Section 16

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. 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 775. **Research and Development (R&D) Expenditures by Source and Objective: 1970 to 2006**

[**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	Nonprofit	Nonfederal 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	17,287	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	662	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	63,224	29,986	30,929	920	871	519	24	5	70	8,745	13,714	40,765
1981	72,292	33,739	35,948	1,058	967	581	24	5	70	9,658	16,329	46,305
1982	80,748	37,133	40,692	1,207	1,095	621	26	5	69	10,651	18,218	51,879
1983	89,950	41,451	45,264	1,357	1,220	658	28	4	68	11,880	20,298	57,771
1984	102,244	46,470	52,187	1,514	1,351	721	29	3	68	13,332	22,451	66,461
1985	114,671	52,641	57,962	1,743	1,491	834	30	3	67	14,748	25,401	74,522
1986	120,249	54,622	60,991	2,019	1,647	969	31	3	66	17,154	27,240	75,855
1987	126,360	58,609	62,576	2,262	1,849	1,065	32	3	65	18,481	27,951	79,929
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	60,464	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	5	73	27,139	38,629	95,104
1992	165,347	60,912	96,229	3,568	3,113	1,525	22	4	74	27,604	37,933	99,810
1993	165,726	60,524	96,549	3,709	3,388	1,557	21	4	74	28,742	37,280	99,704
1994	169,201	60,773	99,203	3,938	3,665	1,622	20	5	76	29,649	36,615	102,937
1995	183,618	62,964	110,870	4,110	3,924	1,751	19	5	77	29,609	40,932	113,077
1996	197,338	63,388	123,416	4,435	4,239	1,860	18	4	78	32,797	43,165	121,375
1997	212,142	64,567	136,227	4,837	4,590	1,921	17	4	79	36,915	46,551	128,676
1998	226,455	66,375	147,845	5,162	5,101	1,971	16	4	80	35,331	46,388	144,736
1999	245,036	67,045	164,660	5,618	5,616	2,098	15	3	82	38,872	52,096	154,068
2000	267,557	66,403	186,135	6,230	6,542	2,246	13	2	84	42,763	56,932	167,862
2001	277,736	72,820	188,439	6,824	7,256	2,396	14	2	84	47,785	64,706	165,245
2002	276,591	77,691	180,711	7,341	8,291	2,556	15	2	82	51,400	51,033	174,157
2003	289,025	83,596	186,174	7,648	8,868	2,740	16	2	82	55,109	61,448	172,468
2004	300,060	88,908	191,376	7,932	8,962	2,882	17	2	81	56,670	70,093	173,297
2005 [4]	323,546	94,635	207,556	8,413	9,949	2,993	17	2	81	60,157	75,252	188,138
2006 [4]	342,886	96,847	223,042	8,909	10,924	3,164	12	2	86	63,648	79,291	199,947

[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 776. **Performance Sector of Research and Development (R&D) Expenditures: 1995 to 2006**

[**In millions of dollars (183,618 represents $183,618,000,000).** 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	Industry					Industry FFRDCs	Universities and colleges						University & college FFRDCs [3]	Other nonprofit institutions			
			Funded by—					Funded by—							Funded by—		
	Total	Federal government	Total	Federal government	Industry [1]		Total	Federal government	Nonfederal government [2]	Industry	Universities & colleges	Nonprofits		Total	Federal government	Industry	Nonprofits
RESEARCH AND DEVELOPMENT TOTAL																	
1995	183,618	16,904	129,830	21,178	108,652	2,273	22,610	13,587	1,751	1,547	4,110	1,616	5,367	5,827	2,847	671	2,308
2000	267,557	17,917	199,961	17,117	182,844	2,001	30,688	17,714	2,246	2,174	6,230	2,325	5,742	9,782	4,447	1,118	4,217
2003	289,025	22,752	200,724	17,798	182,926	2,458	40,457	25,106	2,740	2,129	7,648	2,833	7,301	12,839	5,686	1,118	6,035
2004	300,060	23,044	208,301	20,266	188,035	2,485	43,090	27,140	2,882	2,190	7,932	2,946	7,658	12,838	5,671	1,151	6,016
2005, prel.	323,546	24,744	225,983	21,990	203,994	2,565	45,831	28,944	2,993	2,311	8,413	3,170	7,786	13,822	5,791	1,251	6,779
2006, prel.	342,886	24,408	241,809	22,516	219,293	2,426	49,090	31,223	3,164	2,400	8,909	3,395	7,720	14,599	5,721	1,349	7,530
BASIC RESEARCH																	
1995	29,609	2,689	5,569	190	5,379	530	15,145	9,634	1,069	945	2,510	987	2,702	2,899	1,170	390	1,338
2000	42,763	3,765	7,040	925	6,115	547	22,860	13,912	1,549	1,499	4,296	1,603	2,874	5,061	2,099	621	2,341
2003	55,109	4,664	8,330	1,386	6,944	299	30,354	19,823	1,880	1,461	5,246	1,943	3,747	6,686	2,714	621	3,351
2004	56,670	4,734	7,835	1,072	6,763	175	32,397	21,380	1,991	1,513	5,479	2,035	3,729	6,728	2,749	639	3,340
2005, prel.	60,157	4,921	8,500	1,163	7,337	135	34,437	22,734	2,074	1,602	5,830	2,197	3,780	7,215	2,756	695	3,764
2006, prel.	63,648	4,938	9,078	1,191	7,887	128	36,887	24,524	2,189	1,661	6,164	2,349	3,746	7,697	2,768	749	4,181
APPLIED RESEARCH																	
1995	40,932	4,952	26,919	3,164	23,755	535	5,655	2,775	559	494	1,311	516	1,050	1,692	934	170	589
2000	56,932	6,105	39,176	2,682	36,494	269	6,652	3,350	572	553	1,586	592	1,329	3,183	1,831	283	1,069
2003	61,448	7,672	37,334	4,473	32,861	1,434	8,589	4,637	705	548	1,969	729	1,756	4,300	2,487	283	1,529
2004	70,093	7,532	45,432	4,775	40,657	1,521	8,997	4,951	731	556	2,012	747	1,935	4,312	2,496	292	1,525
2005, prel.	75,252	7,870	49,289	5,181	44,108	1,532	9,625	5,374	753	582	2,118	798	1,918	4,611	2,576	317	1,718
2006, prel.	79,291	7,750	52,721	5,305	47,416	1,482	10,325	5,812	799	606	2,250	857	1,805	4,809	2,559	342	1,908
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	167,862	8,047	153,745	13,510	140,235	1,185	1,177	452	125	121	348	130	1,539	1,537	517	214	807
2003	172,468	10,416	155,060	11,939	143,121	725	1,514	646	155	120	432	160	1,798	1,853	485	214	1,155
2004	173,297	10,778	155,034	14,419	140,615	789	1,696	808	161	122	442	164	1,993	1,798	426	220	1,151
2005, prel.	188,138	11,952	168,195	15,645	152,549	899	1,769	836	165	128	465	175	2,088	1,996	460	239	1,297
2006, prel.	199,947	11,720	180,010	16,020	163,990	816	1,877	887	175	133	494	188	2,168	2,094	395	258	1,441

