

Science and Technology

This section presents statistics on scientific, engineering, and technological resources, with emphasis on patterns of research and development (R&D) funding and on scientific, engineering, and technical personnel; education; and employment. Also included are statistics on space program outlays and accomplishments. Principal sources of these data are the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA).

NSF gathers data chiefly through recurring surveys. Current NSF publications containing data on funds for research and development and on scientific and engineering personnel include detailed statistical tables; issue briefs; and annual, biennial, triennial, and special reports. Titles or the areas of coverage of these reports include the following: *Science and Engineering Indicators*; *National Patterns of R&D Resources*; *Women, Minorities, and Persons with Disabilities in Science and Engineering*—science and technology data presented in chart and tabular form in a pocket-sized publication—*Federal Funds for Research and Development*; *Federal R&D Funding by Budget Function*; *Federal Support to Universities, Colleges, and Selected Nonprofit Institutions*; *Research and Development in Industry*; R&D expenditures and graduate enrollment and support in academic science and engineering; and characteristics of doctoral scientists and engineers and of recent graduates in the United States. Statistical surveys in these areas pose problems of concept and definition and the data should therefore be regarded as broad estimates rather than precise, quantitative statements. See sources for methodological and technical details.

The National Science Board's biennial *Science and Engineering Indicators* contains data and analysis of international and domestic science and technology, including measures of inputs and outputs.

The *Budget of the United States Government*, published by the U.S. Office of Management and Budget, contains summary financial data on federal R&D programs.

Research and development outlays—NSF defines research as “systematic study directed toward fuller scientific knowledge of the subject studied” and development as “the systematic use of scientific knowledge directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes.”

National coverage of R&D expenditures is developed primarily from periodic surveys in four principal economic sectors: (1) *Government*, made up primarily of federal executive agencies; (2) *industry*, consisting of manufacturing and nonmanufacturing firms and the federally funded research and development centers (FFRDCs) they administer; (3) *universities and colleges*, composed of universities, colleges, and their affiliated institutions, agricultural experiment stations, and associated schools of agriculture and of medicine, and FFRDCs administered by educational institutions; and (4) *other nonprofit institutions*, consisting of such organizations as private philanthropic foundations, nonprofit research institutes, voluntary health agencies, and FFRDCs administered by nonprofit organizations.

The R&D funds reported consist of current operating costs, including planning and administration costs, except as otherwise noted. They exclude funds for routine testing, mapping and surveying, collection of general-purpose data, dissemination of scientific information, and training of scientific personnel.

Scientists, engineers, and technicians—Scientists and engineers are defined as persons engaged in scientific and engineering work at a level requiring a knowledge of sciences equivalent at least to that acquired through completion

of a 4-year college course. Technicians are defined as persons engaged in technical work at a level requiring knowledge acquired through a technical institute,

junior college, or other type of training less extensive than 4-year college training. Craftsmen and skilled workers are excluded.

Table 778. Research and Development (R&D) Expenditures by Source and Objective: 1970 to 2004

[In millions of dollars (26,271 represents \$26,271,000,000), except as indicated. For calendar years]

Year	Total	Sources of funds					Objective (percent of total)			Character of work		
		Federal government	Industry	Universities/colleges	Non-profit	Non-federal government ¹	Defense related ²	Space related ³	Other	Basic research	Applied research	Development
1970 . . .	26,271	14,984	10,449	259	343	237	33	10	56	3,594	5,752	16,925
1971 . . .	26,952	15,210	10,824	290	366	262	33	10	58	3,720	5,833	17,399
1972 . . .	28,740	16,039	11,715	312	393	282	33	8	59	3,850	6,147	18,743
1973 . . .	30,952	16,587	13,299	343	422	302	32	7	61	4,099	6,655	20,197
1974 . . .	33,359	17,225	14,885	393	474	320	29	7	64	4,511	7,344	21,504
1975 . . .	35,671	18,533	15,824	432	534	348	28	8	65	4,875	8,091	22,706
1976 . . .	39,435	20,292	17,702	480	592	369	27	8	65	5,373	8,976	25,085
1977 . . .	43,338	22,071	19,642	569	663	394	27	7	66	6,008	9,662	27,667
1978 . . .	48,719	24,414	22,457	679	727	443	26	6	68	6,959	10,704	31,056
1979 . . .	55,379	27,225	26,097	785	791	482	25	6	70	7,836	12,097	35,445
1980 . . .	63,213	29,975	30,929	920	871	519	24	5	70	8,790	13,745	40,678
1981 . . .	72,269	33,715	35,948	1,058	967	581	24	5	70	9,830	16,391	46,047
1982 . . .	80,783	37,168	40,692	1,207	1,095	621	26	5	69	10,824	18,280	51,679
1983 . . .	89,971	41,472	45,264	1,357	1,221	658	28	4	68	12,059	20,373	57,540
1984 . . .	102,251	46,477	52,187	1,514	1,352	721	29	3	68	13,484	22,505	66,261
1985 . . .	114,685	52,655	57,962	1,743	1,491	834	30	3	67	14,857	25,410	74,417
1986 . . .	120,259	54,633	60,991	2,019	1,647	969	31	3	66	17,247	27,259	75,754
1987 . . .	126,344	58,593	62,576	2,262	1,849	1,065	32	3	65	18,498	27,915	79,804
1988 . . .	133,880	60,130	67,977	2,527	2,081	1,165	30	4	66	19,786	29,528	84,566
1989 . . .	141,889	60,463	74,966	2,852	2,333	1,274	28	4	69	21,889	32,277	87,723
1990 . . .	151,990	61,607	83,208	3,187	2,589	1,399	25	4	71	23,028	34,896	94,067
1991 . . .	160,872	60,780	92,300	3,457	2,852	1,483	22	4	73	27,139	38,629	95,104
1992 . . .	165,347	60,912	96,229	3,568	3,114	1,525	22	4	74	27,604	37,933	99,810
1993 . . .	165,724	60,524	96,549	3,708	3,387	1,557	21	4	74	28,741	37,279	99,704
1994 . . .	169,198	60,772	99,203	3,937	3,665	1,622	20	5	76	29,648	36,614	102,936
1995 . . .	183,616	62,963	110,870	4,109	3,924	1,750	19	4	77	29,607	40,931	113,077
1996 . . .	197,336	63,387	123,416	4,434	4,240	1,860	18	4	78	32,796	43,165	121,375
1997 . . .	212,140	64,566	136,227	4,837	4,590	1,921	17	4	79	36,910	46,553	128,677
1998 . . .	227,651	66,373	149,160	5,161	4,986	1,971	16	4	80	35,268	46,361	146,023
1999 . . .	244,970	67,043	164,660	5,617	5,552	2,098	15	3	82	38,830	52,083	154,055
2000 . . .	267,207	66,400	186,136	6,227	6,198	2,247	13	2	84	42,567	56,844	167,792
2001 . . .	277,326	72,819	188,438	6,820	6,853	2,397	14	2	84	47,553	64,605	165,168
2002 . . .	275,797	77,685	180,709	7,350	7,492	2,560	15	2	82	51,033	50,787	173,977
2003 ⁴ . . .	291,864	86,742	186,568	7,820	8,016	2,717	17	3	81	55,104	62,084	174,677
2004 ⁴ . . .	312,068	93,384	199,025	8,205	8,565	2,890	17	3	80	58,356	66,364	187,349

¹ Nonfederal R&D expenditures to university and college performers. ² R&D spending by the Department of Defense, including space activities, and a portion of the Department of Energy funds. ³ For the National Aeronautics and Space Administration only. ⁴ Preliminary.

