TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2022

(Millions of current and of constant 2017 dollars)

Year	All performers	All federal	Federal intramural[a]	FFRDCs[b]		Nonfederal government[c]	Business[d]							Higher education[e]						NPOs[f]			
	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
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

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2022

(Millions of current and of constant 2017 dollars)

Year	All performers	All federal	Federal intramural[a]	FFRDCs[b]		Nonfederal government[c]	Business[d]							Higher education[e]						NPOs[f]			
	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																						
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	402,931	47,572	30,560	17,013	16,571	606	282,393	221,104	39,573	195	9,567	11,464	490	54,909	31,740	3,680	3,032	12,057	4,400	17,452	7,097	1,258	9,097
2010	406,599	50,798	31,970	18,828	18,409	691	278,977	218,187	34,199	156	11,013	14,534	888	58,083	34,681	3,674	2,953	12,262	4,515	18,050	7,093	1,266	9,691
2011	426,214	53,524	34,950	18,574	18,176	694	294,092	235,426	31,309	321	11,124	15,349	563	60,087	35,742	3,615	2,999	13,103	4,629	17,817	6,564	1,340	9,913
2012	433,698	52,144	34,017	18,128	17,727	665	302,251	242,674	30,621	157	11,624	16,699	476	60,876	34,967	3,561	3,170	14,282	4,898	17,762	6,239	1,376	10,147
2013	454,232	51,086	33,406	17,680	17,296	620	322,528	259,908	29,362	194	13,450	18,796	818	61,511	33,840	3,643	3,376	15,341	5,313	18,487	5,970	1,464	11,053
2014	475,938	52,687	34,783	17,903	17,523	583	340,728	277,272	26,554	138	13,227	22,544	993	62,318	33,124	3,714	3,602	16,176	5,702	19,622	6,135	1,548	11,939
2015	494,470	52,847	34,199	18,649	18,287	595	355,821	289,892	26,990	127	14,595	23,102	1,115	64,604	33,563	3,782	3,844	17,260	6,156	20,604	6,247	1,605	12,751
2016	521,686	51,187	31,762	19,424	19,059	620	379,529	310,391	24,154	195	14,649	29,017	1,123	67,777	34,687	3,936	4,049	18,399	6,707	22,573	8,257	1,993	11,517

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2022

(Millions of current and of constant 2017 dollars)

