



National Center for Science and  
Engineering Statistics

# National Patterns of R&D Resources: 2020–21 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 (R&D) in the United States. These detailed statistical tables supplement analytical InfoBriefs available at <https://nces.nsf.gov/data-collections/national-patterns>, 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. These data along with gross domestic product (GDP), also reported in current and inflation-adjusted dollars, are presented back to 1953 to facilitate trend analysis and comparison of growth in R&D to overall U.S. economic growth.

The data for 2021 are estimates based mainly on early findings from the 2021 sectoral R&D expenditure surveys and evident recent trends. Data for 2020 were included in the previous edition (2019–20) of this report series but are now revised to reflect new, nearly final input from the sectoral surveys. The numbers for 1953–2019 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 detailed breakouts by source of funds. The second perspective ([tables 6–9](#)) is by source of funds, with detailed 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 2020.

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.

## Data Tables

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### U.S. gross domestic product and R&D: 1953–2021

Table	Title
1	U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2021

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### U.S. R&D expenditures

Table	Title
2	U.S. R&D expenditures, by performing sector and source of funds: 1953–2021
3	U.S. basic research expenditures, by performing sector and source of funds: 1953–2021
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6	U.S. R&D expenditures, by source of funds and performing sector: 1953–2021
7	U.S. basic research expenditures, by source of funds and performing sector: 1953–2021
8	U.S. applied research expenditures, by source of funds and performing sector: 1953–2021
9	U.S. development expenditures, by source of funds and performing sector: 1953–2021

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### U.S. R&D expenditures, by state

Table	Title
10	U.S. R&D expenditures, by state, performing sector, and source of funds: 2020

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TABLE 1

**U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2021**

(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

TABLE 1

**U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2021**

(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>	
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	
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	19,477.3	18,076.7	1.07748	553.8	513.9	2.84	2.08	0.27	0.37	0.12	1.98	0.63	0.23	
2018	20,533.1	18,609.1	1.10339	604.4	547.7	2.94	2.17	0.28	0.36	0.12	2.08	0.64	0.23	

TABLE 1

**U.S. gross domestic product, R&D, and ratio of R&D to gross domestic product (and components): 1953–2021**

(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>	
2019	21,381.0	19,036.1	1.12318	666.2	593.1	3.12	2.33	0.29	0.37	0.13	2.26	0.64	0.22	
2020 <sup>e</sup>	21,060.5	18,509.1	1.13785	717.0	630.1	3.40	2.58	0.31	0.38	0.14	2.47	0.70	0.23	
2021 <sup>f</sup>	23,315.1	19,609.8	1.18895	791.9	666.0	3.40	2.63	0.28	0.36	0.13	2.52	0.66	0.22	

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> Some data for 2020 are preliminary and may be revised later.<sup>f</sup> Data for 2021 include estimates and are likely to be revised later.**Note(s):**

Detail may not add to total because of rounding. For trend comparisons, use only the historical data reported in this table because some back-year data may have been revised.

**Source(s):**GDP data from Bureau of Economic Analysis, National Economic Accounts, Gross Domestic Product, <https://www.bea.gov/national/>, 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: 1953–2021

(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: 1953–2021

(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	102,244	17,518	11,916	5,602	5,602	NA	73,061	51,404	21,657	NA	NA	NA	NA	9,154	5,748	721	518	1,514	654	2,511	1,548	265	698
1985	114,671	19,227	13,093	6,134	6,134	NA	82,376	57,043	25,333	NA	NA	NA	NA	10,308	6,388	834	630	1,743	713	2,761	1,694	289	778
1986	120,249	19,909	13,505	6,405	6,405	NA	85,932	59,932	26,000	NA	NA	NA	NA	11,540	7,028	969	745	2,019	780	2,867	1,686	314	867
1987	126,360	20,380	13,588	6,792	6,792	NA	90,160	61,403	28,757	NA	NA	NA	NA	12,807	7,768	1,065	831	2,262	882	3,013	1,704	342	967
1988	133,881	21,555	14,342	7,212	7,212	NA	94,893	66,672	28,221	NA	NA	NA	NA	14,221	8,593	1,165	933	2,527	1,003	3,212	1,762	372	1,078
1989	141,891	22,728	15,231	7,497	7,497	NA	99,860	73,501	26,359	NA	NA	NA	NA	15,634	9,317	1,274	1,061	2,852	1,131	3,669	2,062	405	1,202
1990	151,993	23,524	15,671	7,853	7,853	NA	107,404	81,602	25,802	NA	NA	NA	NA	16,939	9,939	1,399	1,166	3,187	1,249	4,126	2,346	440	1,340
1991	160,876	23,343	15,249	8,093	8,093	NA	114,675	90,580	24,095	NA	NA	NA	NA	18,206	10,667	1,483	1,242	3,458	1,358	4,652	2,679	479	1,494
1992	165,350	24,212	15,853	8,360	8,360	NA	116,757	94,388	22,369	NA	NA	NA	NA	19,388	11,528	1,525	1,320	3,569	1,448	4,993	2,806	521	1,666
1993	165,730	24,534	16,531	8,003	8,003	NA	115,435	94,591	20,844	NA	NA	NA	NA	20,495	12,307	1,557	1,392	3,709	1,531	5,267	2,843	567	1,857
1994	169,207	24,610	16,355	8,254	8,254	NA	117,392	97,131	20,261	NA	NA	NA	NA	21,607	12,996	1,623	1,456	3,938	1,595	5,599	2,911	617	2,071
1995	183,625	25,352	16,904	8,448	8,448	NA	129,830	108,652	21,178	NA	NA	NA	NA	22,617	13,592	1,751	1,548	4,110	1,617	5,827	2,847	671	2,308
1996	197,346	25,049	16,585	8,464	8,464	NA	142,371	121,015	21,356	NA	NA	NA	NA	23,718	14,084	1,861	1,672	4,436	1,666	6,209	2,905	730	2,574
1997	211,894	25,232	16,819	8,413	8,413	NA	155,409	133,611	21,798	NA	NA	NA	NA	24,627	14,317	1,902	1,788	4,852	1,767	6,626	3,014	809	2,804
1998	225,759	25,843	17,362	8,480	8,480	NA	167,102	145,016	22,086	NA	NA	NA	NA	25,583	14,699	1,920	1,898	5,193	1,871	7,232	3,281	859	3,092
1999	244,451	26,846	18,142	8,704	8,704	NA	182,090	161,594	20,496	NA	NA	NA	NA	27,475	15,714	2,036	2,020	5,654	2,050	8,040	3,761	931	3,349
2000	267,950	28,516	19,247	9,269	9,269	NA	199,961	182,844	17,117	NA	NA	NA	NA	29,916	17,095	2,182	2,112	6,270	2,258	9,557	4,510	1,020	4,027
2001	278,539	32,812	22,374	10,438	10,056	NA	202,017	185,118	16,899	NA	NA	NA	NA	32,750	18,976	2,319	2,120	6,874	2,461	10,960	5,488	1,029	4,443
2002	277,911	35,482	23,798	11,684	11,242	NA	193,868	177,467	16,401	NA	NA	NA	NA	36,684	21,655	2,521	2,103	7,673	2,732	11,878	5,778	998	5,102
2003	291,365	37,235	24,982	12,253	11,841	NA	200,724	182,926	17,798	NA	NA	NA	NA	40,577	24,567	2,756	2,090	8,286	2,879	12,829	5,945	1,020	5,864
2004	302,731	37,685	24,898	12,788	12,471	NA	208,301	188,035	20,266	NA	NA	NA	NA	43,296	26,624	2,896	2,148	8,637	2,993	13,448	6,537	1,041	5,870
2005	325,288	39,568	26,322	13,246	12,894	NA	226,159	204,250	21,909	NA	NA	NA	NA	45,490	27,743	2,945	2,279	9,353	3,170	14,072	6,545	1,107	6,420
2006	350,908	41,610	28,240	13,370	12,969	309	247,669	223,365	24,304	NA	NA	NA	NA	47,369	28,277	3,059	2,464	10,176	3,394	13,952	6,044	1,182	6,726
2007	377,890	44,132	29,859	14,273	13,845	388	269,267	242,682	26,585	NA	NA	NA	NA	49,430	28,725	3,308	2,697	10,933	3,767	14,674	5,980	1,257	7,438
2008	404,777	45,649	29,839	15,810	15,369	491	290,680	225,848	36,360	306	12,181	15,533	452	52,054	29,635	3,567	2,954	11,738	4,161	15,903	6,236	1,305	8,362
2009	402,932	47,572	30,560	17,013	16,571	606	282,393	221,104	39,573	195	9,567	11,464	490	54,909	31,741	3,680	3,032	12,057	4,400	17,452	7,097	1,258	9,097
2010	406,600	50,798	31,970	18,828	18,409	691	278,977	218,187	34,199	156	11,013	14,534	888	58,084	34,682	3,674	2,953	12,262	4,515	18,050	7,093	1,266	9,691
2011	426,215	53,524	34,950	18,574	18,176	694	294,092	235,426	31,309	321	11,124	15,349	563	60,088	35,742	3,616	2,999	13,103	4,629	17,817	6,564	1,340	9,913
2012	433,716	52,144	34,017	18,128	17,727	665	302,251	242,674	30,621	157	11,624	16,699	476	60,895	34,967	3,560	3,170	14,300	4,899	17,762	6,239	1,376	10,147
2013	454,271	51,086	33,406	17,680	17,296	620	322,528	259,908	29,362	194	13,450	18,796	818	61,548	33,840	3,642	3,376	15,378	5,313	18,489	5,970	1,464	11,056
2014	475,969	52,687	34,783	17,903	17,523	583	340,728	277,272	26,554	138	13,227	22,544	993	62,351	33,125	3,714	3,602	16,210	5,701	19,620	6,135	1,548	11,937
2015	494,499	52,847	34,199	18,649	18,287	595	355,821	289,892	26,990	127	14,595	23,102	1,115	64,635	33,564	3,782	3,844	17,292	6,154	20,601	6,247	1,605	12,749