Source: U.S. National Science Foundation, *National Patterns of R&D Resources*, annual. See also <<http://www.nsf.gov/statistics/>>.

Table 779. Performance Sector of Research and Development (R&D) Expenditures: 1995 to 2004

[In millions of dollars (183,616 represents \$183,616,000,000). For calendar year. FFRDCs are federally funded research and development centers. For most academic institutions and the federal government before 1997, began on July 1 instead of October 1]

Year	Federal government		Industry			Industry FFRDCs	Universities and colleges						University & college FFRDCs ⁹	Other nonprofit institutions							
			Funded by—				Funded by—							Funded by—							
			Total	Federal government	Industry ¹		Total	Federal government	Nonfederal government ²	Industry	Universities & colleges	Nonprofits		Total	Federal government	Industry	Nonprofits	Total	Federal government	Industry	Nonprofits
RESEARCH AND DEVELOPMENT TOTAL																					
1995	183,616	16,904	129,830	21,178	108,652	2,273	22,608	13,586	1,750	1,547	4,109	1,616	5,367	5,827	2,847	671	2,308				
2000	267,207	17,917	200,007	17,163	182,844	1,955	30,683	17,710	2,247	2,175	6,227	2,326	5,742	9,437	4,447	1,118	3,872				
2001	277,326	20,426	202,017	16,899	185,118	2,020	33,712	19,767	2,397	2,188	6,820	2,540	6,225	10,734	5,289	1,132	4,313				
2002	275,797	21,499	193,868	16,401	177,467	2,263	37,185	22,370	2,560	2,158	7,350	2,746	7,102	11,561	5,731	1,084	4,746				
2003, prel.	291,864	23,326	204,004	20,699	183,305	2,486	40,173	24,580	2,717	2,142	7,820	2,913	7,275	12,031	5,807	1,121	5,103				
2004, prel.	312,068	24,742	219,226	23,535	195,691	2,584	42,431	26,115	2,890	2,135	8,205	3,087	7,500	12,750	6,072	1,199	5,478				
BASIC RESEARCH																					
1995	29,607	2,689	5,569	190	5,379	530	15,144	9,633	1,069	945	2,510	987	2,702	2,899	1,170	390	1,338				
2000	42,567	3,765	7,053	938	6,115	534	22,856	13,904	1,550	1,500	4,296	1,605	2,874	4,870	2,099	621	2,150				
2001	47,553	4,260	8,053	754	7,299	552	25,181	15,507	1,663	1,518	4,731	1,762	3,104	5,488	2,464	629	2,395				
2002	51,033	4,511	7,547	888	6,659	619	27,853	17,616	1,769	1,492	5,078	1,898	3,714	5,812	2,575	602	2,635				
2003, prel.	55,104	4,700	8,585	1,628	6,957	679	30,047	19,379	1,859	1,466	5,351	1,993	3,799	6,222	2,766	622	2,834				
2004, prel.	58,356	4,887	9,278	1,851	7,427	706	31,735	20,589	1,974	1,458	5,605	2,109	3,917	6,651	2,944	666	3,042				
APPLIED RESEARCH																					
1995	40,931	4,952	26,919	3,164	23,755	535	5,654	2,775	558	494	1,311	516	1,050	1,692	934	170	589				
2000	56,844	6,105	39,170	2,676	36,494	275	6,652	3,354	571	553	1,583	591	1,329	3,096	1,831	283	981				
2001	64,605	7,052	44,012	3,603	40,409	935	7,260	3,757	602	550	1,713	638	1,485	3,530	2,150	287	1,093				
2002	50,787	7,487	28,533	2,452	26,081	1,048	7,980	4,227	649	547	1,863	696	1,685	3,744	2,267	275	1,203				
2003, prel.	62,084	7,939	38,076	5,182	32,894	1,200	8,686	4,648	704	555	2,025	754	1,721	4,095	2,518	284	1,293				
2004, prel.	66,364	8,407	41,009	5,892	35,117	1,268	9,223	4,983	751	555	2,132	802	1,806	4,287	2,595	304	1,388				
DEVELOPMENT																					
1995	113,077	9,262	97,342	17,824	79,518	1,208	1,810	1,178	123	108	288	113	1,616	1,236	744	111	381				
2000	167,792	8,047	153,784	13,549	140,235	1,146	1,176	452	125	121	347	130	1,539	1,468	513	214	741				
2001	165,168	9,114	149,952	12,542	137,410	534	1,271	502	132	121	376	140	1,637	1,716	675	217	825				
2002	173,977	9,501	157,788	13,061	144,727	597	1,351	527	142	120	409	153	1,703	2,005	890	207	908				
2003, prel.	174,677	10,686	157,343	13,889	143,454	607	1,440	553	154	122	445	166	1,754	1,714	523	214	976				
2004, prel.	187,349	11,447	168,939	15,792	153,147	610	1,474	543	165	122	468	176	1,778	1,812	534	229	1,048				

¹ Includes all nonfederal sources of industry R&D expenditures. ² Includes all nonfederal sources. ³ Includes all R&D expenditures of FFRDCs administered by academic institutions and funded by the federal government.

Source: National Science Foundation. Data derived from: *Research and Development in Industry*, annual; *Academic Research and Development Expenditures*, annual; and *Federal Funds For Research and Development*, annual. See also <<http://www.nsf.gov/statistics/>>.

Table 780. National Research and Development (R&D) Expenditures as a Percent of Gross Domestic Product by Country: 1985 to 2004

Year	Total R&D						Nondefense R&D ¹		
	United States	Japan ²	Unified Germany ³	France	United Kingdom	Italy	Canada	Russia	Total OECD ⁴
1985	2.75	2.56	2.68	2.15	2.24	1.12	1.44	(NA)	2.23
1990	2.65	2.79	2.67	2.33	2.15	1.29	1.53	2.03	2.27
1995	2.51	2.69	2.19	2.29	1.95	1.00	1.72	0.85	2.08
2000	2.74	2.99	2.45	2.15	1.86	1.07	1.93	1.05	2.23
2001	2.76	3.07	2.46	2.20	1.87	1.11	2.08	1.18	2.28
2002	2.65	3.12	2.49	2.23	1.89	1.16	1.97	1.25	2.24
2003	2.68	3.15	2.52	2.18	1.88	—	1.95	1.29	2.26
2004	2.68	(NA)	2.49	2.16	(NA)	(NA)	1.93	1.17	(NA)

— Represents or rounds to zero. NA Not available. ¹ Estimated. ² Data on Japanese research and development in 2000 and later years may not be consistent with data in earlier years because of changes in methodology. ³ Data for 1985–90 are for West Germany only. ⁴ Organization for Economic Cooperation and Development.

Source: National Science Foundation, *National Patterns of R&D Resources*, annual; and Organization for Economic Cooperation and Development.

