

Appendix table 4-8

U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry			U&C	Other nonprofit		Other government ^a		
	Performer:	All performers	Total	Federal	Industry ^{b,c}	FFRDCs ^c	U&C ^d	FFRDCs	Other nonprofit ^e	Nonprofit FFRDCs ^e	Total	Industry ^{b,f}	U&C ^d	Other nonprofit	U&C ^d	Total	Other nonprofit	U&C ^d	
Current \$millions																			
1953		1,289	756	347	288	NA	59	48	14	NA	456	438	7	11	28	20	10	10	30
1954		1,378	785	330	322	NA	60	58	16	NA	513	492	8	13	28	21	11	10	32
1955		1,514	850	333	368	NA	63	68	18	NA	583	560	9	14	27	22	11	11	32
1956		1,928	1,025	387	474	NA	65	79	21	NA	818	794	10	14	27	25	14	11	33
1957		2,414	1,304	446	678	NA	63	94	24	NA	1,018	992	12	14	27	31	20	11	34
1958		2,758	1,496	516	774	NA	66	111	30	NA	1,163	1,137	12	14	27	37	25	12	35
1959		2,940	1,630	577	813	NA	78	121	43	NA	1,206	1,178	13	15	28	39	27	12	37
1960		3,065	1,732	615	833	NA	93	129	63	NA	1,226	1,196	13	17	29	40	28	12	39
1961		3,123	1,811	668	812	NA	104	145	83	NA	1,195	1,165	13	17	30	48	35	13	40
1962		3,698	2,098	709	1,011	NA	119	163	98	NA	1,471	1,438	14	19	30	58	45	13	41
1963		3,865	2,245	809	1,007	NA	128	186	115	NA	1,483	1,450	14	19	32	63	49	14	42
1964		4,201	2,462	947	978	62	142	203	130	NA	1,593	1,560	14	19	37	65	47	18	45
1965		4,374	2,553	994	992	46	176	206	140	NA	1,654	1,620	13	21	42	79	52	27	46
1966		4,653	2,625	1,012	986	53	208	213	153	NA	1,842	1,804	14	24	48	91	57	34	47
1967		4,848	2,763	1,069	983	83	238	225	166	NA	1,890	1,849	16	25	54	96	60	36	46
1968		5,137	2,811	1,112	956	87	250	221	186	NA	2,125	2,081	16	28	55	101	62	39	46
1969		5,454	2,924	1,229	920	95	257	213	210	NA	2,320	2,272	16	32	54	109	66	43	48
1970		5,752	3,100	1,334	952	97	280	213	225	NA	2,429	2,378	18	33	56	117	70	47	51
1971		5,833	3,091	1,355	907	67	306	216	241	NA	2,494	2,441	19	34	67	121	74	47	61
1972		6,147	3,243	1,434	845	107	391	224	243	NA	2,618	2,562	21	35	82	131	79	52	74
1973		6,655	3,429	1,527	883	110	450	203	257	NA	2,894	2,832	26	36	100	145	83	62	88
1974		7,344	3,634	1,652	905	120	477	191	290	NA	3,333	3,263	32	39	118	163	91	72	96
1975		8,091	4,125	1,912	991	139	550	219	315	NA	3,520	3,440	39	42	141	192	100	92	113
1976		8,976	4,464	2,068	1,033	167	596	263	338	NA	4,001	3,912	45	45	166	218	109	109	127
1977		9,662	4,683	2,081	1,113	212	626	297	355	NA	4,410	4,311	51	48	194	241	120	121	134
1978		10,704	5,080	2,242	1,195	235	676	324	409	NA	4,982	4,870	61	52	232	259	132	128	151
1979		12,097	5,602	2,415	1,305	250	793	360	480	NA	5,797	5,670	71	55	263	273	144	129	161
1980		13,714	6,237	2,546	1,625	275	912	421	458	NA	6,698	6,550	88	60	308	298	158	140	174
1981		16,329	6,905	2,731	2,042	298	953	422	391	68	8,531	8,359	108	64	363	332	173	159	199
1982		18,218	7,689	2,802	2,593	367	1,007	433	398	91	9,553	9,363	121	69	402	367	189	178	207
1983		20,298	8,738	2,991	3,227	414	1,122	473	433	78	10,501	10,286	141	74	443	401	207	194	215
1984		22,451	9,499	2,961	3,677	547	1,226	548	459	80	11,788	11,541	168	79	491	438	226	212	234
1985		25,401	10,930	3,135	4,717	630	1,296	580	490	82	13,191	12,908	198	85	547	471	247	224	262
1986		27,240	10,409	3,204	4,049	629	1,393	554	506	75	15,402	15,082	229	91	620	510	270	240	298