Year	All performers	All federal	Federal intramural[a]	FFRDCs[b]		Nonfederal government[c]	Business[d]							Higher education[e]						NPOs[f]			
	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																						
2017	553,612	52,553	32,231	20,322	19,943	632	405,792	324,177	24,974	142	17,729	37,913	856	71,115	36,006	4,057	4,283	19,554	7,217	23,521	9,058	2,226	11,414
2018	604,028	58,356	36,793	21,563	21,163	643	445,563	357,862	25,192	120	19,283	42,057	1,049	74,890	37,745	4,224	4,584	20,667	7,670	24,576	9,937	2,486	11,312
2019	665,557	62,802	39,870	22,932	22,538	675	498,175	405,960	22,653	169	21,673	46,809	911	78,157	39,528	4,363	4,806	21,568	7,893	25,749	10,901	2,778	11,212
2020	716,870	65,093	41,227	23,866	23,478	683	543,220	443,398	29,772	241	21,775	47,051	982	80,823	41,436	4,470	4,838	22,250	7,830	27,053	11,959	3,103	11,112
2021[g]	789,072	66,786	41,464	25,322	24,873	685	608,625	500,300	24,587	392	26,858	55,507	981	85,787	44,683	4,621	5,080	23,506	7,897	27,190	11,620	3,010	11,958
2022[h]	885,563	73,338	46,960	26,378	25,819	697	692,748	573,667	27,325	413	28,561	61,740	1,042	91,451	47,738	4,766	5,493	25,236	8,219	27,329	11,679	3,026	12,019
	Constant 2017 $millions																						
1953	38,372	8,522	7,548	974	974	NA	26,994	16,360	10,634	NA	NA	NA	NA	2,026	1,108	294	152	271	201	829	428	193	208
1954	41,414	8,304	7,092	1,212	1,212	NA	29,989	17,095	12,895	NA	NA	NA	NA	2,218	1,212	328	173	291	214	903	446	228	228
1955	44,817	9,358	7,050	2,308	2,308	NA	32,027	17,825	14,202	NA	NA	NA	NA	2,478	1,384	362	196	304	232	953	467	254	232
1956	59,566	11,853	7,922	3,931	3,931	NA	43,950	22,963	20,987	NA	NA	NA	NA	2,740	1,549	396	221	322	252	1,023	498	259	266
1957	67,199	13,459	8,797	4,663	4,663	NA	49,673	23,033	26,641	NA	NA	NA	NA	2,937	1,638	434	248	346	271	1,129	532	251	346
1958	72,382	14,344	9,990	4,354	4,354	NA	53,489	24,072	29,417	NA	NA	NA	NA	3,256	1,857	477	259	368	295	1,293	630	252	411
1959	81,701	16,158	10,996	5,161	5,161	NA	60,182	26,055	34,127	NA	NA	NA	NA	3,833	2,326	527	258	399	324	1,527	814	275	438
1960	88,484	17,492	11,620	5,873	5,873	NA	64,742	28,576	36,166	NA	NA	NA	NA	4,547	2,920	581	258	432	355	1,704	955	310	439
1961	93,001	19,626	12,688	6,938	6,938	NA	66,111	29,808	36,302	NA	NA	NA	NA	5,322	3,554	642	255	476	396	1,941	1,079	313	549
1962	98,647	20,463	13,801	6,662	6,662	NA	69,632	31,728	37,904	NA	NA	NA	NA	6,262	4,331	707	256	530	438	2,290	1,262	341	688
1963	109,276	23,185	15,959	7,226	7,226	NA	76,198	33,433	42,765	NA	NA	NA	NA	7,348	5,230	780	253	599	487	2,545	1,460	343	742
1964	117,368	26,189	18,220	7,969	7,969	NA	80,172	35,586	44,587	NA	NA	NA	NA	8,445	6,113	845	249	697	541	2,562	1,536	338	688
1965	122,192	26,390	19,045	7,346	7,346	NA	83,334	38,886	44,448	NA	NA	NA	NA	9,620	7,041	902	250	821	606	2,848	1,726	374	748
1966	129,541	26,554	19,415	7,140	7,140	NA	89,168	42,351	46,817	NA	NA	NA	NA	10,670	7,835	939	264	965	666	3,149	1,928	411	810
1967	133,162	27,292	19,649	7,643	7,643	NA	91,064	45,743	45,321	NA	NA	NA	NA	11,607	8,501	958	294	1,138	716	3,200	1,951	422	827
1968	134,940	26,639	19,133	7,506	7,506	NA	93,077	48,519	44,558	NA	NA	NA	NA	11,964	8,676	1,009	315	1,206	758	3,260	1,991	443	826
1969	135,560	27,274	19,765	7,509	7,509	NA	93,052	51,402	41,650	NA	NA	NA	NA	11,890	8,466	1,085	315	1,215	808	3,345	2,021	485	840
1970	130,130	27,656	20,575	7,081	7,081	NA	87,148	50,960	36,189	NA	NA	NA	NA	11,975	8,349	1,174	324	1,280	847	3,351	2,028	471	852
1971	127,058	27,575	20,784	6,791	6,791	NA	84,051	50,226	33,825	NA	NA	NA	NA	12,092	8,295	1,235	339	1,365	858	3,340	2,011	462	867
1972	129,871	28,056	21,128	6,927	6,927	NA	85,875	52,124	33,751	NA	NA	NA	NA	12,458	8,541	1,274	357	1,408	879	3,482	2,131	456	895
1973	132,600	27,472	20,720	6,752	6,752	NA	88,697	56,138	32,559	NA	NA	NA	NA	12,653	8,604	1,289	386	1,474	900	3,779	2,425	450	904
1974	131,115	27,184	20,172	7,012	7,012	NA	87,407	57,647	29,761	NA	NA	NA	NA	12,640	8,490	1,256	411	1,547	937	3,883	2,510	449	925
1975	128,316	27,268	20,005	7,263	7,263	NA	84,389	56,051	28,338	NA	NA	NA	NA	12,840	8,633	1,252	424	1,552	978	3,819	2,428	447	943
1976	134,454	28,267	20,083	8,185	8,185	NA	89,012	59,448	29,564	NA	NA	NA	NA	13,292	8,930	1,258	447	1,637	1,021	3,882	2,424	461	997

