

Appendix table 5-1

**Academic R&D expenditures directed to basic research, applied research, and development: 1970–2002**

(Percent distribution)

Year	All academic R&D	Basic research	Applied research	Development
1970	100.0	76.7	18.7	4.6
1971	100.0	76.7	19.5	3.8
1972	100.0	73.9	22.5	3.7
1973	100.0	71.2	24.6	4.3
1974	100.0	71.0	24.7	4.4
1975	100.0	69.5	26.2	4.4
1976	100.0	68.6	26.7	4.7
1977	100.0	68.3	25.9	5.8
1978	100.0	67.6	25.0	7.5
1979	100.0	67.0	24.8	8.2
1980	100.0	66.8	25.1	8.0
1981	100.0	66.9	25.1	8.0
1982	100.0	67.0	25.2	7.9
1983	100.0	66.9	25.6	7.5
1984	100.0	67.1	25.5	7.4
1985	100.0	68.1	24.5	7.3
1986	100.0	68.8	24.1	7.1
1987	100.0	67.5	25.1	7.4
1988	100.0	65.7	26.6	7.7
1989	100.0	65.4	26.8	7.8
1990	100.0	65.7	26.0	8.3
1991	100.0	66.3	25.3	8.4
1992	100.0	66.6	25.2	8.2
1993	100.0	66.6	25.1	8.3
1994	100.0	66.6	24.9	8.4
1995	100.0	67.0	25.0	8.0
1996	100.0	67.6	24.8	7.6
1997	100.0	71.0	22.2	6.9
1998	100.0	73.8	19.9	6.2
1999	100.0	74.3	20.8	4.9
2000	100.0	74.3	21.8	3.9
2001	100.0	74.0	22.1	3.9
2002	100.0	74.1	22.2	3.7

NOTES: Data for 2001 and 2002 are preliminary. Expenditure levels for academic R&D are also in reference to calendar years. These levels are approximations based on FY data. Because of changes in estimation procedures, the character of work data before FY 1998 is not comparable with that of later years. For details of methodological issues of measurement, see *The Methodology Underlying the Measurement of R&D Expenditures: 2002* (NSF/SRS, Arlington, VA, forthcoming). Data are based on annual reports by performers. See appendix tables 4-3, 4-7, 4-11, and 4-15.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *National Patterns of R&D Resources* (Arlington, VA, annual series).

Appendix table 5-2

(Page 1 of 2)

## Support for academic R&amp;D, by sector: 1972–2001

Year	All sources	Federal Government	State/local government	Industry	Academic institutions	All other sources
Millions of current dollars						
1972 .....	2,630	1,795	270	74	305	187
1973 .....	2,884	1,985	295	84	318	202
1974 .....	3,023	2,032	307	96	370	218
1975 .....	3,409	2,288	332	113	417	259
1976 .....	3,729	2,512	364	123	446	285
1977 .....	4,067	2,726	374	139	514	314
1978 .....	4,625	3,059	414	170	623	359
1979 .....	5,366	3,598	472	193	735	368
1980 .....	6,063	4,098	491	236	835	403
1981 .....	6,847	4,571	546	291	1,004	435
1982 .....	7,324	4,768	616	337	1,111	491
1983 .....	7,882	4,989	626	389	1,302	576
1984 .....	8,620	5,431	690	475	1,411	613
1985 .....	9,687	6,064	752	560	1,617	694
1986 .....	10,928	6,712	915	700	1,869	732
1987 .....	12,153	7,343	1,023	790	2,168	828
1988 .....	13,463	8,193	1,106	872	2,356	935
1989 .....	14,977	8,991	1,224	994	2,698	1,071
1990 .....	16,286	9,638	1,324	1,127	3,006	1,191
1991 .....	17,585	10,234	1,474	1,204	3,367	1,307
1992 .....	18,818	11,093	1,491	1,279	3,547	1,409
1993 .....	19,951	11,957	1,559	1,360	3,589	1,486
1994 .....	21,023	12,646	1,554	1,422	3,827	1,574
1995 .....	22,165	13,328	1,689	1,489	4,047	1,613
1996 .....	23,040	13,836	1,811	1,605	4,170	1,618
1997 .....	24,363	14,309	1,909	1,737	4,697	1,711
1998 .....	25,848	15,145	1,944	1,888	5,002	1,869
1999 .....	27,505	16,071	2,019	2,028	5,395	1,992
2000 .....	30,042	17,508	2,196	2,152	5,933	2,253
2001 .....	32,723	19,191	2,315	2,234	6,553	2,430
Millions of constant 1996 dollars						
1972 .....	8,399	5,731	861	238	973	596
1973 .....	8,817	6,070	901	257	973	617
1974 .....	8,626	5,800	876	274	1,055	622
1975 .....	8,815	5,917	858	292	1,079	669
1976 .....	9,007	6,067	879	297	1,076	688
1977 .....	9,137	6,125	840	312	1,155	705
1978 .....	9,724	6,431	871	357	1,309	755
1979 .....	10,436	6,998	918	376	1,430	715
1980 .....	10,828	7,319	877	421	1,492	719
1981 .....	11,148	7,443	889	475	1,634	708
1982 .....	11,144	7,255	938	513	1,690	747
1983 .....	11,488	7,272	912	566	1,897	840
1984 .....	12,118	7,634	971	668	1,983	862
1985 .....	13,182	8,252	1,023	762	2,200	944
1986 .....	14,520	8,918	1,216	930	2,483	973
1987 .....	15,715	9,496	1,323	1,022	2,804	1,070
1988 .....	16,858	10,259	1,385	1,092	2,950	1,171
1989 .....	18,059	10,841	1,475	1,198	3,253	1,291
1990 .....	18,926	11,200	1,539	1,310	3,493	1,384
1991 .....	19,671	11,448	1,648	1,347	3,766	1,462
1992 .....	20,512	12,091	1,625	1,394	3,867	1,535
1993 .....	21,240	12,729	1,659	1,448	3,821	1,582
1994 .....	21,908	13,179	1,619	1,482	3,988	1,640
1995 .....	22,608	13,594	1,723	1,519	4,128	1,645
1996 .....	23,040	13,836	1,811	1,605	4,170	1,618
1997 .....	23,897	14,036	1,872	1,703	4,607	1,679
1998 .....	25,000	14,648	1,880	1,826	4,838	1,808
1999 .....	26,235	15,329	1,926	1,934	5,146	1,900
2000 .....	28,114	16,385	2,055	2,014	5,552	2,108
2001 .....	29,892	17,530	2,115	2,040	5,986	2,220

Appendix table 5-2

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**Support for academic R&D, by sector: 1972–2001**

Year	All sources	Federal Government	State/local government	Industry	Academic institutions	All other sources
Percent distribution						
1972 .....	100.0	68.2	10.2	2.8	11.6	7.1
1973 .....	100.0	68.8	10.2	2.9	11.0	7.0
1974 .....	100.0	67.2	10.2	3.2	12.2	7.2
1975 .....	100.0	67.1	9.7	3.3	12.2	7.6
1976 .....	100.0	67.4	9.8	3.3	11.9	7.6
1977 .....	100.0	67.0	9.2	3.4	12.6	7.7
1978 .....	100.0	66.1	9.0	3.7	13.5	7.8
1979 .....	100.0	67.1	8.8	3.6	13.7	6.9
1980 .....	100.0	67.6	8.1	3.9	13.8	6.6
1981 .....	100.0	66.8	8.0	4.3	14.7	6.4
1982 .....	100.0	65.1	8.4	4.6	15.2	6.7
1983 .....	100.0	63.3	7.9	4.9	16.5	7.3
1984 .....	100.0	63.0	8.0	5.5	16.4	7.1
1985 .....	100.0	62.6	7.8	5.8	16.7	7.2
1986 .....	100.0	61.4	8.4	6.4	17.1	6.7
1987 .....	100.0	60.4	8.4	6.5	17.8	6.8
1988 .....	100.0	60.9	8.2	6.5	17.5	6.9
1989 .....	100.0	60.0	8.2	6.6	18.0	7.1
1990 .....	100.0	59.2	8.1	6.9	18.5	7.3
1991 .....	100.0	58.2	8.4	6.8	19.1	7.4
1992 .....	100.0	58.9	7.9	6.8	18.9	7.5
1993 .....	100.0	59.9	7.8	6.8	18.0	7.4
1994 .....	100.0	60.2	7.4	6.8	18.2	7.5
1995 .....	100.0	60.1	7.6	6.7	18.3	7.3
1996 .....	100.0	60.1	7.9	7.0	18.1	7.0
1997 .....	100.0	58.7	7.8	7.1	19.3	7.0
1998 .....	100.0	58.6	7.5	7.3	19.4	7.2
1999 .....	100.0	58.4	7.3	7.4	19.6	7.2
2000 .....	100.0	58.3	7.3	7.2	19.7	7.5
2001 .....	100.0	58.6	7.1	6.8	20.0	7.4

NOTE: See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 1996 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-3  
Sources of R&D funds at private and public institutions: 1981, 1991, and 2001

Source of funds	All institutions		Private institutions		Public institutions	
	Millions of current dollars	Percent distribution	Millions of current dollars	Percent distribution	Millions of current dollars	Percent distribution
1981						
All sources.....	6,847	100.0	2,457	100.0	4,390	100.0
Federal Government .....	4,571	66.8	1,941	79.0	2,630	59.9
State/local government.....	546	8.0	47	1.9	499	11.4
Industry.....	291	4.3	111	4.5	180	4.1
Academic institutions .....	1,004	14.7	182	7.4	821	18.7
Other sources.....	435	6.4	176	7.1	259	5.9
1991						
All sources.....	17,585	100.0	5,846	100.0	11,740	100.0
Federal Government .....	10,234	58.2	4,182	71.5	6,053	51.6
State/local government.....	1,474	8.4	142	2.4	1,331	11.3
Industry.....	1,204	6.8	415	7.1	789	6.7
Academic institutions .....	3,367	19.1	582	10.0	2,785	23.7
Other sources.....	1,307	7.4	524	9.0	782	6.7
2001						
All sources.....	32,723	100.0	10,382	100.0	22,341	100.0
Federal Government .....	19,191	58.6	7,496	72.2	11,695	52.3
State/local government.....	2,315	7.1	236	2.3	2,080	9.3
Industry.....	2,234	6.8	744	7.2	1,489	6.7
Academic institutions .....	6,553	20.0	1,011	9.7	5,542	24.8
Other sources.....	2,430	7.4	895	8.6	1,535	6.9

NOTE: Details may not add to totals and percents may not sum to 100 because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-4

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**Top 100 academic institutions in R&D expenditures, by source of funds: 2001**

(Millions of current dollars)

Rank and academic institution	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
All institutions	32,723	19,191	2,315	2,234	6,553	2,430
1 University of California—Los Angeles (public)	694	313	59	33	190	99
2 University of Wisconsin—Madison (public)	604	304	35	17	188	60
3 University of Michigan, all campuses (public)	601	396	5	34	121	44
4 University of Washington—Seattle (public)	590	435	12	43	88	11
5 University of California—San Diego (public)	557	343	21	37	102	54
6 University of California—San Francisco (public)	525	277	22	36	111	79
7 Johns Hopkins University <sup>a</sup> (private)	517	417	1	16	35	48
8 Stanford University (private)	483	384	5	35	31	27
9 Johns Hopkins University Applied Physics Laboratory <sup>a</sup> (private)	482	463	—	2	16	—
10 University of Pennsylvania (private)	470	352	2	28	44	44
Total, top 10	5,522	3,685	164	282	924	467
11 University of Minnesota, all campuses (public)	462	264	58	26	80	33
12 Pennsylvania State University, all campuses (public)	458	246	24	68	112	9
13 University of California—Berkeley (public)	446	208	30	27	128	53
14 Cornell University, all campuses (private)	444	240	63	22	80	38
15 Massachusetts Institute of Technology	435	304	—	97	6	28
16 University of California—Davis (public)	432	155	50	17	171	39
17 Texas A&M University, all campuses (public)	407	149	100	35	116	6
18 Washington University (private)	407	285	7	25	59	32
19 University of Illinois at Urbana-Champaign (public)	391	195	49	11	120	16
20 Ohio State University, all campuses (public)	391	161	55	55	86	34
Total, top 20	9,795	5,894	598	665	1,883	754
21 Baylor College of Medicine (private)	381	234	4	18	56	69
22 Duke University (private)	375	218	8	104	19	26
23 Harvard University (private)	372	300	2	14	0	56
24 University of Arizona (public)	367	199	8	23	119	17
25 University of Colorado, all campuses (public)	365	309	3	9	30	15
26 University of Florida (public)	359	140	74	36	99	10
27 Columbia University in the City of New York (private)	354	318	1	3	13	19
28 University of Pittsburgh, all campuses (public)	349	269	5	15	32	28
29 University of Southern California (private)	341	246	16	23	56	0
30 Yale University (private)	322	251	—	14	18	38
Total, top 30	13,381	8,378	719	925	2,327	1,032
31 Georgia Institute of Technology, all campuses (public)	307	144	11	60	92	0
32 University of North Carolina at Chapel Hill (public)	304	222	16	7	59	0
33 North Carolina State University at Raleigh (public)	299	96	92	38	66	8
34 University of Texas at Austin (public)	295	195	20	30	36	13
35 University of Georgia (public)	272	67	53	14	137	1
36 Louisiana State University, all campuses (public)	269	95	74	17	65	19
37 University of Maryland at College Park (public)	267	146	22	7	80	13
38 Michigan State University (public)	266	112	46	11	88	8
39 Indiana University, all campuses (public)	260	117	6	6	103	29
40 Northwestern University (private)	258	158	4	14	60	22
Total, top 40	16,178	9,729	1,062	1,129	3,112	1,144
41 University of Iowa (public)	255	155	7	21	53	19
42 Purdue University, all campuses (public)	255	98	36	30	90	—
43 University of Maryland at Baltimore (public)	239	99	27	41	34	38
44 Emory University (private)	237	170	4	8	20	35
45 Rutgers the State University of New Jersey, all campuses (public)	237	77	28	11	90	31
46 University of Rochester (private)	234	167	10	24	20	14
47 University of Illinois at Chicago (public)	233	125	10	11	71	17
48 University of Alabama at Birmingham (public)	232	195	—	8	14	14
49 University of Texas Southwestern Medical Center Dallas (public)	222	132	10	13	6	62
50 Virginia Polytechnic Institute and State University (public)	216	77	58	18	53	10
Total, top 50	18,539	11,025	1,252	1,315	3,563	1,383
51 California Institute of Technology (private)	215	194	1	10	10	0
52 University of Texas M.D. Anderson Cancer Center (public)	213	94	0	27	59	33
53 University of Kentucky, all campuses (public)	212	86	38	13	61	14
54 Case Western Reserve University (private)	198	159	4	6	12	18
55 University of Utah (public)	198	127	2	6	35	27

Appendix table 5-4

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**Top 100 academic institutions in R&D expenditures, by source of funds: 2001**

(Millions of current dollars)

Rank and academic institution	All sources	Federal government	State/local government	Industry	Academic institutions	All other sources
56 University of Chicago (private).....	194	156	4	2	14	18
57 University of Cincinnati, all campuses (public).....	193	128	4	6	41	14
58 New York University (private).....	191	130	3	7	26	26
59 SUNY at Buffalo, all campuses (public).....	187	97	5	12	50	23
60 Vanderbilt University (private).....	187	146	—	3	21	16
Total, top 60.....	20,525	12,341	1,313	1,406	3,892	1,572
61 University of California—Irvine (public).....	180	102	8	16	31	23
62 Iowa State University (public).....	179	62	52	13	49	3
63 Mount Sinai School of Medicine (private).....	177	109	3	18	17	30
64 Wayne State University (public).....	176	79	12	11	55	18
65 University of Missouri, Columbia (public).....	175	68	16	5	79	7
66 Boston University (private).....	172	151	—	8	0	12
67 University of South Florida (public).....	172	59	9	11	76	17
68 SUNY at Stony Brook, all campuses (public).....	168	93	3	7	54	11
69 University of Connecticut, all campuses (public).....	164	70	14	10	55	16
70 University of Medicine and Dentistry of New Jersey (public).....	162	86	9	13	38	15
Total, top 70.....	22,251	13,221	1,440	1,519	4,346	1,723
71 University of Tennessee system (public).....	162	79	34	15	18	16
72 Colorado State University (public).....	161	101	16	9	26	9
73 University of Nebraska at Lincoln (public).....	158	44	4	6	101	3
74 University of Hawaii at Manoa (public).....	157	98	33	7	19	0
75 University of New Mexico, all campuses (public).....	157	110	2	2	37	6
76 University of Kansas, all campuses (public).....	156	74	7	4	52	18
77 Oregon State University (public).....	154	85	37	—	27	5
78 University of Miami (private).....	154	112	2	18	8	14
79 University of Virginia, all campuses (public).....	150	123	—	8	12	7
80 Princeton University (private).....	149	79	3	8	42	17
Total, top 80.....	23,808	14,125	1,578	1,596	4,688	1,819
81 University of Oklahoma, all campuses (public).....	149	60	14	10	52	11
82 Yeshiva University (private).....	148	108	0	0	40	0
83 Mississippi State University (public).....	147	65	32	7	42	0
84 Rockefeller University (private).....	146	55	6	3	52	29
85 Carnegie Mellon University (private).....	145	97	3	23	0	21
86 Oregon Health Sciences University (public).....	137	112	3	12	0	11
87 University of Texas Health Science Center Houston (public).....	125	89	4	11	8	14
88 Clemson University (public).....	124	49	21	12	42	—
89 Utah State University (public).....	121	74	18	7	17	6
90 Arizona State University (public).....	119	57	4	6	49	4
Total, top 90.....	25,168	14,891	1,684	1,686	4,991	1,914
91 Medical University of South Carolina (public).....	117	61	1	7	46	1
92 University of California—Santa Barbara (public).....	116	77	3	6	19	11
93 University of Texas Health Science Center San Antonio (public).....	115	71	6	10	21	7
94 Florida State University (public).....	114	57	7	—	45	4
95 University of Massachusetts at Worcester (public).....	111	79	22	3	0	6
96 University of Alaska Fairbanks, all campuses (public).....	110	55	3	28	24	0
97 University of South Carolina, all campuses (public).....	110	52	7	4	42	5
98 Dartmouth College (private).....	109	70	4	4	24	8
99 Washington State University (public).....	108	49	5	4	38	11
100 Auburn University, all campuses (public).....	106	40	1	5	56	4
Total, top 100.....	26,285	15,501	1,744	1,758	5,307	1,971

— less than \$1 million

\*Although not officially classified as a federally funded research and development center, the Johns Hopkins University Applied Physics Laboratory functions as one and performs almost as much R&D as the university. It is included as a separate entry to provide a better measure of distribution of academic R&D dollars and ranking of individual institutions.

NOTE: Public and private refer to institutional control.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-5

## Federal and non-Federal R&amp;D expenditures at academic institutions, by field and source of funds: 2001

Field	All R&D expenditures		Federal expenditures		Non-Federal expenditures	
	Millions of dollars	Percent distribution	Millions of dollars	Percent	Millions of dollars	Percent
All fields .....	32,723.1	100.0	19,190.9	58.6	13,532.2	41.4
Sciences.....	27,723.4	84.7	16,347.1	59.0	11,376.3	41.0
Physical sciences .....	2,800.4	8.6	1,971.5	70.4	828.9	29.6
Astronomy.....	378.0	1.2	259.7	68.7	118.3	31.3
Chemistry .....	1,007.1	3.1	660.3	65.6	346.8	34.4
Physics .....	1,236.5	3.8	925.6	74.9	310.9	25.1
Other.....	178.7	0.5	125.9	70.5	52.8	29.5
Mathematics .....	357.3	1.1	241.3	67.5	115.9	32.5
Computer sciences.....	953.8	2.9	643.2	67.4	310.6	32.6
Earth, atmospheric, and ocean sciences .....	1,826.8	5.6	1,182.6	64.7	644.2	35.3
Atmospheric sciences .....	300.4	0.9	232.1	77.3	68.3	22.7
Earth sciences.....	552.5	1.7	328.1	59.4	224.4	40.6
Ocean sciences.....	674.4	2.1	447.9	66.4	226.5	33.6
Other.....	299.5	0.9	174.5	58.3	125.0	41.7
Life sciences .....	19,189.1	58.6	11,178.7	58.3	8,010.4	41.7
Agricultural sciences .....	2,318.1	7.1	613.4	26.5	1,704.7	73.5
Biological sciences.....	5,943.6	18.2	3,872.2	65.1	2,071.4	34.9
Medical sciences.....	10,176.7	31.1	6,248.7	61.4	3,928.1	38.6
Other.....	750.7	2.3	444.5	59.2	306.2	40.8
Psychology .....	581.9	1.8	398.1	68.4	183.8	31.6
Social sciences .....	1,435.5	4.4	544.5	37.9	891.1	62.1
Economics .....	270.9	0.8	89.9	33.2	181.0	66.8
Political science .....	252.2	0.8	71.9	28.5	180.3	71.5
Sociology .....	327.2	1.0	148.2	45.3	179.0	54.7
Other.....	585.2	1.8	234.4	40.1	350.8	59.9
Other sciences .....	578.7	1.8	187.1	32.3	391.5	67.7
Engineering .....	4,999.6	15.3	2,843.8	56.9	2,155.9	43.1
Aeronautical/astronautical .....	338.6	1.0	254.5	75.2	84.1	24.8
Bioengineering/biomedical .....	211.3	0.6	120.7	57.1	90.6	42.9
Chemical .....	413.5	1.3	214.8	51.9	198.7	48.1
Civil.....	666.7	2.0	270.6	40.6	396.1	59.4
Electrical/electronic .....	1,160.4	3.5	725.2	62.5	435.2	37.5
Mechanical.....	685.4	2.1	415.8	60.7	269.6	39.3
Materials .....	450.9	1.4	240.3	53.3	210.7	46.7
Other.....	1,072.7	3.3	601.9	56.1	470.9	43.9

NOTES: Details may not add to totals because of rounding. See appendix table 5-2 for detail on non-Federal sources.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-6

**Academic R&D funds provided by Federal Government, by field: Selected years, 1975–2001**

(Percent)

Field	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
All fields .....	67.1	67.6	62.6	59.2	58.2	58.9	59.9	60.2	60.1	60.1	58.7	58.6	58.4	58.3	58.6
Sciences.....	67.0	67.4	62.9	59.5	58.6	59.3	60.1	60.3	60.2	60.0	58.7	58.7	58.6	58.6	59.0
Physical sciences .....	81.4	81.9	77.5	72.8	71.4	71.8	71.0	71.8	72.6	72.2	71.0	71.0	71.4	70.6	70.4
Astronomy.....	73.4	75.6	67.0	66.1	64.4	66.5	63.8	67.7	68.2	66.1	63.7	62.2	70.9	71.8	68.7
Chemistry .....	76.8	77.7	74.2	68.7	67.3	68.1	68.2	68.2	69.1	69.1	67.2	67.0	67.1	65.6	65.6
Physics .....	86.4	86.8	82.2	77.5	77.1	76.9	75.3	76.0	77.0	76.7	75.9	75.8	75.5	74.7	74.9
Other.....	77.7	78.7	75.1	71.8	66.4	67.7	70.3	70.8	70.8	71.0	71.0	74.7	68.7	66.9	70.5
Mathematics .....	78.6	78.4	75.9	72.6	74.1	74.0	74.6	72.8	73.5	72.2	69.8	69.0	66.8	67.2	67.5
Computer sciences.....	74.3	70.4	69.7	66.5	67.0	68.4	69.7	71.5	70.9	72.7	71.4	68.8	67.7	66.5	67.4
Earth, atmospheric, and ocean sciences.....	70.8	73.1	67.2	63.7	62.7	63.7	66.0	67.6	67.1	67.6	66.0	66.3	65.1	64.2	64.7
Atmospheric sciences .....	NA	84.1	79.8	75.7	74.1	72.1	76.3	79.4	78.6	78.4	76.0	77.8	77.3	77.2	77.3
Earth sciences.....	NA	69.7	60.7	57.7	56.7	57.7	58.5	59.5	59.9	60.0	59.8	60.7	58.9	58.9	59.4
Ocean sciences.....	NA	77.6	72.7	69.6	67.7	71.7	72.0	71.0	70.0	69.6	66.2	66.4	67.1	66.7	66.4
Other.....	70.8	59.1	53.9	50.8	52.7	51.5	58.4	66.6	65.3	67.1	66.9	65.1	60.1	55.8	58.3
Life sciences .....	65.1	64.9	60.4	58.3	57.2	58.0	58.9	58.8	58.4	58.2	57.1	57.1	57.3	57.6	58.3
Agricultural sciences.....	29.4	30.9	29.4	26.2	25.9	27.6	28.9	29.7	29.3	29.3	27.9	26.7	26.8	26.5	26.5
Biological sciences.....	72.5	74.0	67.9	64.5	63.7	64.7	65.3	65.7	64.9	64.7	64.2	64.1	63.9	65.0	65.1
Medical sciences.....	75.6	74.4	68.0	64.3	62.7	62.7	63.3	62.7	63.0	63.0	61.2	61.0	60.8	60.6	61.4
Other.....	71.8	67.3	60.0	59.1	60.0	58.2	59.3	58.8	56.7	58.0	56.9	55.5	58.2	56.9	59.2
Psychology.....	76.8	73.3	66.9	64.8	65.8	65.4	67.0	67.1	67.2	67.7	68.5	67.2	66.6	67.9	68.4
Social sciences .....	55.2	53.8	40.1	32.2	33.7	34.5	37.7	37.6	38.1	38.6	36.3	37.6	37.7	37.8	37.9
Economics .....	48.2	48.8	37.0	27.1	28.6	29.8	33.4	31.4	32.0	33.4	34.4	35.3	33.8	35.0	33.2
Political science .....	41.8	43.4	33.1	22.0	22.8	24.7	28.3	31.0	34.5	34.6	29.5	30.3	27.0	27.3	28.5
Sociology .....	65.5	65.0	53.5	45.5	46.3	50.1	49.7	49.1	48.5	51.6	46.9	47.1	44.9	45.4	45.3
Other.....	55.9	54.1	38.5	33.9	35.5	34.2	38.4	38.4	37.8	36.4	33.9	36.4	40.1	39.3	40.1
Other sciences .....	57.2	53.6	49.3	41.2	33.8	32.4	35.1	37.0	44.9	41.6	40.7	38.5	34.5	34.4	32.3
Engineering .....	68.1	68.6	61.2	57.4	56.4	57.2	58.9	59.4	59.8	60.2	58.8	57.8	57.3	56.6	56.9
Aeronautical/astronautical .....	NA	79.5	76.4	77.7	76.4	76.7	75.2	76.1	76.2	73.5	74.2	68.4	70.3	70.6	75.2
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	61.9	55.5	52.8	52.8	57.1
Chemical .....	NA	64.4	55.6	50.6	48.4	48.4	52.2	54.0	54.2	54.8	52.4	51.8	51.2	52.0	51.9
Civil.....	NA	64.0	51.5	41.1	39.2	42.3	41.6	40.6	43.2	43.5	42.5	39.8	40.9	39.4	40.6
Electrical/electronic.....	NA	75.7	67.7	65.1	64.2	63.9	65.7	65.8	66.4	67.6	66.3	66.4	63.9	62.6	62.5
Mechanical.....	NA	67.0	64.6	61.0	59.7	59.7	64.2	65.3	65.2	64.5	62.3	61.8	62.0	60.6	60.7
Materials.....	NA	NA	NA	50.9	50.4	48.7	50.3	50.2	53.2	54.5	57.2	56.6	56.6	56.6	53.3
Other.....	68.1	65.7	57.3	54.6	54.8	57.6	58.9	60.1	58.4	59.7	55.8	55.4	55.8	56.3	56.1

NA not available

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Science &amp; Engineering Indicators – 2004



## Expenditures for academic R&amp;D, by field: Selected years, 1975–2001

Field	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Millions of current dollars														
All fields .....	3,409	6,063	9,687	16,286	17,585	18,818	19,951	21,023	22,165	23,040	24,363	25,848	27,505	30,042	32,723
Sciences.....	3,028	5,201	8,269	13,630	14,679	15,756	16,795	17,668	18,650	19,333	20,524	21,779	23,245	25,495	27,723
Physical sciences .....	350	677	1,148	1,807	1,939	2,055	2,130	2,177	2,255	2,257	2,370	2,482	2,604	2,708	2,800
Astronomy.....	27	59	96	170	211	238	259	267	304	276	287	302	384	385	378
Chemistry .....	121	244	422	648	671	705	740	759	771	801	820	876	918	960	1,007
Physics .....	174	323	551	842	881	921	940	957	989	987	1,058	1,078	1,149	1,206	1,237
Other.....	29	52	80	147	176	191	191	193	191	193	204	226	152	158	179
Mathematics .....	40	78	128	222	230	248	272	282	279	288	289	310	313	341	357
Computer sciences.....	46	124	281	515	554	555	608	646	682	690	709	746	861	875	954
Earth, atmospheric, and ocean sciences....	255	508	705	1,069	1,119	1,242	1,319	1,396	1,433	1,488	1,532	1,624	1,691	1,763	1,827
Atmospheric sciences .....	NA	76	108	173	175	194	210	203	208	224	245	269	288	287	300
Earth sciences.....	NA	188	254	355	384	413	417	455	456	445	449	513	545	562	553
Ocean sciences.....	NA	176	258	377	389	427	458	455	473	533	537	546	604	633	674
Other.....	255	68	86	164	171	207	234	283	295	285	301	296	254	281	299
Life sciences .....	1,901	3,218	5,279	8,725	9,472	10,196	10,851	11,466	12,186	12,713	13,588	14,593	15,610	17,460	19,189
Agricultural sciences .....	384	676	999	1,349	1,458	1,512	1,558	1,661	1,814	1,910	1,966	1,995	2,035	2,175	2,318
Biological sciences.....	630	1,028	1,781	2,859	3,064	3,304	3,536	3,709	3,834	3,909	4,180	4,581	5,029	5,613	5,944
Medical sciences.....	811	1,423	2,318	4,154	4,546	4,964	5,324	5,639	6,070	6,391	6,908	7,472	7,994	8,986	10,177
Other.....	75	91	181	363	404	417	433	457	468	503	534	545	552	686	751
Psychology .....	80	110	158	253	283	329	350	358	370	381	396	444	464	516	582
Social sciences .....	256	339	383	703	750	815	896	954	1,019	1,096	1,125	1,131	1,251	1,297	1,436
Economics .....	56	91	118	201	209	222	231	243	250	271	261	261	266	255	271
Political science .....	29	54	59	115	125	142	151	161	173	180	175	176	200	230	252
Sociology .....	69	87	75	132	156	163	183	196	215	231	257	253	271	301	327
Other.....	102	107	131	255	260	288	331	354	380	415	432	442	513	512	585
Other sciences .....	100	146	186	336	332	315	369	389	426	418	514	448	451	534	579
Engineering .....	381	862	1,418	2,656	2,907	3,062	3,156	3,355	3,515	3,707	3,839	4,069	4,260	4,547	5,000
Aeronautical/astronautical .....	NA	53	81	164	180	197	213	217	241	233	247	250	260	256	339
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	102	137	172	211
Chemical.....	NA	61	116	218	244	261	274	279	297	317	317	327	349	375	414
Civil.....	NA	83	153	284	315	340	371	403	431	455	472	495	529	600	667
Electrical/electronic.....	NA	183	337	663	679	704	698	745	819	888	942	1,042	1,017	1,116	1,160
Mechanical.....	NA	140	208	391	421	451	483	502	521	519	518	568	625	632	685
Materials.....	NA	NA	NA	274	304	294	299	310	330	349	389	391	384	399	451
Other.....	381	341	523	663	764	817	818	899	877	946	878	894	959	997	1,073
	Millions of constant 1996 dollars														
All fields .....	8,815	10,828	13,182	18,926	19,671	20,512	21,240	21,908	22,608	23,040	23,897	25,000	26,235	28,114	29,892
Sciences.....	7,830	9,289	11,252	15,839	16,419	17,174	17,880	18,412	19,023	19,333	20,132	21,065	22,171	23,859	25,325
Physical sciences .....	906	1,210	1,563	2,100	2,169	2,240	2,268	2,269	2,300	2,257	2,325	2,401	2,484	2,534	2,558
Astronomy.....	69	105	131	198	236	259	275	278	310	276	282	292	367	361	345
Chemistry .....	312	436	574	753	750	768	788	791	787	801	805	847	876	898	920
Physics .....	449	576	750	978	986	1,004	1,001	997	1,009	987	1,038	1,043	1,096	1,128	1,130
Other.....	76	93	109	171	196	209	203	201	195	193	200	218	145	147	163

## Expenditures for academic R&amp;D, by field: Selected years, 1975–2001

Field	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Millions of constant 1996 dollars														
Mathematics .....	103	140	174	258	257	270	290	294	284	288	284	300	299	319	326
Computer sciences.....	118	222	382	598	620	605	647	673	696	690	696	722	821	819	871
Earth, atmospheric, and ocean sciences.....	660	907	960	1,242	1,252	1,354	1,404	1,455	1,462	1,488	1,503	1,570	1,613	1,650	1,669
Atmospheric sciences .....	NA	135	147	201	195	212	224	212	212	224	241	260	275	269	274
Earth sciences.....	NA	336	345	412	430	450	444	474	465	445	440	496	520	526	505
Ocean sciences.....	NA	314	350	438	436	466	488	474	483	533	526	528	576	592	616
Other.....	660	122	117	191	191	226	249	295	301	285	295	286	242	263	274
Life sciences .....	4,916	5,747	7,184	10,140	10,595	11,114	11,553	11,949	12,429	12,713	13,328	14,114	14,889	16,340	17,529
Agricultural sciences.....	993	1,207	1,360	1,567	1,631	1,648	1,659	1,731	1,851	1,910	1,928	1,930	1,941	2,036	2,118
Biological sciences.....	1,630	1,836	2,424	3,323	3,427	3,602	3,765	3,865	3,910	3,909	4,100	4,431	4,797	5,253	5,429
Medical sciences.....	2,098	2,541	3,154	4,828	5,086	5,411	5,668	5,876	6,191	6,391	6,776	7,227	7,625	8,409	9,296
Other.....	195	163	246	422	451	454	461	477	477	503	524	527	526	642	686
Psychology.....	208	196	215	294	317	358	372	373	378	381	388	430	443	483	532
Social sciences .....	662	606	522	817	839	889	954	994	1,039	1,096	1,104	1,094	1,194	1,214	1,311
Economics .....	145	162	161	233	234	242	246	253	255	271	256	253	254	238	247
Political science .....	76	97	81	134	140	155	161	167	176	180	172	170	191	215	230
Sociology .....	178	156	102	153	174	178	195	204	219	231	252	244	259	281	299
Other.....	264	191	178	297	291	314	352	369	388	415	423	427	490	479	535
Other sciences .....	258	261	254	390	371	344	392	405	435	418	504	434	430	500	529
Engineering .....	985	1,539	1,929	3,087	3,251	3,338	3,360	3,496	3,585	3,707	3,765	3,935	4,063	4,255	4,567
Aeronautical/astronautical .....	NA	95	110	190	202	214	226	227	246	233	242	241	248	240	309
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75	99	130	161	193
Chemical.....	NA	109	158	254	273	284	291	290	303	317	311	316	333	351	378
Civil.....	NA	149	208	330	352	370	395	420	439	455	463	479	505	561	609
Electrical/electronic.....	NA	327	459	770	760	767	743	776	835	888	924	1,008	970	1,044	1,060
Mechanical.....	NA	251	283	454	471	491	514	523	531	519	508	549	596	591	626
Materials.....	NA	NA	NA	318	340	320	318	323	336	349	381	379	366	373	412
Other.....	985	610	711	771	854	891	871	937	895	946	861	865	915	933	980
	Percent distribution														
All fields .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sciences.....	88.8	85.8	85.4	83.7	83.5	83.7	84.2	84.0	84.1	83.9	84.2	84.3	84.5	84.9	84.7
Physical sciences .....	10.3	11.2	11.9	11.1	11.0	10.9	10.7	10.4	10.2	9.8	9.7	9.6	9.5	9.0	8.6
Astronomy.....	0.8	1.0	1.0	1.0	1.2	1.3	1.3	1.3	1.4	1.2	1.2	1.2	1.4	1.3	1.2
Chemistry .....	3.5	4.0	4.4	4.0	3.8	3.7	3.7	3.6	3.5	3.5	3.4	3.4	3.3	3.2	3.1
Physics.....	5.1	5.3	5.7	5.2	5.0	4.9	4.7	4.6	4.5	4.3	4.3	4.2	4.2	4.0	3.8
Other.....	0.9	0.9	0.8	0.9	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.9	0.6	0.5	0.5
Mathematics .....	1.2	1.3	1.3	1.4	1.3	1.3	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1
Computer sciences.....	1.3	2.0	2.9	3.2	3.2	3.0	3.0	3.1	3.1	3.0	2.9	2.9	3.1	2.9	2.9
Earth, atmospheric, and ocean sciences..	7.5	8.4	7.3	6.6	6.4	6.6	6.6	6.6	6.5	6.5	6.3	6.3	6.1	5.9	5.6
Atmospheric sciences .....	NA	1.3	1.1	1.1	1.0	1.0	1.1	1.0	0.9	1.0	1.0	1.0	1.0	1.0	0.9
Earth sciences.....	NA	3.1	2.6	2.2	2.2	2.2	2.1	2.2	2.1	1.9	1.8	2.0	2.0	1.9	1.7
Ocean sciences.....	NA	2.9	2.7	2.3	2.2	2.3	2.3	2.2	2.1	2.3	2.2	2.1	2.2	2.1	2.1
Other.....	7.5	1.1	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.2	1.2	1.1	0.9	0.9	0.9

## Expenditures for academic R&amp;D, by field: Selected years, 1975–2001

Field	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Percent distribution														
Life sciences .....	55.8	53.1	54.5	53.6	53.9	54.2	54.4	54.5	55.0	55.2	55.8	56.5	56.8	58.1	58.6
Agricultural sciences .....	11.3	11.1	10.3	8.3	8.3	8.0	7.8	7.9	8.2	8.3	8.1	7.7	7.4	7.2	7.1
Biological sciences.....	18.5	17.0	18.4	17.6	17.4	17.6	17.7	17.6	17.3	17.0	17.2	17.7	18.3	18.7	18.2
Medical sciences.....	23.8	23.5	23.9	25.5	25.9	26.4	26.7	26.8	27.4	27.7	28.4	28.9	29.1	29.9	31.1
Other.....	2.2	1.5	1.9	2.2	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.0	2.3	2.3
Psychology.....	2.4	1.8	1.6	1.6	1.6	1.7	1.8	1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.8
Social sciences .....	7.5	5.6	4.0	4.3	4.3	4.3	4.5	4.5	4.6	4.8	4.6	4.4	4.5	4.3	4.4
Economics .....	1.6	1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.1	1.0	1.0	0.8	0.8
Political science .....	0.9	0.9	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.8
Sociology .....	2.0	1.4	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.0	1.0	1.0	1.0
Other.....	3.0	1.8	1.4	1.6	1.5	1.5	1.7	1.7	1.7	1.8	1.8	1.7	1.9	1.7	1.8
Other sciences .....	2.9	2.4	1.9	2.1	1.9	1.7	1.8	1.9	1.9	1.8	2.1	1.7	1.6	1.8	1.8
Engineering .....	11.2	14.2	14.6	16.3	16.5	16.3	15.8	16.0	15.9	16.1	15.8	15.7	15.5	15.1	15.3
Aeronautical/astronautical.....	NA	0.9	0.8	1.0	1.0	1.0	1.1	1.0	1.1	1.0	1.0	1.0	0.9	0.9	1.0
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.4	0.5	0.6	0.6
Chemical.....	NA	1.0	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.4	1.3	1.3	1.3	1.2	1.3
Civil.....	NA	1.4	1.6	1.7	1.8	1.8	1.9	1.9	1.9	2.0	1.9	1.9	1.9	2.0	2.0
Electrical/electronic .....	NA	3.0	3.5	4.1	3.9	3.7	3.5	3.5	3.7	3.9	3.9	4.0	3.7	3.7	3.5
Mechanical.....	NA	2.3	2.1	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.1	2.2	2.3	2.1	2.1
Materials.....	NA	NA	NA	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.6	1.5	1.4	1.3	1.4
Other.....	11.2	5.6	5.4	4.1	4.3	4.3	4.1	4.3	4.0	4.1	3.6	3.5	3.5	3.3	3.3

NA not available

NOTES: Details may not add to totals because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 1996 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-8

(Page 1 of 2)

## Federal obligations for academic R&amp;D, by agency: 1970–2003

Year	All agencies	National Institutes of Health <sup>a</sup>	National Science Foundation	Department of Defense	National	Department of Energy <sup>b</sup>	Department of Agriculture	All other agencies
					Aeronautics and Space Administration			
Millions of current dollars								
1970 .....	1,476	518	228	216	131	100	65	217
1971 .....	1,645	603	267	211	134	94	72	264
1972 .....	1,904	756	362	217	119	85	87	277
1973 .....	1,917	761	374	204	111	83	94	289
1974 .....	2,214	1,027	389	197	99	94	95	312
1975 .....	2,411	1,077	435	203	108	132	108	348
1976 .....	2,552	1,185	437	240	119	145	120	307
1977 .....	2,905	1,311	511	273	118	188	140	364
1978 .....	3,375	1,493	537	383	127	240	186	408
1979 .....	3,889	1,880	617	438	139	260	200	355
1980 .....	4,263	2,012	685	495	158	285	216	412
1981 .....	4,466	2,101	702	573	171	300	243	376
1982 .....	4,605	2,140	715	664	186	277	255	369
1983 .....	4,966	2,392	783	724	189	297	275	306
1984 .....	5,547	2,715	880	830	204	321	261	335
1985 .....	6,340	3,158	1,002	940	237	357	293	352
1986 .....	6,559	3,243	992	1,098	254	345	274	355
1987 .....	7,337	3,903	1,096	1,017	294	386	280	361
1988 .....	7,828	4,199	1,143	1,071	338	406	305	366
1989 .....	8,672	4,565	1,254	1,189	434	454	328	449
1990 .....	9,138	4,779	1,321	1,213	471	500	348	505
1991 .....	10,169	5,521	1,436	1,152	534	621	386	520
1992 .....	10,271	5,064	1,540	1,403	586	640	438	600
1993 .....	11,208	5,848	1,562	1,616	614	583	433	553
1994 .....	11,797	6,191	1,680	1,703	641	565	439	577
1995 .....	11,928	6,271	1,734	1,589	708	594	435	597
1996 .....	11,978	6,620	1,740	1,447	665	601	376	529
1997 .....	12,559	7,057	1,819	1,345	719	583	441	595
1998 .....	13,366	7,565	1,875	1,422	787	623	415	679
1999 .....	14,959	8,762	2,076	1,474	787	630	492	739
2000 .....	16,815	10,087	2,265	1,606	845	668	554	790
2001 .....	19,588	11,528	2,498	2,285	942	743	652	939
2002 (estimated) .....	21,344	13,119	2,664	2,207	942	746	639	1,027
2003 (estimated) .....	23,055	15,229	2,790	1,845	942	749	575	925
Millions of constant 1996 dollars								
1970 .....	5,179	1,817	800	759	461	352	227	762
1971 .....	5,497	2,017	891	705	448	314	240	882
1972 .....	6,078	2,414	1,157	692	380	270	279	885
1973 .....	5,859	2,327	1,145	623	340	253	288	883
1974 .....	6,318	2,931	1,111	563	282	268	270	892
1975 .....	6,236	2,784	1,125	526	279	341	280	901
1976 .....	6,164	2,861	1,055	581	287	351	289	741
1977 .....	6,528	2,946	1,148	614	264	423	315	818
1978 .....	7,096	3,139	1,129	806	267	505	392	857
1979 .....	7,563	3,657	1,199	852	270	506	389	691
1980 .....	7,615	3,593	1,223	885	282	509	387	736
1981 .....	7,271	3,420	1,143	933	279	489	395	611
1982 .....	7,008	3,256	1,088	1,010	282	422	388	562
1983 .....	7,239	3,486	1,141	1,055	276	433	401	447
1984 .....	7,797	3,817	1,237	1,167	287	451	367	472
1985 .....	8,627	4,297	1,363	1,279	323	486	399	480
1986 .....	8,715	4,308	1,318	1,459	338	458	363	471
1987 .....	9,488	5,048	1,418	1,315	380	500	362	467
1988 .....	9,802	5,258	1,432	1,341	423	508	382	458
1989 .....	10,457	5,505	1,512	1,433	523	547	395	541
1990 .....	10,619	5,554	1,535	1,410	547	582	405	587
1991 .....	11,374	6,176	1,606	1,288	597	694	432	581

Appendix table 5-8

**Federal obligations for academic R&D, by agency: 1970–2003**

Year	All agencies	National Institutes of Health <sup>a</sup>	National Science Foundation	Department of Defense	National Aeronautics and Space Administration	Department of Energy <sup>b</sup>	Department of Agriculture	All other agencies
1992 .....	11,196	5,520	1,679	1,529	639	698	477	654
1993 .....	11,933	6,226	1,663	1,720	653	621	461	589
1994 .....	12,294	6,452	1,751	1,775	668	589	457	601
1995 .....	12,166	6,396	1,768	1,621	722	606	444	609
1996 .....	11,978	6,620	1,740	1,447	665	601	376	529
1997 .....	12,319	6,922	1,784	1,319	705	572	432	583
1998 .....	12,928	7,317	1,813	1,376	761	603	402	656
1999 .....	14,268	8,357	1,981	1,406	750	601	469	704
2000 .....	15,736	9,439	2,120	1,503	791	625	518	740
2001 .....	17,893	10,531	2,282	2,088	861	679	596	858
2002 (estimated) .....	19,352	11,894	2,415	2,001	854	676	579	931
2003 (estimated) .....	20,639	13,633	2,498	1,651	844	671	515	828
Percent distribution								
1970 .....	100.0	35.1	15.4	14.7	8.9	6.8	4.4	14.7
1971 .....	100.0	36.7	16.2	12.8	8.2	5.7	4.4	16.0
1972 .....	100.0	39.7	19.0	11.4	6.3	4.4	4.6	14.6
1973 .....	100.0	39.7	19.5	10.6	5.8	4.3	4.9	15.1
1974 .....	100.0	46.4	17.6	8.9	4.5	4.2	4.3	14.1
1975 .....	100.0	44.6	18.0	8.4	4.5	5.5	4.5	14.4
1976 .....	100.0	46.4	17.1	9.4	4.7	5.7	4.7	12.0
1977 .....	100.0	45.1	17.6	9.4	4.0	6.5	4.8	12.5
1978 .....	100.0	44.2	15.9	11.4	3.8	7.1	5.5	12.1
1979 .....	100.0	48.4	15.9	11.3	3.6	6.7	5.1	9.1
1980 .....	100.0	47.2	16.1	11.6	3.7	6.7	5.1	9.7
1981 .....	100.0	47.0	15.7	12.8	3.8	6.7	5.4	8.4
1982 .....	100.0	46.5	15.5	14.4	4.0	6.0	5.5	8.0
1983 .....	100.0	48.2	15.8	14.6	3.8	6.0	5.5	6.2
1984 .....	100.0	49.0	15.9	15.0	3.7	5.8	4.7	6.0
1985 .....	100.0	49.8	15.8	14.8	3.7	5.6	4.6	5.6
1986 .....	100.0	49.4	15.1	16.7	3.9	5.3	4.2	5.4
1987 .....	100.0	53.2	14.9	13.9	4.0	5.3	3.8	4.9
1988 .....	100.0	53.6	14.6	13.7	4.3	5.2	3.9	4.7
1989 .....	100.0	52.6	14.5	13.7	5.0	5.2	3.8	5.2
1990 .....	100.0	52.3	14.5	13.3	5.2	5.5	3.8	5.5
1991 .....	100.0	54.3	14.1	11.3	5.2	6.1	3.8	5.1
1992 .....	100.0	49.3	15.0	13.7	5.7	6.2	4.3	5.8
1993 .....	100.0	52.2	13.9	14.4	5.5	5.2	3.9	4.9
1994 .....	100.0	52.5	14.2	14.4	5.4	4.8	3.7	4.9
1995 .....	100.0	52.6	14.5	13.3	5.9	5.0	3.6	5.0
1996 .....	100.0	55.3	14.5	12.1	5.5	5.0	3.1	4.4
1997 .....	100.0	56.2	14.5	10.7	5.7	4.6	3.5	4.7
1998 .....	100.0	56.6	14.0	10.6	5.9	4.7	3.1	5.1
1999 .....	100.0	58.6	13.9	9.9	5.3	4.2	3.3	4.9
2000 .....	100.0	60.0	13.5	9.6	5.0	4.0	3.3	4.7
2001 .....	100.0	58.9	12.8	11.7	4.8	3.8	3.3	4.8
2002 (estimated) .....	100.0	61.5	12.5	10.3	4.4	3.5	3.0	4.8
2003 (estimated) .....	100.0	66.1	12.1	8.0	4.1	3.3	2.5	4.0

<sup>a</sup>Includes Alcohol, Drug Abuse, and Mental Health Administration.