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U.S. applied research expenditures, by source of funds and performing sector: 1953–2011

Year	Funding source:	All sources	Federal								Industry				U&C	Other nonprofit		Other government ^a	
	Performer:	All performers	Total	Federal	Industry ^{b,c}	FFRDCs ^e	U&C ^d	U&C	Other nonprofit ^e	Nonprofit FFRDCs ^e	Total	Industry ^{b,f}	U&C ^d	Other nonprofit	U&C ^d	Total	Other nonprofit	U&C ^d	
1987		27,951	10,829	3,366	4,037	623	1,643	532	555	74	15,511	15,153	260	98	707	571	295	276	333
1988		29,528	10,749	3,362	3,846	371	1,958	547	599	66	16,938	16,531	302	105	818	647	322	325	377
1989		32,277	11,753	3,566	4,324	374	2,121	603	695	70	18,452	17,993	347	112	933	722	352	370	417
1990		34,897	13,695	3,652	5,967	386	2,140	689	780	81	18,930	18,432	377	120	1,031	788	384	404	453
1991		38,631	14,280	4,093	5,588	433	2,232	927	921	86	21,946	21,425	392	129	1,091	847	419	428	468
1992		37,936	13,690	4,337	4,476	507	2,415	940	933	81	21,736	21,184	414	138	1,120	911	456	454	479
1993		37,283	14,075	4,838	4,295	435	2,542	962	900	103	20,547	19,956	443	148	1,181	984	497	487	496
1994		36,618	13,800	4,985	3,616	503	2,644	982	960	111	19,995	19,372	464	158	1,256	1,049	541	509	517
1995		40,936	13,543	4,952	3,164	535	2,779	1,050	934	129	24,418	23,755	494	170	1,311	1,104	589	516	559
1996		43,170	13,958	4,872	3,640	231	2,864	1,270	960	122	26,076	25,370	524	182	1,390	1,162	640	522	584
1997		46,554	12,884	4,997	2,648	213	2,550	1,337	1,011	128	30,506	29,782	519	205	1,389	1,223	711	512	553
1998		46,362	12,822	5,146	2,632	230	2,260	1,372	1,060	123	30,314	29,576	520	218	1,378	1,322	809	513	526
1999		52,007	13,959	5,530	2,817	274	2,661	1,247	1,300	130	34,599	33,821	542	236	1,463	1,441	891	550	546
2000		56,681	15,563	6,105	2,682	269	3,194	1,291	1,831	190	37,305	36,494	553	258	1,585	1,657	1,066	591	571
2001		64,176	18,828	7,052	3,603	821	3,553	1,405	2,150	244	41,219	40,409	549	261	1,712	1,816	1,178	638	601
2002		50,796	19,280	7,487	2,452	1,090	4,056	1,663	2,267	266	26,880	26,081	546	253	1,911	2,071	1,362	709	654
2003		61,379	22,553	7,672	4,473	1,413	4,660	1,600	2,487	249	33,672	32,861	553	259	2,098	2,326	1,565	761	729
2004		69,469	22,714	7,455	4,775	1,459	4,902	1,481	2,448	194	41,483	40,657	562	264	2,158	2,355	1,572	783	758
2005		70,001	23,639	7,557	5,289	1,414	5,032	1,637	2,432	278	40,850	39,995	575	280	2,247	2,523	1,723	799	743
2006		76,735	25,124	7,435	6,140	1,314	5,318	1,827	2,592	500	45,925	45,033	593	300	2,331	2,619	1,802	816	736
2007		83,559	27,914	7,222	8,945	1,168	5,548	1,354	2,583	1,094	49,571	48,625	628	318	2,426	2,878	2,001	877	770
2008		74,819	25,614	7,316	5,397	1,975	6,144	855	2,600	1,326	42,495	41,467	698	330	2,647	3,220	2,237	983	843
2009		72,881	31,125	7,874	7,797	2,010	7,699	1,282	3,049	1,414	34,356	33,258	779	319	2,898	3,573	2,445	1,128	929
2010		79,543	30,356	7,985	4,705	2,249	9,439	1,277	3,060	1,642	41,333	40,201	812	321	3,101	3,774	2,542	1,232	978
2011		82,379	30,311	7,747	4,404	2,223	10,256	1,314	2,766	1,602	43,947	42,782	827	338	3,255	3,866	2,590	1,277	999
2005 constant \$millions																			
1953		7,977	4,675	2,147	1,782	NA	365	294	87	NA	2,819	2,710	40	68	172	124	62	62	186
1954		8,449	4,813	2,020	1,974	NA	365	356	98	NA	3,142	3,017	46	80	172	129	67	61	193
1955		9,125	5,125	2,008	2,219	NA	380	410	109	NA	3,512	3,376	51	84	164	130	66	63	195
1956		11,236	5,972	2,253	2,763	NA	379	458	119	NA	4,768	4,628	58	82	157	146	82	64	193
1957		13,615	7,356	2,513	3,825	NA	355	530	133	NA	5,740	5,596	65	79	153	175	113	62	191
1958		15,216	8,254	2,847	4,270	NA	361	610	166	NA	6,416	6,273	66	77	150	201	138	63	195
1959		16,029	8,888	3,144	4,433	NA	423	657	232	NA	6,574	6,424	68	82	153	213	147	65	202
1960		16,483	9,312	3,305	4,480	NA	500	691	336	NA	6,593	6,432	70	91	155	215	151	65	208
1961		16,606	9,630	3,552	4,318	NA	550	771	439	NA	6,354	6,195	69	90	157	253	186	66	212
1962		19,396	11,005	3,717	5,303	NA	622	852	511	NA	7,714	7,543	71	100	160	304	236	68	213

