	188	143	565	196	2,494	900	236	1,358
2004	208,879	20,536	15,023	5,513	5,376	NA	182,730	165,735	16,995	NA	NA	NA	NA	2,522	1,428	190	141	567	196	3,091	1,533	235	1,324
2005	223,683	21,456	15,993	5,464	5,318	NA	196,801	179,073	17,727	NA	NA	NA	NA	2,397	1,310	180	140	573	194	3,029	1,384	242	1,404
2006	235,819	22,817	17,837	4,981	4,831	8	208,540	190,004	18,536	NA	NA	NA	NA	2,108	1,027	173	139	576	192	2,346	668	251	1,427
2007	246,076	25,239	19,447	5,791	5,671	10	216,349	200,309	16,040	NA	NA	NA	NA	2,070	965	176	144	583	201	2,408	613	260	1,536
2008	274,942	25,165	18,605	6,560	6,455	12	245,129	191,407	31,231	236	9,407	12,497	350	2,082	891	189	157	623	221	2,554	596	264	1,695
2009	269,334	24,727	18,148	6,579	6,482	15	238,418	189,259	32,029	151	7,409	9,190	380	3,510	1,606	296	295	933	380	2,663	578	253	1,832
2010	261,210	26,878	19,595	7,283	7,184	17	226,380	176,815	29,209	118	8,356	11,209	673	5,093	2,515	412	423	1,225	518	2,843	663	252	1,928

TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs <sup>b</sup>		Nonfederal government <sup>c</sup>	Business <sup>d</sup>							Higher education <sup>e</sup>					NPOs <sup>f</sup>				
	All funding sources	Total	Federal	Total	Federal	Total	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2011	275,837	29,289	22,288	7,000	6,913	16	238,261	191,307	26,719	234	8,115	11,475	411	5,272	2,623	398	423	1,297	531	2,998	805	261	1,932
2012	273,051	26,666	19,941	6,725	6,631	15	238,202	192,828	25,840	102	7,578	11,543	310	5,445	2,603	367	444	1,454	579	2,723	518	263	1,941
2013	282,037	25,981	19,427	6,554	6,459	14	247,670	203,964	21,756	124	8,579	12,724	522	5,553	2,523	378	473	1,569	609	2,820	466	275	2,079
2014	290,804	26,129	19,587	6,542	6,445	13	256,023	215,320	17,428	84	8,019	14,570	602	5,694	2,450	384	517	1,672	671	2,944	455	286	2,203
2015	298,954	24,961	18,112	6,850	6,746	13	265,121	220,296	18,005	86	9,833	16,150	751	5,832	2,404	383	529	1,774	743	3,026	403	293	2,330
2016	307,858	22,166	14,978	7,188	7,073	17	275,776	229,863	15,878	122	9,401	19,794	719	6,036	2,433	397	531	1,855	819	3,863	1,243	365	2,255
2017	325,995	22,270	14,709	7,561	7,445	20	293,407	239,591	16,461	86	10,944	25,806	520	6,263	2,473	415	563	1,945	866	4,034	1,214	372	2,448
2018	352,568	24,978	17,092	7,887	7,765	21	317,048	259,119	15,682	77	12,459	29,033	678	6,336	2,521	440	566	1,981	828	4,185	1,219	384	2,582
2019	384,687	27,025	18,926	8,098	7,980	28	346,784	288,398	13,410	99	13,094	31,233	549	6,462	2,721	438	562	1,961	781	4,389	1,262	404	2,722
2020 <sup>g</sup>	405,241	27,741	19,415	8,326	8,211	35	366,268	306,217	12,270	105	13,911	33,182	583	6,651	2,906	424	576	1,970	775	4,547	1,443	416	2,688

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> See [table 2](#), footnote a.<sup>b</sup> Type-of-R&D data for FFRDC R&D in 1953–63 reflect the R&D performance of only university-administered FFRDCs. In 1953–63, the R&D performance and funding of industry-administered FFRDCs were not separately reported but are included instead in the business R&D data for these years. Similarly, in 1953–63, the R&D performance and funding for nonprofit-administered FFRDCs were not separately reported but are included instead in the NPO R&D data for these years. The data for 1964–80 reflect the R&D performance of only university-administered FFRDCs and industry-administered FFRDCs; the R&D performance for nonprofit-administered FFRDCs is included in the NPO R&D data for these years. Starting in 2001, type-of-R&D data provide detail on federal and nonfederal sources of funding for FFRDC R&D. (See also [table 2](#), footnote b.)<sup>c</sup> Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)<sup>d</sup> Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and later years, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.)<sup>e</sup> The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. The pass-through adjusted data on higher education R&D, applied 1998 and forward, reflect institution-specific detail on the type-of-R&D performed. Type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.)<sup>f</sup> Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for the R&D that is federally funded. (See also [table 2](#), footnote f.)<sup>g</sup> The data for 2020 include estimates and are likely to be revised later.**Note(s):**

Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. For federal performers in 1977 and afterward, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. Prior to 1977, the federal fiscal year began on 1 July, not 1 October, and the approximation is 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. The fiscal year for higher education performers and state government performers generally begins 1 July, and the calendar year approximation is 50% of the amount reported in the same fiscal year plus 50% of amount reported in the subsequent fiscal year.

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series).

TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
Current \$millions																								
1953	5,160	2,783	1,015	131	NA	1,430	149	58	40	NA	NA	NA	40	2,247	NA	2,200	21	26	37	55	NA	NA	27	28
1954	5,621	3,102	963	165	NA	1,750	165	61	45	NA	NA	NA	45	2,375	NA	2,320	24	31	40	60	NA	NA	29	31
1955	6,185	3,507	973	319	NA	1,960	191	65	50	NA	NA	NA	50	2,522	NA	2,460	27	35	42	64	NA	NA	32	32
1956	8,501	4,979	1,131	561	NA	2,995	221	71	57	NA	NA	NA	57	3,346	NA	3,277	32	37	46	74	NA	NA	36	38
1957	9,908	6,233	1,297	688	NA	3,928	242	79	64	NA	NA	NA	64	3,470	NA	3,396	37	37	51	91	NA	NA	40	51
1958	10,915	6,974	1,507	657	NA	4,436	280	95	72	NA	NA	NA	72	3,707	NA	3,630	39	38	56	107	NA	NA	45	62
1959	12,490	8,167	1,681	789	NA	5,217	356	125	81	NA	NA	NA	81	4,065	NA	3,983	40	42	61	117	NA	NA	50	67
1960	13,711	8,915	1,801	910	NA	5,604	453	148	90	NA	NA	NA	90	4,516	NA	4,428	40	48	67	123	NA	NA	55	68
1961	14,564	9,484	1,987	1,087	NA	5,685	557	169	101	NA	NA	NA	101	4,757	NA	4,668	40	49	75	148	NA	NA	62	86
1962	15,636	10,138	2,188	1,056	NA	6,008	687	200	112	NA	NA	NA	112	5,124	NA	5,029	41	54	84	179	NA	NA	70	109
1963	17,519	11,646	2,559	1,159	NA	6,856	839	234	125	NA	NA	NA	125	5,456	NA	5,360	41	55	96	197	NA	NA	78	119
1964	19,103	12,765	2,966	1,297	NA	7,257	995	250	138	NA	NA	NA	138	5,888	NA	5,792	41	55	114	200	NA	NA	88	112
1965	20,253	13,194	3,157	1,218	NA	7,367	1,167	286	150	NA	NA	NA	150	6,549	NA	6,445	42	62	136	225	NA	NA	101	124
1966	22,072	14,165	3,308	1,217	NA	7,977	1,335	329	160	NA	NA	NA	160	7,331	NA	7,216	45	70	165	252	NA	NA	114	138
1967	23,347	14,564	3,445	1,340	NA	7,946	1,491	342	168	NA	NA	NA	168	8,146	NA	8,020	52	74	200	271	NA	NA	126	145
1968	24,667	14,965	3,498	1,372	NA	8,145	1,586	364	185	NA	NA	NA	185	9,008	NA	8,869	58	81	221	290	NA	NA	139	151
1969	25,996	15,228	3,790	1,440	NA	7,987	1,624	388	208	NA	NA	NA	208	10,011	NA	9,857	61	93	233	316	NA	NA	155	161
1970	26,271	14,984	4,154	1,430	NA	7,306	1,686	410	237	NA	NA	NA	237	10,449	NA	10,288	66	95	259	343	NA	NA	171	172
1971	26,952	15,210	4,409	1,441	NA	7,175	1,760	427	262	NA	NA	NA	262	10,824	NA	10,654	72	98	290	366	NA	NA	182	184
1972	28,740	16,039	4,676	1,533	NA	7,469	1,890	472	282	NA	NA	NA	282	11,715	NA	11,535	79	101	312	393	NA	NA	195	198
1973	30,952	16,587	4,837	1,576	NA	7,600	2,009	566	301	NA	NA	NA	301	13,299	NA	13,104	90	105	344	421	NA	NA	210	211
1974	33,359	17,287	5,132	1,784	NA	7,572	2,160	639	320	NA	NA	NA	320	14,886	NA	14,667	105	114	394	474	NA	NA	239	235
1975	35,671	18,533	5,561	2,019	NA	7,878	2,400	675	348	NA	NA	NA	348	15,824	NA	15,582	118	124	432	534	NA	NA	272	262
1976	39,435	20,292	5,890	2,401	NA	8,671	2,619	711	369	NA	NA	NA	369	17,702	NA	17,436	131	135	480	592	NA	NA	300	292
1977	43,338	22,071	6,211	2,704	NA	9,523	2,893	740	394	NA	NA	NA	394	19,642	NA	19,340	155	147	569	662	NA	NA	337	326
1978	48,719	24,414	6,962	3,186	NA	10,107	3,329	830	443	NA	NA	NA	443	22,457	NA	22,115	182	160	679	727	NA	NA	364	363
1979	55,379	27,225	7,471	3,567	NA	11,354	3,848	985	482	NA	NA	NA	482	26,097	NA	25,708	215	174	785	791	NA	NA	386	405
1980	63,224	29,986	7,831	4,052	NA	12,752	4,335	1,017	519	NA	NA	NA	519	30,929	NA	30,476	264	189	920	871	NA	NA	419	452
1981	72,292	33,739	8,605	4,393	NA	14,997	4,670	1,075	581	NA	NA	NA	581	35,948	NA	35,428	314	206	1,058	967	NA	NA	463	504
1982	80,748	37,133	9,501	4,563	NA	17,061	4,879	1,129	621	NA	NA	NA	621	40,692	NA	40,105	363	224	1,207	1,095	NA	NA	534	561
1983	89,949	41,451	10,830	5,011	NA	19,095	5,210	1,306	658	NA	NA	NA	658	45,264	NA	44,588	432	244	1,357	1,220	NA	NA	595	626
1984	102,244	46,470	11,916	5,602	NA	21,657	5,748	1,548	721	NA	NA	NA	721	52,187	NA	51,404	518	265	1,514	1,351	NA	NA	654	698

TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO		
1985	114,671	52,641	13,093	6,134	NA	25,333	6,388	1,694	834	NA	NA	NA	834	57,962	NA	57,043	630	289	1,743	1,491	NA	NA	713	778		
1986	120,249	54,622	13,505	6,405	NA	26,000	7,028	1,686	969	NA	NA	NA	969	60,991	NA	59,932	745	314	2,019	1,647	NA	NA	780	867		
1987	126,360	58,609	13,588	6,792	NA	28,757	7,768	1,704	1,065	NA	NA	NA	1,065	62,576	NA	61,403	831	342	2,262	1,849	NA	NA	882	967		
1988	133,881	60,131	14,342	7,212	NA	28,221	8,593	1,762	1,165	NA	NA	NA	1,165	67,977	NA	66,672	933	372	2,527	2,081	NA	NA	1,003	1,078		
1989	141,891	60,465	15,231	7,497	NA	26,359	9,317	2,062	1,274	NA	NA	NA	1,274	74,966	NA	73,501	1,061	405	2,852	2,333	NA	NA	1,131	1,202		
1990	151,993	61,610	15,671	7,853	NA	25,802	9,939	2,346	1,399	NA	NA	NA	1,399	83,208	NA	81,602	1,166	440	3,187	2,589	NA	NA	1,249	1,340		
1991	160,876	60,783	15,249	8,093	NA	24,095	10,667	2,679	1,483	NA	NA	NA	1,483	92,300	NA	90,580	1,242	479	3,458	2,852	NA	NA	1,358	1,494		
1992	165,350	60,915	15,853	8,360	NA	22,369	11,528	2,806	1,525	NA	NA	NA	1,525	96,229	NA	94,388	1,320	521	3,569	3,113	NA	NA	1,448	1,666		
1993	165,730	60,528	16,531	8,003	NA	20,844	12,307	2,843	1,557	NA	NA	NA	1,557	96,549	NA	94,591	1,392	567	3,709	3,388	NA	NA	1,531	1,857		
1994	169,207	60,777	16,355	8,254	NA	20,261	12,996	2,911	1,623	NA	NA	NA	1,623	99,204	NA	97,131	1,456	617	3,938	3,665	NA	NA	1,595	2,071		
1995	183,625	62,969	16,904	8,448	NA	21,178	13,592	2,847	1,751	NA	NA	NA	1,751	110,871	NA	108,652	1,548	671	4,110	3,925	NA	NA	1,617	2,308		
1996	197,346	63,394	16,585	8,464	NA	21,356	14,084	2,905	1,861	NA	NA	NA	1,861	123,417	NA	121,015	1,672	730	4,436	4,239	NA	NA	1,666	2,574		
1997	211,894	64,362	16,819	8,413	NA	21,798	14,317	3,014	1,902	NA	NA	NA	1,902	136,208	NA	133,611	1,788	809	4,852	4,571	NA	NA	1,767	2,804		
1998	225,759	65,908	17,362	8,480	NA	22,086	14,699	3,281	1,920	NA	NA	NA	1,920	147,774	NA	145,016	1,898	859	5,193	4,963	NA	NA	1,871	3,092		
1999	244,451	66,817	18,142	8,704	NA	20,496	15,714	3,761	2,036	NA	NA	NA	2,036	164,545	NA	161,594	2,020	931	5,654	5,399	NA	NA	2,050	3,349		
2000	267,950	67,238	19,247	9,269	NA	17,117	17,095	4,510	2,182	NA	NA	NA	2,182	185,975	NA	182,844	2,112	1,020	6,270	6,285	NA	NA	2,258	4,027		
2001	278,539	73,793	22,374	10,056	NA	16,899	18,976	5,488	2,341	22	NA	NA	2,319	188,408	142	185,118	2,120	1,029	6,874	7,122	218	NA	2,461	4,443		
2002	277,911	78,873	23,798	11,242	NA	16,401	21,655	5,778	2,553	32	NA	NA	2,521	180,704	135	177,467	2,103	998	7,673	8,109	275	NA	2,732	5,102		
2003	291,365	85,133	24,982	11,841	NA	17,798	24,567	5,945	2,788	32	NA	NA	2,756	186,171	134	182,926	2,090	1,020	8,286	8,988	245	NA	2,879	5,864		
2004	302,731	90,795	24,898	12,471	NA	20,266	26,624	6,537	2,926	31	NA	NA	2,896	191,346	122	188,035	2,148	1,041	8,637	9,028	165	NA	2,993	5,870		
2005	325,288	95,413	26,322	12,894	NA	21,909	27,743	6,545	2,977	32	NA	NA	2,945	207,775	139	204,250	2,279	1,107	9,353	9,771	180	NA	3,170	6,420		
2006	350,908	99,938	28,240	12,969	105	24,304	28,277	6,044	3,293	31	204	NA	3,059	227,182	171	223,365	2,464	1,182	10,176	10,320	200	NA	3,394	6,726		
2007	377,890	105,128	29,859	13,845	135	26,585	28,725	5,980	3,594	32	253	NA	3,308	246,815	180	242,682	2,697	1,257	10,933	11,420	216	NA	3,767	7,438		
2008	404,777	117,615	29,839	15,369	176	36,360	29,635	6,236	4,221	33	315	306	3,567	258,020	199	253,562	2,954	1,305	11,738	13,184	209	452	4,161	8,362		
2009	402,932	125,765	30,560	16,571	224	39,573	31,741	7,097	4,296	40	381	195	3,680	246,609	184	242,135	3,032	1,258	12,057	14,205	218	490	4,400	9,097		
2010	406,600	126,617	31,970	18,409	264	34,199	34,682	7,093	4,303	46	427	156	3,674	248,126	174	243,734	2,953	1,266	12,262	15,292	199	888	4,515	9,691		
2011	426,215	127,014	34,950	18,176	273	31,309	35,742	6,564	4,387	30	421	321	3,616	266,427	189	261,899	2,999	1,340	13,103	15,284	179	563	4,629	9,913		
2012	433,716	123,837	34,017	17,727	266	30,621	34,967	6,239	4,158	42	398	157	3,560	275,728	185	270,997	3,170	1,376	14,300	15,694	173	476	4,899	10,147		
2013	454,271	120,132	33,406	17,296	257	29,362	33,840	5,970	4,243	45	362	194	3,642	297,188	195	292,154	3,376	1,464	15,378	17,330	144	818	5,313	11,056		
2014	475,969	118,367	34,783	17,523	247	26,554	33,125	6,135	4,213	26	336	138	3,714	318,410	218	313,043	3,602	1,548	16,210	18,768	137	993	5,701	11,937		
2015	494,499	119,532	34,199	18,287	246	26,990	33,564	6,247	4,277	19	348	127	3,782	333,243	205	327,589	3,844	1,605	17,292	20,156	138	1,115	6,154	12,749		
2016	521,700	118,174	31,762	19,059	255	24,154	34,688	8,257	4,520	23	365	195	3,937	360,291	192	354,057	4,049	1,993	18,415	20,300	150	1,123	6,704	12,323		
2017	554,012	121,632	32,231	19,943	258	24,974	36,008	8,218	4,578	33	346	142	4,057	386,385	194	379,820	4,284	2,071	19,554	21,862	152	856	7,214	13,632		

TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO		
2018	604,837	129,625	36,793	21,163	269	25,192	37,758	8,451	4,731	45	341	120	4,224	426,193	194	419,202	4,586	2,189	20,679	23,607	162	1,049	7,668	14,721		
2019	666,875	133,807	39,870	22,538	290	22,653	39,556	8,900	4,929	49	347	169	4,364	481,799	179	474,442	4,808	2,347	21,559	24,778	166	911	7,889	15,800		
2020 <sup>a</sup>	707,967	137,818	41,936	23,365	299	20,996	40,919	10,304	5,038	44	355	180	4,458	517,431	175	509,786	5,002	2,444	22,604	25,073	166	979	8,128	15,786		
Constant 2012 \$millions																										
1953	35,738	19,272	7,030	907	NA	9,904	1,032	398	274	NA	NA	NA	274	15,559	NA	15,237	142	180	253	381	NA	NA	187	194		
1954	38,573	21,289	6,606	1,129	NA	12,010	1,129	415	305	NA	NA	NA	305	16,296	NA	15,922	161	213	271	412	NA	NA	199	213		
1955	41,735	23,665	6,566	2,149	NA	13,226	1,289	435	337	NA	NA	NA	337	17,018	NA	16,600	182	236	283	432	NA	NA	216	216		
1956	55,467	32,485	7,377	3,661	NA	19,543	1,442	463	369	NA	NA	NA	369	21,830	NA	21,383	206	241	300	483	NA	NA	235	248		
1957	62,586	39,369	8,193	4,343	NA	24,812	1,525	496	404	NA	NA	NA	404	21,916	NA	21,451	231	234	322	575	NA	NA	253	322		
1958	67,414	43,073	9,304	4,055	NA	27,398	1,729	587	445	NA	NA	NA	445	22,895	NA	22,420	241	235	343	658	NA	NA	275	383		
1959	76,086	49,753	10,241	4,807	NA	31,782	2,166	758	490	NA	NA	NA	490	24,761	NA	24,264	241	256	372	710	NA	NA	302	408		
1960	82,408	53,582	10,822	5,469	NA	33,682	2,720	890	541	NA	NA	NA	541	27,143	NA	26,614	240	288	403	739	NA	NA	331	409		
1961	86,615	56,403	11,817	6,462	NA	33,810	3,310	1,005	598	NA	NA	NA	598	28,291	NA	27,761	238	291	443	880	NA	NA	369	511		
1962	91,874	59,569	12,853	6,205	NA	35,302	4,034	1,175	658	NA	NA	NA	658	30,105	NA	29,549	238	317	494	1,049	NA	NA	408	640		
1963	101,759	67,643	14,861	6,729	NA	39,823	4,870	1,359	726	NA	NA	NA	726	31,688	NA	31,133	235	319	558	1,144	NA	NA	453	691		
1964	109,296	73,031	16,967	7,421	NA	41,520	5,693	1,430	787	NA	NA	NA	787	33,685	NA	33,138	232	315	649	1,144	NA	NA	503	641		
1965	113,794	74,134	17,736	6,841	NA	41,393	6,557	1,607	840	NA	NA	NA	840	36,794	NA	36,213	233	348	764	1,261	NA	NA	565	697		
1966	120,642	77,423	18,081	6,649	NA	43,601	7,297	1,796	875	NA	NA	NA	875	40,070	NA	39,441	246	383	899	1,375	NA	NA	620	754		
1967	124,005	77,353	18,298	7,117	NA	42,204	7,917	1,816	892	NA	NA	NA	892	43,264	NA	42,597	274	393	1,060	1,437	NA	NA	667	770		
1968	125,661	76,235	17,818	6,990	NA	41,494	8,080	1,854	940	NA	NA	NA	940	45,888	NA	45,182	293	413	1,123	1,475	NA	NA	706	769		
1969	126,251	73,957	18,407	6,994	NA	38,790	7,885	1,882	1,010	NA	NA	NA	1,010	48,617	NA	47,872	294	452	1,132	1,535	NA	NA	753	782		
1970	121,194	69,125	19,162	6,595	NA	33,704	7,775	1,889	1,093	NA	NA	NA	1,093	48,201	NA	47,460	302	438	1,193	1,582	NA	NA	789	793		
1971	118,327	66,778	19,356	6,324	NA	31,501	7,725	1,872	1,150	NA	NA	NA	1,150	47,521	NA	46,775	316	430	1,271	1,607	NA	NA	799	808		
1972	120,958	67,503	19,678	6,452	NA	31,434	7,954	1,984	1,187	NA	NA	NA	1,187	49,304	NA	48,547	332	425	1,311	1,652	NA	NA	819	833		
1973	123,495	66,181	19,297	6,288	NA	30,323	8,014	2,258	1,201	NA	NA	NA	1,201	53,062	NA	52,284	359	419	1,373	1,680	NA	NA	838	842		
1974	122,118	63,282	18,788	6,531	NA	27,719	7,907	2,337	1,170	NA	NA	NA	1,170	54,492	NA	53,691	383	418	1,440	1,734	NA	NA	873	861		
1975	119,507	62,091	18,632	6,764	NA	26,393	8,041	2,261	1,166	NA	NA	NA	1,166	53,015	NA	52,203	395	416	1,446	1,790	NA	NA	911	879		
1976	125,226	64,436	18,704	7,623	NA	27,535	8,317	2,258	1,172	NA	NA	NA	1,172	56,214	NA	55,368	416	429	1,524	1,880	NA	NA	951	928		
1977	129,570	65,988	18,571	8,085	NA	28,472	8,648	2,213	1,178	NA	NA	NA	1,178	58,724	NA	57,822	462	440	1,700	1,981	NA	NA	1,006	975		
1978	136,085	68,193	19,447	8,899	NA	28,231	9,297	2,318	1,237	NA	NA	NA	1,237	62,727	NA	61,773	507	447	1,897	2,031	NA	NA	1,015	1,015		
1979	142,839	70,221	19,271	9,200	NA	29,285	9,925	2,541	1,242	NA	NA	NA	1,242	67,311	NA	66,309	553	449	2,025	2,039	NA	NA	994	1,045		
1980	149,562	70,935	18,524	9,585	NA	30,166	10,254	2,406	1,227	NA	NA	NA	1,227	73,165	NA	72,094	623	448	2,175	2,060	NA	NA	991	1,069		
1981	156,232	72,914	18,595	9,494	NA	32,410	10,091	2,322	1,256	NA	NA	NA	1,256	77,688	NA	76,564	679	445	2,285	2,089	NA	NA	1,001	1,088		



TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO		
1982	164,350	75,579	19,338	9,288	NA	34,725	9,929	2,298	1,264	NA	NA	NA	1,264	82,823	NA	81,628	739	456	2,456	2,229	NA	NA	1,086	1,143		
1983	176,179	81,187	21,211	9,814	NA	37,400	10,205	2,557	1,289	NA	NA	NA	1,289	88,656	NA	87,332	846	478	2,657	2,391	NA	NA	1,164	1,226		
1984	193,284	87,849	22,526	10,591	NA	40,941	10,865	2,926	1,363	NA	NA	NA	1,363	98,656	NA	97,176	978	502	2,862	2,555	NA	NA	1,235	1,319		
1985	210,131	96,463	23,992	11,240	NA	46,422	11,706	3,104	1,527	NA	NA	NA	1,527	106,213	NA	104,530	1,154	529	3,194	2,732	NA	NA	1,307	1,426		
1986	216,004	98,119	24,258	11,505	NA	46,704	12,624	3,028	1,741	NA	NA	NA	1,741	109,559	NA	107,657	1,338	564	3,626	2,959	NA	NA	1,401	1,558		
1987	221,505	102,740	23,820	11,905	NA	50,410	13,617	2,988	1,866	NA	NA	NA	1,866	109,693	NA	107,637	1,457	599	3,965	3,241	NA	NA	1,545	1,695		
1988	226,693	101,816	24,285	12,212	NA	47,785	14,550	2,984	1,973	NA	NA	NA	1,973	115,102	NA	112,892	1,580	630	4,279	3,524	NA	NA	1,698	1,826		
1989	231,189	98,519	24,816	12,216	NA	42,948	15,180	3,360	2,076	NA	NA	NA	2,076	122,146	NA	119,758	1,728	659	4,647	3,801	NA	NA	1,843	1,959		
1990	238,716	96,764	24,613	12,333	NA	40,524	15,610	3,684	2,197	NA	NA	NA	2,197	130,684	NA	128,162	1,831	691	5,005	4,067	NA	NA	1,962	2,105		
1991	244,403	92,342	23,167	12,295	NA	36,605	16,205	4,070	2,252	NA	NA	NA	2,252	140,223	NA	137,609	1,886	728	5,253	4,333	NA	NA	2,063	2,270		
1992	245,602	90,479	23,547	12,417	NA	33,226	17,122	4,167	2,265	NA	NA	NA	2,265	142,933	NA	140,199	1,960	774	5,300	4,624	NA	NA	2,150	2,474		
1993	240,467	87,823	23,985	11,612	NA	30,244	17,857	4,125	2,259	NA	NA	NA	2,259	140,089	NA	137,247	2,019	823	5,381	4,915	NA	NA	2,221	2,695		
1994	240,380	86,342	23,235	11,726	NA	28,783	18,462	4,136	2,305	NA	NA	NA	2,305	140,932	NA	137,987	2,068	876	5,594	5,207	NA	NA	2,265	2,941		
1995	255,506	87,618	23,521	11,755	NA	29,468	18,913	3,962	2,436	NA	NA	NA	2,436	154,272	NA	151,184	2,153	934	5,719	5,461	NA	NA	2,249	3,212		
1996	269,662	86,624	22,662	11,565	NA	29,182	19,245	3,970	2,543	NA	NA	NA	2,543	168,641	NA	165,360	2,284	998	6,061	5,792	NA	NA	2,276	3,517		
1997	284,628	86,454	22,592	11,301	NA	29,280	19,232	4,049	2,555	NA	NA	NA	2,555	182,962	NA	179,474	2,402	1,086	6,517	6,140	NA	NA	2,374	3,766		
1998	299,880	87,547	23,063	11,264	NA	29,337	19,525	4,358	2,551	NA	NA	NA	2,551	196,291	NA	192,628	2,522	1,141	6,898	6,593	NA	NA	2,486	4,107		
1999	320,086	87,490	23,755	11,397	NA	26,838	20,576	4,924	2,667	NA	NA	NA	2,667	215,456	NA	211,592	2,646	1,219	7,403	7,070	NA	NA	2,684	4,385		
2000	343,413	86,174	24,667	11,879	NA	21,938	21,910	5,780	2,797	NA	NA	NA	2,797	238,352	NA	234,339	2,706	1,307	8,035	8,055	NA	NA	2,894	5,161		
2001	349,122	92,493	28,044	12,604	NA	21,181	23,785	6,879	2,935	28	NA	NA	2,907	236,152	177	232,028	2,657	1,290	8,615	8,927	273	NA	3,085	5,569		
2002	342,991	97,343	29,370	13,874	NA	20,242	26,726	7,131	3,151	39	NA	NA	3,111	223,020	167	219,025	2,596	1,232	9,470	10,008	340	NA	3,372	6,296		
2003	352,632	103,034	30,235	14,331	NA	21,540	29,732	7,195	3,374	39	NA	NA	3,335	225,318	162	221,391	2,530	1,235	10,028	10,878	297	NA	3,484	7,097		
2004	356,811	107,014	29,345	14,698	NA	23,886	31,380	7,704	3,449	36	NA	NA	3,413	225,528	144	221,626	2,531	1,227	10,179	10,640	194	NA	3,527	6,919		
2005	371,742	109,038	30,081	14,735	NA	25,038	31,704	7,479	3,402	36	NA	NA	3,366	237,447	159	233,419	2,604	1,265	10,688	11,166	206	NA	3,623	7,337		
2006	389,015	110,790	31,306	14,377	116	26,943	31,347	6,700	3,651	34	226	NA	3,391	251,853	190	247,621	2,731	1,310	11,281	11,440	221	NA	3,762	7,457		
2007	407,906	113,478	32,231	14,945	145	28,697	31,006	6,455	3,879	35	274	NA	3,571	266,420	194	261,958	2,911	1,356	11,801	12,327	233	NA	4,066	8,028		
2008	428,705	124,567	31,603	16,277	187	38,509	31,387	6,604	4,471	35	334	324	3,778	273,272	211	268,551	3,128	1,382	12,431	13,963	221	479	4,407	8,857		
2009	424,033	132,352	32,160	17,438	236	41,645	33,403	7,469	4,521	42	401	205	3,872	259,524	194	254,815	3,191	1,323	12,688	14,949	229	516	4,631	9,573		
2010	422,811	131,665	33,245	19,143	275	35,563	36,064	7,376	4,475	48	444	162	3,820	258,019	181	253,452	3,070	1,316	12,750	15,902	207	923	4,694	10,077		
2011	434,187	129,390	35,604	18,516	278	31,895	36,410	6,687	4,469	30	428	327	3,683	271,411	192	266,798	3,055	1,365	13,348	15,570	183	574	4,716	10,098		
2012	433,716	123,837	34,017	17,727	266	30,621	34,967	6,239	4,158	42	398	157	3,560	275,728	185	270,997	3,170	1,376	14,300	15,694	173	476	4,899	10,147		
2013	446,452	118,064	32,831	16,999	253	28,857	33,258	5,867	4,170	44	356	191	3,579	292,073	192	287,126	3,317	1,438	15,113	17,031	141	804	5,221	10,865		
2014	459,193	114,195	33,557	16,905	239	25,618	31,957	5,919	4,065	25	324	133	3,583	307,187	210	302,009	3,475	1,493	15,639	18,107	132	958	5,500	11,516		

TABLE 6

**U.S. R&D expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2015	472,344	114,177	32,666	17,467	235	25,781	32,060	5,967	4,085	18	333	121	3,613	318,312	195	312,912	3,672	1,533	16,517	19,253	132	1,065	5,878	12,178
2016	493,381	111,759	30,038	18,024	241	22,843	32,805	7,809	4,275	22	345	184	3,723	340,734	182	334,838	3,829	1,884	17,415	19,198	142	1,062	6,340	11,654
2017	514,181	112,887	29,914	18,510	239	23,178	33,419	7,627	4,249	30	321	132	3,765	358,605	180	352,512	3,976	1,922	18,148	20,290	141	794	6,695	12,652
2018	548,252	117,498	33,351	19,183	244	22,835	34,225	7,660	4,288	41	309	109	3,829	386,321	176	379,984	4,157	1,985	18,744	21,398	146	951	6,950	13,344
2019	593,865	119,157	35,505	20,070	258	20,173	35,225	7,925	4,389	44	309	150	3,886	429,051	159	422,499	4,282	2,090	19,198	22,065	148	811	7,025	14,070
2020 <sup>a</sup>	622,951	121,268	36,900	20,559	263	18,475	36,005	9,067	4,433	39	312	158	3,923	455,296	154	448,569	4,402	2,150	19,890	22,062	146	861	7,152	13,890

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> The data for 2020 are estimates and are likely to be revised later.**Note(s):**

This table reagggregates the R&D performer data in [table 2](#) according to major categories of R&D funding: federal government, nonfederal government (state and local), business, higher education, and NPOs. Business sources of R&D funding in this table include the own funds of domestic R&D-performing businesses, funds from other domestic businesses, and funds from foreign businesses. For further detail on the R&D performers listed, see [table 2](#), footnotes a–f. Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. (See [table 2](#), general notes.) The 1998–2020 data for NPO R&D performance funded by businesses and the nonprofit sector itself are estimated, based on the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations and the 2016 Nonprofit Research Activities Survey.

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&amp;D Resources (annual series).