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2022

(Millions of current and of constant 2017 dollars)

Year	All performers	All federal	Federal intramural[a]	FFRDCs[b]		Nonfederal government[c]	Business[d]							Higher education[e]						NPOs[f]			
	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																						
1977	139,118	28,620	19,939	8,681	8,681	NA	92,652	62,083	30,569	NA	NA	NA	NA	13,951	9,285	1,265	496	1,825	1,080	3,895	2,376	472	1,046
1978	146,114	30,436	20,880	9,555	9,555	NA	96,637	66,325	30,312	NA	NA	NA	NA	14,982	9,983	1,329	544	2,036	1,090	4,059	2,489	480	1,090
1979	153,363	30,568	20,690	9,878	9,878	NA	102,638	71,194	31,443	NA	NA	NA	NA	15,825	10,656	1,333	594	2,174	1,068	4,332	2,728	482	1,122
1980	160,583	30,180	19,889	10,291	10,291	NA	109,795	77,406	32,389	NA	NA	NA	NA	16,395	11,009	1,317	669	2,335	1,064	4,212	2,584	481	1,147
1981	167,744	30,160	19,966	10,194	10,194	NA	117,004	82,206	34,798	NA	NA	NA	NA	16,440	10,835	1,348	729	2,454	1,074	4,140	2,493	478	1,169
1982	176,461	30,736	20,763	9,972	9,972	NA	124,927	87,643	37,284	NA	NA	NA	NA	16,614	10,661	1,357	793	2,637	1,166	4,185	2,467	490	1,227
1983	189,161	33,311	22,774	10,537	10,537	NA	133,923	93,767	40,156	NA	NA	NA	NA	17,352	10,956	1,384	908	2,853	1,250	4,575	2,745	513	1,316
1984	207,528	35,557	24,185	11,371	11,371	NA	148,295	104,337	43,958	NA	NA	NA	NA	18,579	11,666	1,463	1,050	3,073	1,326	5,097	3,141	539	1,417
1985	225,616	37,828	25,760	12,068	12,068	NA	162,076	112,233	49,843	NA	NA	NA	NA	20,280	12,568	1,640	1,240	3,429	1,403	5,431	3,332	568	1,531
1986	231,920	38,399	26,046	12,353	12,353	NA	165,735	115,589	50,145	NA	NA	NA	NA	22,257	13,554	1,869	1,437	3,893	1,504	5,530	3,251	606	1,673
1987	237,816	38,356	25,574	12,782	12,782	NA	169,685	115,563	54,122	NA	NA	NA	NA	24,103	14,620	2,003	1,564	4,257	1,659	5,671	3,208	643	1,820
1988	243,385	39,184	26,073	13,112	13,112	NA	172,508	121,204	51,304	NA	NA	NA	NA	25,853	15,621	2,118	1,696	4,594	1,823	5,840	3,204	676	1,960
1989	248,214	39,759	26,643	13,115	13,115	NA	174,688	128,578	46,111	NA	NA	NA	NA	27,349	16,298	2,229	1,855	4,989	1,978	6,418	3,607	708	2,103
1990	256,292	39,666	26,425	13,241	13,241	NA	181,106	137,598	43,508	NA	NA	NA	NA	28,563	16,759	2,359	1,965	5,373	2,106	6,957	3,955	742	2,260
1991	262,397	38,073	24,872	13,200	13,200	NA	187,041	147,741	39,300	NA	NA	NA	NA	29,695	17,398	2,418	2,025	5,639	2,215	7,588	4,370	781	2,437