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	Performer:	All performers	Total	Federal	Industry ^{b,c}	FFRDCs ^e	U&C ^d	U&C	Other nonprofit ^e	Nonprofit FFRDCs ^e	Total	Industry ^{b,f}	U&C ^d	Other nonprofit	U&C ^d	Total	Other nonprofit	U&C ^d	
1963		20,059	11,650	4,199	5,227	NA	662	965	597	NA	7,698	7,526	73	99	168	324	254	70	219
1964		21,475	12,583	4,838	5,000	317	726	1,038	665	NA	8,141	7,975	69	97	191	330	240	89	231
1965		21,956	12,814	4,988	4,980	231	881	1,032	703	NA	8,304	8,133	65	105	211	394	261	133	233
1966		22,712	12,812	4,940	4,813	259	1,015	1,040	744	NA	8,992	8,807	68	117	236	442	278	164	230
1967		22,962	13,086	5,061	4,656	393	1,125	1,066	786	NA	8,949	8,757	73	118	255	455	284	171	216
1968		23,338	12,769	5,050	4,343	395	1,134	1,002	845	NA	9,654	9,454	73	127	250	457	282	175	209
1969		23,613	12,658	5,322	3,983	411	1,110	922	909	NA	10,044	9,836	69	139	233	470	286	184	208
1970		23,656	12,750	5,486	3,915	399	1,149	876	925	NA	9,987	9,779	72	136	230	479	288	191	210
1971		22,846	12,106	5,307	3,552	262	1,199	844	942	NA	9,766	9,561	72	133	262	474	290	184	237
1972		23,079	12,176	5,384	3,173	402	1,466	841	910	NA	9,827	9,619	77	131	307	490	297	193	279
1973		23,674	12,199	5,433	3,141	391	1,599	720	914	NA	10,294	10,074	92	128	355	514	295	219	312
1974		23,949	11,851	5,388	2,951	391	1,554	621	946	NA	10,870	10,641	103	126	384	530	297	233	313
1975		24,107	12,291	5,696	2,953	414	1,637	653	939	NA	10,488	10,249	115	124	419	572	298	274	338
1976		25,294	12,578	5,828	2,911	471	1,678	740	951	NA	11,274	11,023	125	126	467	616	309	307	359
1977		25,595	12,406	5,511	2,948	562	1,657	787	940	NA	11,682	11,420	135	127	514	637	318	319	356
1978		26,495	12,575	5,549	2,958	582	1,673	802	1,012	NA	12,332	12,054	150	128	574	641	326	316	374
1979		27,643	12,802	5,519	2,982	571	1,811	822	1,097	NA	13,247	12,957	163	127	601	624	329	295	369
1980		28,722	13,062	5,332	3,403	576	1,910	881	959	NA	14,027	13,717	185	125	645	624	330	294	364
1981		31,267	13,222	5,230	3,910	571	1,824	808	749	130	16,334	16,006	206	122	694	635	331	304	381
1982		32,877	13,876	5,056	4,679	662	1,816	781	718	164	17,239	16,897	218	124	725	662	341	321	374
1983		35,238	15,170	5,193	5,602	719	1,948	822	751	135	18,230	17,857	245	128	769	696	359	337	373
1984		37,564	15,894	4,954	6,152	915	2,052	918	768	135	19,723	19,310	281	132	822	733	379	355	392
1985		41,251	17,750	5,091	7,660	1,023	2,106	941	795	133	21,422	20,963	321	138	889	766	402	364	425
1986		43,280	16,539	5,091	6,433	999	2,213	880	803	120	24,472	23,963	364	145	986	810	429	381	473
1987		43,158	16,721	5,197	6,233	962	2,537	821	857	114	23,949	23,397	401	151	1,092	882	456	426	514
1988		44,079	16,045	5,019	5,741	554	2,923	816	894	98	25,285	24,678	451	156	1,221	966	481	485	563
1989		46,430	16,907	5,130	6,220	538	3,051	867	999	101	26,543	25,883	499	161	1,342	1,038	506	532	600
1990		48,333	18,968	5,058	8,265	535	2,965	954	1,080	113	26,218	25,529	522	167	1,428	1,092	532	560	627
1991		51,674	19,101	5,475	7,475	579	2,985	1,239	1,232	115	29,355	28,658	524	172	1,459	1,133	560	573	626
1992		49,568	17,888	5,667	5,849	662	3,155	1,229	1,220	106	28,402	27,680	541	180	1,463	1,190	596	594	626
1993		47,661	17,992	6,185	5,491	556	3,249	1,230	1,150	131	26,267	25,511	566	189	1,510	1,258	635	623	634
1994		45,845	17,278	6,242	4,527	630	3,310	1,229	1,201	139	25,034	24,254	581	198	1,572	1,314	677	637	648
1995		50,206	16,610	6,074	3,880	656	3,408	1,288	1,145	158	29,948	29,134	606	208	1,608	1,354	722	633	685
1996		51,957	16,799	5,864	4,381	278	3,446	1,528	1,155	147	31,383	30,534	631	219	1,673	1,399	770	629	703
1997		55,058	15,238	5,909	3,132	252	3,016	1,582	1,196	152	36,077	35,222	613	242	1,643	1,446	840	606	654

