

**Table 45. Federal obligations for applied research, by detailed field of science and engineering: fiscal years 1970-2002**

[Dollars in thousands]

Page 1 of 5

Field of science and engineering	1970	1971	1972	1973	1974	1975	1976
Total, all fields .....	2,974,890	3,143,030	3,360,759	3,349,423	3,787,559	4,141,281	4,851,878
Life sciences, total .....	742,953	840,305	981,247	1,042,705	1,232,976	1,339,266	1,427,681
Biol & agricultural, total .....	380,595	423,800	482,921	514,598	624,304	705,165	717,386
Biol (excl environmental) .....	NA	NA	NA	NA	NA	NA	NA
Environmental biology .....	NA	NA	NA	NA	NA	NA	NA
Agricultural .....	NA	NA	NA	NA	NA	NA	NA
Medical sciences, total .....	344,048	385,610	467,374	505,354	593,252	608,740	668,554
Clinical medical .....	333,684	361,971	426,893	459,011	532,728	511,737	545,104
Other medical .....	10,364	23,639	40,481	46,343	60,524	97,003	123,450
Life sciences, n.e.c. ....	18,310	30,895	30,952	22,753	15,420	25,361	41,741
Psychology, total .....	59,489	62,003	64,894	64,560	87,295	80,550	98,467
Biological aspects .....	12,837	12,723	14,895	13,816	30,720	19,211	25,342
Social aspects .....	31,762	31,958	29,220	29,090	33,944	34,888	38,834
Psychological sciences, n.e.c. ....	14,890	17,322	20,779	21,654	22,631	26,451	34,291
Physical sciences, total .....	345,217	312,486	383,611	353,530	366,464	387,685	537,457
Astronomy .....	5,724	2,800	7,540	1,608	2,689	5,291	3,133
Chemistry .....	100,778	95,654	106,326	116,068	131,091	126,906	160,179
Physics .....	215,644	178,050	211,845	192,463	196,341	215,981	320,823
Physical sciences, n.e.c. ....	23,071	35,982	57,900	43,391	36,343	39,507	53,322
Environmental sciences, total .....	242,351	273,133	304,940	307,116	344,685	446,506	474,959
Atmospheric sciences .....	118,361	138,097	126,481	112,673	149,834	191,209	175,305
Geological sciences .....	74,635	79,226	94,101	88,486	76,154	103,120	131,457
Oceanography .....	32,295	38,266	45,274	51,693	57,144	70,581	87,387
Environmental sciences, n.e.c. ....	17,060	17,544	39,084	54,264	61,553	81,596	80,810
Math & computer sciences, total .....	35,566	51,286	54,122	54,680	61,529	63,253	75,989
Mathematics .....	NA	NA	NA	NA	NA	NA	26,695
Computer sciences .....	NA	NA	NA	NA	NA	NA	46,989
Math & computer sciences, n.e.c. ....	NA	NA	NA	NA	NA	NA	2,305
Engineering, total .....	1,336,959	1,295,472	1,244,540	1,149,821	1,348,861	1,454,930	1,795,856
Aeronautical .....	301,182	261,391	182,204	198,386	303,890	314,907	494,839
Astronautical .....	165,177	141,564	57,825	38,694	86,405	87,788	167,536
Chemical .....	97,317	93,922	66,268	59,549	50,144	67,513	69,845
Civil .....	65,562	70,489	114,423	95,749	93,543	117,874	98,119
Electrical .....	249,883	242,993	292,102	253,595	230,792	239,202	244,606
Mechanical .....	143,085	163,187	147,961	185,133	114,427	144,849	165,564
Metallurgy & materials .....	86,850	99,173	119,544	104,806	116,000	122,126	171,636
Engineering, n.e.c. ....	227,903	222,753	264,213	213,909	353,660	360,671	383,711
Social sciences, total .....	148,356	233,740	226,803	218,593	217,365	228,059	306,030
Anthropology .....	713	2,950	3,289	1,149	4,596	6,866	7,159
Economics .....	53,269	49,099	58,203	66,432	92,854	104,172	111,943
Political science .....	3,944	2,735	1,743	4,111	6,240	10,086	4,240
Sociology .....	25,160	88,922	98,656	89,594	49,864	39,838	37,044
Social sciences, n.e.c. ....	65,270	90,034	64,912	57,307	63,811	67,097	145,644
History .....	207	516	248	245	337	956	NA
Linguistics .....	50	768	1,280	1,128	1,005	941	NA
Other social sciences .....	65,013	88,750	63,384	55,934	62,469	65,200	NA
Other sciences, n.e.c. ....	63,999	74,605	100,602	158,418	128,384	141,032	135,439

