TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2023

(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	Federal	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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: 1953–2023

(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	Federal	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
1985	114,671	19,227	13,093	6,134	6,134	NA	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	105	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	135	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	176	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	224	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	264	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	273	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	266	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	257	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	247	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	494,471	52,847	34,199	18,649	18,287	595	246	355,821	289,892	26,990	127	14,595	23,102	1,115	64,605	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	255	379,529	310,391	24,154	195	14,649	29,017	1,123	67,778	34,687	3,936	4,050	18,398	6,707	22,573	8,257	1,993	11,517
2017	553,530	52,553	32,231	20,322	19,943	632	258	405,792	324,177	24,974	142	17,729	37,913	856	71,108	36,000	4,057	4,283	19,553	7,217	23,445	9,030	2,220	11,375

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2023

(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	Federal	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2018	603,844	58,356	36,793	21,563	21,163	643	269	445,563	357,862	25,192	120	19,283	42,057	1,049	74,863	37,726	4,224	4,581	20,667	7,666	24,419	9,875	2,473	11,234
2019	665,267	62,802	39,870	22,932	22,538	675	290	498,175	405,960	22,653	169	21,673	46,809	911	78,113	39,497	4,363	4,800	21,569	7,885	25,503	10,799	2,756	11,096
2020	716,479	65,093	41,227	23,866	23,478	683	298	543,220	443,398	29,772	241	21,775	47,051	982	80,775	41,402	4,471	4,831	22,251	7,820	26,709	11,809	3,070	10,959
2021	788,718	66,662	41,469	25,193	24,784	685	305	608,625	500,300	24,587	392	26,858	55,507	981	85,717	44,633	4,622	5,073	23,509	7,881	27,030	11,481	2,994	11,953
2022[g]	891,834	71,533	44,699	26,834	26,424	719	321	697,256	582,295	32,321	244	27,422	53,999	974	94,275	49,059	4,945	5,590	26,121	8,560	28,052	11,648	3,593	11,959
2023[h]	939,561	73,621	44,161	29,460	29,021	742	330	734,959	612,365	34,363	260	29,526	57,399	1,046	102,044	52,762	5,287	6,019	28,601	9,375	28,195	11,708	3,611	12,020
Constant 2017 $millions																								
1953	38,374	8,523	7,548	974	974	NA	NA	26,996	16,361	10,635	NA	NA	NA	NA	2,027	1,108	294	152	271	201	829	428	193	208
1954	41,419	8,305	7,093	1,212	1,212	NA	NA	29,993	17,097	12,896	NA	NA	NA	NA	2,218	1,212	328	173	291	214	903	446	228	228
1955	44,814	9,358	7,050	2,308	2,308	NA	NA	32,026	17,824	14,201	NA	NA	NA	NA	2,478	1,384	362	196	304	232	953	467	254	232
1956	59,560	11,852	7,921	3,931	3,931	NA	NA	43,946	22,961	20,985	NA	NA	NA	NA	2,740	1,548	396	221	322	252	1,023	497	259	266
1957	67,205	13,461	8,797	4,663	4,663	NA	NA	49,678	23,035	26,643	NA	NA	NA	NA	2,937	1,638	434	248	346	271	1,129	532	251	346
1958	72,386	14,344	9,991	4,354	4,354	NA	NA	53,492	24,073	29,418	NA	NA	NA	NA	3,256	1,857	477	259	368	295	1,293	630	252	411
1959	81,693	16,156	10,995	5,161	5,161	NA	NA	60,176	26,052	34,124	NA	NA	NA	NA	3,833	2,325	527	258	399	324	1,527	814	275	438
1960	88,482	17,492	11,619	5,873	5,873	NA	NA	64,740	28,575	36,165	NA	NA	NA	NA	4,546	2,920	581	258	432	355	1,704	955	310	439
1961	93,003	19,627	12,689	6,938	6,938	NA	NA	66,112	29,809	36,303	NA	NA	NA	NA	5,323	3,554	642	255	476	396	1,941	1,079	313	549
1962	98,650	20,464	13,801	6,662	6,662	NA	NA	69,634	31,729	37,905	NA	NA	NA	NA	6,262	4,331	707	256	530	438	2,290	1,262	341	688
1963	109,266	23,183	15,957	7,226	7,226	NA	NA	76,191	33,430	42,761	NA	NA	NA	NA	7,347	5,230	780	253	599	486	2,545	1,459	343	742
1964	117,361	26,187	18,219	7,968	7,968	NA	NA	80,168	35,584	44,584	NA	NA	NA	NA	8,444	6,113	845	249	697	541	2,562	1,536	338	688
1965	122,192	26,390	19,044	7,346	7,346	NA	NA	83,333	38,885	44,448	NA	NA	NA	NA	9,620	7,041	902	250	821	606	2,848	1,726	374	748
1966	129,542	26,555	19,415	7,140	7,140	NA	NA	89,169	42,351	46,818	NA	NA	NA	NA	10,670	7,835	939	264	965	666	3,149	1,928	411	810
1967	133,157	27,291	19,648	7,643	7,643	NA	NA	91,060	45,741	45,319	NA	NA	NA	NA	11,606	8,501	958	294	1,138	716	3,200	1,951	422	827
1968	134,933	26,638	19,132	7,505	7,505	NA	NA	93,071	48,516	44,555	NA	NA	NA	NA	11,964	8,676	1,009	315	1,206	758	3,260	1,991	443	826
1969	135,563	27,274	19,765	7,509	7,509	NA	NA	93,053	51,402	41,651	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	NA	87,149	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	127,052	27,574	20,783	6,791	6,791	NA	NA	84,047	50,224	33,823	NA	NA	NA	NA	12,092	8,294	1,235	339	1,365	858	3,340	2,011	462	867
1972	129,871	28,056	21,128	6,927	6,927	NA	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	132,598	27,471	20,720	6,752	6,752	NA	NA	88,696	56,137	32,558	NA	NA	NA	NA	12,653	8,604	1,289	386	1,474	900	3,778	2,425	450	904
1974	131,119	27,185	20,173	7,012	7,012	NA	NA	87,410	57,649	29,762	NA	NA	NA	NA	12,640	8,490	1,256	411	1,547	937	3,883	2,510	449	925
1975	128,317	27,268	20,005	7,263	7,263	NA	NA	84,390	56,051	28,339	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	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
1977	139,119	28,620	19,939	8,681	8,681	NA	NA	92,653	62,083	30,570	NA	NA	NA	NA	13,951	9,285	1,265	496	1,825	1,080	3,895	2,376	472	1,046