TABLE 7

## U.S. basic research expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
Current \$millions																								
1953	460	265	102	36	NA	19	82	27	7	NA	NA	NA	7	154	NA	132	13	9	6	28	NA	NA	16	12
1954	509	291	96	45	NA	23	97	31	10	NA	NA	NA	10	169	NA	143	15	11	8	31	NA	NA	18	13
1955	570	318	98	62	NA	7	117	35	14	NA	NA	NA	14	192	NA	162	17	13	12	35	NA	NA	21	14
1956	718	392	114	89	NA	7	143	41	19	NA	NA	NA	19	251	NA	216	20	15	15	41	NA	NA	24	17
1957	813	451	124	110	NA	4	167	48	25	NA	NA	NA	25	268	NA	230	23	15	20	50	NA	NA	27	23
1958	943	537	149	115	NA	14	202	58	31	NA	NA	NA	31	292	NA	252	24	16	24	59	NA	NA	31	28
1959	1,087	665	165	134	NA	34	263	71	38	NA	NA	NA	38	290	NA	248	24	18	28	66	NA	NA	36	30
1960	1,286	794	184	150	NA	36	341	84	45	NA	NA	NA	45	343	NA	297	25	21	33	71	NA	NA	41	30
1961	1,511	972	230	177	NA	30	432	104	54	NA	NA	NA	54	361	NA	314	25	22	40	85	NA	NA	48	37
1962	1,824	1,218	252	189	NA	104	546	128	64	NA	NA	NA	64	394	NA	345	25	24	48	101	NA	NA	55	46
1963	2,115	1,446	285	216	NA	109	689	147	75	NA	NA	NA	75	425	NA	375	25	25	58	113	NA	NA	63	50
1964	2,396	1,693	339	245	NA	123	824	163	84	NA	NA	NA	84	434	NA	384	25	25	70	115	NA	NA	68	47
1965	2,664	1,900	375	250	NA	157	944	175	94	NA	NA	NA	94	462	NA	406	27	29	86	122	NA	NA	70	52
1966	2,930	2,075	410	273	NA	142	1,066	184	104	NA	NA	NA	104	512	NA	451	29	32	106	133	NA	NA	75	58
1967	3,168	2,280	434	301	NA	168	1,188	190	114	NA	NA	NA	114	495	NA	427	34	34	136	144	NA	NA	83	61
1968	3,376	2,399	482	315	NA	145	1,265	192	131	NA	NA	NA	131	537	NA	462	38	37	156	154	NA	NA	91	63
1969	3,491	2,457	545	313	NA	123	1,288	188	153	NA	NA	NA	153	541	NA	458	40	43	171	170	NA	NA	103	67
1970	3,594	2,501	562	304	NA	122	1,323	191	179	NA	NA	NA	179	531	NA	444	43	44	196	187	NA	NA	115	72
1971	3,720	2,559	581	289	NA	101	1,385	204	194	NA	NA	NA	194	551	NA	456	50	45	214	204	NA	NA	127	77
1972	3,850	2,656	603	313	NA	91	1,437	213	195	NA	NA	NA	195	565	NA	463	55	47	216	218	NA	NA	134	84
1973	4,099	2,847	652	382	NA	96	1,489	229	196	NA	NA	NA	196	607	NA	499	59	49	223	227	NA	NA	137	90
1974	4,511	3,146	715	467	NA	114	1,609	242	204	NA	NA	NA	204	656	NA	536	66	54	250	254	NA	NA	153	102
1975	4,875	3,415	760	533	NA	104	1,768	251	212	NA	NA	NA	212	704	NA	573	72	59	264	280	NA	NA	164	116
1976	5,373	3,793	850	629	NA	116	1,924	274	218	NA	NA	NA	218	774	NA	634	75	65	283	305	NA	NA	175	131
1977	6,008	4,235	943	746	NA	135	2,114	297	232	NA	NA	NA	232	862	NA	701	89	72	334	346	NA	NA	198	148
1978	6,959	4,950	1,044	1,005	NA	156	2,399	346	260	NA	NA	NA	260	970	NA	785	107	79	398	380	NA	NA	213	168
1979	7,836	5,558	1,112	1,160	NA	161	2,719	406	286	NA	NA	NA	286	1,107	NA	893	128	87	466	419	NA	NA	229	190
1980	8,747	6,147	1,212	1,294	NA	170	3,061	411	307	NA	NA	NA	307	1,286	NA	1,035	156	95	544	463	NA	NA	248	215
1981	9,658	6,591	1,343	1,430	NA	164	3,331	324	338	NA	NA	NA	338	1,600	NA	1,313	183	105	615	512	NA	NA	269	243
1982	10,651	7,121	1,522	1,503	NA	253	3,475	369	368	NA	NA	NA	368	1,854	NA	1,523	215	115	716	591	NA	NA	317	275
1983	11,880	7,853	1,733	1,661	NA	346	3,689	426	396	NA	NA	NA	396	2,146	NA	1,760	260	127	816	668	NA	NA	358	311
1984	13,332	8,651	1,877	1,854	NA	340	4,087	494	436	NA	NA	NA	436	2,584	NA	2,132	313	139	915	746	NA	NA	395	351

TABLE 7

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
1985	14,748	9,407	1,947	1,936	NA	358	4,606	560	514	NA	NA	NA	514	2,915	NA	2,373	389	153	1,075	837	NA	NA	440	397
1986	17,154	10,220	2,026	2,045	NA	434	5,122	594	606	NA	NA	NA	606	4,130	NA	3,496	466	168	1,262	936	NA	NA	488	449
1987	18,481	11,090	2,047	2,242	NA	598	5,527	675	659	NA	NA	NA	659	4,282	NA	3,583	514	185	1,399	1,052	NA	NA	545	507
1988	19,787	12,097	2,116	2,633	NA	656	5,937	756	705	NA	NA	NA	705	4,275	NA	3,507	565	203	1,530	1,180	NA	NA	607	573
1989	21,891	13,392	2,309	2,815	NA	986	6,422	860	766	NA	NA	NA	766	4,692	NA	3,832	637	223	1,714	1,327	NA	NA	680	647
1990	23,029	14,057	2,319	3,033	NA	869	6,889	947	847	NA	NA	NA	847	4,710	NA	3,760	705	245	1,929	1,486	NA	NA	756	730
1991	27,140	15,283	2,378	3,195	NA	1,251	7,423	1,036	912	NA	NA	NA	912	7,157	NA	6,125	764	269	2,127	1,660	NA	NA	836	825
1992	27,604	15,710	2,419	3,408	NA	712	8,058	1,114	941	NA	NA	NA	941	6,925	NA	5,816	814	295	2,203	1,824	NA	NA	893	931
1993	28,743	16,399	2,621	3,517	NA	466	8,638	1,157	952	NA	NA	NA	952	7,136	NA	5,961	851	324	2,268	1,987	NA	NA	936	1,051
1994	29,651	16,770	2,547	3,512	NA	436	9,139	1,137	992	NA	NA	NA	992	7,323	NA	6,078	890	356	2,406	2,160	NA	NA	974	1,186
1995	29,610	16,990	2,689	3,307	NA	190	9,634	1,170	1,070	NA	NA	NA	1,070	6,715	NA	5,379	945	390	2,511	2,326	NA	NA	987	1,338
1996	32,799	18,063	2,680	3,393	NA	650	10,092	1,248	1,149	NA	NA	NA	1,149	8,309	NA	6,848	1,032	428	2,740	2,539	NA	NA	1,028	1,510
1997	36,717	19,254	2,746	3,404	NA	1,029	10,758	1,317	1,233	NA	NA	NA	1,233	10,376	NA	8,766	1,161	449	3,150	2,704	NA	NA	1,147	1,557
1998	34,842	20,473	3,003	3,441	NA	1,002	11,567	1,461	1,292	NA	NA	NA	1,292	6,606	NA	4,851	1,278	477	3,495	2,976	NA	NA	1,259	1,717
1999	38,282	22,364	3,347	3,719	NA	1,108	12,456	1,734	1,386	NA	NA	NA	1,386	7,429	NA	5,537	1,375	517	3,848	3,255	NA	NA	1,396	1,860
2000	42,033	24,295	3,765	4,037	NA	925	13,469	2,099	1,501	NA	NA	NA	1,501	8,134	NA	6,115	1,453	566	4,314	3,790	NA	NA	1,553	2,236
2001	46,843	26,802	4,260	4,404	NA	754	14,919	2,464	1,615	10	NA	NA	1,606	9,400	62	7,299	1,467	571	4,759	4,267	95	NA	1,704	2,467
2002	50,789	30,141	4,511	5,029	NA	888	17,139	2,575	1,759	14	NA	NA	1,745	8,730	61	6,659	1,456	554	5,311	4,847	123	NA	1,891	2,833
2003	54,823	32,889	4,664	4,904	NA	1,386	19,220	2,714	1,906	13	NA	NA	1,893	9,002	55	6,944	1,436	567	5,692	5,335	102	NA	1,978	3,256
2004	56,379	34,139	4,697	4,852	NA	1,072	20,730	2,788	2,011	12	NA	NA	2,000	8,872	48	6,763	1,483	578	5,965	5,391	64	NA	2,067	3,259
2005	59,904	35,566	4,770	5,000	NA	1,108	21,786	2,902	2,080	12	NA	NA	2,068	9,828	54	7,559	1,600	614	6,568	5,861	70	NA	2,226	3,565
2006	61,568	36,375	4,716	5,080	16	1,444	22,270	2,849	2,233	12	30	NA	2,191	9,428	67	6,940	1,765	656	7,288	6,244	78	NA	2,431	3,735
2007	64,603	36,094	4,621	3,298	20	2,780	22,546	2,829	2,448	10	38	NA	2,400	11,199	57	8,488	1,956	698	7,932	6,930	68	NA	2,733	4,130
2008	68,542	35,917	4,957	3,432	26	1,475	22,954	3,073	2,643	11	47	12	2,573	13,784	65	10,864	2,131	724	8,467	7,731	68	18	3,002	4,643
2009	72,883	37,752	5,441	4,432	33	1,340	23,008	3,498	2,539	13	57	13	2,457	16,148	58	13,397	1,995	698	8,257	8,186	69	34	3,032	5,051
2010	76,388	40,063	5,111	6,475	39	1,406	23,618	3,414	2,368	18	63	10	2,277	17,450	67	14,897	1,783	703	8,010	8,498	77	58	2,983	5,381
2011	73,552	39,177	5,047	6,333	41	677	23,999	3,081	2,339	11	62	21	2,244	14,899	67	12,284	1,804	744	8,496	8,641	64	38	3,035	5,504
2012	73,843	38,107	5,489	5,530	40	644	23,312	3,092	2,283	14	59	10	2,200	15,302	61	12,611	1,866	764	9,244	8,908	57	29	3,189	5,634
2013	79,137	36,183	5,330	4,085	38	1,196	22,502	3,031	2,293	12	54	21	2,206	21,044	53	18,203	1,976	813	9,927	9,690	39	88	3,425	6,139
2014	82,769	36,949	5,705	4,077	42	2,044	21,991	3,090	2,320	6	57	17	2,240	22,757	53	19,757	2,088	859	10,350	10,394	34	119	3,614	6,628
2015	84,273	37,131	5,890	4,043	42	2,038	22,084	3,034	2,373	4	59	14	2,297	22,764	47	19,621	2,205	891	10,978	11,028	32	120	3,798	7,079
2016	85,689	37,157	6,119	4,112	38	2,037	22,450	2,401	2,435	5	55	20	2,355	25,925	44	22,879	2,286	716	11,577	8,594	34	117	4,012	4,431
2017	88,696	37,793	6,259	4,054	41	1,853	23,197	2,390	2,465	6	55	17	2,387	26,836	38	23,644	2,407	745	12,228	9,373	30	103	4,337	4,901

TABLE 7

## U.S. basic research expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2018	96,043	40,412	6,827	4,188	45	2,535	24,361	2,457	2,526	9	57	12	2,449	29,974	39	26,545	2,599	787	12,971	10,158	33	112	4,720	5,293
2019	102,874	42,199	7,352	4,501	52	2,349	25,358	2,588	2,618	10	62	15	2,531	33,745	36	30,132	2,729	844	13,594	10,719	33	86	4,916	5,681
2020 <sup>a</sup>	107,895	43,800	7,839	4,683	56	2,174	26,051	2,996	2,702	9	67	17	2,610	36,159	34	32,398	2,843	879	14,333	10,900	33	93	5,096	5,676
Constant 2012 \$millions																								
1953	3,182	1,835	703	249	NA	132	564	187	45	NA	NA	NA	45	1,067	NA	914	90	62	42	194	NA	NA	111	83
1954	3,490	1,994	659	305	NA	158	662	209	66	NA	NA	NA	66	1,160	NA	981	103	75	58	213	NA	NA	124	89
1955	3,846	2,146	658	418	NA	47	786	236	94	NA	NA	NA	94	1,296	NA	1,093	115	88	78	233	NA	NA	138	94
1956	4,683	2,559	741	581	NA	44	930	264	124	NA	NA	NA	124	1,635	NA	1,409	127	98	101	264	NA	NA	153	111
1957	5,138	2,852	783	692	NA	25	1,052	300	157	NA	NA	NA	157	1,690	NA	1,453	142	95	125	316	NA	NA	171	145
1958	5,825	3,317	920	710	NA	84	1,248	355	192	NA	NA	NA	192	1,803	NA	1,556	148	99	148	364	NA	NA	191	173
1959	6,622	4,054	1,002	813	NA	207	1,599	433	229	NA	NA	NA	229	1,767	NA	1,511	146	110	173	399	NA	NA	216	183
1960	7,727	4,770	1,103	902	NA	214	2,047	505	271	NA	NA	NA	271	2,059	NA	1,785	147	126	201	427	NA	NA	246	180
1961	8,986	5,781	1,365	1,053	NA	181	2,566	616	319	NA	NA	NA	319	2,147	NA	1,867	149	131	237	503	NA	NA	282	220
1962	10,719	7,158	1,481	1,111	NA	612	3,205	749	374	NA	NA	NA	374	2,315	NA	2,027	147	141	281	591	NA	NA	320	270
1963	12,287	8,398	1,653	1,255	NA	635	4,002	854	435	NA	NA	NA	435	2,466	NA	2,178	142	145	334	653	NA	NA	363	290
1964	13,708	9,686	1,940	1,402	NA	704	4,712	930	483	NA	NA	NA	483	2,483	NA	2,197	143	143	398	658	NA	NA	389	269
1965	14,968	10,676	2,104	1,405	NA	882	5,301	983	531	NA	NA	NA	531	2,593	NA	2,281	149	163	483	685	NA	NA	393	292
1966	16,015	11,342	2,241	1,492	NA	776	5,827	1,006	566	NA	NA	NA	566	2,799	NA	2,465	159	175	582	727	NA	NA	410	317
1967	16,824	12,107	2,302	1,599	NA	892	6,307	1,007	605	NA	NA	NA	605	2,626	NA	2,268	178	181	720	765	NA	NA	441	324
1968	17,199	12,219	2,455	1,602	NA	739	6,444	978	666	NA	NA	NA	666	2,733	NA	2,354	191	188	796	785	NA	NA	464	321
1969	16,953	11,931	2,648	1,520	NA	597	6,253	913	742	NA	NA	NA	742	2,625	NA	2,224	192	209	831	823	NA	NA	498	325
1970	16,579	11,540	2,592	1,402	NA	563	6,101	881	827	NA	NA	NA	827	2,450	NA	2,048	198	203	903	860	NA	NA	528	332
1971	16,333	11,234	2,552	1,267	NA	443	6,078	893	850	NA	NA	NA	850	2,417	NA	2,002	217	198	939	893	NA	NA	555	338
1972	16,203	11,176	2,536	1,315	NA	383	6,048	894	822	NA	NA	NA	822	2,378	NA	1,949	231	198	909	917	NA	NA	564	354
1973	16,357	11,359	2,601	1,524	NA	383	5,939	912	783	NA	NA	NA	783	2,420	NA	1,991	233	196	890	904	NA	NA	545	359
1974	16,512	11,517	2,616	1,710	NA	417	5,890	884	746	NA	NA	NA	746	2,401	NA	1,962	242	197	916	932	NA	NA	558	373
1975	16,331	11,442	2,545	1,784	NA	348	5,923	841	712	NA	NA	NA	712	2,358	NA	1,920	240	199	883	936	NA	NA	549	387
1976	17,062	12,043	2,699	1,997	NA	368	6,110	869	691	NA	NA	NA	691	2,459	NA	2,013	238	207	900	970	NA	NA	554	415
1977	17,963	12,661	2,819	2,230	NA	404	6,320	888	693	NA	NA	NA	693	2,576	NA	2,096	266	214	999	1,033	NA	NA	590	443
1978	19,438	13,827	2,917	2,807	NA	436	6,701	966	726	NA	NA	NA	726	2,710	NA	2,193	297	220	1,112	1,062	NA	NA	594	468
1979	20,213	14,337	2,869	2,991	NA	415	7,013	1,048	737	NA	NA	NA	737	2,856	NA	2,303	329	224	1,202	1,080	NA	NA	591	489
1980	20,691	14,542	2,868	3,061	NA	402	7,240	971	726	NA	NA	NA	726	3,043	NA	2,448	369	226	1,287	1,095	NA	NA	587	508
1981	20,871	14,245	2,902	3,090	NA	354	7,199	700	731	NA	NA	NA	731	3,459	NA	2,838	395	226	1,330	1,107	NA	NA	582	525