See explanatory information, if any, and SOURCE at end of table.

**Table 45. Federal obligations for applied research, by detailed field of science and engineering: fiscal years 1970-2002**

[Dollars in thousands]

Page 2 of 5

Field of science and engineering	1977	1978	1979	1980	1981	1982	1983
Total, all fields .....	5,255,475	5,908,154	6,342,340	6,923,222	7,171,485	7,540,580	7,993,394
Life sciences, total .....	1,624,384	1,838,743	1,956,504	2,137,910	2,211,792	2,219,482	2,286,595
Biol & agricultural, total .....	843,993	945,339	1,041,032	1,168,124	1,249,396	1,137,018	1,135,626
Biol (excl environmental) .....	NA	613,965	646,724	730,755	794,949	678,068	683,686
Environmental biology .....	NA	120,528	125,751	143,623	137,017	100,368	100,967
Agricultural .....	NA	210,846	268,557	293,746	317,430	358,582	350,973
Medical sciences, total .....	723,971	819,775	820,505	879,925	903,725	979,606	1,048,531
Clinical medical .....	594,802	NA	NA	NA	NA	NA	NA
Other medical .....	129,169	NA	NA	NA	NA	NA	NA
Life sciences, n.e.c. ....	56,420	73,629	94,967	89,861	58,671	102,858	102,438
Psychology, total .....	100,484	109,194	122,315	114,803	117,906	128,521	147,944
Biological aspects .....	35,087	29,925	30,407	29,722	26,966	26,689	31,821
Social aspects .....	34,465	40,133	49,639	63,546	63,277	64,444	71,848
Psychological sciences, n.e.c. ....	30,932	39,136	42,269	21,535	27,663	37,388	44,275
Physical sciences, total .....	640,177	704,226	742,552	780,024	895,594	1,106,537	1,304,256
Astronomy .....	3,984	3,769	3,786	6,251	6,800	4,670	2,950
Chemistry .....	162,027	201,733	218,820	197,614	188,689	169,152	158,103
Physics .....	398,846	423,638	487,117	514,391	610,221	819,767	999,462
Physical sciences, n.e.c. ....	75,320	75,086	32,829	61,768	89,884	112,948	143,741
Environmental sciences, total .....	518,547	573,288	643,700	738,597	588,247	628,254	671,153
Atmospheric sciences .....	174,902	155,919	179,544	230,465	199,603	262,634	288,051
Geological sciences .....	140,710	171,246	201,064	203,420	201,877	180,069	155,245
Oceanography .....	91,301	103,117	101,369	131,446	118,390	106,813	147,895
Environmental sciences, n.e.c. ....	111,634	143,006	161,723	173,266	68,377	78,738	79,962
Math & computer sciences, total .....	112,472	118,543	106,137	124,685	138,565	185,016	211,287
Mathematics .....	44,279	37,481	24,215	24,101	38,552	37,269	32,605
Computer sciences .....	58,337	66,973	63,310	82,378	69,315	103,490	124,114
Math & computer sciences, n.e.c. ....	9,856	14,089	18,612	18,206	30,698	44,257	54,568
Engineering, total .....	1,775,234	2,028,610	2,136,972	2,364,903	2,545,436	2,776,076	2,827,496
Aeronautical .....	359,327	400,046	536,460	603,977	596,293	614,693	679,852
Astronautical .....	148,810	150,197	225,973	275,141	270,757	245,889	271,135
Chemical .....	80,767	125,327	89,680	70,187	116,294	59,934	94,592
Civil .....	106,998	131,576	110,842	136,818	135,750	169,942	156,039
Electrical .....	327,588	375,222	355,840	446,556	478,166	518,561	519,124
Mechanical .....	169,545	204,658	159,985	165,751	157,268	148,108	205,673
Metallurgy & materials .....	168,945	151,434	98,229	114,847	117,492	153,241	149,632
Engineering, n.e.c. ....	413,254	490,150	559,963	551,626	673,416	865,708	751,449
Social sciences, total .....	330,612	365,139	397,592	376,631	360,476	265,741	297,545
Anthropology .....	4,339	7,569	4,855	2,945	1,459	1,501	1,624
Economics .....	113,769	129,616	149,239	152,761	172,610	118,152	124,569
Political science .....	5,935	5,571	9,781	4,767	4,481	3,173	6,551
Sociology .....	36,221	41,745	46,117	46,058	42,397	33,266	35,043
Social sciences, n.e.c. ....	170,348	180,638	187,600	170,100	139,529	109,649	129,758
History .....	NA	NA	NA	NA	NA	NA	NA
Linguistics .....	NA	NA	NA	NA	NA	NA	NA
Other social sciences .....	NA	NA	NA	NA	NA	NA	NA
Other sciences, n.e.c. ....	153,565	170,411	236,568	285,669	313,469	230,953	247,118