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	Performer:	All performers	Total	Federal	Industry ^{b,c}	FFRDCs ^c	U&C ^d	U&C	Other nonprofit ^e	Nonprofit FFRDCs ^e	Total	Industry ^{b,f}	U&C ^d	Other nonprofit	U&C ^d	Total	Other nonprofit	U&C ^d	
1998		54,218	14,995	6,017	3,078	269	2,642	1,604	1,240	144	35,450	34,587	608	255	1,611	1,546	946	600	615
1999		59,938	16,087	6,373	3,247	316	3,067	1,437	1,498	149	39,875	38,978	625	272	1,686	1,660	1,027	634	630
2000		63,885	17,541	6,881	3,023	303	3,600	1,456	2,064	214	42,047	41,133	623	291	1,786	1,867	1,201	666	644
2001		70,735	20,752	7,773	3,971	905	3,917	1,548	2,370	268	45,432	44,539	606	287	1,887	2,002	1,299	703	662
2002		55,096	20,912	8,121	2,660	1,183	4,399	1,804	2,458	288	29,155	28,289	592	274	2,072	2,247	1,477	769	710
2003		65,203	23,959	8,149	4,752	1,501	4,950	1,700	2,642	264	35,770	34,908	587	275	2,229	2,471	1,663	808	774
2004		71,775	23,469	7,702	4,934	1,508	5,065	1,531	2,529	201	42,861	42,007	581	273	2,229	2,433	1,624	809	784
2005		70,001	23,639	7,557	5,289	1,414	5,032	1,637	2,432	278	40,850	39,995	575	280	2,247	2,523	1,723	799	743
2006		74,333	24,338	7,202	5,948	1,272	5,151	1,770	2,511	484	44,488	43,623	574	290	2,258	2,537	1,746	791	713
2007		78,661	26,278	6,798	8,421	1,100	5,223	1,275	2,431	1,030	46,666	45,775	591	300	2,284	2,709	1,884	825	725
2008		68,881	23,565	6,738	4,970	1,819	5,658	787	2,395	1,198	39,136	38,189	643	304	2,438	2,966	2,060	906	776
2009		66,419	28,365	7,176	7,106	1,831	7,017	1,168	2,779	1,289	31,310	30,309	710	290	2,641	3,256	2,228	1,028	847
2010		71,666	27,350	7,195	4,239	2,026	8,504	1,150	2,757	1,480	37,240	36,220	731	289	2,794	3,400	2,290	1,110	881
2011		72,670	26,739	6,834	3,885	1,961	9,048	1,159	2,440	1,413	38,767	37,740	730	298	2,871	3,411	2,284	1,126	881