Table 781. Federal Obligations for Research in Current and Constant (2000) Dollars by Field of Science: 1980 to 2005

[In millions of dollars (11,597 represents \$11,597,000,000). For fiscal years ending in year shown; see text, Section 8. Excludes R&D plant]

Field of science	1980	1990	1995	2000	2001	2002	2003	2004, prel.	2005, prel.
CURRENT DOLLARS									
Research, total	11,597	21,622	28,434	38,471	44,714	48,007	51,072	54,450	54,698
Basic	4,674	11,286	13,877	19,570	21,958	23,668	24,751	26,436	26,860
Applied	6,923	10,337	14,557	18,901	22,756	24,338	26,320	28,013	27,838
Life sciences	4,192	8,830	11,811	17,965	23,057	25,477	27,772	29,746	29,781
Psychology	199	449	623	1,627	742	906	1,104	1,150	1,157
Physical sciences	2,001	3,809	4,278	4,788	4,601	4,983	5,022	5,384	5,373
Environmental sciences	1,261	2,174	2,854	3,329	3,252	3,418	3,741	3,957	3,916
Mathematics and computer sciences	241	841	1,579	2,206	2,611	2,631	2,672	2,806	2,841
Engineering	2,830	4,227	5,708	6,346	8,197	8,275	8,405	9,064	9,147
Social sciences	524	630	679	1,050	1,009	983	1,026	1,067	1,081
Other sciences, n.e.c. ¹	350	664	902	1,160	1,246	1,334	1,329	1,296	1,391
CONSTANT (2000) DOLLARS ²									
Research, total	21,840	26,612	30,846	38,471	43,683	46,019	48,009	49,986	48,868
Basic	8,802	13,890	15,054	19,570	21,452	22,688	23,267	24,269	23,997
Applied	13,038	12,722	15,792	18,901	22,231	23,330	24,742	25,717	24,871
Life sciences	7,895	10,868	12,813	17,965	22,525	24,422	26,107	27,307	26,606
Psychology	375	553	676	1,627	725	868	1,038	1,056	1,034
Physical sciences	3,768	4,688	4,641	4,788	4,495	4,777	4,720	4,943	4,801
Environmental sciences	2,375	2,676	3,096	3,329	3,177	3,277	3,517	3,633	3,499
Mathematics and computer sciences	454	1,035	1,713	2,206	2,551	2,522	2,512	2,576	2,539
Engineering	5,330	5,202	6,192	6,346	8,008	7,932	7,901	8,302	8,172
Social sciences	987	775	737	1,050	986	942	964	980	966
Other sciences, n.e.c. ¹	659	817	979	1,160	1,217	1,279	1,250	1,190	1,243

¹ Not elsewhere classified. ² Based on gross domestic product implicit price deflator.

Source: U.S. National Science Foundation, *Federal Funds for Research and Development*, annual. See also <<http://www.nsf.gov/statistics/>>.

Table 782. Federal Budget Authority for Research and Development (R&D) in Current and Constant (2000) Dollars by Selected Budget Functions: 2003 to 2006

[In millions of dollars (112,544 represents \$112,544,000,000). For year ending September 30. Excludes R&D plant. Represents budget authority. Functions shown are those for which \$1 billion or more was authorized since 1995]

Function	Current dollars				Constant (2000) dollars ¹			
	2003	2004	2005, prel.	2006, prel.	2003	2004	2005, prel.	2006, prel.
Total ²	112,544	121,867	127,336	127,621	105,794	111,876	113,764	111,217
National defense	63,048	69,593	74,668	74,759	59,267	63,888	66,710	65,149
Health	26,517	28,251	28,746	28,984	24,927	25,935	25,682	25,258
Space research and technology	7,355	7,612	7,686	8,089	6,914	6,988	6,867	7,049
Energy	1,403	1,343	1,194	1,210	1,319	1,233	1,067	1,054
General science	6,129	6,466	6,482	6,423	5,761	5,936	5,791	5,597
Natural resources and environment	2,151	2,168	2,108	1,990	2,022	1,990	1,883	1,734
Transportation	1,869	1,863	1,828	1,640	1,757	1,710	1,633	1,429
Agriculture	1,708	1,750	1,803	1,575	1,606	1,607	1,611	1,373

¹ Based on gross domestic product implicit price deflator. ² Includes other functions, not shown separately.

Source: U.S. National Science Foundation, *Federal R&D Funding by Budget Function*, annual. See also <<http://www.nsf.gov/statistics/>> (released October 2005).

Table 783. Research and Development (R&D) Expenditures in Science and Engineering at Universities and Colleges in Current and Constant (2000) Dollars: 1990 to 2003

[In millions of dollars (16,286 represents \$16,286,000,000). Totals may not add due to rounding]

Characteristic	Current dollars				Constant (2000) dollars ¹			
	1990	1995	2000	2003	1990	1995	2000	2003
Total	16,286	22,170	30,063	40,077	20,052	24,053	30,063	37,681
Basic research ²	10,643	14,808	22,243	29,981	13,104	16,066	22,243	28,188
Applied R&D ²	5,643	7,362	7,820	10,096	6,948	7,987	7,820	9,492
Source of funds:								
All governments	9,638	13,331	17,518	24,734	11,867	14,463	17,518	23,255
Institutions' own funds	1,324	1,689	2,198	2,653	1,630	1,832	2,198	2,494
Industry	3,006	4,047	5,940	7,683	3,701	4,391	5,940	7,224
Other	1,127	1,489	2,153	2,162	1,388	1,615	2,153	2,033
Fields:								
Physical sciences	1,807	2,256	2,711	3,273	2,225	2,448	2,711	3,077
Environmental sciences	1,069	1,434	1,764	2,188	1,316	1,556	1,764	2,057
Mathematical sciences	222	279	341	429	273	303	341	403
Computer sciences	515	682	876	1,304	634	740	876	1,226
Life sciences	8,726	12,188	17,468	23,764	10,744	13,223	17,468	22,343
Psychology	253	371	516	769	311	403	516	723
Social sciences	703	1,019	1,298	1,661	866	1,106	1,298	1,562
Other sciences	336	427	535	691	414	463	535	650
Engineering	2,656	3,515	4,554	5,999	3,270	3,814	4,554	5,640

¹ Based on gross domestic product implicit price deflator. ² Basic research and applied R&D statistics were re-estimated for FY 2001 and forward. These data are not directly comparable to those from earlier years.

Source: U.S. National Science Foundation, *Survey of Research and Development Expenditures at Universities and Colleges*, annual.

Table 784. Federal Research and Development (R&D) Obligations to Selected Universities and Colleges: 2001 and 2002

[In millions of dollars (19,390.2 represents \$19,390,200,000). For years ending September 30. For the top 40 institutions receiving federal R&D funds in 2002. Awards to the administrative offices of university systems are excluded from totals for individual institutions because that allocation of funds is unknown, but those awards are included in "total all institutions"]

Major institution ranked by total 2002 federal R&D obligations	2001	2002	Major institution ranked by total 2002 federal R&D obligations	2001	2002
Total, all institutions ¹	19,390.2	21,117.9	Massachusetts Institute of Technology	252.5	268.8
Johns Hopkins University	838.0	974.7	Baylor College of Medicine	231.7	266.8
University of Washington	474.5	525.6	University Southern California	232.5	254.3
University of Pennsylvania	412.0	447.2	University of Alabama—Birmingham	201.6	224.2
University of Michigan	403.4	419.7	Vanderbilt University	166.1	215.5
University of California—Los Angeles	363.9	415.7	Case Western Reserve University	200.0	213.4
Stanford University	351.1	381.0	University of Illinois—Urbana		
University of California—San Diego	333.9	373.6	Champaign	186.9	194.0
University of California—San Francisco	344.9	361.0	The Scripps Research Institute	157.4	193.6
Washington University	314.7	348.0	University of Rochester	171.2	189.2
University of Pittsburgh	300.8	335.8	University of California—Berkeley	210.6	187.3
Columbia University—City of NY	305.8	330.2	University of California—Davis	166.2	185.3
University of Wisconsin—Madison	290.2	327.9	Boston University	154.4	182.9
Duke University	274.1	327.5	Emory University	161.9	180.6
Harvard University	321.7	313.4	Ohio State University	156.6	174.7
University of Colorado	290.7	308.3	Northwestern University	164.0	174.0
Yale University	276.2	306.9	University of Iowa	163.9	172.7
University of North Carolina at			University of Arizona	166.9	168.5
Chapel Hill	275.9	297.9	University of Florida	157.4	167.1
University of Minnesota	273.1	291.9	University of Texas SW Medical		
Pennsylvania State University	253.6	287.1	Center Dallas	146.9	162.3
Cornell University	271.9	283.1	University of Chicago	160.1	161.5

¹ Includes other institutions, not shown separately. Source: U.S. National Science Foundation, *Federal S&E Support to Universities and Colleges and Nonprofit Institutions*, annual.