See explanatory information, if any, and SOURCE at end of table.

**Table 45. Federal obligations for applied research, by detailed field of science and engineering: fiscal years 1970-2002**

[Dollars in thousands]

Page 3 of 5

Field of science and engineering	1984	1985	1986	1987	1988	1989	1990
Total, all fields .....	7,911,414	8,314,739	8,349,123	8,998,096	9,176,527	10,163,520	10,336,771
Life sciences, total .....	2,348,314	2,575,903	2,605,535	2,979,489	3,222,705	3,579,390	3,652,306
Biol & agricultural, total .....	1,150,336	1,239,806	1,318,359	1,488,112	1,718,049	1,917,152	1,959,388
Biol (excl environmental) .....	727,324	779,325	841,922	1,040,483	1,266,828	1,336,003	1,402,478
Environmental biology .....	129,184	134,633	138,336	148,554	154,220	210,460	174,019
Agricultural .....	293,828	325,848	338,101	299,075	297,001	370,689	382,891
Medical sciences, total .....	1,097,538	1,223,057	1,163,829	1,323,780	1,367,786	1,514,131	1,532,723
Clinical medical .....	NA	NA	NA	NA	NA	NA	NA
Other medical .....	NA	NA	NA	NA	NA	NA	NA
Life sciences, n.e.c. ....	100,440	113,040	123,347	167,597	136,870	148,107	160,195
Psychology, total .....	158,811	194,284	201,015	222,364	211,986	234,530	233,544
Biological aspects .....	37,095	43,165	43,060	49,053	52,874	60,754	65,305
Social aspects .....	74,333	96,012	98,252	108,914	108,448	111,832	116,505
Psychological sciences, n.e.c. ....	47,383	55,107	59,703	64,397	50,664	61,944	51,734
Physical sciences, total .....	1,241,032	1,230,771	1,154,627	1,156,641	1,117,683	1,198,757	1,147,215
Astronomy .....	2,739	14,067	15,110	17,687	12,314	17,296	17,214
Chemistry .....	203,044	225,378	229,038	235,211	232,314	278,005	259,595
Physics .....	914,999	856,143	802,560	781,356	769,786	795,465	780,593
Physical sciences, n.e.c. ....	120,250	135,183	107,919	122,387	103,269	107,991	89,813
Environmental sciences, total .....	619,182	703,999	732,567	730,604	734,291	756,339	899,274
Atmospheric sciences .....	241,960	276,767	280,888	309,123	307,123	271,640	329,675
Geological sciences .....	160,980	178,995	178,423	175,564	174,296	207,847	221,389