TABLE 2

## U.S. R&amp;D expenditures, by performing sector and source of funds: 1953–2021

(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	6,703	22,573	8,257	1,993	11,517
2017	553,768	52,553	32,231	20,322	19,943	632	405,792	324,177	24,974	142	17,729	37,913	856	71,114	36,007	4,057	4,284	19,554	7,213	23,678	9,118	2,226	11,408
2018	604,372	58,356	36,793	21,563	21,163	643	445,563	357,862	25,192	120	19,283	42,057	1,049	74,878	37,735	4,224	4,585	20,668	7,667	24,932	10,068	2,486	11,299
2019	666,153	62,802	39,870	22,932	22,538	675	498,175	405,960	22,653	169	21,673	46,809	911	78,146	39,524	4,359	4,806	21,569	7,889	26,355	11,118	2,777	11,192
2020 <sup>g</sup>	716,955	64,237	40,371	23,866	23,478	683	543,220	443,398	29,772	241	21,775	47,051	982	80,842	41,462	4,464	4,837	22,252	7,828	27,973	12,278	3,103	11,085
2021 <sup>h</sup>	791,873	65,207	40,036	25,171	24,755	674	612,444	502,538	31,805	262	24,010	52,750	1,078	84,035	43,475	4,603	4,931	23,065	7,961	29,514	12,954	3,274	11,696
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

TABLE 2

## U.S. R&amp;D expenditures, by performing sector and source of funds: 1953–2021

(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
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
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

TABLE 2

## U.S. R&amp;D expenditures, by performing sector and source of funds: 1953–2021

(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
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
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	6,339	21,347	7,809	1,884	10,892
2017	513,947	48,774	29,913	18,860	18,509	587	376,612	300,866	23,178	132	16,455	35,187	926	66,000	33,417	3,765	3,975	18,147	6,694	21,975	8,462	2,066	10,587
2018	547,740	52,888	33,346	19,543	19,180	583	403,813	324,329	22,831	109	17,476	38,116	1,060	67,861	34,199	3,828	4,155	18,731	6,948	22,596	9,125	2,253	10,240
2019	593,094	55,914	35,497	20,417	20,066	601	443,539	361,438	20,169	150	19,296	41,675	962	69,576	35,189	3,881	4,278	19,203	7,024	23,465	9,899	2,473	9,964
2020 <sup>g</sup>	630,098	56,455	35,480	20,975	20,633	600	477,411	389,682	26,165	212	19,137	41,351	863	71,048	36,439	3,923	4,251	19,556	6,879	24,584	10,790	2,727	9,743
2021 <sup>h</sup>	666,027	54,844	33,673	21,170	20,821	567	515,112	422,673	26,750	220	20,195	44,367	907	70,680	36,566	3,871	4,147	19,399	6,696	24,824	10,895	2,753	9,837

NA = not available.

FFRDC = federally funded research and development 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 [RDTE] 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 billion to \$7 billion each year.

<sup>b</sup> The R&D expenditures of FFRDCs are chiefly federally funded; the small remainder (\$389 million of the \$23.9 billion total in 2020) 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 (\$341 million of the \$683 million total in 2020) or from the federal government (\$298 million in 2020), but other sources include other nonfederal governments (\$7 million), businesses (\$20 million), higher education (\$3 million), or NPOs (\$13 million).

<sup>d</sup> R&D performed by companies in the domestic United States. Business R&D data for 2017–20 come from the NCSES annual Business Enterprise Research and Development (BERD) Survey and its predecessor, the Business Research and Development Survey (BRDS), which cover all publicly or privately held companies with 10 or more employees, plus the Annual Business Survey (ABS), which covers the R&D activities of businesses with 1–9 employees. Data for 2021 are estimates, based on the 2020 data from these surveys. Data for 2008–15 come from the NCSES 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. BERD, ABS, BRDIS, BRDS, and BRDI-M 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 governments, other organizations inside or outside the United States). Prior to 2008, the data collected by 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 (\$20.0 billion in 2020) and funding from U.S. businesses' foreign subsidiaries (\$27.0 billion in 2020). 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 \$5.1 billion in FY 2021.) 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 2020, total pass-through was \$7.056 billion, with \$3.868 billion to other academic recipients and \$3.187 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 FY20, \$5.348 billion was from NPOs, and \$2.540 was from these unclassified other sources).

<sup>f</sup> The most recent data on NPO R&D come from two sources: the 2020 Nonprofit Research Activities (NPRA) module of the Annual Business Survey and the 2016 NPRA Survey. Data for 2021 are estimated based on the 2020 survey. Data for 2017–2019 are estimated based on the 2016 and 2020 surveys. The 1998–2015 data for NPO R&D funded by the federal government come from the NCSSES annual Survey of Federal Funds for Research and Development; NPO R&D funded by businesses and by the nonprofit sector itself for that period are estimated, based on parameters from the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations.

<sup>g</sup> Some data for 2020 are preliminary and may be revised later.

<sup>h</sup> The data for 2021 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. Data are based on reports by performers in the NCSSES annual surveys on R&D expenditures: BERD, ABS (which includes modules on micro-BERD and NPRA), Higher Education Research and Development Survey, Survey of Federal Funds for Research and Development, FFRDC Research and Development Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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: 1953–2021

(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: 1953–2021

(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	46,363	8,353	4,260	4,092	3,925	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	50,400	9,349	4,511	4,839	4,612	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	5,074	4,858	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	9,673	4,697	4,976	4,837	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	59,899	9,902	4,770	5,132	4,995	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	61,552	9,938	4,716	5,222	5,074	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	66,488	9,938	4,621	5,317	5,166	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	70,468	10,459	4,957	5,502	5,336	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	74,379	11,508	5,441	6,067	5,907	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	11,747	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	73,551	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: 1953–2021