Table 785. Graduate Science/Engineering Students in Doctorate-Granting Colleges by Characteristic and Field: 1990 to 2003

[In thousands (397.8 represents 397,800). As of fall. Includes outlying areas]

Field of science or engineering	Characteristic										
	Total			Female			Foreign		Part-time		
	1990	2000	2003	1990	2000	2003	2000	2003	1990	2000	2003
Total, all surveyed fields	397.8	433.3	507.2	149.7	195.3	233.4	122.3	148.0	123.2	118.2	135.5
Science/engineering	350.6	366.7	428.0	113.4	145.6	174.2	116.9	141.0	100.7	94.7	107.8
Engineering, total	99.9	98.4	119.3	13.6	19.6	25.5	46.1	58.2	35.9	27.8	31.6
Sciences, total	250.7	268.3	308.7	99.8	126.0	148.7	70.8	82.7	64.8	66.9	76.2
Physical sciences	32.5	29.3	33.3	7.6	8.7	10.4	11.5	13.9	3.6	3.2	3.3
Environmental	12.9	12.7	13.5	3.8	5.2	6.0	2.6	2.7	3.0	2.6	2.5
Mathematical sciences	17.3	13.8	17.4	5.3	4.9	6.3	5.7	7.1	4.0	2.7	3.5
Computer sciences	27.7	39.5	46.7	6.4	11.4	12.5	19.3	21.6	12.9	16.3	18.4
Agricultural sciences	10.9	11.2	12.4	3.2	4.7	5.6	2.4	2.5	2.0	2.3	2.9
Biological sciences	46.0	52.3	60.6	21.0	27.4	33.4	11.5	14.5	6.8	7.2	8.2
Psychology	35.8	37.7	41.8	23.6	27.0	30.8	2.1	2.8	10.3	9.5	11.6
Social sciences	67.7	71.8	82.8	29.0	36.8	43.8	15.7	17.6	22.1	23.0	25.9
Health fields, total	47.2	66.6	79.3	36.3	49.6	59.2	5.4	7.0	22.5	23.5	27.6

Source: U.S. National Science Foundation, *Survey of Graduate Science Engineering Students and Postdoctorates*, annual.

Table 786. College Graduates by Education and Occupation: 1993 and 2003

[In percent, except as noted. S&E stands for science and engineering. College graduates includes individuals with degrees at the bachelor level or higher]

Field and occupation	1993	2003	Field and occupation	1993	2003
All college graduates (1,000) . . .	29,021	40,621	S&E-related or non-S&E occupations .	78	77
S&E occupations	11	12	Not employed	16	17
S&E-related or non-S&E occupations . .	71	69	Non-S&E degrees only (1,000)	15,723	21,395
Not employed	18	20	S&E occupations	3	3
S&E degrees only (1,000)	7,153	10,118	S&E-related or non-S&E occupations .	78	75
S&E occupations	30	31	Not employed	19	21
S&E-related or non-S&E occupations .	52	50	Degrees in more than one broad		
Not employed	18	19	field ¹ (1,000)	3,676	5,568
S&E-related degrees only (1,000)	2,469	3,540	S&E occupations	11	12
S&E occupations	6	6	S&E-related or non-S&E occupations .	76	72
			Not employed	13	16

¹ S&E, S&E-related, and non-S&E.

Source: U.S. National Science Foundation, National Survey of College Graduates: 1993 and 2003.

Table 787. Profile of Employed College Graduates by Employment Sector and Occupation Group: 2003

[32,575 represents 32,575,000,000. S&E stands for science and engineering. Includes individuals with degrees at the bachelor's level or higher]

Characteristic	All employed graduates (1,000)	Occupation (percent)			Median annual salary (dollars)			
		S&E	S&E-related	Non-S&E	All employed graduates	S&E	S&E-related	Non-S&E
HIGHEST LEVEL OF DEGREE ATTAINMENT								
All degree levels	32,575	14	15	70	50,000	69,000	55,000	47,000
Bachelor's	20,359	12	14	74	47,000	67,000	48,000	43,000
Master's	8,675	17	14	70	54,000	70,000	55,000	50,000
Doctorate	1,271	50	7	43	70,000	71,000	77,000	65,000
Professional	2,270	4	44	52	95,000	80,000	112,000	80,000
EMPLOYMENT SECTOR								
Educational institutions	7,156	11	17	71	42,000	49,000	44,000	40,000
4-year colleges, medical schools, university-affiliated research institutes . .	2,003	32	22	46	47,000	50,000	50,000	44,000
2-year colleges	295	31	2	67	40,000	40,000	40,000	40,000
Precollege and other institutions	4,857	1	16	82	41,000	50,000	42,000	40,000
Government	3,527	16	13	71	53,000	64,000	56,000	50,000
Federal	1,232	23	13	65	66,000	75,000	65,000	62,000
State	1,044	16	13	71	43,000	50,000	45,000	42,000
Local	1,251	10	13	77	45,000	54,000	44,000	44,000
Business/industry	21,893	15	15	70	56,000	73,000	60,000	50,000
For-profit	13,771	19	13	68	61,000	75,000	67,000	55,000
Self-employed, incorporated	3,403	11	18	71	60,000	72,000	85,000	50,000
Self-employed, not incorporated	2,583	7	14	78	40,000	50,000	65,000	35,000
Nonprofit	2,534	7	28	65	42,000	53,000	50,000	35,000

Source: U.S. National Science Foundation, National Survey of College Graduates: 2003.