[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 777. **National Research and Development (R&D) Expenditures as a Percent of Gross Domestic Product by Country: 1985 to 2005**

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	2.72	2.58	2.60	2.15	2.24	1.10	1.42	(NA)	2.22
1990	2.62	2.81	2.61	2.33	2.15	1.25	1.51	2.03	2.26
1995	2.48	2.71	2.19	2.29	1.95	0.97	1.70	0.85	2.07
2000	2.73	3.05	2.45	2.15	1.86	1.05	1.92	1.05	2.23
2002	2.64	3.18	2.49	2.23	1.83	1.13	2.04	1.25	2.24
2003	2.63	3.20	2.52	2.17	1.79	1.11	2.01	1.28	2.25
2004	2.56	3.18	2.50	2.14	1.73	1.10	2.01	1.16	2.25
2005	2.59	(NA)	2.51	2.13	(NA)	(NA)	1.98	1.07	(NA)

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 778. **Federal Obligations for Research in Current and Constant (2000) Dollars by Field of Science: 1980 to 2006**

[**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	2002	2003	2004	2005, prel.	2006, prel.
CURRENT DOLLARS									
Research, total	**11,597**	**21,622**	**28,434**	**38,471**	**48,007**	**51,072**	**53,358**	**55,546**	**54,979**
Basic	4,674	11,286	13,877	19,570	23,668	24,751	26,121	26,919	26,938
Applied	6,923	10,337	14,557	18,901	24,338	26,320	27,237	28,627	28,041
Life sciences	4,192	8,830	11,811	17,965	25,477	27,772	27,729	28,543	28,207
Psychology	199	449	623	1,627	906	1,104	1,855	1,916	1,934
Physical sciences	2,001	3,809	4,278	4,788	4,983	5,022	5,211	5,473	5,394
Environmental sciences	1,261	2,174	2,854	3,329	3,418	3,741	3,742	3,876	3,754
Mathematics and computer sciences	241	841	1,579	2,206	2,631	2,672	2,949	3,115	3,081
Engineering	2,830	4,227	5,708	6,346	8,275	8,405	8,866	9,481	9,397
Social sciences	524	630	679	1,050	983	1,026	1,090	1,132	1,178
Other sciences, n.e.c. [1]	350	664	902	1,160	1,334	1,329	1,916	2,010	2,034
CONSTANT (**2000**) DOLLARS [2]									
Research, total	**21,848**	**26,622**	**30,850**	**38,471**	**46,014**	**48,018**	**48,988**	**49,644**	**47,916**
Basic	8,806	13,896	15,056	19,570	22,686	23,271	23,982	24,059	23,478
Applied	13,043	12,727	15,794	18,901	23,328	24,747	25,007	25,585	24,439
Life sciences	7,898	10,872	12,814	17,965	24,419	26,112	25,458	25,510	24,584
Psychology	375	553	676	1,627	868	1,038	1,703	1,712	1,686
Physical sciences	3,770	4,690	4,641	4,788	4,776	4,721	4,784	4,892	4,701
Environmental sciences	2,376	2,677	3,096	3,329	3,276	3,517	3,435	3,464	3,272
Mathematics and computer sciences	454	1,035	1,713	2,206	2,521	2,513	2,708	2,784	2,685
Engineering	5,332	5,204	6,193	6,346	7,931	7,903	8,140	8,473	8,190
Social sciences	987	776	737	1,050	942	964	1,000	1,011	1,026
Other sciences, n.e.c. [1]	659	818	979	1,160	1,279	1,250	1,759	1,797	1,773

[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 779. **Federal Budget Authority for Research and Development (R&D) in Current and Constant (2000) Dollars by Selected Budget Functions: 2004 to 2007**

[**In millions of dollars (121,867 represents $121,867,000,000).** 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]			
	2004	2005	2006	2007, prel.	2004	2005	2006	2007, prel.
Total [2]	**121,867**	**126,601**	**130,087**	**132,578**	**112,309**	**113,158**	**112,795**	**112,117**
National defense	69,593	74,047	76,154	77,781	64,135	66,184	66,031	65,777
Health	28,251	28,824	28,949	28,902	26,035	25,763	25,101	24,441
Space research and technology	7,612	7,300	8,256	9,268	7,015	6,525	7,159	7,838
Energy	1,343	1,296	1,370	1,346	1,238	1,158	1,188	1,138
General science	6,466	6,570	6,672	7,294	5,959	5,872	5,785	6,168
Natural resources and environment	2,168	2,168	2,136	2,004	1,998	1,938	1,852	1,695
Transportation	1,863	1,847	1,723	1,488	1,717	1,651	1,494	1,258
Agriculture	1,750	1,820	1,866	1,610	1,613	1,627	1,618	1,362

[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 December 2006).