NA = not available, included in data for federal support to industry and federal support to nonprofit institutions.

FFRDC = federally funded R&D center; U&C = universities and colleges.

^a Because of limitations in survey information, data on other government funding to performers other than U&C were not available and consequently are included in other sectors' support for their own R&D performance (e.g., other government support to other nonprofits is included in other nonprofit support for their own R&D).

^b Character-of-work estimates for industry have been revised for 1998 and later years; data are not directly comparable with data for 1997 and earlier years.

^c Character-of-work estimates for industry-administered FFRDCs for 1953–63 are not separated from federal support for industry; thus, the data for federal support to industry include support to FFRDCs for those years.

^d Data for U&C R&D before 2003 cover only S&E fields; in 2003 and later years, R&D in non-S&E fields is also included. Adjustments have been made to U&C R&D for 1998 and later years to eliminate double counting of funds passed through from one academic institution to another. The character-of-work estimation procedure was revised in 1998 and again in 2010; hence, these data are not directly comparable with data reported in earlier years.

^e Character-of-work estimates for nonprofit-administered FFRDCs for 1953–80 are not separated from federal support for other nonprofits; thus, the data for federal support to other nonprofit institutions include support to FFRDCs for those years.

^f Industry sources of funds for industry R&D expenditures include all nonfederal sources of funds for industry R&D expenditures.

NOTES: Technical notes explaining methodological issues of measurement are available on request. Data are based on annual reports by performers, except for the nonprofit sector. R&D expenditures of FFRDCs are chiefly federal funds, but any nonfederal funds are also included in totals. For trend comparisons, use only historical data reported here; do not use data published earlier. Expenditures for industry and, before 2001, for industry-administered FFRDCs are collected by calendar year. Expenditures for other performers are calendar-year approximations based on fiscal year data. In most cases, the approximation equals 75% of the amount reported in the same fiscal year plus 25% of the amount reported in the subsequent fiscal year. However, the fiscal year for academic performers generally begins on 1 July, not 1 October; also, before 1977, the federal fiscal year began on 1 July, not 1 October. Therefore, calendar-year approximations for academic performers and federal performers before 1977 equal 50% of the amount reported in the same fiscal year plus 50% of the amount reported in the subsequent fiscal year. Detail may not add to total due to rounding. Constant-dollar estimates are derived from unrounded data. Los Alamos National Laboratory (some \$2 billion in annual R&D expenditures in recent years) became industry administered in June 2006—previously, it was U&C administered. Lawrence Livermore National Laboratory (more than \$1 billion in annual R&D expenditures in recent years) became industry administered in October 2007—previously, it was U&C administered. The tracks of R&D expenditures from 2006 to 2008 for both industry- and U&C-administered FFRDCs reflect these shifts.

SOURCES: National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES), National Patterns of R&D Resources (annual series), Business R&D and Innovation Survey, Higher Education R&D Survey (annual series), Survey of Federal Funds for R&D (annual series), Federally Funded Research and Development Centers R&D Survey (annual series), R&D Funding and Performance by Nonprofit Organizations: FYs 1996–97. All NSF/NCSES reports are available at <http://www.nsf.gov/statistics/>.