<sup>b</sup>Data for 1970–73 are for Atomic Energy Commission; data for 1974–76 are for Energy Research and Development Administration; data for 1977 and thereafter are for Department of Energy.

NOTES: Percents may not sum to 100 because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 1996 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003* (Arlington, VA, forthcoming); and NSF/SRS, *Federal Funds for Research and Development: Detailed Historical Tables: Fiscal Years 1951–2001*, NSF 01-334 (Arlington, VA, 2001), <http://www.nsf.gov/sbe/srs/nsf01334/start.htm>.

Appendix table 5-9

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## Federal obligations for academic research, by agency: 1970–2003

Year	All agencies	National Institutes of Health <sup>a</sup>	National Science Foundation	Department of Defense	National	Department of Energy <sup>b</sup>	Department of Agriculture	All other agencies
					Aeronautics and Space Administration			
Millions of current dollars								
1970 .....	1,276	480	223	173	65	97	65	174
1971 .....	1,430	551	254	184	70	90	72	210
1972 .....	1,643	677	346	177	48	81	87	226
1973 .....	1,691	749	370	161	80	79	94	158
1974 .....	1,958	1,004	369	167	85	86	94	153
1975 .....	2,079	1,036	420	165	91	112	108	148
1976 .....	2,250	1,138	429	192	98	116	119	158
1977 .....	2,584	1,269	505	221	105	134	139	211
1978 .....	2,928	1,437	534	243	116	175	181	241
1979 .....	3,333	1,657	612	271	125	204	198	266
1980 .....	3,699	1,835	680	313	146	224	214	287
1981 .....	3,920	1,929	698	363	157	248	240	284
1982 .....	4,045	1,995	713	413	156	236	253	280
1983 .....	4,468	2,246	783	472	170	273	273	250
1984 .....	5,030	2,573	880	539	177	311	260	290
1985 .....	5,726	2,990	1,002	587	213	336	292	305
1986 .....	5,883	3,054	992	707	225	334	273	298
1987 .....	6,640	3,651	1,096	681	263	372	279	298
1988 .....	7,023	3,856	1,143	729	310	384	304	297
1989 .....	7,793	4,167	1,254	840	387	437	326	382
1990 .....	8,137	4,349	1,321	795	422	479	346	426
1991 .....	8,868	4,729	1,436	794	474	596	384	456
1992 .....	9,061	4,517	1,540	912	512	605	436	538
1993 .....	9,892	5,253	1,562	1,090	539	547	429	472
1994 .....	10,292	5,517	1,680	1,079	555	529	436	496
1995 .....	10,354	5,481	1,734	1,047	588	558	431	516
1996 .....	10,707	5,924	1,740	1,071	560	566	373	471
1997 .....	11,173	6,309	1,819	945	596	552	437	515
1998 .....	11,741	6,716	1,875	965	648	564	408	566
1999 .....	13,204	7,733	2,076	989	745	562	482	617
2000 .....	16,016	10,087	2,265	1,113	721	619	547	665
2001 .....	18,657	11,528	2,498	1,697	812	695	643	785
2002 (estimated) .....	20,331	13,119	2,664	1,559	812	698	629	850
2003 (estimated) .....	22,229	15,229	2,790	1,345	812	707	567	780
Millions of constant 1996 dollars								
1970 .....	4,480	1,686	784	606	230	339	227	609
1971 .....	4,780	1,840	848	615	235	300	240	703
1972 .....	5,245	2,162	1,105	564	154	259	279	722
1973 .....	5,170	2,289	1,132	491	246	241	288	483
1974 .....	5,589	2,866	1,053	477	242	244	269	437
1975 .....	5,376	2,678	1,086	427	235	290	278	383
1976 .....	5,434	2,749	1,036	463	236	281	288	382
1977 .....	5,804	2,850	1,134	496	236	301	312	475
1978 .....	6,157	3,022	1,123	510	245	367	381	508
1979 .....	6,483	3,223	1,191	527	244	396	385	517
1980 .....	6,607	3,277	1,215	558	261	400	383	512
1981 .....	6,383	3,141	1,136	591	256	404	391	463
1982 .....	6,156	3,035	1,085	628	237	359	385	427
1983 .....	6,512	3,274	1,141	688	247	398	398	365
1984 .....	7,070	3,617	1,237	757	249	438	365	408
1985 .....	7,792	4,069	1,363	799	290	457	398	416
1986 .....	7,817	4,058	1,318	940	299	444	363	397
1987 .....	8,587	4,721	1,418	881	340	481	361	386
1988 .....	8,794	4,829	1,432	913	388	481	381	371
1989 .....	9,397	5,024	1,512	1,013	467	527	393	461
1990 .....	9,456	5,054	1,535	924	490	557	402	495
1991 .....	9,919	5,290	1,606	888	531	666	429	510
1992 .....	9,876	4,924	1,679	994	558	660	475	586

Appendix table 5-9

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## Federal obligations for academic research, by agency: 1970–2003

Year	All agencies	National Institutes of Health <sup>a</sup>	National Science Foundation	Department of Defense	National Aeronautics and Space Administration	Department of Energy <sup>b</sup>	Department of Agriculture	All other agencies
Millions of constant 1996 dollars								
1993 .....	10,532	5,592	1,663	1,161	574	583	457	503
1994 .....	10,725	5,750	1,751	1,124	579	551	454	517
1995 .....	10,561	5,590	1,768	1,068	599	569	440	526
1996 .....	10,707	5,924	1,740	1,071	560	566	373	471
1997 .....	10,960	6,188	1,784	927	585	542	428	505
1998 .....	11,356	6,496	1,813	933	626	545	395	548
1999 .....	12,594	7,376	1,980	943	710	536	459	589
2000 .....	14,988	9,439	2,120	1,041	675	579	512	622
2001 .....	17,043	10,531	2,282	1,550	742	635	587	717
2002 (estimated) .....	18,433	11,894	2,415	1,414	736	633	571	770
2003 (estimated) .....	19,899	13,633	2,498	1,204	727	632	508	698
Percent distribution								
1970 .....	100.0	37.6	17.5	13.5	5.1	7.6	5.1	13.6
1971 .....	100.0	38.5	17.7	12.9	4.9	6.3	5.0	14.7
1972 .....	100.0	41.2	21.1	10.8	2.9	4.9	5.3	13.8
1973 .....	100.0	44.3	21.9	9.5	4.8	4.7	5.6	9.3
1974 .....	100.0	51.3	18.8	8.5	4.3	4.4	4.8	7.8
1975 .....	100.0	49.8	20.2	7.9	4.4	5.4	5.2	7.1
1976 .....	100.0	50.6	19.1	8.5	4.3	5.2	5.3	7.0
1977 .....	100.0	49.1	19.5	8.6	4.1	5.2	5.4	8.2
1978 .....	100.0	49.1	18.2	8.3	4.0	6.0	6.2	8.2
1979 .....	100.0	49.7	18.4	8.1	3.8	6.1	5.9	8.0
1980 .....	100.0	49.6	18.4	8.5	3.9	6.1	5.8	7.8
1981 .....	100.0	49.2	17.8	9.3	4.0	6.3	6.1	7.3
1982 .....	100.0	49.3	17.6	10.2	3.9	5.8	6.3	6.9
1983 .....	100.0	50.3	17.5	10.6	3.8	6.1	6.1	5.6
1984 .....	100.0	51.2	17.5	10.7	3.5	6.2	5.2	5.8
1985 .....	100.0	52.2	17.5	10.3	3.7	5.9	5.1	5.3
1986 .....	100.0	51.9	16.9	12.0	3.8	5.7	4.6	5.1
1987 .....	100.0	55.0	16.5	10.3	4.0	5.6	4.2	4.5
1988 .....	100.0	54.9	16.3	10.4	4.4	5.5	4.3	4.2
1989 .....	100.0	53.5	16.1	10.8	5.0	5.6	4.2	4.9
1990 .....	100.0	53.4	16.2	9.8	5.2	5.9	4.2	5.2
1991 .....	100.0	53.3	16.2	9.0	5.4	6.7	4.3	5.1
1992 .....	100.0	49.9	17.0	10.1	5.6	6.7	4.8	5.9
1993 .....	100.0	53.1	15.8	11.0	5.4	5.5	4.3	4.8
1994 .....	100.0	53.6	16.3	10.5	5.4	5.1	4.2	4.8
1995 .....	100.0	52.9	16.7	10.1	5.7	5.4	4.2	5.0
1996 .....	100.0	55.3	16.3	10.0	5.2	5.3	3.5	4.4
1997 .....	100.0	56.5	16.3	8.5	5.3	4.9	3.9	4.6
1998 .....	100.0	57.2	16.0	8.2	5.5	4.8	3.5	4.8
1999 .....	100.0	58.6	15.7	7.5	5.6	4.3	3.6	4.7
2000 .....	100.0	63.0	14.1	6.9	4.5	3.9	3.4	4.1
2001 .....	100.0	61.8	13.4	9.1	4.4	3.7	3.4	4.2
2002 (estimated) .....	100.0	64.5	13.1	7.7	4.0	3.4	3.1	4.2
2003 (estimated) .....	100.0	68.5	12.6	6.0	3.7	3.2	2.6	3.5

<sup>a</sup>Includes Alcohol, Drug Abuse, and Mental Health Administration.

<sup>b</sup>Data for 1970–73 are for Atomic Energy Commission; data for 1974–76 are for Energy Research and Development Administration; data for 1977 and thereafter are for U.S. Department of Energy.

NOTES: Academic research includes basic and applied research. Percents may not sum to 100 because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 1996 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003* (Arlington, VA, forthcoming); and NSF/SRS, *Federal Funds for Research and Development: Detailed Historical Tables: Fiscal Years 1951–2001*, NSF 01-334 (Arlington, VA, 2001), <http://www.nsf.gov/sbe/srs/nsf01334/start.htm>.

Appendix table 5-10

**Federal agencies' academic research obligations, by field: FY 2001**

(Percent distribution)

Field	Department of Health and Human Services	National Science Foundation	Department of Defense	National Aeronautics and Space Administration	Department of Energy	Department of Agriculture
All fields .....	100.0	100.0	100.0	100.0	100.0	100.0
Sciences.....	99.1	81.9	64.8	85.1	89.4	95.7
Physical sciences .....	1.7	18.7	8.1	37.5	56.0	4.4
Astronomy.....	0.0	2.1	0.0	26.6	0.0	0.0
Chemistry .....	1.5	6.1	3.1	1.2	9.4	4.4
Physics .....	0.0	6.6	4.4	6.1	41.6	0.0
Other.....	0.2	3.9	0.7	3.6	5.0	0.0
Mathematics .....	0.2	4.2	1.5	0.1	2.1	0.1
Computer sciences.....	0.0	17.3	17.1	4.1	1.7	0.0
Earth, atmospheric, and ocean sciences .....	1.5	14.6	6.2	21.3	12.5	0.5
Atmospheric sciences .....	0.0	3.2	0.8	8.1	3.7	0.5
Earth sciences.....	0.0	4.2	0.4	1.4	4.0	0.0
Oceanography.....	0.0	6.6	4.6	1.6	0.5	0.0
Other.....	1.5	0.6	0.3	10.2	4.4	0.0
Life sciences .....	89.9	15.9	31.0	6.6	17.1	80.4
Agricultural sciences .....	0.0	0.0	0.0	0.1	0.0	44.1
Biological sciences (excluding environmental) .....	78.9	12.0	5.1	2.5	9.6	18.1
Environmental biology .....	0.0	3.9	0.5	0.6	0.0	16.7
Medical sciences.....	9.6	0.0	23.4	1.0	7.6	1.6
Other.....	1.4	0.0	2.0	2.4	0.0	0.0
Psychology .....	2.8	0.2	0.7	0.5	0.0	0.0
Biological aspects .....	0.0	0.0	0.6	0.1	0.0	0.0
Social aspects.....	0.0	0.2	0.0	0.2	0.0	0.0
Other.....	2.8	0.0	0.0	0.3	0.0	0.0
Social sciences .....	0.9	4.1	0.0	0.0	0.0	10.4
Anthropology.....	0.0	0.5	0.0	0.0	0.0	0.0
Economics .....	0.0	0.7	0.0	0.0	0.0	8.5
Political science .....	0.0	0.3	0.0	0.0	0.0	0.0
Sociology .....	0.0	0.2	0.0	0.0	0.0	1.9
Other.....	0.9	2.5	0.0	0.0	0.0	0.0
Other sciences .....	2.0	6.8	0.3	14.9	0.0	0.0
Engineering .....	0.9	18.1	35.2	14.9	10.6	4.3
Aeronautical .....	0.0	0.0	2.0	3.9	0.0	0.0
Astronautical .....	0.0	0.0	0.2	2.6	0.0	0.0
Chemical.....	0.0	1.9	0.4	0.3	2.1	0.0
Civil.....	0.0	1.7	0.2	0.0	0.7	0.0
Electrical .....	0.0	2.2	9.9	1.4	0.4	0.0
Mechanical.....	0.0	0.2	4.4	1.1	1.6	0.0
Materials.....	0.3	4.9	8.6	2.0	2.2	0.0
Other.....	0.6	7.1	9.5	3.6	3.6	4.2

NOTES: Academic research includes both basic and applied research. The agencies shown are the only ones that report research obligations to academia by S&E field; they represent approximately 97 percent of academic research obligations. Percents may not sum to 100 because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003* (Arlington, VA, forthcoming).



Appendix table 5-11

**Federal academic research obligations provided by major agencies, by field: FY 2001**

(Percent distribution)

Field	All agencies	Department of Health and Human Services	National Science Foundation	Department of Defense	National Aeronautics and Space Administration	Department of Energy	Department of Agriculture
All fields .....	100.0	65.0	13.8	9.4	4.5	3.8	3.5
Sciences .....	100.0	69.7	12.2	6.6	4.1	3.7	3.7
Physical sciences .....	100.0	13.1	30.6	9.1	20.0	25.5	1.8
Astronomy.....	100.0	0.0	19.5	0.0	80.5	0.0	0.0
Chemistry .....	100.0	36.6	31.4	10.7	2.0	13.5	5.7
Physics .....	100.0	0.0	28.4	12.8	8.6	50.2	0.0
Other.....	100.0	10.7	50.2	6.2	15.2	17.8	0.0
Mathematics .....	100.0	16.0	60.4	14.4	0.6	8.4	0.2
Computer sciences.....	100.0	0.0	56.3	37.8	4.3	1.5	0.0
Earth, atmospheric, and ocean sciences.....	100.0	19.8	39.9	11.5	18.9	9.5	0.3
Atmospheric sciences .....	100.0	0.0	42.6	7.5	34.8	13.4	1.6
Earth sciences.....	100.0	0.2	69.0	4.8	7.7	18.3	0.0
Ocean sciences.....	100.0	0.0	63.5	30.3	4.9	1.2	0.0
Other.....	100.0	57.6	4.8	1.6	26.4	9.7	0.0
Life sciences .....	100.0	86.8	3.3	4.3	0.4	1.0	4.2
Agricultural sciences .....	100.0	0.0	0.0	0.2	0.4	0.0	99.4
Biological sciences (excluding environmental) .....	100.0	94.0	3.0	0.9	0.2	0.7	1.2
Environmental biology .....	100.0	0.0	44.9	3.7	2.1	0.0	49.3
Medical sciences.....	100.0	70.9	0.0	24.7	0.5	3.3	0.6
Other.....	100.0	75.6	0.0	15.3	9.0	0.0	0.0
Psychology.....	100.0	94.5	1.1	3.1	1.2	0.0	0.0
Biological aspects .....	100.0	0.0	0.0	93.8	6.2	0.0	0.0
Social aspects.....	100.0	1.4	62.4	10.4	25.8	0.0	0.0
Other.....	100.0	99.4	0.0	0.0	0.6	0.0	0.0
Social sciences .....	100.0	39.1	36.9	0.0	0.1	0.0	23.9
Anthropology.....	100.0	0.0	99.8	0.1	0.0	0.0	0.2
Economics .....	100.0	2.8	23.4	0.0	0.0	0.0	73.9
Political science .....	100.0	0.0	96.7	0.0	3.3	0.0	0.0
Sociology .....	100.0	2.3	27.2	0.0	0.0	0.0	70.5
Other.....	100.0	62.8	37.1	0.0	0.1	0.0	0.0
Other sciences .....	100.0	44.5	32.0	0.8	22.6	0.0	0.0
Engineering .....	100.0	7.5	32.9	43.4	8.8	5.3	2.0
Aeronautical .....	100.0	0.0	0.0	51.4	48.6	0.0	0.0
Astronautical .....	100.0	0.0	0.0	13.5	86.5	0.0	0.0
Chemical .....	100.0	0.0	66.4	9.7	3.3	20.2	0.4
Civil.....	100.0	0.0	85.4	5.1	0.3	9.0	0.2
Electrical .....	100.0	0.0	23.5	70.5	4.6	1.3	0.0
Mechanical.....	100.0	0.0	5.8	74.1	8.9	11.1	0.1
Materials.....	100.0	11.0	36.2	43.6	4.7	4.5	0.0
Other.....	100.0	13.5	36.7	33.0	6.1	5.1	5.6

NOTES: Academic research includes both basic and applied research. The agencies shown are the only ones that report research obligations to academia by S&E field; they represent approximately 97 percent of academic research obligations.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Federal Funds for Research and Development: Fiscal Years 2001, 2002, and 2003* (Arlington, VA, forthcoming).

Appendix table 5-12

**Academic institutions receiving Federal R&D support, by selected Carnegie classification: 1972–2000**

Year	All academic institutions	Carnegie research and doctorate-granting institutions	Other Carnegie institutions
1972 .....	617	223	394
1973 .....	534	219	315
1974 .....	547	217	330
1975 .....	558	221	337
1976 .....	572	222	350
1977 .....	617	220	397
1978 .....	674	221	453
1979 .....	663	223	440
1980 .....	683	223	460
1981 .....	619	225	394
1982 .....	586	223	363
1983 .....	600	226	374
1984 .....	602	225	377
1985 .....	646	226	420
1986 .....	650	225	425
1987 .....	764	228	536
1988 .....	685	228	457
1989 .....	716	229	487
1990 .....	748	228	520
1991 .....	777	227	550
1992 .....	839	228	611
1993 .....	891	227	664
1994 .....	907	227	680
1995 .....	901	228	673
1996 .....	843	228	615
1997 .....	844	228	616
1998 .....	794	230	564
1999 .....	791	228	563
2000 .....	814	227	587

NOTE: See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: Fiscal Year 2001* (Arlington, VA, forthcoming); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-13

**Academic research space, by field: 1988–2001**

(Millions of net assignable square feet)

S&E field	1988	1990	1992	1994	1996	1998	1999	2001
All fields .....	112	116	122	127	136	143	150	155
Physical sciences .....	16	16	16	17	18	18	19	19
Mathematics .....	1	1	1	1	1	1	1	1
Computer sciences .....	1	1	2	2	2	2	2	2
Earth, atmospheric, and ocean sciences .....	6	6	7	7	7	8	8	8
Agricultural sciences .....	18	21	20	20	22	25	25	27
Biological sciences .....	24	27	28	28	30	31	32	33
Universities and colleges .....	16	18	17	17	19	19	20	20
Medical schools .....	8	9	11	11	11	12	13	13
Medical sciences .....	19	20	22	23	25	25	27	28
Universities and colleges .....	5	5	6	6	7	7	8	8
Medical schools .....	14	15	16	17	18	18	19	20
Psychology .....	3	3	3	3	3	3	4	4
Social sciences .....	3	3	3	3	4	5	5	5
Other sciences .....	4	2	2	2	2	3	3	3
Engineering .....	16	17	18	21	22	23	25	26

NOTES: Total R&D space is current actual space reported at the time of the survey. Square footage refers to net assignable square feet (the sum of all areas on all floors of a building assigned to, or available to be assigned to, an occupant for specific use, such as instruction or research). Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, *Scientific and Engineering Research Facilities: 2001*, NSF 02-307 (Arlington, VA, 2001).

Science & Engineering Indicators – 2004

## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2001

Field	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Millions of current dollars															
All fields .....	450	672	837	986	1,013	1,025	1,034	1,042	1,107	1,238	1,213	1,288	1,294	1,318	1,421	1,490
Sciences .....	371	547	659	784	793	791	809	824	856	966	928	987	996	1,032	1,115	1,157
Physical sciences .....	81	142	166	181	191	190	198	207	207	239	233	243	253	248	249	240
Astronomy.....	4	7	7	10	13	14	14	17	20	22	21	26	25	29	25	15
Chemistry .....	32	54	66	76	73	69	70	75	78	81	88	89	91	102	103	100
Physics .....	37	71	82	83	91	88	94	90	90	114	105	108	122	106	110	113
Other .....	8	10	12	12	14	18	20	26	19	22	19	19	16	11	12	13
Mathematics .....	4	6	10	10	10	11	10	15	15	14	13	15	14	12	10	12
Computer sciences.....	20	35	43	43	48	59	45	54	59	77	67	71	63	63	56	65
Earth, atmospheric, and ocean sciences.....	31	48	55	68	72	70	78	77	83	83	88	93	102	100	100	89
Atmospheric sciences .....	5	8	11	13	11	10	11	15	12	14	14	15	15	15	13	13
Earth sciences.....	12	18	20	26	27	29	30	27	30	27	31	35	37	35	37	29
Ocean sciences.....	11	16	17	18	20	19	28	24	27	28	29	31	33	37	34	35
Other.....	3	5	7	11	13	12	9	11	15	15	14	13	17	13	17	11
Life sciences .....	209	283	335	431	420	412	430	418	434	464	444	478	495	547	614	665
Agricultural sciences .....	41	52	49	59	54	53	59	53	68	63	63	69	76	72	76	81
Biological sciences.....	74	105	130	175	171	168	174	171	175	191	180	196	190	243	268	282
Medical sciences.....	87	114	142	177	177	169	176	178	173	187	183	198	213	213	248	281
Other.....	7	12	14	20	19	22	21	16	18	23	18	15	16	19	21	20
Psychology.....	7	9	11	11	11	11	11	15	13	12	12	13	13	12	14	14
Social sciences .....	9	10	12	14	15	14	18	19	21	27	25	24	22	18	19	17
Economics .....	2	3	3	4	4	5	5	5	6	7	6	5	4	4	3	2
Political science .....	1	1	1	2	1	2	2	3	3	3	3	3	3	2	2	2
Sociology .....	1	2	2	3	3	3	3	4	4	4	4	4	4	3	3	3
Other .....	5	4	5	6	7	5	7	8	9	12	11	11	11	9	11	9
Other sciences .....	10	15	27	26	25	25	18	18	23	51	45	48	33	32	51	55
Engineering .....	80	124	178	202	220	234	225	218	251	272	285	301	298	286	306	334
Aeronautical/astronautical .....	3	7	9	11	13	17	12	13	19	16	16	19	20	22	20	24
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	6	8	14	15
Chemical .....	6	11	15	19	18	20	20	22	19	22	24	23	28	27	26	31
Civil .....	7	10	12	16	20	18	16	18	19	22	26	28	21	23	29	32
Electrical/electronic.....	23	33	44	49	58	52	57	56	66	68	75	83	83	70	72	79
Mechanical .....	11	17	25	29	32	34	31	35	37	42	43	46	51	51	55	49
Materials.....	NA	NA	NA	NA	27	33	29	23	25	28	32	36	29	28	30	49
Other .....	29	46	75	78	51	59	61	51	66	73	69	62	60	57	61	55

## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2001

Field	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Millions of constant 1996 dollars															
All fields .....	657	914	1,082	1,189	1,177	1,147	1,127	1,109	1,153	1,263	1,213	1,263	1,252	1,257	1,330	1,361
Sciences .....	541	745	852	946	921	885	882	877	892	986	928	968	963	984	1,043	1,057
Physical sciences .....	118	193	215	218	222	212	216	221	216	244	233	238	245	236	233	219
Astronomy.....	6	10	8	12	15	16	15	18	21	23	21	26	24	27	23	13
Chemistry .....	47	73	85	91	85	77	77	80	81	83	88	88	88	97	96	91
Physics .....	53	97	106	100	106	98	102	95	93	117	105	106	118	101	103	103
Other .....	11	13	16	15	16	20	22	28	20	22	19	19	15	11	12	12
Mathematics .....	5	8	13	12	12	12	11	16	16	15	13	15	14	11	9	11
Computer sciences.....	29	48	55	52	56	65	49	57	62	78	67	70	61	60	53	59
Earth, atmospheric, and ocean sciences ...	45	65	72	81	84	78	85	82	87	85	88	92	98	95	94	81
Atmospheric sciences .....	8	11	15	15	13	12	12	15	12	14	14	15	14	14	12	12
Earth sciences.....	17	25	26	31	32	32	33	29	31	27	31	34	36	33	35	27
Ocean sciences.....	17	22	22	22	23	21	30	26	28	28	29	30	32	36	32	32
Other.....	4	7	9	14	16	13	10	12	15	15	14	12	16	13	15	10
Life sciences .....	305	385	434	520	488	461	469	445	453	473	444	469	478	522	575	607
Agricultural sciences.....	60	70	64	71	62	59	64	57	71	65	63	68	73	69	72	74
Biological sciences.....	108	143	168	211	199	188	190	182	182	195	180	192	184	232	251	258
Medical sciences.....	127	156	184	213	206	189	191	189	181	190	183	194	206	203	233	257
Other.....	10	16	19	24	22	24	23	17	19	23	18	15	15	18	20	18
Psychology.....	10	12	14	13	12	12	12	16	13	12	12	13	13	11	13	13
Social sciences .....	14	14	15	17	17	16	19	20	22	27	25	24	21	17	18	15
Economics .....	3	4	4	5	5	5	5	5	6	7	6	5	4	4	3	2
Political science .....	1	2	2	2	2	2	3	3	3	3	3	3	3	2	2	2
Sociology .....	2	3	3	4	3	3	4	4	4	4	4	4	4	3	3	3
Other .....	7	6	7	7	8	5	7	8	9	12	11	11	11	8	11	9
Other sciences .....	15	20	35	32	29	28	20	19	24	52	45	48	32	31	48	50
Engineering .....	116	169	231	243	256	262	245	232	261	277	285	295	289	273	286	305
Aeronautical/astronautical .....	5	9	11	14	15	19	13	14	20	17	16	19	19	21	19	22
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	6	7	13	14
Chemical .....	9	15	19	23	21	22	22	23	20	22	24	23	28	26	24	28
Civil .....	11	14	15	19	23	20	17	20	20	23	26	27	21	22	27	29
Electrical/electronic.....	33	45	56	59	68	58	62	59	68	70	75	81	80	67	67	72
Mechanical .....	16	24	33	35	38	38	34	37	39	43	43	45	49	48	51	45
Materials.....	NA	NA	NA	NA	31	37	31	25	26	28	32	35	28	27	28	45
Other .....	42	62	97	94	60	66	66	54	69	75	69	61	58	54	57	50

## Current expenditures for research equipment at academic institutions, by field: Selected years, 1983–2001

Field	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Percent distribution															
All fields .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sciences .....	82.3	81.5	78.7	79.5	78.3	77.2	78.2	79.1	77.4	78.0	76.5	76.6	76.9	78.3	78.5	77.6
Physical sciences .....	17.9	21.1	19.9	18.3	18.9	18.5	19.2	19.9	18.7	19.3	19.2	18.9	19.6	18.8	17.6	16.1
Astronomy.....	0.9	1.0	0.8	1.0	1.3	1.4	1.4	1.6	1.8	1.8	1.7	2.0	2.0	2.2	1.7	1.0
Chemistry .....	7.2	8.0	7.9	7.7	7.2	6.8	6.8	7.2	7.1	6.5	7.2	6.9	7.0	7.7	7.2	6.7
Physics .....	8.1	10.6	9.7	8.4	9.0	8.6	9.1	8.6	8.1	9.2	8.7	8.4	9.4	8.1	7.7	7.6
Other .....	1.7	1.4	1.5	1.2	1.4	1.8	1.9	2.5	1.8	1.7	1.6	1.5	1.2	0.9	0.9	0.9
Mathematics .....	0.8	0.9	1.2	1.0	1.0	1.0	1.0	1.5	1.3	1.2	1.1	1.2	1.1	0.9	0.7	0.8
Computer sciences.....	4.4	5.3	5.1	4.4	4.7	5.7	4.4	5.1	5.3	6.2	5.5	5.5	4.9	4.8	4.0	4.4
Earth, atmospheric, and ocean sciences ...	6.9	7.1	6.6	6.8	7.1	6.8	7.5	7.4	7.5	6.7	7.3	7.3	7.9	7.6	7.1	6.0
Atmospheric sciences .....	1.2	1.2	1.3	1.3	1.1	1.0	1.1	1.4	1.0	1.1	1.1	1.2	1.1	1.1	0.9	0.9
Earth sciences.....	2.6	2.7	2.4	2.6	2.7	2.8	2.9	2.6	2.7	2.2	2.6	2.7	2.9	2.6	2.6	2.0
Ocean sciences.....	2.5	2.4	2.0	1.8	2.0	1.9	2.7	2.3	2.5	2.2	2.4	2.4	2.5	2.8	2.4	2.3
Other.....	0.7	0.8	0.8	1.2	1.3	1.2	0.9	1.1	1.3	1.2	1.2	1.0	1.3	1.0	1.2	0.8
Life sciences .....	46.4	42.1	40.1	43.7	41.5	40.2	41.6	40.1	39.2	37.4	36.6	37.1	38.2	41.5	43.2	44.6
Agricultural sciences .....	9.1	7.7	5.9	6.0	5.3	5.2	5.7	5.1	6.1	5.1	5.2	5.4	5.9	5.5	5.4	5.4
Biological sciences.....	16.4	15.6	15.5	17.8	16.9	16.4	16.9	16.4	15.8	15.4	14.9	15.2	14.7	18.5	18.9	19.0
Medical sciences.....	19.4	17.0	17.0	17.9	17.5	16.5	17.0	17.1	15.7	15.1	15.1	15.4	16.4	16.2	17.5	18.9
Other.....	1.6	1.7	1.7	2.1	1.9	2.1	2.0	1.5	1.6	1.8	1.5	1.2	1.2	1.4	1.5	1.4
Psychology .....	1.4	1.3	1.3	1.1	1.1	1.1	1.1	1.5	1.1	1.0	1.0	1.0	1.0	0.9	1.0	0.9
Social sciences .....	2.1	1.5	1.4	1.5	1.5	1.4	1.7	1.8	1.9	2.1	2.1	1.9	1.7	1.4	1.4	1.1
Economics .....	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.6	0.5	0.4	0.3	0.3	0.2	0.2
Political science .....	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1
Sociology .....	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.2
Other .....	1.1	0.6	0.7	0.6	0.7	0.5	0.7	0.8	0.8	1.0	0.9	0.9	0.8	0.7	0.8	0.6
Other sciences .....	2.3	2.2	3.2	2.7	2.5	2.5	1.8	1.7	2.1	4.1	3.7	3.8	2.5	2.4	3.6	3.7
Engineering .....	17.7	18.5	21.3	20.5	21.7	22.8	21.8	20.9	22.6	22.0	23.5	23.4	23.1	21.7	21.5	22.4
Aeronautical/astronautical .....	0.8	1.0	1.0	1.1	1.2	1.7	1.1	1.3	1.7	1.3	1.3	1.5	1.5	1.7	1.4	1.6
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.5	0.6	1.0	1.0
Chemical .....	1.3	1.7	1.8	2.0	1.8	1.9	1.9	2.1	1.7	1.8	2.0	1.8	2.2	2.1	1.8	2.1
Civil .....	1.6	1.6	1.4	1.6	2.0	1.7	1.5	1.8	1.7	1.8	2.1	2.1	1.7	1.8	2.0	2.2
Electrical/electronic.....	5.0	4.9	5.2	4.9	5.8	5.1	5.5	5.4	5.9	5.5	6.2	6.4	6.4	5.3	5.0	5.3
Mechanical .....	2.5	2.6	3.0	3.0	3.2	3.3	3.0	3.3	3.4	3.4	3.5	3.6	3.9	3.8	3.9	3.3
Materials.....	NA	NA	NA	NA	2.7	3.2	2.8	2.2	2.3	2.3	2.6	2.8	2.2	2.1	2.1	3.3
Other .....	6.5	6.8	8.9	7.9	5.1	5.8	5.9	4.9	6.0	5.9	5.7	4.8	4.7	4.3	4.3	3.7

NA not available

NOTES: Details may not add to totals because of rounding. See appendix table 4-1 for gross domestic product implicit price deflators used to convert current dollars to constant 1996 dollars.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

Appendix table 5-15

## Federal share of current funding for research equipment at academic institutions, by field: Selected years, 1983–2001

(Percent)

Field	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
All fields .....	62.3	64.4	62.9	60.4	59.9	59.6	59.8	61.2	60.6	59.3	59.5	58.6	59.8	58.1	56.1	55.2
Sciences .....	61.6	64.7	63.9	61.0	60.1	60.1	60.8	61.9	60.6	59.0	59.0	59.4	59.8	58.0	56.4	55.7
Physical sciences .....	78.8	79.8	78.5	73.6	75.3	73.5	76.4	74.1	72.8	74.6	73.0	70.9	73.9	74.9	70.1	67.0
Astronomy.....	84.0	69.3	75.1	69.2	63.1	61.6	68.9	65.6	63.9	61.6	70.9	65.2	81.8	86.7	83.6	83.6
Chemistry .....	71.7	76.6	74.1	70.2	71.4	68.1	71.9	70.4	68.5	70.1	68.7	65.5	67.1	67.3	61.5	57.8
Physics .....	83.4	84.5	82.2	78.3	81.1	79.0	80.8	75.8	79.0	81.7	77.2	76.2	76.4	79.7	76.9	72.1
Other .....	84.4	70.9	80.1	66.6	69.5	76.8	76.9	84.5	70.8	67.6	72.3	73.8	81.5	67.6	55.6	76.3
Mathematics .....	66.4	82.1	77.6	67.5	65.8	62.7	68.3	75.1	73.5	65.6	74.7	59.3	70.7	64.7	67.6	52.7
Computer sciences.....	72.7	83.0	79.3	71.9	65.8	74.6	65.7	69.9	68.9	63.5	70.8	68.9	70.4	69.1	60.6	64.4
Earth, atmospheric, and ocean sciences.	61.7	67.7	65.0	66.1	65.9	61.4	67.4	70.8	72.9	69.9	69.9	73.1	67.9	67.6	64.2	62.0
Atmospheric sciences .....	71.3	84.2	79.8	65.1	76.8	75.8	78.2	78.1	81.6	71.5	64.1	74.6	81.5	79.6	80.3	76.2
Earth sciences.....	54.9	56.4	51.8	63.0	56.8	53.2	58.2	61.5	66.9	62.8	65.4	70.0	66.4	59.2	50.8	55.4
Ocean sciences.....	63.7	74.2	75.1	74.8	75.1	71.7	76.6	79.9	80.3	76.5	81.7	76.3	70.8	72.2	74.5	63.8
Other.....	63.5	60.7	55.4	60.6	61.4	52.4	56.0	64.5	64.8	68.6	61.2	72.3	53.8	63.1	61.1	56.8
Life sciences .....	54.9	55.6	56.0	55.2	53.2	53.6	53.8	54.3	52.5	48.6	50.2	50.2	50.9	49.4	52.1	51.6
Agricultural sciences.....	26.8	29.1	31.8	30.8	28.3	30.6	36.5	36.7	35.3	31.9	30.3	31.4	31.8	33.0	27.7	27.7
Biological sciences.....	66.0	67.3	64.5	62.9	60.2	60.5	61.1	60.8	61.0	56.0	58.8	55.7	56.5	56.9	60.2	58.7
Medical sciences.....	58.5	57.4	57.5	55.4	54.3	54.4	53.4	54.1	51.9	48.3	49.9	51.4	53.2	47.1	51.4	51.5
Other.....	58.2	49.1	47.6	56.8	50.6	50.8	44.3	45.6	41.5	34.6	36.6	48.8	43.5	41.4	44.2	49.5
Psychology.....	69.7	71.5	76.6	65.3	63.8	64.6	63.8	68.6	59.9	63.5	62.6	62.7	62.6	65.6	64.3	63.9
Social sciences .....	32.9	40.1	29.0	33.5	32.4	36.6	43.1	40.1	41.5	39.5	40.1	37.2	40.1	38.7	33.2	38.2
Economics .....	40.4	35.6	28.9	25.8	27.2	33.8	48.4	39.3	43.5	38.9	40.2	31.2	34.5	37.7	54.8	40.9
Political science .....	36.9	32.1	26.8	23.0	24.4	32.0	45.8	30.6	49.0	36.8	33.8	36.0	47.3	33.2	39.0	39.0
Sociology .....	59.6	53.5	37.6	38.0	43.2	52.6	52.2	52.9	46.0	46.7	48.4	43.3	47.9	43.4	46.1	38.1
Other .....	21.4	39.1	26.2	39.7	32.8	32.3	33.8	38.0	36.1	38.1	38.8	38.0	37.0	38.6	22.6	37.3
Other sciences .....	59.8	46.1	51.1	49.6	46.1	38.3	28.4	41.3	45.6	63.9	39.9	63.4	47.3	26.8	25.6	39.5
Engineering .....	65.3	62.9	59.1	57.9	58.9	57.9	56.3	58.8	60.6	60.4	61.1	56.0	59.7	58.6	55.2	53.6
Aeronautical/astronautical .....	76.7	75.0	74.7	76.8	81.1	83.8	75.1	81.3	76.9	77.4	71.3	70.2	69.1	70.8	64.1	71.7
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	53.1	42.3	46.8	43.2	47.4
Chemical .....	58.1	58.7	53.6	52.2	46.1	49.0	50.5	46.7	58.0	58.8	56.7	55.0	55.6	49.2	52.3	51.7
Civil .....	51.5	58.5	57.6	55.5	58.7	46.7	44.9	44.5	44.6	44.2	44.3	43.7	43.2	49.2	35.3	39.2
Electrical/electronic.....	71.1	68.5	69.0	60.8	61.8	58.2	59.4	65.9	66.8	61.8	68.7	61.6	66.8	65.5	61.7	58.7
Mechanical .....	68.5	65.1	63.9	57.2	56.8	51.8	60.1	64.5	65.8	63.7	63.2	62.7	64.3	63.8	65.0	59.4
Materials.....	NA	NA	NA	NA	66.5	59.7	48.8	51.0	48.6	50.5	53.3	51.4	59.5	61.0	60.9	45.2
Other.....	63.2	58.5	51.1	55.6	52.2	59.0	56.4	55.1	56.8	62.7	60.6	47.8	52.6	49.4	46.3	52.1

NA not available

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

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Appendix table 5-16

**Expenditures of current funds for research equipment at academic institutions as percentage of total academic R&D expenditures, by field: Selected years, 1983–2001**

(Percent)

Field	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
All fields .....	5.7	6.9	6.9	6.6	6.2	5.8	5.5	5.2	5.3	5.6	5.3	5.3	5.0	4.8	4.7	4.6
Sciences .....	5.5	6.6	6.4	6.2	5.8	5.4	5.1	4.9	4.8	5.2	4.8	4.8	4.6	4.4	4.4	4.2
Physical sciences .....	9.0	12.4	11.9	11.0	10.6	9.8	9.6	9.7	9.5	10.6	10.3	10.3	10.2	9.5	9.2	8.6
Astronomy .....	5.7	7.3	6.0	7.3	7.8	6.8	5.9	6.5	7.5	7.4	7.7	9.2	8.3	7.5	6.4	3.9
Chemistry .....	9.7	12.8	12.8	12.5	11.3	10.3	10.0	10.1	10.3	10.5	10.9	10.9	10.4	11.1	10.7	9.9
Physics .....	8.8	12.9	12.1	10.6	10.8	10.0	10.2	9.5	9.4	11.6	10.6	10.2	11.3	9.3	9.1	9.1
Other .....	10.1	12.0	11.8	10.4	9.5	10.2	10.4	13.6	10.0	11.3	10.1	9.3	6.9	7.4	7.9	7.1
Mathematics .....	3.5	4.7	5.5	4.8	4.6	4.6	4.2	5.6	5.3	5.2	4.6	5.3	4.6	3.7	3.0	3.3
Computer sciences .....	10.7	12.6	11.5	9.1	9.3	10.6	8.1	8.8	9.1	11.2	9.7	10.1	8.5	7.3	6.4	6.8
Earth, atmospheric, and ocean sciences .....	5.0	6.8	6.6	6.7	6.8	6.3	6.3	5.9	6.0	5.8	5.9	6.1	6.3	5.9	5.7	4.9
Atmospheric sciences .....	5.3	7.7	8.5	7.6	6.6	5.9	5.7	6.9	5.7	6.6	6.0	6.1	5.4	5.1	4.4	4.4
Earth sciences .....	5.3	7.2	7.2	7.9	7.7	7.5	7.3	6.5	6.6	5.9	7.0	7.8	7.3	6.3	6.6	5.3
Ocean sciences .....	5.1	6.3	5.6	5.0	5.3	4.9	6.5	5.3	6.0	5.8	5.5	5.7	6.0	6.2	5.4	5.2
Other .....	3.8	6.0	5.7	7.3	8.1	7.0	4.4	4.9	5.2	5.0	4.9	4.2	5.7	5.2	5.9	3.8
Life sciences .....	4.9	5.4	5.1	5.3	4.8	4.4	4.2	3.9	3.8	3.8	3.5	3.5	3.4	3.5	3.5	3.5
Agricultural sciences .....	4.4	5.2	4.4	4.6	4.0	3.6	3.9	3.4	4.1	3.5	3.3	3.5	3.8	3.5	3.5	3.5
Biological sciences .....	5.2	5.9	6.1	6.6	6.0	5.5	5.3	4.8	4.7	5.0	4.6	4.7	4.2	4.8	4.8	4.8
Medical sciences .....	4.8	4.9	4.7	4.6	4.3	3.7	3.5	3.3	3.1	3.1	2.9	2.9	2.8	2.7	2.8	2.8
Other .....	5.4	6.5	5.5	6.3	5.2	5.4	5.0	3.6	3.9	4.8	3.6	2.9	2.9	3.4	3.1	2.7
Psychology .....	4.8	5.5	5.6	4.6	4.2	3.9	3.4	4.4	3.5	3.3	3.2	3.3	3.0	2.5	2.8	2.4
Social sciences .....	2.7	2.6	2.3	2.3	2.1	1.9	2.2	2.1	2.2	2.6	2.3	2.1	2.0	1.4	1.5	1.2
Economics .....	2.2	2.3	1.9	2.2	2.0	2.2	2.3	2.0	2.3	2.9	2.4	2.0	1.5	1.5	1.2	0.9
Political science .....	1.6	2.0	1.6	1.6	1.3	1.6	1.7	1.9	1.8	1.8	1.9	1.9	1.9	1.0	0.7	0.8
Sociology .....	1.8	2.6	2.2	2.5	2.2	1.7	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.2	1.1	0.9
Other .....	4.4	3.2	3.1	2.6	2.6	1.9	2.4	2.4	2.6	3.1	2.6	2.6	2.5	1.7	2.2	1.6
Other sciences .....	6.3	7.9	10.5	8.3	7.5	7.6	5.8	4.9	6.0	11.9	10.8	9.4	7.3	7.1	9.5	9.5
Engineering .....	7.1	8.8	9.4	8.4	8.3	8.1	7.4	6.9	7.5	7.7	7.7	7.8	7.3	6.7	6.7	6.7
Aeronautical/astronautical .....	5.0	8.2	7.9	7.5	7.7	9.7	5.9	6.2	8.7	6.8	6.9	7.8	7.8	8.4	7.9	7.0
Bioengineering/biomedical .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.8	6.1	5.6	7.9	7.1
Chemical .....	6.3	9.8	9.9	10.0	8.3	8.2	7.6	7.9	6.7	7.4	7.6	7.4	8.7	7.8	6.9	7.5
Civil .....	5.7	6.8	6.1	6.4	7.1	5.7	4.6	5.0	4.7	5.2	5.7	5.9	4.3	4.4	4.8	4.8
Electrical/electronic .....	8.6	9.7	9.7	8.2	8.8	7.7	8.1	8.0	8.8	8.3	8.5	8.8	7.9	6.9	6.4	6.8
Mechanical .....	7.5	8.4	9.2	8.5	8.3	8.1	6.9	7.2	7.5	8.0	8.2	8.9	9.0	8.1	8.7	7.1
Materials .....	NA	NA	NA	NA	9.9	10.9	9.7	7.8	8.0	8.5	9.1	9.3	7.4	7.4	7.6	10.9
Other .....	6.9	8.8	10.4	9.0	7.7	7.8	7.4	6.2	7.3	8.4	7.3	7.1	6.7	5.9	6.1	5.1

NA not available

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), *Academic Research and Development Expenditures: Fiscal Year 2001*, NSF 03-316 (Arlington, VA, 2003); and NSF/SRS, WebCASPAR database system, <http://caspar.nsf.gov>.