Oceanography .....	143,358	179,250	205,356	177,601	190,931	198,374	220,393
Environmental sciences, n.e.c. ....	72,884	68,987	67,900	68,316	61,941	78,478	127,817
Math & computer sciences, total .....	199,518	314,900	322,023	334,252	329,641	389,659	433,854
Mathematics .....	37,118	53,356	42,103	46,106	52,486	68,266	64,998
Computer sciences .....	109,739	164,199	171,025	169,296	167,218	205,077	336,919
Math & computer sciences, n.e.c. ....	52,661	97,345	108,895	118,850	109,937	116,316	31,937
Engineering, total .....	2,779,064	2,733,394	2,770,438	2,916,837	2,950,169	3,258,447	3,125,111
Aeronautical .....	634,873	546,512	549,310	573,014	570,776	658,913	657,452
Astronautical .....	344,418	383,167	474,429	575,867	526,938	618,529	518,490
Chemical .....	88,916	179,886	172,813	138,348	169,452	92,157	166,004
Civil .....	160,950	172,978	157,782	158,721	168,725	178,123	270,431
Electrical .....	499,679	481,924	518,096	610,893	577,130	669,259	493,105
Mechanical .....	126,341	178,791	152,955	146,226	157,222	156,525	176,907
Metallurgy & materials .....	153,740	227,360	216,562	152,215	226,595	266,161	294,343
Engineering, n.e.c. ....	770,147	562,776	528,491	561,553	553,331	618,780	548,379
Social sciences, total .....	303,758	319,330	302,045	350,526	339,013	396,421	483,992
Anthropology .....	1,740	2,129	2,437	2,919	2,221	1,780	1,851
Economics .....	117,627	125,378	104,989	119,551	124,822	129,093	160,051
Political science .....	6,664	8,879	7,487	5,763	7,058	8,063	6,792
Sociology .....	36,307	34,022	36,973	39,644	44,987	55,883	91,989
Social sciences, n.e.c. ....	141,420	148,922	150,159	182,649	159,925	201,602	223,309
History .....	NA	NA	NA	NA	NA	NA	NA
Linguistics .....	NA	NA	NA	NA	NA	NA	NA
Other social sciences .....	NA	NA	NA	NA	NA	NA	NA
Other sciences, n.e.c. ....	261,735	242,158	260,873	307,383	271,039	349,977	361,475

See explanatory information, if any, and SOURCE at end of table.

**Table 45. Federal obligations for applied research, by detailed field of science and engineering: fiscal years 1970-2002**

[Dollars in thousands]