1992	263,686	38,612	25,281	13,331	13,331	NA	186,194	150,522	35,672	NA	NA	NA	NA	30,918	18,383	2,432	2,104	5,691	2,308	7,962	4,474	831	2,656
1993	258,173	38,218	25,751	12,467	12,467	NA	179,823	147,353	32,471	NA	NA	NA	NA	31,926	19,172	2,425	2,168	5,777	2,384	8,205	4,429	883	2,893
1994	258,078	37,535	24,945	12,590	12,590	NA	179,049	148,146	30,903	NA	NA	NA	NA	32,955	19,821	2,475	2,221	6,006	2,432	8,539	4,440	941	3,158
1995	274,318	37,873	25,252	12,620	12,620	NA	193,953	162,315	31,638	NA	NA	NA	NA	33,788	20,305	2,616	2,312	6,140	2,415	8,705	4,254	1,003	3,448
1996	289,515	36,747	24,331	12,417	12,417	NA	208,864	177,534	31,330	NA	NA	NA	NA	34,795	20,662	2,730	2,452	6,507	2,443	9,109	4,262	1,071	3,776
1997	305,588	36,389	24,256	12,134	12,134	NA	224,126	192,690	31,436	NA	NA	NA	NA	35,516	20,648	2,743	2,579	6,997	2,549	9,556	4,347	1,166	4,043
1998	321,964	36,855	24,761	12,094	12,094	NA	238,311	206,814	31,498	NA	NA	NA	NA	36,484	20,963	2,739	2,708	7,406	2,669	10,313	4,679	1,225	4,409
1999	343,758	37,752	25,512	12,240	12,240	NA	256,063	227,241	28,822	NA	NA	NA	NA	38,636	22,098	2,864	2,841	7,950	2,883	11,307	5,288	1,309	4,710
2000	368,456	39,212	26,466	12,746	12,746	NA	274,965	251,428	23,538	NA	NA	NA	NA	41,138	23,507	3,001	2,904	8,621	3,105	13,142	6,202	1,402	5,538
2001	374,583	44,126	30,089	14,037	13,523	NA	271,675	248,949	22,726	NA	NA	NA	NA	44,042	25,520	3,119	2,851	9,244	3,310	14,740	7,380	1,384	5,975
2002	368,020	46,986	31,514	15,472	14,887	NA	256,727	235,008	21,719	NA	NA	NA	NA	48,578	28,676	3,338	2,785	10,161	3,618	15,729	7,651	1,322	6,756
2003	378,366	48,354	32,442	15,912	15,377	NA	260,660	237,547	23,112	NA	NA	NA	NA	52,693	31,902	3,578	2,715	10,760	3,738	16,660	7,720	1,325	7,615
2004	382,831	47,657	31,485	16,171	15,770	NA	263,416	237,787	25,628	NA	NA	NA	NA	54,752	33,668	3,662	2,716	10,922	3,784	17,006	8,266	1,317	7,424
2005	398,851	48,516	32,275	16,241	15,810	NA	277,304	250,440	26,864	NA	NA	NA	NA	55,777	34,016	3,611	2,794	11,468	3,887	17,254	8,025	1,357	7,872
2006	417,393	49,493	33,590	15,903	15,426	367	294,594	265,685	28,909	NA	NA	NA	NA	56,343	33,634	3,639	2,930	12,103	4,037	16,596	7,189	1,406	8,001
2007	437,630	51,108	34,579	16,529	16,034	449	311,835	281,047	30,788	NA	NA	NA	NA	57,244	33,266	3,832	3,123	12,661	4,362	16,993	6,925	1,455	8,613
2008	459,907	51,866	33,903	17,963	17,462	558	330,270	256,608	41,312	348	13,840	17,649	514	59,144	33,671	4,053	3,356	13,336	4,728	18,069	7,085	1,483	9,501