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Appendix table 5-17

**S&E doctorate holders employed in research universities and other academic institutions, by type of position and primary work activity: 1975–2001**

(Thousands)

Institution type, position, and primary work activity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All academic institutions</b>														
All positions.....	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
Teaching.....	83.8	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0
Research.....	30.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8
Other work.....	19.4	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8
Full-time faculty.....	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4
Teaching.....	80.2	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	95.4	98.6	97.9
Research.....	21.4	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.9	56.6	58.0	60.4	62.8
Other work.....	14.8	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	24.9	25.0	26.8
Postdocs.....	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5
Teaching.....	0.1	0.1	0.2	0.1	0.4	0.2	0.2	0.4	0.1	0.0	0.6	0.6	0.4	0.5
Research.....	5.7	6.8	6.9	7.7	7.1	7.5	8.4	10.3	9.2	12.7	15.1	16.7	16.6	15.6
Other work.....	0.4	0.7	1.0	0.7	0.7	0.9	0.7	0.8	0.6	0.7	1.1	1.5	1.5	1.4
All other types of positions.....	11.5	12.2	15.9	16.6	19.4	24.6	22.1	25.4	27.6	28.1	29.4	35.3	37.5	40.7
Teaching.....	3.5	3.6	3.9	3.7	5.4	5.9	5.5	6.6	6.6	6.9	7.7	9.4	9.5	10.6
Research.....	3.8	4.3	6.2	6.9	8.1	9.0	9.6	10.3	10.9	10.7	11.4	13.8	14.3	15.4
Other work.....	4.2	4.2	5.8	6.0	5.9	9.8	7.1	8.6	10.1	10.4	10.3	12.1	13.7	14.6
<b>Research universities</b>														
All positions.....	73.4	78.2	83.5	91.0	89.9	102.8	106.9	112.5	111.6	113.0	112.8	113.6	117.2	119.6
Teaching.....	36.5	33.4	34.0	39.3	36.8	38.3	36.0	35.8	34.5	32.8	31.7	33.4	33.3	31.9
Research.....	25.5	29.5	32.1	37.5	37.4	45.4	53.7	58.1	57.9	60.6	62.4	60.6	64.3	66.9
Other work.....	11.4	15.4	17.4	14.3	15.6	19.1	17.2	18.7	19.2	19.5	18.7	19.6	19.7	20.8
Full-time faculty.....	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	81.6	81.5	84.1	84.8
Teaching.....	35.1	32.1	32.5	37.9	34.9	35.9	33.6	32.9	32.2	30.5	29.1	29.9	30.2	28.0
Research.....	17.4	20.0	21.1	25.1	25.2	31.5	38.4	40.7	41.1	41.5	41.0	39.5	42.2	44.2
Other work.....	8.9	12.6	13.5	10.7	12.1	13.3	12.2	13.0	12.5	12.4	11.5	12.1	11.8	12.6
Postdocs.....	5.3	6.5	6.8	7.0	6.7	7.4	8.1	9.7	8.3	11.3	13.6	13.9	14.1	13.8
Teaching.....	0.1	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.1	0.0	0.3	0.4	0.3	0.4
Research.....	4.9	5.9	5.8	6.5	6.1	6.5	7.3	8.9	7.8	10.8	12.4	12.3	12.6	12.4
Other work.....	0.3	0.6	0.9	0.5	0.4	0.7	0.6	0.6	0.4	0.6	0.9	1.2	1.2	1.0
All other types of positions.....	6.6	7.1	9.6	10.2	11.0	14.8	14.5	16.2	17.5	17.3	17.5	18.2	19.0	21.0
Teaching.....	1.3	1.2	1.4	1.3	1.8	2.3	2.2	2.6	2.2	2.4	2.3	3.1	2.8	3.5
Research.....	3.3	3.6	5.2	5.9	6.0	7.5	7.9	8.4	9.0	8.3	8.9	8.8	9.5	10.2
Other work.....	2.2	2.2	3.0	3.1	3.1	5.0	4.4	5.1	6.4	6.6	6.2	6.4	6.8	7.3
<b>Other U&amp;C</b>														
All positions.....	60.7	67.2	71.8	76.0	86.2	87.4	89.0	94.1	99.0	100.8	104.8	118.9	122.9	126.0
Teaching.....	47.3	48.8	49.8	56.7	60.8	62.7	63.3	65.1	69.0	65.5	68.5	72.0	75.3	77.1
Research.....	5.3	7.5	9.2	9.0	11.4	10.6	12.8	14.1	16.0	19.6	20.7	27.9	27.1	26.9
Other work.....	8.1	10.9	12.8	10.4	13.9	14.2	12.9	14.9	14.0	15.7	15.6	19.0	20.5	21.9
Full-time faculty.....	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	89.7	96.8	99.9	102.6
Teaching.....	45.1	46.4	47.3	54.1	57.0	59.0	60.0	61.1	64.5	61.0	62.8	65.5	68.4	69.9
Research.....	3.9	5.8	7.0	6.7	8.4	8.0	10.1	10.9	12.7	15.3	15.5	18.5	18.3	18.6
Other work.....	5.9	8.8	9.9	7.4	10.8	9.2	10.0	11.2	10.2	11.7	11.3	12.8	13.2	14.2
Postdocs.....	0.9	1.1	1.3	1.5	1.6	1.3	1.2	1.8	1.5	2.0	3.2	5.0	4.5	3.7
Teaching.....	0.1	0.0	0.1	0.1	0.3	0.0	0.0	0.2	0.1	0.0	0.3	0.2	0.1	0.1
Research.....	0.8	0.9	1.1	1.2	1.1	1.1	1.0	1.4	1.3	1.9	2.7	4.4	4.0	3.1
Other work.....	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.4	0.3	0.4
All other types of positions.....	4.8	5.2	6.3	6.4	8.5	9.9	7.6	9.1	10.1	10.8	11.8	17.0	18.5	19.6
Teaching.....	2.1	2.5	2.5	2.4	3.6	3.7	3.2	3.8	4.4	4.6	5.3	6.3	6.7	7.1
Research.....	0.6	0.7	1.0	1.1	2.1	1.5	1.6	1.9	2.0	2.4	2.4	4.9	4.9	5.2
Other work.....	2.0	2.0	2.8	2.9	2.8	4.7	2.7	3.4	3.7	3.9	4.1	5.8	6.9	7.3

U&amp;C universities and colleges

NOTES: See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching. Full-time faculty includes full, associate, and assistant professors plus instructors. Other types of positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-18

(Page 1 of 3)

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1975–2001**

(Thousands)

Institution control, institution type, and position	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All U&amp;C</b>														
All academic institutions														
All positions.....	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
Full-time senior faculty.....	84.3	90.7	97.2	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9
Full-time junior faculty .....	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5
Full-time nonfaculty .....	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7
Postdocs .....	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5
Part-time positions.....	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0
Research universities														
All positions .....	73.4	78.2	83.5	91.0	89.9	102.8	106.9	112.5	111.6	113.0	112.8	113.6	117.2	119.6
Full-time senior faculty ....	45.6	48.0	50.0	55.6	56.2	61.0	65.0	66.4	65.6	62.6	61.1	61.5	64.2	63.1
Full-time junior faculty .....	15.9	16.7	17.1	18.1	16.0	19.7	19.3	20.2	20.2	21.8	20.5	20.0	20.0	21.7
Full-time nonfaculty .....	5.1	5.6	7.5	8.1	8.1	11.7	11.5	13.2	13.9	14.6	15.7	15.1	16.4	18.3
Postdocs .....	5.3	6.5	6.8	7.0	6.7	7.4	8.1	9.7	8.3	11.3	13.6	13.9	14.1	13.8
Part-time positions.....	1.5	1.5	2.1	2.1	2.9	3.1	3.0	3.0	3.6	2.7	1.8	3.1	2.6	2.8
Doctorate-granting institutions														
All positions .....	15.9	17.2	17.2	18.8	19.5	21.2	22.2	23.5	24.9	24.2	25.0	25.8	26.3	26.3
Full-time senior faculty ....	10.9	11.6	11.6	13.4	14.5	15.0	16.4	16.4	17.0	16.2	16.0	16.9	17.4	17.4
Full-time junior faculty .....	3.8	4.4	4.2	3.9	3.5	3.6	3.9	4.4	5.1	5.4	5.6	5.1	5.4	5.5
Full-time nonfaculty .....	0.6	0.5	0.8	0.8	0.7	1.6	1.1	1.3	1.7	1.7	1.9	1.9	2.0	1.9
Postdocs .....	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.5	0.3	0.5	0.8	0.9	0.8	0.7
Part-time positions.....	0.4	0.4	0.4	0.3	0.5	0.6	0.6	0.9	0.8	0.5	0.7	1.0	0.7	0.8
Comprehensive institutions														
All positions .....	24.8	26.5	26.9	30.5	31.6	35.6	36.0	38.4	39.5	39.5	41.5	42.0	43.6	44.8
Full-time senior faculty ....	17.0	18.9	19.5	22.5	24.0	26.3	27.5	28.7	29.8	29.0	29.1	28.4	29.6	29.9
Full-time junior faculty .....	6.1	6.3	5.6	6.3	5.2	6.0	6.3	6.5	6.8	7.4	8.2	9.2	9.9	10.6
Full-time nonfaculty .....	1.0	0.6	0.9	1.1	1.1	2.0	1.3	1.9	1.5	1.9	2.2	2.0	2.2	2.3
Postdocs .....	0.1	0.1	0.2	0.1	0.3	0.0	0.0	0.1	0.2	0.1	0.4	0.6	0.1	0.1
Part-time positions.....	0.5	0.6	0.8	0.6	1.0	1.2	0.9	1.2	1.2	1.0	1.6	1.7	1.8	1.9
Freestanding medical schools														
All positions .....	4.3	4.9	5.9	7.2	7.0	8.3	9.0	9.7	9.6	10.8	11.2	9.8	11.9	12.6
Full-time senior faculty ....	2.0	2.2	2.6	3.6	3.8	4.0	4.6	4.8	4.7	5.3	5.1	4.3	5.7	6.2
Full-time junior faculty .....	1.6	1.9	2.1	2.0	1.9	2.5	2.6	2.9	3.1	3.2	3.3	3.1	3.1	3.2
Full-time nonfaculty .....	0.2	0.2	0.4	0.4	0.6	0.7	0.7	1.0	0.7	1.1	1.2	0.8	1.0	1.3
Postdocs .....	0.4	0.5	0.6	1.1	0.6	0.8	0.8	0.9	0.8	1.1	1.4	1.4	1.7	1.6
Part-time positions.....	0.2	0.1	0.2	0.1	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.2	0.4	0.3
Liberal arts colleges														
All positions .....	10.4	10.8	11.3	12.0	12.6	14.0	14.6	15.3	15.8	16.0	15.8	17.3	18.5	18.6
Full-time senior faculty ....	6.3	6.6	7.2	8.1	8.4	9.3	10.3	10.8	11.2	10.9	10.7	11.1	12.3	12.1
Full-time junior faculty .....	3.1	3.3	2.9	2.7	2.9	3.2	3.1	3.1	2.9	3.7	3.9	4.4	4.5	4.3
Full-time nonfaculty .....	0.6	0.5	0.7	0.8	0.7	0.9	0.7	0.8	1.0	0.9	0.8	0.9	0.9	1.0
Postdocs .....	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.1
Part-time positions.....	0.3	0.3	0.5	0.4	0.6	0.6	0.5	0.4	0.8	0.4	0.3	0.7	0.6	1.1
<b>Public U&amp;C</b>														
All academic institutions														
All positions.....	93.0	100.4	104.3	113.9	115.9	130.2	135.3	141.2	142.6	144.6	145.7	148.7	153.1	156.4
Full-time senior faculty.....	60.2	65.2	66.9	76.2	79.7	85.0	90.7	92.6	93.7	90.6	88.7	89.8	92.5	91.9
Full-time junior faculty .....	22.1	23.7	22.4	22.7	20.2	24.1	25.0	25.4	25.8	27.9	28.3	28.2	29.4	31.7
Full-time nonfaculty .....	5.2	5.1	7.4	8.0	7.8	11.9	10.2	12.5	13.4	14.1	15.3	15.4	16.5	18.3
Postdocs .....	3.6	4.4	4.8	4.8	4.6	4.7	5.3	6.4	5.3	8.2	9.9	9.8	9.9	8.9
Part-time positions.....	2.0	2.1	2.8	2.3	3.7	4.4	4.1	4.2	4.4	3.9	3.5	5.6	4.9	5.5
Research universities														
All positions .....	54.8	58.6	62.9	66.7	66.6	75.3	79.0	81.7	80.8	81.9	80.8	82.9	83.6	84.3
Full-time senior faculty ....	35.4	37.7	39.2	43.3	44.3	47.2	50.7	51.5	50.8	48.5	47.1	48.3	48.7	47.4
Full-time junior faculty .....	11.8	12.4	12.8	12.5	11.2	13.9	14.0	14.2	13.7	14.9	14.0	13.7	13.8	15.2
Full-time nonfaculty .....	3.3	3.7	5.1	5.4	5.4	7.9	7.3	8.5	9.4	9.4	10.2	10.7	11.5	12.6
Postdocs .....	3.1	3.8	4.1	3.9	3.7	4.0	4.5	5.3	4.3	7.0	8.1	8.0	7.9	7.1
Part-time positions.....	1.1	1.1	1.6	1.5	2.0	2.3	2.5	2.3	2.6	2.0	1.4	2.3	1.7	2.0

Appendix table 5-18

(Page 2 of 3)

**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1975–2001**

(Thousands)

Institution control, institution type, and position	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>Doctorate-granting institutions</b>														
All positions .....	11.4	12.2	11.8	13.3	13.7	15.0	15.3	16.5	17.3	16.9	17.7	18.4	18.5	18.4
Full-time senior faculty ....	8.1	8.5	8.1	9.7	10.4	10.6	11.6	11.6	12.1	11.6	11.6	12.3	12.5	12.4
Full-time junior faculty .....	2.6	2.9	2.8	2.7	2.3	2.5	2.6	3.1	3.5	3.6	3.8	3.7	3.7	3.7
Full-time nonfaculty .....	0.4	0.3	0.6	0.6	0.5	1.3	0.7	0.9	1.1	1.0	1.3	1.4	1.3	1.4
Postdocs .....	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.2	0.4	0.5	0.5	0.6	0.5
Part-time positions .....	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.6	0.4	0.2	0.4	0.5	0.3	0.4
<b>Comprehensive institutions</b>														
All positions .....	18.8	20.4	19.9	22.4	23.6	26.2	26.8	28.2	28.4	28.9	30.2	31.0	31.5	32.5
Full-time senior faculty ....	12.9	14.6	14.7	17.0	18.2	19.8	20.5	21.3	21.9	21.5	21.4	21.0	21.6	22.0
Full-time junior faculty .....	4.9	4.9	3.8	4.2	3.7	4.1	4.5	4.6	4.6	5.2	6.0	6.6	7.1	7.4
Full-time nonfaculty .....	0.7	0.4	0.8	0.9	0.9	1.4	1.0	1.4	1.3	1.4	1.7	1.6	1.6	1.9
Postdocs .....	0.1	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.2	0.1	0.3	0.5	0.1	0.1
Part-time positions .....	0.3	0.4	0.5	0.3	0.7	0.9	0.7	0.8	0.5	0.6	0.9	1.3	1.2	1.1
<b>Freestanding medical schools</b>														
All positions .....	3.1	3.6	4.3	5.4	5.2	5.9	6.1	6.6	6.8	7.4	7.7	6.4	8.2	9.0
Full-time senior faculty ....	1.4	1.6	1.9	2.7	2.9	3.0	3.3	3.3	3.5	3.8	3.7	3.0	4.0	4.5
Full-time junior faculty .....	1.2	1.4	1.4	1.5	1.3	1.6	1.6	1.8	2.0	2.1	2.4	1.9	2.0	2.2
Full-time nonfaculty .....	0.1	0.2	0.4	0.3	0.4	0.4	0.4	0.7	0.5	0.8	0.8	0.5	0.6	0.9
Postdocs .....	0.3	0.3	0.5	0.8	0.4	0.6	0.5	0.6	0.5	0.7	0.8	0.8	1.2	1.1
Part-time positions .....	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.3	0.2
<b>Liberal arts colleges</b>														
All positions .....	1.3	1.5	1.5	1.7	1.9	2.2	2.5	2.7	2.6	2.6	2.4	3.0	2.7	2.9
Full-time senior faculty ....	0.7	0.9	1.0	1.2	1.3	1.5	1.8	1.8	2.0	2.0	1.6	2.0	1.9	1.8
Full-time junior faculty .....	0.4	0.4	0.3	0.4	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.6	0.7
Full-time nonfaculty .....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2
Postdocs .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Part-time positions .....	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.2
<b>Private U&amp;C</b>														
<b>All academic institutions</b>														
All positions .....	40.0	42.2	45.0	51.0	50.3	58.3	60.2	65.1	67.0	67.1	68.7	68.8	74.8	76.7
Full-time senior faculty .....	23.6	24.3	26.2	29.8	30.2	34.0	36.4	38.3	39.1	37.2	37.3	36.6	41.3	41.9
Full-time junior faculty .....	9.8	10.8	10.7	11.7	10.6	12.6	12.0	13.2	14.1	15.5	15.1	15.7	16.1	16.4
Full-time nonfaculty .....	2.9	2.9	3.4	4.3	4.2	5.9	6.1	6.6	6.6	7.7	7.8	6.6	7.4	8.0
Postdocs .....	2.5	3.2	3.2	3.7	3.3	3.8	4.0	5.0	4.5	4.9	6.6	7.4	7.1	7.4
Part-time positions .....	1.2	1.1	1.5	1.6	2.0	1.9	1.6	1.9	2.8	1.8	1.8	2.6	2.8	3.0
<b>Research universities</b>														
All positions .....	18.6	19.6	20.6	24.4	23.2	27.5	27.9	30.8	30.8	31.1	32.0	30.7	33.6	35.3
Full-time senior faculty ....	10.1	10.3	10.7	12.4	11.9	13.7	14.2	14.9	14.8	14.1	14.1	13.3	15.5	15.7
Full-time junior faculty .....	4.1	4.2	4.3	5.6	4.8	5.8	5.3	6.1	6.5	6.9	6.5	6.3	6.1	6.5
Full-time nonfaculty .....	1.8	1.9	2.4	2.7	2.7	3.8	4.3	4.7	4.5	5.2	5.5	4.4	4.9	5.6
Postdocs .....	2.1	2.8	2.7	3.1	2.9	3.4	3.6	4.4	4.0	4.3	5.5	5.9	6.2	6.6
Part-time positions .....	0.4	0.4	0.5	0.6	0.9	0.8	0.5	0.8	1.0	0.6	0.4	0.9	0.9	0.8
<b>Doctorate-granting institutions</b>														
All positions .....	4.5	5.0	5.4	5.5	5.8	6.2	6.9	7.1	7.5	7.3	7.3	7.4	7.9	7.9
Full-time senior faculty ....	2.8	3.1	3.4	3.7	4.1	4.4	4.8	4.8	4.9	4.6	4.4	4.5	4.9	5.0
Full-time junior faculty .....	1.3	1.5	1.4	1.2	1.2	1.1	1.3	1.3	1.6	1.7	1.7	1.4	1.7	1.8
Full-time nonfaculty .....	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.7	0.6	0.5	0.6	0.5
Postdocs .....	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.5	0.2	0.2
Part-time positions .....	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.3
<b>Comprehensive institutions</b>														
All positions .....	5.9	6.2	7.0	8.2	8.0	9.4	9.2	10.1	11.1	10.6	11.2	11.0	12.1	12.3
Full-time senior faculty ....	4.1	4.3	4.8	5.5	5.8	6.5	7.0	7.4	8.0	7.5	7.7	7.4	8.0	8.0
Full-time junior faculty .....	1.3	1.4	1.8	2.1	1.5	1.9	1.8	1.9	2.2	2.2	2.2	2.6	2.9	3.2
Full-time nonfaculty .....	0.3	0.2	0.2	0.2	0.3	0.7	0.2	0.5	0.2	0.5	0.5	0.5	0.6	0.4
Postdocs .....	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Part-time positions .....	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.7	0.4	0.7	0.5	0.6	0.7

Appendix table 5-18

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**S&E doctorate holders employed in academia, by type of position, Carnegie institution type, and administrative control of institution: 1975–2001**

(Thousands)

Institution control, institution type, and position	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>Freestanding medical schools</b>														
All positions .....	1.2	1.3	1.5	1.8	1.8	2.3	2.9	3.1	2.8	3.4	3.4	3.5	3.7	3.6
Full-time senior faculty .....	0.5	0.6	0.7	0.9	0.9	1.0	1.3	1.4	1.3	1.5	1.5	1.2	1.6	1.7
Full-time junior faculty .....	0.4	0.5	0.6	0.5	0.5	0.8	1.0	1.1	1.0	1.1	1.0	1.2	1.1	0.9
Full-time nonfaculty .....	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.4
Postdocs .....	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.7	0.5	0.5
Part-time positions.....	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
<b>Liberal arts colleges</b>														
All positions .....	9.1	9.3	9.8	10.4	10.6	11.8	12.1	12.6	13.2	13.4	13.4	14.3	15.8	15.7
Full-time senior faculty .....	5.6	5.6	6.1	6.9	7.1	7.8	8.5	9.0	9.2	8.9	9.1	9.1	10.4	10.3
Full-time junior faculty .....	2.7	2.9	2.6	2.3	2.4	2.8	2.5	2.6	2.4	3.2	3.4	3.8	3.9	3.6
Full-time nonfaculty .....	0.5	0.4	0.6	0.7	0.6	0.7	0.6	0.6	0.9	0.8	0.6	0.6	0.7	0.9
Postdocs .....	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.1
Part-time positions.....	0.3	0.2	0.4	0.4	0.5	0.4	0.4	0.4	0.6	0.4	0.2	0.6	0.5	0.9

U&amp;C universities and colleges

NOTES: Employment at institutions without a Carnegie code or with unknown administrative control is included only in total. Freestanding schools of engineering and technology are included under comprehensive institutions. Senior faculty includes full and associate professors; junior faculty includes assistant professors and instructors; and full-time nonfaculty includes positions such as research associates, adjunct appointments, lecturers, and administrative positions. See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-19

(Page 1 of 2)

**S&E doctorate holders employed in academia, by type of position and degree field: 1975–2001**

(Thousands)

Position and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All positions</b>														
All fields .....	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
All sciences .....	120.7	130.7	139.5	151.0	158.1	170.4	174.8	183.9	187.8	190.6	193.7	205.9	214.7	218.9
Physical sciences .....	23.6	25.0	24.6	25.4	25.1	27.0	27.2	27.7	27.7	28.6	29.3	30.2	30.9	30.4
Mathematics .....	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9
Computer sciences .....	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8
Earth, atmospheric, and ocean sciences .....	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2
Life sciences .....	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3
Psychology .....	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4
Social sciences .....	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9
Engineering .....	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6
<b>All full-time faculty</b>														
All fields .....	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4
All sciences .....	104.2	112.2	116.9	127.3	132.0	139.0	145.2	149.6	153.1	152.3	151.3	156.8	163.0	165.5
Physical sciences .....	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6
Mathematics .....	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6
Computer sciences .....	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3
Earth, atmospheric, and ocean sciences .....	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9
Life sciences .....	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4
Psychology .....	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6
Social sciences .....	25.5	28.8	30.4	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.7	39.2	39.2
Engineering .....	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9
<b>Full-time professors</b>														
All fields .....	47.9	51.0	57.5	64.4	69.9	72.8	79.1	83.1	82.5	80.0	77.7	80.9	83.1	84.8
All sciences .....	42.4	44.7	50.1	56.4	60.9	63.7	68.7	72.5	72.6	69.7	68.6	70.2	72.4	74.1
Physical sciences .....	8.6	9.2	10.0	11.2	11.9	12.6	13.5	13.2	12.8	12.1	11.6	11.4	11.6	11.2
Mathematics .....	3.5	3.9	4.4	5.0	5.6	6.1	6.5	6.9	6.7	7.1	6.6	6.9	6.6	6.6
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.7	0.8
Earth, atmospheric, and ocean sciences .....	1.4	1.6	1.7	1.9	2.0	2.0	2.0	2.3	2.0	2.1	2.3	2.4	2.6	2.8
Life sciences .....	13.6	13.9	15.5	17.0	19.3	19.6	21.7	22.5	22.9	21.2	22.5	22.5	23.3	24.5
Psychology .....	4.6	4.8	5.6	6.5	7.0	7.6	8.3	9.1	9.5	8.7	8.7	9.5	9.4	9.9
Social sciences .....	10.6	11.3	12.9	14.7	15.1	15.9	16.8	18.5	18.6	18.4	16.6	17.1	18.2	18.2
Engineering .....	5.6	6.4	7.4	8.0	9.0	9.2	10.4	10.6	9.9	10.3	9.1	10.7	10.6	10.7
<b>Full-time associate professors</b>														
All fields .....	36.3	39.7	39.7	42.9	45.7	46.9	48.2	47.9	50.5	48.6	49.6	51.0	53.6	52.2
All sciences .....	32.2	35.3	35.5	38.5	40.9	42.2	43.3	42.6	44.7	43.3	43.5	45.2	47.6	46.1
Physical sciences .....	6.0	6.1	6.0	5.6	5.2	5.1	4.9	4.5	4.7	4.8	4.8	5.2	5.1	5.3
Mathematics .....	3.4	3.7	3.9	4.0	4.1	4.0	4.1	4.0	5.1	4.4	4.0	3.9	4.1	3.6
Computer sciences .....	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.7	1.4	1.4	1.4	1.6
Earth, atmospheric, and ocean sciences .....	1.1	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.6	1.6	1.3	1.3	1.5	1.4
Life sciences .....	9.8	10.7	11.5	12.5	13.4	14.1	14.1	14.0	14.6	14.6	14.7	15.8	17.3	16.7
Psychology .....	4.1	4.3	4.3	5.2	5.9	5.9	6.0	5.9	5.9	5.6	5.8	5.8	6.2	6.0
Social sciences .....	7.9	9.4	8.8	10.2	11.2	11.8	12.7	12.6	12.0	11.6	11.5	11.7	11.9	11.4
Engineering .....	4.2	4.4	4.2	4.4	4.7	4.7	4.9	5.3	5.9	5.3	6.2	5.8	6.0	6.1
<b>Full-time junior faculty</b>														
All fields .....	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5
All sciences .....	29.6	32.2	31.3	32.3	30.2	33.1	33.2	34.4	35.8	39.3	39.3	41.5	42.9	45.4
Physical sciences .....	4.3	4.8	4.0	3.7	3.1	3.5	3.6	3.7	4.1	4.3	4.5	4.8	5.1	5.0
Mathematics .....	3.5	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.8	2.4	2.3
Computer sciences .....	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.3	1.2	0.9
Earth, atmospheric, and ocean sciences .....	0.9	0.9	0.7	0.9	0.9	1.1	1.1	1.1	0.9	0.9	1.1	1.3	1.5	1.7
Life sciences .....	9.7	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	16.9	17.5	19.2
Psychology .....	4.2	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	5.5	6.2	6.6
Social sciences .....	7.1	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.9	9.1	9.6
Engineering .....	2.5	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	5.0	4.5	5.1

Appendix table 5-19

(Page 2 of 2)

**S&E doctorate holders employed in academia, by type of position and degree field: 1975–2001**

(Thousands)

Position and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All other full-time positions</b>														
All fields .....	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7
All sciences.....	7.4	8.0	10.5	11.5	12.3	16.6	15.3	17.7	18.4	20.7	21.7	23.3	26.4	28.3
Physical sciences.....	1.9	2.1	2.0	2.4	2.5	3.0	2.6	3.3	3.2	3.7	3.8	4.6	5.6	5.5
Mathematics.....	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.6	0.5	0.6	0.8	0.8	1.0
Computer sciences .....	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Earth, atmospheric, and ocean sciences.....	0.3	0.3	0.5	0.5	0.5	0.7	0.8	0.7	0.9	1.1	1.1	1.4	1.4	1.6
Life sciences.....	2.4	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	8.4	9.5	10.5
Psychology .....	1.0	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.0	4.6	4.9
Social sciences .....	1.5	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	3.9	4.3	4.5
Engineering.....	0.9	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.1	3.0	3.4
<b>Postdocs</b>														
All fields .....	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5
All sciences.....	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6
Physical sciences.....	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6
Mathematics.....	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Earth, atmospheric, and ocean sciences.....	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4
Life sciences.....	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0
Psychology .....	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2
Social sciences .....	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6
Engineering.....	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9
<b>Part-time positions</b>														
All fields .....	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0
All sciences.....	3.1	3.2	4.3	3.9	5.7	6.2	5.4	5.6	6.9	5.4	5.1	8.6	7.9	8.5
Physical sciences.....	0.6	0.6	0.7	0.6	1.0	0.9	0.6	0.5	0.9	0.7	0.7	1.0	0.7	0.7
Mathematics.....	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3
Life sciences.....	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4
Psychology .....	0.5	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8
Social sciences .....	0.8	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7
Engineering.....	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4

NA not available

NOTES: Faculty are defined by position: professors and associate professors are senior faculty; junior faculty are assistant professors or instructors; other full-time positions include nonfaculty positions such as research associates, adjunct appointments, lecturers, and administrative positions. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-20

**Recent S&E doctorate holders employed in academia, by years since doctorate, Carnegie institution type, type of position, and tenure status: 1975–2001**

(Percent distribution)

Years since doctorate and institution type	Position				Tenure status			
	Total	Full-time faculty	Postdocs	Other	On tenure track			Not on tenure track
					Total	Tenured	Untenured	
<b>1–3 years since doctorate</b>								
<b>All U&amp;C</b>								
1975 .....	100.0	70.4	18.3	11.3	NA	NA	NA	NA
1977 .....	100.0	64.8	22.9	12.3	NA	NA	NA	NA
1979 .....	100.0	59.2	25.0	15.8	45.1	7.4	37.7	54.9
1981 .....	100.0	56.9	28.4	14.7	45.0	5.2	39.8	55.0
1983 .....	100.0	56.5	27.9	15.7	66.2	8.4	57.8	33.8
1985 .....	100.0	54.7	27.4	17.9	49.0	4.2	44.8	51.0
1987 .....	100.0	51.8	29.8	18.5	48.6	3.8	44.8	51.4
1989 .....	100.0	47.6	33.5	19.0	44.1	3.7	40.4	55.9
1991 .....	100.0	55.1	27.4	17.5	65.2	4.6	60.6	34.8
1993 .....	100.0	47.6	33.4	19.0	36.3	1.9	34.4	63.7
1995 .....	100.0	41.4	39.6	19.0	31.2	2.6	28.6	68.8
1997 .....	100.0	40.6	41.4	18.0	32.0	2.6	29.5	68.0
1999 .....	100.0	37.3	43.1	19.5	28.8	2.0	26.8	71.2
2001 .....	100.0	43.6	39.1	17.3	33.7	2.7	31.0	66.3
<b>Research universities</b>								
1975 .....	100.0	56.6	29.0	14.4	NA	NA	NA	NA
1977 .....	100.0	50.5	36.0	13.5	NA	NA	NA	NA
1979 .....	100.0	47.7	35.6	16.6	34.8	1.6	33.2	65.2
1981 .....	100.0	45.6	38.8	15.6	36.3	1.1	35.2	63.7
1983 .....	100.0	43.3	40.5	16.2	56.9	2.6	54.3	43.1
1985 .....	100.0	43.5	37.2	19.3	39.6	0.6	39.1	60.4
1987 .....	100.0	40.0	40.3	19.7	39.2	1.3	37.9	60.8
1989 .....	100.0	36.3	44.2	19.5	36.0	1.2	34.8	64.0
1991 .....	100.0	41.9	38.4	19.7	57.3	2.4	55.0	42.7
1993 .....	100.0	33.4	46.3	20.3	23.7	0.7	23.0	76.3
1995 .....	100.0	26.7	54.4	18.8	19.6	0.4	19.2	80.4
1997 .....	100.0	26.8	56.4	16.9	19.5	0.6	18.9	80.5
1999 .....	100.0	24.1	57.9	18.0	18.9	0.7	18.2	81.1
2001 .....	100.0	29.8	52.8	17.5	22.3	1.1	21.2	77.7
<b>Other U&amp;C</b>								
1975 .....	100.0	86.5	5.9	7.6	NA	NA	NA	NA
1977 .....	100.0	82.0	7.2	10.8	NA	NA	NA	NA
1979 .....	100.0	75.6	9.9	14.5	59.5	15.6	43.9	40.5
1981 .....	100.0	75.7	11.1	13.1	59.4	12.1	47.4	40.6
1983 .....	100.0	75.2	9.9	14.9	76.9	15.1	61.8	23.1
1985 .....	100.0	73.5	10.8	15.7	63.5	9.9	53.6	36.5
1987 .....	100.0	73.2	10.6	16.1	64.4	8.1	56.4	35.6
1989 .....	100.0	67.9	14.2	17.9	56.9	7.5	49.4	43.1
1991 .....	100.0	75.0	10.7	14.3	73.0	6.7	66.2	27.0
1993 .....	100.0	69.9	13.2	16.9	56.1	3.8	52.3	43.9
1995 .....	100.0	63.3	17.5	19.2	48.6	5.9	42.7	51.4
1997 .....	100.0	57.9	22.7	19.4	47.6	4.9	42.6	52.4
1999 .....	100.0	55.0	23.4	21.6	42.1	3.7	38.4	57.9
2001 .....	100.0	62.3	20.7	17.0	49.1	4.8	44.3	50.9
<b>4–7 years since doctorate</b>								
<b>All U&amp;C</b>								
1975 .....	100.0	87.1	4.3	8.3	NA	NA	NA	NA
1977 .....	100.0	85.0	5.3	9.7	NA	NA	NA	NA
1979 .....	100.0	81.2	6.1	12.9	65.7	26.3	39.4	32.8
1981 .....	100.0	80.8	6.3	13.2	70.3	24.9	45.3	28.4
1983 .....	100.0	76.8	5.7	17.2	65.7	23.8	42.0	26.1
1985 .....	100.0	76.9	6.9	16.4	65.2	19.4	45.8	29.0
1987 .....	100.0	75.0	7.6	17.2	60.4	16.6	43.8	28.9
1989 .....	100.0	73.2	9.1	17.8	59.5	12.6	46.9	30.1
1991 .....	100.0	75.0	7.1	17.6	65.1	21.2	43.9	24.7

Appendix table 5-20

(Page 2 of 2)

**Recent S&E doctorate holders employed in academia, by years since doctorate, Carnegie institution type, type of position, and tenure status: 1975–2001**

(Percent distribution)

Years since doctorate and institution type	Position				Tenure status			
	Total	Full-time faculty	Postdocs	Other	On tenure track			Not on tenure track
					Total	Tenured	Untenured	
1993 .....	100.0	72.1	11.1	16.7	60.4	12.4	48.0	39.6
1995 .....	100.0	70.3	12.9	16.8	59.3	12.4	46.9	40.7
1997 .....	100.0	66.3	14.8	19.0	54.1	11.6	42.5	45.9
1999 .....	100.0	65.4	14.1	20.5	52.4	10.4	42.0	47.6
2001 .....	100.0	63.1	13.2	23.7	49.6	9.0	40.6	50.4
Research universities								
1975 .....	100.0	82.1	7.7	9.8	NA	NA	NA	NA
1977 .....	100.0	77.8	9.4	13.3	NA	NA	NA	NA
1979 .....	100.0	74.0	9.8	16.7	60.0	20.2	39.8	38.5
1981 .....	100.0	74.4	8.9	16.8	61.6	16.2	45.4	36.8
1983 .....	100.0	70.5	8.7	21.2	60.2	14.4	45.8	31.9
1985 .....	100.0	69.1	10.9	20.0	58.7	11.9	46.8	35.0
1987 .....	100.0	67.0	11.4	21.9	53.1	12.2	40.9	35.1
1989 .....	100.0	65.1	13.7	20.9	52.3	7.5	44.8	35.9
1991 .....	100.0	65.9	11.6	22.8	56.9	16.2	40.7	28.2
1993 .....	100.0	64.5	17.5	18.6	52.4	6.9	45.5	47.6
1995 .....	100.0	59.9	19.8	19.9	49.0	7.6	41.3	51.0
1997 .....	100.0	55.2	21.3	23.1	43.5	5.9	37.7	56.5
1999 .....	100.0	54.8	21.0	24.3	41.8	5.8	36.0	58.2
2001 .....	100.0	50.0	22.1	28.0	37.9	4.9	33.0	62.1
Other U&C								
1975 .....	100.0	91.8	1.1	6.8	NA	NA	NA	NA
1977 .....	100.0	92.1	1.6	6.5	NA	NA	NA	NA
1979 .....	100.0	89.2	1.9	8.7	71.9	32.9	39.0	26.5
1981 .....	100.0	87.9	3.4	9.3	80.1	34.8	45.3	18.9
1983 .....	100.0	84.4	2.7	13.4	71.3	33.3	38.1	20.3
1985 .....	100.0	86.2	2.2	12.1	73.0	28.5	44.5	21.9
1987 .....	100.0	87.4	2.4	10.9	70.4	22.6	47.7	20.4
1989 .....	100.0	84.6	2.4	13.3	69.7	19.9	49.8	22.0
1991 .....	100.0	86.3	2.2	11.2	75.2	27.4	47.9	20.3
1993 .....	100.0	82.6	3.4	14.6	70.2	19.1	51.1	29.8
1995 .....	100.0	81.6	5.1	13.2	71.2	17.9	53.3	28.8
1997 .....	100.0	77.5	7.7	14.9	64.6	17.3	47.3	35.4
1999 .....	100.0	75.3	7.6	16.9	62.3	14.7	47.7	37.7
2001 .....	100.0	76.1	4.5	19.4	61.1	13.0	48.1	38.9

NA not available

U&amp;C universities and colleges

NOTES: See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching. Recent doctorate-holders are defined as having earned their doctorate within 3 years or within 4–7 years, respectively, preceding the survey year. Full-time faculty includes full, associate, and assistant professors plus instructors. Other types of positions include full-time nonfaculty appointments such as research associates, adjunct appointments, lecturers, administrative positions, and part-time appointments of all kinds. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.