TABLE 7

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
1982	21,678	14,494	3,097	3,059	NA	515	7,072	751	749	NA	NA	NA	749	3,773	NA	3,100	439	234	1,458	1,204	NA	NA	645	559
1983	23,269	15,382	3,394	3,252	NA	678	7,224	834	775	NA	NA	NA	775	4,204	NA	3,447	509	248	1,599	1,309	NA	NA	701	608
1984	25,203	16,355	3,548	3,505	NA	643	7,725	934	823	NA	NA	NA	823	4,885	NA	4,030	591	263	1,729	1,410	NA	NA	746	664
1985	27,026	17,238	3,568	3,548	NA	656	8,439	1,026	943	NA	NA	NA	943	5,341	NA	4,348	713	280	1,971	1,533	NA	NA	806	727
1986	30,813	18,358	3,639	3,674	NA	780	9,200	1,066	1,088	NA	NA	NA	1,088	7,418	NA	6,280	837	302	2,267	1,682	NA	NA	876	806
1987	32,396	19,440	3,589	3,931	NA	1,048	9,688	1,184	1,154	NA	NA	NA	1,154	7,505	NA	6,281	901	323	2,453	1,844	NA	NA	956	888
1988	33,504	20,484	3,583	4,458	NA	1,111	10,052	1,280	1,194	NA	NA	NA	1,194	7,238	NA	5,938	956	343	2,590	1,998	NA	NA	1,028	970
1989	35,668	21,821	3,762	4,587	NA	1,607	10,464	1,402	1,248	NA	NA	NA	1,248	7,645	NA	6,244	1,039	363	2,793	2,161	NA	NA	1,108	1,054
1990	36,169	22,077	3,642	4,764	NA	1,365	10,819	1,487	1,330	NA	NA	NA	1,330	7,397	NA	5,905	1,108	384	3,030	2,335	NA	NA	1,187	1,147
1991	41,231	23,218	3,613	4,854	NA	1,901	11,277	1,574	1,385	NA	NA	NA	1,385	10,874	NA	9,305	1,160	408	3,232	2,522	NA	NA	1,269	1,253
1992	41,001	23,335	3,593	5,062	NA	1,058	11,969	1,655	1,398	NA	NA	NA	1,398	10,286	NA	8,639	1,210	438	3,272	2,710	NA	NA	1,327	1,383
1993	41,704	23,794	3,803	5,103	NA	676	12,533	1,679	1,382	NA	NA	NA	1,382	10,354	NA	8,649	1,235	470	3,291	2,883	NA	NA	1,358	1,525
1994	42,123	23,823	3,618	4,989	NA	619	12,982	1,615	1,409	NA	NA	NA	1,409	10,404	NA	8,635	1,264	505	3,419	3,069	NA	NA	1,384	1,685
1995	41,202	23,640	3,742	4,601	NA	264	13,405	1,628	1,488	NA	NA	NA	1,488	9,343	NA	7,485	1,315	543	3,493	3,236	NA	NA	1,374	1,862
1996	44,818	24,682	3,662	4,636	NA	888	13,790	1,706	1,570	NA	NA	NA	1,570	11,353	NA	9,357	1,410	585	3,744	3,469	NA	NA	1,405	2,064
1997	49,320	25,862	3,688	4,572	NA	1,382	14,451	1,769	1,657	NA	NA	NA	1,657	13,938	NA	11,775	1,559	603	4,231	3,632	NA	NA	1,541	2,091
1998	46,281	27,195	3,989	4,571	NA	1,331	15,365	1,940	1,717	NA	NA	NA	1,717	8,774	NA	6,444	1,697	634	4,642	3,953	NA	NA	1,673	2,280
1999	50,127	29,283	4,382	4,869	NA	1,451	16,310	2,270	1,815	NA	NA	NA	1,815	9,727	NA	7,250	1,801	677	5,039	4,262	NA	NA	1,828	2,435
2000	53,871	31,137	4,825	5,173	NA	1,186	17,262	2,691	1,924	NA	NA	NA	1,924	10,425	NA	7,837	1,862	726	5,529	4,857	NA	NA	1,991	2,866
2001	58,713	33,594	5,340	5,520	NA	945	18,700	3,089	2,025	12	NA	NA	2,012	11,782	78	9,149	1,839	716	5,965	5,348	120	NA	2,136	3,092
2002	62,682	37,200	5,567	6,207	NA	1,096	21,152	3,178	2,171	18	NA	NA	2,154	10,774	75	8,218	1,797	684	6,555	5,982	152	NA	2,334	3,496
2003	66,351	39,804	5,645	5,935	NA	1,677	23,261	3,285	2,307	16	NA	NA	2,291	10,895	67	8,404	1,738	686	6,888	6,457	123	NA	2,393	3,941
2004	66,451	40,238	5,536	5,719	NA	1,264	24,434	3,286	2,371	14	NA	NA	2,357	10,457	56	7,971	1,748	681	7,031	6,354	75	NA	2,436	3,842
2005	68,459	40,646	5,452	5,714	NA	1,266	24,897	3,317	2,377	14	NA	NA	2,363	11,231	62	8,638	1,829	702	7,506	6,698	80	NA	2,544	4,074
2006	68,254	40,325	5,228	5,632	17	1,601	24,688	3,158	2,476	13	34	NA	2,429	10,452	74	7,694	1,956	728	8,079	6,922	87	NA	2,695	4,140
2007	69,735	38,961	4,988	3,560	22	3,001	24,337	3,054	2,643	11	41	NA	2,591	12,088	61	9,162	2,112	753	8,562	7,481	73	NA	2,950	4,458
2008	72,594	38,040	5,250	3,634	28	1,562	24,311	3,255	2,799	11	50	13	2,726	14,599	69	11,506	2,256	767	8,968	8,188	72	19	3,179	4,918
2009	76,700	39,729	5,726	4,664	35	1,410	24,213	3,682	2,672	13	60	14	2,585	16,994	61	14,098	2,100	735	8,690	8,615	72	36	3,191	5,316
2010	79,434	41,661	5,314	6,734	41	1,462	24,559	3,551	2,462	19	66	11	2,367	18,145	70	15,491	1,854	731	8,329	8,837	80	60	3,101	5,595
2011	74,927	39,910	5,142	6,451	41	690	24,448	3,138	2,382	11	64	22	2,286	15,178	69	12,514	1,837	758	8,655	8,802	65	38	3,092	5,607
2012	73,843	38,107	5,489	5,530	40	644	23,312	3,092	2,283	14	59	10	2,200	15,302	61	12,611	1,866	764	9,244	8,908	57	29	3,189	5,634
2013	77,775	35,560	5,239	4,015	38	1,175	22,115	2,979	2,253	12	53	20	2,168	20,682	52	17,890	1,942	799	9,756	9,523	38	87	3,366	6,033
2014	79,852	35,647	5,504	3,933	40	1,972	21,216	2,981	2,238	6	55	16	2,161	21,954	51	19,060	2,014	829	9,985	10,028	32	115	3,486	6,394

TABLE 7

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2015	80,497	35,467	5,626	3,862	40	1,947	21,094	2,898	2,267	4	56	13	2,194	21,744	45	18,742	2,106	851	10,486	10,533	30	114	3,627	6,761
2016	81,037	35,140	5,787	3,889	36	1,927	21,231	2,271	2,303	5	52	19	2,227	24,518	42	21,637	2,162	678	10,948	8,128	33	111	3,794	4,190
2017	82,319	35,076	5,809	3,763	38	1,720	21,529	2,218	2,288	6	51	16	2,215	24,907	35	21,944	2,234	691	11,349	8,699	28	95	4,025	4,549
2018	87,058	36,632	6,188	3,796	40	2,298	22,081	2,227	2,290	8	51	11	2,219	27,170	35	24,062	2,356	714	11,758	9,208	30	101	4,278	4,798
2019	91,611	37,579	6,547	4,008	46	2,091	22,581	2,305	2,332	9	55	14	2,254	30,050	32	26,833	2,430	752	12,105	9,545	30	77	4,377	5,059
2020 <sup>a</sup>	94,938	38,540	6,898	4,121	49	1,913	22,923	2,636	2,378	8	59	15	2,297	31,817	30	28,508	2,502	773	12,612	9,591	29	82	4,484	4,994

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> The data for 2020 include estimates and are likely to later be revised.**Note(s):**

This table reaggregates the R&D performer data in [table 3](#) according to major categories of R&D funding: federal government, nonfederal government (state and local), business, higher education, and NPOs. Business sources of R&D funding in this table include the own funds of domestic R&D-performing businesses, funds from other domestic businesses, and funds from foreign businesses. For further detail on the R&D performers listed, see [table 2](#), footnotes a–f. Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. (See also [table 3](#), general notes.) The 1998–2020 data for NPO R&D performance funded by businesses and the nonprofit sector itself are estimated based on the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations and the 2016 Nonprofit Research Activities Survey. Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and onward, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.) Type-of-R&D data for FFRDC R&D in 1953–54 include only those of university-administered FFRDCs. Starting in 2001, type-of-R&D data distinguish federally funded from and nonfederally funded FFRDC R&D. (See also [table 2](#), footnote b.) The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. Furthermore, the type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.) Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for those that are federally funded. (See also [table 2](#), footnote f.) Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&amp;D Resources (annual series).

TABLE 8

## U.S. applied research expenditures, by source of funds and performing sectors: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal						Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
Current \$millions																								
1953	1,289	756	347	48	NA	288	59	14	30	NA	NA	NA	30	456	NA	438	7	11	28	20	NA	NA	10	10
1954	1,378	785	330	59	NA	322	60	16	32	NA	NA	NA	32	513	NA	492	8	13	28	21	NA	NA	10	11
1955	1,502	838	333	86	NA	339	63	18	32	NA	NA	NA	32	583	NA	560	9	14	27	22	NA	NA	11	11
1956	1,929	1,026	387	125	NA	430	65	20	33	NA	NA	NA	33	818	NA	794	10	14	27	25	NA	NA	11	14
1957	2,413	1,304	446	149	NA	624	63	23	34	NA	NA	NA	34	1,018	NA	992	12	14	27	31	NA	NA	11	20
1958	2,759	1,497	516	156	NA	731	66	29	35	NA	NA	NA	35	1,163	NA	1,137	12	14	27	37	NA	NA	12	25
1959	2,940	1,630	577	179	NA	757	78	40	37	NA	NA	NA	37	1,206	NA	1,178	13	15	28	39	NA	NA	12	27
1960	3,065	1,732	615	201	NA	769	93	54	39	NA	NA	NA	39	1,226	NA	1,196	13	17	29	40	NA	NA	12	28
1961	3,123	1,811	668	240	NA	738	104	62	40	NA	NA	NA	40	1,195	NA	1,165	13	17	30	48	NA	NA	13	35
1962	3,698	2,098	709	249	NA	954	119	68	41	NA	NA	NA	41	1,471	NA	1,438	14	19	30	58	NA	NA	13	45
1963	3,864	2,244	809	275	NA	952	128	82	42	NA	NA	NA	42	1,483	NA	1,450	14	19	32	63	NA	NA	14	49
1964	4,201	2,462	947	313	NA	978	142	82	45	NA	NA	NA	45	1,593	NA	1,560	14	19	37	65	NA	NA	18	47
1965	4,374	2,553	994	294	NA	992	176	98	46	NA	NA	NA	46	1,654	NA	1,620	13	21	42	79	NA	NA	27	52
1966	4,653	2,625	1,012	290	NA	986	208	129	47	NA	NA	NA	47	1,842	NA	1,804	14	24	48	91	NA	NA	34	57
1967	4,848	2,763	1,069	334	NA	983	238	141	46	NA	NA	NA	46	1,890	NA	1,849	16	25	54	96	NA	NA	36	60
1968	5,137	2,811	1,112	334	NA	956	250	160	46	NA	NA	NA	46	2,125	NA	2,081	16	28	55	101	NA	NA	39	62
1969	5,454	2,924	1,229	336	NA	920	257	183	48	NA	NA	NA	48	2,320	NA	2,272	16	32	54	109	NA	NA	43	66
1970	5,752	3,100	1,334	336	NA	952	280	199	51	NA	NA	NA	51	2,429	NA	2,378	18	33	56	117	NA	NA	47	70
1971	5,833	3,091	1,355	312	NA	907	306	212	61	NA	NA	NA	61	2,494	NA	2,441	19	34	67	121	NA	NA	47	74
1972	6,147	3,243	1,434	358	NA	845	391	216	74	NA	NA	NA	74	2,618	NA	2,562	21	35	82	131	NA	NA	52	79
1973	6,655	3,429	1,527	334	NA	883	450	236	88	NA	NA	NA	88	2,894	NA	2,832	26	36	100	145	NA	NA	62	83
1974	7,344	3,634	1,652	335	NA	905	477	266	96	NA	NA	NA	96	3,333	NA	3,263	32	39	118	163	NA	NA	72	91
1975	8,091	4,125	1,912	384	NA	991	550	290	113	NA	NA	NA	113	3,520	NA	3,440	39	42	141	192	NA	NA	92	100
1976	8,976	4,464	2,068	457	NA	1,033	596	310	127	NA	NA	NA	127	4,001	NA	3,912	45	45	166	218	NA	NA	109	109
1977	9,662	4,683	2,081	540	NA	1,113	626	324	134	NA	NA	NA	134	4,410	NA	4,311	51	48	194	241	NA	NA	121	120
1978	10,704	5,080	2,242	597	NA	1,195	676	371	151	NA	NA	NA	151	4,982	NA	4,870	61	52	232	259	NA	NA	128	132
1979	12,097	5,602	2,415	654	NA	1,305	793	436	161	NA	NA	NA	161	5,797	NA	5,670	71	55	263	273	NA	NA	129	144
1980	13,729	6,252	2,546	749	NA	1,625	912	420	174	NA	NA	NA	174	6,698	NA	6,550	88	60	308	298	NA	NA	140	158
1981	16,329	6,905	2,731	788	NA	2,042	953	391	199	NA	NA	NA	199	8,531	NA	8,359	108	64	363	332	NA	NA	159	173
1982	18,218	7,689	2,802	890	NA	2,593	1,007	398	207	NA	NA	NA	207	9,553	NA	9,363	121	69	402	367	NA	NA	178	189
1983	20,298	8,738	2,991	965	NA	3,227	1,122	433	215	NA	NA	NA	215	10,501	NA	10,286	141	74	443	401	NA	NA	194	207
1984	22,451	9,499	2,961	1,176	NA	3,677	1,226	459	234	NA	NA	NA	234	11,788	NA	11,541	168	79	491	438	NA	NA	212	226



TABLE 8

**U.S. applied research expenditures, by source of funds and performing sectors: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO	
1985	25,401	10,930	3,135	1,292	NA	4,717	1,296	490	262	NA	NA	NA	262	13,191	NA	12,908	198	85	547	471	NA	NA	224	247	
1986	27,240	10,409	3,204	1,258	NA	4,049	1,393	506	298	NA	NA	NA	298	15,402	NA	15,082	229	91	620	510	NA	NA	240	270	
1987	27,951	10,829	3,366	1,228	NA	4,037	1,643	555	333	NA	NA	NA	333	15,511	NA	15,153	260	98	707	571	NA	NA	276	295	
1988	29,528	10,749	3,362	984	NA	3,846	1,958	599	377	NA	NA	NA	377	16,938	NA	16,531	302	105	818	647	NA	NA	325	322	
1989	32,277	11,753	3,566	1,047	NA	4,324	2,121	695	417	NA	NA	NA	417	18,452	NA	17,993	347	112	933	722	NA	NA	370	352	
1990	34,897	13,695	3,652	1,156	NA	5,967	2,140	780	453	NA	NA	NA	453	18,930	NA	18,432	377	120	1,031	788	NA	NA	404	384	
1991	38,631	14,280	4,093	1,446	NA	5,588	2,232	921	468	NA	NA	NA	468	21,946	NA	21,425	392	129	1,091	847	NA	NA	428	419	
1992	37,936	13,690	4,337	1,529	NA	4,476	2,415	933	479	NA	NA	NA	479	21,736	NA	21,184	414	138	1,120	911	NA	NA	454	456	
1993	37,283	14,075	4,838	1,500	NA	4,295	2,542	900	496	NA	NA	NA	496	20,547	NA	19,956	443	148	1,181	984	NA	NA	487	497	
1994	36,618	13,800	4,985	1,596	NA	3,616	2,644	960	517	NA	NA	NA	517	19,995	NA	19,372	464	158	1,256	1,049	NA	NA	509	541	
1995	40,936	13,543	4,952	1,714	NA	3,164	2,779	934	559	NA	NA	NA	559	24,418	NA	23,755	494	170	1,311	1,104	NA	NA	516	589	
1996	43,170	13,958	4,872	1,623	NA	3,640	2,864	960	584	NA	NA	NA	584	26,076	NA	25,370	524	182	1,390	1,162	NA	NA	522	640	
1997	46,516	12,852	4,997	1,679	NA	2,648	2,518	1,011	548	NA	NA	NA	548	30,502	NA	29,782	515	205	1,396	1,219	NA	NA	508	711	
1998	46,247	12,751	5,146	1,725	NA	2,632	2,189	1,060	515	NA	NA	NA	515	30,303	NA	29,576	509	218	1,393	1,285	NA	NA	502	784	
1999	51,853	13,869	5,530	1,651	NA	2,817	2,571	1,300	533	NA	NA	NA	533	34,586	NA	33,821	529	236	1,480	1,385	NA	NA	537	849	
2000	56,503	15,450	6,105	1,750	NA	2,682	3,081	1,831	558	NA	NA	NA	558	37,293	NA	36,494	540	258	1,604	1,598	NA	NA	578	1,021	
2001	63,956	18,595	7,052	2,379	NA	3,603	3,411	2,150	590	5	NA	NA	585	41,238	33	40,409	535	261	1,734	1,798	52	NA	621	1,126	
2002	50,521	18,987	7,487	2,905	NA	2,452	3,877	2,267	644	8	NA	NA	636	26,899	35	26,081	531	253	1,937	2,053	71	NA	689	1,293	
2003	61,059	22,234	7,672	3,152	NA	4,473	4,450	2,487	716	9	NA	NA	708	33,692	36	32,861	537	259	2,127	2,290	65	NA	739	1,486	
2004	69,132	22,417	7,455	3,057	NA	4,775	4,682	2,448	742	7	NA	NA	735	41,495	30	40,657	545	264	2,190	2,287	40	NA	759	1,488	
2005	69,653	23,329	7,557	3,241	NA	5,289	4,810	2,432	727	8	NA	NA	719	40,867	35	39,995	557	280	2,283	2,447	45	NA	774	1,627	
2006	76,622	24,864	7,435	3,531	87	6,140	5,080	2,592	889	8	169	NA	712	45,952	47	45,033	573	300	2,368	2,549	54	NA	789	1,705	
2007	85,319	29,438	7,222	5,293	111	8,945	5,284	2,583	968	14	210	NA	745	49,627	77	48,625	607	318	2,461	2,824	92	NA	848	1,885	
2008	76,639	27,142	7,316	5,843	146	5,397	5,840	2,600	1,161	15	261	71	815	42,386	89	41,292	675	331	2,682	3,268	93	105	951	2,119	
2009	74,117	32,092	7,874	5,979	186	7,797	7,207	3,049	1,314	19	316	38	942	34,288	88	33,124	757	319	2,913	3,511	104	96	1,006	2,305	
2010	79,017	29,651	8,016	5,025	219	4,705	8,645	3,041	1,405	18	354	32	1,002	41,138	67	39,987	763	321	3,074	3,749	77	182	1,034	2,456	
2011	81,891	29,572	8,024	5,057	226	4,404	9,168	2,693	1,411	13	348	70	981	43,791	81	42,590	781	340	3,333	3,784	77	122	1,073	2,512	
2012	86,822	30,191	8,587	5,566	220	4,137	9,053	2,629	1,387	19	330	45	994	47,727	81	46,436	861	349	3,602	3,916	76	137	1,132	2,571	
2013	88,158	32,424	8,309	6,639	213	6,028	8,771	2,465	1,420	22	300	47	1,051	46,121	94	44,738	918	371	3,854	4,338	69	199	1,268	2,802	
2014	91,771	33,353	8,775	6,765	200	6,445	8,594	2,574	1,394	13	271	35	1,075	48,163	107	46,685	979	392	4,127	4,735	67	250	1,392	3,025	
2015	97,249	34,585	9,347	7,182	199	6,102	8,964	2,791	1,399	9	282	24	1,085	51,726	96	50,137	1,086	407	4,457	5,083	64	209	1,579	3,231	
2016	110,484	37,016	9,805	7,469	209	5,327	9,665	4,541	1,517	10	300	45	1,162	59,430	84	57,253	1,202	891	4,877	7,644	65	245	1,826	5,508	
2017	114,069	38,251	10,124	7,868	208	5,386	10,146	4,520	1,550	15	279	33	1,223	60,728	91	58,429	1,270	926	5,230	8,308	72	193	1,943	6,093	