Table 780. **Research and Development (R&D) Expenditures in Science and Engineering at Universities and Colleges in Current and Constant (2000) Dollars: 1990 to 2005**

[**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**	**2005**	**1990**	**1995**	**2000**	**2005**
Total	**16,286**	**22,172**	**30,070**	**45,750**	**20,051**	**24,056**	**30,070**	**40,893**
Basic research [2]	10,643	14,810	22,454	34,384	13,103	16,068	22,454	30,733
Applied R&D [2]	5,643	7,362	7,616	11,367	6,948	7,987	7,616	10,160
Source of funds:								
All governments	9,638	13,333	17,536	29,167	11,866	14,466	17,536	26,070
Institutions' own funds	1,324	1,690	2,200	2,940	1,630	1,834	2,200	2,628
Industry	3,006	4,048	5,924	8,258	3,701	4,392	5,924	7,381
Other	1,127	1,489	2,156	2,292	1,388	1,616	2,156	2,049
Fields:								
Physical sciences	1,807	2,256	2,712	3,704	2,225	2,448	2,712	3,311
Environmental sciences	1,069	1,434	1,765	2,546	1,316	1,556	1,765	2,276
Mathematical sciences	222	279	342	495	273	303	342	442
Computer sciences	515	682	876	1,406	634	740	876	1,257
Life sciences	8,726	12,189	17,469	27,603	10,743	13,224	17,469	24,672
Psychology	253	371	517	826	311	402	517	738
Social sciences	703	1,019	1,299	1,675	866	1,106	1,299	1,498
Other sciences	336	427	535	767	414	463	535	686
Engineering	2,656	3,516	4,555	6,728	3,270	3,814	4,555	6,013

[1] Based on gross domestic product implicit price deflator. [2] Basic research and applied R&D statistics were reestimated 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 781. **Federal Research and Development (R&D) Obligations to Selected Universities and Colleges: 2003 and 2004**

[**In millions of dollars (22,804.3 represents $22,804,300,000). For years ending September 30**. For the top 40 institutions receiving federal R&D funds in 2004. 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 **2004** federal R&D obligations	**2003**	**2004**	Major institution ranked by total **2004** federal R&D obligations	**2003**	**2004**
Total, all institutions [1]	**22,804.3**	**23,810.8**	University of North Carolina		
Johns Hopkins University	961.9	1,034.9	at Chapel Hill	313.2	305.7
University of Washington	565.5	589.6	University Southern California	269.3	288.3
University of Pennsylvania	454.8	494.2	Vanderbilt University	235.0	259.5
University of Michigan	470.5	477.3	Baylor College of Medicine	251.8	252.6
Stanford University	436.6	472.3	University of California—Berkeley	212.3	246.9
University of California—Los Angeles	448.6	471.0	Case Western Reserve University	195.0	241.5
University of California—San Diego	414.1	420.3	University of Rochester	215.0	236.3
University of California—San Francisco	368.5	395.5	The Scripps Research Institute	209.9	229.1
Duke University	377.1	392.6	Emory University	204.6	214.0
Washington University	398.1	386.4	University of Alabama—Birmingham	211.6	211.6
Harvard University	346.2	379.1	University of Chicago	192.6	209.1
University of Pittsburgh	362.4	371.9	Boston University	197.2	208.7
Columbia University—City of NY	363.7	369.5	Northwestern University	194.6	208.5
University of Wisconsin—Madison	346.6	364.0	University of Arizona	190.0	206.9
Yale University	321.6	343.0	University of California—Davis	192.1	205.1
Massachusetts Institute of Technology	273.6	340.2	Ohio State University	185.4	202.9
University of Colorado	313.6	336.7	University of Illinois—Urbana Champaign	205.9	198.2
University of Minnesota	311.8	328.7	University of Virginia	172.8	188.8
Cornell University	294.3	328.6	University of Florida	175.1	179.0
Pennsylvania State University	299.1	316.2	University of Iowa	169.8	178.1

[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 782. **Graduate Science/Engineering Students in Doctorate-Granting Colleges by Characteristic and Field: 1990 to 2005**