Appendix table 5-21

## Age distribution of S&amp;E doctorate holders employed in academia, by type of position: 1975–2001

Position	Age (years)		Age distribution (percent)					65 or older
	Mean	Median	Total	Younger than 35	35–44	45–54	55–64	
<b>All positions</b>								
1975 .....	42.4	39.9	100.0	25.9	36.8	23.7	11.7	2.0
1977 .....	42.7	40.0	100.0	22.9	38.9	23.8	12.4	2.0
1979 .....	43.3	40.7	100.0	20.1	40.3	23.8	13.6	2.2
1981 .....	44.0	41.5	100.0	18.3	40.5	23.7	14.5	2.9
1983 .....	44.8	42.5	100.0	14.9	40.8	25.2	15.7	3.4
1985 .....	45.2	43.2	100.0	14.2	39.2	26.8	15.9	3.8
1987 .....	45.6	44.2	100.0	12.9	36.5	30.6	16.5	3.5
1989 .....	46.1	45.0	100.0	12.1	34.7	32.2	16.9	4.1
1991 .....	46.3	45.3	100.0	11.5	33.7	34.2	16.9	3.8
1993 .....	45.8	45.0	100.0	13.3	33.3	34.4	16.1	3.0
1995 .....	46.2	45.3	100.0	12.7	32.9	33.6	17.4	3.5
1997 .....	46.6	45.8	100.0	13.3	30.7	32.8	19.6	3.6
1999 .....	47.0	46.3	100.0	12.2	30.5	31.0	22.5	3.8
2001 .....	47.4	46.9	100.0	12.0	29.1	31.8	23.1	4.0
<b>Full-time faculty</b>								
1975 .....	42.8	40.6	100.0	22.9	38.2	25.1	12.0	1.8
1977 .....	43.3	40.9	100.0	19.2	40.1	25.7	13.3	1.7
1979 .....	44.0	41.6	100.0	16.2	41.1	25.9	14.7	2.0
1981 .....	44.7	42.4	100.0	14.7	41.2	25.8	15.7	2.7
1983 .....	45.5	43.4	100.0	11.3	41.2	27.5	17.2	2.8
1985 .....	45.8	43.9	100.0	10.8	39.6	29.0	17.0	3.5
1987 .....	46.6	45.1	100.0	9.2	35.9	33.2	18.1	3.5
1989 .....	47.1	46.0	100.0	8.3	33.8	35.4	18.8	3.8
1991 .....	47.0	46.4	100.0	8.8	32.7	36.8	18.3	3.4
1993 .....	46.9	46.0	100.0	9.3	32.4	36.9	18.0	3.3
1995 .....	47.5	46.9	100.0	8.0	31.9	36.6	19.8	3.8
1997 .....	48.0	47.5	100.0	8.2	29.9	35.6	22.2	4.0
1999 .....	48.5	48.0	100.0	7.3	29.4	33.3	25.7	4.3
2001 .....	48.8	48.3	100.0	7.6	28.0	34.1	25.9	4.4
<b>Postdocs</b>								
1975 .....	32.7	31.2	100.0	78.0	18.7	2.0	1.1	0.2
1977 .....	32.9	31.1	100.0	75.3	21.7	2.4	0.6	0.0
1979 .....	33.1	31.6	100.0	71.7	25.5	2.1	0.7	0.0
1981 .....	33.1	31.6	100.0	71.9	24.6	2.6	0.6	0.3
1983 .....	33.7	31.7	100.0	68.4	27.0	3.5	1.0	0.2
1985 .....	33.3	31.9	100.0	70.6	27.2	2.1	0.1	0.0
1987 .....	33.8	32.0	100.0	68.4	28.3	2.4	0.5	0.4
1989 .....	34.6	32.6	100.0	63.9	29.9	4.5	1.0	0.7
1991 .....	34.7	33.1	100.0	57.2	39.0	2.8	1.0	0.0
1993 .....	33.9	32.7	100.0	62.3	34.7	2.5	0.5	0.0
1995 .....	35.0	33.0	100.0	56.6	35.9	5.8	1.6	0.1
1997 .....	35.0	33.0	100.0	60.7	32.3	4.6	2.1	0.3
1999 .....	34.5	33.0	100.0	57.6	36.8	5.3	0.3	0.0
2001 .....	34.6	33.0	100.0	59.9	34.6	4.5	0.8	0.1
<b>Other positions</b>								
1975 .....	43.3	40.0	100.0	27.5	32.0	21.8	13.4	5.4
1977 .....	42.5	38.3	100.0	28.4	37.4	17.5	10.6	6.1
1979 .....	42.5	38.6	100.0	25.2	41.6	17.0	10.9	5.2
1981 .....	43.3	39.6	100.0	21.8	43.6	17.0	11.1	6.4
1983 .....	44.1	39.9	100.0	19.3	43.6	17.5	10.6	8.9
1985 .....	45.3	42.5	100.0	15.9	41.0	21.6	14.7	6.8
1987 .....	43.9	41.1	100.0	16.9	43.9	23.3	10.9	5.0
1989 .....	44.9	42.2	100.0	14.2	43.3	23.5	11.2	7.8
1991 .....	46.1	44.0	100.0	11.6	38.2	28.7	14.2	7.3
1993 .....	44.6	43.2	100.0	14.2	37.9	33.9	11.3	2.7
1995 .....	44.8	43.5	100.0	15.0	37.0	31.7	12.4	3.8
1997 .....	45.8	44.7	100.0	13.4	33.9	33.5	15.7	3.4
1999 .....	46.0	45.0	100.0	13.6	33.1	32.4	17.9	3.1
2001 .....	46.8	45.6	100.0	11.5	31.8	32.6	20.2	3.9

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Other positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Details may not add to totals and percents may not sum to 100 because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-22

**Age distribution of S&E doctorate holders in full-time faculty positions at research universities and other academic institutions: 1975–2001**

Age and institution type	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
	Thousands													
All U&C .....	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4
Research universities .....	61.5	64.7	67.1	73.8	72.2	80.6	84.2	86.6	85.8	84.4	81.6	81.5	84.1	84.8
Other U&C .....	54.9	61.0	64.1	68.2	76.2	76.2	80.2	83.2	87.3	88.1	89.7	96.8	99.9	102.6
	Percent distribution													
All U&C														
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Younger than 30.....	2.9	2.3	1.7	1.5	1.1	1.0	0.7	0.5	0.8	1.1	0.7	0.8	0.8	0.9
30–34.....	20.1	16.9	14.5	13.2	10.2	9.9	8.5	7.8	8.1	8.3	7.3	7.5	6.5	6.7
35–39.....	21.6	23.7	23.3	20.7	18.6	18.2	15.9	15.1	14.9	15.3	14.9	13.1	13.2	12.4
40–44.....	16.6	16.4	17.8	20.5	22.6	21.4	20.0	18.6	17.8	17.1	17.0	16.7	16.2	15.6
45–49.....	13.8	14.3	14.1	13.8	15.1	17.0	20.1	20.8	19.4	18.4	17.9	17.2	16.8	16.8
50–54.....	11.3	11.4	11.8	12.0	12.4	12.0	13.1	14.6	17.4	18.5	18.7	18.5	16.5	17.4
55–59.....	7.5	8.4	9.3	9.4	10.3	9.7	10.5	11.1	11.0	10.6	12.4	14.5	16.7	15.5
60–64.....	4.6	4.8	5.4	6.3	7.0	7.3	7.6	7.7	7.2	7.5	7.4	7.7	9.0	10.3
65 or older.....	1.8	1.7	2.0	2.7	2.8	3.5	3.5	3.8	3.4	3.3	3.8	4.0	4.3	4.4
Research universities														
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Younger than 30.....	3.0	2.5	2.2	2.1	1.4	1.2	1.0	0.6	0.8	1.2	0.9	0.9	0.7	1.1
30–34.....	18.8	16.4	14.9	14.1	11.2	11.4	9.8	9.3	9.1	9.4	7.3	7.0	6.3	6.6
35–39.....	20.3	21.0	21.7	19.8	18.0	17.9	16.6	17.1	16.6	16.6	16.4	14.0	13.8	12.2
40–44.....	16.3	16.2	17.2	18.8	20.2	20.0	18.7	17.2	17.5	17.6	18.4	17.6	17.3	16.5
45–49.....	14.2	14.7	13.9	12.6	14.9	15.4	17.8	18.4	17.8	16.9	16.9	17.3	16.5	16.9
50–54.....	12.2	12.3	12.1	12.1	12.1	12.0	12.9	13.8	15.6	16.0	16.5	17.3	15.9	16.3
55–59.....	8.3	9.3	10.0	10.4	10.8	9.8	10.3	10.9	10.7	11.0	11.8	13.5	15.2	14.3
60–64.....	5.0	5.4	5.8	6.8	8.0	8.2	8.5	8.0	7.7	7.8	7.5	7.8	9.3	10.7
65 or older.....	1.9	2.2	2.3	3.2	3.5	4.1	4.3	4.8	4.2	3.7	4.2	4.7	4.9	5.3
Other U&C														
All ages (years).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Younger than 30.....	2.8	2.1	1.2	0.9	0.8	0.8	0.4	0.4	0.8	0.9	0.6	0.7	0.8	0.8
30–34.....	21.4	17.5	14.1	12.2	9.4	8.2	7.1	6.3	7.1	7.3	7.2	7.9	6.7	6.7
35–39.....	23.0	26.5	25.1	21.6	19.1	18.5	15.2	13.1	13.1	14.1	13.5	12.5	12.6	12.5
40–44.....	17.0	16.6	18.4	22.3	24.9	22.8	21.3	20.1	18.1	16.7	15.7	16.0	15.3	14.8
45–49.....	13.3	13.9	14.3	15.0	15.2	18.8	22.5	23.4	20.9	19.9	18.8	17.1	17.0	16.7
50–54.....	10.3	10.4	11.6	11.8	12.7	12.0	13.4	15.4	19.2	20.8	20.6	19.5	17.1	18.2
55–59.....	6.5	7.5	8.5	8.4	9.8	9.6	10.8	11.2	11.3	10.2	12.9	15.4	17.9	16.5
60–64.....	4.2	4.2	5.1	5.8	5.9	6.3	6.6	7.4	6.8	7.1	7.2	7.5	8.7	10.1
65 or older.....	1.6	1.2	1.7	2.0	2.2	2.9	2.6	2.7	2.7	3.0	3.3	3.5	3.8	3.6

U&amp;C universities and colleges

NOTES: Faculty positions include full, associate, and assistant professors and instructors. See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching. Details may not add to totals and percents may not sum to 100 because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-23

(Page 1 of 4)

**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1975–2001**

(Thousands)

Position, sex, and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All positions</b>														
Both sexes, all fields .....	134.1	145.5	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
All sciences .....	120.7	130.7	139.5	151.0	158.1	170.4	174.8	183.9	187.8	190.6	193.7	205.9	214.7	218.9
Physical sciences .....	23.6	25.0	24.6	25.4	25.1	27.0	27.2	27.7	27.7	28.6	29.3	30.2	30.9	30.4
Mathematics .....	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9
Computer sciences .....	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8
Earth, atmospheric, and ocean sciences .....	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2
Life sciences .....	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3
Psychology .....	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4
Social sciences .....	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9
Engineering .....	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.9	22.8	23.1	23.8	26.6	25.5	26.6
Male, all fields .....	120.3	129.0	136.0	144.0	149.8	159.2	162.0	168.0	168.7	166.9	165.1	173.3	175.8	175.0
All sciences .....	106.9	114.3	120.3	128.1	132.0	139.7	141.4	145.8	146.9	144.8	142.9	148.4	152.4	150.7
Physical sciences .....	22.1	23.3	22.9	23.5	23.2	24.9	24.9	25.2	25.4	25.7	25.9	26.2	27.0	26.2
Mathematics .....	10.3	10.8	11.3	11.3	11.8	12.3	12.5	13.0	13.9	13.7	12.8	13.5	12.9	12.6
Computer sciences .....	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.6	2.1	2.5	2.6	2.9	2.9
Earth, atmospheric, and ocean sciences .....	3.8	4.1	4.0	4.3	4.5	4.9	5.1	5.3	5.4	5.7	5.5	6.2	6.4	6.6
Life sciences .....	34.3	36.6	40.1	42.9	44.5	46.7	47.9	49.5	50.1	49.4	50.1	52.6	55.1	54.9
Psychology .....	11.8	12.6	13.5	14.9	15.1	16.0	16.2	16.5	16.0	14.7	14.7	15.4	15.6	15.7
Social sciences .....	24.7	26.9	28.5	30.9	32.3	34.3	33.9	35.1	34.6	33.4	31.3	31.9	32.4	31.7
Engineering .....	13.3	14.7	15.7	15.9	17.8	19.5	20.6	22.2	21.8	22.1	22.3	24.8	23.4	24.3
Female, all fields .....	13.8	16.5	19.4	23.1	26.5	31.1	34.0	38.7	41.9	46.9	52.4	59.2	64.4	70.5
All sciences .....	13.8	16.4	19.2	22.9	26.1	30.7	33.5	38.0	40.9	45.8	50.9	57.5	62.3	68.2
Physical sciences .....	1.5	1.6	1.7	1.9	1.9	2.1	2.3	2.5	2.3	2.9	3.5	4.0	3.9	4.2
Mathematics .....	0.8	0.9	0.9	1.1	1.1	1.3	1.4	1.5	1.4	1.7	1.8	2.1	2.2	2.3
Computer sciences .....	NA	NA	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.8
Earth, atmospheric, and ocean sciences .....	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.9	1.1	1.4	1.6
Life sciences .....	5.1	6.0	6.9	8.4	10.3	12.1	13.3	15.3	16.8	18.8	21.5	24.7	26.7	29.4
Psychology .....	3.0	3.6	4.3	5.2	5.9	7.1	7.6	8.5	9.2	10.3	11.5	11.9	13.4	14.7
Social sciences .....	3.3	4.2	5.2	6.0	6.5	7.7	8.3	9.4	10.2	10.9	11.2	13.0	13.8	15.2
Engineering .....	0.1	0.1	0.2	0.2	0.3	0.4	0.6	0.7	1.0	1.1	1.5	1.7	2.1	2.3
<b>Full-time senior faculty</b>														
Both sexes, all fields .....	84.3	90.7	97.2	107.3	115.6	119.7	127.3	131.0	133.0	128.6	127.3	131.9	136.7	136.9
All sciences .....	74.5	80.0	85.6	94.9	101.8	105.8	112.0	115.2	117.2	113.0	112.1	115.4	120.1	120.2
Physical sciences .....	14.6	15.3	16.0	16.8	17.1	17.7	18.3	17.8	17.6	16.9	16.4	16.7	16.6	16.5
Mathematics .....	6.9	7.6	8.3	9.1	9.7	10.0	10.5	10.9	11.8	11.5	10.6	10.8	10.8	10.2
Computer sciences .....	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.9	0.9	1.7	1.7	2.1	2.4
Earth, atmospheric, and ocean sciences .....	2.5	2.7	2.8	2.9	3.1	3.1	3.2	3.6	3.6	3.7	3.6	3.8	4.1	4.2
Life sciences .....	23.4	24.6	27.0	29.6	32.6	33.7	35.8	36.4	37.4	35.8	37.2	38.3	40.6	41.2
Psychology .....	8.7	9.1	9.9	11.7	12.8	13.5	14.3	15.0	15.3	14.3	14.5	15.3	15.6	15.9
Social sciences .....	18.5	20.7	21.7	24.9	26.3	27.7	29.5	31.1	30.6	29.9	28.1	28.8	30.1	29.6
Engineering .....	9.7	10.7	11.6	12.4	13.7	13.9	15.3	15.9	15.8	15.7	15.3	16.6	16.6	16.8
Male, all fields .....	78.9	84.7	90.2	98.7	104.9	107.4	113.2	115.2	115.5	110.3	107.0	109.4	110.6	108.3
All sciences .....	69.2	74.0	78.7	86.4	91.3	93.7	98.2	99.6	100.1	95.0	92.2	93.3	94.8	92.4
Physical sciences .....	14.1	14.7	15.4	16.2	16.4	17.0	17.5	16.9	16.9	16.0	15.4	15.6	15.4	15.0
Mathematics .....	6.5	7.2	7.9	8.6	9.1	9.3	9.8	10.0	10.8	10.5	9.8	10.0	9.7	9.1
Computer sciences .....	NA	NA	0.0	0.0	0.1	0.1	0.3	0.4	0.8	0.8	1.4	1.3	1.6	2.0
Earth, atmospheric, and ocean sciences .....	2.5	2.7	2.7	2.8	3.0	3.0	3.1	3.4	3.4	3.5	3.4	3.3	3.6	3.6
Life sciences .....	21.6	22.7	24.8	26.9	29.1	29.4	31.0	31.0	31.4	29.3	29.3	30.0	31.1	30.4
Psychology .....	7.6	7.8	8.4	9.7	10.5	10.8	11.2	11.5	11.3	10.2	10.1	10.7	10.3	10.3
Social sciences .....	16.9	18.8	19.5	22.3	23.2	24.1	25.3	26.4	25.5	24.7	22.8	22.4	23.2	21.9
Engineering .....	9.7	10.7	11.5	12.2	13.6	13.7	15.1	15.7	15.4	15.3	14.8	16.1	15.8	15.9

Appendix table 5-23

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**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1975–2001**

(Thousands)

Position, sex, and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Female, all fields .....	5.4	6.0	7.0	8.6	10.7	12.4	14.0	15.8	17.6	18.3	20.3	22.5	26.1	28.6
All sciences.....	5.4	6.0	6.9	8.5	10.5	12.2	13.8	15.6	17.1	18.0	19.8	22.0	25.3	27.8
Physical sciences.....	0.5	0.6	0.6	0.6	0.7	0.8	0.9	0.9	0.7	0.9	1.0	1.1	1.3	1.5
Mathematics.....	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	0.8	0.8	1.1	1.1
Computer sciences.....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.5	0.4
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.6	0.6
Life sciences.....	1.8	1.9	2.2	2.7	3.5	4.3	4.8	5.4	6.1	6.5	7.8	8.3	9.5	10.8
Psychology .....	1.1	1.2	1.4	2.0	2.4	2.7	3.1	3.5	4.0	4.1	4.4	4.6	5.4	5.6
Social sciences.....	1.5	1.8	2.2	2.6	3.1	3.6	4.1	4.7	5.1	5.2	5.3	6.4	7.0	7.7
Engineering.....	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.5	0.5	0.8	0.9
Full-time junior faculty														
Both sexes, all fields .....	32.1	34.9	34.0	34.6	32.8	37.2	37.2	38.7	40.1	43.8	44.0	46.4	47.4	50.5
All sciences.....	29.6	32.2	31.3	32.3	30.2	33.1	33.2	34.4	35.8	39.3	39.3	41.5	42.9	45.4
Physical sciences.....	4.3	4.8	4.0	3.7	3.1	3.5	3.6	3.7	4.1	4.3	4.5	4.8	5.1	5.0
Mathematics.....	3.5	3.3	3.1	2.6	2.5	2.7	2.4	2.6	2.4	3.2	2.4	2.8	2.4	2.3
Computer sciences.....	NA	NA	0.1	0.2	0.3	0.6	0.6	0.9	1.0	1.4	1.2	1.3	1.2	0.9
Earth, atmospheric, and ocean sciences.....	0.9	0.9	0.7	0.9	0.9	1.1	1.1	1.1	0.9	0.9	1.1	1.3	1.5	1.7
Life sciences.....	9.7	10.3	10.3	11.3	10.8	11.9	12.3	12.8	13.7	15.0	15.6	16.9	17.5	19.2
Psychology.....	4.2	4.8	4.4	4.8	4.5	5.0	4.9	5.2	5.4	5.2	5.5	5.5	6.2	6.6
Social sciences.....	7.1	8.2	8.6	8.8	8.1	8.4	8.2	7.9	8.4	9.3	9.0	8.9	9.1	9.6
Engineering.....	2.5	2.7	2.8	2.3	2.7	4.0	4.0	4.3	4.3	4.5	4.8	5.0	4.5	5.1
Male, all fields .....	27.5	28.9	27.3	27.1	25.2	27.8	27.2	27.6	28.1	29.7	28.5	29.5	30.1	31.0
All sciences.....	25.1	26.3	24.6	24.9	22.6	23.9	23.4	23.5	24.2	25.7	24.4	25.1	26.2	26.7
Physical sciences.....	4.0	4.4	3.6	3.2	2.7	3.0	3.2	3.2	3.4	3.5	3.4	3.5	4.0	3.9
Mathematics.....	3.2	2.9	2.7	2.2	2.2	2.3	2.0	2.2	2.2	2.7	2.0	2.2	1.7	1.7
Computer sciences.....	NA	NA	0.1	0.2	0.3	0.5	0.5	0.8	0.8	1.1	1.0	1.0	0.9	0.7
Earth, atmospheric, and ocean sciences.....	0.9	0.8	0.7	0.9	0.8	0.9	0.9	0.9	0.7	0.7	0.7	1.0	1.1	1.2
Life sciences.....	8.1	8.4	8.1	8.9	8.1	8.5	8.5	8.4	8.8	9.5	9.5	9.8	10.4	11.0
Psychology .....	3.0	3.3	2.8	3.0	2.6	2.7	2.7	2.9	3.0	2.3	2.4	2.1	2.7	2.7
Social sciences.....	5.9	6.5	6.6	6.5	5.9	6.0	5.6	5.2	5.3	5.9	5.5	5.5	5.4	5.5
Engineering.....	2.4	2.7	2.7	2.2	2.6	3.8	3.8	4.0	3.9	4.0	4.1	4.4	3.9	4.3
Female, all fields .....	4.6	6.0	6.8	7.5	7.7	9.4	10.0	11.2	12.0	14.1	15.6	17.0	17.3	19.4
All sciences.....	4.6	5.9	6.7	7.4	7.6	9.2	9.7	10.8	11.6	13.6	14.9	16.4	16.7	18.7
Physical sciences.....	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.7	0.9	1.1	1.3	1.1	1.1
Mathematics.....	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.5	0.5	0.6	0.7	0.6
Computer sciences.....	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.2
Earth, atmospheric, and ocean sciences.....	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.5
Life sciences.....	1.6	1.9	2.2	2.4	2.7	3.4	3.8	4.5	4.9	5.5	6.1	7.1	7.1	8.1
Psychology .....	1.2	1.5	1.6	1.8	1.9	2.3	2.2	2.3	2.4	2.9	3.1	3.4	3.5	3.9
Social sciences.....	1.2	1.7	2.1	2.3	2.1	2.4	2.6	2.7	3.0	3.4	3.5	3.5	3.7	4.1
Engineering.....	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.6	0.5	0.8
All other full-time positions														
Both sexes, all fields .....	8.3	8.8	11.4	12.6	13.4	18.1	16.4	19.2	20.2	22.2	23.9	26.4	29.3	31.7
All sciences.....	7.4	8.0	10.5	11.5	12.4	16.6	15.3	17.7	18.4	20.8	21.6	23.3	26.4	28.3
Physical sciences.....	1.9	2.1	2.0	2.4	2.5	3.0	2.6	3.3	3.2	3.7	3.8	4.6	5.6	5.5
Mathematics.....	0.3	0.4	0.4	0.4	0.3	0.5	0.4	0.5	0.7	0.5	0.6	0.8	0.8	1.0
Computer sciences.....	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
Earth, atmospheric, and ocean sciences.....	0.3	0.3	0.5	0.5	0.5	0.7	0.8	0.7	0.9	1.1	1.1	1.4	1.4	1.6
Life sciences.....	2.4	2.8	3.9	4.0	4.6	6.2	6.0	6.7	7.2	7.7	8.4	8.4	9.5	10.5
Psychology.....	1.0	1.2	1.8	2.2	2.2	2.9	2.8	2.9	2.8	3.9	3.9	4.0	4.6	4.9
Social sciences.....	1.5	1.2	1.9	2.0	2.2	3.2	2.6	3.5	3.5	3.7	3.6	3.9	4.3	4.5
Engineering.....	0.9	0.8	0.9	1.1	1.1	1.5	1.1	1.5	1.8	1.5	2.1	3.1	3.0	3.4

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**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1975–2001**

(Thousands)

Position, sex, and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Male, all fields .....	7.2	7.4	9.4	10.0	10.3	14.3	12.0	13.9	14.4	15.4	16.1	18.0	20.5	21.4
All sciences.....	6.4	6.6	8.6	8.9	9.3	12.8	10.9	12.5	12.8	13.9	14.2	15.3	17.9	18.3
Physical sciences.....	1.8	1.9	1.8	2.1	2.2	2.7	2.2	2.9	2.9	3.3	3.2	4.0	4.9	4.8
Mathematics.....	0.3	0.4	0.3	0.3	0.2	0.4	0.4	0.4	0.6	0.4	0.5	0.7	0.7	0.8
Computer sciences .....	NA	NA	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2
Earth, atmospheric, and ocean sciences.....	0.3	0.3	0.5	0.5	0.5	0.7	0.7	0.6	0.7	0.9	0.9	1.2	1.1	1.3
Life sciences.....	1.9	2.2	3.0	3.0	3.2	4.6	4.1	4.6	4.9	5.1	5.6	5.3	6.2	6.5
Psychology .....	0.8	0.9	1.4	1.4	1.4	1.8	1.6	1.5	1.2	1.9	1.7	1.8	2.1	2.0
Social sciences .....	1.3	0.9	1.6	1.6	1.7	2.5	1.8	2.4	2.4	2.2	2.1	2.2	2.6	2.7
Engineering.....	0.9	0.8	0.9	1.1	1.0	1.5	1.0	1.4	1.7	1.5	2.0	2.7	2.6	3.1
Female, all fields .....	1.0	1.4	2.0	2.6	3.1	3.8	4.5	5.3	5.8	6.7	7.7	8.4	8.8	10.4
All sciences.....	1.0	1.4	1.9	2.6	3.0	3.8	4.5	5.2	5.6	6.7	7.5	8.2	8.5	10.0
Physical sciences.....	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.6	0.7	0.6	0.7
Mathematics.....	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
Life sciences.....	0.5	0.6	0.9	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.8	3.1	3.3	4.0
Psychology .....	0.2	0.3	0.5	0.8	0.8	1.1	1.3	1.4	1.6	2.0	2.2	2.2	2.5	2.9
Social sciences .....	0.2	0.2	0.3	0.4	0.5	0.7	0.8	1.1	1.1	1.5	1.5	1.7	1.7	1.8
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.4
Postdocs														
Both sexes, all fields .....	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5
All sciences.....	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6
Physical sciences.....	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6
Mathematics.....	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Earth, atmospheric, and ocean sciences.....	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4
Life sciences.....	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0
Psychology .....	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2
Social sciences .....	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6
Engineering.....	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9
Male, all fields .....	4.9	6.1	6.3	6.3	5.8	6.0	6.8	8.2	6.8	9.2	11.1	12.1	11.2	10.5
All sciences.....	4.7	5.7	6.0	6.1	5.5	5.9	6.3	7.6	6.4	8.3	10.1	10.6	10.3	9.9
Physical sciences.....	1.9	1.9	1.7	1.6	1.2	1.6	1.7	2.0	1.5	2.5	3.3	2.5	2.3	2.0
Mathematics.....	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.3	0.3	0.5	0.6
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.1	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.4	0.3
Life sciences.....	2.2	2.9	3.5	3.6	3.3	3.4	3.8	4.7	4.1	5.2	5.5	6.2	6.6	6.2
Psychology .....	0.2	0.4	0.4	0.5	0.3	0.4	0.3	0.3	0.2	0.1	0.4	0.5	0.3	0.4
Social sciences .....	0.1	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.2	0.1	0.2	0.5	0.3	0.3
Engineering.....	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.5	0.4	0.9	1.0	1.4	0.9	0.7
Female, all fields .....	1.3	1.6	1.8	2.2	2.5	2.6	2.6	3.3	3.0	4.1	5.7	6.8	7.3	6.9
All sciences.....	1.3	1.6	1.8	2.2	2.5	2.6	2.6	3.3	3.0	4.0	5.5	6.6	7.1	6.7
Physical sciences.....	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.3	0.6	0.6	0.6	0.6	0.6
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.2
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1
Life sciences.....	0.8	1.1	1.2	1.6	1.8	1.8	1.8	2.2	2.3	3.0	3.7	4.6	5.1	4.7
Psychology .....	0.1	0.1	0.2	0.2	0.2	0.3	0.4	0.5	0.3	0.3	0.7	0.8	0.9	0.8
Social sciences .....	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3
Engineering.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2

Appendix table 5-23

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**S&E doctorate holders employed in academia, by type of position, sex, and degree field: 1975–2001**

(Thousands)

Position, sex, and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>Part-time positions</b>														
Both sexes, all fields .....	3.2	3.4	4.5	4.0	6.0	6.5	5.7	6.2	7.4	5.9	5.5	8.9	8.2	9.0
All sciences .....	3.1	3.2	4.3	3.9	5.7	6.2	5.4	5.6	6.9	5.4	5.1	8.6	7.9	8.5
Physical sciences .....	0.6	0.6	0.7	0.6	1.0	0.9	0.6	0.5	0.9	0.7	0.7	1.0	0.7	0.7
Mathematics .....	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.7	0.7	0.6
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences .....	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3
Life sciences .....	0.9	1.0	1.2	1.2	1.7	1.7	1.6	1.9	2.3	1.6	1.2	2.9	2.6	2.4
Psychology .....	0.5	0.6	1.0	0.8	1.0	1.0	1.0	1.0	1.2	1.2	1.1	1.1	1.3	1.8
Social sciences .....	0.8	0.8	1.0	1.0	1.6	2.2	1.8	1.7	2.0	1.3	1.3	2.6	2.2	2.7
Engineering .....	0.1	0.1	0.3	0.2	0.4	0.3	0.3	0.5	0.5	0.5	0.4	0.3	0.4	0.4
Male, all fields .....	1.8	1.8	2.7	1.9	3.5	3.6	2.7	3.1	3.8	2.3	2.4	4.4	3.4	3.8
All sciences .....	1.7	1.6	2.4	1.7	3.2	3.3	2.5	2.6	3.4	1.9	2.0	4.1	3.2	3.5
Physical sciences .....	0.3	0.4	0.5	0.3	0.8	0.6	0.4	0.3	0.6	0.5	0.5	0.7	0.5	0.4
Mathematics .....	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.3	0.3	0.4	0.3
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Earth, atmospheric, and ocean sciences .....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2
Life sciences .....	0.5	0.4	0.5	0.4	0.7	0.7	0.5	0.8	1.0	0.4	0.3	1.3	0.8	0.7
Psychology .....	0.2	0.2	0.5	0.3	0.4	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.3
Social sciences .....	0.5	0.4	0.6	0.5	1.1	1.4	1.0	0.8	1.2	0.5	0.7	1.4	1.0	1.4
Engineering .....	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.5	0.5	0.4	0.3	0.2	0.2	0.4
Female, all fields .....	1.5	1.6	1.9	2.1	2.5	2.9	3.0	3.1	3.5	3.6	3.1	4.5	4.9	5.1
All sciences .....	1.5	1.6	1.9	2.1	2.5	2.9	2.9	3.1	3.5	3.5	3.1	4.4	4.7	5.1
Physical sciences .....	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.2
Mathematics .....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.3
Computer sciences .....	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Life sciences .....	0.5	0.6	0.6	0.7	0.9	1.0	1.1	1.1	1.3	1.2	0.9	1.6	1.8	1.7
Psychology .....	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.9	1.1	1.0	0.8	1.0	1.5
Social sciences .....	0.3	0.3	0.4	0.5	0.5	0.9	0.8	0.8	0.8	0.8	0.7	1.2	1.2	1.3
Engineering .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1

NA not available

NOTES: Faculty is defined by position. Senior faculty includes full and associate professors; junior faculty members are either assistant professors or instructors. Other types of full-time positions include nonfaculty positions such as research associates, adjunct appointments, lecturers, and administrative positions. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-24

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**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1975–2001**

(Thousands)

Position, field, and race/ethnicity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
All positions .....	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
Science .....	120.6	130.7	139.5	150.9	157.9	170.3	174.7	183.8	187.8	190.6	193.7	205.9	214.7	218.9
Physical sciences .....	23.6	25.0	24.6	25.3	25.1	27.0	27.2	27.7	27.7	28.6	29.4	30.2	30.9	30.4
Mathematics .....	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9
Computer sciences.....	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8
Earth, atmospheric, and ocean sciences.....	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.1	6.4	6.4	7.3	7.8	8.2
Life sciences .....	39.4	42.6	47.0	51.3	54.8	58.7	61.2	64.8	66.9	68.2	71.6	77.3	81.9	84.3
Psychology.....	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4
Social sciences .....	28.0	31.1	33.6	36.9	38.8	41.9	42.1	44.5	44.8	44.4	42.5	44.9	46.2	46.9
Engineering .....	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6
White.....	121.6	131.4	140.0	149.9	157.2	168.4	172.8	181.0	183.5	181.8	182.6	193.2	198.2	201.0
Science .....	109.9	118.8	126.5	135.9	142.0	152.0	155.7	163.0	165.3	164.3	165.0	173.0	178.8	180.8
Physical sciences.....	21.1	22.1	21.9	22.3	21.9	23.4	23.3	23.7	23.8	23.4	23.8	24.4	25.3	24.7
Mathematics.....	10.0	10.6	10.8	11.0	11.5	11.9	12.2	12.6	13.0	12.9	12.0	12.6	12.3	12.1
Computer sciences.....	0.0	0.0	0.1	0.2	0.4	0.6	0.9	1.1	1.4	1.6	2.1	2.2	2.7	2.7
Earth, atmospheric, and ocean sciences...	3.7	4.0	4.0	4.3	4.5	4.9	5.2	5.5	5.7	5.9	5.7	6.6	7.0	7.3
Life sciences.....	35.8	38.8	42.4	46.1	49.3	52.7	54.6	57.6	59.2	59.1	61.3	64.9	67.2	68.4
Psychology.....	13.9	15.2	16.8	18.8	19.6	21.3	22.0	23.2	23.2	22.9	23.6	24.4	25.5	26.6
Social sciences .....	25.3	28.2	30.5	33.1	34.7	37.2	37.5	39.4	39.1	38.6	36.5	38.0	38.9	39.0
Engineering.....	11.6	12.6	13.5	14.0	15.2	16.4	17.2	18.1	18.2	17.5	17.6	20.2	19.4	20.2
Asian/Pacific Islander .....	6.1	6.7	9.8	10.8	11.8	14.0	15.0	16.3	16.8	20.9	22.4	25.4	26.3	27.6
Science .....	5.0	5.4	7.8	9.1	9.4	11.1	11.5	12.2	13.1	16.2	17.5	20.3	21.7	22.8
Physical sciences.....	1.3	1.4	1.8	2.0	2.2	2.6	2.9	2.8	2.6	3.8	4.1	4.1	4.0	3.9
Mathematics.....	0.5	0.5	0.9	0.9	1.0	1.1	1.1	1.3	1.6	1.9	1.8	2.2	2.1	2.0
Computer sciences.....	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.5	0.7	0.9	0.9	0.9	0.9
Earth, atmospheric, and ocean sciences...	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.2	0.4	0.5	0.5	0.6	0.6
Life sciences.....	1.8	2.0	3.1	3.6	3.6	4.0	4.4	4.7	5.1	6.3	6.8	8.5	9.9	11.0
Psychology.....	0.1	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9
Social sciences .....	1.1	1.2	1.6	2.0	2.0	2.5	2.2	2.4	2.6	2.7	2.8	3.2	3.5	3.6
Engineering.....	1.1	1.3	1.9	1.8	2.4	3.0	3.5	4.1	3.7	4.7	4.9	5.2	4.6	4.8
Underrepresented minorities.....	3.2	3.7	4.9	5.8	6.5	7.2	7.8	9.0	9.9	10.7	12.4	13.7	15.6	16.8
Science .....	2.9	3.4	4.5	5.5	6.0	6.7	7.2	8.3	9.0	9.8	11.2	12.6	14.1	15.2
Physical sciences.....	0.5	0.5	0.7	0.9	0.9	0.9	1.0	1.1	1.2	1.4	1.4	1.7	1.6	1.7
Mathematics.....	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.7	0.8	0.7	0.8	0.8
Computer sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.2
Earth, atmospheric, and ocean sciences...	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3
Life sciences.....	1.1	1.2	1.3	1.5	1.7	1.8	2.1	2.4	2.6	2.7	3.5	3.9	4.7	4.9
Psychology.....	0.4	0.6	0.5	0.8	1.0	1.2	1.2	1.3	1.5	1.6	2.0	2.3	2.7	2.9
Social sciences .....	0.8	0.8	1.5	1.8	2.0	2.1	2.3	2.8	3.0	3.1	3.2	3.6	3.9	4.3
Engineering.....	0.2	0.3	0.4	0.3	0.5	0.5	0.5	0.7	0.9	0.9	1.2	1.2	1.5	1.6
Black.....	1.7	1.7	1.9	2.6	3.1	3.3	3.5	3.8	4.6	4.8	5.8	6.6	7.3	8.2
Science.....	1.6	1.7	1.9	2.5	2.9	3.2	3.3	3.5	4.2	4.5	5.4	6.1	6.6	7.4
Physical sciences.....	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.5	0.7	0.6	0.8
Mathematics.....	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
Computer sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Life sciences.....	0.6	0.6	0.6	0.6	0.8	0.9	0.9	1.0	1.2	1.3	1.7	1.9	2.1	2.2
Psychology.....	0.2	0.3	0.3	0.4	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.4	1.6
Social sciences .....	0.5	0.5	0.7	1.0	1.1	1.3	1.2	1.2	1.6	1.6	1.7	2.0	2.0	2.3
Engineering.....	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.4	0.3	0.5	0.5	0.7	0.7

Appendix table 5-24

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**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1975–2001**

(Thousands)

Position, field, and race/ethnicity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Hispanic.....	1.2	1.6	2.4	2.5	2.6	3.1	3.4	4.3	4.5	5.0	5.7	6.2	7.3	7.8
Science.....	1.1	1.4	2.1	2.4	2.4	2.8	3.1	3.9	4.1	4.4	5.0	5.6	6.6	7.0
Physical sciences.....	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.8	0.8	0.8	0.9	0.8	0.8
Mathematics.....	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.4	0.5	0.5
Computer sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Life sciences.....	0.4	0.5	0.7	0.8	0.8	0.8	1.0	1.2	1.2	1.3	1.6	1.8	2.3	2.5
Psychology.....	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.8	1.0	1.1	1.2
Social sciences.....	0.2	0.2	0.6	0.5	0.6	0.7	0.8	1.1	1.1	1.2	1.1	1.3	1.6	1.7
Engineering.....	0.1	0.2	0.3	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.7	0.6	0.7	0.8
American Indian/Alaskan Native.....	0.3	0.4	0.6	0.7	0.7	0.8	0.8	1.0	0.8	0.9	0.9	0.9	1.0	0.9
Science.....	0.3	0.3	0.6	0.7	0.7	0.7	0.8	0.9	0.8	0.9	0.8	0.8	0.9	0.8
Physical sciences.....	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Psychology.....	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Social sciences.....	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.5	0.3	0.4	0.3	0.3	0.3	0.3
Engineering.....	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Full-time faculty.....	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4
Science.....	104.2	112.2	116.9	127.2	132.0	139.0	145.1	149.5	153.1	152.2	151.3	156.8	163.0	165.5
Physical sciences.....	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6
Mathematics.....	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6
Computer sciences.....	0.0	0.0	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3
Earth, atmospheric, and ocean sciences.....	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9
Life sciences.....	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4
Psychology.....	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6
Social sciences.....	25.5	28.8	30.3	33.7	34.4	36.1	37.6	39.0	39.0	39.2	37.1	37.7	39.2	39.2
Engineering.....	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9
White.....	106.2	114.3	118.7	128.1	133.4	139.7	146.2	149.8	151.8	148.7	147.1	151.1	155.4	156.3
Science.....	95.6	102.6	106.5	115.4	119.4	124.9	130.3	133.6	135.7	133.1	131.7	134.5	139.3	139.8
Physical sciences.....	17.2	18.0	18.0	18.5	17.8	18.8	19.3	18.9	18.9	18.0	17.8	17.9	18.3	17.9
Mathematics.....	9.5	9.9	10.1	10.3	10.9	11.1	11.4	11.7	12.2	12.3	10.7	11.0	10.7	10.1
Computer sciences.....	0.0	0.0	0.0	0.2	0.3	0.5	0.7	1.0	1.3	1.5	1.9	2.0	2.4	2.3
Earth, atmospheric, and ocean sciences.....	3.3	3.5	3.3	3.6	3.8	4.0	4.1	4.4	4.3	4.2	4.3	4.7	5.1	5.3
Life sciences.....	30.4	32.1	33.9	37.2	39.7	41.3	43.3	44.4	46.0	45.1	46.7	48.3	50.2	51.4
Psychology.....	12.1	13.0	13.6	15.4	16.2	17.1	17.9	18.8	19.2	18.0	18.4	18.8	19.6	20.1
Social sciences.....	23.2	26.1	27.5	30.1	30.7	32.2	33.5	34.4	33.8	34.1	31.9	31.8	33.0	32.8
Engineering.....	10.6	11.6	12.2	12.7	14.0	14.8	15.9	16.2	16.2	15.6	15.3	16.7	16.1	16.5
Asian/Pacific Islander.....	4.7	5.0	7.8	8.4	9.1	10.9	11.7	12.3	12.6	14.8	14.5	16.5	17.0	18.4
Science.....	3.7	3.9	6.0	6.7	7.2	8.2	8.7	8.9	9.5	11.1	10.9	12.7	13.2	14.4
Physical sciences.....	0.8	0.9	1.3	1.2	1.5	1.6	1.8	1.7	1.7	2.2	2.0	2.2	2.2	2.3
Mathematics.....	0.5	0.5	0.8	0.9	1.0	1.1	1.1	1.3	1.5	1.7	1.6	2.0	1.7	1.7
Computer sciences.....	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.5	0.7	0.8	0.8	0.8	0.8
Earth, atmospheric, and ocean sciences.....	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.3	0.3
Life sciences.....	1.2	1.2	2.1	2.3	2.4	2.8	3.1	3.0	3.0	3.7	3.5	4.1	4.9	5.7
Psychology.....	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
Social sciences.....	1.1	1.1	1.5	1.9	1.9	2.1	2.1	2.1	2.4	2.3	2.4	2.8	2.9	3.1
Engineering.....	1.0	1.1	1.8	1.7	1.9	2.7	3.0	3.4	3.1	3.7	3.6	3.8	3.8	4.0



Appendix table 5-24

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1975–2001**

(Thousands)

Position, field, and race/ethnicity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Underrepresented minorities .....	2.7	3.2	4.2	5.0	5.4	5.8	6.3	7.4	8.4	8.6	9.8	10.6	11.6	12.5
Science .....	2.5	2.9	3.9	4.8	5.0	5.4	5.9	6.8	7.6	7.8	8.7	9.6	10.4	11.2
Physical sciences .....	0.4	0.4	0.6	0.8	0.8	0.7	0.8	0.8	1.0	1.1	1.0	1.3	1.3	1.4
Mathematics .....	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.6	0.7	0.7
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Life sciences .....	0.9	1.0	1.1	1.3	1.3	1.4	1.6	1.8	2.0	2.0	2.6	2.7	3.1	3.3
Psychology .....	0.3	0.5	0.4	0.6	0.7	0.9	0.9	1.0	1.1	1.1	1.3	1.5	1.8	2.0
Social sciences .....	0.6	0.8	1.4	1.6	1.7	1.8	2.0	2.5	2.8	2.8	2.8	3.1	3.3	3.4
Engineering .....	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	0.8	1.1	1.0	1.1	1.4
Black .....	1.4	1.5	1.7	2.3	2.5	2.7	2.8	3.2	4.0	3.8	4.6	5.0	5.5	5.9
Science .....	1.3	1.5	1.6	2.1	2.3	2.6	2.6	3.0	3.6	3.5	4.2	4.5	4.9	5.2
Physical sciences .....	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.3	0.4	0.6	0.5	0.6
Mathematics .....	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Life sciences .....	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	1.0	1.0	1.3	1.3	1.4	1.4
Psychology .....	0.2	0.3	0.2	0.4	0.4	0.5	0.5	0.6	0.7	0.6	0.6	0.7	1.0	1.1
Social sciences .....	0.4	0.4	0.6	0.9	0.9	1.1	1.0	1.1	1.5	1.4	1.5	1.7	1.7	1.7
Engineering .....	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.2	0.3	0.3	0.5	0.4	0.6	0.7
Hispanic .....	1.0	1.3	2.0	2.1	2.2	2.4	2.7	3.3	3.7	3.9	4.4	4.8	5.2	5.9
Science .....	0.9	1.2	1.7	2.0	2.0	2.2	2.5	3.0	3.3	3.5	3.8	4.3	4.7	5.3
Physical sciences .....	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.4	0.6	0.6	0.5	0.7	0.7	0.7
Mathematics .....	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.5	0.5
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Life sciences .....	0.4	0.4	0.5	0.7	0.6	0.6	0.8	0.9	0.9	0.9	1.2	1.3	1.5	1.7
Psychology .....	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.7	0.7	0.8
Social sciences .....	0.2	0.2	0.5	0.5	0.5	0.5	0.7	0.9	1.0	1.0	1.0	1.1	1.3	1.4
Engineering .....	0.1	0.2	0.2	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.5	0.5	0.6
American Indian/Alaskan Native .....	0.3	0.4	0.6	0.6	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7
Science .....	0.3	0.3	0.6	0.6	0.6	0.6	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7
Physical sciences .....	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mathematics .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences .....	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Psychology .....	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Social sciences .....	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.3
Engineering .....	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Postdocs .....	6.2	7.6	8.1	8.5	8.3	8.7	9.3	11.5	9.9	13.3	16.8	18.9	18.5	17.5
Science .....	5.9	7.2	7.8	8.4	8.0	8.5	8.8	10.9	9.4	12.3	15.6	17.2	17.5	16.6
Physical sciences .....	2.1	2.2	1.9	1.9	1.4	1.9	2.0	2.4	1.9	3.0	3.9	3.2	2.9	2.6
Mathematics .....	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.0	0.5	0.5	0.6	0.8
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Earth, atmospheric, and ocean sciences .....	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.5	0.5	0.6	0.5	0.4
Life sciences .....	3.0	4.0	4.7	5.2	5.1	5.2	5.6	6.8	6.4	8.2	9.2	10.8	11.7	11.0
Psychology .....	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.5	0.4	1.1	1.3	1.2	1.2
Social sciences .....	0.2	0.3	0.3	0.3	0.6	0.3	0.1	0.4	0.3	0.2	0.4	0.7	0.5	0.6
Engineering .....	0.3	0.4	0.3	0.2	0.3	0.2	0.5	0.6	0.5	1.0	1.2	1.7	1.1	0.9





Appendix table 5-24

(Page 6 of 6)

**S&E doctorate holders employed in academia, by type of position, degree field, and race/ethnicity: 1975–2001**

(Thousands)

Position, field, and race/ethnicity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Black .....	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.4	0.5	0.7	0.9	1.2	1.2	1.8
Science.....	0.2	0.2	0.2	0.3	0.5	0.4	0.6	0.4	0.5	0.7	0.9	1.1	1.2	1.7
Physical sciences .....	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.4	0.5
Psychology.....	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.4	0.4	0.3	0.5
Social sciences.....	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.5
Engineering .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hispanic.....	0.1	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.5	0.7	0.7	0.8	1.2	1.2
Science.....	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.8	1.1	1.1
Physical sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Life sciences.....	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.4
Psychology.....	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3
Social sciences.....	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Engineering .....	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1
American Indian/Alaskan Native .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Science.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Physical sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mathematics.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA
Life sciences.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Psychology.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social sciences .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Engineering .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA not available