(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	87,276	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	4,011	9,135	3,988	716	4,141
2017	89,955	10,388	6,259	4,128	4,054	100	25,617	18,299	1,853	17	2,085	3,260	103	44,556	23,198	2,387	2,407	12,228	4,337	9,295	3,762	846	4,335
2018	97,798	11,096	6,827	4,269	4,188	107	29,204	21,100	2,535	12	2,069	3,377	112	47,088	24,360	2,449	2,598	12,963	4,719	10,303	4,358	995	4,520
2019	105,051	11,932	7,352	4,580	4,501	120	32,582	24,558	2,349	15	2,062	3,513	86	49,116	25,350	2,528	2,727	13,598	4,915	11,300	4,901	1,167	4,701
2020 <sup>g</sup>	111,883	12,099	7,310	4,789	4,714	125	36,371	27,909	2,191	24	2,315	3,830	103	50,618	26,379	2,608	2,741	14,026	4,865	12,670	5,557	1,406	5,024
2021 <sup>h</sup>	118,196	11,310	6,239	5,071	4,994	119	40,924	31,630	2,342	26	2,544	4,270	112	52,474	27,642	2,684	2,787	14,455	4,906	13,368	5,863	1,484	5,301
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

TABLE 3

## U.S. basic research expenditures, by performing sector and source of funds: 1953–2021

(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
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
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	58,112	10,469	5,340	5,129	4,920	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	62,203	11,538	5,567	5,972	5,692	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	6,141	5,879	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	11,401	5,536	5,865	5,701	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	68,453	11,316	5,452	5,865	5,708	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	68,236	11,017	5,228	5,789	5,625	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	71,769	10,727	4,988	5,739	5,576	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	74,634	11,077	5,250	5,827	5,651	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	78,274	12,110	5,726	6,385	6,217	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



TABLE 3

**U.S. basic research expenditures, by performing sector and source of funds: 1953–2021**

(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
2010	79,434	12,216	5,314	6,901	6,733	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
2011	74,927	11,737	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	82,538	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	3,793	8,640	3,772	678	3,916
2017	83,487	9,641	5,809	3,831	3,762	93	23,774	16,983	1,719	16	1,935	3,025	95	41,352	21,530	2,215	2,234	11,348	4,025	8,627	3,492	785	4,023
2018	88,634	10,056	6,187	3,869	3,796	97	26,468	19,123	2,298	11	1,875	3,060	101	42,676	22,077	2,219	2,355	11,748	4,277	9,338	3,950	901	4,096
2019	93,530	10,624	6,546	4,078	4,007	107	29,009	21,864	2,091	14	1,835	3,128	77	43,729	22,569	2,250	2,427	12,106	4,376	10,061	4,363	1,039	4,185
2020 <sup>g</sup>	98,328	10,633	6,424	4,209	4,143	110	31,965	24,528	1,926	21	2,034	3,366	90	44,485	23,183	2,292	2,409	12,326	4,276	11,135	4,884	1,236	4,415
2021 <sup>h</sup>	99,412	9,513	5,248	4,265	4,201	100	34,421	26,603	1,970	22	2,140	3,591	94	44,134	23,249	2,258	2,344	12,158	4,126	11,244	4,931	1,248	4,458

NA = not available.

FFRDC = federally funded research and development 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> Some data for 2020 are preliminary and may be revised later.<sup>h</sup> The data for 2021 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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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	64,201	9,766	7,052	2,714	2,564	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	50,540	10,525	7,487	3,038	2,867	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	60,983	10,857	7,672	3,186	3,020	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	69,322	10,779	7,455	3,325	3,180	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	69,768	11,001	7,557	3,444	3,288	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	76,499	10,952	7,435	3,518	3,348	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	83,662	11,040	7,222	3,819	3,643	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	74,729	11,446	7,316	4,130	3,955	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	72,634	12,581	7,874	4,707	4,517	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	79,016	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	91,772	15,728	8,775	6,952	6,766	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: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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	109,691	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	10,147	3,749	891	5,147
2017	113,659	18,170	10,124	8,046	7,868	510	64,040	47,727	5,386	33	3,852	6,849	193	19,809	10,144	1,223	1,270	5,230	1,943	11,130	4,723	979	5,019
2018	118,700	19,704	11,111	8,593	8,407	514	66,587	50,898	5,355	23	3,469	6,651	191	20,789	10,593	1,290	1,363	5,511	2,034	11,105	4,714	1,069	4,859
2019	130,712	20,523	11,264	9,258	9,075	523	76,176	57,549	5,246	42	4,907	8,223	209	21,760	11,117	1,340	1,448	5,759	2,097	11,730	5,483	1,139	4,589
2020 <sup>b</sup>	133,326	21,057	11,494	9,563	9,384	514	78,371	58,766	6,140	62	5,032	8,137	234	22,539	11,704	1,363	1,441	5,956	2,077	10,845	4,908	1,174	4,193
2021 <sup>c</sup>	143,995	20,702	10,651	10,051	9,863	506	87,930	66,457	6,541	67	5,536	9,074	256	23,415	12,261	1,398	1,453	6,186	2,117	11,442	5,179	1,238	4,424
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

TABLE 4

## U.S. applied research expenditures, by performing sector and source of funds: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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
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
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	80,470	12,241	8,839	3,401	3,214	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	62,375	12,990	9,241	3,749	3,538	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	73,806	13,140	9,285	3,856	3,654	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	81,705	12,705	8,786	3,919	3,748	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	79,732	12,572	8,637	3,936	3,758	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	84,807	12,142	8,242	3,900	3,712	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	90,308	11,917	7,795	4,122	3,932	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	79,147	12,123	7,749	4,374	4,189	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	76,438	13,239	8,286	4,953	4,754	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

TABLE 4

**U.S. applied research expenditures, by performing sector and source of funds: 1953–2021**

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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
2010	82,167	13,729	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
2011	83,423	13,499	8,174	5,324	5,151	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	14,872	8,166	6,706	6,525	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	103,737	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	9,596	3,545	842	4,868
2017	105,486	16,863	9,396	7,467	7,302	474	59,435	44,295	4,998	30	3,575	6,356	179	18,385	9,415	1,135	1,178	4,854	1,803	10,329	4,384	909	4,658
2018	107,577	17,858	10,070	7,788	7,619	465	60,348	46,128	4,854	21	3,144	6,028	173	18,841	9,600	1,169	1,235	4,995	1,843	10,065	4,272	969	4,403
2019	116,376	18,272	10,029	8,243	8,080	466	67,822	51,237	4,671	37	4,369	7,321	186	19,374	9,898	1,193	1,289	5,127	1,867	10,443	4,881	1,014	4,085
2020 <sup>b</sup>	117,174	18,506	10,102	8,404	8,247	452	68,877	51,647	5,396	55	4,422	7,151	206	19,808	10,286	1,198	1,266	5,234	1,825	9,531	4,314	1,031	3,685
2021 <sup>c</sup>	121,111	17,412	8,959	8,453	8,295	425	73,956	55,895	5,501	56	4,656	7,632	215	19,694	10,312	1,176	1,222	5,203	1,780	9,624	4,356	1,041	3,721

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> See [table 2](#), footnote a.<sup>b</sup> Some data for 2020 are preliminary and may be revised later.<sup>c</sup> The data for 2021 include estimates and are likely to be revised later.**Note(s):**

For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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&amp;D Resources (annual series).



TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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	167,975	14,693	11,062	3,631	3,566	NA	149,952	137,410	12,542	NA	NA	NA	NA	1,409	646	128	117	381	136	1,921	874	197	850
2002	176,971	15,607	11,800	3,807	3,763	NA	157,788	144,727	13,061	NA	NA	NA	NA	1,472	639	140	116	425	151	2,104	937	191	976
2003	175,559	16,639	12,646	3,993	3,964	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	177,030	17,233	12,746	4,487	4,454	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	195,621	18,664	13,994	4,670	4,611	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	212,857	20,720	16,089	4,630	4,547	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	227,740	23,154	18,016	5,137	5,037	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	259,579	23,743	17,566	6,177	6,078	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	255,919	23,484	17,245	6,239	6,147	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	25,848	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	273,052	26,666	19,941	6,725	6,632	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	7,063	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: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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	324,733	23,438	15,838	7,600	7,479	18	291,605	243,056	16,790	129	9,940	20,930	760	6,382	2,573	420	561	1,962	866	3,290	520	386	2,228
2017	350,154	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	3,253	632	401	2,053
2018	387,873	27,556	18,856	8,701	8,567	23	349,771	285,863	17,301	85	13,745	32,029	748	7,001	2,783	486	624	2,195	914	3,523	996	423	1,921
2019	430,391	30,347	21,253	9,094	8,962	31	389,418	323,854	15,058	112	14,704	35,073	617	7,270	3,058	492	631	2,213	878	3,325	735	472	1,903
2020 <sup>b</sup>	471,747	31,081	21,567	9,514	9,379	44	428,479	356,724	21,440	155	14,428	35,085	645	7,686	3,380	494	656	2,271	886	4,458	1,812	523	1,869
2021 <sup>c</sup>	529,683	33,194	23,145	10,049	9,897	49	483,591	404,453	22,922	169	15,931	39,407	710	8,146	3,573	520	691	2,423	939	4,704	1,912	552	1,972
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

TABLE 5

## U.S. development expenditures, by performing sector and source of funds: 1953–2021

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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
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
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	210,540	18,416	13,865	4,552	4,470	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	218,412	19,262	14,563	4,699	4,644	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	212,475	20,138	15,305	4,833	4,798	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	208,655	20,312	15,023	5,289	5,250	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	223,557	21,330	15,993	5,337	5,270	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	235,972	22,970	17,837	5,133	5,041	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	245,830	24,993	19,447	5,546	5,437	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	274,924	25,147	18,605	6,542	6,438	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	269,321	24,714	18,148	6,566	6,469	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

TABLE 5

**U.S. development expenditures, by performing sector and source of funds: 1953–2021**

(Millions of current and of constant 2012 dollars)

Year	All performers	All federal	Federal intramural <sup>a</sup>	FFRDCs		Nonfederal government	Business							Higher education				NPOs					
	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
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
2011	275,837	29,289	22,288	7,001	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	273,052	26,666	19,941	6,725	6,632	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	6,553	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	290,803	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	307,106	22,166	14,978	7,187	7,073	17	275,776	229,863	15,878	122	9,401	19,794	719	6,036	2,433	397	531	1,855	819	3,112	492	365	2,107
2017	324,975	22,270	14,708	7,561	7,444	20	293,403	239,587	16,460	86	10,944	25,805	520	6,263	2,473	415	563	1,945	866	3,019	587	372	1,906
2018	351,529	24,974	17,089	7,885	7,764	21	316,997	259,077	15,680	77	12,457	29,028	678	6,345	2,522	440	566	1,989	828	3,193	903	383	1,741
2019	383,189	27,019	18,922	8,096	7,979	28	346,709	288,336	13,407	99	13,091	31,226	549	6,473	2,722	438	562	1,970	781	2,961	654	420	1,694
2020 <sup>b</sup>	414,597	27,315	18,954	8,361	8,243	39	376,570	313,509	18,843	136	12,680	30,835	567	6,754	2,970	434	576	1,996	779	3,918	1,593	460	1,642
2021 <sup>c</sup>	445,505	27,919	19,467	8,452	8,324	41	406,737	340,176	19,279	142	13,399	33,144	597	6,852	3,005	438	581	2,038	790	3,956	1,608	464	1,658

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> See [table 2](#), footnote a.<sup>b</sup> Some data for 2020 are preliminary and may be revised later.<sup>c</sup> The data for 2021 include estimates and are likely to be revised later.**Note(s):**

For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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&amp;D Resources (annual series).

TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2021

(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: 1953–2021

(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	118,175	31,762	19,059	255	24,154	34,688	8,257	4,995	23	365	195	3,937	360,291	192	354,057	4,049	1,993	18,415	19,493	150	1,123	6,703	11,517		
2017	553,768	122,531	32,231	19,943	258	24,974	36,007	9,118	5,076	33	346	142	4,057	386,539	194	379,820	4,284	2,226	19,554	19,638	152	856	7,213	11,408		



TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2021

(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	604,372	131,220	36,793	21,163	269	25,192	37,735	10,068	5,252	45	341	120	4,224	426,488	194	419,202	4,585	2,486	20,668	20,184	162	1,049	7,667	11,299		
2019	666,153	135,993	39,870	22,538	290	22,653	39,524	11,118	5,470	49	346	169	4,359	482,227	179	474,442	4,806	2,777	21,569	20,170	166	911	7,889	11,192		
2020 <sup>a</sup>	716,955	147,657	40,371	23,478	298	29,772	41,462	12,278	5,670	44	348	241	4,464	520,363	179	512,224	4,837	3,103	22,252	20,074	166	982	7,828	11,085		
2021 <sup>b</sup>	791,873	153,323	40,036	24,755	299	31,805	43,475	12,954	5,856	44	344	262	4,603	587,717	198	579,299	4,931	3,274	23,065	20,922	174	1,078	7,961	11,696		
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		

TABLE 6

## U.S. R&amp;D expenditures, by source of funds and performing sector: 1953–2021

(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	
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	
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	



TABLE 6

**U.S. R&D expenditures, by source of funds and performing sector: 1953–2021**

(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
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
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	111,760	30,038	18,024	241	22,843	32,805	7,809	4,724	22	345	184	3,723	340,734	182	334,838	3,829	1,884	17,415	18,435	142	1,062	6,339	10,892
2017	513,947	113,719	29,913	18,509	239	23,178	33,417	8,462	4,711	30	321	132	3,765	358,744	180	352,507	3,975	2,066	18,147	18,225	141	794	6,694	10,587
2018	547,740	118,924	33,346	19,180	244	22,831	34,199	9,125	4,760	41	309	109	3,828	386,525	175	379,922	4,155	2,253	18,731	18,293	146	951	6,948	10,240
2019	593,094	121,078	35,497	20,066	258	20,169	35,189	9,899	4,870	44	308	150	3,881	429,340	159	422,409	4,278	2,473	19,203	17,958	148	811	7,024	9,964
2020 <sup>a</sup>	630,098	129,769	35,480	20,633	262	26,165	36,439	10,790	4,983	39	306	212	3,923	457,323	157	450,170	4,251	2,727	19,556	17,642	146	863	6,879	9,743
2021 <sup>b</sup>	666,027	128,957	33,673	20,821	251	26,750	36,566	10,895	4,926	37	289	220	3,871	494,315	166	487,235	4,147	2,753	19,399	17,597	146	907	6,696	9,837

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> Some data for 2020 are preliminary and may be revised later.<sup>b</sup> The data for 2021 are estimates and are likely to be revised later.**Note(s):**

This table reaggregates 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. For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were collected on a calendar year basis. Expenditures for other performers are calendar year approximations based on fiscal year data. (See [table 2](#), general notes.)

**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: 1953–2021

(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: 1953–2021

(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	46,363	26,323	4,260	3,925	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	50,400	29,724	4,511	4,612	NA	888	17,139	2,575	1,761	16	NA	NA	1,745	8,739	69	6,659	1,456	554	5,311	4,865	141	NA	1,891	2,833
2003	54,823	32,842	4,664	4,858	NA	1,386	19,220	2,714	1,910	17	NA	NA	1,893	9,017	70	6,944	1,436	567	5,692	5,363	129	NA	1,978	3,256
2004	56,379	34,124	4,697	4,837	NA	1,072	20,730	2,788	2,013	13	NA	NA	2,000	8,878	54	6,763	1,483	578	5,965	5,399	72	NA	2,067	3,259
2005	59,899	35,561	4,770	4,995	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	61,552	36,368	4,716	5,074	16	1,444	22,270	2,849	2,232	11	30	NA	2,191	9,424	63	6,940	1,765	656	7,288	6,239	74	NA	2,431	3,735
2007	66,488	37,962	4,621	5,166	20	2,780	22,546	2,829	2,449	11	38	NA	2,400	11,206	64	8,488	1,956	698	7,932	6,939	76	NA	2,733	4,130
2008	70,468	37,821	4,957	5,336	26	1,475	22,954	3,073	2,645	12	47	12	2,573	13,794	75	10,864	2,131	724	8,467	7,741	79	18	3,002	4,643
2009	74,379	39,227	5,441	5,907	33	1,340	23,008	3,498	2,541	14	57	13	2,457	16,157	67	13,397	1,995	698	8,257	8,196	79	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	73,551	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	38,106	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	87,276	38,745	6,119	4,112	38	2,037	22,450	3,988	2,606	5	55	20	2,355	25,925	44	22,879	2,286	716	11,577	8,304	35	117	4,011	4,141
2017	89,955	39,167	6,259	4,054	41	1,853	23,198	3,762	2,655	6	55	17	2,387	26,937	38	23,644	2,407	846	12,228	8,805	30	103	4,337	4,335