Table 788. Science and Engineering Degree Recipients, 2001 and 2002, and Post-Graduate Employment Status, 2003

[In thousands (937.7 represents 937,700). FT represents full-time. Based on a survey and subject to sampling error; see source for details]

Degree and field	Graduates 2001 and 2002 (1,000)	2003 ¹				
		In school ²	Employed		Not employed or not FT students	Median salary ⁴ (\$1,000)
			In S&E ³	In other		
Bachelor's recipients ⁵	937.7	222.0	287.2	358.7	69.8	36
All science fields	682.2	185.1	114.9	327.4	54.7	45
Computer and information sciences	84.8	6.4	38.6	33.6	5.7	45
Mathematical sciences	25.6	6.0	4.1	13.7	1.5	36
Life and related sciences	150.7	61.4	35.2	44.4	9.8	29
Physical and related sciences	35.7	15.5	9.5	8.8	1.9	35
Psychology	153.0	44.6	10.7	82.7	15.2	28
Social and related sciences	232.3	51.0	16.3	144.4	20.6	30
All engineering fields	112.3	19.1	67.5	17.7	7.3	50
Aerospace and related engineering	3.1	0.6	1.8	0.7	(B)	48
Chemical engineering	10.6	2.7	6.0	1.4	(B)	53
Civil and architectural engineering	16.3	1.1	12.5	1.9	(B)	44
Electrical, electronics, computer, and communications engineering	35.8	5.5	21.6	5.5	2.8	53
Industrial engineering	6.6	0.7	3.4	2.1	(B)	47
Mechanical engineering	24.8	4.7	14.5	4.2	1.5	50
Other engineering	15.1	3.8	7.7	2.0	1.4	43
All health fields	143.0	17.7	103.7	13.6	(B)	43
Master's recipients ⁵	246.7	40.9	134.7	51.6	19.4	52
All science fields	117.0	27.9	44.0	36.2	9.0	45
Computer and mathematical sciences	27.2	4.8	13.6	4.9	4.0	60
Mathematical sciences	5.9	1.8	2.7	1.0	(B)	54
Life and related sciences	16.8	4.5	8.6	2.8	(B)	40
Physical and related sciences	9.6	3.1	4.8	1.3	(B)	49
Psychology	32.0	6.8	9.2	14.4	(B)	38
Social and related sciences	25.5	6.8	4.4	11.7	2.4	42
All engineering fields	47.0	10.8	29.9	3.6	2.6	65
Aerospace and related engineering	1.1	(B)	0.8	(B)	(B)	60
Chemical engineering	1.9	0.7	0.9	(B)	(B)	63
Civil and architectural engineering	6.0	0.9	4.7	(B)	(B)	54
Electrical, electronics, computer, and communications engineering	16.1	4.4	9.9	(B)	(B)	70
Industrial engineering	3.7	(B)	2.3	(B)	(B)	(B)
Mechanical engineering	6.0	1.2	4.0	(B)	(B)	59
Other engineering	12.2	2.3	7.4	1.2	(B)	65
All health fields	82.7	(B)	56.8	11.8	(B)	53

¹ B Base figure too small to meet statistical standards of reliability of a derived figure. ² As of April. ³ Full-time students. ⁴ In science and engineering or related occupation. ⁵ For the principal job. Excludes full-time students, the self-employed, and persons whose principal job is less than 35 hours per week. For definition of median, see Guide to Tabular Presentation. ⁶ Includes health degrees beginning in 2003.

Source: National Science Foundation, *National Survey of Recent College Graduates: 2003*.

Table 789. Doctorates Conferred by Characteristics of Recipients: 2000 and 2004

[In percent, except as indicated. Based on the Survey of Earned Doctorate Awards; for description of methodology, see <http://www.nsf.gov/sbe/srs/ssed/sedmeth.htm>]

Characteristic	2004										
	2000, total ¹	All fields ¹	Engin- eering	Physi- cal sci- ences ²	Earth sci- ences	Math- ematics	Com- puter sci- ences	Biologi- cal sci- ences ³	Agri- cultural sci- ences ⁴	Social sci- ences ⁴	Psychol- ogy
Total conferred (number)	41,368	42,155	5,776	3,353	672	1,075	949	5,937	1,046	4,131	3,336
Male	56.0	54.5	82.2	74.1	66.1	71.6	78.9	53.6	62.0	56.0	32.6
Female	43.8	45.3	17.6	25.9	33.9	28.4	20.5	46.3	38.0	44.0	67.3
Median age ⁵	33.6	33.3	31.4	30.0	32.4	32.3	30.3	33.5	34.1	32.3	(NA)
CITIZENSHIP ⁶											
Total conferred (number)	39,485	39,544	5,484	3,198	662	1,036	907	5,649	1,078	6,307	2,977
U.S. citizen	75.6	70.7	39.8	58.0	66.2	49.2	49.4	74.1	56.1	39.7	93.7
Foreign citizen	24.4	29.3	60.2	42.0	33.8	50.8	50.6	25.9	43.9	30.3	6.3
RACE/ETHNICITY ⁷											
Total conferred (number)	29,837	27,959	2,182	1,854	438	510	448	4,187	605	2,303	2,789
White ⁸	79.3	76.5	70.7	79.1	86.5	78.0	71.7	76.0	82.3	77.9	76.8
Black ⁸	5.9	7.0	4.3	3.2	1.6	2.0	3.8	3.5	3.8	6.6	7.3
Asian/Pacific ⁸	7.8	7.3	16.2	8.7	2.5	10.6	16.1	11.7	5.6	6.1	5.5
Indian/Alaskan ⁸	0.6	0.5	0.3	0.3	0.9	0.0	0.4	0.3	0.7	0.3	0.5
Hispanic ⁸	4.3	4.6	4.0	3.3	2.5	5.1	2.9	4.6	2.8	4.7	6.1
Other/unknown ⁹	2.2	4.0	4.5	5.2	5.9	4.3	5.1	3.9	4.8	4.4	3.9

NA Not available. ¹ Includes other fields, not shown separately. ² Astronomy, physics, and chemistry. ³ Biochemistry, botany, microbiology, physiology, zoology, and related fields. ⁴ Anthropology, sociology, political science, economics, international relations, and related fields. ⁵ For definition of median, see Guide to Tabular Presentation. ⁶ For those with known citizenship. Includes those with temporary visas. ⁷ Excludes those with temporary visas. ⁸ Non-Hispanic. ⁹ For the year 2004, includes Native Hawaiians and Other Pacific Islanders, respondents choosing multiple races (excluding those selecting an Hispanic ethnicity), and respondents with unknown race/ethnicity.

Source: U.S. National Science Foundation, *Science and Engineering Doctorate Awards*, annual. See also <http://www.nsf.gov/statistics/pubserver.cfm?TopID=2&SubID=5&SerID=11> (released February 2006).

Table 790. Doctorates Awarded, by Field of Study and Year of Doctorate: 1995 to 2004

Field of study	1995	1999	2000	2001	2002	2003	2004
Grand total, all fields	41,748	41,090	41,357	40,808	39,964	40,710	42,155
Science and engineering, total.	26,535	25,932	25,966	25,540	24,571	25,258	26,275
Engineering, total	6,008	5,330	5,321	5,502	5,071	5,265	5,776
Aeronautical/astronautical	252	206	214	203	208	199	201
Chemical	708	674	725	728	705	643	723
Civil	656	584	556	594	625	672	675
Electrical	1,731	1,478	1,544	1,576	1,392	1,463	1,649
Industrial/manufacturing	284	211	176	205	230	211	217
Materials/metallurgical	588	469	451	497	396	473	509
Mechanical	1,025	855	864	953	827	814	853
Other	764	853	791	746	688	790	949
Science, total	20,527	20,602	20,645	20,038	19,500	19,993	20,499
Biological/agricultural sciences	6,412	6,548	6,797	6,543	6,580	6,616	6,983
Agricultural sciences	1,036	966	943	853	893	922	1,046
Biological sciences	5,376	5,582	5,854	5,690	5,687	5,694	5,937
Earth, atmospheric, and ocean sciences, total	780	805	758	749	785	783	672
Atmospheric	130	124	143	116	117	139	126
Earth	454	452	386	393	428	373	420
Oceanography	115	130	134	121	128	133	126
Other environmental sciences	81	99	95	119	112	138	(NA)
Mathematical/computer sciences, total	2,187	1,938	1,909	1,833	1,725	1,860	2,024
Computer sciences	997	855	859	826	807	866	949
Mathematics	1,190	1,083	1,050	1,007	918	994	1,075
Physical sciences, total	3,841	3,579	3,407	3,393	3,209	3,320	3,353
Astronomy	173	159	185	186	144	167	165
Chemistry	2,162	2,132	1,989	1,980	1,923	2,037	1,987
Physics	1,479	1,271	1,204	1,197	1,124	1,080	1,186
Other	27	17	29	30	18	36	(NA)
Psychology	3,429	3,668	3,618	3,442	3,198	3,275	3,336
Social sciences, total	3,878	4,064	4,156	4,078	4,003	4,139	4,131
Economics	1,152	1,075	1,086	1,081	1,023	1,051	1,066
Political science	894	1,016	987	984	938	1,026	946
Sociology	555	572	637	577	565	612	598
Other social sciences	1,277	1,401	1,446	1,436	1,477	1,450	1,521
Non-science and engineering, total	15,213	15,158	15,391	15,268	15,393	15,452	15,880
Education	6,650	6,546	6,429	6,337	6,487	6,627	6,635
Health	1,329	1,407	1,591	1,620	1,655	1,633	1,730
Humanities	4,691	5,034	5,213	5,160	5,009	5,015	5,017
Professional/other/unknown	2,543	2,171	2,158	2,151	2,242	2,177	2,498