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Other types of full-time positions include nonfaculty positions such as research associates, adjunct appointments, lecturers, and administrative positions. Underrepresented minorities are black, Hispanic, and American Indian/Alaskan Native respondents. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-25

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## U.S. S&amp;E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1975–2001

Field, position, and place of birth	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All positions</b>														
All fields.....	134,100	145,400	155,300	167,100	176,100	190,200	195,900	206,600	210,600	213,800	217,500	232,500	240,200	245,500
United States.....	116,800	127,200	132,500	142,400	149,200	159,500	164,300	171,800	174,100	173,300	175,800	186,000	191,200	194,100
Foreign.....	15,300	16,400	21,700	23,600	25,700	29,700	30,800	34,000	36,300	40,500	41,800	46,500	49,000	51,500
Percent foreign.....	12	11	14	14	15	16	16	17	17	19	19	20	20	21
Physical sciences.....	23,600	25,000	24,600	25,300	25,100	27,000	27,200	27,700	27,700	28,600	29,400	30,200	30,900	30,400
United States.....	20,200	21,300	20,600	21,200	21,000	22,200	22,000	22,300	22,400	22,000	22,800	23,300	24,000	23,400
Foreign.....	3,000	3,200	3,800	4,000	4,000	4,700	5,000	5,300	5,300	6,600	6,500	6,900	7,000	7,000
Percent foreign.....	13	13	16	16	16	17	18	19	19	23	22	23	23	23
Mathematics.....	11,000	11,700	12,200	12,400	12,900	13,600	13,800	14,500	15,200	15,500	14,600	15,600	15,200	14,900
United States.....	9,600	10,300	10,200	10,200	10,500	10,900	11,200	11,300	11,600	11,500	10,900	11,300	11,000	10,700
Foreign.....	1,300	1,200	1,900	2,000	2,300	2,600	2,600	3,100	3,600	4,000	3,700	4,200	4,200	4,200
Percent foreign.....	11	10	15	16	18	19	19	21	24	26	26	27	28	28
Computer sciences.....	NA	NA	100	300	500	800	1,100	1,500	2,000	2,500	3,100	3,300	3,700	3,800
United States.....	NA	NA	—	200	300	500	800	900	1,100	1,500	1,800	1,900	2,300	2,300
Foreign.....	NA	NA	—	100	100	300	300	600	900	1,100	1,300	1,400	1,400	1,500
Percent foreign.....	NA	NA	—	30	30	32	29	38	44	42	42	44	37	39
<b>Earth, atmospheric, and</b>														
ocean sciences.....	3,900	4,200	4,200	4,600	4,800	5,200	5,600	5,900	6,100	6,400	6,400	7,300	7,800	8,200
United States.....	3,500	3,700	3,700	4,000	4,200	4,500	4,900	5,000	5,300	5,400	5,300	5,900	6,600	6,800
Foreign.....	400	400	500	500	600	700	700	800	800	1,000	1,100	1,400	1,200	1,400
Percent foreign.....	10	11	11	12	13	14	12	14	13	16	17	19	16	17
Life sciences.....	39,400	42,600	47,000	51,300	54,800	58,700	61,200	64,800	66,900	68,200	71,600	77,300	81,900	84,300
United States.....	34,800	37,800	40,700	44,400	47,700	51,000	53,100	56,000	57,800	57,800	60,500	64,000	66,400	67,400
Foreign.....	3,900	4,300	5,900	6,500	6,600	7,300	7,800	8,400	9,100	10,400	11,100	13,300	15,500	16,800
Percent foreign.....	10	10	13	13	12	12	13	13	14	15	16	17	19	20
Psychology.....	14,800	16,200	17,700	20,100	21,000	23,100	23,700	25,000	25,200	25,000	26,100	27,300	29,000	30,400
United States.....	13,700	15,100	16,500	18,600	19,500	21,300	22,100	23,200	23,400	23,200	24,400	25,200	26,800	28,000
Foreign.....	900	900	1,100	1,500	1,400	1,700	1,600	1,700	1,700	1,700	1,800	2,100	2,200	2,400
Percent foreign.....	6	6	6	7	7	7	7	7	7	7	7	8	8	8
Social sciences.....	28,000	31,100	33,600	36,900	38,800	41,900	42,100	44,500	44,800	44,400	42,500	44,900	46,200	46,900
United States.....	24,100	27,100	28,600	31,300	32,800	35,200	35,900	37,700	37,500	37,100	35,300	36,800	37,500	38,100
Foreign.....	3,500	3,700	4,700	5,400	5,800	6,600	6,100	6,700	7,200	7,300	7,200	8,100	8,700	8,800
Percent foreign.....	12	12	14	15	15	16	15	15	16	17	17	18	19	19
Engineering.....	13,400	14,800	15,800	16,100	18,100	19,900	21,200	22,800	22,800	23,100	23,800	26,600	25,500	26,600
United States.....	11,000	11,900	12,100	12,500	13,200	13,900	14,400	15,300	15,100	14,800	14,800	17,500	16,700	17,200
Foreign.....	2,300	2,700	3,700	3,600	4,900	6,000	6,700	7,500	7,700	8,400	9,000	9,100	8,800	9,400
Percent foreign.....	17	18	23	23	27	30	32	33	34	36	38	34	35	35
<b>Full-time senior faculty</b>														
All fields.....	84,300	90,700	97,200	107,300	115,600	119,700	127,300	131,000	133,000	128,600	127,300	131,900	136,700	136,900
United States.....	73,100	79,300	83,000	91,500	98,400	101,300	108,300	110,900	113,500	108,400	107,400	109,900	113,200	112,400
Foreign.....	9,600	9,900	13,300	14,900	16,300	17,900	18,500	19,600	19,500	20,200	19,900	22,000	23,400	24,500
Percent foreign.....	12	11	14	14	14	15	15	15	15	16	16	17	17	18
Physical sciences.....	14,600	15,300	16,000	16,800	17,100	17,700	18,300	17,800	17,600	16,900	16,400	16,700	16,600	16,500
United States.....	12,500	13,000	13,600	14,300	14,400	14,900	15,300	14,800	14,900	14,100	13,900	14,000	13,900	13,400
Foreign.....	1,800	1,900	2,200	2,400	2,500	2,700	2,900	2,800	2,600	2,900	2,500	2,700	2,800	3,100
Percent foreign.....	12	12	14	14	15	16	16	16	15	17	16	16	17	19
Mathematics.....	6,900	7,600	8,300	9,100	9,700	10,000	10,500	10,900	11,800	11,500	10,600	10,800	10,800	10,200
United States.....	6,000	6,700	7,000	7,500	8,000	8,100	8,800	8,900	9,600	9,100	8,400	8,200	8,100	7,700
Foreign.....	800	800	1,200	1,400	1,600	1,800	1,700	1,900	2,200	2,400	2,200	2,600	2,700	2,500
Percent foreign.....	12	11	14	16	16	18	16	18	19	21	21	24	25	25
Computer sciences.....	NA	NA	—	—	100	100	300	400	900	900	1,700	1,700	2,100	2,400
United States.....	NA	NA	—	—	100	—	200	300	500	600	1,100	900	1,300	1,400
Foreign.....	NA	NA	—	—	—	100	100	100	400	300	600	700	900	1,000
Percent foreign.....	NA	NA	—	—	—	—	26	24	46	35	37	45	40	42

Appendix table 5-25

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## U.S. S&amp;E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1975–2001

Field, position, and place of birth	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Earth, atmospheric, and														
ocean sciences.....	2,500	2,700	2,800	2,900	3,100	3,100	3,200	3,600	3,600	3,700	3,600	3,800	4,100	4,200
United States.....	2,200	2,400	2,400	2,500	2,600	2,700	2,900	3,100	3,300	3,300	3,200	3,200	3,600	3,500
Foreign.....	200	300	300	300	400	400	300	500	300	400	400	600	500	700
Percent foreign.....	8	10	11	12	13	12	11	13	9	12	12	15	13	17
Life sciences.....	23,400	24,600	27,000	29,600	32,600	33,700	35,800	36,400	37,400	35,800	37,200	38,300	40,600	41,200
United States.....	20,900	22,000	23,800	26,000	28,700	29,500	31,500	32,100	33,400	31,700	33,200	33,900	35,800	36,200
Foreign.....	2,000	2,100	2,900	3,200	3,700	4,000	4,100	4,200	4,000	4,100	4,000	4,400	4,800	5,000
Percent foreign.....	8	9	11	11	11	12	12	11	11	12	11	12	12	12
Psychology.....	8,700	9,100	9,900	11,700	12,800	13,500	14,300	15,000	15,300	14,300	14,500	15,300	15,600	15,900
United States.....	7,900	8,400	9,200	10,700	11,900	12,400	13,200	13,900	14,400	13,400	13,700	14,200	14,500	14,800
Foreign.....	600	500	600	900	900	1,000	1,000	1,000	900	800	900	1,100	1,100	1,100
Percent foreign.....	7	6	6	8	7	8	7	7	6	6	6	7	7	7
Social sciences.....	18,500	20,700	21,700	24,900	26,300	27,700	29,500	31,100	30,600	29,900	28,100	28,800	30,100	29,600
United States.....	15,700	17,900	18,100	20,900	22,200	23,300	25,200	26,400	26,200	25,400	23,900	24,100	25,100	24,400
Foreign.....	2,500	2,500	3,400	3,800	4,000	4,300	4,200	4,600	4,400	4,500	4,200	4,700	5,100	5,200
Percent foreign.....	13	12	16	15	15	16	14	15	14	15	15	16	17	18
Engineering.....	9,700	10,700	11,600	12,400	13,700	13,900	15,300	15,900	15,800	15,700	15,300	16,600	16,600	16,800
United States.....	7,900	8,800	8,800	9,600	10,500	10,300	11,200	11,400	11,200	10,900	10,200	11,300	11,100	11,000
Foreign.....	1,700	1,800	2,700	2,800	3,200	3,600	4,100	4,500	4,600	4,800	5,100	5,300	5,500	5,800
Percent foreign.....	18	17	24	22	23	26	27	28	29	31	33	32	33	35
Full-time junior faculty														
All fields.....	32,100	34,900	34,000	34,600	32,800	37,200	37,200	38,700	40,100	43,800	44,000	46,400	47,400	50,500
United States.....	28,800	31,400	29,300	29,900	27,700	30,600	30,700	31,000	30,800	33,500	34,300	35,600	36,700	38,700
Foreign.....	3,200	3,400	4,700	4,600	5,000	6,400	6,400	7,600	9,200	10,300	9,700	10,900	10,600	11,700
Percent foreign.....	10	10	14	13	15	17	17	20	23	24	22	23	23	23
Physical sciences.....	4,300	4,800	4,000	3,700	3,100	3,500	3,600	3,700	4,100	4,300	4,500	4,800	5,100	5,000
United States.....	3,900	4,200	3,300	3,100	2,600	2,900	3,100	3,000	3,100	3,200	3,500	3,500	3,700	3,700
Foreign.....	500	500	700	500	400	600	600	700	1,000	1,200	1,000	1,300	1,300	1,300
Percent foreign.....	11	11	17	14	15	18	15	19	26	27	22	26	26	26
Mathematics.....	3,500	3,300	3,100	2,600	2,500	2,700	2,400	2,600	2,400	3,200	2,400	2,800	2,400	2,300
United States.....	3,100	3,000	2,600	2,100	1,900	2,100	1,900	1,700	1,300	1,700	1,500	1,800	1,700	1,600
Foreign.....	300	300	500	500	600	700	500	1,000	1,100	1,500	900	1,000	700	700
Percent foreign.....	10	8	17	20	24	24	22	36	45	46	38	35	28	30
Computer sciences.....	NA	NA	100	200	300	600	600	900	1,000	1,400	1,200	1,300	1,200	900
United States.....	NA	NA	—	200	300	400	400	500	500	700	600	700	800	600
Foreign.....	NA	NA	—	100	100	200	200	400	500	700	600	600	400	300
Percent foreign.....	NA	NA	—	28	25	29	33	48	47	48	50	47	36	33
Earth, atmospheric, and														
ocean sciences.....	900	900	700	900	900	1,100	1,100	1,100	900	900	1,100	1,300	1,500	1,700
United States.....	800	800	600	800	800	900	1,000	900	800	600	900	1,100	1,300	1,500
Foreign.....	100	100	100	100	100	100	100	200	200	200	200	200	200	200
Percent foreign.....	12	10	11	10	9	14	13	16	17	28	18	19	13	12
Life sciences.....	9,700	10,300	10,300	11,300	10,800	11,900	12,300	12,800	13,700	15,000	15,600	16,900	17,500	19,200
United States.....	8,700	9,500	8,800	9,900	9,700	10,600	10,700	11,300	11,600	12,700	13,200	13,900	13,900	14,800
Foreign.....	900	800	1,500	1,300	1,100	1,300	1,500	1,500	2,000	2,300	2,400	3,000	3,600	4,400
Percent foreign.....	10	8	14	12	10	11	12	12	15	15	15	18	21	23
Psychology.....	4,200	4,800	4,400	4,800	4,500	5,000	4,900	5,200	5,400	5,200	5,500	5,500	6,200	6,600
United States.....	4,000	4,500	4,100	4,500	4,200	4,600	4,600	4,800	5,000	4,800	5,100	5,000	5,700	6,100
Foreign.....	200	300	300	200	200	300	300	400	300	400	400	500	500	600
Percent foreign.....	4	6	7	5	5	6	6	8	6	8	8	9	9	9
Social sciences.....	7,100	8,200	8,600	8,800	8,100	8,400	8,200	7,900	8,400	9,300	9,000	8,900	9,100	9,600
United States.....	6,300	7,100	7,600	7,500	6,800	7,000	6,900	6,600	6,300	7,300	6,800	6,600	6,900	7,500
Foreign.....	800	1,000	1,000	1,200	1,300	1,300	1,300	1,400	2,100	2,000	2,200	2,300	2,200	2,200
Percent foreign.....	11	12	12	14	16	16	16	17	25	21	24	26	24	23
Engineering.....	2,500	2,700	2,800	2,300	2,700	4,000	4,000	4,300	4,300	4,500	4,800	5,000	4,500	5,100
United States.....	2,100	2,200	2,100	1,700	1,500	2,100	2,200	2,300	2,300	2,400	2,800	3,000	2,800	3,000
Foreign.....	400	500	600	600	1,200	1,900	1,800	2,100	2,000	2,100	2,000	2,000	1,700	2,000
Percent foreign.....	16	18	23	27	44	47	46	47	46	47	42	40	38	39

Appendix table 5-25

(Page 3 of 4)

## U.S. S&amp;E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1975–2001

Field, position, and place of birth	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>Full-time other</b>														
All fields.....	8,300	8,800	11,400	12,600	13,400	18,100	16,400	19,200	20,200	22,200	23,900	26,400	29,300	31,700
United States.....	7,300	7,600	9,900	10,800	11,000	15,400	13,700	16,000	16,700	18,600	19,000	21,800	23,700	25,400
Foreign.....	900	1,200	1,500	1,700	2,300	2,700	2,700	3,100	3,500	3,600	4,800	4,600	5,600	6,300
Percent foreign.....	11	13	13	14	18	15	16	16	17	16	20	17	19	20
Physical sciences.....	1,900	2,100	2,000	2,400	2,500	3,000	2,600	3,300	3,200	3,700	3,800	4,600	5,600	5,500
United States.....	1,700	1,900	1,700	2,000	2,000	2,600	2,100	2,600	2,600	2,800	2,900	3,600	4,400	4,300
Foreign.....	200	200	300	400	500	400	600	700	600	900	900	1,000	1,100	1,200
Percent foreign.....	12	12	15	15	22	14	21	20	19	25	23	22	20	22
Mathematics.....	300	400	400	400	300	500	400	500	600	500	600	800	800	1,000
United States.....	300	400	300	300	300	500	300	400	400	300	400	700	500	700
Foreign.....	100	100	100	—	—	—	100	100	300	100	200	200	300	300
Percent foreign.....	16	16	22	—	—	—	33	17	43	25	31	19	34	30
Computer sciences.....	NA	NA	—	—	100	100	100	100	100	200	200	200	300	300
United States.....	NA	NA	—	—	—	100	100	100	100	100	100	100	200	200
Foreign.....	NA	NA	—	—	—	—	—	—	—	—	100	—	100	100
Percent foreign.....	NA	NA	—	—	—	—	—	—	—	—	38	—	31	33
<b>Earth, atmospheric, and</b>														
ocean sciences.....	300	300	500	500	500	700	800	700	900	1,100	1,100	1,400	1,400	1,600
United States.....	300	300	400	500	400	600	600	600	800	1,000	800	1,200	1,000	1,200
Foreign.....	—	—	100	—	100	100	100	100	100	100	300	300	300	400
Percent foreign.....	—	—	14	—	15	18	18	13	9	9	24	19	25	25
Life sciences.....	2,400	2,800	3,900	4,000	4,600	6,200	6,000	6,700	7,200	7,700	8,400	8,400	9,500	10,500
United States.....	2,000	2,200	3,100	3,200	3,600	5,200	5,000	5,500	6,000	6,500	6,900	7,000	7,500	8,200
Foreign.....	300	500	700	800	900	900	1,000	1,200	1,200	1,200	1,600	1,400	2,000	2,300
Percent foreign.....	12	18	19	20	20	15	16	17	17	16	19	16	21	22
Psychology.....	1,000	1,200	1,800	2,200	2,200	2,900	2,800	2,900	2,800	3,900	3,900	4,000	4,600	4,900
United States.....	1,000	1,200	1,700	2,100	2,000	2,700	2,600	2,800	2,600	3,600	3,600	3,700	4,300	4,500
Foreign.....	—	—	100	200	200	200	200	200	200	300	400	300	300	400
Percent foreign.....	—	—	6	7	9	7	8	6	9	9	9	8	7	8
Social sciences.....	1,500	1,200	1,900	2,000	2,200	3,200	2,600	3,500	3,500	3,700	3,600	3,900	4,300	4,500
United States.....	1,300	1,000	1,800	1,800	1,900	2,600	2,300	3,000	3,200	3,300	3,100	3,300	3,600	3,800
Foreign.....	100	100	100	200	300	600	300	500	400	400	500	600	800	700
Percent foreign.....	9	11	5	11	12	18	12	13	10	11	15	15	18	16
Engineering.....	900	800	900	1,100	1,100	1,500	1,100	1,500	1,800	1,500	2,100	3,100	3,000	3,400
United States.....	800	600	800	1,000	800	1,100	700	1,000	1,100	1,000	1,200	2,300	2,200	2,600
Foreign.....	100	100	100	100	300	400	300	500	700	500	900	800	800	900
Percent foreign.....	11	19	13	7	28	25	32	32	38	35	43	26	27	26
<b>Postdocs</b>														
All fields.....	6,200	7,600	8,100	8,500	8,300	8,700	9,300	11,500	9,900	13,300	16,800	18,900	18,500	17,500
United States.....	4,800	6,000	6,500	6,600	6,700	6,800	6,700	8,300	6,600	8,100	10,400	11,400	11,200	10,300
Foreign.....	1,300	1,600	1,700	1,900	1,500	1,800	2,600	3,100	3,200	5,200	6,400	7,500	7,400	7,100
Percent foreign.....	21	21	20	22	18	21	28	27	33	39	38	40	40	41
Physical sciences.....	2,100	2,200	1,900	1,900	1,400	1,900	2,000	2,400	1,900	3,000	3,900	3,200	2,900	2,600
United States.....	1,700	1,700	1,400	1,300	1,100	1,200	1,100	1,400	1,000	1,600	2,100	1,600	1,500	1,600
Foreign.....	500	500	500	600	300	700	900	1,000	900	1,400	1,800	1,600	1,400	1,100
Percent foreign.....	22	23	27	32	23	36	46	43	47	47	47	50	48	42
Mathematics.....	100	100	100	100	100	100	300	200	100	—	500	500	600	800
United States.....	100	100	100	100	100	100	100	100	—	—	200	200	300	400
Foreign.....	—	—	—	—	—	—	200	100	100	—	300	200	300	400
Percent foreign.....	—	—	—	—	—	—	64	49	—	—	62	54	57	50
Computer sciences.....	NA	NA	—	—	—	—	—	—	—	—	100	100	100	—
United States.....	NA	NA	—	—	—	—	—	—	—	—	—	—	100	—
Foreign.....	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—
Percent foreign.....	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—
<b>Earth, atmospheric, and</b>														
ocean sciences.....	100	200	100	200	200	200	300	300	300	500	500	600	500	400
United States.....	100	100	100	100	100	100	200	200	200	300	300	400	400	300
Foreign.....	—	—	—	—	—	—	—	—	200	200	200	200	100	100
Percent foreign.....	—	—	—	—	—	—	—	—	44	36	40	39	15	25

Appendix table 5-25

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## U.S. S&amp;E doctorate holders employed at academic institutions, by type of position, degree field, and place of birth: 1975–2001

Field, position, and place of birth	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
Life sciences .....	3,000	4,000	4,700	5,200	5,100	5,200	5,600	6,800	6,400	8,200	9,200	10,800	11,700	11,000
United States .....	2,400	3,200	3,900	4,300	4,300	4,300	4,500	5,400	4,700	5,500	6,200	6,700	7,000	6,300
Foreign.....	700	700	800	1,000	800	900	1,100	1,400	1,700	2,700	3,000	4,100	4,700	4,700
Percent foreign .....	22	19	17	19	16	18	19	20	26	33	33	38	40	43
Psychology .....	400	500	600	600	600	700	700	800	500	400	1,100	1,300	1,200	1,200
United States .....	400	500	600	600	500	700	600	800	400	300	1,000	1,100	1,000	1,100
Foreign.....	—	—	—	—	—	—	—	—	100	100	100	200	100	100
Percent foreign .....	—	—	—	—	—	—	—	—	13	16	8	16	11	8
Social sciences .....	200	300	300	300	600	300	100	400	300	200	400	700	500	600
United States .....	200	300	200	300	500	300	100	200	200	100	300	600	400	400
Foreign.....	100	—	100	—	100	—	—	100	100	100	100	100	100	200
Percent foreign .....	22	—	42	—	19	—	—	32	30	51	23	17	23	33
Engineering .....	300	400	300	200	300	200	500	600	500	1,000	1,200	1,700	1,100	900
United States .....	200	200	200	—	100	—	100	200	100	200	300	700	400	300
Foreign.....	100	200	200	100	200	100	400	400	300	800	900	900	700	500
Percent foreign .....	41	55	51	—	65	—	76	66	68	76	72	56	60	56
Part-time														
All fields.....	3,200	3,400	4,500	4,000	6,000	6,500	5,700	6,200	7,400	5,900	5,500	8,900	8,200	9,000
United States.....	2,800	3,000	3,900	3,400	5,400	5,400	4,900	5,500	6,500	4,700	4,600	7,300	6,400	7,200
Foreign.....	300	400	500	500	500	1,000	700	600	900	1,100	900	1,600	1,900	1,800
Percent foreign.....	10	11	12	13	9	15	13	10	12	19	17	18	23	20
Physical sciences.....	600	600	700	600	1,000	900	600	500	900	700	700	1,000	700	700
United States .....	500	500	600	500	900	600	500	400	800	400	500	600	400	500
Foreign.....	100	100	100	100	100	200	100	100	100	300	300	300	300	200
Percent foreign .....	12	9	18	18	9	25	16	16	14	39	35	33	40	29
Mathematics .....	200	200	300	200	200	200	200	300	300	300	500	700	700	600
United States .....	200	200	200	200	200	200	100	200	300	200	400	500	400	400
Foreign.....	—	—	100	—	—	100	—	—	—	100	100	200	300	200
Percent foreign .....	—	—	21	—	—	23	—	—	—	34	24	31	40	33
Computer sciences .....	NA	NA	—	—	—	—	—	—	—	—	—	100	100	100
United States .....	NA	NA	—	—	—	—	—	—	—	—	—	100	100	100
Foreign.....	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—
Percent foreign .....	NA	NA	—	—	—	—	—	—	—	—	—	—	—	—
Earth, atmospheric, and ocean sciences .....	100	100	100	100	100	200	200	200	300	300	200	200	300	300
United States .....	100	100	100	100	100	200	200	200	200	200	200	200	200	300
Foreign.....	—	—	—	—	—	—	—	—	100	—	—	100	100	—
Percent foreign .....	—	—	—	—	—	—	—	—	22	—	—	29	25	—
Life sciences .....	900	1,000	1,200	1,200	1,700	1,700	1,600	1,900	2,300	1,600	1,200	2,900	2,600	2,400
United States .....	800	900	1,000	1,000	1,500	1,400	1,400	1,800	2,100	1,400	1,100	2,500	2,100	2,000
Foreign.....	100	100	100	100	200	200	200	200	200	200	100	400	400	400
Percent foreign .....	9	11	9	11	10	13	12	9	7	10	11	15	17	17
Psychology .....	500	600	1,000	800	1,000	1,000	1,000	1,000	1,100	1,200	1,100	1,100	1,300	1,800
United States .....	500	500	900	700	900	900	1,000	900	1,000	1,100	1,100	1,100	1,300	1,600
Foreign.....	—	—	100	100	100	100	—	100	100	100	—	—	100	200
Percent foreign .....	—	—	10	12	9	14	—	8	11	5	—	—	5	11
Social sciences .....	800	800	1,000	1,000	1,600	2,200	1,800	1,700	2,000	1,300	1,300	2,600	2,200	2,700
United States .....	700	700	900	800	1,400	1,900	1,500	1,500	1,700	1,000	1,200	2,200	1,700	2,100
Foreign.....	100	100	100	100	100	300	200	200	300	300	200	500	600	500
Percent foreign .....	8	9	9	13	8	13	14	10	15	23	14	17	25	19
Engineering .....	100	100	300	200	400	300	300	500	500	500	400	300	400	400
United States .....	100	100	200	100	300	300	200	500	400	300	200	200	200	200
Foreign.....	—	—	100	—	—	—	100	100	100	200	200	100	200	200
Percent foreign .....	—	—	18	—	—	—	28	13	20	40	42	46	53	50

— sample too small

NA not available

NOTES: Numbers are rounded to nearest hundred. Percent foreign is based on actual rather than rounded numbers and is reported to the nearest whole number. Small number of unknowns through 1987 not shown. Senior faculty includes full and associate professors. Junior faculty includes assistant professors and instructors. Other types of full-time positions include nonfaculty positions such as research associates, adjunct appointments, lecturers, and administrative positions. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.



Appendix table 5-26

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**S&E doctorate holders employed in academia, by degree field, type of position, and primary work activity: 1975–2001**

(Thousands)

Field, position, and work activity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All fields</b>														
All positions.....	134.1	145.4	155.3	167.1	176.1	190.2	195.9	206.6	210.6	213.8	217.5	232.5	240.2	245.5
Research.....	30.8	37.0	41.3	46.5	48.9	55.9	66.5	72.2	73.9	80.2	83.0	88.6	91.4	93.8
Teaching.....	83.8	82.2	83.8	95.9	97.7	101.0	99.3	100.9	103.4	98.3	100.2	105.4	108.6	109.0
Other.....	19.4	26.2	30.2	24.7	29.6	33.3	30.1	33.5	33.2	35.2	34.3	38.6	40.2	42.8
Full-time faculty.....	116.4	125.6	131.2	141.9	148.4	156.9	164.4	169.8	173.1	172.4	171.4	178.4	184.0	187.4
Research.....	21.4	25.8	28.1	31.8	33.6	39.5	48.6	51.6	53.8	56.8	56.6	58.0	60.4	62.8
Teaching.....	80.2	78.4	79.7	92.1	91.9	94.9	93.6	93.9	96.7	91.4	91.9	95.4	98.6	97.9
Other.....	14.8	21.3	23.4	18.0	22.9	22.5	22.2	24.2	22.6	24.1	22.9	24.9	25.0	26.8
<b>Physical sciences</b>														
All positions.....	23.6	25.0	24.6	25.3	25.1	27.0	27.2	27.7	27.7	28.6	29.4	30.2	30.9	30.4
Research.....	6.4	7.9	7.5	8.0	7.7	9.4	10.2	10.9	10.6	12.0	12.6	12.7	12.2	11.9
Teaching.....	14.6	13.8	13.4	14.7	14.0	14.4	14.0	13.7	13.8	12.8	12.9	13.5	14.0	13.8
Other.....	2.6	3.3	3.7	2.6	3.3	3.2	2.9	3.1	3.3	3.8	3.8	4.0	4.7	4.7
Full-time faculty.....	18.9	20.0	20.0	20.5	20.2	21.2	22.0	21.5	21.7	21.3	20.9	21.4	21.7	21.6
Research.....	3.4	4.4	4.4	4.6	4.5	5.6	6.5	6.5	6.7	7.1	6.9	6.8	6.7	6.6
Teaching.....	13.9	13.1	12.7	14.1	13.1	13.6	13.4	12.8	12.8	11.8	11.6	12.2	12.7	12.6
Other.....	1.7	2.5	2.8	1.8	2.6	2.0	2.0	2.2	2.1	2.3	2.3	2.4	2.3	2.4
<b>Mathematics</b>														
All positions.....	11.0	11.7	12.2	12.4	12.9	13.6	13.8	14.5	15.2	15.5	14.6	15.6	15.2	14.9
Research.....	1.5	1.8	2.1	1.9	2.0	2.7	3.2	3.5	3.5	3.4	3.3	3.5	2.9	3.3
Teaching.....	8.5	8.5	8.6	9.1	9.4	9.3	9.2	9.5	10.1	10.3	9.8	10.2	10.5	10.2
Other.....	1.0	1.4	1.6	1.3	1.6	1.6	1.4	1.5	1.6	1.8	1.5	1.8	1.7	1.4
Full-time faculty.....	10.4	10.9	11.4	11.7	12.3	12.7	12.9	13.5	14.2	14.7	13.0	13.6	13.1	12.6
Research.....	1.3	1.6	1.8	1.8	1.8	2.5	2.7	3.2	3.2	3.1	2.7	2.8	2.3	2.3
Teaching.....	8.2	8.1	8.3	8.8	9.0	8.9	9.0	9.0	9.6	10.0	9.0	9.3	9.4	9.2
Other.....	0.9	1.2	1.3	1.1	1.4	1.3	1.2	1.3	1.4	1.6	1.3	1.5	1.4	1.1
<b>Computer sciences</b>														
All positions.....	NA	NA	0.1	0.3	0.5	0.8	1.1	1.5	2.0	2.5	3.1	3.3	3.7	3.8
Research.....	NA	NA	0.0	0.1	0.2	0.4	0.7	0.8	1.1	0.9	1.0	1.1	1.1	1.3
Teaching.....	NA	NA	0.1	0.2	0.3	0.3	0.3	0.6	0.7	1.4	1.8	1.8	2.1	1.9
Other.....	NA	NA	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.5
Full-time faculty.....	NA	NA	0.1	0.3	0.4	0.7	0.9	1.3	1.8	2.3	2.8	3.0	3.3	3.3
Research.....	NA	NA	0.0	0.1	0.1	0.3	0.5	0.7	1.0	0.7	0.9	1.0	0.9	1.1
Teaching.....	NA	NA	0.1	0.2	0.3	0.3	0.3	0.5	0.7	1.3	1.7	1.7	2.0	1.8
Other.....	NA	NA	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4
<b>Earth, atmospheric, and ocean sciences</b>														
All positions.....	3.9	4.2	4.2	4.6	4.8	5.2	5.6	5.9	6.0	6.4	6.4	7.3	7.8	8.2
Research.....	0.8	1.0	1.0	1.4	1.5	1.6	2.1	2.4	2.5	2.7	2.6	2.9	2.9	3.1
Teaching.....	2.7	2.7	2.5	2.8	2.8	3.0	2.9	3.0	3.0	2.9	3.0	3.2	3.8	4.1
Other.....	0.4	0.5	0.7	0.4	0.5	0.6	0.6	0.5	0.5	0.8	0.8	1.2	1.1	1.1
Full-time faculty.....	3.4	3.6	3.5	3.8	4.0	4.2	4.4	4.7	4.5	4.5	4.7	5.1	5.6	5.9
Research.....	0.5	0.6	0.6	0.8	0.9	0.9	1.3	1.5	1.5	1.6	1.5	1.6	1.5	1.7
Teaching.....	2.6	2.6	2.4	2.8	2.7	2.9	2.8	2.8	2.8	2.5	2.8	2.9	3.4	3.6
Other.....	0.3	0.4	0.5	0.2	0.4	0.4	0.4	0.3	0.2	0.4	0.4	0.6	0.7	0.6

Appendix table 5-26

(Page 2 of 2)

**S&E doctorate holders employed in academia, by degree field, type of position, and primary work activity: 1975–2001**

(Thousands)

Field, position, and work activity	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>Life sciences</b>														
All positions.....	39.4	42.6	47.0	51.3	54.9	58.7	61.3	64.8	66.9	68.2	71.6	77.3	81.9	84.3
Research.....	14.5	16.6	19.7	23.2	24.3	27.1	31.5	33.8	34.5	36.0	37.7	40.5	43.2	43.7
Teaching.....	19.0	18.1	18.1	20.5	21.1	20.9	20.1	20.3	20.9	20.2	21.8	23.4	25.1	25.7
Other.....	5.9	8.0	9.3	7.6	9.4	10.6	9.7	10.7	11.5	12.0	12.2	13.4	13.6	14.8
Full-time faculty.....	33.1	34.9	37.3	40.9	43.5	45.6	48.1	49.3	51.1	50.8	52.8	55.2	58.1	60.4
Research.....	10.3	11.4	13.1	15.5	16.5	18.6	22.3	22.6	23.8	24.1	24.7	25.7	27.0	27.7
Teaching.....	18.1	17.1	17.1	19.6	19.6	19.5	18.7	18.7	19.1	18.4	19.8	20.7	22.5	22.8
Other.....	4.7	6.4	7.1	5.8	7.4	7.4	7.2	7.9	8.2	8.3	8.3	8.7	8.6	9.9
<b>Psychology</b>														
All positions.....	14.8	16.2	17.7	20.1	21.0	23.1	23.7	25.0	25.2	25.0	26.1	27.3	29.0	30.4
Research.....	2.2	2.8	3.4	4.1	4.4	4.6	5.2	5.9	6.2	6.7	7.4	8.0	8.6	8.7
Teaching.....	9.7	9.4	9.5	11.7	11.6	12.3	13.0	12.8	12.8	11.6	11.9	12.4	13.0	13.3
Other.....	2.9	4.0	4.8	4.4	5.0	6.2	5.6	6.3	6.2	6.7	6.9	7.0	7.3	8.4
Full-time faculty.....	12.8	13.9	14.3	16.4	17.3	18.5	19.2	20.2	20.7	19.5	20.1	20.8	21.9	22.6
Research.....	1.5	2.0	2.2	2.5	2.9	3.3	3.9	4.5	5.0	5.3	5.4	5.9	6.1	6.3
Teaching.....	9.2	8.9	8.9	11.0	10.9	11.6	12.1	11.9	12.2	10.5	10.9	11.3	11.9	11.9
Other.....	2.1	3.0	3.2	2.9	3.5	3.6	3.3	3.8	3.6	3.7	3.8	3.6	3.9	4.3
<b>Social sciences</b>														
All positions.....	28.0	31.1	33.6	36.9	38.9	42.0	42.2	44.5	44.8	44.4	42.5	44.9	46.2	46.9
Research.....	3.2	4.1	4.2	4.5	4.9	5.7	7.5	8.2	8.4	10.7	9.8	9.8	11.1	11.7
Teaching.....	20.5	21.0	22.6	26.8	27.7	29.1	28.5	28.8	29.8	27.6	26.9	28.3	28.0	28.0
Other.....	4.3	6.0	6.8	5.6	6.1	7.1	6.1	7.6	6.6	6.1	5.8	6.8	7.2	7.2
Full-time faculty.....	25.5	28.8	30.4	33.7	34.4	36.1	37.7	39.0	39.0	39.2	37.1	37.7	39.2	39.2
Research.....	2.7	3.6	3.4	3.8	3.8	4.6	6.3	7.1	7.1	8.9	8.3	7.6	9.2	9.7
Teaching.....	19.5	20.1	21.4	25.7	25.9	26.8	26.5	26.4	27.6	25.9	24.6	25.3	24.9	24.9
Other.....	3.3	5.2	5.5	4.2	4.7	4.7	4.8	5.4	4.3	4.5	4.2	4.8	5.1	4.7
<b>Engineering</b>														
All positions.....	13.4	14.8	15.8	16.1	18.1	19.9	21.2	22.8	22.8	23.1	23.8	26.6	25.5	26.6
Research.....	2.3	2.9	3.4	3.3	3.9	4.4	6.2	6.9	7.2	7.9	8.7	10.1	9.4	10.1
Teaching.....	8.9	8.7	9.1	10.1	10.8	11.7	11.3	12.2	12.2	11.6	12.1	12.6	12.1	11.9
Other.....	2.3	3.1	3.3	2.7	3.5	3.8	3.7	3.7	3.4	3.7	3.0	3.8	4.0	4.7
Full-time faculty.....	12.2	13.5	14.3	14.7	16.4	17.9	19.3	20.2	20.1	20.1	20.0	21.5	21.1	21.9
Research.....	1.7	2.3	2.6	2.7	3.0	3.7	5.0	5.4	5.5	6.0	6.3	6.7	6.7	7.4
Teaching.....	8.7	8.5	8.9	10.0	10.4	11.2	11.0	11.7	11.8	11.0	11.5	12.0	11.7	11.2
Other.....	1.8	2.7	2.8	2.0	2.9	2.9	3.3	3.1	2.7	3.1	2.2	2.8	2.7	3.3

NA not available

NOTES: Faculty positions include full, associate, and assistant professors and instructors. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-27

**S&E doctorate holders employed in academia whose primary or secondary work activity was teaching or research, by type of position and degree field:**  
**1975–2001**

(Thousands)

Position, work activity, and field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All positions</b>														
<b>Teaching</b>														
All fields .....	110.4	110.8	115.2	125.2	131.3	138.5	151.4	155.8	160.8	145.2	147.1	153.5	158.7	160.6
Physical sciences .....	18.9	18.6	18.4	18.9	18.6	19.6	20.9	20.4	20.9	18.5	19.2	18.8	20.2	19.2
Mathematics .....	10.3	10.6	10.9	11.0	11.5	12.2	12.8	13.3	14.0	13.5	12.8	13.3	13.3	12.9
Computer sciences .....	0.0	0.0	0.1	0.3	0.4	0.6	0.8	1.3	1.8	2.0	2.5	2.6	2.9	2.9
Earth, atmospheric, and ocean sciences .....	3.2	3.2	3.1	3.5	3.8	3.8	4.3	4.5	4.7	4.1	4.3	4.6	5.0	5.4
Life sciences .....	29.6	28.3	29.8	32.9	34.6	35.0	40.5	41.4	43.3	36.5	38.6	41.6	43.6	44.4
Psychology .....	12.3	12.4	13.2	15.0	15.3	16.5	18.2	18.6	18.8	17.3	17.8	18.0	19.0	19.7
Social sciences .....	24.7	25.9	27.6	31.0	32.8	35.2	36.7	37.6	39.0	36.5	35.2	36.6	37.2	37.9
Engineering .....	11.4	11.7	12.1	12.7	14.3	15.6	17.2	18.6	18.3	16.8	16.8	18.0	17.5	18.3
<b>Research</b>														
All fields .....	90.6	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5
Physical sciences .....	16.9	16.3	15.4	16.3	16.1	17.7	20.3	20.8	20.8	20.0	20.6	21.8	21.6	21.0
Mathematics .....	7.5	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8
Computer sciences .....	0.0	0.0	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6
Earth, atmospheric, and ocean sciences .....	2.8	2.9	2.7	3.2	3.3	3.7	4.6	4.9	5.1	5.0	5.1	5.6	5.7	6.3
Life sciences .....	29.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1
Psychology .....	8.5	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2
Social sciences .....	16.9	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4
Engineering .....	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2
<b>Full-time faculty</b>														
<b>Teaching</b>														
All fields .....	103.4	104.7	107.9	117.7	122.3	127.9	141.0	143.6	148.1	134.0	134.0	138.1	143.1	144.2
Physical sciences .....	17.4	17.3	17.2	17.6	17.3	18.1	19.5	18.9	19.2	17.0	17.2	17.2	18.2	17.6
Mathematics .....	9.9	10.1	10.5	10.6	11.1	11.7	12.3	12.7	13.3	13.1	11.8	12.0	11.8	11.4
Computer sciences .....	0.0	0.0	0.1	0.3	0.3	0.6	0.8	1.3	1.7	1.9	2.4	2.4	2.9	2.7
Earth, atmospheric, and ocean sciences .....	3.1	3.1	3.0	3.3	3.6	3.7	4.0	4.2	4.2	3.6	3.9	4.1	4.5	4.7
Life sciences .....	27.3	26.4	27.5	30.6	31.6	31.9	36.9	37.3	38.7	32.8	34.4	36.4	38.5	39.4
Psychology .....	11.4	11.6	12.0	13.7	14.1	15.1	16.7	16.9	17.5	15.4	16.0	16.1	16.9	17.4
Social sciences .....	23.3	24.7	26.1	29.5	30.6	32.1	34.3	34.7	36.0	34.1	32.3	32.9	33.5	33.9
Engineering .....	10.9	11.4	11.5	12.2	13.7	14.8	16.5	17.6	17.5	16.1	16.0	16.9	16.8	17.1
<b>Research</b>														
All fields .....	78.9	71.6	74.1	83.8	86.9	95.1	121.4	125.8	131.4	121.7	121.7	127.0	129.2	133.3
Physical sciences .....	13.4	12.4	11.7	12.5	12.5	13.4	16.1	16.0	16.4	14.4	14.2	14.9	14.7	14.5
Mathematics .....	7.1	6.4	6.4	6.5	6.9	7.3	9.1	9.8	10.2	9.1	8.4	8.9	8.5	8.3
Computer sciences .....	0.0	0.0	0.0	0.2	0.3	0.5	0.8	1.2	1.6	1.8	2.2	2.2	2.4	2.3
Earth, atmospheric, and ocean sciences .....	2.5	2.5	2.2	2.6	2.6	2.9	3.6	4.0	3.8	3.6	3.7	3.9	4.0	4.6
Life sciences .....	24.1	22.9	24.7	28.7	29.6	31.9	38.3	39.0	41.0	38.4	39.5	41.2	42.5	44.6
Psychology .....	7.5	6.7	6.6	8.0	8.8	9.0	12.1	12.2	13.9	12.6	12.9	13.3	13.9	14.6
Social sciences .....	15.9	12.9	13.5	16.5	16.0	18.8	26.1	27.9	28.3	26.6	25.3	25.8	27.2	27.8
Engineering .....	8.3	8.0	8.9	8.8	10.2	11.4	15.2	15.7	16.2	15.1	15.5	16.7	15.9	16.6

NOTES: Faculty includes full, associate, and assistant professors and instructors. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-28

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field: 1975–2001**

(Thousands)

Field	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001
<b>All doctoral researchers and graduate research assistants</b>														
All fields .....	130.6	128.7	139.0	153.4	159.6	176.2	214.2	230.7	241.8	240.3	243.4	252.7	259.4	272.3
Physical sciences .....	23.3	23.1	23.2	24.9	25.2	28.0	31.9	33.2	33.0	32.3	32.4	33.1	32.9	32.8
Mathematics .....	8.1	7.6	7.7	7.6	8.0	8.6	10.8	11.5	12.1	10.9	10.9	11.5	11.2	11.2
Computer sciences.....	0.7	0.7	0.9	1.4	1.8	2.7	3.8	4.6	5.3	5.8	6.3	6.4	7.5	6.7
Earth, atmospheric, and ocean sciences .....	5.6	6.1	6.3	6.7	6.8	7.4	8.2	9.1	9.5	9.7	9.8	9.9	10.0	12.8
Life sciences .....	40.3	41.8	47.5	53.4	54.8	59.3	69.0	75.0	79.1	79.8	83.1	86.5	89.8	94.0
Psychology .....	10.7	10.0	10.8	12.8	13.5	13.8	17.5	18.1	19.9	19.5	20.2	20.9	22.0	23.1
Social sciences .....	21.7	18.7	19.9	22.8	22.8	26.0	34.0	36.7	37.9	36.7	35.3	36.5	38.1	39.2
Engineering.....	20.0	20.7	22.6	23.9	26.7	30.4	39.0	42.2	45.0	45.4	45.5	47.8	48.1	52.4
<b>Doctoral researchers</b>														
All fields .....	90.6	85.0	90.0	100.7	104.7	115.2	144.0	151.6	156.6	150.1	153.5	164.7	168.1	172.5
Physical sciences.....	16.9	16.3	15.4	16.3	16.1	17.7	20.3	20.8	20.8	20.0	20.6	21.8	21.6	21.0
Mathematics.....	7.5	6.8	6.9	6.8	7.2	7.6	9.7	10.2	10.7	9.5	9.4	10.1	9.9	9.8
Computer sciences.....	0.0	0.0	0.1	0.3	0.4	0.6	1.0	1.3	1.7	2.0	2.4	2.4	2.6	2.6
Earth, atmospheric, and ocean sciences .....	2.8	2.9	2.7	3.2	3.3	3.7	4.6	4.9	5.1	5.0	5.1	5.6	5.7	6.3
Life sciences.....	29.0	28.7	32.1	37.1	38.3	41.4	48.8	51.8	53.3	51.8	53.8	57.9	60.8	63.1
Psychology.....	8.5	7.7	8.3	9.9	10.5	10.7	14.3	14.3	15.7	14.9	15.6	16.1	17.2	18.2
Social sciences .....	16.9	13.8	14.7	17.6	17.8	20.9	28.5	30.5	31.1	29.3	28.1	29.8	30.9	31.4
Engineering.....	9.0	8.9	9.8	9.5	11.2	12.5	16.8	17.6	18.2	17.5	18.5	20.9	19.4	20.2
<b>Graduate research assistants</b>														
All fields .....	40.0	43.7	49.0	52.7	54.9	61.0	70.2	79.1	85.2	90.2	89.9	88.0	91.3	99.7
Physical sciences.....	6.4	6.8	7.8	8.6	9.1	10.3	11.6	12.4	12.2	12.3	11.8	11.3	11.3	11.8
Mathematics.....	0.6	0.8	0.8	0.8	0.8	1.0	1.1	1.3	1.4	1.4	1.5	1.4	1.3	1.4
Computer sciences.....	0.7	0.7	0.8	1.1	1.4	2.1	2.8	3.3	3.6	3.8	3.9	4.0	4.9	4.2
Earth, atmospheric, and ocean sciences .....	2.8	3.2	3.6	3.5	3.5	3.7	3.6	4.2	4.4	4.7	4.7	4.3	4.3	6.5
Life sciences.....	11.3	13.1	15.4	16.3	16.5	17.9	20.2	23.2	25.8	28.0	29.3	28.6	29.0	31.0
Psychology.....	2.2	2.3	2.5	2.9	3.0	3.1	3.2	3.8	4.2	4.6	4.6	4.8	4.8	4.9
Social sciences .....	4.8	4.9	5.2	5.2	5.0	5.1	5.5	6.2	6.8	7.4	7.2	6.7	7.2	7.8
Engineering.....	11.0	11.8	12.8	14.4	15.5	17.9	22.2	24.6	26.8	27.9	27.0	26.9	28.7	32.2

NOTES: Academic doctoral researchers are those reporting research as their primary or secondary work activity. Graduate research assistants are full-time graduate students with research assistantships as their primary mechanism of support. Details may not add to totals because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Survey of Doctorate Recipients; and NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, unpublished tabulations.