TABLE 7

## U.S. basic research expenditures, by source of funds and performing sector: 1953–2021

(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	97,798	42,313	6,827	4,188	45	2,535	24,360	4,358	2,735	9	57	12	2,449	30,181	39	26,545	2,598	995	12,963	9,384	33	112	4,719	4,520
2019	105,051	44,503	7,352	4,501	52	2,349	25,350	4,901	2,844	10	62	15	2,528	34,065	36	30,132	2,727	1,167	13,598	9,737	33	86	4,915	4,701
2020 <sup>a</sup>	111,883	46,205	7,310	4,714	54	2,191	26,379	5,557	2,963	9	64	24	2,608	38,239	35	34,053	2,741	1,406	14,026	10,026	32	103	4,865	5,024
2021 <sup>b</sup>	118,196	47,134	6,239	4,994	53	2,342	27,642	5,863	3,053	8	61	26	2,684	42,753	37	38,443	2,787	1,484	14,455	10,353	32	112	4,906	5,301
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

TABLE 7

## U.S. basic research expenditures, by source of funds and performing sector: 1953–2021

(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
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
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	58,112	32,993	5,340	4,920	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	119	NA	2,136	3,092
2002	62,203	36,685	5,567	5,692	NA	1,096	21,152	3,178	2,174	20	NA	NA	2,154	10,785	85	8,218	1,797	684	6,555	6,004	174	NA	2,334	3,496
2003	66,351	39,748	5,645	5,879	NA	1,677	23,261	3,285	2,311	21	NA	NA	2,291	10,913	85	8,404	1,738	686	6,888	6,490	156	NA	2,393	3,941
2004	66,451	40,220	5,536	5,701	NA	1,264	24,434	3,286	2,373	16	NA	NA	2,357	10,464	63	7,971	1,748	681	7,031	6,363	85	NA	2,436	3,842
2005	68,453	40,640	5,452	5,708	NA	1,266	24,897	3,317	2,377	14	NA	NA	2,363	11,232	62	8,638	1,829	702	7,506	6,698	80	NA	2,544	4,074
2006	68,236	40,318	5,228	5,625	17	1,601	24,688	3,158	2,475	13	34	NA	2,429	10,448	70	7,694	1,956	728	8,079	6,917	82	NA	2,695	4,140
2007	71,769	40,977	4,988	5,576	22	3,001	24,337	3,054	2,644	12	41	NA	2,591	12,096	69	9,162	2,112	753	8,562	7,490	82	NA	2,950	4,458
2008	74,634	40,057	5,250	5,651	28	1,562	24,311	3,255	2,801	13	50	13	2,726	14,610	80	11,506	2,256	767	8,968	8,199	83	19	3,179	4,918
2009	78,274	41,282	5,726	6,217	35	1,410	24,213	3,682	2,674	15	60	14	2,585	17,003	70	14,098	2,100	735	8,690	8,626	83	36	3,191	5,316
2010	79,434	41,660	5,314	6,733	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	15,177	69	12,514	1,837	758	8,655	8,802	65	38	3,092	5,607
2012	73,843	38,106	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

TABLE 7

**U.S. basic research expenditures, by source of funds and performing sector: 1953–2021**

(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
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	21,955	52	19,060	2,014	829	9,985	10,028	32	115	3,486	6,394
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	10,534	31	114	3,627	6,761
2016	82,538	36,642	5,787	3,889	36	1,927	21,231	3,772	2,465	5	52	19	2,227	24,518	42	21,637	2,162	678	10,948	7,853	33	111	3,793	3,916
2017	83,487	36,351	5,809	3,762	38	1,719	21,530	3,492	2,464	6	51	16	2,215	25,000	35	21,944	2,234	785	11,348	8,172	28	95	4,025	4,023
2018	88,634	38,348	6,187	3,796	40	2,298	22,077	3,950	2,479	8	51	11	2,219	27,353	35	24,058	2,355	901	11,748	8,505	30	101	4,277	4,096
2019	93,530	39,622	6,546	4,007	46	2,091	22,569	4,363	2,532	9	55	14	2,250	30,329	32	26,827	2,427	1,039	12,106	8,669	30	77	4,376	4,185
2020 <sup>a</sup>	98,328	40,607	6,424	4,143	48	1,926	23,183	4,884	2,604	7	56	21	2,292	33,606	30	29,928	2,409	1,236	12,326	8,811	28	90	4,276	4,415
2021 <sup>b</sup>	99,412	39,643	5,248	4,201	45	1,970	23,249	4,931	2,568	7	51	22	2,258	35,958	31	32,334	2,344	1,248	12,158	8,708	27	94	4,126	4,458

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> Some data for 2020 are preliminary and may be revised later.<sup>b</sup> The data for 2021 include estimates and are likely to be revised later.**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. For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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.)

**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 sector: 1953–2021

(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 sector: 1953–2021

(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	64,201	18,781	7,052	2,564	NA	3,603	3,411	2,150	594	9	NA	NA	585	41,260	55	40,409	535	261	1,734	1,832	85	NA	621	1,126	
2002	50,540	18,949	7,487	2,867	NA	2,452	3,877	2,267	649	12	NA	NA	636	26,917	52	26,081	531	253	1,937	2,089	106	NA	689	1,293	
2003	60,983	22,101	7,672	3,020	NA	4,473	4,450	2,487	721	13	NA	NA	708	33,710	54	32,861	537	259	2,127	2,324	99	NA	739	1,486	
2004	69,322	22,540	7,455	3,180	NA	4,775	4,682	2,448	749	14	NA	NA	735	41,521	56	40,657	545	264	2,190	2,322	75	NA	759	1,488	
2005	69,768	23,376	7,557	3,288	NA	5,289	4,810	2,432	734	14	NA	NA	719	40,894	62	39,995	557	280	2,283	2,481	80	NA	774	1,627	
2006	76,499	24,682	7,435	3,348	87	6,140	5,080	2,592	894	13	169	NA	712	45,978	72	45,033	573	300	2,368	2,579	84	NA	789	1,705	
2007	83,662	27,788	7,222	3,643	111	8,945	5,284	2,583	968	13	210	NA	745	49,625	74	48,625	607	318	2,461	2,821	89	NA	848	1,885	
2008	74,729	25,254	7,316	3,955	146	5,397	5,840	2,600	1,160	13	261	71	815	42,377	79	41,292	675	331	2,682	3,258	83	105	951	2,119	
2009	72,634	30,630	7,874	4,517	186	7,797	7,207	3,049	1,312	17	316	38	942	34,279	79	33,124	757	319	2,913	3,501	93	96	1,006	2,305	
2010	79,016	29,650	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	80	42,590	781	340	3,333	3,784	76	122	1,073	2,512	
2012	86,822	30,191	8,587	5,566	220	4,137	9,053	2,629	1,387	18	330	45	994	47,727	81	46,436	861	349	3,602	3,915	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	91,772	33,354	8,775	6,766	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	65	209	1,579	3,231	
2016	109,691	36,224	9,805	7,469	209	5,327	9,665	3,749	1,729	10	300	45	1,162	59,430	84	57,253	1,202	891	4,877	7,284	66	245	1,826	5,147	
2017	113,659	38,453	10,124	7,868	208	5,386	10,144	4,723	1,769	15	279	33	1,223	60,782	91	58,429	1,270	979	5,230	7,235	72	193	1,943	5,019	