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2023

(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	Federal	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	146,114	30,436	20,880	9,555	9,555	NA	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	153,365	30,568	20,691	9,878	9,878	NA	NA	102,639	71,195	31,444	NA	NA	NA	NA	15,826	10,657	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	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	167,746	30,160	19,966	10,194	10,194	NA	NA	117,006	82,207	34,799	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	NA	124,926	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	189,164	33,312	22,774	10,537	10,537	NA	NA	133,925	93,769	40,157	NA	NA	NA	NA	17,352	10,957	1,384	908	2,853	1,250	4,575	2,745	513	1,316
1984	207,528	35,557	24,186	11,371	11,371	NA	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	225,615	37,828	25,760	12,068	12,068	NA	NA	162,075	112,232	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	231,921	38,399	26,046	12,353	12,353	NA	NA	165,736	115,590	50,146	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	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	243,386	39,185	26,073	13,112	13,112	NA	NA	172,509	121,205	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	248,213	39,759	26,643	13,115	13,115	NA	NA	174,688	128,577	46,110	NA	NA	NA	NA	27,349	16,298	2,229	1,855	4,989	1,978	6,418	3,607	708	2,103
1990	256,293	39,666	26,425	13,241	13,241	NA	NA	181,107	137,599	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	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	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	258,172	38,218	25,751	12,467	12,467	NA	NA	179,823	147,352	32,470	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	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	274,319	37,873	25,253	12,620	12,620	NA	NA	193,954	162,316	31,638	NA	NA	NA	NA	33,788	20,305	2,616	2,312	6,140	2,415	8,705	4,254	1,003	3,449
1996	289,516	36,747	24,331	12,417	12,417	NA	NA	208,865	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	305,586	36,389	24,256	12,133	12,133	NA	NA	224,125	192,689	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	321,966	36,855	24,761	12,094	12,094	NA	NA	238,312	206,814	31,498	NA	NA	NA	NA	36,485	20,963	2,739	2,708	7,406	2,669	10,313	4,679	1,225	4,409
1999	343,757	37,752	25,512	12,240	12,240	NA	NA	256,063	227,240	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	368,454	39,211	26,466	12,746	12,746	NA	NA	274,963	251,426	23,537	NA	NA	NA	NA	41,137	23,507	3,001	2,904	8,621	3,105	13,142	6,202	1,402	5,538
2001	374,584	44,126	30,090	14,037	13,523	NA	NA	271,676	248,950	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	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	378,364	48,353	32,442	15,912	15,377	NA	NA	260,658	237,546	23,112	NA	NA	NA	NA	52,693	31,902	3,578	2,715	10,759	3,738	16,660	7,720	1,325	7,615
2004	382,831	47,657	31,485	16,171	15,770	NA	NA	263,416	237,788	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	398,852	48,516	32,275	16,241	15,810	NA	NA	277,305	250,441	26,864	NA	NA	NA	NA	55,777	34,017	3,611	2,794	11,468	3,887	17,254	8,025	1,357	7,872
2006	417,391	49,493	33,590	15,903	15,426	367	125	294,592	265,684	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	156	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	459,906	51,866	33,903	17,963	17,462	558	200	330,269	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
2009	455,002	53,720	34,509	19,211	18,712	684	253	318,887	249,677	44,687	220	10,803	12,945	774	62,004	35,842	4,155	3,424	13,615	4,969	19,707	8,014	1,420	10,273
2010	453,633	56,674	35,668	21,006	20,539	771	295	311,248	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