TABLE 8

## U.S. applied research expenditures, by source of funds and performing sectors: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2018	119,837	40,352	11,111	8,407	215	5,355	10,616	4,648	1,607	21	273	23	1,290	63,467	90	61,018	1,363	979	5,523	8,885	75	191	2,034	6,579
2019	132,021	41,849	11,264	9,075	225	5,246	11,144	4,895	1,675	23	269	42	1,341	73,277	83	70,679	1,449	1,049	5,763	9,454	77	209	2,097	7,062
2020 <sup>a</sup>	139,527	43,718	12,032	9,350	226	4,877	11,565	5,667	1,699	21	268	44	1,366	78,557	81	75,861	1,504	1,092	6,033	9,518	76	224	2,151	7,055
Constant 2012 \$millions																								
1953	8,928	5,233	2,403	329	NA	1,995	409	97	209	NA	NA	NA	209	3,155	NA	3,034	45	76	193	139	NA	NA	69	69
1954	9,457	5,387	2,261	401	NA	2,210	408	106	216	NA	NA	NA	216	3,517	NA	3,377	51	89	192	144	NA	NA	69	75
1955	10,133	5,656	2,247	580	NA	2,285	425	118	218	NA	NA	NA	218	3,931	NA	3,779	57	94	183	145	NA	NA	71	74
1956	12,584	6,692	2,522	812	NA	2,803	424	131	216	NA	NA	NA	216	5,338	NA	5,181	65	91	176	163	NA	NA	72	91
1957	15,243	8,235	2,814	941	NA	3,940	398	142	214	NA	NA	NA	214	6,427	NA	6,266	73	88	171	196	NA	NA	69	126
1958	17,040	9,245	3,187	963	NA	4,514	405	176	218	NA	NA	NA	218	7,183	NA	7,022	74	86	168	225	NA	NA	71	154
1959	17,909	9,931	3,512	1,090	NA	4,613	472	244	225	NA	NA	NA	225	7,344	NA	7,176	76	91	171	238	NA	NA	73	164
1960	18,424	10,409	3,693	1,208	NA	4,624	559	325	233	NA	NA	NA	233	7,369	NA	7,188	78	102	173	240	NA	NA	72	168
1961	18,573	10,770	3,973	1,424	NA	4,389	616	369	237	NA	NA	NA	237	7,107	NA	6,928	77	101	176	282	NA	NA	74	208
1962	21,727	12,328	4,163	1,463	NA	5,607	696	400	238	NA	NA	NA	238	8,640	NA	8,449	79	112	179	341	NA	NA	76	264
1963	22,446	13,036	4,699	1,594	NA	5,528	741	473	245	NA	NA	NA	245	8,614	NA	8,422	81	110	188	363	NA	NA	78	285
1964	24,036	14,083	5,415	1,791	NA	5,596	812	469	259	NA	NA	NA	259	9,111	NA	8,925	77	109	213	369	NA	NA	100	269
1965	24,574	14,342	5,582	1,649	NA	5,574	986	551	261	NA	NA	NA	261	9,293	NA	9,102	73	118	237	441	NA	NA	149	292
1966	25,430	14,345	5,531	1,585	NA	5,389	1,137	702	257	NA	NA	NA	257	10,068	NA	9,860	77	131	265	495	NA	NA	183	312
1967	25,750	14,675	5,675	1,771	NA	5,221	1,261	746	242	NA	NA	NA	242	10,036	NA	9,821	82	133	286	510	NA	NA	191	319
1968	26,170	14,318	5,662	1,702	NA	4,870	1,271	813	234	NA	NA	NA	234	10,826	NA	10,601	82	143	280	512	NA	NA	196	316
1969	26,489	14,199	5,970	1,629	NA	4,468	1,246	886	234	NA	NA	NA	234	11,267	NA	11,034	78	155	262	527	NA	NA	206	321
1970	26,537	14,303	6,154	1,550	NA	4,392	1,289	918	236	NA	NA	NA	236	11,203	NA	10,970	81	152	257	537	NA	NA	215	323
1971	25,609	13,570	5,949	1,368	NA	3,982	1,343	929	266	NA	NA	NA	266	10,947	NA	10,717	81	149	294	531	NA	NA	206	325
1972	25,870	13,648	6,035	1,507	NA	3,556	1,643	907	312	NA	NA	NA	312	11,016	NA	10,783	86	147	344	549	NA	NA	217	332
1973	26,554	13,683	6,094	1,333	NA	3,523	1,793	940	350	NA	NA	NA	350	11,547	NA	11,299	104	144	398	577	NA	NA	245	331
1974	26,884	13,304	6,048	1,225	NA	3,313	1,744	974	352	NA	NA	NA	352	12,202	NA	11,945	115	142	432	595	NA	NA	262	333
1975	27,107	13,820	6,405	1,285	NA	3,320	1,841	970	380	NA	NA	NA	380	11,793	NA	11,525	129	139	471	643	NA	NA	308	335
1976	28,505	14,175	6,568	1,451	NA	3,280	1,891	984	404	NA	NA	NA	404	12,706	NA	12,423	141	142	526	694	NA	NA	346	348
1977	28,888	14,002	6,220	1,614	NA	3,328	1,870	969	402	NA	NA	NA	402	13,185	NA	12,889	152	144	580	719	NA	NA	360	359
1978	29,900	14,190	6,261	1,666	NA	3,338	1,888	1,037	422	NA	NA	NA	422	13,916	NA	13,603	169	144	647	724	NA	NA	356	367
1979	31,202	14,450	6,229	1,687	NA	3,366	2,044	1,124	417	NA	NA	NA	417	14,952	NA	14,625	184	143	679	704	NA	NA	333	372
1980	32,478	14,789	6,023	1,772	NA	3,844	2,158	993	411	NA	NA	NA	411	15,844	NA	15,495	209	141	729	705	NA	NA	332	373
1981	35,289	14,923	5,903	1,703	NA	4,413	2,059	845	431	NA	NA	NA	431	18,436	NA	18,065	233	138	784	716	NA	NA	343	373

TABLE 8

## U.S. applied research expenditures, by source of funds and performing sectors: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
1982	37,080	15,650	5,702	1,812	NA	5,278	2,049	810	422	NA	NA	NA	422	19,443	NA	19,057	246	140	818	747	NA	NA	362	385
1983	39,756	17,115	5,859	1,890	NA	6,321	2,198	848	421	NA	NA	NA	421	20,567	NA	20,147	277	144	868	785	NA	NA	380	405
1984	42,442	17,957	5,597	2,223	NA	6,951	2,318	868	443	NA	NA	NA	443	22,284	NA	21,817	317	149	929	829	NA	NA	401	428
1985	46,546	20,028	5,745	2,367	NA	8,644	2,376	897	479	NA	NA	NA	479	24,171	NA	23,654	362	155	1,003	864	NA	NA	411	453
1986	48,931	18,698	5,755	2,260	NA	7,273	2,502	908	535	NA	NA	NA	535	27,667	NA	27,092	411	163	1,114	916	NA	NA	431	486
1987	48,997	18,983	5,900	2,153	NA	7,077	2,880	973	584	NA	NA	NA	584	27,189	NA	26,563	456	171	1,240	1,001	NA	NA	483	518
1988	49,998	18,200	5,693	1,665	NA	6,512	3,316	1,014	638	NA	NA	NA	638	28,679	NA	27,991	511	177	1,385	1,096	NA	NA	550	546
1989	52,590	19,150	5,811	1,705	NA	7,045	3,456	1,132	679	NA	NA	NA	679	30,065	NA	29,317	565	183	1,520	1,176	NA	NA	603	573
1990	54,808	21,509	5,736	1,816	NA	9,372	3,362	1,224	711	NA	NA	NA	711	29,730	NA	28,949	592	189	1,619	1,238	NA	NA	635	603
1991	58,689	21,694	6,219	2,196	NA	8,489	3,390	1,399	711	NA	NA	NA	711	33,340	NA	32,549	595	196	1,657	1,287	NA	NA	651	636
1992	56,347	20,334	6,442	2,271	NA	6,648	3,587	1,387	711	NA	NA	NA	711	32,286	NA	31,466	615	205	1,664	1,353	NA	NA	675	678
1993	54,095	20,421	7,020	2,176	NA	6,232	3,688	1,305	719	NA	NA	NA	719	29,813	NA	28,955	643	215	1,714	1,428	NA	NA	707	721
1994	52,020	19,605	7,082	2,267	NA	5,137	3,756	1,363	735	NA	NA	NA	735	28,405	NA	27,520	660	225	1,784	1,491	NA	NA	722	769
1995	56,961	18,845	6,891	2,385	NA	4,403	3,867	1,299	777	NA	NA	NA	777	33,977	NA	33,054	687	236	1,825	1,537	NA	NA	718	819
1996	58,989	19,072	6,657	2,217	NA	4,974	3,913	1,311	798	NA	NA	NA	798	35,631	NA	34,667	716	248	1,900	1,588	NA	NA	714	875
1997	62,483	17,264	6,712	2,255	NA	3,557	3,382	1,358	737	NA	NA	NA	737	40,971	NA	40,005	691	275	1,875	1,637	NA	NA	683	954
1998	61,431	16,938	6,835	2,291	NA	3,496	2,908	1,408	684	NA	NA	NA	684	40,252	NA	39,286	676	289	1,850	1,708	NA	NA	667	1,041
1999	67,897	18,160	7,241	2,161	NA	3,689	3,367	1,702	698	NA	NA	NA	698	45,287	NA	44,285	693	309	1,938	1,814	NA	NA	703	1,111
2000	72,415	19,801	7,825	2,243	NA	3,437	3,949	2,347	715	NA	NA	NA	715	47,795	NA	46,772	692	331	2,055	2,048	NA	NA	740	1,308
2001	80,163	23,308	8,839	2,982	NA	4,516	4,276	2,695	740	7	NA	NA	733	51,688	42	50,649	671	327	2,173	2,254	65	NA	778	1,411
2002	62,352	23,433	9,241	3,585	NA	3,026	4,784	2,797	795	10	NA	NA	785	33,199	43	32,188	655	312	2,390	2,534	88	NA	851	1,596
2003	73,898	26,909	9,285	3,815	NA	5,414	5,386	3,010	867	10	NA	NA	856	40,776	43	39,771	649	313	2,574	2,772	79	NA	894	1,799
2004	81,482	26,422	8,786	3,603	NA	5,628	5,519	2,885	875	9	NA	NA	866	48,908	35	47,920	642	311	2,582	2,695	48	NA	894	1,753
2005	79,600	26,661	8,637	3,703	NA	6,044	5,497	2,779	831	9	NA	NA	822	46,703	40	45,707	636	321	2,609	2,796	52	NA	885	1,859
2006	84,942	27,564	8,242	3,914	96	6,807	5,632	2,873	985	9	187	NA	789	50,942	52	49,923	635	332	2,625	2,825	60	NA	875	1,890
2007	92,096	31,777	7,795	5,714	120	9,656	5,704	2,788	1,045	15	227	NA	804	53,569	83	52,487	655	344	2,656	3,049	99	NA	915	2,035
2008	81,169	28,746	7,749	6,188	155	5,716	6,185	2,754	1,230	16	276	75	863	44,892	94	43,732	715	350	2,840	3,461	99	111	1,007	2,245
2009	77,999	33,772	8,286	6,292	196	8,205	7,584	3,209	1,383	20	332	40	991	36,083	92	34,859	796	335	3,065	3,695	109	101	1,059	2,426
2010	82,167	30,833	8,336	5,225	227	4,893	8,990	3,162	1,461	19	368	33	1,041	42,779	70	41,582	793	334	3,197	3,898	80	189	1,075	2,554
2011	83,423	30,125	8,174	5,152	230	4,486	9,339	2,744	1,438	13	355	71	999	44,610	82	43,387	795	346	3,395	3,855	78	124	1,093	2,559
2012	86,822	30,191	8,587	5,566	220	4,137	9,053	2,629	1,387	19	330	45	994	47,727	81	46,436	861	349	3,602	3,916	76	137	1,132	2,571
2013	86,640	31,866	8,166	6,524	209	5,924	8,620	2,423	1,396	21	295	46	1,033	45,327	92	43,968	902	365	3,788	4,264	68	196	1,246	2,754
2014	88,537	32,178	8,466	6,527	193	6,218	8,291	2,483	1,345	12	262	34	1,037	46,465	103	45,040	944	378	3,982	4,568	65	241	1,343	2,919

TABLE 8

**U.S. applied research expenditures, by source of funds and performing sectors: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources		Federal					Nonfederal government					Business					Higher education	NPOs					
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2015	92,892	33,035	8,928	6,860	190	5,829	8,562	2,666	1,337	9	269	23	1,036	49,408	91	47,891	1,037	389	4,257	4,855	62	200	1,508	3,086
2016	104,487	35,007	9,273	7,063	198	5,038	9,140	4,295	1,435	10	284	43	1,098	56,204	79	54,146	1,137	842	4,612	7,229	62	232	1,727	5,209
2017	105,868	35,501	9,396	7,303	193	4,998	9,416	4,195	1,439	14	259	30	1,135	56,362	85	54,228	1,178	859	4,854	7,711	66	179	1,803	5,655
2018	108,626	36,577	10,072	7,621	195	4,854	9,622	4,213	1,457	19	247	21	1,169	57,529	81	55,310	1,235	887	5,006	8,054	68	173	1,844	5,964
2019	117,567	37,267	10,031	8,081	200	4,672	9,923	4,359	1,491	20	239	37	1,194	65,255	74	62,941	1,290	934	5,132	8,419	69	186	1,867	6,289
2020 <sup>a</sup>	122,772	38,468	10,588	8,227	199	4,292	10,177	4,987	1,495	18	236	39	1,202	69,123	71	66,751	1,324	961	5,308	8,375	67	197	1,893	6,208

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> The data for 2020 include estimates and are likely to be revised later.**Note(s):**

This table reaggregates the R&D performer data in [table 4](#) according to major categories of R&D funding: federal government, nonfederal government (state and local), business, higher education, and NPOs. Business sources of R&D funding in this table include the own funds of domestic R&D-performing businesses, funds from other domestic businesses, and funds from foreign businesses. For further detail on the R&D performers listed, see [table 2](#), footnotes a–f. Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers in the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. (See also [table 4](#), general notes.) The 1998–2020 data for NPO R&D performance funded by businesses and the nonprofit sector itself are estimated based on the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations and the 2016 Nonprofit Research Activities Survey. Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and onward, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.) Type-of-R&D data for FFRDC R&D in 1953–54 include only those of university-administered FFRDCs. Starting in 2001, type-of-R&D data distinguish federally funded from and nonfederally funded FFRDC R&D. (See also [table 2](#), footnote b.) The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. Furthermore, the type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.) Type-of-R&D data for R&D by NPOs in 1998 and later years are estimated, except for those that are federally funded. (See also [table 2](#), footnote f.) Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&amp;D Resources (annual series).