TABLE 8

## U.S. applied research expenditures, by source of funds and performing sector: 1953–2021

(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	118,700	40,395	11,111	8,407	215	5,355	10,593	4,714	1,831	21	273	23	1,290	63,557	90	61,018	1,363	1,069	5,511	7,164	75	191	2,034	4,859	
2019	130,712	42,410	11,264	9,075	225	5,246	11,117	5,483	1,897	23	269	42	1,340	73,366	83	70,679	1,448	1,139	5,759	6,981	77	209	2,097	4,589	
2020 <sup>a</sup>	133,326	43,855	11,494	9,384	224	6,140	11,704	4,908	1,924	20	262	62	1,363	74,646	82	71,934	1,441	1,174	5,956	6,590	76	234	2,077	4,193	
2021 <sup>b</sup>	143,995	44,718	10,651	9,863	224	6,541	12,261	5,179	1,972	20	258	67	1,398	83,859	89	81,066	1,453	1,238	6,186	6,884	78	256	2,117	4,424	
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	

TABLE 8

## U.S. applied research expenditures, by source of funds and performing sector: 1953–2021

(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	
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	
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	80,470	23,540	8,839	3,214	NA	4,516	4,276	2,695	744	11	NA	NA	733	51,716	70	50,649	671	327	2,173	2,297	107	NA	778	1,411	
2002	62,375	23,387	9,241	3,538	NA	3,026	4,784	2,797	800	15	NA	NA	785	33,220	65	32,188	655	312	2,390	2,578	131	NA	851	1,596	
2003	73,806	26,748	9,285	3,654	NA	5,414	5,386	3,010	872	16	NA	NA	856	40,799	65	39,771	649	313	2,574	2,813	120	NA	894	1,799	
2004	81,705	26,566	8,786	3,748	NA	5,628	5,519	2,885	882	16	NA	NA	866	48,939	66	47,920	642	311	2,582	2,737	89	NA	894	1,753	
2005	79,732	26,715	8,637	3,758	NA	6,044	5,497	2,779	838	16	NA	NA	822	46,734	71	45,707	636	321	2,609	2,836	91	NA	885	1,859	
2006	84,807	27,362	8,242	3,712	96	6,807	5,632	2,873	991	14	187	NA	789	50,971	80	49,923	635	332	2,625	2,859	94	NA	875	1,890	
2007	90,308	29,995	7,795	3,932	120	9,656	5,704	2,788	1,045	14	227	NA	804	53,566	80	52,487	655	344	2,656	3,045	96	NA	915	2,035	
2008	79,147	26,747	7,749	4,189	155	5,716	6,185	2,754	1,228	14	276	75	863	44,882	84	43,732	715	350	2,840	3,450	88	111	1,007	2,245	
2009	76,438	32,234	8,286	4,754	196	8,205	7,584	3,209	1,381	18	332	40	991	36,074	83	34,859	796	335	3,065	3,684	98	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	5,151	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	18	330	45	994	47,727	81	46,436	861	349	3,602	3,915	76	137	1,132	2,571	

TABLE 8

**U.S. applied research expenditures, by source of funds and performing sector: 1953–2021**

(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
2013	86,640	31,866	8,166	6,525	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
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	92	47,891	1,037	389	4,257	4,855	62	200	1,508	3,086
2016	103,737	34,257	9,273	7,063	198	5,038	9,140	3,545	1,635	10	284	43	1,098	56,204	79	54,146	1,137	842	4,612	6,889	62	232	1,727	4,868
2017	105,486	35,688	9,396	7,302	193	4,998	9,415	4,384	1,642	14	259	30	1,135	56,411	85	54,227	1,178	909	4,854	6,714	66	179	1,803	4,658
2018	107,577	36,610	10,070	7,619	195	4,854	9,600	4,272	1,659	19	247	21	1,169	57,602	81	55,301	1,235	969	4,995	6,493	68	173	1,843	4,403
2019	116,376	37,759	10,029	8,080	200	4,671	9,898	4,881	1,689	20	239	37	1,193	65,320	74	62,927	1,289	1,014	5,127	6,215	69	186	1,867	4,085
2020 <sup>a</sup>	117,174	38,542	10,102	8,247	197	5,396	10,286	4,314	1,691	18	230	55	1,198	65,603	72	63,220	1,266	1,031	5,234	5,792	67	206	1,825	3,685
2021 <sup>b</sup>	121,111	37,612	8,959	8,295	188	5,501	10,312	4,356	1,658	17	217	56	1,176	70,532	75	68,183	1,222	1,041	5,203	5,790	66	215	1,780	3,721

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> Some data for 2020 are preliminary and may be revised later.<sup>b</sup> The data for 2021 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. For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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.)

**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: 1953–2021

(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: 1953–2021

(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	167,975	28,690	11,062	3,566	NA	12,542	646	874	132	4	NA	NA	128	137,749	24	137,410	117	197	381	1,024	37	NA	136	850	
2002	176,971	30,199	11,800	3,763	NA	13,061	639	937	143	3	NA	NA	140	145,048	14	144,727	116	191	425	1,155	28	NA	151	976	
2003	175,559	30,190	12,646	3,964	NA	11,939	897	743	158	2	NA	NA	155	143,443	9	143,121	118	195	467	1,301	17	NA	162	1,122	
2004	177,030	34,131	12,746	4,454	NA	14,419	1,211	1,300	164	3	NA	NA	161	140,947	13	140,615	120	199	481	1,307	17	NA	167	1,123	
2005	195,621	36,475	13,994	4,611	NA	15,512	1,146	1,211	163	5	NA	NA	158	157,053	23	156,696	122	212	501	1,428	30	NA	170	1,228	
2006	212,857	38,888	16,089	4,547	2	16,720	927	603	167	6	5	NA	156	171,780	36	171,392	126	226	520	1,502	41	NA	173	1,287	
2007	227,740	39,378	18,016	5,037	3	14,860	894	568	177	8	6	NA	163	185,985	42	185,569	133	240	540	1,660	51	NA	186	1,423	
2008	259,579	54,540	17,566	6,078	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	255,919	55,908	17,245	6,147	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	2,860	39	403	521	1,897	
2012	273,052	55,540	19,941	6,632	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	57	246,601	536	296	1,733	3,640	36	624	696	2,284	
2015	312,977	47,818	18,961	7,063	6	18,850	2,517	422	504	6	8	90	401	258,753	61	257,831	554	307	1,857	4,045	41	786	778	2,439	
2016	324,733	43,207	15,838	7,479	7	16,790	2,573	520	660	8	11	129	420	274,937	64	273,926	561	386	1,962	3,904	50	760	866	2,228	
2017	350,154	44,911	15,848	8,021	9	17,736	2,665	632	652	11	12	92	448	298,820	64	297,747	607	401	2,096	3,598	51	560	934	2,053	

TABLE 9

## U.S. development expenditures, by source of funds and performing sector: 1953–2021

(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	387,873	48,512	18,856	8,567	9	17,301	2,783	996	686	15	12	85	486	332,749	65	331,637	624	423	2,195	3,637	54	748	914	1,921
2019	430,391	49,079	21,253	8,962	13	15,058	3,058	735	728	17	16	112	492	374,795	60	373,631	631	472	2,213	3,453	56	617	878	1,903
2020 <sup>a</sup>	471,747	57,597	21,567	9,379	19	21,440	3,380	1,812	783	15	22	155	494	407,479	62	406,238	656	523	2,271	3,458	58	645	886	1,869
2021 <sup>b</sup>	529,683	61,470	23,145	9,897	22	22,922	3,573	1,912	832	16	25	169	520	461,107	72	459,790	691	552	2,423	3,685	63	710	939	1,972
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