TABLE 2

U.S. R&D expenditures, by performing sector and source of funds: 1953–2023

(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	Federal	Total	Own domestic	Federal	Nonfederal government	Other domestic business	Foreign business	Other	Total	Federal	Nonfederal government	Business	Higher education	NPO	Total	Federal	Business	NPO
2011	465,904	58,508	38,205	20,303	19,868	758	299	321,479	257,350	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	286	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	271	340,326	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	493,604	54,643	36,074	18,568	18,173	605	256	353,376	287,564	27,540	143	13,718	23,381	1,173	64,631	34,354	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	253	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	531,030	52,103	32,331	19,772	19,400	631	259	386,327	315,950	24,587	198	14,912	29,536	1,342	68,991	35,308	4,006	4,122	18,728	6,827	22,977	8,405	2,028	11,723
2017	553,530	52,553	32,231	20,322	19,943	632	258	405,792	324,177	24,974	142	17,729	37,913	998	71,108	36,000	4,057	4,283	19,553	7,217	23,445	9,030	2,220	11,375
2018	590,321	57,049	35,969	21,080	20,689	629	263	435,585	349,847	24,628	117	18,851	41,115	1,143	73,186	36,881	4,129	4,478	20,204	7,494	23,872	9,653	2,418	10,983
2019	639,808	60,398	38,344	22,054	21,675	649	279	479,111	390,425	21,786	162	20,843	45,017	1,039	75,123	37,985	4,196	4,616	20,743	7,583	24,527	10,386	2,650	10,671
2020	680,024	61,781	39,129	22,652	22,283	648	283	515,581	420,838	28,257	229	20,667	44,657	932	76,665	39,295	4,243	4,585	21,119	7,422	25,350	11,209	2,914	10,401
2021	715,899	60,507	37,640	22,867	22,495	622	277	552,433	454,109	22,317	356	24,378	50,382	891	77,803	40,512	4,195	4,605	21,338	7,153	24,534	10,421	2,718	10,850
2022[g]	755,622	60,608	37,872	22,736	22,388	609	272	590,762	493,360	27,384	207	23,234	45,752	826	79,876	41,566	4,190	4,736	22,131	7,253	23,768	9,869	3,044	10,133
2023[h]	768,410	60,210	36,116	24,094	23,735	607	270	601,079	500,816	28,103	213	24,148	46,943	856	83,456	43,151	4,324	4,922	23,391	7,668	23,059	9,575	2,953	9,831

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 ($410 million of the $26.8 billion total in 2022) 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 ($362 million of the $719 million total in 2022) or from the federal government ($321 million in 2022), but other sources include other nonfederal governments ($7 million), businesses ($16 million), higher education ($3 million), or NPOs ($11 million).

[d] Business is R&D performed by companies in the domestic United States. Business R&D data for 2017–22 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 2023 are estimates, based on the 2022 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 other domestic businesses ($27.4 billion in 2022) and foreign businesses includes funding from both parent or unaffiliated businesses outside the United States ($23.8 billion in 2022) and funding from U.S. businesses' foreign subsidiaries ($30.2 billion in 2022). Business R&D performance funded by other sources includes state government, foreign governments, 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 $5.9 billion in FY 2022.) 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 2022, total pass-through was $8.5 billion, with $4.7 billion to other academic recipients and $3.8 billion to nonacademic recipients.) The nonfederal government funding category includes support from state and local government. The other nonprofit funding category includes support from NPOs and other sources not elsewhere classified (in FY 2022, $5.5 billion was from NPOs, and $2.5 billion 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 (2020–22) of the Annual Business Survey and the 2016 NPRA Survey. Data for 2023 are estimated based on the 2022 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 2022 are preliminary and may be revised later.

[h] The data for 2023 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).