Page 4 of 5

Field of science and engineering	1991	1992	1993	1994	1995	1996	1997
Total, all fields .....	11,797,583	12,000,734	13,491,376	13,887,733	14,557,365	13,795,729	14,423,397
Life sciences, total .....	4,188,429	4,068,773	4,483,283	4,812,225	5,209,768	5,185,336	5,457,569
Biol & agricultural, total .....	2,223,017	2,115,974	2,271,526	2,351,087	2,566,041	2,707,552	2,598,886
Biol (excl environmental) .....	1,589,306	1,453,212	1,567,434	1,606,623	1,677,070	1,922,791	1,929,190
Environmental biology .....	272,809	309,390	333,336	387,803	586,208	498,270	376,449
Agricultural .....	360,902	353,372	370,756	356,661	302,763	286,491	293,247
Medical sciences, total .....	1,602,560	1,778,903	2,023,548	2,251,828	2,356,315	2,232,592	2,497,556
Clinical medical .....	NA	NA	NA	NA	NA	NA	NA
Other medical .....	NA	NA	NA	NA	NA	NA	NA
Life sciences, n.e.c. ....	362,852	173,896	188,209	209,310	287,412	245,192	361,127
Psychology, total .....	256,880	175,578	303,897	302,249	344,585	233,489	251,512
Biological aspects .....	71,964	20,283	19,115	23,317	27,419	29,320	27,557
Social aspects .....	128,230	84,090	118,723	100,548	134,073	73,374	83,738
Psychological sciences, n.e.c. ....	56,686	71,205	166,059	178,384	183,093	130,795	140,217
Physical sciences, total .....	1,353,874	1,487,733	1,519,826	1,426,520	1,413,542	1,060,395	1,172,818
Astronomy .....	19,346	9,370	22,845	22,772	32,901	20,160	20,564
Chemistry .....	289,689	339,565	299,467	334,189	304,102	330,375	327,931
Physics .....	815,981	970,694	1,037,739	940,879	943,798	445,660	505,917
Physical sciences, n.e.c. ....	228,858	168,104	159,775	128,680	132,741	264,200	318,406
Environmental sciences, total .....	886,257	903,982	1,075,019	1,321,710	1,386,969	1,465,673	1,502,172
Atmospheric sciences .....	353,728	332,034	348,996	396,698	447,333	414,555	484,809
Geological sciences .....	229,749	209,206	242,563	350,127	396,601	394,276	303,514
Oceanography .....	201,043	248,927	260,196	306,601	219,079	265,170	294,177
Environmental sciences, n.e.c. ....	101,737	113,815	223,264	268,284	323,956	391,672	419,672
Math & computer sciences, total .....	477,598	678,869	714,138	779,885	976,085	932,010	1,010,466
Mathematics .....	63,229	90,486	68,944	94,663	94,638	91,843	63,385
Computer sciences .....	361,425	524,046	541,751	567,896	696,755	743,054	875,148
Math & computer sciences, n.e.c. ....	52,944	64,337	103,443	117,326	184,692	97,113	71,933
Engineering, total .....	3,710,760	3,727,148	4,292,014	4,189,002	4,259,509	4,068,879	4,107,261
Aeronautical .....	760,009	629,520	946,849	946,835	977,216	987,642	1,083,662
Astronautical .....	583,443	536,000	440,393	439,256	480,187	454,748	526,497
Chemical .....	202,631	192,523	172,742	167,274	179,396	155,374	166,928
Civil .....	245,736	276,864	213,323	239,806	269,298	247,282	230,194
Electrical .....	587,448	593,628	678,376	536,090	551,686	468,252	449,347
Mechanical .....	219,953	223,389	324,254	236,516	247,784	180,809	149,744
Metallurgy & materials .....	416,109	453,624	454,344	521,241	446,869	487,161	398,080
Engineering, n.e.c. ....	695,431	821,600	1,061,733	1,101,984	1,107,073	1,087,611	1,102,809
Social sciences, total .....	566,014	549,838	480,788	463,347	472,039	442,064	475,303
Anthropology .....	3,281	3,053	3,714	6,568	6,611	5,594	6,165
Economics .....	150,099	172,261	158,723	154,949	161,806	154,809	159,088
Political science .....	9,958	16,122	22,829	20,622	15,232	10,920	9,158
Sociology .....	155,738	70,486	65,623	54,961	33,533	27,924	17,712
Social sciences, n.e.c. ....	246,938	287,916	229,899	226,247	254,857	242,817	283,180
History .....	NA	NA	NA	NA	NA	NA	NA
Linguistics .....	NA	NA	NA	NA	NA	NA	NA
Other social sciences .....	NA	NA	NA	NA	NA	NA	NA
Other sciences, n.e.c. ....	357,771	408,813	622,411	592,795	494,868	407,883	446,296

See explanatory information, if any, and SOURCE at end of table.