TABLE 9

## U.S. development expenditures, by source of funds and performing sector: 1953–2021

(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	
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	
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	210,540	35,960	13,865	4,470	NA	15,720	810	1,095	166	5	NA	NA	161	172,655	30	172,230	147	247	477	1,283	47	NA	171	1,066	
2002	218,412	37,271	14,563	4,644	NA	16,120	789	1,156	176	4	NA	NA	172	179,014	17	178,618	144	236	525	1,426	34	NA	187	1,205	
2003	212,475	36,538	15,305	4,798	NA	14,449	1,086	900	191	3	NA	NA	188	173,606	11	173,216	143	236	565	1,575	21	NA	196	1,358	
2004	208,655	40,228	15,023	5,250	NA	16,995	1,428	1,533	194	4	NA	NA	190	166,125	15	165,735	141	235	567	1,540	20	NA	196	1,324	
2005	223,557	41,683	15,993	5,270	NA	17,727	1,310	1,384	187	6	NA	NA	180	179,482	27	179,073	140	242	573	1,632	34	NA	194	1,404	
2006	235,972	43,111	17,837	5,041	3	18,536	1,027	668	186	7	5	NA	173	190,434	39	190,004	139	251	576	1,665	46	NA	192	1,427	
2007	245,830	42,506	19,447	5,437	3	16,040	965	613	191	8	6	NA	176	200,758	46	200,309	144	260	583	1,792	55	NA	201	1,536	
2008	274,924	57,764	18,605	6,438	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	269,321	58,836	18,148	6,469	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	42	210,897	423	261	1,297	2,913	40	411	531	1,932	
2012	273,052	55,540	19,941	6,632	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	



TABLE 9

**U.S. development expenditures, by source of funds and performing sector: 1953–2021**

(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
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	290,803	46,371	19,587	6,445	5	17,428	2,450	455	482	7	7	84	384	238,768	55	237,909	517	286	1,672	3,511	35	602	671	2,203
2015	298,954	45,676	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	307,106	40,861	14,978	7,073	7	15,878	2,433	492	624	7	10	122	397	260,013	61	259,057	531	365	1,855	3,692	47	719	819	2,107
2017	324,975	41,681	14,708	7,444	8	16,460	2,473	587	606	10	11	86	415	277,332	60	276,336	563	372	1,945	3,339	47	520	866	1,906
2018	351,529	43,966	17,089	7,764	9	15,680	2,522	903	622	14	11	77	440	301,570	59	300,562	566	383	1,989	3,296	49	678	828	1,741
2019	383,189	43,696	18,922	7,979	12	13,407	2,722	654	649	15	14	99	438	333,691	53	332,654	562	420	1,970	3,074	49	549	781	1,694
2020 <sup>a</sup>	414,597	50,620	18,954	8,243	17	18,843	2,970	1,593	688	13	20	136	434	358,115	55	357,023	576	460	1,996	3,039	51	567	779	1,642
2021 <sup>b</sup>	445,505	51,701	19,467	8,324	18	19,279	3,005	1,608	700	14	21	142	438	387,826	61	386,719	581	464	2,038	3,099	53	597	790	1,658

NA = not available.

FFRDC = federally funded research and development center; NPO = nonprofit organization.

<sup>a</sup> Some data for 2020 are preliminary and may be revised later.<sup>b</sup> The data for 2021 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. For detail on type-of-R&D data, see [table 3](#), footnotes b–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. Data are based on reports by performers in the National Center for Science and Engineering Statistics annual surveys on R&D expenditures: 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 Survey, and Survey of State Government Research and Development. R&D expenditures by business performers—and, before 2001, also industry-administered FFRDCs—were 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.)

**Source(s):**

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

**TABLE 10**  
**U.S. R&D expenditures, by state, performing sector, and source of funds: 2020**

(Millions of current dollars)

State	All R&D	R&D rank	Performer:	Federal	FFRDCs		Business				Higher education <sup>a</sup>						NPOs	State, internal <sup>b</sup>	GDP	GDP rank	R&D intensity <sup>c</sup>			
			Source of funds:	Federal	Total	Federal	Nonfederal <sup>d</sup>	Total	Own	Nonfederal <sup>e</sup>	Federal	Total	Federal	Other government	Business	Higher education	NPO	Other			Total	Total	Percent	Rank
										Paid by others														
U.S. total <sup>f</sup>	716,955	na		40,371	23,866	23,478	389	543,220	470,436	43,012	29,772	80,842	41,462	4,464	4,837	22,252	5,284	2,544	27,973	683	21,060,474	na	3.40	na
States total <sup>g</sup>	713,526	na		38,373	23,514	23,134	381	536,816	465,455	41,987 - 43,163	28,195 - 29,371	86,158	46,047	4,592	5,180	21,919	5,744	2,676	27,973	692	20,925,236	na	3.41	na
Alabama	5,701	27		1,443	0	0	0	2,937	1,329	112	1,497	1,187	669	65	71	329	37	16	121	14	230,892	27	2.47	22
Alaska	339	50		87	0	0	0	47	43	2	1	178	118	5	4	46	2	3	17	11	50,475	49	0.67	48
Arizona	9,056	21		264	73	70	3	7,110	4,899	754	1,457	1,499	647	81	42	495	99	135	109	2	382,072	17	2.37	26
Arkansas	892	42		41	0	0	0	414	360	38	16	371	136	72	20	127	12	5	65	*	133,969	36	0.67	49
California	217,976	1		3,458	6,756	6,650	105	193,063	175,459	9,024	8,580	10,911	5,524	438	733	2,390	1,127	701	3,707	81	3,020,173	1	7.22	4
Colorado	10,297	15		626	700	632	68	7,145	6,042	216	887	1,666	1,186	53	87	190	94	56	148	12	391,263	16	2.63	20
Connecticut	9,486	18		15	0	0	0	7,902	6,487	393	1,022	1,401	761	12	85	430	102	11	143	26	276,223	23	3.43	12
Delaware	2,749	34		3	0	0	0	2,499	1,688	804	7	244	157	11	7	60	5	5	0	2	75,819	43	3.63	11
District of Columbia <sup>h</sup>	7,440	25		4,511	9	9	0	659	509	31	118	685	333	5	27	193	90	37	1,574	3	144,720	34	5.14	6
Florida	11,888	14		766	0	0	0	7,885	5,762	838	1,284	2,723	1,278	252	114	890	131	57	461	52	1,116,727	4	1.06	41
Georgia	8,455	23		198	0	0	0	5,389	4,426	814	149	2,782	1,627	172	141	703	122	17	83	3	625,426	8	1.35	35
Hawaii	794	45		91	0	0	0	279	216	37	25	298	184	19	3	78	13	1	120	7	82,536	41	0.96	43
Idaho	2,929	31		37	494	481	13	2,210	2,139	66	5	171	86	40	3	36	2	3	10	8	85,928	40	3.41	13
Illinois	19,203	10		181	1,160	1,140	20	14,097	13,415	582	101	2,765	1,666	39	169	697	156	39	1,001	1	856,943	5	2.24	28
Indiana	10,303	16		243	0	0	0	8,305	7,202	976	126	1,734	756	47	112	627	129	64	21	*	373,782	20	2.76	17
Iowa	4,480	28		71	33	32	*	3,455	2,664	0 - 588	204 - 792	917	430	43	46	360	32	6	1	3	196,983	30	2.27	27
Kansas	3,616	30		93	0	0	0	2,771	1,956	799	15	740	319	72	111	204	29	4	12	1	177,581	32	2.04	31
Kentucky	1,911	35		7	0	0	0	1,259	852	320	87	641	302	50	22	202	20	46	2	2	216,866	28	0.88	45
Louisiana	1,453	37		53	0	0	0	535	475	30	30	798	309	97	99	227	40	25	55	11	232,528	26	0.62	50
Maine	769	44		8	0	0	0	434	385	32	18	151	66	22	3	54	4	2	172	4	70,740	44	1.09	39
Maryland	27,853	8		14,521	1,040	1,040	0	5,923	3,964	593	1,366	4,745	3,735	87	137	550	225	11	1,624	1	410,931	15	6.78	5
Massachusetts	44,907	3		573	1,917	1,892	24	32,737	27,704	3,861	1,172	4,361	2,414	42	330	996	426	153	5,310	10	585,150	12	7.67	2
Michigan	24,898	6		115	0	0	0	21,589	18,507	2,812	269	2,868	1,425	63	128	1,081	129	42	326	*	520,105	14	4.79	7
Minnesota	10,301	17		61	0	0	0	7,824	7,421	229	175	1,087	524	86	51	354	45	26	1,327	3	376,814	19	2.73	18
Mississippi	1,098	41		300	0	0	0	278	244	25	9	507	269	112	10	99	15	2	12	1	115,123	37	0.95	44
Missouri	8,229	22		126	0	0	0	6,502	4,581	150	1,771	1,444	822	30	118	351	112	12	149	8	330,250	22	2.49	21
Montana	608	47		65	0	0	0	242	224	9	9	290	161	25	4	91	7	2	4	6	52,356	48	1.16	37