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

Field of science or engineering	Total			Characteristic							
				Female			Foreign		Part-time		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**	**2000**	**2005**	**1990**	**2000**	**2005**
Total, all surveyed fields	**397.8**	**433.3**	**524.5**	**149.7**	**195.3**	**253.5**	**122.3**	**141.3**	**123.2**	**118.2**	**146.6**
Science/engineering	350.6	366.7	433.3	113.4	145.6	183.6	116.9	134.2	100.7	94.7	113.3
Engineering, total	99.9	98.4	114.3	13.6	19.6	25.2	46.1	52.2	35.9	27.8	32.1
Sciences, total	250.7	268.3	319.0	99.8	126.0	158.4	70.8	81.9	64.8	66.9	81.1
Physical sciences	32.5	29.3	35.4	7.6	8.7	11.3	11.5	14.4	3.6	3.2	3.5
Environmental	12.9	12.7	10.7	3.8	5.2	6.4	2.6	2.7	3.0	2.6	3.0
Mathematical sciences	17.3	13.8	18.5	5.3	4.9	6.6	5.7	7.3	4.0	2.7	3.9
Computer sciences	27.7	39.5	44.3	6.4	11.4	10.8	19.3	18.7	12.9	16.3	16.7
Agricultural sciences	10.9	11.2	12.2	3.2	4.7	5.7	2.4	2.6	2.0	2.3	3.1
Biological sciences	46.0	52.3	64.4	21.0	27.4	36.0	11.5	16.2	6.8	7.2	8.7
Psychology	35.8	37.7	46.7	23.6	27.0	35.0	2.1	2.8	10.3	9.5	13.8
Social sciences	67.7	71.8	87.8	29.0	36.8	46.6	15.7	17.3	22.1	23.0	28.5
Health fields, total	47.2	66.6	91.2	36.3	49.6	69.9	5.4	7.1	22.5	23.5	33.3

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

Table 783. **Science and Engineering (S&E) Degrees Awarded, by Degree Level and Sex of Recipient: 1980 to 2004**

[For a description of science and engineering degree categories, see Appendix B of source <http://www.nsf.gov/statistics/nsf07307/content.cfm?pub_id=3634&id=4>]

Academic year ending	Bachelor's degrees awarded				Master's degrees awarded				Doctoral degrees awarded			
	Total S&E	Men	Women	Percent women	Total S&E	Men	Women	Percent women	Total S&E	Men	Women	Percent women
1980	304,695	191,215	113,480	37.2	64,089	46,004	18,085	28.2	17,775	13,814	3,961	22.3
1985	332,273	203,402	128,871	38.8	70,578	48,247	22,331	31.6	18,934	14,043	4,891	25.8
1990	329,094	189,082	140,012	42.5	77,788	51,230	26,558	34.1	22,869	16,498	6,371	27.9
1995	378,148	202,217	175,931	46.5	94,309	58,518	35,791	38.0	26,536	18,117	8,287	31.4
2000	398,622	197,669	200,953	50.4	95,683	54,213	41,470	43.3	25,966	16,521	9,393	36.2
2001	400,206	197,623	202,583	50.6	98,986	55,593	43,393	43.8	25,548	16,174	9,331	36.6
2002	415,611	204,408	211,203	50.8	99,173	55,701	43,472	43.8	24,588	15,374	9,159	37.3
2003	439,434	218,057	221,377	50.4	107,739	61,140	46,599	43.3	25,289	15,728	9,477	37.6
2004	454,978	225,566	229,412	50.4	118,379	66,764	51,615	43.6	26,275	16,405	9,819	37.4

Source: U.S. National Science Foundation, *Science and Engineering Degrees: 1966–2004* (published January 2007). See also <http://www.nsf.gov/statistics/nsf07307/>.

Table 784. **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			
Not employed	18	20	Non-S&E degrees only (1,000)	15,723	21,395
			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			
Not employed	18	19	Degrees in more than one broad field [1] (1,000)	3,676	5,568
			S&E occupations	11	12
S&E-related degrees only (1,000)	2,469	3,540	S&E-related or non-S&E occupations	76	72
S&E occupations	6	6	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 785. **Profile of Employed College Graduates by Employment Sector and Occupation Group: 2003**

[**In thousands (32,575 represents $32,575,000,000), except as noted**. 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 786. **Doctorates Conferred by Characteristics of Recipients: 2000 and 2005**

[**In percent, except as indicated**. Based on the Survey of Earned Doctorate Awards; for description of methodology, see source]

Characteristic	2000, total [1]	2005									
		All fields [1]	Engineering	Physical sciences [2]	Earth sciences	Mathematics	Computer sciences	Biological sciences [3]	Agricultural	Social sciences [4]	Psychology
Total conferred (number)	**41,361**	**43,354**	**6,404**	**3,647**	**713**	**1,203**	**1,136**	**6,368**	**1,038**	**4,138**	**3,327**
Male	56.0	54.7	81.4	73.3	65.9	72.7	80.0	51.1	63.5	55.2	31.9
Female	43.8	45.1	18.3	26.7	34.1	27.1	19.8	48.8	36.2	44.7	68.0
CITIZENSHIP [5]											
Total conferred (number)	**39,596**	**40,736**	**6,038**	**3,450**	**675**	**1,143**	**1,072**	**6,073**	**972**	**3,904**	**3,101**
U.S. citizen	70.7	64.6	33.1	51.2	62.4	42.0	37.8	68.2	54.2	60.5	90.6
Foreign citizen	29.3	35.4	66.9	48.8	37.6	58.0	62.2	31.8	45.8	39.5	9.4
RACE/ETHNICITY [6]											
Total conferred (number)	**29,936**	**27,912**	**2,284**	**1,900**	**442**	**541**	**473**	**4,396**	**557**	**2,540**	**2,891**
White [7]	79.2	76.9	70.2	79.0	86.9	76.3	69.1	75.9	87.3	76.2	79.1
Black [7]	5.8	6.4	4.4	2.9	1.4	4.1	3.2	3.6	2.9	6.7	5.7
Asian/Pacific [7]	7.6	7.8	17.7	10.3	4.1	12.2	19.5	12.2	3.9	6.6	4.5
Indian/Alaskan [7]	0.6	0.5	0.4	0.2	0.9	0.0	0.2	0.3	0.5	0.7	0.5
Hispanic	4.4	5.1	3.9	3.9	4.1	4.4	2.5	5.2	3.2	5.9	6.5
Other/unknown [8]	2.4	3.2	3.4	3.7	2.7	3.0	5.5	2.9	2.2	4.0	3.7

[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 those with known citizenship. Includes those with temporary visas. [6] Excludes those with temporary visas. [7] Non-Hispanic. [8] 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/nsf07305/> (released December 2006).