**Table 45. Federal obligations for applied research, by detailed field of science and engineering: fiscal years 1970-2002**

[Dollars in thousands]

Page 5 of 5

Field of science and engineering	1998	1999	2000	Preliminary	
				2001	2002
Total, all fields .....	15,309,257	16,083,861	18,900,701	21,131,300	21,927,617
Life sciences, total .....	5,704,150	6,225,338	7,915,730	9,166,362	9,666,706
Biol & agricultural, total .....	2,851,496	3,106,065	4,764,568	NA	NA
Biol (excl environmental) .....	2,053,580	2,240,738	3,888,908	NA	NA
Environmental biology .....	407,640	440,393	426,411	NA	NA
Agricultural .....	390,276	424,934	449,249	NA	NA
Medical sciences, total .....	2,603,892	2,844,718	2,539,968	NA	NA
Clinical medical .....	NA	NA	0	NA	NA
Other medical .....	NA	NA	0	NA	NA
Life sciences, n.e.c. ....	248,762	274,555	611,194	NA	NA
Psychology, total .....	278,952	285,320	808,874	926,822	1,030,445
Biological aspects .....	14,271	5,800	2,252	NA	NA
Social aspects .....	84,628	56,715	41,964	NA	NA
Psychological sciences, n.e.c. ....	180,053	222,805	764,658	NA	NA
Physical sciences, total .....	1,268,298	976,358	1,317,334	1,310,739	1,309,253
Astronomy .....	25,229	39,447	86,279	NA	NA
Chemistry .....	301,507	260,322	459,792	NA	NA
Physics .....	551,951	528,093	640,974	NA	NA
Physical sciences, n.e.c. ....	389,611	148,496	130,289	NA	NA
Environmental sciences, total .....	1,533,245	1,479,532	1,490,349	1,602,141	1,588,587
Atmospheric sciences .....	519,242	505,453	387,316	NA	NA
Geological sciences .....	212,146	248,097	209,590	NA	NA
Oceanography .....	273,797	272,713	308,144	NA	NA
Environmental sciences, n.e.c. ....	528,060	453,269	585,299	NA	NA
Math & computer sciences, total .....	1,131,356	1,245,700	1,407,336	1,535,149	1,690,342
Mathematics .....	83,338	91,277	124,311	NA	NA
Computer sciences .....	979,612	1,077,775	1,196,571	NA	NA
Math & computer sciences, n.e.c. ....	68,406	76,648	86,454	NA	NA
Engineering, total .....	4,300,981	4,623,729	4,582,206	5,018,813	5,006,689
Aeronautical .....	1,311,194	1,278,020	1,141,127	NA	NA
Astronautical .....	563,159	554,420	426,286	NA	NA
Chemical .....	137,881	147,992	143,946	NA	NA
Civil .....	208,272	259,664	179,514	NA	NA
Electrical .....	425,427	513,079	567,742	NA	NA
Mechanical .....	142,881	140,826	195,931	NA	NA
Metallurgy & materials .....	310,855	306,858	400,265	NA	NA
Engineering, n.e.c. ....	1,201,312	1,422,870	1,527,395	NA	NA
Social sciences, total .....	581,330	608,326	742,303	874,446	915,973
Anthropology .....	4,664	4,901	1,854	NA	NA
Economics .....	188,940	171,226	197,717	NA	NA
Political science .....	15,600	15,395	17,522	NA	NA
Sociology .....	77,368	74,675	78,833	NA	NA
Social sciences, n.e.c. ....	294,758	342,129	446,377	NA	NA
History .....	NA	NA	0	NA	NA
Linguistics .....	NA	NA	0	NA	NA
Other social sciences .....	NA	NA	0	NA	NA
Other sciences, n.e.c. ....	510,945	639,558	636,569	696,828	719,622

**KEY:** NA = Not applicable (indicates that the data collected for this table were not recorded at that level for that particular fiscal year)  
n.e.c. = Not elsewhere classified

**NOTE:** During the Vol. 45 survey cycle, the National Aeronautics and Space Administration made a statistical adjustment to the 1994 and 1995 field of science and engineering values to diminish a computational error introduced by its software.

**SOURCE:** National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: Fiscal Years 2000, 2001, and 2002