Appendix table 5-29

(Page 1 of 2)

**Estimates of total academic S&E doctoral employment, S&E doctoral researchers, and S&E graduate research assistants, by Carnegie institution type and work activity: 1975–2001**

Institution type	All positions		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All U&amp;C</b>								
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0	40.0	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0	43.7	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0	49.0	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0	52.7	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0	54.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0	61.0	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0	70.2	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0	79.1	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0	85.2	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0	90.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0	89.9	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0	88.0	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0	91.3	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0	99.7	100.0
<b>Research universities</b>								
1975 .....	73.4	54.7	58.0	64.0	25.5	82.8	35.6	89.0
1977 .....	78.2	53.8	55.9	65.8	29.5	79.7	38.8	88.8
1979 .....	83.5	53.8	59.0	65.6	32.1	77.7	42.6	86.9
1981 .....	91.0	54.5	66.6	66.1	37.5	80.6	45.2	85.8
1983 .....	89.9	51.1	66.3	63.3	37.4	76.5	47.1	85.8
1985 .....	102.8	54.0	75.1	65.2	45.4	81.2	52.2	85.6
1987 .....	106.9	54.6	90.0	62.5	53.7	80.8	59.9	85.3
1989 .....	112.5	54.5	94.7	62.5	58.1	80.5	66.5	84.1
1991 .....	111.6	53.0	93.8	59.9	57.9	78.3	70.1	82.3
1993 .....	112.9	52.8	91.1	60.7	60.6	75.6	73.9	81.9
1995 .....	112.8	51.9	92.0	59.9	62.4	75.2	73.1	81.3
1997 .....	113.6	48.9	92.3	56.0	60.6	68.4	70.6	80.2
1999 .....	117.2	48.8	95.5	56.8	64.3	70.4	73.1	80.1
2001 .....	119.6	48.7	97.8	56.7	66.9	71.3	79.7	79.9
<b>Doctorate granting institutions</b>								
1975 .....	15.9	11.9	10.6	11.7	1.8	5.8	3.7	9.3
1977 .....	17.2	11.8	9.4	11.1	2.4	6.5	4.0	9.2
1979 .....	17.2	11.1	9.2	10.2	2.6	6.3	4.4	9.0
1981 .....	18.8	11.3	10.5	10.4	2.6	5.6	5.0	9.5
1983 .....	19.5	11.1	10.7	10.2	2.8	5.7	5.3	9.7
1985 .....	21.2	11.1	12.4	10.8	3.5	6.3	5.8	9.5
1987 .....	22.2	11.3	16.2	11.3	4.4	6.6	6.7	9.5
1989 .....	23.5	11.4	16.8	11.1	4.9	6.8	7.9	10.0
1991 .....	24.9	11.8	18.4	11.7	5.9	8.0	9.2	10.8
1993 .....	24.2	11.3	17.4	11.6	6.7	8.4	9.9	11.0
1995 .....	25.0	11.5	17.7	11.5	7.2	8.7	9.9	11.0
1997 .....	25.8	11.1	19.1	11.6	8.2	9.3	10.3	11.7
1999 .....	26.3	10.9	19.3	11.5	8.2	9.0	10.7	11.7
2001 .....	26.3	10.7	18.8	10.9	7.7	8.2	12.2	12.3
<b>Comprehensive institutions</b>								
1975 .....	24.8	18.5	12.5	13.8	0.8	2.7	0.4	0.9
1977 .....	26.5	18.2	10.3	12.1	1.3	3.5	0.4	1.0
1979 .....	26.9	17.3	10.3	11.5	1.7	4.1	1.4	2.9
1981 .....	30.5	18.3	12.0	11.9	1.2	2.6	1.7	3.3
1983 .....	31.6	17.9	12.8	12.2	1.4	2.9	1.9	3.5
1985 .....	35.6	18.7	14.4	12.5	1.5	2.7	1.3	2.1
1987 .....	36.0	18.4	20.1	14.0	1.8	2.7	1.6	2.2
1989 .....	38.4	18.6	21.5	14.2	2.4	3.4	2.9	3.7
1991 .....	39.5	18.8	24.0	15.3	2.8	3.9	3.8	4.5
1993 .....	39.5	18.5	21.5	14.3	4.1	5.1	4.0	4.4
1995 .....	41.5	19.1	23.0	15.0	4.3	5.2	4.5	5.0
1997 .....	42.0	18.1	23.7	14.4	4.7	5.3	4.4	5.0
1999 .....	43.6	18.2	23.5	14.0	3.9	4.2	4.8	5.2
2001 .....	44.8	18.2	26.0	15.1	4.3	4.6	4.8	4.9

Appendix table 5-29

(Page 2 of 2)

**Estimates of total academic S&E doctoral employment, S&E doctoral researchers, and S&E graduate research assistants, by Carnegie institution type and work activity: 1975–2001**

Institution type	All positions		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>Freestanding medical schools</b>								
1975 .....	4.3	3.2	3.2	3.5	2.1	6.8	0.3	0.8
1977 .....	4.9	3.4	3.5	4.1	2.5	6.8	0.3	0.7
1979 .....	5.9	3.8	4.2	4.7	3.1	7.5	0.4	0.8
1981 .....	7.2	4.3	5.3	5.3	4.1	8.8	0.5	0.9
1983 .....	7.0	4.0	5.1	4.9	3.9	8.0	0.5	0.9
1985 .....	8.3	4.4	5.9	5.1	4.5	8.1	0.7	1.1
1987 .....	9.0	4.6	7.2	5.0	5.3	8.0	1.1	1.6
1989 .....	9.7	4.7	7.6	5.0	5.6	7.8	1.6	2.0
1991 .....	9.6	4.6	7.8	5.0	6.0	8.1	1.9	2.2
1993 .....	10.8	5.1	8.2	5.5	6.4	8.0	2.2	2.4
1995 .....	11.2	5.1	8.4	5.5	6.7	8.1	2.4	2.7
1997 .....	9.8	4.2	7.4	4.5	5.9	6.7	2.5	2.8
1999 .....	11.9	5.0	9.2	5.5	7.5	8.2	2.6	2.8
2001 .....	12.6	5.1	9.5	5.5	7.7	8.2	2.9	2.9
<b>Liberal arts colleges</b>								
1975 .....	10.4	7.8	4.6	5.1	0.2	0.8	0.0	0.1
1977 .....	10.8	7.4	3.6	4.2	0.5	1.3	0.0	0.0
1979 .....	11.3	7.3	3.5	3.9	0.4	1.0	0.1	0.1
1981 .....	12.0	7.2	4.4	4.4	0.4	0.9	0.0	0.1
1983 .....	12.6	7.2	4.1	3.9	0.3	0.6	0.0	0.1
1985 .....	14.0	7.4	5.4	4.7	0.4	0.7	0.0	0.1
1987 .....	14.6	7.5	7.7	5.4	0.6	0.9	0.0	0.0
1989 .....	15.3	7.4	8.6	5.7	0.5	0.6	0.1	0.1
1991 .....	15.8	7.5	9.0	5.7	0.4	0.5	0.0	0.1
1993 .....	16.0	7.5	8.0	5.3	1.0	1.2	0.1	0.1
1995 .....	15.8	7.3	7.9	5.2	0.7	0.9	0.1	0.1
1997 .....	17.3	7.4	9.3	5.6	1.1	1.2	0.0	0.0
1999 .....	18.5	7.7	9.1	5.4	0.9	1.0	0.1	0.1
2001 .....	18.6	7.6	9.5	5.5	0.9	1.0	0.1	0.1
<b>All others</b>								
1975 .....	5.3	4.0	1.7	1.8	0.3	1.1	0.0	0.1
1977 .....	7.8	5.4	2.4	2.8	0.9	2.3	0.1	0.1
1979 .....	10.5	6.8	3.8	4.3	1.4	3.3	0.1	0.1
1981 .....	7.6	4.5	2.0	2.0	0.7	1.5	0.2	0.4
1983 .....	15.5	8.8	5.8	5.5	3.0	6.2	0.1	0.2
1985 .....	8.3	4.4	2.0	1.8	0.7	1.3	0.9	1.5
1987 .....	7.2	3.7	2.7	1.9	0.6	1.0	0.9	1.3
1989 .....	7.2	3.5	2.5	1.6	0.7	0.9	0.1	0.1
1991 .....	9.2	4.4	3.6	2.3	0.9	1.2	0.1	0.1
1993 .....	10.4	4.9	4.0	2.6	1.4	1.8	0.1	0.1
1995 .....	11.2	5.1	4.4	2.9	1.8	2.2	0.1	0.1
1997 .....	24.0	10.3	12.9	7.9	8.1	9.2	0.1	0.1
1999 .....	22.7	9.5	11.4	6.8	6.6	7.2	0.1	0.1
2001 .....	23.6	9.6	10.9	6.3	6.3	6.7	0.1	0.1

U&amp;C universities and colleges

NOTES: Researchers are those reporting research as either primary or secondary work activity. Graduate research assistants are full-time graduate students with primary research assistantship support. Freestanding schools of engineering and technology are included under comprehensive institutions. Employment at institutions without a Carnegie code or with unknown administrative control is included under "All others." See chapter 2, "Classification of Academic Institutions," for information on the institutional categories used by the Carnegie Foundation for the Advancement of Teaching. Percents may not sum to 100 because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Survey of Doctorate Recipients; and NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, unpublished tabulations.

Appendix table 5-30

## Estimates of academic S&amp;E doctoral researchers, by type of position and work activity: 1975–2001

Position	All academic employment		Researchers		Research as primary activity	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All positions</b>						
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0
<b>Full-time faculty</b>						
1975 .....	116.4	86.8	78.9	87.1	21.4	69.5
1977 .....	125.6	86.4	71.6	84.2	25.8	69.7
1979 .....	131.2	84.5	74.1	82.3	28.1	68.0
1981 .....	141.9	84.9	83.8	83.2	31.8	68.4
1983 .....	148.4	84.3	86.9	83.0	33.6	68.7
1985 .....	156.9	82.5	95.1	82.6	39.5	70.7
1987 .....	164.4	83.9	121.4	84.3	48.6	73.1
1989 .....	169.8	82.2	125.8	83.0	51.6	71.5
1991 .....	173.1	82.2	131.4	83.9	53.8	72.8
1993 .....	172.4	80.6	121.7	81.1	56.9	70.9
1995 .....	171.4	78.8	121.7	79.3	56.6	68.2
1997 .....	178.4	76.7	127.0	77.1	58.0	65.5
1999 .....	184.0	76.6	129.2	76.9	60.4	66.1
2001 .....	187.4	76.3	133.3	77.3	62.8	67.0
<b>Postdocs</b>						
1975 .....	6.2	4.6	5.9	6.5	5.7	18.5
1977 .....	7.6	5.2	7.1	8.4	6.8	18.4
1979 .....	8.1	5.2	7.4	8.2	6.9	16.7
1981 .....	8.5	5.1	8.0	7.9	7.7	16.6
1983 .....	8.3	4.7	7.4	7.1	7.1	14.5
1985 .....	8.7	4.6	7.8	6.8	7.5	13.4
1987 .....	9.3	4.7	8.9	6.2	8.4	12.6
1989 .....	11.5	5.6	10.8	7.1	10.3	14.3
1991 .....	9.9	4.7	9.4	6.0	9.2	12.4
1993 .....	13.3	6.2	13.3	8.9	12.7	15.8
1995 .....	16.8	7.7	16.1	10.5	15.1	18.2
1997 .....	18.9	8.1	18.0	10.9	16.7	18.8
1999 .....	18.5	7.7	17.9	10.6	16.6	18.2
2001 .....	17.5	7.1	16.6	9.6	15.6	16.6
<b>Other</b>						
1975 .....	11.5	8.6	5.8	6.4	3.8	12.3
1977 .....	12.2	8.4	6.3	7.4	4.4	11.8
1979 .....	16.0	10.3	8.5	9.5	6.3	15.2
1981 .....	16.6	9.9	8.9	8.8	6.9	14.9
1983 .....	19.4	11.0	10.3	9.9	8.1	16.6
1985 .....	24.6	13.0	12.2	10.6	8.9	16.0
1987 .....	22.1	11.3	13.7	9.5	9.6	14.4
1989 .....	25.4	12.3	15.0	9.9	10.3	14.3
1991 .....	27.6	13.1	15.7	10.0	11.0	14.8
1993 .....	28.0	13.1	15.1	10.0	10.7	13.3
1995 .....	29.3	13.5	15.7	10.2	11.4	13.7
1997 .....	35.3	15.2	19.8	12.0	13.8	15.6
1999 .....	37.6	15.6	21.0	12.5	14.3	15.7
2001 .....	40.7	16.6	22.6	13.1	15.4	16.5

NOTES: Researchers are those reporting research as either primary or secondary work activity. Full-time faculty includes full, associate, and assistant professors plus instructors. Other types of positions include full-time nonfaculty positions such as research associates, adjunct positions, lecturers, administrative positions, and part-time positions of all kinds. Percents may not sum to 100 because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-31

(Page 1 of 3)

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1975–2001**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>All fields</b>								
1975 .....	134.1	100.0	90.6	100.0	30.8	100.0	40.0	100.0
1977 .....	145.4	100.0	85.0	100.0	37.0	100.0	43.7	100.0
1979 .....	155.3	100.0	90.0	100.0	41.3	100.0	49.0	100.0
1981 .....	167.1	100.0	100.7	100.0	46.5	100.0	52.7	100.0
1983 .....	176.1	100.0	104.7	100.0	48.9	100.0	54.9	100.0
1985 .....	190.2	100.0	115.2	100.0	55.9	100.0	61.0	100.0
1987 .....	195.9	100.0	144.0	100.0	66.5	100.0	70.2	100.0
1989 .....	206.6	100.0	151.6	100.0	72.2	100.0	79.1	100.0
1991 .....	210.6	100.0	156.6	100.0	73.9	100.0	85.2	100.0
1993 .....	213.8	100.0	150.1	100.0	80.2	100.0	90.2	100.0
1995 .....	217.5	100.0	153.5	100.0	83.0	100.0	89.9	100.0
1997 .....	232.5	100.0	164.7	100.0	88.6	100.0	88.0	100.0
1999 .....	240.2	100.0	168.1	100.0	91.4	100.0	91.3	100.0
2001 .....	245.5	100.0	172.5	100.0	93.8	100.0	99.7	100.0
<b>Physical sciences</b>								
1975 .....	23.6	17.6	16.9	18.7	6.4	20.8	6.4	16.1
1977 .....	25.0	17.2	16.3	19.2	7.9	21.3	6.8	15.6
1979 .....	24.6	15.9	15.4	17.1	7.5	18.3	7.8	15.9
1981 .....	25.3	15.2	16.3	16.2	8.0	17.1	8.6	16.3
1983 .....	25.1	14.3	16.1	15.3	7.7	15.9	9.1	16.7
1985 .....	27.0	14.2	17.7	15.4	9.4	16.8	10.3	16.9
1987 .....	27.2	13.9	20.3	14.1	10.2	15.3	11.6	16.5
1989 .....	27.7	13.4	20.8	13.7	10.9	15.1	12.4	15.7
1991 .....	27.7	13.1	20.8	13.3	10.6	14.4	12.2	14.4
1993 .....	28.6	13.4	20.0	13.3	12.0	15.0	12.3	13.6
1995 .....	29.4	13.5	20.6	13.4	12.6	15.2	11.8	13.1
1997 .....	30.2	13.0	21.8	13.2	12.7	14.4	11.3	12.8
1999 .....	30.9	12.9	21.6	12.8	12.2	13.3	11.3	12.3
2001 .....	30.4	12.4	21.0	12.2	11.9	12.7	11.8	11.8
<b>Mathematics</b>								
1975 .....	11.0	8.2	7.5	8.2	1.5	4.7	0.6	1.6
1977 .....	11.7	8.0	6.8	8.0	1.8	4.9	0.8	1.8
1979 .....	12.2	7.9	6.9	7.7	2.1	5.0	0.8	1.7
1981 .....	12.4	7.4	6.8	6.8	1.9	4.2	0.8	1.4
1983 .....	12.9	7.3	7.2	6.9	2.0	4.0	0.8	1.5
1985 .....	13.6	7.1	7.6	6.6	2.7	4.8	1.0	1.6
1987 .....	13.8	7.1	9.7	6.7	3.2	4.7	1.1	1.6
1989 .....	14.5	7.0	10.2	6.8	3.5	4.8	1.3	1.6
1991 .....	15.2	7.2	10.7	6.9	3.5	4.8	1.4	1.6
1993 .....	15.5	7.2	9.5	6.3	3.4	4.2	1.4	1.6
1995 .....	14.6	6.7	9.4	6.1	3.3	3.9	1.5	1.6
1997 .....	15.6	6.7	10.1	6.2	3.5	4.0	1.4	1.6
1999 .....	15.2	6.3	9.9	5.9	2.9	3.2	1.3	1.4
2001 .....	14.9	6.1	9.8	5.7	3.3	3.5	1.4	1.4
<b>Computer sciences</b>								
1975 .....	NA	NA	NA	NA	NA	NA	0.7	1.9
1977 .....	NA	NA	NA	NA	NA	NA	0.7	1.7
1979 .....	0.1	0.1	0.1	0.1	0.0	0.1	0.8	1.7
1981 .....	0.3	0.2	0.3	0.3	0.1	0.2	1.1	2.1
1983 .....	0.5	0.3	0.4	0.3	0.2	0.4	1.4	2.5
1985 .....	0.8	0.4	0.6	0.5	0.4	0.7	2.1	3.4
1987 .....	1.1	0.5	1.0	0.7	0.7	1.0	2.8	4.0
1989 .....	1.5	0.7	1.3	0.9	0.8	1.1	3.3	4.2
1991 .....	2.0	0.9	1.7	1.1	1.1	1.4	3.6	4.2
1993 .....	2.5	1.2	2.0	1.3	0.9	1.1	3.8	4.2
1995 .....	3.1	1.4	2.4	1.6	1.0	1.3	3.9	4.4
1997 .....	3.3	1.4	2.4	1.5	1.1	1.2	4.0	4.6
1999 .....	3.7	1.5	2.6	1.6	1.1	1.2	4.9	5.4
2001 .....	3.8	1.5	2.6	1.5	1.3	1.4	4.2	4.2



Appendix table 5-31

(Page 2 of 3)

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1975–2001**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
<b>Earth, atmospheric, and ocean sciences</b>								
1975 .....	3.9	2.9	2.8	3.1	0.8	2.7	2.8	7.1
1977 .....	4.2	2.9	2.9	3.4	1.0	2.7	3.2	7.4
1979 .....	4.2	2.7	2.7	3.0	1.0	2.4	3.6	7.3
1981 .....	4.6	2.7	3.2	3.2	1.4	2.9	3.5	6.6
1983 .....	4.8	2.7	3.3	3.1	1.5	3.0	3.5	6.4
1985 .....	5.2	2.8	3.7	3.2	1.6	2.9	3.7	6.1
1987 .....	5.6	2.8	4.6	3.2	2.1	3.2	3.6	5.2
1989 .....	5.9	2.8	4.9	3.2	2.4	3.3	4.2	5.2
1991 .....	6.0	2.9	5.1	3.3	2.5	3.4	4.4	5.2
1993 .....	6.4	3.0	5.0	3.3	2.7	3.4	4.7	5.2
1995 .....	6.4	3.0	5.1	3.3	2.6	3.1	4.7	5.2
1997 .....	7.3	3.2	5.6	3.4	2.9	3.2	4.3	4.9
1999 .....	7.8	3.2	5.6	3.4	2.9	3.2	4.3	4.7
2001 .....	8.2	3.3	6.3	3.6	3.1	3.3	6.5	6.5
<b>Life sciences</b>								
1975 .....	39.4	29.4	29.0	32.0	14.5	47.0	11.3	28.3
1977 .....	42.6	29.3	28.7	33.7	16.6	44.7	13.1	30.0
1979 .....	47.0	30.3	32.1	35.6	19.7	47.6	15.4	31.5
1981 .....	51.3	30.7	37.1	36.8	23.2	49.9	16.3	31.0
1983 .....	54.8	31.1	38.3	36.6	24.3	49.7	16.5	30.0
1985 .....	58.7	30.8	41.4	35.9	27.1	48.4	17.9	29.3
1987 .....	61.2	31.3	48.8	33.9	31.5	47.3	20.2	28.8
1989 .....	64.8	31.3	51.8	34.1	33.8	46.7	23.2	29.3
1991 .....	66.9	31.8	53.3	34.1	34.5	46.7	25.8	30.3
1993 .....	68.2	31.9	51.8	34.5	36.0	44.9	28.0	31.1
1995 .....	71.6	32.9	53.8	35.1	37.7	45.3	29.3	32.5
1997 .....	77.3	33.2	57.9	35.2	40.5	45.7	28.6	32.5
1999 .....	81.9	34.1	60.8	36.2	43.2	47.2	29.0	31.7
2001 .....	84.3	34.3	63.1	36.6	43.7	46.6	31.0	31.0
<b>Psychology</b>								
1975 .....	14.8	11.0	8.5	9.4	2.2	7.1	2.2	5.5
1977 .....	16.2	11.1	7.7	9.1	2.8	7.5	2.3	5.3
1979 .....	17.7	11.4	8.3	9.2	3.4	8.3	2.5	5.2
1981 .....	20.1	12.0	9.9	9.8	4.1	8.8	2.9	5.5
1983 .....	21.0	11.9	10.5	10.0	4.4	8.9	3.0	5.4
1985 .....	23.1	12.1	10.7	9.3	4.6	8.2	3.1	5.0
1987 .....	23.7	12.1	14.3	9.9	5.2	7.8	3.2	4.6
1989 .....	25.0	12.1	14.3	9.5	5.9	8.2	3.8	4.9
1991 .....	25.2	12.0	15.7	10.0	6.2	8.4	4.2	5.0
1993 .....	25.0	11.7	14.9	9.9	6.7	8.3	4.6	5.1
1995 .....	26.1	12.0	15.6	10.1	7.4	8.9	4.6	5.1
1997 .....	27.3	11.7	16.1	9.8	8.0	9.0	4.8	5.4
1999 .....	29.0	12.1	17.2	10.2	8.6	9.5	4.8	5.3
2001 .....	30.4	12.4	18.2	10.5	8.7	9.3	4.9	4.9
<b>Social sciences</b>								
1975 .....	28.0	20.9	16.9	18.6	3.2	10.2	4.8	12.0
1977 .....	31.1	21.4	13.8	16.2	4.1	11.1	4.9	11.2
1979 .....	33.6	21.6	14.7	16.3	4.2	10.1	5.2	10.6
1981 .....	36.9	22.1	17.6	17.5	4.5	9.7	5.2	9.8
1983 .....	38.8	22.0	17.8	17.0	4.9	10.1	5.0	9.2
1985 .....	41.9	22.0	20.9	18.2	5.7	10.2	5.1	8.3
1987 .....	42.1	21.5	28.5	19.8	7.5	11.3	5.5	7.8
1989 .....	44.5	21.5	30.5	20.1	8.2	11.3	6.2	7.9
1991 .....	44.8	21.3	31.1	19.8	8.4	11.3	6.8	8.0
1993 .....	44.4	20.8	29.3	19.5	10.7	13.4	7.4	8.2
1995 .....	42.5	19.5	28.1	18.3	9.8	11.8	7.2	8.0
1997 .....	44.9	19.3	29.8	18.1	9.8	11.1	6.7	7.7
1999 .....	46.2	19.2	30.9	18.4	11.1	12.1	7.2	7.9
2001 .....	46.9	19.1	31.4	18.2	11.7	12.4	7.8	7.8

Appendix table 5-31

(Page 3 of 3)

**Estimates of academic S&E doctoral researchers and graduate research assistants, by degree field and work activity: 1975–2001**

Field	All academic employment		Researchers		Research as primary activity		Research assistants	
	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution	Thousands	Percent distribution
Engineering								
1975 .....	13.4	10.0	9.0	10.0	2.3	7.5	11.0	27.5
1977 .....	14.8	10.1	8.9	10.5	2.9	7.9	11.8	27.1
1979 .....	15.8	10.2	9.8	10.9	3.4	8.2	12.8	26.2
1981 .....	16.1	9.7	9.5	9.5	3.3	7.2	14.4	27.3
1983 .....	18.1	10.3	11.2	10.7	3.9	7.9	15.5	28.3
1985 .....	19.9	10.5	12.5	10.8	4.4	7.9	17.9	29.4
1987 .....	21.2	10.8	16.8	11.6	6.2	9.3	22.2	31.6
1989 .....	22.8	11.0	17.6	11.6	6.9	9.5	24.6	31.1
1991 .....	22.8	10.8	18.2	11.6	7.2	9.7	26.8	31.4
1993 .....	23.1	10.8	17.5	11.7	7.9	9.8	27.9	31.0
1995 .....	23.8	10.9	18.5	12.1	8.7	10.5	27.0	30.1
1997 .....	26.6	11.4	20.9	12.7	10.1	11.4	26.9	30.6
1999 .....	25.5	10.6	19.4	11.6	9.4	10.3	28.7	31.4
2001 .....	26.6	10.8	20.2	11.7	10.1	10.7	32.2	32.3

NA not available

NOTES: Researchers are those reporting research as either primary or secondary work activity. Graduate research assistants are full-time students with research assistantships as their primary mechanism of support. Percents may not sum to 100 because of rounding.

SOURCES: National Science Foundation, Division of Science Resources Statistics (NSF/SRS), Survey of Doctorate Recipients; and NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering, unpublished tabulations.

Appendix table 5-32

**Academic S&E doctorate holders with Federal support, by degree field, type of position, and work activity: 1975–2001**

(Percent)

Field, position, and work activity	1975	1977	1979	1981	1983	1985 <sup>a</sup>	1987	1989	1991	1993 <sup>a</sup>	1995 <sup>a</sup>	1997 <sup>a</sup>	1999	2001
All fields .....	42.2	41.6	39.9	42.8	44.3	37.4	48.2	49.4	50.3	36.7	39.4	38.6	46.1	45.4
Research as primary activity.....	79.0	75.4	75.2	80.6	79.9	73.5	79.9	79.8	80.7	67.2	69.1	66.9	73.9	73.9
Research as secondary activity.....	35.6	37.5	35.3	35.3	40.5	28.9	38.7	40.7	40.0	23.9	27.5	26.4	36.6	36.2
Full-time faculty .....	39.6	38.2	36.2	38.8	41.7	34.3	45.6	46.6	48.0	32.9	35.7	34.7	43.1	43.2
Full-time other.....	58.8	68.1	58.3	58.5	59.4	49.8	60.6	60.9	58.8	42.5	43.1	47.0	49.9	49.1
Postdocs.....	86.3	86.0	82.1	86.3	82.2	78.5	82.1	83.5	84.5	83.1	80.1	74.1	80.3	74.3
Physical sciences .....	45.2	46.2	44.1	50.4	50.9	43.2	54.6	58.2	56.6	45.5	48.2	46.3	55.7	53.2
Research as primary activity.....	82.4	79.2	79.4	88.9	84.7	79.5	86.2	87.3	88.3	75.3	77.4	75.6	83.0	83.8
Research as secondary activity.....	39.4	39.2	37.7	42.5	49.3	34.4	48.9	52.6	49.5	35.4	38.3	34.8	53.1	46.3
Full-time faculty .....	39.3	39.9	38.2	44.6	46.5	37.4	49.9	53.5	52.9	37.7	41.6	39.2	50.4	47.9
Full-time other .....	64.1	75.9	72.4	70.3	72.1	66.1	72.6	72.1	72.0	61.1	52.8	63.8	68.8	64.1
Postdocs .....	90.2	89.4	81.9	90.2	87.3	84.4	90.5	86.8	87.6	87.1	84.6	80.4	82.5	82.4
Mathematics .....	19.1	19.0	21.7	21.3	30.1	21.5	31.1	33.5	34.5	18.8	22.3	20.9	29.1	31.9
Research as primary activity.....	50.1	42.3	44.0	52.7	71.0	51.5	66.8	68.1	74.5	40.7	45.9	48.2	60.6	59.5
Research as secondary activity.....	18.2	20.4	20.8	21.6	32.6	19.8	23.8	28.4	26.3	16.5	17.0	15.5	25.4	32.9
Full-time faculty .....	18.8	18.0	20.4	21.0	29.9	21.4	30.4	32.8	34.0	18.3	21.1	19.4	28.3	30.1
Full-time other .....	33.5	46.9	54.6	30.1	43.4	29.1	47.8	52.8	67.2	40.6	34.6	43.9	38.4	48.0
Postdocs .....	35.8	55.1	43.2	56.3	66.3	48.5	34.4	53.4	80.4	—	45.3	35.6	54.7	61.9
Computer sciences.....	NA	NA	34.8	29.7	44.6	45.0	61.7	52.4	49.4	39.9	43.2	41.1	55.6	47.2
Research as primary activity.....	NA	NA	58.3	19.4	84.6	57.2	66.3	74.9	71.2	64.7	75.8	59.4	85.0	82.4
Research as secondary activity.....	NA	NA	23.3	35.8	30.1	19.7	58.7	31.4	27.7	29.0	28.6	43.3	49.5	44.1
Full-time faculty .....	NA	NA	25.0	26.6	38.1	38.0	58.1	52.8	48.2	37.7	40.7	38.8	54.1	46.8
Full-time other .....	NA	NA	—	25.0	67.9	80.6	79.7	47.1	67.7	59.1	62.9	63.1	74.9	47.2
Postdocs .....	NA	NA	57.1	100.0	100.0	0.0	88.2	100.0	—	100.0	78.0	97.2	100.0	100.0
Earth, atmospheric, and ocean sciences ....	46.0	42.7	45.4	50.2	54.5	51.1	60.2	63.8	66.2	51.2	54.3	58.0	63.3	64.1
Research as primary activity.....	82.0	82.0	78.4	89.0	86.3	85.7	88.4	90.4	89.9	81.9	85.7	84.2	79.8	84.8
Research as secondary activity.....	41.4	37.9	46.3	41.3	47.8	42.0	49.2	52.9	55.5	37.1	38.9	41.2	63.2	60.7
Full-time faculty .....	43.0	37.8	40.0	45.1	50.3	44.8	54.6	60.2	61.4	45.5	48.6	52.3	61.7	62.3
Full-time other .....	79.9	80.3	75.2	68.6	78.9	78.4	79.5	80.9	90.7	67.9	72.0	71.0	74.5	70.6
Postdocs .....	75.0	95.2	96.9	91.9	90.7	96.6	91.7	90.6	73.4	83.3	91.0	85.8	74.3	91.8
Life sciences .....	58.9	58.1	55.3	59.6	60.0	53.5	65.3	65.1	65.5	52.2	52.5	51.0	57.9	56.6
Research as primary activity.....	85.0	83.0	82.2	85.4	84.6	80.0	87.0	86.7	86.5	76.2	75.3	73.1	79.9	78.9
Research as secondary activity.....	47.4	50.1	44.2	45.9	51.4	39.2	50.6	50.9	50.8	34.8	36.4	34.8	45.1	43.7
Full-time faculty .....	56.4	54.9	51.4	55.6	57.8	50.5	63.4	62.1	63.7	48.6	49.0	47.6	55.1	55.5
Full-time other .....	70.9	72.1	64.8	68.5	68.5	58.4	71.0	74.1	67.2	45.8	46.3	46.2	49.9	47.4
Postdocs .....	87.7	88.4	84.6	86.0	82.6	78.3	82.1	86.8	84.4	84.1	81.9	77.7	82.6	77.6
Psychology .....	36.1	33.2	32.6	32.7	30.1	25.9	31.2	35.5	34.7	25.7	27.6	27.4	32.9	34.3
Research as primary activity.....	70.1	70.2	72.5	77.3	70.4	66.8	70.5	73.0	70.8	63.8	62.4	65.0	68.2	72.2
Research as secondary activity.....	34.0	29.0	24.9	23.8	26.2	22.2	23.9	29.2	27.0	15.9	19.0	16.7	24.8	26.3
Full-time faculty .....	34.1	30.6	28.3	27.5	27.3	23.6	28.3	34.0	32.9	25.2	25.1	24.9	31.5	32.9
Full-time other .....	41.6	65.4	46.3	52.3	40.3	32.7	37.1	39.6	36.3	23.8	30.7	28.3	30.4	38.2
Postdocs .....	86.4	82.5	86.8	92.0	84.2	70.8	88.1	66.3	95.8	71.7	71.4	71.8	71.8	59.2
Social sciences.....	23.7	23.3	20.4	21.8	23.7	17.2	27.2	27.7	28.4	14.2	16.1	15.2	22.9	21.5
Research as primary activity.....	61.1	51.4	53.6	53.8	55.8	44.5	50.3	49.8	51.2	33.4	37.2	30.1	44.3	43.4
Research as secondary activity.....	20.3	23.4	21.5	18.6	24.3	14.9	24.9	25.8	25.4	8.3	12.2	11.6	18.0	17.0
Full-time faculty .....	23.7	22.6	19.0	21.2	22.5	16.2	27.1	27.4	27.8	13.4	15.4	14.8	22.5	21.3
Full-time other .....	31.6	35.3	37.3	32.7	34.0	26.6	36.2	33.8	32.7	22.1	22.6	22.7	29.3	29.4
Postdocs .....	54.6	54.7	84.9	47.9	64.6	54.7	27.4	57.6	52.5	88.1	68.5	33.9	65.0	35.8
Engineering .....	50.6	51.1	49.1	51.0	54.7	43.0	57.1	56.3	63.2	42.6	49.9	49.7	56.9	56.8
Research as primary activity.....	81.4	78.0	72.4	80.2	83.9	74.5	82.0	78.1	86.5	69.4	74.5	70.8	75.7	77.2
Research as secondary activity.....	50.5	53.7	52.8	56.8	54.4	38.0	54.8	57.1	58.9	34.3	43.1	41.0	51.0	52.6
Full-time faculty .....	49.9	49.3	49.5	49.8	54.7	42.2	56.0	55.2	62.9	40.9	48.4	46.4	55.2	56.7
Full-time other .....	67.3	86.6	53.0	60.7	63.1	44.3	76.4	71.2	66.8	59.5	56.7	67.9	64.2	61.8
Postdocs .....	84.3	74.7	51.1	98.9	82.7	91.4	74.8	76.0	90.0	65.7	72.7	62.1	80.4	56.8

— too few cases

NA not available

<sup>a</sup>Not comparable to the other years and understates degree of Federal support by asking whether work performed during week of April 15 was supported by the Government. In other years, question pertains to work conducted over course of a year.

NOTES: Full-time faculty includes full, associate, and assistant professors plus instructors. Other types of full-time positions include nonfaculty appointments such as research associates, adjunct appointments, lecturers, and administrative positions.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-33

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**S&E doctorate holders employed in academia with Federal support, by degree field, years since doctorate, and type of position: 1975–2001**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
<b>All fields</b>								
1975 .....	44.2	31.1	58.3	87.8	42.5	40.0	66.2	83.2
1977 .....	44.5	28.8	61.2	87.0	42.2	37.8	71.6	85.3
1979 .....	47.2	29.6	58.9	86.6	43.0	37.4	67.3	83.1
1981 .....	51.0	30.8	63.1	87.9	46.5	41.2	64.8	86.9
1983 .....	50.2	33.7	59.0	86.1	50.1	45.3	68.1	84.8
1985 <sup>a</sup> .....	43.2	23.9	59.3	79.1	42.4	36.2	63.3	81.0
1987 .....	53.3	36.7	56.1	82.0	54.8	49.7	71.6	84.2
1989 .....	57.2	38.7	58.7	84.7	57.8	53.5	70.0	89.1
1991 .....	53.6	38.3	56.6	83.8	57.4	53.4	66.6	88.7
1993 <sup>a</sup> .....	43.5	20.8	43.7	80.7	41.1	34.0	46.8	87.3
1995 <sup>a</sup> .....	47.0	23.2	40.1	78.5	43.9	36.1	52.0	86.0
1997 <sup>a</sup> .....	45.3	21.0	42.4	74.1	41.9	33.7	49.6	78.5
1999 .....	52.8	28.8	45.5	79.5	47.4	41.4	46.6	83.3
2001 .....	48.4	29.4	45.5	73.4	46.1	39.8	50.7	78.6
<b>Physical sciences</b>								
1975 .....	64.1	27.9	60.7	93.2	43.8	36.6	77.3	85.1
1977 .....	63.2	28.9	95.7	88.5	51.6	40.5	77.5	92.4
1979 .....	59.1	25.5	73.7	84.7	52.0	39.0	72.1	91.7
1981 .....	69.3	25.2	94.3	88.1	57.9	49.4	84.5	97.9
1983 .....	70.4	33.8	82.7	88.2	66.2	56.3	85.3	84.8
1985 <sup>a</sup> .....	64.3	18.7	86.6	84.6	50.8	35.7	78.7	91.4
1987 .....	80.9	66.7	69.9	90.2	68.7	56.0	97.1	93.1
1989 .....	77.9	49.2	82.1	88.0	72.4	61.9	89.0	90.6
1991 .....	69.9	44.1	78.8	87.2	67.2	55.1	88.5	100.0
1993 <sup>a</sup> .....	63.1	21.3	64.9	84.5	58.2	43.9	70.0	94.5
1995 <sup>a</sup> .....	62.8	21.0	41.9	84.1	53.9	37.8	60.2	86.7
1997 <sup>a</sup> .....	64.2	30.0	71.4	77.7	53.4	41.2	67.9	96.5
1999 .....	68.0	39.3	69.9	80.5	57.0	46.7	65.5	89.4
2001 .....	62.2	31.0	55.4	80.9	54.1	39.4	73.9	83.7
<b>Mathematics</b>								
1975 .....	14.5	13.0	37.6	28.3	18.9	18.5	0.0	57.9
1977 .....	16.2	12.2	45.9	56.4	19.2	17.6	82.0	52.2
1979 .....	24.8	22.5	52.9	42.5	32.3	30.2	64.9	46.9
1981 .....	10.8	9.5	0.0	44.1	29.7	27.6	62.7	81.5
1983 .....	31.8	29.8	7.1	73.4	39.8	39.8	51.3	100.0
1985 <sup>a</sup> .....	14.7	14.1	—	34.6	27.0	26.8	26.7	100.0
1987 .....	15.6	7.4	81.8	37.6	34.9	35.5	7.3	10.3
1989 .....	29.1	24.9	53.8	52.4	39.0	39.1	78.6	100.0
1991 .....	39.8	35.8	54.9	80.4	28.3	28.6	40.9	—
1993 <sup>a</sup> .....	15.7	14.8	0.0	100.0	15.2	14.0	100.0	—
1995 <sup>a</sup> .....	17.7	13.4	0.0	40.0	25.6	19.6	42.4	70.6
1997 <sup>a</sup> .....	14.9	3.5	29.1	32.9	16.7	14.9	0.0	42.2
1999 .....	36.4	24.0	0.0	58.7	32.2	33.5	0.0	47.2
2001 .....	34.6	21.6	34.6	56.3	42.2	38.6	62.4	100.0
<b>Computer sciences</b>								
1975 .....	NA	NA	NA	NA	NA	NA	NA	NA
1977 .....	NA	NA	NA	NA	NA	NA	NA	NA
1979 .....	34.8	25.0	—	57.1	—	—	—	—
1981 .....	27.7	24.1	25.0	100.0	52.4	52.4	—	—
1983 .....	45.7	35.1	60.0	100.0	43.5	40.4	92.3	—
1985 <sup>a</sup> .....	54.1	46.4	77.2	0.0	36.7	31.0	100.0	—
1987 .....	47.2	46.3	42.0	100.0	73.2	66.3	100.0	0.0
1989 .....	33.0	29.3	50.0	100.0	70.8	78.0	35.7	100.0
1991 .....	23.1	23.1	25.1	—	66.2	63.9	100.0	100.0
1993 <sup>a</sup> .....	44.7	39.5	100.0	100.0	30.7	30.9	27.3	100.0
1995 <sup>a</sup> .....	38.2	31.4	61.1	75.9	38.1	38.3	23.9	—
1997 <sup>a</sup> .....	40.5	29.7	74.3	97.0	40.4	37.7	75.6	—

Appendix table 5-33

(Page 2 of 3)

**S&E doctorate holders employed in academia with Federal support, by degree field, years since doctorate, and type of position: 1975–2001**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
1999 .....	59.7	50.6	77.5	100.0	56.6	56.5	85.9	—
2001 .....	31.4	25.9	44.2	100.0	49.2	47.3	53.2	—
<b>Earth, atmospheric, and ocean sciences</b>								
1975 .....	50.7	38.4	85.3	74.2	54.0	49.8	97.0	100.0
1977 .....	44.3	22.5	60.5	94.4	46.9	38.3	82.1	100.0
1979 .....	67.2	41.3	97.3	96.7	49.6	43.1	72.3	100.0
1981 .....	66.1	43.2	79.7	100.0	57.2	53.3	72.7	0.0
1983 .....	61.8	36.7	75.7	92.8	64.5	59.5	100.0	66.7
1985 <sup>a</sup> .....	56.0	33.4	83.9	96.4	59.6	50.6	81.2	100.0
1987 .....	64.2	42.3	87.9	89.6	71.1	61.9	88.9	100.0
1989 .....	70.4	52.8	88.5	90.1	81.2	78.0	92.9	93.8
1991 .....	76.0	61.7	100.0	77.4	76.6	75.3	100.0	64.1
1993 <sup>a</sup> .....	68.2	33.0	97.8	74.2	59.9	50.2	72.6	100.0
1995 <sup>a</sup> .....	65.4	35.8	87.4	88.0	66.4	58.9	86.2	100.0
1997 <sup>a</sup> .....	67.3	35.0	74.7	94.2	57.1	49.4	70.7	69.4
1999 .....	61.7	42.9	89.7	79.8	65.3	62.7	75.6	55.5
2001 .....	80.7	64.0	84.2	90.0	54.1	48.7	69.3	95.6
<b>Life sciences</b>								
1975 .....	61.8	46.4	72.5	87.6	60.1	57.6	76.2	87.5
1977 .....	61.6	38.1	70.4	88.9	59.6	56.6	73.3	90.2
1979 .....	65.9	40.6	75.8	85.9	57.3	51.4	76.5	84.2
1981 .....	71.8	51.7	76.5	88.1	64.0	58.8	70.8	85.7
1983 .....	68.2	52.8	65.1	84.7	67.1	64.5	72.6	83.7
1985 <sup>a</sup> .....	59.6	34.1	67.2	78.9	61.1	55.6	72.3	81.7
1987 .....	70.2	53.5	73.8	82.1	71.4	68.3	81.0	83.0
1989 .....	74.5	50.2	79.3	89.1	71.9	67.5	79.1	89.3
1991 .....	68.1	49.9	60.0	83.0	70.6	66.8	79.2	86.3
1993 <sup>a</sup> .....	61.2	32.2	44.8	81.9	55.7	46.4	52.0	86.7
1995 <sup>a</sup> .....	58.5	30.3	35.3	80.3	54.0	43.9	47.4	87.4
1997 <sup>a</sup> .....	58.3	23.0	42.2	77.5	52.3	42.4	48.4	78.8
1999 .....	65.0	35.0	46.2	82.4	57.2	47.2	49.3	83.0
2001 .....	59.2	34.2	39.0	76.8	56.4	48.9	49.5	78.8
<b>Psychology</b>								
1975 .....	35.0	25.5	53.7	88.5	35.3	34.9	32.8	71.2
1977 .....	35.3	26.8	71.7	86.0	31.5	27.9	60.5	73.0
1979 .....	35.2	22.5	22.2	95.5	39.3	31.4	76.5	87.6
1981 .....	46.5	33.2	41.6	93.4	34.7	28.6	54.5	88.2
1983 .....	31.2	19.8	34.2	89.3	32.3	28.2	37.1	87.2
1985 <sup>a</sup> .....	30.6	15.6	44.5	70.1	29.2	26.2	38.7	72.5
1987 .....	37.5	28.5	28.8	82.7	33.2	25.6	40.3	97.9
1989 .....	41.7	34.6	36.1	64.9	36.1	36.7	33.1	63.1
1991 .....	35.9	23.9	24.3	100.0	38.8	38.6	24.8	86.9
1993 <sup>a</sup> .....	21.6	12.0	27.5	61.6	23.2	24.6	15.5	48.2
1995 <sup>a</sup> .....	33.5	17.5	40.6	63.5	26.1	21.8	36.0	82.1
1997 <sup>a</sup> .....	34.5	24.2	19.0	70.9	29.5	22.3	36.4	77.3
1999 .....	33.4	22.4	29.9	63.6	35.6	34.7	23.8	100.0
2001 .....	35.5	20.0	41.7	64.1	34.9	32.6	42.7	45.6
<b>Social sciences</b>								
1975 .....	23.1	22.5	29.0	61.7	26.2	26.2	42.4	39.2
1977 .....	24.8	24.2	12.3	61.4	24.6	23.2	56.3	48.0
1979 .....	26.6	22.8	37.6	97.5	20.8	19.2	52.2	70.8
1981 .....	20.4	16.3	48.7	56.0	24.3	24.3	25.2	60.0
1983 .....	28.2	23.6	49.0	77.9	28.1	23.6	57.5	93.8
1985 <sup>a</sup> .....	15.6	12.3	27.8	44.4	19.3	15.7	51.0	41.0
1987 .....	22.5	20.9	34.5	21.4	29.9	27.7	54.0	0.0
1989 .....	25.6	24.7	24.3	41.9	33.2	31.6	51.4	83.9
1991 .....	21.7	19.5	38.8	31.7	36.6	33.8	44.2	100.0
1993 <sup>a</sup> .....	11.2	7.2	25.4	88.2	14.9	14.4	21.9	100.0

Appendix table 5-33

(Page 3 of 3)

**S&E doctorate holders employed in academia with Federal support, by degree field, years since doctorate, and type of position: 1975–2001**

(Percent)

Field	1–3 years since doctorate				4–7 years since doctorate			
	All positions	Full-time faculty	Other full time	Postdocs	All positions	Full-time faculty	Other full time	Postdocs
1995 <sup>a</sup> .....	15.9	10.7	28.8	80.8	17.8	16.0	41.8	49.8
1997 <sup>a</sup> .....	14.1	10.9	26.8	33.7	17.4	15.6	26.3	57.7
1999 .....	21.1	15.2	26.1	77.1	22.8	21.7	31.3	48.1
2001 .....	20.5	21.2	24.0	41.8	21.2	20.3	28.0	63.3
<b>Engineering</b>								
1975 .....	53.7	48.9	65.8	83.8	54.4	53.1	82.3	100.0
1977 .....	55.2	47.2	84.8	72.9	52.9	52.3	64.8	64.9
1979 .....	55.5	48.5	71.9	99.4	55.1	58.8	33.8	16.9
1981 .....	54.4	43.2	100.0	100.0	65.6	61.9	83.9	100.0
1983 .....	47.1	36.7	58.2	98.3	64.3	62.2	99.0	100.0
1985 <sup>a</sup> .....	43.9	37.8	66.1	94.5	47.6	46.3	66.4	0.0
1987 .....	53.3	43.7	79.2	75.7	65.5	64.2	97.6	100.0
1989 .....	56.0	48.9	71.9	73.3	70.8	68.6	91.8	100.0
1991 .....	66.6	62.1	67.7	89.9	73.2	73.0	79.7	100.0
1993 <sup>a</sup> .....	43.4	32.1	65.1	68.7	51.2	49.4	65.9	70.3
1995 <sup>a</sup> .....	51.1	38.5	50.3	72.6	62.1	60.3	72.5	86.5
1997 <sup>a</sup> .....	50.0	35.5	66.4	66.3	51.3	48.4	62.5	60.5
1999 .....	58.5	40.0	70.9	78.1	55.5	56.4	44.8	94.2
2001 .....	54.9	49.1	77.0	57.1	58.3	59.2	54.9	74.2

— too few cases

NA not available

<sup>a</sup>Not comparable to the other years and understates degree of Federal support by asking whether work performed during the week of April 15 was supported by the Government. In other years, question pertains to work conducted over course of a year.