Table 787. **Doctorates Awarded by Field of Study and Year of Doctorate: 1999 to 2005**

Field of study	1999	2000	2001	2002	2003	2004	2005
Grand total, all fields	**41,092**	**41,361**	**40,651**	**39,953**	**40,740**	**42,117**	**43,354**
Science and engineering, total	25,931	25,966	25,496	24,582	25,274	26,272	27,974
Engineering, total	5,330	5,323	5,508	5,077	5,279	5,775	6,404
Aeronautical/astronautical	206	214	203	209	200	201	219
Chemical	674	726	730	705	648	725	875
Civil	584	556	595	627	673	673	757
Electrical	1,478	1,543	1,577	1,393	1,465	1,650	1,852
Industrial/manufacturing	211	176	206	230	214	217	222
Materials/metallurgical	469	451	497	396	474	511	540
Mechanical	855	864	953	827	814	852	978
Other	853	793	747	690	791	946	961
Science, total	20,601	20,643	19,988	19,505	19,995	20,497	21,570
Biological/agricultural sciences	6,646	6,890	6,668	6,699	6,753	6,984	7,406
Agricultural sciences	1,065	1,037	975	1,009	1,060	1,045	1,038
Biological sciences	5,581	5,853	5,693	5,690	5,693	5,939	6,368
Earth, atmospheric, and ocean sciences, total	723	694	660	689	683	686	713
Atmospheric	124	143	116	117	139	126	144
Earth	452	387	393	426	374	420	420
Ocean sciences	147	164	151	146	170	140	149
Mathematical/computer sciences, total	1,939	1,910	1,832	1,726	1,859	2,024	2,339
Computer sciences	856	860	825	807	866	948	1,136
Mathematics	1,083	1,050	1,007	919	993	1,076	1,203
Physical sciences, total	3,562	3,378	3,364	3,185	3,289	3,338	3,647
Astronomy	159	185	186	141	167	165	186
Chemistry	2,132	1,989	1,981	1,921	2,041	1,987	2,127
Physics	1,271	1,204	1,197	1,123	1,081	1,186	1,334
Psychology	3,668	3,616	3,385	3,197	3,273	3,327	3,327
Social sciences, total	4,063	4,155	4,079	4,009	4,138	4,138	4,138
Economics	1,075	1,086	1,081	1,026	1,050	1,069	1,184
Political science	1,016	986	984	938	1,024	946	990
Sociology	572	637	577	566	612	599	555
Other social sciences	1,400	1,446	1,437	1,479	1,452	1,524	1,409
Nonscience and engineering, total	15,161	15,395	15,155	15,371	15,466	15,845	15,380
Education	6,546	6,432	6,332	6,491	6,638	6,633	6,229
Health	1,407	1,591	1,541	1,653	1,633	1,719	1,777
Humanities	5,035	5,213	5,160	5,029	5,018	5,013	4,947
Professional/other/unknown	2,173	2,159	2,122	2,198	2,177	2,480	2,427

Source: U.S. National Science Foundation, *Science and Engineering Doctorate Awards*, annual. See also <http://www.nsf.gov/statistics/nsf07305/> (released December 2006).

Table 788. **Non-U.S. Citizens Awarded Doctorates in Science and Engineering by Visa Type and Country of Citizenship: 1996 to 2005**

[For description of science and engineering fields, see Table 787]

Visa and country/economy	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
All non-U.S. citizens	**10,911**	**9,788**	**9,734**	**8,892**	**9,067**	**9,213**	**8,861**	**9,480**	**10,154**	**11,516**
Canada	278	263	286	289	294	306	315	323	380	365
Mexico	162	148	176	172	208	206	182	217	181	206
Brazil	209	151	164	164	131	142	126	108	136	156
United Kingdom	118	92	124	142	100	138	134	109	109	107
Germany	171	181	210	183	229	220	197	191	185	180
China	3,033	2,395	2,502	2,233	2,378	2,404	2,401	2,495	2,877	3,448
Japan	169	155	155	158	201	149	157	201	186	211
Korea	991	901	822	760	753	865	856	956	1,056	1,170
Taiwan	1,166	1,093	909	746	676	539	469	440	394	442
Thailand	119	97	122	134	153	236	264	312	272	251
India	1,287	1,281	1,134	915	834	817	681	769	863	1,103
Iran	152	113	93	92	80	100	58	68	60	136
Turkey	153	170	172	192	275	307	343	373	344	340
Science	7,356	6,640	6,677	6,297	6,266	6,127	5,940	6,304	6,604	7,477
Engineering	3,555	3,148	3,057	2,595	2,801	3,086	2,921	3,176	3,550	4,039
Permanent visa	3,009	2,281	1,991	1,654	1,409	1,270	1,170	1,098	1,003	1,112
Temporary visa	7,902	7,507	7,743	7,238	7,658	7,943	7,691	8,382	9,151	10,404

Source: U.S. National Science Foundation, *Science and Engineering Doctorate Awards*, annual. See also <http://www.nsf.gov/statistics/nsf07305/> (released December 2006).