TABLE 9

**U.S. development expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO		
Current \$millions																										
1953	3,412	1,762	567	48	NA	1,123	9	17	3	NA	NA	NA	3	1,637	NA	1,630	1	6	3	7	NA	NA	1	6		
1954	3,734	2,027	537	62	NA	1,405	9	15	3	NA	NA	NA	3	1,693	NA	1,685	1	7	3	8	NA	NA	1	7		
1955	4,113	2,351	543	171	NA	1,614	12	12	4	NA	NA	NA	4	1,748	NA	1,738	2	8	3	8	NA	NA	1	7		
1956	5,854	3,561	631	348	NA	2,559	14	11	4	NA	NA	NA	4	2,277	NA	2,267	2	8	4	9	NA	NA	2	7		
1957	6,681	4,477	728	429	NA	3,300	12	9	5	NA	NA	NA	5	2,185	NA	2,174	3	8	4	10	NA	NA	2	8		
1958	7,213	4,940	842	386	NA	3,691	13	9	6	NA	NA	NA	6	2,252	NA	2,241	3	8	4	11	NA	NA	2	9		
1959	8,463	5,871	940	477	NA	4,426	16	14	6	NA	NA	NA	6	2,569	NA	2,557	3	9	5	12	NA	NA	2	10		
1960	9,360	6,390	1,003	559	NA	4,799	19	10	6	NA	NA	NA	6	2,948	NA	2,935	3	10	5	12	NA	NA	2	10		
1961	9,930	6,701	1,090	670	NA	4,917	22	4	7	NA	NA	NA	7	3,201	NA	3,189	2	10	5	16	NA	NA	2	14		
1962	10,114	6,822	1,227	618	NA	4,950	23	5	8	NA	NA	NA	8	3,259	NA	3,246	2	11	6	20	NA	NA	2	18		
1963	11,539	7,955	1,465	668	NA	5,795	22	6	8	NA	NA	NA	8	3,548	NA	3,535	2	11	6	22	NA	NA	2	20		
1964	12,506	8,610	1,680	739	NA	6,156	30	6	8	NA	NA	NA	8	3,861	NA	3,848	2	11	7	21	NA	NA	3	18		
1965	13,215	8,742	1,789	674	NA	6,218	48	13	9	NA	NA	NA	9	4,433	NA	4,419	2	12	8	24	NA	NA	4	20		
1966	14,490	9,466	1,886	654	NA	6,849	61	16	9	NA	NA	NA	9	4,977	NA	4,961	2	14	10	28	NA	NA	5	23		
1967	15,332	9,521	1,943	706	NA	6,795	66	12	9	NA	NA	NA	9	5,762	NA	5,744	3	15	10	31	NA	NA	7	24		
1968	16,154	9,756	1,904	724	NA	7,044	72	13	8	NA	NA	NA	8	6,346	NA	6,326	4	16	9	35	NA	NA	9	26		
1969	17,051	9,848	2,016	792	NA	6,944	80	17	7	NA	NA	NA	7	7,150	NA	7,127	5	18	8	38	NA	NA	10	28		
1970	16,925	9,382	2,258	790	NA	6,232	84	20	6	NA	NA	NA	6	7,489	NA	7,466	5	18	7	40	NA	NA	10	30		
1971	17,399	9,561	2,473	841	NA	6,167	69	12	8	NA	NA	NA	8	7,780	NA	7,757	4	19	9	42	NA	NA	9	33		
1972	18,743	10,141	2,639	863	NA	6,533	63	44	12	NA	NA	NA	12	8,533	NA	8,510	4	19	14	44	NA	NA	9	35		
1973	20,197	10,311	2,657	860	NA	6,621	71	102	18	NA	NA	NA	18	9,798	NA	9,773	5	20	20	51	NA	NA	13	38		
1974	21,504	10,506	2,765	983	NA	6,553	75	131	20	NA	NA	NA	20	10,896	NA	10,868	7	22	25	57	NA	NA	15	42		
1975	22,706	10,993	2,890	1,103	NA	6,783	83	135	22	NA	NA	NA	22	11,600	NA	11,569	8	23	27	63	NA	NA	16	47		
1976	25,085	12,035	2,972	1,315	NA	7,522	100	128	24	NA	NA	NA	24	12,927	NA	12,890	12	25	31	68	NA	NA	16	52		
1977	27,667	13,153	3,188	1,418	NA	8,275	153	119	28	NA	NA	NA	28	14,370	NA	14,328	15	27	40	76	NA	NA	19	58		
1978	31,056	14,383	3,676	1,584	NA	8,756	254	113	32	NA	NA	NA	32	16,504	NA	16,460	15	30	49	88	NA	NA	24	64		
1979	35,445	16,064	3,944	1,753	NA	9,888	336	143	34	NA	NA	NA	34	19,193	NA	19,145	16	32	56	99	NA	NA	28	71		
1980	40,748	17,587	4,072	2,009	NA	10,957	362	187	38	NA	NA	NA	38	22,945	NA	22,891	19	35	68	110	NA	NA	31	79		
1981	46,305	20,242	4,530	2,175	NA	12,791	386	360	44	NA	NA	NA	44	25,817	NA	25,756	24	37	80	123	NA	NA	35	88		
1982	51,879	22,323	5,178	2,170	NA	14,215	397	362	46	NA	NA	NA	46	29,286	NA	29,219	27	40	88	137	NA	NA	39	98		
1983	57,771	24,859	6,106	2,385	NA	15,522	399	447	47	NA	NA	NA	47	32,617	NA	32,542	31	44	97	151	NA	NA	43	109		
1984	66,461	28,320	7,078	2,572	NA	17,640	435	594	51	NA	NA	NA	51	37,815	NA	37,731	37	47	108	167	NA	NA	47	120		

TABLE 9

## U.S. development expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal					Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO		
1985	74,522	32,304	8,011	2,906	NA	20,258	486	644	57	NA	NA	NA	57	41,857	NA	41,762	43	51	120	183	NA	NA	49	134		
1986	75,855	33,993	8,275	3,101	NA	21,517	513	587	65	NA	NA	NA	65	41,460	NA	41,354	50	55	136	201	NA	NA	53	149		
1987	79,929	36,691	8,176	3,321	NA	24,122	599	474	73	NA	NA	NA	73	42,784	NA	42,667	57	60	155	226	NA	NA	61	165		
1988	84,567	37,285	8,864	3,596	NA	23,719	698	407	83	NA	NA	NA	83	46,765	NA	46,634	66	65	180	254	NA	NA	71	183		
1989	87,723	35,320	9,355	3,635	NA	21,049	773	507	91	NA	NA	NA	91	51,822	NA	51,676	76	70	205	285	NA	NA	81	203		
1990	94,067	33,859	9,700	3,663	NA	18,966	910	619	99	NA	NA	NA	99	59,568	NA	59,410	83	75	226	315	NA	NA	89	226		
1991	95,105	31,220	8,778	3,452	NA	17,256	1,012	722	103	NA	NA	NA	103	63,197	NA	63,030	86	82	239	345	NA	NA	94	251		
1992	99,811	31,514	9,098	3,423	NA	17,181	1,055	758	105	NA	NA	NA	105	67,567	NA	67,388	91	88	246	378	NA	NA	100	279		
1993	99,705	30,055	9,071	2,986	NA	16,083	1,127	787	109	NA	NA	NA	109	68,866	NA	68,674	97	95	259	416	NA	NA	107	309		
1994	102,938	30,208	8,823	3,147	NA	16,209	1,213	815	114	NA	NA	NA	114	71,886	NA	71,681	102	103	276	455	NA	NA	112	343		
1995	113,079	32,436	9,262	3,427	NA	17,824	1,180	744	123	NA	NA	NA	123	79,738	NA	79,518	108	111	288	495	NA	NA	113	381		
1996	121,377	31,373	9,033	3,448	NA	17,066	1,128	698	128	NA	NA	NA	128	89,032	NA	88,797	115	120	305	538	NA	NA	115	423		
1997	128,661	32,256	9,077	3,331	NA	18,121	1,041	687	120	NA	NA	NA	120	95,331	NA	95,063	113	155	306	648	NA	NA	112	536		
1998	144,669	32,684	9,214	3,314	NA	18,452	943	760	113	NA	NA	NA	113	110,865	NA	110,589	112	164	306	702	NA	NA	110	592		
1999	154,315	30,584	9,265	3,335	NA	16,571	686	727	117	NA	NA	NA	117	122,530	NA	122,236	116	178	325	759	NA	NA	118	641		
2000	169,414	27,493	9,377	3,482	NA	13,510	545	580	123	NA	NA	NA	123	140,549	NA	140,235	119	195	352	897	NA	NA	127	771		
2001	167,740	28,396	11,062	3,273	NA	12,542	646	874	136	7	NA	NA	128	137,770	46	137,410	117	197	381	1,057	71	NA	136	850		
2002	176,601	29,745	11,800	3,308	NA	13,061	639	937	149	9	NA	NA	140	145,074	40	144,727	116	191	425	1,208	81	NA	151	976		
2003	175,483	30,011	12,646	3,785	NA	11,939	897	743	166	10	NA	NA	155	143,477	43	143,121	118	195	467	1,363	78	NA	162	1,122		
2004	177,220	34,238	12,746	4,561	NA	14,419	1,211	1,300	172	11	NA	NA	161	140,978	45	140,615	120	199	481	1,350	60	NA	167	1,123		
2005	195,731	36,517	13,994	4,654	NA	15,512	1,146	1,211	169	11	NA	NA	158	157,080	50	156,696	122	212	501	1,463	65	NA	170	1,228		
2006	212,719	38,699	16,089	4,358	2	16,720	927	603	171	10	5	NA	156	171,802	58	171,392	126	226	520	1,527	67	NA	173	1,287		
2007	227,968	39,595	18,016	5,254	3	14,860	894	568	178	8	6	NA	163	185,989	47	185,569	133	240	540	1,665	56	NA	186	1,423		
2008	259,596	54,556	17,566	6,094	4	29,488	841	562	417	7	7	223	179	201,848	45	201,406	148	250	589	2,186	47	330	209	1,600		
2009	255,931	55,920	17,245	6,159	5	30,435	1,526	550	442	8	9	144	282	196,174	39	195,614	280	241	887	2,509	46	361	361	1,740		
2010	251,195	56,904	18,844	6,909	6	28,089	2,419	638	530	11	10	114	396	189,538	40	188,850	407	242	1,178	3,044	45	647	498	1,854		
2011	270,772	58,265	21,879	6,786	6	26,228	2,575	790	637	6	10	230	391	207,737	41	207,025	415	256	1,274	2,859	39	403	521	1,897		
2012	273,051	55,539	19,941	6,631	6	25,840	2,603	518	488	10	9	102	367	212,699	43	211,949	444	263	1,454	2,871	40	310	579	1,941		
2013	286,976	51,524	19,767	6,572	6	22,137	2,568	474	531	11	8	126	385	230,023	49	229,213	482	280	1,597	3,302	36	532	620	2,115		
2014	301,428	48,065	20,303	6,681	6	18,065	2,540	471	500	7	8	87	399	247,491	58	246,601	536	296	1,733	3,640	36	624	696	2,284		
2015	312,977	47,817	18,961	7,062	6	18,850	2,517	422	504	6	8	90	401	258,753	62	257,831	554	307	1,857	4,045	42	786	778	2,439		
2016	325,528	44,001	15,838	7,479	7	16,790	2,573	1,314	568	8	11	129	420	274,937	64	273,926	561	386	1,962	4,060	50	760	866	2,384		
2017	351,248	45,587	15,848	8,021	9	17,736	2,665	1,308	563	11	12	92	448	298,820	64	297,747	607	401	2,096	4,182	51	560	934	2,638		

TABLE 9

## U.S. development expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO	
2018	388,957	48,860	18,856	8,567	9	17,301	2,782	1,345	598	15	12	85	486	332,750	65	331,637	624	424	2,185	4,564	54	748	914	2,848	
2019	431,981	49,758	21,253	8,962	13	15,058	3,055	1,417	636	17	16	112	492	374,777	60	373,631	631	454	2,202	4,607	56	617	877	3,057	
2020 <sup>a</sup>	460,545	50,300	22,064	9,331	17	13,945	3,303	1,640	636	15	20	119	482	402,715	60	401,527	654	473	2,239	4,655	56	662	881	3,054	
Constant 2012 \$millions																									
1953	23,628	12,204	3,924	329	NA	7,778	59	114	20	NA	NA	NA	20	11,338	NA	11,289	7	42	18	48	NA	NA	7	42	
1954	25,626	13,908	3,685	422	NA	9,643	58	100	24	NA	NA	NA	24	11,619	NA	11,564	7	48	21	55	NA	NA	7	48	
1955	27,756	15,863	3,661	1,151	NA	10,893	78	81	26	NA	NA	NA	26	11,792	NA	11,728	10	54	22	54	NA	NA	7	47	
1956	38,200	23,234	4,114	2,267	NA	16,696	88	69	29	NA	NA	NA	29	14,858	NA	14,793	13	52	23	55	NA	NA	10	46	
1957	42,204	28,282	4,595	2,710	NA	20,847	76	54	33	NA	NA	NA	33	13,799	NA	13,732	16	51	27	63	NA	NA	13	51	
1958	44,549	30,510	5,197	2,381	NA	22,799	77	56	35	NA	NA	NA	35	13,909	NA	13,841	19	49	27	68	NA	NA	12	56	
1959	51,555	35,768	5,726	2,903	NA	26,962	94	82	36	NA	NA	NA	36	15,650	NA	15,577	18	55	28	73	NA	NA	12	61	
1960	56,257	38,403	6,025	3,360	NA	28,844	114	60	38	NA	NA	NA	38	17,715	NA	17,640	15	60	28	72	NA	NA	12	60	
1961	59,056	39,852	6,479	3,985	NA	29,240	128	21	41	NA	NA	NA	41	19,037	NA	18,966	12	59	30	95	NA	NA	12	83	
1962	59,428	40,082	7,210	3,631	NA	29,083	132	26	45	NA	NA	NA	45	19,149	NA	19,073	12	65	34	118	NA	NA	12	106	
1963	67,026	46,209	8,509	3,880	NA	33,660	128	32	46	NA	NA	NA	46	20,608	NA	20,533	12	64	35	128	NA	NA	12	116	
1964	71,552	49,261	9,612	4,228	NA	35,221	169	31	45	NA	NA	NA	45	22,090	NA	22,016	11	63	37	117	NA	NA	14	103	
1965	74,252	49,116	10,049	3,787	NA	34,937	270	73	49	NA	NA	NA	49	24,908	NA	24,829	11	67	44	135	NA	NA	22	112	
1966	79,197	51,737	10,309	3,572	NA	37,435	333	87	51	NA	NA	NA	51	27,203	NA	27,116	11	77	53	153	NA	NA	27	126	
1967	81,432	50,570	10,320	3,747	NA	36,091	348	64	45	NA	NA	NA	45	30,602	NA	30,509	13	80	53	162	NA	NA	35	127	
1968	82,292	49,698	9,700	3,686	NA	35,885	364	64	39	NA	NA	NA	39	32,329	NA	32,227	20	82	47	178	NA	NA	46	132	
1969	82,809	47,827	9,790	3,844	NA	33,724	386	83	34	NA	NA	NA	34	34,725	NA	34,613	24	87	39	185	NA	NA	49	136	
1970	78,077	43,282	10,416	3,642	NA	28,749	385	90	30	NA	NA	NA	30	34,548	NA	34,442	23	83	32	185	NA	NA	46	138	
1971	76,386	41,974	10,855	3,690	NA	27,075	303	50	34	NA	NA	NA	34	34,157	NA	34,056	18	83	38	182	NA	NA	37	145	
1972	78,884	42,679	11,108	3,630	NA	27,495	263	183	52	NA	NA	NA	52	35,910	NA	35,816	15	80	57	185	NA	NA	38	147	
1973	80,583	41,139	10,602	3,431	NA	26,417	281	407	70	NA	NA	NA	70	39,093	NA	38,993	20	80	80	201	NA	NA	50	152	
1974	78,721	38,461	10,123	3,597	NA	23,989	273	480	73	NA	NA	NA	73	39,887	NA	39,784	24	79	90	209	NA	NA	55	155	
1975	76,069	36,829	9,682	3,695	NA	22,725	276	451	74	NA	NA	NA	74	38,864	NA	38,759	27	78	92	211	NA	NA	54	157	
1976	79,658	38,218	9,437	4,174	NA	23,886	316	405	76	NA	NA	NA	76	41,049	NA	40,932	37	80	99	216	NA	NA	51	165	
1977	82,719	39,325	9,531	4,240	NA	24,740	457	356	83	NA	NA	NA	83	42,963	NA	42,837	43	82	120	228	NA	NA	55	173	
1978	86,747	40,176	10,269	4,426	NA	24,458	709	315	89	NA	NA	NA	89	46,100	NA	45,977	41	83	137	245	NA	NA	66	179	
1979	91,425	41,434	10,172	4,521	NA	25,504	868	369	88	NA	NA	NA	88	49,503	NA	49,381	40	83	144	255	NA	NA	71	184	
1980	96,393	41,604	9,634	4,752	NA	25,920	856	442	90	NA	NA	NA	90	54,278	NA	54,151	46	82	160	260	NA	NA	73	187	
1981	100,071	43,745	9,791	4,701	NA	27,643	834	777	95	NA	NA	NA	95	55,794	NA	55,662	51	81	172	265	NA	NA	75	190	

TABLE 9

## U.S. development expenditures, by source of funds and performing sector: 1953–2020

(Millions of current and of constant 2012 dollars)