NA Not available.

Source: U.S. National Science Foundation, *Science and Engineering Doctorate Awards*, annual. See also <<http://www.nsf.gov/statistics/nsf06308/>> (released February 2006).

Table 791. Non-U.S. Citizens Awarded Doctorates in Science and Engineering, by Visa Type and Country of Citizenship: 1995 to 2004

Visa and country/economy	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
All non-U.S. citizens.	10,516	10,845	9,790	9,795	8,891	9,069	9,242	8,857	9,507	10,121
Canada	274	278	263	288	289	294	307	314	325	381
Mexico	130	162	148	179	172	209	207	182	219	180
Brazil	137	207	151	164	164	131	143	126	107	136
United Kingdom	132	117	92	124	142	100	138	134	110	110
Germany	208	170	181	210	183	229	220	197	189	184
China	2,781	3,022	2,395	2,510	2,233	2,378	2,418	2,401	2,501	2,869
Japan	155	169	155	156	158	201	150	158	202	186
Korea	1,009	985	901	823	760	753	867	855	961	1,053
Taiwan	1,249	1,162	1,093	913	746	676	541	469	442	394
Thailand	114	119	97	123	134	153	236	264	311	271
India	1,212	1,271	1,281	1,142	915	834	815	679	771	857
Iran	173	150	113	93	92	80	100	57	68	59
Turkey	167	151	170	172	192	275	309	342	374	344
Science	7,033	7,318	6,642	6,734	6,296	6,267	6,152	5,937	6,325	6,578
Engineering	3,483	3,527	3,148	3,061	2,595	2,802	3,090	2,920	3,182	3,543
Permanent visa	3,509	3,009	2,281	2,019	1,653	1,409	1,278	1,167	1,100	999
Temporary visa	7,007	7,836	7,509	7,776	7,238	7,660	7,964	7,690	8,407	9,122

Source: U.S. National Science Foundation, *Science and Engineering Doctorate Awards*, annual. See also <<http://www.nsf.gov/statistics/nsf06308/>> (released February 2006).

Table 792. Research and Development (R&D) Funds in R&D-Performing Manufacturing and Nonmanufacturing Companies by Industry: 2001 to 2003

Industry	NAICS ¹ code	Total R&D funds as a percent of net sales			Company R&D funds as a percent of net sales		
		2001	2002	2003	2001	2002	2003
All industries, total	(X)	4.2	3.9	3.5	3.8	3.6	3.2
All manufacturing industries, total	(X)	4.1	3.7	3.5	3.7	3.3	3.1
Food	311	0.5	(D)	(D)	0.5	0.6	0.6
Paper, printing, and support activities	322, 326	(D)	(D)	(D)	2.1	1.3	1.1
Petroleum and coal products	324	(D)	(D)	(D)	0.3	0.4	0.3
Chemicals	325	4.9	6.0	5.7	4.8	5.9	5.6
Plastic and rubber products	326	(D)	(D)	2.1	2.9	1.8	2.1
Nonmetallic mineral products	327	2.4	(D)	1.0	2.3	1.2	1.0
Primary metals	331	0.7	0.7	0.7	0.7	0.7	0.7
Fabricated metal products	332	1.7	1.5	1.6	1.6	1.4	1.5
Machinery	333	4.3	4.4	4.2	4.2	4.3	4.2
Navigational, measuring, electromedical, and control instruments	3345	12.6	8.7	12.9	7.3	5.4	7.2
Electrical equipment, appliances, and components	335	3.1	2.8	2.2	2.9	2.7	2.2
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	(D)	3.5	3.1	2.4
Aerospace products and parts	3364	5.7	4.1	6.8	3.0	2.3	3.5
All nonmanufacturing industries, total	(X)	4.3	4.4	3.6	4.0	4.1	3.3
Transportation and warehousing services	48, 49	2.5	(D)	0.4	2.4	0.5	0.4
Software publishing	5112	19.4	21.5	(D)	19.3	21.4	23.4
Architectural, engineering, and related services	5413	7.5	7.8	12.3	5.2	5.3	7.8
Computer systems design and related services	5415	17.4	16.5	11.1	16.5	14.3	9.8
Scientific R&D services	5417	47.7	21.3	19.4	36.5	17.6	16.5
Management of companies and enterprises	55	7.8	7.6	4.1	7.8	7.6	4.1

X Not applicable. D Figure withheld to avoid disclosure of information pertaining to a specific organization or individual. ¹ North American Industry Classification System 1997 (NAICS); see text, Section 15.

Source: U.S. National Science Foundation, *Research and Development in Industry*, annual. See also <<http://www.nsf.gov/statistics/pubseri.cfm?TopID=2&SubID=5&SerID=26>>.

Table 793. Civilian Employment of Scientists, Engineers, and Technicians by Occupation and Industry: 2004

[In thousands (6,834.8 represents 6,834,800). Based on sample and subject to sampling error. For details, see source]

Occupation	Total ¹	Wage and salary workers							
		Mining ²	Construction	Manufacturing	Information	Professional, scientific and technical services	Government	Other service-providing industries	Self employed ³
Scientists, engineers, and technicians, total	6,834.8	45.6	76.4	1,251.2	516.7	1,874.7	1,118.8	1,603.4	336.2
Scientists	1,080.8	7.8	2.5	104.6	31.1	225.8	331.3	252.4	118.4
Physical scientists	250.4	7.4	0.5	43.8	0.8	82.8	84.2	22.9	6.5
Life scientists	231.7	(NA)	(NA)	28.8	0.1	44.8	96.2	41.4	16.2
Mathematical science occupations	107.0	0.1	0.1	7.2	8.3	23.2	20.5	45.9	1.7
Social scientists and related occupations	491.7	0.3	2.0	24.9	21.9	75.0	130.3	142.3	94.0
Computer specialists	3,045.8	6.0	9.0	272.5	411.0	868.8	332.2	996.3	150.1
Engineers ⁴	1,448.9	19.1	36.6	554.7	49.7	378.1	194.2	174.9	40.9
Civil engineers	237.3	0.4	19.6	3.3	1.2	115.1	75.6	9.5	12.7
Electrical/electronics engineers	298.8	0.5	4.5	103.4	33.6	69.5	31.5	45.1	10.6
Mechanical engineers	225.9	0.7	4.1	122.1	0.4	55.8	13.5	23.5	5.7
Drafters, engineering, and mapping technicians	850.9	3.9	24.2	260.9	24.2	281.2	122.1	113.8	19.8
Electrical/electronics engineering technicians	181.6	1.1	2.3	64.8	17.3	26.8	24.8	43.5	0.6
Other engineering technicians	350.3	1.7	4.2	128.2	4.0	91.3	78.5	41.0	1.1
Drafters	254.0	0.5	16.9	67.6	2.5	119.3	7.2	25.1	14.9
Surveying and mapping technicians	65.0	0.7	0.9	0.3	0.4	43.8	11.6	4.2	3.1
Life, physical, and social science technicians	341.9	8.2	0.3	58.3	0.5	73.2	129.4	64.0	4.3
Surveyors, cartographers, and photogrammetrists	66.5	0.5	3.7	0.1	0.2	47.7	9.6	1.9	2.7