Table 789. **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							Self employed [3]
		Mining [2]	Construction	Manufacturing	Information	Professional, scientific and technical services	Government	Other service-providing industries	
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 [5]	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 790. **Individuals in Science and Engineering (S&E) Occupations as Share of Workforce by State and Other Areas: 2006**

[**In thousands (3,661.3 represents 3,661,300), except as noted. As of May 2006**. The Occupational Employment Statistics Survey (OES) collects data in six semiannual panels over a 3-year period on occupational employment and wages of wage and salary workers in nonfarm establishments in the United States, Guam, Puerto Rico, and the Virgin Islands. The OES survey uses the Standard Occupational Classification (SOC) system to categorize workers in 1 of 801 detailed occupations. For a list of occupations see <http://www.bls.gov/oes/current/oes_stru.htm>. For more information about methodology, see <http://www.bls.gov/oes/current/oes_tec.htm>]

State	2006			State	2006		
	S&E occupations [1]	Employed workforce	Workforce in S&E occupations [1] (percent)		S&E occupations [1]	Employed workforce	Workforce in S&E occupations [1] (percent)
United States	**3,661.3**	**132,605.0**	**2.8**	Nebraska	19.3	901.1	2.1
				Nevada	25.0	1,257.9	2.0
Alabama	50.5	1,912.2	2.6	New Hampshire	16.6	627.6	2.6
Alaska	12.2	303.9	4.0	New Jersey	99.5	3,957.5	2.5
Arizona	75.5	2,574.2	2.9	New Mexico	30.6	789.4	3.9
Arkansas	20.8	1,166.8	1.8	New York	194.2	8,387.8	2.3
California	481.4	15,065.8	3.2	North Carolina	91.7	3,892.7	2.4
Colorado	83.3	2,207.1	3.8	North Dakota	7.7	335.7	2.3
Connecticut	51.1	1,659.0	3.1	Ohio	125.5	5,354.2	2.3
Delaware	7.3	424.3	1.7	Oklahoma	35.9	1,503.4	2.4
District of Columbia	35.2	609.4	5.8	Oregon	53.2	1,648.7	3.2
Florida	177.5	7,869.2	2.3	Pennsylvania	148.2	5,631.5	2.6
Georgia	76.0	4,001.6	1.9	Rhode Island	11.9	482.6	2.5
Hawaii	14.9	599.1	2.5	South Carolina	46.0	1,840.2	2.5
Idaho	24.9	624.3	4.0	South Dakota	7.9	381.2	2.1
Illinois	130.8	5,826.7	2.2	Tennessee	48.5	2,718.4	1.8
Indiana	63.6	2,913.2	2.2	Texas	294.1	9,761.0	3.0
Iowa	28.3	1,470.2	1.9	Utah	35.6	1,151.0	3.1
Kansas	35.4	1,321.2	2.7	Vermont	9.4	299.6	3.1
Kentucky	32.5	1,779.8	1.8	Virginia	119.0	3,608.4	3.3
Louisiana	40.8	1,777.0	2.3	Washington	116.1	2,736.9	4.2
Maine	13.8	596.9	2.3	West Virginia	15.9	710.6	2.2
Maryland	92.9	2,531.2	3.7	Wisconsin	75.7	2,744.2	2.8
Massachusetts	120.9	3,170.5	3.8	Wyoming	8.6	262.3	3.3
Michigan	167.6	4,294.3	3.9				
Minnesota	81.6	2,682.9	3.0	Guam	1.1	54.7	2.1
Mississippi	6.7	1,113.0	0.6	Puerto Rico	23.7	1,031.7	2.3
Missouri	58.8	2,700.5	2.2	Virgin Islands	0.4	44.3	0.9
Montana	14.5	427.1	3.4				

[1] Science and Engineering includes those occupations listed under SOC 17-0000 and SOC 19-0000.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment and Wage Estimates; and Local Area Unemployment Statistics. See also <http://www.bls.gov/oes/home.htm>.

Table 791. **Research and Development (R&D) Scientists and Engineers—Employment and Cost by Industry: 2002 to 2004**

[**1,073.3 represents 1,073,300**]

Industry	NAICS [1] code	Employed scientists and engineers [2] (1,000)			Cost per scientist or engineer, Constant (**2000**) dollars [3, 4] ($1,000)		
		2002	**2003**	**2004**	**2002**	**2003**	**2004**
All industries [5]	**(X)**	**1,073.3**	**1,115.8**	**1,133.7**	**181.5**	**180.8**	**181.3**
Chemicals	325	84.2	89.1	105.0	239.2	245.1	302.3
Machinery	333	56.2	55.9	59.0	115.4	111.5	109.8
Electrical equipment, appliances, and components	335	23.8	15.2	17.9	149.8	(D)	(D)
Motor vehicles, trailers, and parts	3361–3363	69.6	41.6	(NA)	(D)	(D)	(D)
Aerospace products and parts	3364	25.8	36.6	39.3	(D)	405.9	320.3
Transportation and warehousing services	48, 49	0.4	–	–	(D)	(D)	(D)
Software publishing	5112	81.0	93.6	100.1	163.0	155.3	168.7
Architectural, engineering, and related services	5413	28.0	35.3	39.9	152.7	141.9	111.6
Computer systems design and related services	5415	76.8	77.8	69.7	133.2	152.7	163.8
Scientific R&D services	5417	55.0	48.5	45.8	260.2	258.1	293.1
Management of companies and enterprises	55	1.5	1.0	(NA)	167.6	162.2	(NA)

– Represents or rounds to zero. D Withheld to avoid disclosure. NA Not available. 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 (released February 2007). See also <http://www.nsf.gov/statistics/showpub.cfm?TopID=5&SubID=36>.