Year	All funding sources				Federal				Nonfederal government					Business					Higher education		NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO	
1982	105,592	45,434	10,539	4,417	NA	28,932	809	737	93	NA	NA	NA	93	59,607	NA	59,471	54	82	180	278	NA	NA	79	199	
1983	113,153	48,690	11,959	4,671	NA	30,402	782	876	92	NA	NA	NA	92	63,884	NA	63,738	61	86	191	296	NA	NA	83	213	
1984	125,640	53,537	13,381	4,863	NA	33,347	822	1,124	97	NA	NA	NA	97	71,487	NA	71,328	70	89	204	316	NA	NA	88	228	
1985	136,559	59,197	14,679	5,325	NA	37,122	891	1,180	105	NA	NA	NA	105	76,701	NA	76,528	80	94	220	335	NA	NA	90	245	
1986	136,260	61,062	14,864	5,571	NA	38,651	922	1,054	117	NA	NA	NA	117	74,474	NA	74,285	90	99	245	361	NA	NA	95	267	
1987	140,112	64,318	14,331	5,821	NA	42,285	1,049	830	128	NA	NA	NA	128	74,998	NA	74,794	100	105	272	395	NA	NA	106	289	
1988	143,192	63,133	15,009	6,089	NA	40,162	1,182	690	140	NA	NA	NA	140	79,184	NA	78,963	112	109	304	431	NA	NA	121	310	
1989	142,931	57,548	15,243	5,923	NA	34,296	1,260	826	149	NA	NA	NA	149	84,436	NA	84,198	124	114	334	464	NA	NA	132	332	
1990	147,740	53,177	15,235	5,753	NA	29,788	1,429	972	156	NA	NA	NA	156	93,556	NA	93,308	130	118	355	494	NA	NA	139	355	
1991	144,483	47,430	13,335	5,245	NA	26,215	1,537	1,097	156	NA	NA	NA	156	96,010	NA	95,755	131	124	364	524	NA	NA	143	381	
1992	148,253	46,810	13,513	5,084	NA	25,520	1,567	1,126	156	NA	NA	NA	156	100,360	NA	100,094	135	131	365	562	NA	NA	148	414	
1993	144,668	43,608	13,162	4,333	NA	23,336	1,636	1,141	158	NA	NA	NA	158	99,922	NA	99,643	141	138	376	604	NA	NA	155	449	
1994	146,236	42,914	12,535	4,471	NA	23,027	1,724	1,158	161	NA	NA	NA	161	102,123	NA	101,832	145	146	392	647	NA	NA	159	488	
1995	157,344	45,133	12,888	4,769	NA	24,801	1,641	1,035	171	NA	NA	NA	171	110,951	NA	110,646	151	155	401	688	NA	NA	158	531	
1996	165,854	42,870	12,343	4,712	NA	23,320	1,542	953	175	NA	NA	NA	175	121,657	NA	121,336	157	164	417	735	NA	NA	157	579	
1997	172,825	43,328	12,192	4,474	NA	24,341	1,399	922	162	NA	NA	NA	162	128,053	NA	127,694	152	208	411	870	NA	NA	150	721	
1998	192,167	43,414	12,239	4,402	NA	24,510	1,253	1,010	150	NA	NA	NA	150	147,264	NA	146,898	148	218	406	932	NA	NA	146	786	
1999	202,061	40,048	12,132	4,367	NA	21,698	899	952	153	NA	NA	NA	153	160,442	NA	160,057	152	233	425	993	NA	NA	154	839	
2000	217,126	35,236	12,017	4,463	NA	17,315	698	743	157	NA	NA	NA	157	180,132	NA	179,730	152	250	451	1,150	NA	NA	162	988	
2001	210,246	35,592	13,865	4,102	NA	15,720	810	1,095	170	9	NA	NA	161	172,682	58	172,230	147	247	477	1,325	89	NA	171	1,066	
2002	217,957	36,710	14,563	4,083	NA	16,120	789	1,156	184	12	NA	NA	172	179,047	49	178,618	144	236	525	1,491	100	NA	187	1,205	
2003	212,382	36,321	15,305	4,581	NA	14,449	1,086	900	201	13	NA	NA	188	173,646	52	173,216	143	236	565	1,649	95	NA	196	1,358	
2004	208,879	40,355	15,023	5,376	NA	16,995	1,428	1,533	203	13	NA	NA	190	166,163	53	165,735	141	235	567	1,591	71	NA	196	1,324	
2005	223,683	41,732	15,993	5,318	NA	17,727	1,310	1,384	194	13	NA	NA	180	179,513	58	179,073	140	242	573	1,672	74	NA	194	1,404	
2006	235,819	42,901	17,837	4,831	3	18,536	1,027	668	190	11	5	NA	173	190,458	64	190,004	139	251	576	1,693	74	NA	192	1,427	
2007	246,076	42,740	19,447	5,671	3	16,040	965	613	192	9	6	NA	176	200,763	51	200,309	144	260	583	1,797	60	NA	201	1,536	
2008	274,942	57,781	18,605	6,455	4	31,231	891	596	441	8	8	236	189	213,780	48	213,311	157	264	623	2,315	50	350	221	1,695	
2009	269,334	58,849	18,148	6,482	6	32,029	1,606	578	465	9	9	151	296	206,447	41	205,858	295	253	933	2,640	48	380	380	1,832	
2010	261,210	59,173	19,595	7,184	6	29,209	2,515	663	551	11	10	118	412	197,095	41	196,379	423	252	1,225	3,166	47	673	518	1,928	
2011	275,837	59,355	22,288	6,913	6	26,719	2,623	805	649	7	10	234	398	211,623	41	210,897	423	261	1,297	2,913	39	411	531	1,932	
2012	273,051	55,539	19,941	6,631	6	25,840	2,603	518	488	10	9	102	367	212,699	43	211,949	444	263	1,454	2,871	40	310	579	1,941	
2013	282,037	50,637	19,427	6,459	6	21,756	2,523	466	521	11	8	124	378	226,064	48	225,267	473	275	1,569	3,245	35	522	609	2,079	
2014	290,804	46,370	19,587	6,445	5	17,428	2,450	455	482	7	7	84	384	238,768	56	237,909	517	286	1,672	3,511	35	602	671	2,203	



TABLE 9

**U.S. development expenditures, by source of funds and performing sector: 1953–2020**

(Millions of current and of constant 2012 dollars)

Year	All funding sources	Federal							Nonfederal government					Business					Higher education	NPOs				
	All performers	Total	Federal intramural	FFRDC	Nonfederal government	Business	Higher education	NPO	Total	FFRDC	Nonfederal government	Business	Higher education	Total	FFRDC	Business	Higher education	NPO	Higher education	Total	FFRDC	Business	Higher education	NPO
2015	298,954	45,675	18,112	6,746	5	18,005	2,404	403	481	6	8	86	383	247,160	59	246,279	529	293	1,774	3,864	40	751	743	2,330
2016	307,858	41,612	14,978	7,073	7	15,878	2,433	1,243	537	7	10	122	397	260,013	61	259,057	531	365	1,855	3,840	47	719	819	2,255
2017	325,995	42,310	14,709	7,445	8	16,461	2,473	1,214	522	10	11	86	415	277,336	60	276,340	563	372	1,945	3,882	47	520	866	2,448
2018	352,568	44,289	17,092	7,765	9	15,682	2,521	1,219	542	14	11	77	440	301,620	59	300,611	566	384	1,981	4,137	49	678	828	2,582
2019	384,687	44,311	18,926	7,980	12	13,410	2,721	1,262	566	15	14	99	438	333,746	53	332,726	562	404	1,961	4,103	50	549	781	2,722
2020 <sup>a</sup>	405,241	44,260	19,415	8,211	15	12,270	2,906	1,443	560	13	18	105	424	354,356	52	353,310	576	416	1,970	4,096	50	583	775	2,688

NA = not available.

FFRDC = federally funded R&amp;D center; NPO = nonprofit organization.

<sup>a</sup> The data for 2020 include estimates and are likely to be revised later.**Note(s):**

This table reaggregates the R&D performer data in [table 5](#) according to major categories of R&D funding: federal government, nonfederal government (state and local), business, higher education, and NPOs. Business sources of R&D funding in this table include the own funds of domestic R&D-performing businesses, funds from other domestic businesses, and funds from foreign businesses. For further detail on the R&D performers listed, see [table 2](#), footnotes a–f. Detail may not add to total because of rounding. Constant-dollar estimates are derived from unrounded data. For comparisons, use only the historical data reported in this table because some back-year data may have been revised. Except for the nonprofit sector, data are based on annual reports by performers the National Center for Science and Engineering Statistics' annual R&D expenditure surveys: Business Enterprise Research and Development Survey, Annual Business Survey, Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Expenditures Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—are collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. (See also [table 5](#), general notes.) The 1998–2020 data for NPO R&D performance funded by businesses and the nonprofit sector itself are estimated based on the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations and the 2016 Nonprofit Research Activities Survey. Type-of-R&D data for business R&D in 1998–2007 were revised in response to data quality review considerations and are not directly comparable with the data for 1997 and earlier years. For 2008 and onward, the type-of-R&D splits for other than total, own-funded, and federally funded R&D are estimated. (See also [table 2](#), footnote d.) Type-of-R&D data for FFRDC R&D in 1953–54 include only those of university-administered FFRDCs. Starting in 2001, type-of-R&D data distinguish federally funded from nonfederally funded FFRDC R&D. (See also [table 2](#), footnote b.) The type-of-R&D estimation procedure for higher education R&D was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported for earlier years. Furthermore, the type-of-R&D splits for other than total and federally funded are estimated. (See also [table 2](#), footnote e.) Type-of-R&D data for R&D by nonprofit organizations in 1998 and later years are estimated, except for those that are federally funded. (See also [table 2](#), footnote f.) Type-of-R&D data for state intramural R&D became available in the 2016 survey. These data prior to 2016 are estimated. (See also [table 2](#), footnote c.)

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&amp;D Resources (annual series).

TABLE 10

## U.S. R&amp;D expenditures, by state, performing sector, and source of funds: 2019

(Millions of current dollars)

State	All R&D	R&D rank	Performer: Source of funds:	Federal				FFRDCs				Business				Higher education <sup>a</sup>						NPOs		State, internal <sup>b</sup>		R&D intensity <sup>c</sup>	
				Federal	Total	Federal	Nonfederal <sup>d</sup>	Total	Own	Paid by others		Total	Federal	Other government	Business	Higher education	NPO	Other	Federal <sup>f</sup>	Total	GDP	GDP rank	Percent	Rank			
										Nonfederal <sup>e</sup>	Federal																
U.S. total <sup>g</sup>	666,875	na		39,870	22,932	22,538	394	498,175	433,077	42,445	22,653	78,176	39,556	4,364	4,808	21,559	5,341	2,549	8,900	675	21,372,600	na	3.12	na			
States total <sup>h</sup>	642,004	na		35,658	22,738	22,339	399	491,925	428,049	41,962	21,908	83,350	44,354	4,491	5,048	21,077	5,683	2,696	7,676	658	21,242,531	na	3.02	na			
Alabama	5,148	27		1,551	0	0	0	2,423	1,191	77	1,155	1,123	634	61	71	308	35	14	43	7	231,172	27	2.23	23			
Alaska	354	50		120	0	0	0	49	41	5	4	169	109	5	5	44	2	4	7	9	54,547	47	0.65	49			
Arizona	8,076	21		143	38	29	10	6,403	4,570	726	1,106	1,434	631	70	41	468	97	128	56	1	369,988	20	2.18	24			
Arkansas	860	42		28	0	0	0	461	397	36	28	365	132	69	15	131	9	9	7	0.07	130,840	36	0.66	48			
California	193,095	1		2,745	6,688	6,567	120	171,961	158,850	8,397	4,713	10,490	5,339	428	704	2,254	1,096	669	1,138	73	3,052,645	1	6.33	4			
Colorado	9,842	15		1,390	654	594	61	6,070	5,208	264	598	1,622	1,165	55	86	163	94	59	93	12	392,218	16	2.51	17			
Connecticut	8,885	18		22	0	0	0	7,421	6,171	357	892	1,387	749	17	87	416	105	15	30	25	288,109	23	3.08	13			
Delaware	2,397	34		4	0	0	0	2,156	1,436	715	5	229	145	13	6	56	5	5	5	3	77,042	43	3.11	12			
District of Columbia	5,968	25		4,532	9	9	0	412	277	23	111	665	326	5	23	188	88	34	348	2	144,406	34	4.13	7			
Florida	11,296	14		1,142	0	0	0	7,259	5,611	778	870	2,686	1,237	237	105	912	130	65	159	51	1,116,435	4	1.01	40			
Georgia	7,823	23		283	0	0	0	4,844	3,924	822	97	2,668	1,492	167	145	726	122	16	24	4	637,799	9	1.23	34			
Hawaii	647	45		170	0	0	0	159	86	54	19	301	187	20	2	78	13	2	16	*	91,781	39	0.70	46			
Idaho	3,391	31		39	478	464	15	2,697	2,608	83	6	168	84	41	3	35	2	3	3	7	82,420	41	4.11	8			
Illinois	18,254	10		204	1,145	1,121	24	14,112	13,383	655	74	2,710	1,606	39	179	696	152	38	82	1	890,486	5	2.05	27			
Indiana	9,765	16		151	0	0	0	7,952	6,895	927	130	1,661	699	47	101	635	123	55	1	*	381,020	18	2.56	16			
Iowa	4,075	28		69	34	33	*	3,087	2,285	161	641	880	406	50	46	344	31	4	1	3	194,323	31	2.10	26			
Kansas	3,518	30		63	0	0	0	2,748	1,857	880	11	704	282	76	112	199	33	3	2	1	176,739	33	1.99	30			
Kentucky	2,103	35		7	0	0	0	1,481	939	325	216	611	295	50	19	182	22	43	2	2	216,102	28	0.97	43			
Louisiana	1,554	37		59	0	0	0	703	534	48	121	778	302	99	70	233	50	24	2	11	254,562	24	0.61	51			
Maine	685	44		4	0	0	0	417	373	30	14	151	64	23	4	52	5	3	110	3	68,453	44	1.00	41			
Maryland	22,692	8		10,840	1,026	1,026	0	5,852	4,248	563	1,042	4,629	3,599	80	139	555	246	9	344	1	421,610	15	5.38	5			
Massachusetts	39,315	3		396	1,891	1,871	20	30,843	25,955	3,718	1,170	4,306	2,385	42	326	972	427	155	1,870	9	593,257	12	6.63	3			
Michigan	24,502	6		198	0	0	0	21,283	18,918	2,127	237	2,891	1,435	66	135	1,091	120	44	129	*	531,435	14	4.61	6			
Minnesota	9,436	17		44	0	0	0	8,026	7,547	378	101	1,061	507	87	52	344	43	26	303	2	383,040	17	2.46	18			
Mississippi	1,120	41		258	0	0	0	324	276	30	19	536	253	98	13	156	13	3	1	2	114,734	37	0.98	42			
Missouri	7,856	22		142	0	0	0	6,344	4,150	157	2,036	1,325	753	11	113	330	104	15	37	8	332,273	22	2.36	21			
Montana	543	47		57	0	0	0	205	176	17	11	273	151	25	3	82	7	6	5	3	51,789	49	1.05	39			
Nebraska	1,421	39		34	0	0	0	795	735	49	11	572	250	76	30	167	22	27	19	*	131,352	35	1.08	38			
Nevada	1,342	40		13	0	0	0	1,045	829	183	34	282	108	15	4	142	6	7	1	*	181,743	32	0.74	45			

TABLE 10

## U.S. R&amp;D expenditures, by state, performing sector, and source of funds: 2019

(Millions of current dollars)

State	All R&D	R&D rank	Performer: Source of funds:	FFRDCs				Business				Higher education <sup>a</sup>						NPOs		State, internal <sup>b</sup>		R&D intensity <sup>c</sup>		
				Federal	Total	Federal	Nonfederal <sup>d</sup>	Total	Own	Paid by others		Total	Federal	Other government	Business	Higher education	NPO	Other	Federal <sup>f</sup>	Total	GDP	GDP rank	Percent	Rank
										Nonfederal <sup>e</sup>	Federal													
New Hampshire	3,063	32		21	0	0	0	2,541	1,036	171	1,333	492	246	6	15	193	26	7	9	*	87,508	40	3.50	11
New Jersey	23,386	7		1,538	91	91	*	20,390	16,648	3,547	195	1,331	651	95	67	295	122	101	33	3	639,437	8	3.66	9
New Mexico	7,614	24		738	5,850	5,797	53	637	391	43	202	366	241	26	4	71	16	7	22	1	101,972	38	7.47	1
New York	28,717	5		161	590	561	29	20,180	17,968	1,453	759	7,076	3,661	435	488	1,656	529	307	433	277	1,777,752	3	1.62	32
North Carolina	17,159	11		317	0	0	0	13,249	9,188	3,920	140	3,388	1,945	162	360	670	204	49	186	18	595,655	11	2.88	14
North Dakota	643	46		30	0	0	0	349	340	7	2	263	85	60	13	98	2	6	1	*	59,005	46	1.09	37
Ohio	15,687	12		2,289	0	0	0	10,642	7,087	2,789	765	2,499	1,478	104	229	475	157	55	256	1	693,199	7	2.26	22
Oklahoma	1,845	36		215	0	0	0	1,067	956	70	41	534	220	60	38	200	11	5	27	2	203,700	29	0.91	44
Oregon	8,871	19		72	0	0	0	7,890	7,606	230	54	864	588	56	45	102	58	15	21	25	246,647	25	3.60	10
Pennsylvania	20,788	9		381	141	141	*	15,245	13,353	1,673	219	4,647	2,570	102	297	1,235	295	148	366	9	799,686	6	2.60	15
Rhode Island	1,473	38		270	0	0	0	715	664	16	36	391	262	17	8	81	16	6	94	3	61,319	45	2.40	19
South Carolina	2,894	33		95	176	173	3	1,784	1,527	171	86	743	355	33	44	266	30	16	67	29	244,662	26	1.18	35
South Dakota	347	51		16	0	0	0	194	170	20	4	118	58	19	3	23	6	11	18	*	53,940	48	0.64	50
Tennessee	5,920	26		1,003	1,470	1,454	16	1,663	1,381	228	55	1,337	755	36	76	393	56	21	445	2	376,917	19	1.57	33
Texas	30,921	4		889	7	6	1	23,906	20,916	2,219	772	5,967	2,347	855	436	1,610	446	272	148	4	1,863,954	2	1.66	31
Utah	3,962	29		172	0	0	0	2,857	2,463	316	78	925	547	31	49	250	36	12	3	5	195,088	30	2.03	28
Vermont	392	49		8	0	0	0	244	218	19	7	139	93	1	3	32	9	1	*	1	34,128	51	1.15	36
Virginia	11,693	13		2,251	1,435	1,407	28	6,061	4,276	461	1,324	1,814	843	108	92	599	106	67	121	11	554,306	13	2.11	25
Washington	41,085	2		357	1,012	994	18	37,330	35,823	1,255	252	1,830	1,169	81	73	257	208	41	536	20	597,874	10	6.87	2
West Virginia	521	48		47	0	0	0	246	219	17	10	213	97	12	6	76	6	16	12	3	79,140	42	0.66	47
Wisconsin	8,269	20		55	0	0	0	6,517	5,679	741	97	1,652	771	116	57	518	139	50	40	5	344,725	21	2.40	20
Wyoming	792	43		25	0	0	0	686	670	11	5	80	52	5	4	18	2	1	*	1	39,601	50	2.00	29
U.S. undistributed <sup>i</sup>	2,383	na		1,326	0	0	0	1,034	916	84	34	0	0	0	0	0	0	0	23	0	0	na	na	na
Puerto Rico	666	na		6	0	0	0	539	519	NA	NA	121	80	2	5	30	1	3	*	na	111,702	na	NA	na
Other <sup>j</sup>	398	na		371	0	0	0	0	0	0	0	25	21	2	*	3	*	0	1	na	na	na	na	na

\* amount &gt; \$0.5 million; na = not applicable; NA = not available.