NOTES: Recent doctorate holders are defined as having earned their doctorate within 3 years or within 4–7 years, respectively, preceding the survey year. Full-time faculty includes full, associate, and assistant professors plus instructors. Other types of full-time positions include nonfaculty appointments such as research associates, adjunct appointments, lecturers, and administrative positions.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients, unpublished tabulations.

Appendix table 5-34

**Broad and detailed fields for S&E article output data**

<p><b>Clinical medicine</b></p> <ul style="list-style-type: none"> <li>Addictive diseases</li> <li>Allergy</li> <li>Anesthesiology</li> <li>Arthritis and rheumatism</li> <li>Cancer</li> <li>Cardiovascular system</li> <li>Dentistry</li> <li>Dermatology and venereal disease</li> <li>Endocrinology</li> <li>Environmental and occupational health</li> <li>Fertility</li> <li>Gastroenterology</li> <li>General and internal medicine</li> <li>Geriatrics</li> <li>Hematology</li> <li>Immunology</li> <li>Miscellaneous clinical</li> <li>Nephrology</li> <li>Neurology and neurosurgery</li> <li>Obstetrics and gynecology</li> <li>Ophthalmology</li> <li>Orthopedics</li> <li>Otorhinolaryngology</li> <li>Pathology</li> <li>Pediatrics</li> <li>Pharmacology</li> <li>Pharmacy</li> <li>Psychiatry</li> <li>Radiology and nuclear medicine</li> <li>Respiratory system</li> <li>Surgery</li> <li>Tropical medicine</li> <li>Urology</li> <li>Veterinary medicine</li> </ul> <p><b>Biomedical research</b></p> <ul style="list-style-type: none"> <li>Anatomy and morphology</li> <li>Biochemistry and molecular biology</li> <li>Biomedical engineering</li> <li>Biophysics</li> <li>Cell biology, cytology, and histology</li> <li>Embryology</li> <li>Genetics and heredity</li> <li>General biomedical research</li> <li>Microbiology</li> <li>Microscopy</li> <li>Miscellaneous biomedical research</li> <li>Nutrition and dietetics</li> <li>Parasitology</li> <li>Physiology</li> <li>Virology</li> </ul>	<p><b>Biology</b></p> <ul style="list-style-type: none"> <li>Agriculture and food science</li> <li>Botany</li> <li>Dairy and animal science</li> <li>Ecology</li> <li>Entomology</li> <li>General biology</li> <li>General zoology</li> <li>Marine and hydrobiology</li> <li>Miscellaneous biology</li> <li>Miscellaneous zoology</li> </ul> <p><b>Chemistry</b></p> <ul style="list-style-type: none"> <li>Analytical chemistry</li> <li>Applied chemistry</li> <li>General chemistry</li> <li>Inorganic and nuclear chemistry</li> <li>Organic chemistry</li> <li>Physical chemistry</li> <li>Polymers</li> </ul> <p><b>Physics</b></p> <ul style="list-style-type: none"> <li>Acoustics</li> <li>Applied physics</li> <li>Chemical physics</li> <li>Fluids and plasmas</li> <li>General physics</li> <li>Miscellaneous physics</li> <li>Nuclear and particle physics</li> <li>Optics</li> <li>Solid state physics</li> </ul> <p><b>Earth and space sciences</b></p> <ul style="list-style-type: none"> <li>Astronomy and astrophysics</li> <li>Earth and planetary science</li> <li>Environmental science</li> <li>Geology</li> <li>Meteorology and atmospheric sciences</li> <li>Oceanography and limnology</li> </ul> <p><b>Engineering and technology</b></p> <ul style="list-style-type: none"> <li>Aerospace technology</li> <li>Chemical engineering</li> <li>Civil engineering</li> <li>Computers</li> <li>Electrical and electronics engineering</li> <li>General engineering</li> <li>Industrial engineering</li> <li>Materials science</li> <li>Mechanical engineering</li> <li>Metals and metallurgy</li> <li>Miscellaneous engineering and technology</li> <li>Nuclear technology</li> <li>Operations research and management</li> </ul>	<p><b>Mathematics</b></p> <ul style="list-style-type: none"> <li>Applied mathematics</li> <li>General mathematics</li> <li>Miscellaneous mathematics</li> <li>Probability and statistics</li> </ul> <p><b>Psychology</b></p> <ul style="list-style-type: none"> <li>Behavioral and comparative psychology</li> <li>Clinical psychology</li> <li>Developmental and child psychology</li> <li>Experimental psychology</li> <li>General psychology</li> <li>Human factors</li> <li>Miscellaneous psychology</li> <li>Psychoanalysis</li> <li>Social psychology</li> </ul> <p><b>Social sciences</b></p> <ul style="list-style-type: none"> <li>Anthropology and archaeology</li> <li>Area studies</li> <li>Criminology</li> <li>Demography</li> <li>Economics</li> <li>General social sciences</li> <li>Geography and regional science</li> <li>International relations</li> <li>Miscellaneous social sciences</li> <li>Planning and urban studies</li> <li>Political science and public administration</li> <li>Science studies</li> <li>Sociology</li> </ul> <p><b>Health sciences</b></p> <ul style="list-style-type: none"> <li>Gerontology and aging</li> <li>Health policy and services</li> <li>Nursing</li> <li>Public health</li> <li>Rehabilitation</li> <li>Social studies of medicine</li> <li>Speech/language pathology and audiology</li> </ul> <p><b>Professional fields</b></p> <ul style="list-style-type: none"> <li>Communication</li> <li>Education</li> <li>Information and library science</li> <li>Law</li> <li>Management and business</li> <li>Miscellaneous professional fields</li> <li>Social work</li> </ul>
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SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; and CHI Research, Inc.

## S&amp;E articles, by region and country/economy: 1988–2001

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Worldwide .....	466,419	497,102	508,795	515,530	547,617	540,491	567,204	580,809	593,568	594,467	617,762	632,059	632,781	649,795
OECD.....	386,267	411,328	422,129	429,770	456,039	454,461	475,034	487,111	498,275	495,870	514,070	523,075	520,349	532,756
North America .....	199,937	210,770	215,389	218,000	224,381	222,723	225,997	229,320	228,504	222,878	223,300	224,866	222,044	226,704
Canada.....	21,391	22,501	22,792	22,903	24,180	23,824	24,565	24,532	24,583	23,077	22,796	23,417	22,873	22,626
Mexico.....	884	1,046	1,038	1,082	1,336	1,502	1,663	1,901	2,124	2,271	2,615	2,925	2,950	3,209
United States.....	177,662	187,224	191,559	194,015	198,864	197,397	199,769	202,887	201,798	197,531	197,890	198,524	196,221	200,870
Western Europe .....	143,882	155,249	159,898	163,709	178,406	178,935	193,033	199,688	207,784	210,538	221,670	226,002	225,696	229,173
Austria.....	2,241	2,675	2,690	2,756	3,047	3,051	3,177	3,477	3,618	3,880	4,172	4,210	4,259	4,526
Belgium.....	3,586	3,905	4,103	4,164	4,431	4,512	4,949	5,260	5,583	5,509	5,822	5,924	5,739	5,984
Croatia.....	na	na	na	na	17	575	508	563	614	631	589	671	704	710
Cyprus.....	15	15	17	8	22	24	24	41	54	66	61	58	60	74
Denmark.....	3,445	3,722	3,716	3,776	4,141	4,068	4,458	4,408	4,477	4,512	4,782	4,909	4,929	4,988
Finland.....	2,789	2,981	3,071	3,211	3,438	3,603	3,974	4,134	4,354	4,523	4,564	4,872	4,878	5,098
France.....	21,409	22,686	22,937	23,518	26,172	26,225	28,266	29,309	29,755	30,061	31,809	32,097	30,960	31,317
Germany.....	29,292	31,821	32,295	32,929	35,120	34,103	36,901	38,100	39,123	40,743	43,953	43,550	43,440	43,623
Greece.....	1,239	1,518	1,397	1,598	1,736	1,759	1,974	2,068	2,265	2,407	2,666	2,705	2,892	3,329
Iceland.....	69	68	89	104	105	122	137	158	149	147	177	136	154	174
Ireland.....	790	826	902	915	946	1,003	1,168	1,210	1,269	1,318	1,526	1,526	1,596	1,665
Italy.....	11,229	12,509	13,062	13,778	15,462	15,279	17,000	17,904	19,342	19,147	20,321	20,819	21,038	22,313
Macedonia.....	0	0	0	0	1	27	33	34	37	51	42	45	49	74
Netherlands.....	8,581	9,736	10,176	10,106	11,060	11,360	11,961	12,330	12,438	12,779	12,756	12,642	12,466	12,602
Norway.....	2,192	2,247	2,426	2,403	2,655	2,637	2,805	2,953	2,950	3,012	3,100	3,127	3,195	3,252
Portugal.....	429	510	587	640	712	794	914	989	1,090	1,250	1,404	1,765	1,813	2,142
Slovenia.....	na	na	na	na	10	404	459	443	478	595	625	707	901	876
Spain.....	5,432	6,116	6,837	7,269	9,267	9,759	10,534	11,343	12,234	13,040	13,786	14,860	14,776	15,570
Sweden.....	7,573	8,126	8,172	8,139	8,273	8,547	8,972	9,284	9,697	9,677	9,967	10,129	9,815	10,314
Switzerland.....	5,316	5,548	5,901	6,098	6,651	6,871	7,372	7,361	7,489	7,912	8,096	8,297	8,454	8,107
Turkey.....	507	668	750	846	1,048	1,172	1,397	1,713	2,206	2,440	2,818	3,240	3,482	4,098
United Kingdom.....	36,509	38,195	39,069	39,950	42,404	42,456	45,436	45,993	47,904	46,183	47,916	48,965	49,485	47,660
Yugoslavia.....	1,211	1,330	1,641	1,447	1,621	496	514	507	568	555	605	622	513	547
All others.....	28	48	58	57	71	89	101	104	89	103	112	126	99	129
Asia.....	51,765	56,331	59,282	61,165	68,489	68,965	74,503	78,055	83,545	86,710	95,623	102,318	104,544	113,575
Bangladesh.....	95	99	116	104	151	153	136	170	155	146	138	168	160	177
China.....	4,619	5,411	6,285	6,186	6,956	7,566	7,821	9,261	10,070	12,530	13,807	16,197	18,142	20,978
India.....	8,882	9,744	9,200	9,517	10,100	9,763	9,928	9,591	9,736	9,419	10,066	10,589	10,047	11,076
Indonesia.....	59	86	104	89	86	103	120	133	137	146	138	172	165	207
Japan.....	34,435	36,569	38,570	39,590	44,143	43,339	46,692	47,603	50,392	50,171	54,658	56,134	55,413	57,420
Malaysia.....	208	241	233	260	247	293	345	373	372	339	402	493	470	494
Pakistan.....	235	263	257	315	277	349	324	339	274	258	276	300	277	282
Philippines.....	127	149	157	148	150	148	141	151	153	174	167	187	177	158
Singapore.....	410	517	572	599	755	854	1,022	1,184	1,181	1,338	1,635	1,984	2,301	2,603
South Korea.....	771	1,035	1,170	1,361	1,759	2,184	2,931	3,806	4,728	5,636	7,075	8,386	9,386	11,037
Sri Lanka.....	107	101	106	84	82	83	85	82	78	68	75	94	104	76
Taiwan.....	1,414	1,724	2,119	2,492	3,337	3,693	4,446	4,846	5,696	5,878	6,463	6,838	7,008	8,082
Thailand.....	287	272	282	298	300	317	383	338	386	415	530	558	655	727



## S&amp;E articles, by region and country/economy: 1988–2001

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Vietnam.....	52	66	60	65	74	67	61	102	113	120	107	112	144	158
All others.....	64	55	50	58	72	54	71	76	74	74	86	106	96	101
Eastern Europe/Central Asia.....	41,597	43,697	42,836	41,218	43,214	35,976	38,199	36,390	35,074	34,259	34,680	34,421	35,844	33,686
Armenia.....	na	na	na	na	21	165	178	182	179	186	169	156	167	152
Azerbaijan.....	na	na	na	na	15	197	189	157	125	87	94	70	89	68
Belarus.....	na	na	na	na	30	708	1,021	728	597	576	598	616	576	528
Bulgaria.....	1,089	1,219	1,216	1,169	1,218	1,380	1,024	963	968	977	931	900	887	784
Czech Republic.....	2,746	2,995	3,079	2,881	3,132	3,308	2,179	1,993	2,249	2,231	2,333	2,374	2,458	2,622
Estonia.....	na	na	na	na	2	177	202	240	248	255	299	320	344	339
Georgia.....	na	na	na	na	12	158	136	148	126	135	131	129	141	110
Hungary.....	1,714	1,847	1,722	1,806	1,824	1,718	1,774	1,826	1,839	1,939	2,144	2,313	2,292	2,479
Kazakhstan.....	na	na	na	na	19	250	191	173	143	125	122	109	113	116
Latvia.....	na	na	na	na	37	180	159	154	168	152	164	173	159	157
Lithuania.....	na	na	na	na	5	149	189	179	196	209	248	284	262	272
Moldova.....	na	na	na	na	15	156	159	140	136	116	98	95	96	77
Poland.....	4,030	4,245	3,999	3,919	4,113	3,848	4,041	4,535	4,597	4,445	4,891	5,195	5,342	5,686
Romania.....	393	513	377	395	568	507	675	648	871	835	858	909	956	997
Russia.....	na	na	na	na	817	19,659	21,612	19,974	18,464	18,343	17,841	17,149	18,271	15,846
Slovakia.....	na	na	na	na	44	0	1,151	1,137	1,175	1,051	1,144	997	1,007	955
Ukraine.....	na	na	na	na	162	2,894	2,923	2,856	2,600	2,287	2,362	2,351	2,365	2,256
USSR.....	31,625	32,879	32,443	31,047	31,127	130	na	na	na	na	na	na	na	na
Uzbekistan.....	na	na	na	na	50	275	290	295	347	264	213	242	273	204
All others.....	na	na	na	na	5	116	105	63	45	46	39	38	45	39
Near East/North Africa.....	7,893	8,389	8,226	8,143	8,410	8,815	9,124	9,627	9,691	10,041	10,500	10,731	11,092	11,777
Algeria.....	66	73	98	106	120	123	125	151	156	151	165	179	204	225
Egypt.....	1,130	1,278	1,254	1,429	1,288	1,279	1,380	1,359	1,359	1,242	1,302	1,362	1,376	1,548
Iran.....	86	91	94	126	150	175	233	271	312	366	523	699	825	995
Israel.....	4,916	5,134	4,968	4,873	5,234	5,575	5,559	5,921	5,815	6,203	6,240	6,091	6,314	6,487
Jordan.....	161	174	176	148	135	130	144	153	167	193	217	245	242	240
Kuwait.....	304	326	368	209	104	112	186	166	240	210	251	298	243	257
Lebanon.....	54	61	29	47	52	54	62	56	68	96	111	129	139	202
Morocco.....	113	108	97	128	170	164	182	237	256	298	370	425	471	469
Oman.....	13	20	27	32	37	42	46	53	63	63	76	88	99	96
Saudi Arabia.....	569	577	644	613	653	713	734	781	754	682	700	637	595	580
Tunisia.....	96	107	104	121	131	91	135	147	159	206	230	269	278	344
United Arab Emirates.....	23	30	33	57	77	109	98	122	145	154	157	137	144	159
All others.....	362	411	333	256	257	247	239	210	196	177	159	171	161	174
Pacific.....	12,054	12,802	12,962	12,915	13,775	14,267	15,223	15,922	16,643	16,761	17,719	18,189	17,791	17,743
Australia.....	9,896	10,730	10,664	10,742	11,452	11,929	12,695	13,387	13,911	13,955	14,710	15,186	14,700	14,788
New Zealand.....	2,075	1,993	2,227	2,102	2,253	2,256	2,454	2,466	2,684	2,748	2,953	2,927	3,037	2,903
All others.....	83	78	70	71	70	81	74	69	49	58	57	75	55	53
Central/South America.....	4,748	5,359	5,848	5,970	6,586	6,488	6,862	7,646	8,344	9,251	10,285	11,325	11,797	13,147
Argentina.....	1,423	1,518	1,627	1,499	1,526	1,585	1,747	1,969	2,212	2,430	2,546	2,705	2,792	2,930
Brazil.....	1,766	2,117	2,374	2,640	3,107	2,885	3,073	3,471	3,830	4,362	5,202	5,950	6,195	7,205
Chile.....	682	745	830	819	835	877	798	899	928	974	987	1,062	1,100	1,203

## S&amp;E articles, by region and country/economy: 1988–2001

Region and country/economy	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Colombia.....	86	111	122	106	125	122	145	167	196	230	237	254	320	324
Costa Rica.....	55	55	54	55	62	61	66	70	72	78	73	76	82	92
Cuba.....	67	90	108	94	131	113	141	166	194	177	234	242	282	299
Peru.....	68	67	77	70	73	66	64	68	72	71	71	60	77	93
Uruguay.....	42	50	57	64	81	91	84	98	115	133	136	159	158	155
Venezuela.....	292	328	314	329	377	395	420	430	432	484	528	523	509	535
All others.....	268	278	286	294	268	292	324	307	292	313	272	293	281	310
Sub-Saharan Africa.....	4,544	4,504	4,355	4,409	4,356	4,321	4,263	4,161	3,982	4,028	3,985	4,207	3,973	3,990
Cameroon.....	35	41	46	54	58	75	84	73	60	81	77	71	76	75
Ethiopia.....	71	58	70	93	88	84	86	99	88	109	80	106	90	93
Ghana.....	37	36	40	47	72	52	67	65	77	88	67	85	95	90
Kenya.....	291	300	255	260	295	346	280	310	275	256	270	278	237	230
Nigeria.....	886	864	815	719	666	604	470	464	433	458	418	451	428	332
Senegal.....	72	80	83	77	93	100	79	77	64	65	73	71	73	62
South Africa.....	2,523	2,499	2,406	2,552	2,419	2,377	2,459	2,364	2,282	2,237	2,268	2,366	2,237	2,327
Tanzania.....	64	71	69	77	93	94	105	92	107	100	91	104	100	87
Uganda.....	21	17	29	20	29	44	39	49	43	55	59	73	78	91
Zimbabwe.....	116	123	131	103	119	124	139	109	119	123	122	102	104	113
All others.....	425	415	412	407	425	422	454	459	436	455	459	501	457	490

na not applicable

OECD Organisation for Economic Co-operation and Development

NOTES: Article counts are from a set of journals classified and covered by the Institute for Scientific Information's Science Citation and Social Sciences Citation Indexes. Article counts are based on fractional assignments; for example, an article with two authors from different countries is counted as one-half of an article for each country. Countries with article output of less than 0.01 percent of world output in 2001 are grouped in "All others." Germany's output includes articles from the former East Germany before 1992. China's output includes articles from the Hong Kong economy before 2000. Czech Republic's output includes articles from the former Czechoslovakia before 1996. Article output from the former U.S.S.R. is included. Details may not add to totals because of rounding.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

*Science & Engineering Indicators – 2004*

Appendix table 5-36

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**U.S. S&E articles, by field and sector: Selected years, 1988–2001**

(Percent distribution)

Field and sector	1988	1991	1993	1995	1997	1999	2001
All fields (number of articles).....	177,662	194,015	197,397	202,887	197,531	198,524	200,870
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	71.6	71.8	72.0	72.1	73.2	73.3	73.6
Industry.....	8.5	8.7	8.3	8.1	7.4	7.3	7.0
Federal Government .....	8.1	7.8	7.8	7.6	7.2	7.0	7.0
Nonprofit institutions .....	7.0	7.0	7.3	7.5	7.5	7.7	7.9
FFRDCs .....	2.8	2.7	2.4	2.7	2.7	2.6	2.6
State/local government.....	1.2	1.1	1.0	1.0	1.0	1.0	1.0
Joint.....	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Unknown.....	0.7	0.9	1.0	0.8	1.0	1.0	0.8
Clinical medicine (number of articles) .....	55,016	59,488	61,312	63,367	62,676	63,190	63,709
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	69.1	69.1	68.4	68.9	69.4	69.1	68.8
Industry.....	4.6	5.4	5.5	6.0	5.8	5.8	5.9
Federal Government.....	9.6	8.9	8.7	8.0	7.8	7.5	7.5
Nonprofit institutions .....	13.5	13.4	14.1	14.2	14.0	14.6	15.1
FFRDCs.....	0.4	0.4	0.4	0.4	0.4	0.4	0.3
State/local government .....	2.0	1.7	1.6	1.4	1.4	1.4	1.4
Joint.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown.....	0.8	1.1	1.3	1.0	1.2	1.3	1.0
Biomedical research (number of articles).....	27,455	31,177	33,117	35,048	33,661	33,423	34,041
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	75.0	74.6	74.8	74.3	75.1	75.9	76.0
Industry.....	5.6	6.4	6.4	6.6	6.0	6.2	5.7
Federal Government.....	8.9	8.4	8.4	8.0	7.5	7.2	7.3
Nonprofit institutions .....	7.6	7.6	7.7	8.4	8.5	8.2	8.6
FFRDCs.....	1.5	1.7	1.3	1.6	1.6	1.4	1.3
State/local government .....	1.0	0.9	0.9	0.8	0.7	0.7	0.7
Joint.....	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Unknown.....	0.3	0.4	0.4	0.4	0.5	0.4	0.4
Biology (number of articles).....	12,862	13,898	12,671	12,664	12,027	11,271	12,499
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	76.9	75.5	75.4	74.2	75.6	74.8	74.6
Industry.....	2.9	3.4	3.5	4.3	3.4	3.4	3.8
Federal Government.....	14.1	14.7	14.3	15.1	14.1	14.3	13.7
Nonprofit institutions .....	3.2	3.4	3.5	3.4	3.6	4.1	4.3
FFRDCs.....	0.8	0.5	0.6	0.6	0.7	0.5	0.5
State/local government .....	1.6	1.6	1.7	1.8	1.9	1.9	2.3
Joint.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown.....	0.4	0.9	1.0	0.6	0.8	1.0	0.7
Chemistry (number of articles).....	13,186	14,681	15,089	14,915	14,375	14,491	14,342
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	71.0	71.9	72.8	72.3	74.5	74.9	75.8
Industry.....	17.4	16.7	16.6	16.3	14.0	13.4	12.2
Federal Government.....	5.7	5.3	4.8	5.1	4.9	4.2	4.6
Nonprofit institutions .....	1.6	1.7	1.9	1.9	1.9	2.2	2.1
FFRDCs.....	3.8	3.7	3.3	4.1	4.3	4.6	4.8
State/local government .....	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Joint.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown.....	0.2	0.4	0.4	0.2	0.3	0.5	0.4
Physics (number of articles).....	18,023	20,515	19,602	19,709	18,048	18,074	17,385
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	63.0	64.3	67.6	69.0	71.6	70.5	71.0
Industry.....	17.9	16.9	14.1	11.4	10.0	10.0	10.4
Federal Government.....	5.5	5.8	6.1	6.0	5.5	5.9	5.4
Nonprofit institutions .....	1.2	1.2	1.2	1.2	0.9	0.9	0.9
FFRDCs.....	12.1	11.4	10.5	11.9	11.2	11.9	11.8
State/local government .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint.....	0.1	0.1	0.2	0.1	0.2	0.2	0.2
Unknown.....	0.2	0.3	0.4	0.3	0.5	0.5	0.3
Earth/space sciences (number of articles).....	8,053	9,113	9,830	10,886	10,540	11,209	11,272
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic.....	64.0	62.7	64.6	64.1	65.4	65.1	65.7
Industry.....	6.8	7.9	6.8	6.5	6.3	5.8	5.9
Federal Government.....	14.8	14.4	14.0	14.2	13.7	13.5	12.8

Appendix table 5-36

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**U.S. S&E articles, by field and sector: Selected years, 1988–2001**

(Percent distribution)

Field and sector	1988	1991	1993	1995	1997	1999	2001
Nonprofit institutions .....	4.5	4.8	5.0	4.9	4.5	4.7	4.9
FFRDCs .....	6.9	6.7	6.4	7.2	6.9	7.0	7.0
State/local government .....	1.5	1.7	1.2	1.2	1.0	1.2	1.5
Joint .....	1.0	1.1	1.3	1.2	1.5	1.9	1.7
Unknown .....	0.5	0.7	0.8	0.6	0.7	0.8	0.6
Engineering/technology (number of articles) .....	11,817	12,838	13,303	13,801	12,907	13,564	13,889
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	57.4	59.4	61.4	62.9	62.2	63.7	65.5
Industry .....	26.3	25.4	23.1	21.8	20.8	20.3	19.1
Federal Government .....	6.4	6.8	6.8	7.4	7.1	6.8	6.4
Nonprofit institutions .....	2.0	1.6	1.7	1.5	1.3	1.3	1.2
FFRDCs .....	6.8	5.7	5.6	5.5	7.2	6.1	6.8
State/local government .....	0.3	0.2	0.2	0.3	0.3	0.7	0.2
Joint .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown .....	0.8	0.9	1.2	0.7	1.1	1.1	0.7
Mathematics (number of articles) .....	3,880	3,382	3,453	3,190	3,051	3,561	3,657
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	90.4	91.4	90.6	92.1	92.8	91.7	92.8
Industry .....	4.2	3.2	3.8	3.3	2.9	3.6	3.4
Federal Government .....	2.3	2.0	2.3	1.7	1.5	1.9	1.3
Nonprofit institutions .....	1.3	1.6	1.5	1.5	1.2	1.3	1.2
FFRDCs .....	1.5	1.5	1.5	1.0	1.4	1.0	0.9
State/local government .....	0.1	0.1	0.1	0.0	0.1	0.1	0.0
Joint .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown .....	0.2	0.3	0.2	0.3	0.2	0.4	0.3
Psychology (number of articles) .....	7,171	7,194	6,986	7,830	8,130	7,806	7,809
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	87.4	87.6	87.1	87.6	86.7	87.7	87.9
Industry .....	2.1	1.9	2.3	2.1	2.0	2.1	2.2
Federal Government .....	2.9	3.0	2.8	2.9	3.0	3.1	2.8
Nonprofit institutions .....	3.9	4.1	4.2	3.8	4.5	4.3	4.7
FFRDCs .....	0.1	0.1	0.1	0.1	0.1	0.0	0.0
State/local government .....	1.3	1.3	1.4	1.4	1.4	1.2	0.9
Joint .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown .....	2.3	2.0	2.1	2.0	2.3	1.7	1.5
Social sciences (number of articles) .....	8,738	9,595	9,690	9,150	9,163	9,171	9,384
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	83.5	84.3	84.0	84.3	85.3	86.8	87.9
Industry .....	3.1	2.6	2.4	2.2	2.7	2.0	1.7
Federal Government .....	5.0	4.9	5.2	5.0	4.0	3.7	3.5
Nonprofit institutions .....	6.0	6.0	6.1	6.3	5.9	5.7	5.4
FFRDCs .....	0.7	0.6	0.6	0.6	0.4	0.2	0.3
State/local government .....	0.6	0.5	0.6	0.5	0.6	0.5	0.4
Joint .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown .....	1.1	1.0	1.0	1.0	1.0	1.1	0.7
Health sciences/professional fields (number of articles) .....	11,461	12,133	12,343	12,326	12,954	12,764	12,882
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	78.6	80.8	79.9	79.1	80.7	81.6	81.6
Industry .....	8.5	7.2	7.3	7.1	6.4	5.5	5.0
Federal Government .....	3.6	3.1	3.6	3.6	3.4	3.0	4.3
Nonprofit institutions .....	5.2	5.0	5.1	6.1	5.5	6.0	6.0
FFRDCs .....	0.3	0.3	0.3	0.3	0.3	0.1	0.0
State/local government .....	1.8	1.7	1.8	1.7	1.4	1.5	1.4
Joint .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown .....	2.0	2.0	2.0	2.1	2.3	2.3	1.6

FFRDC federally funded research and development center

NOTES: Article counts are based on fractional assignments; for example, an article with two authors from different sectors is counted as one-half of an article for each sector. Articles with coauthors from more than one country are counted similarly. Articles are assigned to fields based on journal field classifications developed by CHI Research. Details may not add to totals because of rounding.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

## Regional and country portfolio of S&amp;E articles, by field: 1988

Region and country/economy	Articles	All fields	Clinical	Biomedical	Biology	Chemistry	Physics	Earth/space	Engineering/	Mathematics	Psychology	Social	Health	Professional
			medicine	research				sciences	technology			sciences	sciences	fields
	Number		Percent distribution											
Worldwide .....	466,419	100.0	29.3	15.2	7.5	12.3	13.3	4.1	6.7	2.1	3.4	2.5	0.9	2.5
OECD.....	398,238	100.0	31.1	15.2	7.7	10.8	12.0	4.1	6.7	2.1	3.7	2.8	1.0	2.8
North America .....	199,937	100.0	30.4	15.3	8.1	7.5	9.9	4.7	6.8	2.2	4.9	4.1	1.6	4.5
Canada.....	21,391	100.0	25.9	14.3	14.6	8.1	8.0	5.8	8.1	2.3	4.6	4.4	1.3	2.6
Mexico.....	884	100.0	24.5	14.9	15.7	11.1	15.7	6.5	4.0	3.4	2.7	1.2	0.1	0.4
United States.....	177,662	100.0	31.0	15.5	7.2	7.4	10.1	4.5	6.7	2.2	4.9	4.0	1.6	4.8
Western Europe .....	143,882	100.0	34.6	15.4	6.6	13.1	13.0	3.8	5.6	2.1	2.6	1.7	0.5	1.1
Austria.....	2,241	100.0	42.1	10.6	6.3	13.8	12.4	2.5	4.4	2.4	2.8	1.4	0.3	1.0
Belgium.....	3,586	100.0	38.4	17.1	5.4	10.4	11.9	3.0	5.5	2.3	2.8	1.7	0.4	1.2
Cyprus.....	15	100.0	16.4	8.2	52.5	0.0	0.0	6.6	3.3	0.0	13.1	0.0	0.0	0.0
Denmark.....	3,445	100.0	54.6	15.9	6.0	4.8	8.6	2.6	2.3	1.7	1.7	1.1	0.2	0.6
Finland.....	2,789	100.0	51.1	14.3	7.1	6.1	7.0	3.7	4.3	1.8	1.6	1.4	0.6	1.1
France.....	21,409	100.0	29.1	16.6	5.9	15.3	17.2	4.7	4.7	3.0	1.8	1.1	0.1	0.4
Germany (East).....	3,626	100.0	23.7	13.4	8.9	25.5	14.9	2.0	6.6	1.4	0.7	1.4	0.1	1.4
Germany (West).....	25,666	100.0	29.0	15.4	6.2	15.7	16.5	3.3	6.7	2.2	1.8	2.3	0.3	0.7
Greece.....	1,239	100.0	20.4	8.1	9.3	14.7	16.3	7.9	14.7	4.3	2.4	0.6	0.2	0.9
Iceland.....	69	100.0	45.0	12.3	6.2	0.0	3.4	17.6	2.2	2.2	1.5	3.6	1.5	4.6
Ireland.....	790	100.0	35.8	11.9	11.9	9.2	8.7	4.7	3.9	4.5	5.8	1.5	0.6	1.6
Italy.....	11,229	100.0	38.0	13.4	3.8	15.4	16.2	3.6	5.2	2.3	1.0	0.8	0.1	0.3
Netherlands.....	8,581	100.0	36.6	15.5	8.2	10.8	11.9	4.1	4.3	1.5	2.7	2.7	0.6	1.0
Norway.....	2,192	100.0	40.3	13.8	12.8	8.0	4.9	6.4	4.4	2.1	3.9	2.2	0.4	0.8
Portugal.....	429	100.0	15.7	11.4	6.4	17.6	20.1	5.0	16.0	2.4	2.2	0.9	0.2	2.2
Spain.....	5,432	100.0	23.3	18.8	8.9	23.8	12.4	3.3	4.2	3.1	1.1	0.7	0.2	0.2
Sweden.....	7,573	100.0	48.2	17.2	6.9	7.5	7.5	3.2	3.9	1.2	1.8	1.2	0.8	0.6
Switzerland.....	5,316	100.0	36.3	18.5	4.1	11.9	16.5	2.7	4.2	1.6	1.7	1.7	0.3	0.6
Turkey.....	507	100.0	33.1	6.0	5.4	15.8	12.4	6.2	13.4	3.3	2.6	0.9	0.0	1.1
United Kingdom.....	36,509	100.0	36.6	14.8	7.4	9.9	9.1	4.0	6.3	1.5	4.5	2.4	1.2	2.5
Yugoslavia.....	1,211	100.0	21.3	15.0	3.3	22.1	20.7	3.4	9.2	3.0	0.9	0.4	0.2	0.5
All others.....	28	100.0	31.2	2.5	6.0	10.0	31.5	10.9	0.0	3.0	3.6	0.0	0.0	1.2
Asia.....	51,765	100.0	22.4	13.7	7.5	18.2	19.7	2.7	11.6	1.8	1.3	0.5	0.1	0.4
Bangladesh.....	95	100.0	26.3	6.5	12.8	11.4	15.1	0.5	4.2	1.4	15.8	3.2	1.6	1.1
China.....	4,001	100.0	13.8	6.7	2.9	13.0	39.1	5.1	13.0	3.9	0.1	1.7	0.1	0.5
Hong Kong.....	618	100.0	45.3	9.3	2.4	11.3	7.2	1.7	7.2	3.0	3.5	3.8	1.6	3.7
India.....	8,882	100.0	12.9	13.6	10.3	24.2	17.4	5.1	11.1	1.8	2.6	0.4	0.1	0.5
Indonesia.....	59	100.0	21.2	9.6	28.5	4.3	5.9	10.6	6.4	0.8	9.2	1.7	1.7	0.0
Japan.....	34,435	100.0	25.6	15.2	6.9	17.7	19.1	1.9	11.1	1.4	0.5	0.5	0.0	0.1
Malaysia.....	208	100.0	31.3	10.3	23.1	12.4	4.1	2.2	3.1	2.6	7.7	0.0	1.0	2.3
Pakistan.....	235	100.0	8.0	4.6	20.9	34.6	12.6	3.8	11.0	1.3	1.9	0.1	0.6	0.4
Philippines.....	127	100.0	12.8	3.9	58.0	1.6	0.8	4.7	1.8	2.4	10.2	2.6	0.5	0.8
Singapore.....	410	100.0	30.4	9.0	7.1	12.1	8.5	2.7	12.7	4.5	7.0	2.4	0.4	3.1
South Korea.....	771	100.0	10.0	4.6	3.7	30.5	18.2	1.5	24.9	2.7	2.5	0.1	0.0	1.3
Sri Lanka.....	107	100.0	27.9	15.6	21.2	12.0	3.4	6.2	3.7	0.0	5.4	0.5	2.8	1.4
Taiwan.....	1,414	100.0	19.7	8.7	9.2	12.8	16.3	0.9	25.4	2.7	3.8	0.2	0.0	0.5

## Regional and country portfolio of S&amp;E articles, by field: 1988

Region and country/economy	Articles	All fields	Clinical	Biomedical	Biology	Chemistry	Physics	Earth/space	Engineering/	Mathematics	Psychology	Social	Health	Professional
			medicine	research				sciences	technology			sciences	sciences	fields
	Number		Percent distribution											
Thailand .....	287	100.0	42.4	19.4	12.8	3.7	2.6	4.7	4.7	0.9	6.3	0.8	0.5	1.1
Vietnam.....	52	100.0	1.9	1.6	6.8	9.0	41.3	1.0	2.6	35.8	0.0	0.0	0.0	0.0
All others.....	64	100.0	41.2	15.2	13.8	3.9	5.3	4.4	6.2	1.6	7.0	1.6	0.0	0.0
Eastern Europe/Central Asia.....	41,597	100.0	14.4	17.1	3.0	27.2	25.8	3.7	4.8	1.6	1.1	0.7	0.0	0.5
Bulgaria.....	1,089	100.0	9.0	39.2	2.2	20.6	17.7	2.2	5.4	2.8	0.2	0.3	0.0	0.3
Czechoslovakia .....	2,746	100.0	16.5	13.9	4.6	29.0	14.5	3.6	5.3	1.5	7.9	2.9	0.1	0.3
Hungary .....	1,714	100.0	21.2	19.5	3.7	27.3	12.0	1.7	4.3	6.2	2.2	0.7	0.1	1.1
Poland.....	4,030	100.0	12.4	9.3	5.3	27.1	28.4	1.9	9.1	4.4	1.0	0.6	0.1	0.6
Romania.....	393	100.0	10.0	3.7	1.3	38.3	18.2	1.5	15.1	9.6	1.3	0.8	0.0	0.3
USSR.....	31,625	100.0	14.3	17.7	2.6	27.1	27.6	4.1	4.1	0.9	0.6	0.6	0.0	0.4
Near East/North Africa .....	7,893	100.0	30.1	10.9	9.2	13.0	12.0	4.5	8.9	3.1	3.4	2.1	0.5	2.3
Algeria.....	66	100.0	17.1	7.5	7.9	17.9	23.9	9.1	2.3	4.6	6.8	2.3	0.0	0.8
Egypt.....	1,130	100.0	13.5	5.5	11.4	39.7	10.1	4.6	12.8	1.2	0.8	0.3	0.0	0.2
Iran .....	86	100.0	26.0	7.5	20.5	9.1	6.2	4.8	9.8	8.2	3.9	1.2	0.0	2.9
Israel.....	4,916	100.0	33.6	13.6	8.8	5.8	13.7	3.4	6.2	3.5	4.7	3.1	0.7	3.0
Jordan.....	161	100.0	31.6	3.7	6.3	19.4	13.2	2.8	14.0	1.9	3.4	0.6	0.6	2.5
Kuwait.....	304	100.0	38.4	12.3	4.5	7.6	3.1	9.9	16.8	2.8	1.0	0.7	0.7	2.1
Lebanon.....	54	100.0	41.8	15.4	9.9	6.2	16.0	1.8	6.5	0.0	1.8	0.0	0.6	0.0
Morocco.....	113	100.0	12.1	2.3	16.1	24.5	18.2	9.7	9.1	4.9	2.7	0.4	0.0	0.0
Oman .....	13	100.0	1.9	1.5	18.7	16.8	9.0	41.0	3.7	7.5	0.0	0.0	0.0	0.0
Saudi Arabia.....	569	100.0	39.2	8.0	6.8	11.4	5.9	4.6	16.2	3.3	1.2	0.4	1.1	1.9
Tunisia .....	96	100.0	37.5	5.9	5.5	20.7	12.8	4.1	1.0	10.7	1.6	0.0	0.0	0.0
United Arab Emirates.....	23	100.0	33.0	4.3	0.0	13.0	0.0	2.2	43.2	4.3	0.0	0.0	0.0	0.0
All others.....	362	100.0	18.4	3.4	14.3	27.3	8.2	11.0	14.7	1.0	0.3	0.0	0.0	1.4
Pacific .....	12,054	100.0	29.6	13.1	18.3	7.8	6.7	6.3	4.4	2.1	4.9	3.5	0.8	2.4
Australia .....	9,896	100.0	29.9	13.8	16.1	8.2	7.1	6.3	4.5	2.2	5.2	3.3	0.9	2.5
New Zealand .....	2,075	100.0	28.4	10.1	28.6	6.1	4.6	6.1	3.8	1.5	3.2	4.6	0.6	2.3
All others.....	83	100.0	33.8	5.5	25.1	3.8	0.6	12.4	3.6	1.2	8.0	1.2	1.2	3.6
Central/South America.....	4,748	100.0	24.3	16.6	11.6	11.4	16.2	5.0	5.3	2.2	3.6	1.7	1.3	0.6
Argentina .....	1,423	100.0	21.9	17.6	11.6	14.9	18.5	4.3	6.2	1.3	2.2	1.3	0.0	0.2
Brazil.....	1,766	100.0	20.4	15.8	9.1	9.9	22.1	5.3	5.9	3.6	2.2	2.3	3.0	0.4
Chile.....	682	100.0	38.7	19.1	9.5	11.1	5.8	6.2	3.5	2.4	2.1	1.0	0.0	0.7
Colombia.....	86	100.0	26.6	11.8	23.6	2.4	2.4	6.0	5.8	0.0	7.3	5.8	4.7	3.5
Costa Rica.....	55	100.0	19.0	9.1	36.2	4.1	9.1	1.1	2.1	0.0	14.6	2.7	0.0	1.8
Cuba .....	67	100.0	21.4	15.3	10.8	20.5	21.3	2.5	1.5	0.0	6.0	0.0	0.7	0.0
Peru .....	68	100.0	24.0	10.3	31.0	3.8	1.6	12.9	2.2	0.0	12.5	1.5	0.2	0.0
Uruguay .....	42	100.0	39.4	22.3	18.1	7.2	2.4	6.0	2.4	0.0	0.0	0.0	2.4	0.0
Venezuela.....	292	100.0	21.4	19.9	11.2	13.8	17.0	3.7	6.0	2.2	3.3	0.5	0.0	1.0
All others.....	268	100.0	27.6	11.0	20.3	5.4	1.6	4.8	2.3	0.7	18.7	3.0	1.9	2.5
Sub-Saharan Africa .....	4,544	100.0	37.6	12.1	18.7	7.1	3.6	6.0	4.1	1.8	5.0	1.0	1.0	2.1
Cameroon .....	35	100.0	15.0	18.0	25.6	9.8	0.0	2.7	2.9	14.5	4.3	0.0	7.2	0.0
Ethiopia.....	71	100.0	39.2	2.1	30.5	8.4	2.8	11.7	0.5	1.4	0.7	0.0	2.8	0.0
Ghana .....	37	100.0	32.5	9.4	27.6	2.7	0.0	6.9	1.3	0.0	11.6	2.7	0.0	5.3