Table 792. **Research and Development (R&D) Funds in R&D-Performing Manufacturing and Nonmanufacturing Companies by Industry: 2002 to 2004**

Industry	NAICS [1] code	Total R&D funds as a percent of net sales			Company R&D funds as a percent of net sales		
		2002	2003	2004	2002	2003	2004
All industries, total	**(X)**	**3.9**	**3.5**	**3.7**	**3.6**	**3.2**	**3.4**
All manufacturing industries, total	**(X)**	**3.7**	**3.5**	**3.8**	**3.3**	**3.1**	**3.4**
Food	311	(D)	(D)	0.6	0.6	0.6	0.6
Paper, printing, and support activities	322, 326	(D)	(D)	(D)	1.3	1.1	1.5
Petroleum and coal products	324	(D)	(D)	0.4	0.4	0.3	0.4
Chemicals	325	6.0	5.7	(D)	5.9	5.6	6.6
Plastic and rubber products	326	(D)	2.1	(D)	1.8	2.1	1.6
Nonmetallic mineral products	327	(D)	1.0	1.8	1.2	1.0	1.8
Primary metals	331	0.7	0.7	0.7	0.7	0.7	0.7
Fabricated metal products	332	1.5	1.6	1.5	1.4	1.5	1.4
Machinery	333	4.4	4.2	3.7	4.3	4.2	3.6
Navigational, measuring, electromedical, and control instruments	3345	8.7	12.9	13.8	5.4	7.2	7.1
Electrical equipment, appliances, and components	335	2.8	2.2	2.8	2.7	2.2	2.7
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	2.4	3.1	2.4	2.4
Aerospace products and parts	3364	4.1	6.8	5.7	2.3	3.5	4.0
All nonmanufacturing industries, total	**(X)**	**4.4**	**3.6**	**3.5**	**4.1**	**3.3**	**3.2**
Transportation and warehousing services	48, 49	(D)	0.4	(D)	0.5	0.4	0.5
Software publishing	5112	21.5	(D)	(D)	21.4	23.4	23.3
Architectural, engineering, and related services	5413	7.8	12.3	12.2	5.3	7.8	6.6
Computer systems design and related services	5415	16.5	11.1	12.1	14.3	9.8	11.7
Scientific R&D services	5417	21.3	19.4	35.8	17.6	16.5	29.6
Management of companies and enterprises	55	7.6	4.1	(NA)	7.6	4.1	(NA)

D Figure withheld to avoid disclosure of information pertaining to a specific organization or individual. NA Not available. X Not applicable. [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&SeriID=26>.

Table 793. **Funds for Performance of Industrial Research and Development (R&D) by Selected Industries: 2001 to 2004**

[**In millions of dollars (202,017 represents $202,017,000,000). For calendar years.** Covers basic research, applied research, and development. Based on the Survey of Industry Research and Development]

Industry	NAICS [1] code	2001	2002	2003	2004
CURRENT DOLLARS					
Total funds [2]	**(X)**	**202,017**	**193,868**	**200,724**	**208,301**
Company and other funds	**(X)**	**185,118**	**177,467**	**182,926**	**188,035**
Federal funds	**(X)**	**16,899**	**16,401**	**20,699**	**20,266**
Petroleum and coal products	324	(D)	(D)	(D)	1,603
Chemicals and allied products	325	17,892	20,641	23,001	(D)
Pharmaceuticals and medicines	3254	10,371	(D)	(D)	31,477
Machinery	333	6,404	6,429	6,304	6,579
Computer and electronic products	334	47,079	38,881	39,001	48,296
Navigational, measuring, electromedical, and control instruments	3345	12,947	13,729	14,014	15,214
Electrical equipment, appliances, and components	335	4,980	2,039	2,073	2,664
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	(D)	15,677
Aerospace products and parts	3364	7,868	9,654	13,205	13,086
Information	51	(D)	17,870	(D)	22,593
Professional, scientific, and technical services	54	27,704	30,358	27,967	28,709
Computer systems design and related services	5415	9,154	11,983	9,032	11,575
Scientific R&D services	5417	14,244	13,034	12,460	11,355
All other [2]	(X)	(D)	(D)	(D)	(D)
CONSTANT (**2000**) DOLLARS [3]					
Total funds [2]	**(X)**	**197,282**	**186,072**	**188,828**	**190,927**
Company and other funds	**(X)**	**180,779**	**170,330**	**172,085**	**172,351**
Federal funds	**(X)**	**16,503**	**15,741**	**19,472**	**18,576**
Petroleum and coal products	324	(D)	(D)	(D)	1,469
Chemicals	325	17,473	19,811	21,638	(D)
Pharmaceuticals and medicines	3254	10,128	(D)	(D)	28,852
Machinery	333	6,254	6,170	5,930	6,030
Computer and electronic products	334	45,976	37,317	36,690	44,268
Navigational, measuring, electromedical, and control instruments	3345	12,644	13,177	13,183	13,945
Electrical equipment, appliances, and components	335	4,863	1,957	1,950	2,442
Motor vehicles, trailers, and parts	3361-3363	(D)	(D)	(D)	14,369
Aerospace products and parts	3364	7,684	9,266	12,422	11,995
Information	51	(D)	17,151	(D)	20,709
Professional, scientific, and technical services	54	27,055	29,137	26,310	26,314
Computer systems design and related services	5415	8,939	11,501	8,497	10,610
Scientific R&D services	5417	13,910	12,510	11,722	10,408
All other [2]	(X)	(D)	(D)	(D)	(D)

D Figure withheld to avoid disclosure of information pertaining to a specific organization or individual. X Not applicable. [1] North American Industry Classification System, 1997; see text, Section 15. [2] 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. See also <http://www.nsf.gov/statistics/pubseri.cfm?TopID=2&SubID=5&SeriID=26>.