FFRDC = federally funded R&amp;D center; GDP = gross domestic product; NPO = nonprofit organization.

<sup>a</sup> State-level higher education R&D data have not been adjusted to eliminate the double counting of funds passed through from an academic institution to subrecipients (other academic institutions, businesses, NPOs, and others). At the national level, funds passed through to such subrecipients accounted for 8.0% of total R&D expenditures reported by higher education institutions in FY 2019.

<sup>b</sup> Internal performers include state agency and department employees and also services performed by others in support of an internal R&D project.

<sup>c</sup> R&D intensity is the ratio of total R&D performed in a state to its state GDP.

<sup>d</sup> Nonfederal sources of R&D expenditures reported by FFRDCs in FY 2019 included state and local governments, business, NPOs, and other sources.

<sup>e</sup> R&D paid for by nonfederal sources in 2019 included funding from other companies located inside or outside the United States; U.S. state government agencies; U.S. universities, colleges, and academic researchers; foreign universities, colleges, and academic researchers; and organizations located inside or outside the United States.

<sup>f</sup> Data on other sources of support for R&D performed by NPOs are unavailable by state. In 2019, the U.S. total of nonprofit R&D performance is estimated to be \$27.0 billion. In addition to the federal funding listed, businesses provided an estimated \$2.3 billion of support, and NPOs themselves provided an estimated \$15.8 billion.

<sup>g</sup> U.S. R&D totals as reported by the NCSSES *National Patterns of R&D Resources* series, 2019–20 edition. (See tables 1–9 in this report.)

<sup>h</sup> The states' totals differ from U.S. totals for several reasons: (1) some R&D expenditures cannot be allocated to any of the 50 states or the District of Columbia; (2) only the federally funded portion of nonprofit R&D can be allocated by state; (3) data are not available to allocate the portion of business R&D performed by companies with fewer than 10 employees (\$5.2 billion in 2019) by state; (4) the state-level higher education data have not been adjusted to eliminate the double counting of funds passed through to other performers; and (5) state-level R&D data are not converted from fiscal years to calendar years.

<sup>i</sup> Reported R&D expenditures that could not be assigned to any of the 50 states or the District of Columbia.

<sup>j</sup> Includes R&D expenditures reported for outlying areas (Guam, U.S. Virgin Islands, American Samoa) and offices abroad but excluding Puerto Rico.

**Note(s):**

Business R&D data refer to calendar years; the data for the other R&D performers refer to fiscal years but are used here as approximations to calendar year data.

**Source(s):**

National Center for Science and Engineering Statistics, National Patterns of R&D Resources (annual series). State GDP data are from the U.S. Bureau of Economic Analysis, <https://www.bea.gov/data/gdp/gdp-state>, accessed 9 December 2021.

## Technical Notes

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### Overview of 2019–20 Data Update

*National Patterns of R&D Resources* provides current data on the levels and key trends of the performance and funding of research and experimental development in the United States, with comparisons to the historical record (back to 1953). Detail is also provided for the U.S. total and by performer according to the types of R&D conducted (i.e., basic research, applied research, and experimental development).

### Key Information on Publication Series

*Report frequency.* Reports in this series are typically published annually.

*Current reference period.* Data from 1953 to 2020 are provided for almost all variables. The data for 2020 are estimates and not previously reported in this series. The data for 2019 are revised from the previous edition (2018–19) of this series. The data for 1953–2018 reflect final survey data but may still include some further (typically minor) revisions.

### Survey Data Sources for National Patterns

The *National Patterns* statistics draw primarily from the National Center for Science and Engineering Statistics' (NCSES's) annual national surveys of the R&D expenditures and funding of the organizations that perform the bulk of U.S. R&D. These organizations include the business sector, federal and nonfederal government, higher education, and nonprofit organizations. Each of these sectors are summarized—including links to other sections of the NCSES website with specifics on survey coverage, variables collected, and survey or sampling implementation—in the sections below.

#### Business Sector

For 2019, annual data on the R&D performed in the domestic United States by the business sector come from NCSES's Business Enterprise Research and Development Survey (BERD), covering companies with 10 or more employees, and the Annual Business Survey (ABS), covering companies with 9 or fewer employees. BERD and ABS are conducted for NCSES by the Census Bureau in accordance with an agreement between the two agencies. Both are sample surveys designed to be nationally representative of all for-profit companies, publicly or privately held, in manufacturing and nonmanufacturing industries (<https://www.nsf.gov/statistics/srvyberd/>, <https://www.nsf.gov/statistics/srvyabs/>).

For 2017 and 2018, the source of the data for companies with 10 or more employees was the Business R&D Survey (BRDS), a predecessor to the BERD Survey, with similar survey characteristics and coverage. ABS was again the source of data on companies with 9 or few employees in both these years.

From 2008 to 2016, the primary source data on business R&D was the NCSES Business R&D and Innovation Survey (BRDIS), a predecessor of both BERD and BRDS. In a salient difference, BRDIS was designed to be nationally representative of all for-profit companies with 5 or employees. In 2016, a companion survey, the Business R&D and Innovation Survey–Microbusiness (BRDI-M), provided statistics on the R&D activities that year of businesses with 1–4 employees (<https://www.nsf.gov/statistics/srvymicrobus/>). Prior to the 2016 data year, statistics on the R&D of these “micro” businesses (\$4–\$5 billion annually) were neither available nor reported in the business R&D totals reported by *National Patterns*.

As noted, BERD, BRDS, and BRDIS are related surveys. With regard to R&D, the topical coverage has been similar: R&D performance (in the United States and worldwide); total and R&D employment (in the United States and worldwide); sources of R&D funding; type of R&D activities (basic research, applied research, development); type of R&D costs; R&D capital expenditures; R&D application and technology focus areas; geographic location (within the United States and in foreign countries); sales (in the United States and worldwide); and patenting, licensing, other technology transfer activities. The ABS and BRDI-M surveys provided R&D performance and funding data compatible with those for the larger companies.

For 2007 and earlier years, the data come from the NCSES Survey of Industrial Research and Development (SIRD), the predecessor to BRDIS (<https://www.nsf.gov/statistics/srvyindustry/sird.cfm>). SIRD was also a sample survey, conducted annually (1953–2007), that provided national estimates of the R&D performed within the United States by industrial firms, whether U.S. or foreign owned. The SIRD target population consisted (same as BRDIS) of all for-profit companies with 5 or more employees, manufacturing and nonmanufacturing, that performed R&D in the United States. Data on the R&D of companies with fewer than 5 employees were not available throughout this period of time.

(Note: Data on business intramural R&D capital, as reported by BRDIS and its follow-on surveys, are not included as a component in the *National Patterns* total of business intramural R&D.)

## Federal Government

*Federal intramural R&D.* Data on the intramural R&D performed by the federal government come from NCSES's Survey of Federal Funds for Research and Development (Federal Funds Survey), which is completed annually by all federal agencies conducting R&D programs (approximately 28 federal departments or independent agencies; <https://www.nsf.gov/statistics/srvyfedfunds/>). The Federal Funds Survey data provide intramural R&D totals as outlays and obligations on a federal fiscal year basis. The obligations data are further detailed by federal agency, performer, type of R&D, geographical area, and field of science or engineering (for research, not for development). (Note: data on federal intramural R&D plant reported by the Federal Funds Survey are not included as a component in the *National Patterns* total of federal intramural R&D.)

*Federally funded R&D centers (FFRDCs).* The nation's FFRDCs are a second venue of federal R&D performance. (Currently, there are 42 FFRDCs, although the number can change from year to year; NCSES maintains a Master Government List of the population of FFRDCs, which it regularly updates: <https://www.nsf.gov/statistics/ffrdclist/>.) FFRDCs are R&D-performing organizations administered by an industrial firm, a university, a nonprofit institution, or a consortium but that have funding exclusively or substantially from the federal government. An FFRDC is operated to provide R&D capability to serve an agency's mission objectives or, in some cases, to provide major facilities at universities for research and training purposes. Since FY 2001, NCSES's FFRDC Research and Development Survey (known previously as the Survey of Research and Development Expenditures at FFRDCs) has provided annual data (by federal fiscal year) on the R&D expenditures (with additional detail) of all the nation's FFRDCs (<https://www.nsf.gov/statistics/srvyffrdc/>). Prior to FY 2001, R&D expenditure data for the FFRDCs were collected as part of the major performer surveys: the Survey of R&D Expenditures at Universities and Colleges (for university-administered FFRDCs), the Survey of Industrial R&D (for industry-administered FFRDCs), and the Federal Funds Survey (for nonprofit-administered FFRDCs).

## Nonfederal Government

The category of nonfederal government R&D performance included in *National Patterns* is the intramural R&D of state governments (i.e., the R&D performance of state agency and department employees and the services performed by others in support of internal R&D projects). Data on this state intramural R&D come from NCSES's Survey of State Government Research and Development (<https://www.nsf.gov/statistics/srvystateerd/>). This state survey is a comparatively recent NCSES initiative, with the first data year in FY 2006.

In addition, the BERD, FFRDC, and Higher Education Research and Development (HERD) surveys (see above and below) provide detail on R&D funding by nonfederal governments other than just state governments.

## Higher Education Institutions

For academic FY 2010 and onward, data on the R&D performed in higher education come from NCSES's HERD Survey. HERD is an annual census of universities and colleges that grant the bachelor's degree or higher and expend at least \$150,000 in separately accounted for R&D over the fiscal year of these academic institutions (<https://www.nsf.gov/statistics/srvyherd/>). The survey collects information on R&D expenditures by field of research, source of funds, type of R&D, and head counts of R&D personnel.

The HERD Survey replaced the earlier Survey of Research and Development Expenditures at Universities and Colleges (<https://www.nsf.gov/statistics/srvyrdexpenditures/>). For data years FY 2009 and earlier, the Universities and Colleges Survey provides the data on academic R&D.

## Nonprofit Organizations

This sector refers to R&D performed in the United States by nonprofit organizations other than government or academia. Data on the R&D performed by such nonprofit organizations that are federally funded comes from the aforementioned NCSES Federal Funds Survey (reported annually, on a federal fiscal year basis). Data for the R&D performed by nonprofit organizations with funding from within the nonprofit sector and from business sources (both reported on a calendar year basis) are estimated, based on parameters from NCSES's past comprehensive R&D surveys of the sector. NCSES's most recent data on nonprofit organization R&D comes from its FY 2016 Nonprofit Research Activities Survey (<https://www.nsf.gov/statistics/2021/ncses21202>). Before that were the Survey of Research and Development Funding and Performance by Nonprofit Organizations in 1973 and 1996–97 (<https://www.nsf.gov/statistics/srvyrdnonprofit/>). Data for years prior to 1973 come from earlier *National Patterns* reports (which reflect, in part, surveys in 1957 and 1960).

## Statistics on the U.S. Economy

Some of the trend analyses in *National Patterns* draw on National Income and Product Accounts data (e.g., U.S. gross domestic product [GDP], state domestic product) assembled by the U.S. Bureau of Economic Activity (BEA). For details on this U.S. economic data, see <http://www.bea.gov/data/gdp>.

In keeping with international conventions, U.S. R&D expenditures in current dollars are adjusted for inflation based on BEA's implicit GDP price deflator.

## Methodology

The *National Patterns* statistical picture of the U.S. R&D system arises from integration of the primary data from the NCSES sectoral R&D surveys. Adjustments to the primary data are needed in some cases to enable consistent addition. Furthermore, preliminary or otherwise estimated values may be used (and later revised) where final data from one or more of the surveys are not yet available but can reasonably be calculated.

Key features of the methodology include the following.

- Data from the NCSES business R&D surveys (BERD, BRDS, BRDIS, ABS, BRDI-M, SIRD) have been reported on a calendar year basis and are incorporated directly in the *National Patterns* totals. Data from the Federal Funds Survey and the FFRDC Research and Development Survey are reported on a federal fiscal year basis (1 October–30 September the next year) and are adjusted to the calendar year for *National Patterns* integration. The data from the HERD Survey are reported on an academic fiscal year basis (typically, 1 July–30 June the next year) and converted to calendar year. Data from the Survey of State Government R&D are reported according to each state's fiscal year and are also converted to calendar year (presuming that 1 July–30 June the next year is typical).

- NCSES annual surveys of business R&D (particularly BRDIS and SIRD) had long covered the population of private sector companies with 5 or more employees. Inclusion of the BRDI-M data in the *National Patterns* data on business R&D totals in 2016 expanded the covered population to include companies with 1–4 employees, thereby adding \$4.8 billion of R&D to the total reported by BRDIS. BRDS data in 2017 and 2018 covered the population of companies with 10 or more employees. Inclusion of the ABS data for 2017 and 2018 added coverage of companies with 1–9 employees to the *National Patterns* reported business R&D totals in these years (\$5.7 billion and \$4.5 billion, respectively) and a similar amount in 2019 (\$5.2 billion).
- The method for estimating the type of R&D (i.e., basic research, applied research, experimental development) in the business sector was revised for 1998 and later years. This change resulted in a net decrease in the proportion of business R&D classified as basic research. Accordingly, the data for 1998 and later years are not directly comparable with data for 1997 and earlier years. The transition to BRDIS (data series starting in 2008) does not appear to have introduced further discontinuities in the type-of-R&D estimates. For universities and colleges, the type-of-R&D estimation method was revised in 1998 and again in 2010. Hence, the latest data for higher education are also not directly comparable to those reported in earlier years.
- The data for higher education in 2003 and later years include both science and engineering (S&E) and non-S&E fields. Prior to 2003, only S&E fields are included. Non-S&E R&D was \$1.4 billion in FY 2003 and \$4.9 billion in FY 2019. Similarly, for the business sector, social science R&D was not included until the 2008 data year, when it was \$0.8 billion of the \$290.7 billion business R&D total.
- The data for higher education R&D have included, since 1998, a net-out adjustment for R&D funds reported by academic institutions as passed through to other academic subrecipients. This adjustment was recently expanded (back to 1998) to also include pass-throughs to all noneducational recipients (i.e., businesses, nonprofit organizations, and others). The effect of this expanded adjustment is that the annual totals of higher education R&D performance are about \$0.4 billion lower in 1998, the first year for this adjustment, to about \$2.5 billion lower annually in 2012–15 than previously have been reported in *National Patterns*. In addition, for the 2010–20 survey years, this more comprehensive pass-through funding adjustment has been further improved by tabulating the adjustments on an institution-by-institution basis, which allows for a more precise estimate of the original nonfederal sources of pass-through funds and better estimation of the type of R&D (basic, applied, or experimental development) being passed through to other R&D performers.
- Data on federally funded R&D discussed in this report were derived from surveys of organizations that perform R&D, such as companies, universities, and FFRDCs. In the past, these amounts differed substantially from the R&D that federal agencies had reported funding. For example, in 2009, federal agencies reported obligating \$141 billion for R&D funding to all R&D performers (including \$53 billion to the business sector), compared with an estimated \$127 billion in federal funding reported by all performers of R&D that year (\$40 billion by businesses). More recently, with improvements in the methods for the survey of federal funding and adoption of revised R&D definitions, this effect has become less apparent.
- From 2016 forward, the data on federal intramural R&D explicitly exclude expenditures for pre-production development. (Pre-production development is nonexperimental work on a product or system before it goes into full production, e.g., activities and programs that are categorized as operational system development in the Department of Defense’s research, development, test and evaluation Budget Activity structure.) This change aligns the federal intramural data with a recent change introduced in the definition of R&D by the U.S. Office of Management and Budget. In FYs 2016–18, pre-production development for federal intramural R&D totaled between \$5 billion and \$7 billion each year.

Additional details on methodology and technical issues pertaining to specific variables are provided in the notes on each table. For further information about compiling the *National Patterns* statistics, contact the Project Officer.



## Definitions

*R&D performers and funders.* The U.S. R&D system consists of the R&D activities of differing performers and sources of funding for these activities. The main categories of R&D performers tracked by NCSSES are businesses; federal agencies; FFRDCs (administered by businesses, universities, or nonprofit organizations); nonfederal government agencies (specifically those of the 50 states and the District of Columbia); higher education; and nonprofit organizations. For R&D funding, the main categories are businesses; the federal government; nonfederal government (state, regional, local); higher education; and nonprofit organizations. Organizations that perform R&D often receive significant levels of outside funding; R&D funders may also be significant performers.

*Type of R&D.* As defined by the Organisation for Economic Co-operation and Development's *Frascati Manual* (in seven editions since the early 1960s), R&D spans three main types of activities:

*Basic research:* Experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.

*Applied research:* Original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.

*Experimental development:* Systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or improving existing products or processes.<sup>1</sup>

## Notes

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1 Organisation for Economic Co-operation and Development (OECD). 2015. *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*. Page 45. Paris: OECD Publishing. Available at <http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm> .

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