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2022

(Millions of current and of constant 2017 dollars)

Year	All performers	All federal	Federal intramural[a]	FFRDCs[b]		Nonfederal government[c]	Business[d]							Higher education[e]						NPOs[f]			
	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																						
2009	455,003	53,720	34,509	19,211	18,712	684	318,887	249,678	44,687	220	10,803	12,946	774	62,005	35,842	4,155	3,424	13,615	4,969	19,707	8,014	1,420	10,273
2010	453,632	56,674	35,668	21,006	20,539	771	311,247	243,426	38,155	174	12,287	16,215	1,165	64,802	38,693	4,098	3,294	13,680	5,037	20,138	7,914	1,412	10,812
2011	465,903	58,508	38,205	20,303	19,868	758	321,478	257,349	34,225	351	12,160	16,778	966	65,682	39,070	3,952	3,278	14,323	5,060	19,476	7,175	1,465	10,836
2012	465,418	55,958	36,504	19,453	19,024	713	324,357	260,423	32,861	168	12,474	17,920	679	65,328	37,524	3,821	3,401	15,326	5,256	19,061	6,695	1,477	10,889
2013	479,297	53,905	35,250	18,656	18,251	654	340,325	274,250	30,982	205	14,192	19,833	1,068	64,905	35,707	3,843	3,562	16,188	5,606	19,507	6,299	1,544	11,663
2014	493,603	54,642	36,074	18,568	18,173	605	353,375	287,564	27,540	143	13,718	23,381	1,173	64,631	34,353	3,852	3,735	16,776	5,914	20,350	6,363	1,605	12,383
2015	508,109	54,305	35,142	19,163	18,791	611	365,635	297,888	27,734	131	14,998	23,739	1,276	66,386	34,489	3,886	3,950	17,736	6,326	21,172	6,420	1,650	13,103
2016	531,028	52,103	32,331	19,772	19,400	631	386,326	315,949	24,587	198	14,912	29,536	1,342	68,991	35,308	4,006	4,121	18,728	6,827	22,977	8,405	2,028	11,723
2017	553,612	52,553	32,231	20,322	19,943	632	405,792	324,177	24,974	142	17,729	37,913	998	71,115	36,006	4,057	4,283	19,554	7,217	23,521	9,058	2,226	11,414
2018	590,500	57,049	35,969	21,080	20,689	629	435,584	349,847	24,628	117	18,851	41,115	1,143	73,212	36,900	4,129	4,481	20,204	7,498	24,026	9,714	2,431	11,059
2019	639,911	60,382	38,334	22,048	21,669	649	478,978	390,317	21,780	162	20,837	45,005	1,038	75,145	38,004	4,195	4,620	20,737	7,588	24,757	10,481	2,671	10,780
2020	680,262	61,769	39,121	22,647	22,279	648	515,480	420,756	28,252	229	20,663	44,649	932	76,695	39,320	4,242	4,590	21,113	7,430	25,671	11,348	2,944	10,544
2021[g]	715,953	60,597	37,621	22,976	22,568	622	552,227	453,940	22,309	356	24,369	50,363	890	77,838	40,542	4,193	4,609	21,328	7,165	24,670	10,543	2,731	10,850
2022[h]	750,649	62,165	39,806	22,359	21,886	590	587,209	486,270	23,162	350	24,210	52,334	883	77,519	40,465	4,040	4,656	21,391	6,967	23,165	9,900	2,565	10,188

NA = not available.

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

[a] Federal intramural includes expenditures for federal intramural R&D as well as costs associated with administering extramural R&D procurements. Beginning in 2016, the data on federal intramural R&D explicitly exclude expenditures for preproduction development. (Preproduction development is nonexperimental work on a product or system before it goes into full production. For example, activities and programs that are categorized as Operational Systems Development in the Department of Defense's Research, Development, Test and Evaluation [RDT&E] budget activity structure.) This change aligns the federal intramural R&D data with the U.S. Office of Management and Budget's recent clarification of its definition of R&D. In 2016–18, this intramural preproduction development totaled in the range of $5 billion to $7 billion each year.

[b] The R&D expenditures of FFRDCs are chiefly federally funded; the small remainder ($408 million of the $23.0 billion total in 2021) 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.

[c] Nonfederal government is state intramural R&D performance, including 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 ($344 million of the $685 million total in 2021) or from the federal government ($305 million in 2020), but other sources include other nonfederal governments ($6 million), businesses ($16 million), higher education ($3 million), or NPOs ($12 million).

[d] Business is 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 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 ($23.5 billion in 2021) and funding from U.S. businesses' foreign subsidiaries ($32.1 billion in 2021). 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.

[e] 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 $7.577 billion, with $4.070 billion to other academic recipients and $3.507 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 FY21, $5.226 billion was from NPOs, and $2.542 was from these unclassified other sources).

[f] The most recent data on NPO R&D come from two sources: the annual Nonprofit Research Activities (NPRA) modules (2020 and 2021) of the Annual Business Survey and the 2016 NPRA Survey. Data for 2022 are estimated based on the 2021 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 NCSES 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.

[g] Some data for 2021 are preliminary and may be revised later.

[h] The data for 2022 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 NCSES 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).