NA Not available. ¹ Includes agriculture, forestry, and fishing not shown separately. ² Includes oil and gas extraction. ³ Includes secondary jobs. ⁴ Includes kinds of engineers and technicians not shown separately. ⁵ Includes other drafters, technicians, and mapping technicians, not shown separately.

Source: U.S. Bureau of Labor Statistics, *National Industry-Occupation Employment Matrix*, February 2006 (Data collected biennially).

Table 794. Funds for Performance of Industrial Research and Development (R&D) by Selected Industries: 2000 to 2003

[In millions of dollars (201,962 represents \$201,962,000,000). For calendar years. Covers basic research, applied research, and development. Based on the Survey of Industry Research and Development]

Industry	NAICS ¹ code	2000	2001	2002	2003
CURRENT DOLLARS					
Total funds ²	(X)	201,962	202,017	193,868	204,004
Petroleum and coal products	324	(D)	(D)	(D)	(D)
Chemicals and allied products	325	20,918	17,892	20,641	23,001
Machinery	333	6,580	6,404	6,429	6,304
Navigational, measuring, electromedical, and control instruments	3345	15,116	12,947	13,729	14,014
Electrical equipment, appliances, and components	335	(D)	4,980	2,039	2,073
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	(D)	(D)
Aerospace products and parts	3364	10,319	7,868	9,654	15,731
All other ²	(X)	(D)	(D)	(D)	(D)
CONSTANT (1996) DOLLARS ³					
Total funds ²	(X)	201,962	197,282	186,072	191,913
Petroleum and coal products	324	(D)	(D)	(D)	(D)
Chemicals	325	20,918	17,473	19,811	21,638
Machinery	333	6,580	6,254	6,170	5,930
Navigational, measuring, electromedical, and control instruments	3345	15,116	12,644	13,177	13,183
Electrical equipment, appliances, and components	335	(D)	4,863	1,957	1,950
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	(D)	(D)
Aerospace products and parts	3364	10,319	7,684	9,266	14,799
All other ²	(X)	(D)	(D)	(D)	(D)

¹ D Figure withheld to avoid disclosure of information pertaining to a specific organization or individual. X Not applicable.
² North American Industry Classification System, 1997; see text, Section 15. ³ Includes other industries not shown separately.
³ Based on gross domestic product implicit price deflator.

Source: U.S. National Science Foundation, *Research and Development in Industry*, annual.

Table 795. Research and Development (R&D) Scientists and Engineers—Employment and Cost, by Industry: 2001 to 2003

[1,059.6 represents 1,059,600]

Industry	NAICS ¹ code	Employed scientists and engineers ² (1,000)			Cost per scientist or engineer, Constant (1996) dollars ^{3, 4} (\$1,000)		
		2001	2002	2003	2001	2002	2003
All industries ⁵	(X)	1,059.6	1,073.3	1,115.8	184.5	181.5	180.8
Chemicals	325	82.4	84.2	89.1	214.6	239.2	245.1
Machinery	333	54.9	56.2	55.9	116.3	115.4	111.5
Electrical equipment, appliances, and components	335	29.0	23.8	15.2	(D)	149.8	(D)
Motor vehicles, trailers, and parts	3361-3363	65.8	69.6	41.6	(D)	(D)	(D)
Aerospace products and parts	3364	22.1	25.8	36.6	348.2	(D)	405.9
Transportation and warehousing services	48, 49	1.3	0.4	—	(D)	(D)	(D)
Software publishing	5112	82.6	81.0	93.6	155.8	163.0	155.3
Architectural, engineering, and related services	5413	30.3	28.0	35.3	114.6	152.7	141.9
Computer systems design and related services	5415	62.5	76.8	77.8	163.7	133.2	152.7
Scientific R&D services	5417	62.1	55.0	48.5	238.3	260.2	258.1
Management of companies and enterprises	55	0.9	1.5	1.0	412.5	167.6	162.2

— Represents or rounds to zero. D Withheld to avoid disclosure. X Not applicable. ¹ North American Industry Classification System 1997 (NAICS); see text, Section 15. ² The mean number of full-time equivalent R&D scientists and engineers employed in January of the year shown and the following January. ³ Based on gross domestic product implicit price deflator. ⁴ Represents the arithmetic mean of the numbers of R&D scientists and engineers reported in each industry for January in 2 consecutive years divided into total R&D expenditures in each industry. ⁵ Includes other industries not shown separately.

Source: U.S. National Science Foundation, *Research and Development in Industry*, annual.

Table 796. Space Vehicle Systems—Net Sales and Backlog Orders: 1970 to 2004

[In millions of dollars (1,956 represents \$1,956,000,000). Backlog orders as of Dec. 31. Based on data from major companies engaged in manufacture of aerospace products. Includes parts but excludes engines and propulsion units, except where noted]

Year	Net sales			Backlog orders			Year	Net sales			Backlog orders		
	Total	Military	Non-military	Total	Military	Non-military		Total	Military	Non-military	Total	Military	Non-military
1970 . .	1,956	1,025	931	1,184	786	398	2001 ¹	9,032	(D)	(D)	24,425	(D)	(D)
1980 . .	3,483	1,461	2,022	1,814	951	863	2002 ¹	7,946	(D)	(D)	21,968	(D)	(D)
1990 . .	9,691	6,556	3,135	12,462	8,130	4,332	2003 ¹	7,325	(D)	(D)	14,037	(D)	(D)
2000 . .	8,164	3,723	4,441	21,395	8,942	12,453	2004 ¹	7,335	(D)	(D)	16,346	(D)	(D)

D Withheld to avoid disclosing data for individual companies. ¹ Includes engines and/or propulsion units for space vehicles, including parts.

Source: U.S. Census Bureau, *Current Industrial Reports*, M336G, *Civil Aircraft and Aircraft Engines*, annual. See also <<http://www.census.gov/industry/1/m336g0413.pdf>>.