Table 794. **Space Vehicle Systems—Net Sales and Backlog Orders: 1970 to 2005**

[**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	2000	8,164	3,723	4,441	21,395	8,942	12,453
1975	2,119	1,096	1,023	1,304	1,019	285	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)
1985	6,300	4,241	2,059	6,707	4,941	1,766	2003 [1]	7,325	(D)	(D)	14,037	(D)	(D)
1990	9,691	6,556	3,135	12,462	8,130	4,332	2004 [1]	7,320	(D)	(D)	19,413	(D)	(D)
1995	11,314	4,782	6,532	15,650	5,872	9,778	2005 [1]	3,258	(D)	(D)	19,337	(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; and Aerospace Industry*, annual. See also <http://www.census.gov/industry/1/m336g0513.pdf>.

Table 795. **Federal Outlays for General Science, Space, and Other Technology, 1970 to 2006, and Projections, 2007 and 2008**

[**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 [1]	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	20.0	7.5	12.5
2006	23.5	9.0	14.5	19.3	7.4	11.9
2007, proj.	24.7	9.3	15.4	20.0	7.5	12.5
2008, proj.	26.5	9.9	16.6	21.0	7.8	13.1

[1] Due to the effects of the Credit Reform Act of 1990 on the measurement and classification of federal credit activities, the discretionary outlays for years prior to 1995 are not strictly comparable to those for 1995 and after. However, the discretionary outlays shown after 1995 are no more than $1 billion higher than they would have been if measured on the same (pre-credit reform) basis as the 1990 outlays.

Source: U.S. Office of Management and Budget, *Budget of the United States, Historical Tables, Fiscal Year 2008,* annual. See also <http://www.gpoaccess.gov/usbudget/fy08/hist.html>.

Table 796. **U.S. and Worldwide Commercial Space Industry Revenue by Type: 2002 to 2005**

[**In billions of dollars (19.3 represents $19,300,000,000).** For calendar years]

Industry	U.S.				World			
	2002	**2003**	**2004**	**2005**	**2002**	**2003**	**2004**	**2005**
Revenue, total	**19.3**	**24.6**	**26.5**	**30.8**	**71.3**	**74.3**	**82.7**	**88.8**
Satellite manufacturing [1]	4.4	4.6	3.9	3.2	11.0	9.8	10.2	7.8
Launch industry	1.0	2.1	1.5	1.5	3.7	3.2	2.8	3.0
Satellite services [2]	13.9	17.9	21.1	26.1	35.6	39.8	46.9	52.8
Ground equipment manufacturing [3]	(NA)	(NA)	(NA)	(NA)	21.0	21.5	22.8	25.2

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, satellite radio, remote sensing, 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, *2005–2006 Satellite Industry Indicators Survey* (copyright). See also <http://www.sia.org/>.

Table 797. **National Aeronautics and Space Administration—Budget Appropriations, 2007, and Projections, 2008 to 2012**

[**In millions of dollars (16,792.3 represents $16,792,300,000).** Figures may not add due to rounding]

Item	2007	2008	2009	2010	2011	2012
Appropriations, total	**16,792.3**	**17,309.4**	**17,614.2**	**18,026.3**	**18,460.4**	**18,905.0**
Science, exploration, & aeronautics	10,650.6	10,483.1	10,868.4	11,364.2	15,386.5	15,888.6
Science	5,466.8	5,516.1	5,555.3	5,600.6	5,656.9	5,802.7
Earth science	1,464.5	1,497.3	1,545.8	1,520.1	1,411.2	1,353.2
Heliophysics	1,028.1	1,057.2	1,028.4	1,091.3	1,241.2	1,307.5
Planetary science	1,411.2	1,395.8	1,676.9	1,720.3	1,738.3	1,748.2
Astrophysics	1,563.0	1,565.8	1,304.2	1,268.9	1,266.2	1,393.8
Exploration systems	4,152.5	3,923.8	4,312.8	4,757.8	8,725.2	9,076.8
Constellation systems	3,232.5	3,068.0	3,451.2	3,784.9	7,666.0	7,993.0
Advanced capabilities	920.0	855.8	861.6	973.0	1,059.1	1,083.9
Aeronautics research & technology	529.3	554.0	546.7	545.3	549.8	554.7
Cross-agency support programs	502.0	489.2	453.5	460.4	454.7	454.4
Education	167.4	153.7	152.8	152.7	149.8	149.6
Advanced business systems	97.4	103.1	69.4	71.6	67.6	67.5
Innovative partnerships program	215.1	198.1	197.2	199.8	200.0	200.0
Shared capability assets program	22.1	34.3	34.2	36.2	37.3	37.2
Exploration capabilities	6,108.3	6,791.7	6,710.3	6,625.7	3,036.6	2,978.0
Space operations	6,108.3	6,791.7	6,710.3	6,625.7	3,036.6	2,978.0
International space station	1,762.6	2,238.6	2,515.1	2,609.2	2,547.5	2,600.8
Space shuttle	4,017.6	4,007.5	3,650.9	3,634.4	116.2	–
Space & flight support	328.1	545.7	544.3	382.0	372.9	377.2
Inspector General	33.5	34.6	35.5	36.4	37.3	38.3

– Represents or rounds to zero.

Source: U.S. National Aeronautics and Space Administration, *Fiscal Year 2008 Budget* <http://www.nasa.gov/about/budget/index.html> (accessed 11 May 2007).

Table 798. **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 [1]	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.