TABLE 10

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

(Millions of current dollars)

State	All R&D	R&D rank	Performer:	Federal	FFRDCs			Business				Higher education <sup>a</sup>						NPOs	State, internal <sup>b</sup>	GDP	GDP rank	R&D intensity <sup>c</sup>		
			Source of funds:	Federal	Total	Federal	Nonfederal <sup>d</sup>	Total	Own	Paid by others		Total	Federal	Other government	Business	Higher education	NPO	Other	Total			Total	Percent	Rank
										Nonfederal <sup>e</sup>	Federal													
Nebraska	1,492	39		39	0	0	0	838	769	44	25	587	255	71	31	181	23	26	26	2	134,581	35	1.11	38
Nevada	1,252	40		20	0	0	0	931	707	195	29	296	110	12	6	152	7	10	5	*	172,563	33	0.73	47
New Hampshire	3,332	32		63	0	0	0	2,755	1,093	0 - 588	1,074 - 1,662	484	244	6	13	189	26	8	29	*	88,338	39	3.77	10
New Jersey	24,121	7		570	108	104	4	22,009	18,054	3,722	234	1,386	679	104	87	302	131	83	46	3	620,086	9	3.89	9
New Mexico	8,438	24		688	6,135	6,076	58	1,140	857	43	240	376	247	27	6	75	13	8	97	3	98,790	38	8.54	1
New York	36,559	5		1,379	595	570	26	23,414	21,062	1,326	1,026	7,156	3,732	405	510	1,675	530	305	3,735	279	1,740,805	3	2.10	30
North Carolina	18,064	11		349	0	0	0	13,369	9,242	4,010	118	3,386	1,940	164	329	685	214	55	942	18	598,916	11	3.02	15
North Dakota	679	46		37	0	0	0	342	331	10	1	267	76	65	13	105	2	6	33	*	54,423	47	1.25	36
Ohio	16,647	12		1,885	0	0	0	11,005	7,511	2,552	941	2,519	1,554	74	216	498	129	48	1,236	2	684,383	7	2.43	24
Oklahoma	1,892	36		185	0	0	0	1,012	945	28	39	604	243	61	38	243	14	5	89	2	190,064	31	1.00	42
Oregon	11,537	19		89	0	0	0	10,472	10,190	213	70	895	609	58	49	110	51	17	65	16	247,967	24	4.65	8
Pennsylvania	21,687	9		420	141	141	*	15,443	13,544	1,612	287	4,820	2,631	104	318	1,385	294	89	855	8	771,613	6	2.81	16
Rhode Island	1,638	38		351	0	0	0	700	581	15	104	396	265	15	7	84	18	7	188	3	60,771	45	2.70	19
South Carolina	2,628	33		108	176	173	3	1,567	1,337	133	97	743	349	39	43	273	26	12	7	28	245,360	25	1.07	40
South Dakota	344	51		17	0	0	0	216	209	6	1	111	51	19	3	19	5	13	1	*	55,681	46	0.62	51
Tennessee	6,187	26		786	1,633	1,617	16	1,820	1,568	183	69	1,399	766	37	83	433	60	19	548	2	379,007	18	1.63	34
Texas	34,589	4		810	7	6	0	26,084	22,834	1,985	1,265	6,620	2,678	911	464	1,821	471	274	1,065	3	1,789,933	2	1.93	32
Utah	4,452	29		177	0	0	0	3,285	2,981	243	61	951	581	29	50	241	40	10	33	6	202,133	29	2.20	29
Vermont	574	49		4	0	0	0	368	295	64	9	194	100	1	4	74	9	6	7	1	34,019	51	1.69	33
Virginia	13,317	13		2,019	1,468	1,445	23	7,235	5,072	429	1,734	1,921	876	124	94	638	109	80	661	13	556,993	13	2.39	25
Washington	46,392	2		282	1,071	1,054	17	41,615	40,576	773	265	1,827	1,196	81	71	225	211	43	1,573	23	612,969	10	7.57	3
West Virginia	556	48		56	0	0	0	229	203	8	17	218	95	12	7	80	7	17	50	3	76,548	42	0.73	46
Wisconsin	8,346	20		57	0	0	0	6,430	5,506	837	87	1,747	809	126	61	549	150	53	107	5	340,591	21	2.45	23
Wyoming	1,169	43		26	0	0	0	1,047	1,035	9	2	93	57	5	5	25	1	0	0	3	36,330	50	3.22	14
U.S. undistributed <sup>i</sup>	2,050	na		1,243	0	0	0	807	707	0 - 101	0 - 101	0	0	0	0	0	0	0	0	0	0	na	na	na
Puerto Rico	656	na		6	0	0	0	539	519	NA	NA	111	76	2	4	26	1	2	0	na	105,428	na	na	na
Other <sup>j</sup>	69	na		42	0	0	0	0	0	0	0	27	22	3	*	2	*	0	0	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% of total R&D expenditures reported by higher education institutions in FY 2020.

<sup>b</sup> Internal performers include state agency and department employees and 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 2020 included state and local governments, business, NPOs, and other sources.

<sup>e</sup> R&D paid for by nonfederal sources 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> U.S. R&D totals as reported by the NCSES *National Patterns of R&D Resources* series, 2020-21 edition. (See tables 1–9 in this report.)

<sup>g</sup> The states totals differ from U.S. totals for several reasons: (1) some R&D expenditures cannot be allocated to any 1 of the 50 states or the District of Columbia; (2) data are not available to allocate the portion of business R&D performed by companies with fewer than 10 employees (\$5.6 billion in 2020) by state; (3) the state-level higher education data have not been adjusted to eliminate the double counting of funds passed through to other performers; and (4) state-level R&D data are not converted from fiscal years to calendar years.

<sup>h</sup> Federal total excludes \$9.9 billion in federally funded R&D performed by others.

<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 23 October 2022.

## Technical Notes

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### Overview of 2020–21 Data Update

*National Patterns of R&D Resources* provides current data on the levels and key trends of the performance and funding of R&D 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 2021 are provided for almost all variables. The data for 2021 are estimates and not previously reported in this series. The data for 2020 are revised from the previous edition (2019–20) of this series. The data for 1953–2019 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 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 and 2020, annual data on the R&D performed in the domestic United States by the business sector come from the NCSES Business Enterprise Research and Development (BERD) Survey, 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 more 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 billion–\$5 billion annually) were neither available nor reported in the business R&D totals in *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.

(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 the NCSES 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 43 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 SIRD (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 the NCSES Survey of State Government Research and Development (<https://www.nsf.gov/statistics/srvystatard/>). 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 the NCSSES HERD Survey. HERD is an annual census of universities and colleges that grant a bachelor's degree or higher and expend at least \$150,000 in separately accounted for R&D during 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, and type of R&D, as well as on 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. The most recent data on nonprofit organization R&D comes from the NCSSES FY 2020 Nonprofit Research Activities module of the Annual Business Survey and the 2016 NPRA Survey (<https://www.nsf.gov/statistics/srvynpra/>). Data for 2017–19 are estimated based on the 2016 and 2020 surveys. The 1998–2015 data for nonprofit organization R&D funded by the federal government come from the NCSSES annual Survey of Federal Funds for Research and Development; nonprofit organization R&D funded by businesses and by the nonprofit sector itself for that period are estimated based on parameters from the 1996–97 Survey of Research and Development Funding and Performance by Nonprofit Organizations, which was also conducted in 1973 (<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 <https://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 is developed from integration of primary data from NCSSES 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 NCSSES 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 and BERD data in 2019 and 2020 covered the population of companies with 10 or more employees. Starting in 2017, ABS data covered companies with 1–9 employees in the *National Patterns* reported business R&D totals, accounting for \$5.7 billion in 2017 and \$5.6 billion in 2020.
- 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 \$5.0 billion in FY 2020. 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 report’s author.

## 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 <https://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm>.

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