Table 797. Federal Outlays for General Science, Space, and Other Technology, 1970 to 2005, and Projections, 2006 and 2007

[In billions of dollars (4.5 represents \$4,500,000,000). For fiscal years ending in year shown; see text, Section 8]

Year	Current dollars			Constant (2000) dollars		
	Total	General science/basic research	Space and other technologies	Total	General science/basic research	Space and other technologies
1970	4.5	0.9	3.6	19.3	4.0	15.2
1980	5.8	1.4	4.5	12.0	2.8	9.1
1985	8.6	2.0	6.6	13.7	3.2	10.5
1990	14.4	2.8	11.6	20.0	3.9	16.1
1995	16.7	4.1	12.6	18.7	4.6	14.1
2000	18.6	6.2	12.4	18.6	6.2	12.4
2001	19.7	6.5	13.2	19.3	6.4	12.9
2002	20.7	7.2	13.5	19.7	6.9	12.8
2003	20.8	7.9	12.9	19.2	7.3	11.9
2004	23.0	8.3	14.6	20.4	7.4	13.0
2005	23.6	8.8	14.8	20.4	7.6	12.7
2006, proj.	23.9	9.1	14.7	20.0	7.7	12.4
2007, proj.	25.3	9.8	15.6	20.9	8.1	12.8

Source: U.S. Office of Management and Budget, *Budget of the United States, Historical Tables, Fiscal Year 2007*, annual. See also <<http://www.gpoaccess.gov/usbudget/fy07/hist.html>>.

Table 798. U.S. and Worldwide Commercial Space Industry Revenue by Type: 2001 to 2004

[In billions of dollars (20.8 represents \$20,800,000,000). For calendar years]

Industry	U.S.				World			
	2001	2002	2003	2004	2001	2002	2003	2004
Revenue, total	20.8	22.7	24.9	26.1	78.6	86.1	91.1	97.2
Satellite manufacturing	3.8	4.4	4.6	3.9	9.5	12.1	9.8	10.2
Launch industry	1.1	1.0	2.1	1.4	3.0	3.7	3.2	2.8
Satellite services ²	15.9	16.6	18.2	20.8	46.5	49.1	56.0	60.9
Ground equipment manufacturing ³	(NA)	(NA)	(NA)	(NA)	19.6	21.2	22.1	23.3

NA Not available. ¹ Includes revenues from the construction and sale of satellites to both commercial and government. ² Includes revenues derived from transponder leasing and subscription/retail services such as direct-to-home television and satellite mobile and data communications. ³ Includes revenues from the manufacture of gateways and satellite control stations, satellite news-gathering trucks, very small aperture terminals, direct-to-home television equipment and mobile satellite phones.

Source: Satellite Industry Association/Futron Corporation, Bethesda, MD, *2004–2005 Satellite Industry Indicators Survey* (copyright). See also <<http://www.sia.org/>>.

Table 799. Worldwide Successful Space Launches: 1957 to 2005

[Criterion of success is attainment of Earth orbit or Earth escape]

Country	Total, 1957–05	1957–64	1965–69	1970–74	1975–79	1980–84	1985–89	1990–94	1995–2003	2004	2005
Total	4,410	289	586	555	607	605	550	466	647	53	52
Soviet Union/Russia ¹	2,746	82	302	405	461	483	447	283	238	22	23
United States	1,305	207	279	139	126	93	61	122	250	16	12
Japan	62	—	—	5	10	12	11	9	13	—	2
ESA ²	160	—	—	—	1	8	21	33	89	3	5
China	88	—	—	2	6	6	9	15	37	8	5
France	10	—	4	3	3	—	—	—	—	—	—
India	16	—	—	—	—	3	—	3	8	1	1
Israel	4	—	—	—	—	—	1	1	2	—	—
Ukraine ¹	17	—	—	—	—	—	—	—	10	3	4
Australia	1	—	1	—	—	—	—	—	—	—	—
United Kingdom	1	—	—	1	—	—	—	—	—	—	—

— Represents zero. ¹ Launches conducted by the former Soviet Union are listed separately as Russia or Ukraine. ² European Space Agency. Includes launches by Arianespace.

Source: Library of Congress, Congressional Research Service, Science Policy Research Division, *Space Activities of the United States, CIS, and Other Launching Countries/Organizations 1957–1999*; thereafter, Resources, Science, and Industry Division, 2005.

Table 800. National Aeronautics and Space Administration—Budget Appropriations, 2006, and Projections, 2007 to 2011

[In millions of dollars (16,623.0 represents \$16,623,000,000). Figures may not add due to rounding]

Item	2006	2007	2008	2009	2010	2011
Appropriations, total	16,623.0	16,792.3	17,309.4	17,614.2	18,026.3	18,460.4
Science, exploration, & aeronautics	9,721.3	10,524.4	10,594.4	11,136.4	11,747.0	15,526.4
Science	5,253.7	5,330.0	5,383.1	5,437.1	5,491.5	5,546.4
Solar system exploration	1,582.3	1,610.2	1,598.6	1,840.4	1,899.6	1,846.7
The universe	1,507.9	1,509.2	1,500.9	1,307.9	1,276.1	1,309.7
Earth-sun system	2,163.5	2,210.6	2,283.7	2,288.9	2,315.8	2,390.0
Exploration systems	3,050.1	3,978.3	3,981.6	4,499.8	5,055.9	8,775.1
Constellation systems	1,733.5	3,057.6	3,067.6	3,612.9	4,083.8	7,698.4
Exploration systems research & technology	692.5	646.1	632.2	605.1	679.2	764.6
Human systems research & technology	624.1	274.6	281.8	281.8	292.8	312.1
Aeronautics research & technology	884.1	724.4	731.8	732.4	722.8	722.7
Cross-agency support programs	533.5	491.7	497.9	467.1	476.8	482.2
Education	162.4	153.3	152.4	153.1	154.0	153.3
Advanced business systems	156.3	108.2	106.9	73.8	78.5	80.6
Innovative partnerships program	214.8	197.9	205.5	206.2	209.7	212.9
Shared capabilities	–	32.2	33.1	33.9	34.7	35.5
Exploration capabilities	6,869.7	6,234.4	6,680.4	6,442.3	6,242.9	2,896.7
Space operations	6,869.7	6,234.4	6,680.4	6,442.3	6,242.9	2,896.7
International space station	1,753.4	1,811.3	2,200.3	2,255.6	2,197.1	2,360.8
Space shuttle	4,777.5	4,056.7	4,087.3	3,794.8	3,651.1	146.7
Space & flight support	338.8	366.5	392.8	392.0	394.7	398.2
Inspector General	32.0	33.5	34.6	35.5	36.4	37.3

– Represents or rounds to zero.

Source: U.S. National Aeronautics and Space Administration, *Fiscal Year 2007 Budget* <<http://www.nasa.gov/pdf/142458mainFY07budgetfull.pdf>> (accessed April 2006).

Table 801. Nobel Prize Laureates in Selected Sciences: 1901 to 2004

[Presented by location of award-winning research and by date of award]

Country	1901-2004				1901–1930	1931–1945	1946–1960	1961–1975	1976–1990	1991–2003	2004
	Total	Physics	Chemistry	Physiology/Medicine							
Total	502	174	146	182	93	49	74	92	98	82	8
United States	225	80	54	91	6	14	38	41	63	59	6
United Kingdom	76	21	27	28	15	11	14	20	9	6	–
Germany	63	19	29	15	27	11	4	8	7	4	–
France	25	11	7	7	13	2	–	5	2	3	–
Soviet Union/Russia	12	9	1	2	2	–	4	3	1	2	–
Japan	8	4	4	–	–	–	1	2	1	4	–
Other countries	93	30	24	39	30	11	13	13	15	4	2

– Represents zero. ¹ Between 1946 and 1991, data are for the former West Germany only.

Source: U.S. National Science Foundation, unpublished data.