## Regional and country portfolio of S&amp;E articles, by field: 1988

Region and country/economy	Articles	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/ technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
Kenya.....	291	100.0	56.4	12.2	19.7	1.2	0.7	1.7	0.7	0.3	4.9	1.4	0.3	0.3
Nigeria .....	886	100.0	31.6	9.0	24.7	6.7	2.0	2.9	4.2	2.1	7.4	0.6	2.6	6.2
Senegal.....	72	100.0	35.2	23.7	12.5	6.0	0.5	14.5	0.0	3.5	3.5	0.0	0.7	0.0
South Africa.....	2,523	100.0	35.0	14.4	15.7	8.8	5.3	7.6	5.3	2.0	3.0	1.1	0.4	1.2
Tanzania.....	64	100.0	38.7	5.7	28.3	0.0	0.8	4.3	3.1	0.0	12.1	0.8	0.0	6.2
Uganda.....	21	100.0	53.3	0.0	25.7	2.3	0.0	9.3	0.0	0.0	4.7	4.7	0.0	0.0
Zimbabwe .....	116	100.0	56.4	2.9	22.2	0.4	0.0	3.4	0.9	0.9	8.2	0.9	1.7	2.2
All others.....	425	100.0	48.6	8.3	18.6	4.6	1.4	3.8	1.8	0.6	10.0	0.7	0.9	0.7

OECD Organisation for Economic Co-operation and Development

NOTES: Article counts are from a set of journals classified and covered by the Institute of Scientific Information's Science Citation and Social Sciences Citation Indexes. Article counts are based on fractional assignments; for example, an article with two authors from different countries is counted as one-half of an article for each country. Countries with article output of less than 0.01 percent of world output in 2001 are grouped in "All others." Article and field data, however, are included for the former U.S.S.R. for 1988. Articles are assigned to fields based on journal field classifications developed by CHI Research, Inc.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Science & Engineering Indicators – 2004

## Regional and country portfolio of S&amp;E articles, by field: 2001

Region and country/economy	Articles	All fields	Clinical	Biomedical	Biology	Chemistry	Physics	Earth/space	Engineering/	Mathematics	Psychology	Social	Health	Professional
			medicine	research				sciences	technology			sciences	sciences	fields
	Number		Percent distribution											
Worldwide .....	649,795	100.0	28.4	14.2	6.8	11.9	13.4	5.4	9.0	2.2	3.1	2.3	1.4	2.0
OECD .....	551,402	100.0	30.7	15.0	6.8	10.3	11.9	5.4	8.2	2.0	3.3	2.6	1.6	2.2
North America .....	226,704	100.0	31.3	16.7	6.7	7.2	8.6	5.8	7.0	1.8	4.6	3.9	2.5	3.7
Canada .....	22,626	100.0	29.3	15.2	10.3	7.8	6.6	7.3	7.9	1.9	4.7	4.4	2.2	2.4
Mexico .....	3,209	100.0	18.7	12.0	14.8	10.5	21.2	7.6	7.7	2.1	1.7	1.5	1.8	0.5
United States .....	200,870	100.0	31.7	16.9	6.2	7.1	8.7	5.6	6.9	1.8	4.7	3.9	2.5	3.9
Western Europe .....	229,173	100.0	32.0	14.0	6.6	11.5	12.7	5.7	8.1	2.4	2.8	1.8	1.2	1.3
Austria .....	4,526	100.0	42.5	13.0	5.6	10.0	11.3	4.6	6.1	2.7	2.2	1.2	0.3	0.6
Belgium .....	5,984	100.0	32.9	14.6	8.0	11.0	12.5	4.5	7.8	2.1	2.7	2.0	0.7	1.3
Croatia .....	710	100.0	23.4	7.5	6.2	20.5	11.3	4.6	5.0	3.1	16.4	1.3	0.3	0.3
Cyprus .....	74	100.0	7.7	5.3	4.0	12.2	8.7	2.0	24.0	9.4	13.1	1.9	0.0	11.7
Denmark .....	4,988	100.0	34.2	17.9	11.7	7.8	9.3	6.2	5.3	1.4	3.3	1.0	0.9	1.0
Finland .....	5,098	100.0	37.8	14.1	10.1	7.5	8.5	5.5	7.3	1.3	1.8	1.8	2.0	1.9
France .....	31,317	100.0	27.1	15.2	5.7	12.9	16.1	6.6	9.0	4.4	1.4	0.9	0.2	0.5
Germany .....	43,623	100.0	30.9	14.1	5.2	12.7	16.3	5.0	8.5	2.2	1.8	2.0	0.6	0.7
Greece .....	3,329	100.0	31.3	8.1	9.2	12.5	14.1	6.3	11.4	3.0	2.1	0.5	0.4	1.1
Iceland .....	174	100.0	31.9	10.2	16.2	3.3	4.6	16.2	2.9	2.1	5.8	3.9	2.3	0.7
Ireland .....	1,665	100.0	30.7	14.6	14.0	8.4	10.3	3.0	6.9	2.4	4.1	1.7	1.6	2.5
Italy .....	22,313	100.0	35.1	12.0	4.5	11.9	16.2	6.0	8.8	2.9	1.3	0.7	0.2	0.4
Macedonia .....	74	100.0	11.7	6.8	1.4	51.2	13.4	2.0	12.2	1.4	0.0	0.0	0.0	0.0
Netherlands .....	12,602	100.0	37.5	14.2	6.0	8.6	8.8	5.5	6.4	1.4	3.9	3.6	1.8	2.2
Norway .....	3,252	100.0	33.4	12.7	12.9	6.3	5.0	10.1	6.2	2.3	4.4	3.1	2.0	1.7
Portugal .....	2,142	100.0	14.5	12.5	11.0	20.5	16.8	4.7	13.1	3.5	1.4	0.9	0.1	1.0
Slovenia .....	876	100.0	19.9	13.7	4.3	16.3	16.7	2.9	17.4	3.1	3.5	0.7	0.3	1.2
Spain .....	15,570	100.0	24.7	13.9	10.7	18.5	11.7	5.7	7.8	3.3	1.7	0.9	0.4	0.6
Sweden .....	10,314	100.0	36.7	15.5	7.4	8.3	10.5	4.4	8.1	1.2	1.9	1.7	3.1	1.1
Switzerland .....	8,107	100.0	32.7	16.1	5.8	12.8	13.4	6.4	6.6	1.4	2.1	1.4	0.6	0.7
Turkey .....	4,098	100.0	44.3	6.3	5.2	14.2	8.9	4.6	11.2	1.3	1.9	1.1	0.5	0.6
United Kingdom .....	47,660	100.0	32.8	14.2	6.2	8.5	9.0	5.9	7.4	1.6	5.7	3.0	2.7	3.0
Yugoslavia .....	547	100.0	19.1	8.8	3.8	17.5	17.2	4.3	23.9	3.9	0.8	0.5	0.0	0.2
All others .....	129	100.0	34.2	8.9	5.9	12.2	4.6	6.8	11.7	1.5	6.6	0.8	2.5	4.5
Asia .....	113,575	100.0	22.2	11.9	5.5	18.2	19.8	3.6	14.5	2.0	1.0	0.4	0.2	0.6
Bangladesh .....	177	100.0	21.5	8.0	12.2	17.4	14.0	4.8	8.7	0.3	6.6	0.0	3.9	2.7
China .....	20,978	100.0	10.7	8.0	3.8	26.3	23.4	4.4	16.3	3.9	1.1	0.5	0.4	1.3
India .....	11,076	100.0	14.3	13.4	6.5	25.5	18.6	5.2	13.0	1.2	1.5	0.2	0.2	0.4
Indonesia .....	207	100.0	22.0	10.3	19.3	8.8	7.7	9.6	10.0	0.2	8.5	0.6	1.0	1.9
Japan .....	57,420	100.0	28.7	14.0	6.1	14.9	19.1	3.0	11.6	1.4	0.5	0.5	0.1	0.1
Malaysia .....	494	100.0	20.4	7.6	15.1	28.4	6.4	2.9	12.1	1.0	2.9	0.5	0.8	2.0
Pakistan .....	282	100.0	19.4	9.3	15.6	16.2	20.6	2.8	8.9	1.7	2.1	0.0	2.4	1.1
Philippines .....	158	100.0	15.8	10.6	39.5	1.3	12.0	4.0	3.2	1.9	5.3	1.9	1.4	3.3
Singapore .....	2,603	100.0	14.3	9.1	2.6	11.4	21.0	2.0	27.8	3.4	3.5	0.8	0.3	3.8
South Korea .....	11,037	100.0	17.9	11.3	3.3	17.7	22.4	3.0	20.7	1.7	1.0	0.3	0.2	0.6
Sri Lanka .....	76	100.0	27.4	9.1	31.3	11.1	9.2	3.4	2.4	0.0	2.4	0.0	0.7	3.0



## Regional and country portfolio of S&amp;E articles, by field: 2001

Region and country/economy	Articles	All fields	Clinical	Biomedical	Biology	Chemistry	Physics	Earth/space	Engineering/	Mathematics	Psychology	Social	Health	Professional
			medicine	research				sciences	technology			sciences	sciences	fields
	Number		Percent distribution											
Taiwan .....	8,082	100.0	24.1	8.5	5.1	14.0	16.0	5.0	21.8	2.1	1.2	0.5	0.5	1.2
Thailand .....	727	100.0	36.6	10.5	16.2	15.2	3.3	4.6	8.4	0.4	1.9	0.5	1.8	0.5
Vietnam.....	158	100.0	16.2	7.2	13.7	8.6	22.2	3.9	8.8	15.4	0.7	0.0	1.5	1.7
All others.....	101	100.0	31.0	6.1	18.9	4.5	3.0	15.4	2.0	1.5	10.7	1.3	2.1	3.5
Eastern Europe/Central Asia.....	33,686	100.0	8.2	8.8	4.4	26.0	30.3	5.9	10.2	3.7	1.4	0.6	0.1	0.3
Armenia .....	152	100.0	8.2	5.2	1.0	24.0	49.4	4.7	5.7	1.3	0.3	0.0	0.0	0.0
Azerbaijan .....	68	100.0	2.0	1.6	0.7	39.4	28.1	8.8	11.5	7.8	0.0	0.0	0.0	0.0
Belarus.....	528	100.0	4.2	8.5	4.1	29.0	40.2	1.2	8.4	3.3	0.3	0.8	0.0	0.2
Bulgaria.....	784	100.0	12.8	12.3	6.3	24.4	19.5	5.6	13.2	4.3	0.6	0.2	0.4	0.4
Czech Republic.....	2,622	100.0	14.5	16.0	7.7	22.9	16.2	4.5	8.2	3.9	3.1	1.5	0.0	1.3
Estonia .....	339	100.0	16.4	15.2	10.5	9.2	19.1	8.2	12.2	2.0	3.1	1.2	2.1	0.6
Georgia .....	110	100.0	6.8	3.5	4.7	21.1	36.6	7.6	7.8	9.3	2.6	0.0	0.0	0.0
Hungary .....	2,479	100.0	26.7	13.1	5.2	23.5	15.0	2.8	7.0	3.9	1.6	0.8	0.1	0.3
Kazakhstan .....	116	100.0	3.5	0.9	2.2	44.7	22.1	9.5	8.5	7.6	0.0	0.0	0.0	0.9
Latvia .....	157	100.0	10.8	11.5	5.5	27.2	25.1	2.5	14.2	1.6	0.6	0.6	0.3	0.0
Lithuania .....	272	100.0	7.2	14.3	7.5	19.4	27.7	4.4	12.5	3.3	2.9	0.4	0.4	0.0
Moldova .....	77	100.0	1.7	2.5	4.5	39.7	40.7	0.4	9.2	1.3	0.0	0.0	0.0	0.0
Poland .....	5,686	100.0	13.2	8.6	4.8	26.7	26.5	4.1	11.0	3.9	0.5	0.3	0.1	0.4
Romania.....	997	100.0	3.5	2.5	1.1	34.9	29.0	2.5	18.3	7.4	0.5	0.2	0.1	0.0
Russia .....	15,846	100.0	3.2	7.5	4.0	27.1	35.6	8.1	8.9	3.4	1.3	0.6	0.1	0.2
Slovakia .....	955	100.0	12.2	17.5	4.8	22.5	15.9	3.4	8.5	3.4	8.2	3.2	0.1	0.3
Ukraine .....	2,256	100.0	3.4	2.5	2.1	20.6	44.9	4.2	19.5	2.6	0.1	0.2	0.0	0.0
Uzbekistan .....	204	100.0	1.4	1.8	1.9	43.5	36.2	4.8	5.7	2.9	2.0	0.0	0.0	0.0
All others.....	39	100.0	4.7	2.2	8.2	18.3	21.2	19.5	5.1	12.7	3.0	2.5	2.5	0.0
Near East/North Africa .....	11,777	100.0	29.0	9.6	6.6	14.5	14.2	3.8	11.6	3.8	2.3	2.0	1.0	1.6
Algeria.....	225	100.0	5.2	2.1	3.1	16.0	34.5	5.9	27.6	5.4	0.0	0.0	0.0	0.2
Egypt.....	1,548	100.0	20.2	5.1	6.4	29.9	17.7	3.6	15.4	0.5	0.6	0.4	0.1	0.1
Iran .....	995	100.0	19.5	3.7	3.7	39.6	13.5	2.9	12.3	3.9	0.4	0.3	0.1	0.1
Israel.....	6,487	100.0	32.9	12.7	6.9	7.6	13.6	3.4	8.3	4.0	3.5	3.3	1.5	2.4
Jordan.....	240	100.0	18.7	6.6	12.1	9.6	11.6	10.9	25.0	0.4	1.9	1.2	1.5	0.4
Kuwait.....	257	100.0	35.6	10.4	6.8	10.3	3.8	3.7	21.2	3.0	0.4	0.8	1.0	2.8
Lebanon .....	202	100.0	48.2	7.5	6.5	4.3	8.5	4.8	6.9	3.0	5.6	1.1	1.5	2.0
Morocco.....	469	100.0	12.1	5.0	6.7	23.5	21.9	7.6	12.5	10.1	0.5	0.0	0.0	0.2
Oman .....	96	100.0	41.5	5.3	11.7	4.6	8.9	5.0	17.4	1.6	2.1	1.0	0.0	1.0
Saudi Arabia.....	580	100.0	40.8	5.9	4.7	12.3	10.1	2.8	17.2	4.0	0.7	0.2	0.2	1.2
Tunisia .....	344	100.0	22.9	11.3	5.3	15.2	14.1	3.7	14.5	11.9	0.8	0.0	0.0	0.2
United Arab Emirates.....	159	100.0	45.8	9.1	3.4	6.6	6.8	5.1	14.0	1.6	1.6	2.5	0.8	2.8
All others.....	174	100.0	25.4	7.3	17.3	13.3	8.9	5.6	17.5	1.1	1.4	1.0	0.2	0.9
Pacific .....	17,743	100.0	28.2	12.6	16.2	6.6	6.4	8.1	6.4	1.7	4.8	3.8	2.6	2.6
Australia .....	14,788	100.0	28.7	13.1	14.7	6.8	6.9	7.8	6.6	1.7	4.8	3.7	2.7	2.6
New Zealand .....	2,903	100.0	25.9	10.5	23.6	5.7	4.2	9.3	5.2	1.8	4.4	4.4	2.5	2.5
All others.....	53	100.0	30.9	4.6	35.5	1.9	0.0	6.4	1.4	0.0	9.6	0.9	1.5	7.2

## Regional and country portfolio of S&amp;E articles, by field: 2001

Region and country/economy	Articles	All fields	Clinical medicine	Biomedical research	Biology	Chemistry	Physics	Earth/space sciences	Engineering/technology	Mathematics	Psychology	Social sciences	Health sciences	Professional fields
	Number													
Central/South America.....	13,147	100.0	22.7	14.1	12.7	13.4	17.9	5.4	7.6	2.3	1.8	0.6	1.0	0.5
Argentina.....	2,930	100.0	23.4	15.0	16.1	12.7	16.0	6.0	6.4	1.8	1.5	0.6	0.2	0.2
Brazil.....	7,205	100.0	21.4	13.8	10.3	13.5	21.6	4.3	8.8	2.4	1.6	0.5	1.4	0.3
Chile.....	1,203	100.0	26.8	11.6	12.3	17.3	8.0	11.2	5.9	3.0	2.0	0.3	0.6	1.1
Colombia.....	324	100.0	24.2	12.4	18.8	8.4	16.6	3.5	4.7	2.4	4.3	2.1	1.4	1.1
Costa Rica.....	92	100.0	21.1	14.9	37.9	10.9	4.9	4.5	1.8	0.0	2.5	0.3	0.0	1.1
Cuba.....	299	100.0	25.0	20.1	9.4	15.9	17.0	3.6	6.0	0.3	0.0	2.3	0.4	0.0
Peru.....	93	100.0	31.4	9.5	24.2	3.1	8.9	9.4	4.0	1.1	6.2	1.1	0.8	0.3
Uruguay.....	155	100.0	21.3	24.2	13.2	8.9	16.7	4.7	3.1	3.9	0.9	1.8	0.0	1.3
Venezuela.....	535	100.0	19.3	14.2	12.6	17.4	13.7	4.5	9.3	3.9	2.7	0.2	0.4	1.7
All others.....	310	100.0	29.4	13.3	26.0	6.8	4.2	6.1	3.6	0.5	5.5	1.3	1.8	1.7
Sub-Saharan Africa.....	3,990	100.0	29.8	12.0	21.2	6.6	4.4	7.7	5.0	1.5	5.7	1.8	2.3	1.9
Cameroon.....	75	100.0	34.1	9.2	26.5	4.2	5.3	6.6	2.0	3.1	6.2	0.0	1.3	1.3
Ethiopia.....	93	100.0	54.2	6.9	21.5	3.8	5.1	3.4	0.3	0.0	2.6	0.4	2.0	0.0
Ghana.....	90	100.0	40.3	9.6	16.0	5.0	2.3	4.1	2.8	0.0	13.0	1.1	1.2	4.5
Kenya.....	230	100.0	36.0	13.3	31.3	2.2	0.9	3.4	0.9	0.0	8.1	0.6	2.9	0.2
Nigeria.....	332	100.0	29.7	11.5	29.9	3.9	2.4	4.0	4.6	2.1	5.4	0.1	2.4	4.1
Senegal.....	62	100.0	33.8	9.8	30.1	2.7	5.4	4.4	1.9	1.6	6.2	0.0	2.5	1.6
South Africa.....	2,327	100.0	24.5	12.7	18.0	8.9	5.9	10.3	6.8	1.7	5.2	2.7	1.5	1.8
Tanzania.....	87	100.0	53.7	6.5	22.0	0.0	0.6	3.5	2.1	0.0	1.0	2.0	5.2	3.5
Uganda.....	91	100.0	45.6	9.4	21.8	0.0	0.0	2.3	1.1	0.0	4.4	2.1	11.7	1.6
Zimbabwe.....	113	100.0	29.5	11.4	27.5	2.3	0.0	4.0	5.3	0.4	10.2	2.2	6.3	0.9
All others.....	490	100.0	37.6	12.6	23.0	4.2	2.7	4.2	2.0	2.2	5.8	0.4	3.4	1.9

OECD Organisation for Economic Co-operation and Development

NOTES: Article counts are from a set of journals classified and covered by the Institute of Scientific Information's Science Citation and Social Sciences Citation Indexes. Article counts are based on fractional assignments; for example, an article with two authors from different countries is counted as one-half of an article for each country. Countries with article output of less than 0.01 percent of world output in 2001 are grouped in "All others." China's data include articles from the Hong Kong economy for 2001. Articles are assigned to fields based on journal field classifications developed by CHI Research, Inc.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Science & Engineering Indicators – 2004

Appendix table 5-39

**Coauthorship of U.S. S&E articles, by field and sector: 1988**

Field and sector	Articles Number	All coauthored articles	U.S.		Internationally coauthored articles
			coauthored articles	Percent	
<b>All fields</b>					
All sectors .....	187,242	47.5	37.2		10.3
Academic .....	148,506	52.2	42.1		10.1
Industry.....	20,232	50.2	42.0		8.2
Federal Government .....	22,048	67.5	57.6		9.9
Nonprofit institutions .....	19,452	71.8	62.5		9.3
FFRDCs .....	7,352	59.8	43.6		16.2
State/local government.....	3,684	75.4	70.0		5.4
<b>Clinical medicine</b>					
All sectors .....	57,384	61.0	52.0		8.0
Academic .....	46,391	65.6	57.8		7.7
Industry.....	3,885	66.0	56.4		9.6
Federal Government .....	9,035	79.8	70.3		9.5
Nonprofit institutions .....	11,734	76.8	69.8		7.0
FFRDCs .....	396	72.5	61.4		11.1
State/local government .....	2,072	84.5	79.1		5.4
<b>Biomedical research</b>					
All sectors .....	29,203	51.7	39.5		12.2
Academic .....	23,944	55.7	44.1		11.6
Industry.....	2,303	61.9	50.5		11.4
Federal Government .....	3,777	68.0	54.3		13.7
Nonprofit institutions .....	3,468	71.4	57.9		13.5
FFRDCs .....	626	60.5	47.4		13.1
State/local government .....	445	68.3	59.1		9.2
<b>Biology</b>					
All sectors .....	13,522	40.7	30.7		9.9
Academic .....	11,150	44.3	34.5		9.8
Industry.....	563	60.7	53.6		7.1
Federal Government .....	2,435	53.3	45.7		7.6
Nonprofit institutions .....	623	61.2	41.9		19.3
FFRDCs .....	145	52.4	49.0		3.4
State/local government .....	323	65.0	58.5		6.5
<b>Chemistry</b>					
All sectors .....	13,896	31.2	21.1		10.1
Academic .....	10,432	35.5	24.7		10.7
Industry.....	2,696	32.8	26.5		6.3
Federal Government .....	987	47.8	38.1		9.7
Nonprofit institutions .....	278	45.7	34.2		11.5
FFRDCs .....	701	56.9	44.4		12.6
State/local government .....	47	40.4	34.0		6.4
<b>Physics</b>					
All sectors .....	19,686	45.4	28.9		16.5
Academic .....	13,853	53.5	36.0		17.5
Industry.....	4,138	45.3	35.2		10.1
Federal Government .....	1,439	58.9	48.0		10.8
Nonprofit institutions .....	331	62.8	44.1		18.7
FFRDCs .....	3,319	61.0	40.6		20.4
State/local government .....	8	50.0	50.0		0.0
<b>Earth/space sciences</b>					
All sectors .....	8,784	49.6	32.9		16.7
Academic .....	6,413	55.1	38.4		16.7
Industry.....	884	69.6	58.9		10.6
Federal Government .....	1,771	62.9	49.3		13.6
Nonprofit institutions .....	603	68.2	43.3		24.9
FFRDCs .....	907	67.4	47.6		19.7
State/local government .....	183	60.7	56.3		4.4

Appendix table 5-39  
**Coauthorship of U.S. S&E articles, by field and sector: 1988**

(Page 2 of 2)

Field and sector	Articles	All	U.S.	Internationally
		coauthored articles	coauthored articles	coauthored articles
	Number		Percent	
<b>Engineering/technology</b>				
All sectors .....	8,784	49.6	32.9	16.7
Academic .....	6,413	55.1	38.4	16.7
Industry .....	884	69.6	58.9	10.6
Federal Government .....	1,771	62.9	49.3	13.6
Nonprofit institutions .....	603	68.2	43.3	24.9
FFRDCs .....	907	67.4	47.6	19.7
State/local government .....	183	60.7	56.3	4.4
<b>Mathematics</b>				
All sectors .....	4,301	39.7	20.3	19.5
Academic .....	4,009	41.0	21.2	19.8
Industry .....	230	57.0	43.0	13.9
Federal Government .....	126	53.2	44.4	8.7
Nonprofit institutions .....	79	65.8	45.6	20.3
FFRDCs .....	86	60.5	51.2	9.3
State/local government .....	5	80.0	80.0	0.0
<b>Psychology</b>				
All sectors .....	7,343	37.6	32.8	4.8
Academic .....	6,805	39.3	34.5	4.8
Industry .....	231	64.1	58.9	5.2
Federal Government .....	338	70.1	65.7	4.4
Nonprofit institutions .....	467	70.7	66.2	4.5
FFRDCs .....	10	70.0	70.0	0.0
State/local government .....	162	74.7	71.6	3.1
<b>Social sciences</b>				
All sectors .....	9,043	30.5	23.7	6.8
Academic .....	7,854	32.9	26.1	6.8
Industry .....	355	42.8	40.8	2.0
Federal Government .....	560	44.3	39.3	5.0
Nonprofit institutions .....	699	49.4	40.6	8.7
FFRDCs .....	76	40.8	35.5	5.3
State/local government .....	78	56.4	55.1	1.3
<b>Health sciences/professional fields</b>				
All sectors .....	11,649	34.4	31.1	3.4
Academic .....	0	38.5	34.8	3.7
Industry .....	0	37.0	35.8	1.2
Federal Government .....	546	51.6	48.7	2.9
Nonprofit institutions .....	0	52.4	49.7	2.7
FFRDCs .....	0	47.9	47.9	0.0
State/local government .....	0	57.8	56.5	1.3

FFRDC federally funded research and development center

NOTES: Coauthorship is based on author's institutional address. Article volume is on a whole-count basis, where each institutional author is credited with a whole count.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-40

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**Coauthorship of U.S. S&E articles, by field and sector: 2001**

Field and sector	Articles Number	All	U.S.	Internationally
		coauthored articles	coauthored articles	coauthored articles
		Percent		
<b>All fields</b>				
All sectors .....	228,051	62.2	39.0	23.2
Academic .....	187,742	65.0	42.7	22.3
Industry.....	24,560	74.4	51.6	22.9
Federal Government .....	25,771	79.5	57.2	22.3
Nonprofit institutions .....	28,608	81.0	60.4	20.6
FFRDCs .....	9,974	78.3	41.6	36.7
State/local government.....	3,971	83.5	71.5	11.9
<b>Clinical medicine</b>				
All sectors .....	71,006	70.3	50.1	20.2
Academic .....	57,266	74.0	54.9	19.1
Industry.....	7,669	83.5	57.9	25.6
Federal Government .....	9,581	86.0	65.1	20.9
Nonprofit institutions .....	16,807	81.7	64.1	17.6
FFRDCs .....	417	87.8	58.3	29.5
State/local government .....	2,003	87.6	76.1	11.5
<b>Biomedical research</b>				
All sectors .....	39,009	67.4	42.3	25.1
Academic .....	32,731	70.4	46.5	24.0
Industry.....	3,427	73.3	48.1	25.2
Federal Government .....	4,606	79.0	52.2	26.8
Nonprofit institutions .....	5,508	83.4	57.1	26.3
FFRDCs .....	912	84.6	55.7	28.9
State/local government .....	504	83.9	61.7	22.2
<b>Biology</b>				
All sectors .....	14,052	57.7	36.0	21.7
Academic .....	11,629	61.0	39.8	21.3
Industry.....	869	78.4	58.3	20.0
Federal Government .....	2,719	70.6	52.3	18.3
Nonprofit institutions .....	959	74.1	45.8	28.4
FFRDCs .....	117	76.9	52.1	24.8
State/local government .....	515	78.1	69.5	8.5
<b>Chemistry</b>				
All sectors .....	16,147	48.8	27.3	21.5
Academic .....	13,098	50.4	29.1	21.3
Industry.....	2,438	58.9	39.0	19.9
Federal Government .....	1,015	67.3	48.0	19.3
Nonprofit institutions .....	453	79.0	62.3	16.8
FFRDCs .....	1,137	72.9	48.1	24.8
State/local government .....	44	75.0	59.1	15.9
<b>Physics</b>				
All sectors .....	21,801	65.3	27.2	38.0
Academic .....	17,407	69.1	30.7	38.4
Industry.....	2,982	71.4	44.6	26.8
Federal Government .....	1,691	76.2	47.7	28.6
Nonprofit institutions .....	330	86.1	48.5	37.6
FFRDCs .....	4,037	79.0	34.4	44.7
State/local government .....	11	72.7	63.6	9.1
<b>Earth/space sciences</b>				
All sectors .....	13,927	69.8	33.0	36.7
Academic .....	10,755	73.2	37.4	35.9
Industry.....	1,304	82.4	55.4	27.0
Federal Government .....	2,812	83.2	50.8	32.4
Nonprofit institutions .....	1,332	87.2	40.8	46.3
FFRDCs .....	1,708	82.8	41.0	41.8
State/local government .....	290	74.1	60.7	13.4

Appendix table 5-40

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**Coauthorship of U.S. S&E articles, by field and sector: 2001**

Field and sector	Articles	All	U.S.	Internationally
		coauthored articles	coauthored articles	coauthored articles
	Number		Percent	
<b>Engineering/technology</b>				
All sectors .....	15,943	56.5	31.6	24.9
Academic .....	11,937	60.6	36.1	24.5
Industry .....	4,126	70.5	51.0	19.5
Federal Government .....	1,466	73.3	56.8	16.4
Nonprofit institutions .....	309	72.8	51.1	21.7
FFRDCs .....	1,532	69.4	41.8	27.6
State/local government .....	48	75.0	64.6	10.4
<b>Mathematics</b>				
All sectors .....	4,459	55.8	20.5	35.2
Academic .....	4,269	56.3	20.9	35.3
Industry .....	227	79.3	52.4	26.9
Federal Government .....	79	72.2	53.2	19.0
Nonprofit institutions .....	92	81.5	56.5	25.0
FFRDCs .....	56	75.0	53.6	21.4
State/local government .....	2	100.0	100.0	0.0
<b>Psychology</b>				
All sectors .....	8,270	50.8	39.4	11.4
Academic .....	7,727	52.4	41.1	11.3
Industry .....	303	72.9	65.0	7.9
Federal Government .....	431	84.0	72.4	11.6
Nonprofit institutions .....	662	75.1	65.3	9.8
FFRDCs .....	1	100.0	100.0	0.0
State/local government .....	154	85.7	70.1	15.6
<b>Social sciences</b>				
All sectors .....	9,988	37.8	25.8	12.0
Academic .....	9,119	38.8	27.3	11.5
Industry .....	249	64.7	53.4	11.2
Federal Government .....	469	55.7	46.7	9.0
Nonprofit institutions .....	828	68.7	49.8	19.0
FFRDCs .....	46	69.6	50.0	19.6
State/local government .....	66	77.3	72.7	4.5
<b>Health sciences/professional fields</b>				
All sectors .....	13,449	46.3	37.8	8.5
Academic .....	11,804	49.1	40.6	8.5
Industry .....	966	60.1	53.6	6.5
Federal Government .....	902	68.7	60.6	8.1
Nonprofit institutions .....	1,328	72.9	65.8	7.1
FFRDCs .....	11	81.8	63.6	18.2
State/local government .....	334	77.5	74.9	2.7

FFRDC federally funded research and development center

NOTES: Coauthorship is based on author's institutional address. Article volume is on a whole-count basis, where each institutional author is credited with a whole count.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-41

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**Cross-sectoral coauthorship of U.S. S&E articles, by field and sector: 1988**

Field and sector	Cross-sectoral articles	Share of cross-sectoral articles					State and local government
		Academic	Industry	Federal Government	Nonprofit institutions	FFRDCs	
	Number	Percent					
<b>All fields</b>							
All sectors .....	33,062	na	na	na	na	na	na
Academic .....	30,510	na	20.6	34.8	34.4	9.5	7.3
Industry .....	7,790	80.5	na	17.0	10.8	6.4	2.2
Federal Government .....	12,103	87.6	11.0	na	10.4	3.4	3.3
Nonprofit institutions .....	11,541	91.0	7.3	10.9	na	1.3	3.8
FFRDCs .....	3,435	84.0	14.6	11.8	4.2	na	0.3
State/local government .....	2,563	86.3	6.7	15.6	17.0	0.4	na
<b>Clinical medicine</b>							
All sectors .....	15,233	na	na	na	na	na	na
Academic .....	14,395	na	11.3	38.2	47.6	1.2	9.8
Industry .....	2,029	80.3	na	19.3	21.6	1.6	4.3
Federal Government .....	5,957	92.2	6.6	na	13.1	1.2	4.3
Nonprofit institutions .....	7,353	93.2	6.0	10.6	na	0.4	4.5
FFRDCs .....	234	73.5	14.1	30.3	12.4	na	2.1
State/local government .....	1,609	88.0	5.5	15.8	20.6	0.3	na
<b>Biomedical research</b>							
All sectors .....	5,010	na	na	na	na	na	na
Academic .....	4,625	na	19.7	36.9	41.5	5.0	5.3
Industry .....	1,122	81.1	na	18.0	16.7	3.8	1.5
Federal Government .....	1,971	86.6	10.2	na	12.2	3.7	2.0
Nonprofit institutions .....	2,109	91.0	8.9	11.4	na	1.5	2.5
FFRDCs .....	311	74.9	13.8	23.2	10.0	na	0.3
State/local government .....	275	89.1	6.2	14.2	18.9	0.4	na
<b>Biology</b>							
All sectors .....	1,689	na	na	na	na	na	na
Academic .....	1,581	na	16.2	58.7	15.7	4.0	9.7
Industry .....	300	85.3	na	25.0	4.3	2.0	4.0
Federal Government .....	1,009	92.0	7.4	na	4.0	0.9	4.6
Nonprofit institutions .....	288	86.5	4.5	13.9	na	0.3	3.5
FFRDCs .....	71	90.1	8.5	12.7	1.4	na	1.4
State/local government .....	188	81.4	6.4	24.5	5.3	0.5	na
<b>Chemistry</b>							
All sectors .....	1,219	na	na	na	na	na	na
Academic .....	1,091	na	47.4	25.7	6.5	24.8	1.1
Industry .....	622	83.1	na	14.0	3.5	6.4	0.2
Federal Government .....	363	77.1	24.0	na	3.9	4.4	0.8
Nonprofit institutions .....	100	71.0	22.0	14.0	na	3.0	1.0
FFRDCs .....	300	90.3	13.3	5.3	1.0	na	0.0
State/local government .....	13	92.3	7.7	23.1	7.7	0.0	na
<b>Physics</b>							
All sectors .....	3,259	na	na	na	na	na	na
Academic .....	2,926	na	37.0	18.5	4.6	46.7	0.1
Industry .....	1,342	80.8	na	13.1	1.5	16.8	0.1
Federal Government .....	710	76.2	24.8	na	3.1	13.7	0.1
Nonprofit institutions .....	174	77.6	11.5	12.6	na	9.8	0.0
FFRDCs .....	1,555	87.8	14.5	6.2	1.1	na	0.1
State/local government .....	4	75.0	25.0	25.0	0.0	25.0	na
<b>Earth/space sciences</b>							
All sectors .....	1,908	na	na	na	na	na	na
Academic .....	1,609	na	22.7	42.6	15.3	24.8	4.8
Industry .....	540	67.6	na	37.6	6.3	10.6	4.3
Federal Government .....	912	75.1	22.3	na	8.2	12.3	1.9
Nonprofit institutions .....	318	77.4	10.7	23.6	na	13.8	1.9
FFRDCs .....	491	81.3	11.6	22.8	9.0	na	0.6
State/local government .....	106	73.6	21.7	16.0	5.7	2.8	na

Appendix table 5-41

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**Cross-sectoral coauthorship of U.S. S&E articles, by field and sector: 1988**

Field and sector	Cross-sectoral articles	Share of cross-sectoral articles					
		Academic	Industry	Federal Government	Nonprofit institutions	FFRDCs	State and local government
	Number	Percent					
<b>Engineering/technology</b>							
All sectors .....	1,793	na	na	na	na	na	na
Academic .....	1,533	na	56.4	21.9	6.8	18.8	1.4
Industry .....	1,087	79.5	na	12.6	5.6	7.7	0.7
Federal Government .....	457	73.3	30.0	na	3.9	4.8	0.4
Nonprofit institutions .....	167	62.9	36.5	10.8	na	9.6	0.6
FFRDCs .....	369	78.0	22.8	6.0	4.3	na	0.0
State/local government .....	33	63.6	24.2	6.1	3.0	0.0	na
<b>Mathematics</b>							
All sectors .....	237	na	na	na	na	na	na
Academic .....	223	na	40.8	24.7	16.1	19.7	1.8
Industry .....	104	87.5	na	4.8	7.7	4.8	0.0
Federal Government .....	59	93.2	8.5	na	3.4	1.7	1.7
Nonprofit institutions .....	42	85.7	19.0	4.8	na	2.4	0.0
FFRDCs .....	48	91.7	10.4	2.1	2.1	na	0.0
State/local government .....	4	100.0	0.0	25.0	0.0	0.0	na
<b>Psychology</b>							
All sectors .....	866	na	na	na	na	na	na
Academic .....	829	na	14.1	25.8	36.1	0.7	12.9
Industry .....	137	85.4	na	8.0	7.3	0.7	3.6
Federal Government .....	225	95.1	4.9	na	4.9	0.0	4.0
Nonprofit institutions .....	315	94.9	3.2	3.5	na	0.3	3.8
FFRDCs .....	7	85.7	14.3	0.0	14.3	na	0.0
State/local government .....	117	91.5	4.3	7.7	10.3	0.0	na
<b>Social sciences</b>							
All sectors .....	676	na	na	na	na	na	na
Academic .....	632	na	19.6	28.2	40.3	3.8	5.5
Industry .....	142	87.3	na	11.3	9.2	1.4	2.8
Federal Government .....	203	87.7	7.9	na	10.3	2.5	3.0
Nonprofit institutions .....	281	90.7	4.6	7.5	na	0.7	1.1
FFRDCs .....	27	88.9	7.4	18.5	7.4	na	0.0
State/local government .....	42	83.3	9.5	14.3	7.1	0.0	na
<b>Health/professional</b>							
All sectors .....	1,172	na	na	na	na	na	na
Academic .....	1,066	na	29.6	17.7	31.4	1.9	12.9
Industry .....	365	86.6	na	6.3	8.5	1.4	3.6
Federal Government .....	237	79.7	9.7	na	14.8	0.8	9.7
Nonprofit institutions .....	394	85.0	7.9	8.9	na	0.0	4.8
FFRDCs .....	22	90.9	22.7	9.1	0.0	na	0.0
State/local government .....	172	80.2	7.6	13.4	11.0	0.0	na

FFRDC federally funded research and development center

na Not applicable

NOTES: Article counts are on a whole-count basis, where each institutional author is credited with a whole count. Sector shares may exceed 100 percent in cases of articles with multiple institutional authors. Sum of the institutional article counts exceeds the total number of cross sectoral articles because of whole counting of articles with multiple institutional authors.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



Appendix table 5-42

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**Cross-sectoral coauthorship of U.S. S&E articles, by field and sector: 2001**

Field and sector	Cross-sectoral articles	Share of cross-sectoral articles					
		Academic	Industry	Federal Government	Nonprofit institutions	FFRDCs	State and local government
	Number	Percent					
<b>All fields</b>							
All sectors .....	48,872	na	na	na	na	na	na
Academic .....	44,994	na	25.7	31.7	37.0	11.3	5.8
Industry .....	18,334	83.4	na	17.3	17.0	0.9	4.2
Federal Government .....	16,420	86.8	14.6	na	14.6	5.0	3.7
Nonprofit institutions .....	13,874	90.8	12.9	13.1	na	0.5	4.6
FFRDCs .....	5,875	86.2	14.8	14.0	5.4	na	1.7
State/local government .....	3,037	85.5	13.0	20.2	23.3	0.3	na
<b>Clinical medicine</b>							
All sectors .....	20,418	na	na	na	na	na	na
Academic .....	18,977	na	22.2	32.0	51.9	1.1	7.4
Industry .....	5,015	83.8	na	16.6	32.3	0.9	4.2
Federal Government .....	6,755	89.8	12.3	na	20.3	1.5	4.8
Nonprofit institutions .....	10,788	91.4	15.0	12.7	na	0.5	4.6
FFRDCs .....	297	72.7	14.8	34.3	17.8	na	1.7
State/local government .....	1,628	86.7	13.0	20.1	30.8	0.3	na
<b>Biomedical research</b>							
All sectors .....	7,991	na	na	na	na	na	na
Academic .....	7,502	na	21.5	33.5	44.8	6.6	4.3
Industry .....	1,870	86.4	na	16.0	18.8	4.2	2.1
Federal Government .....	2,797	89.9	10.7	na	13.8	3.9	2.4
Nonprofit institutions .....	3,599	93.4	9.8	10.7	na	2.5	1.8
FFRDCs .....	614	80.5	12.7	17.8	14.5	na	1.5
State/local government .....	371	86.0	10.8	17.8	17.8	2.4	na
<b>Biology</b>							
All sectors .....	2,649	na	na	na	na	na	na
Academic .....	2,424	na	18.9	54.7	19.6	2.7	11.9
Industry .....	566	80.7	na	25.8	7.6	1.1	6.2
Federal Government .....	1,493	88.8	9.8	na	6.3	1.5	7.1
Nonprofit institutions .....	544	87.3	7.9	17.3	na	1.8	5.7
FFRDCs .....	77	85.7	7.8	29.9	13.0	na	0.0
State/local government .....	357	80.7	9.8	29.7	8.7	0.0	na
<b>Chemistry</b>							
All sectors .....	1,988	na	na	na	na	na	na
Academic .....	1,799	na	41.4	21.8	9.9	31.5	1.4
Industry .....	870	85.6	na	13.6	2.9	7.2	0.3
Federal Government .....	501	78.2	23.6	na	4.8	11.6	0.6
Nonprofit institutions .....	222	80.6	11.3	10.8	na	5.9	0.9
FFRDCs .....	638	88.9	9.9	9.1	2.0	na	0.2
State/local government .....	30	83.3	10.0	10.0	6.7	3.3	na
<b>Physics</b>							
All sectors .....	4,388	na	na	na	na	na	na
Academic .....	4,026	na	31.0	19.8	4.5	53.1	0.2
Industry .....	1,529	81.6	na	16.2	1.5	20.0	0.0
Federal Government .....	1,000	79.8	24.7	na	3.0	14.0	0.1
Nonprofit institutions .....	215	83.7	10.7	14.0	na	17.7	0.0
FFRDCs .....	2,337	91.4	13.1	6.0	1.6	na	0.0
State/local government .....	8	87.5	0.0	12.5	0.0	0.0	na
<b>Earth/space sciences</b>							
All sectors .....	4,017	na	na	na	na	na	na
Academic .....	3,483	na	18.1	43.4	21.5	27.3	4.4
Industry .....	898	70.2	na	39.5	9.0	12.7	5.0
Federal Government .....	1,888	80.1	18.8	na	13.2	16.3	2.0
Nonprofit institutions .....	907	82.7	8.9	27.5	na	14.0	1.3
FFRDCs .....	1,127	84.3	10.1	27.2	11.3	na	0.4
State/local government .....	195	78.5	23.1	19.0	6.2	2.6	na

Appendix table 5-42

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**Cross-sectoral coauthorship of U.S. S&E articles, by field and sector: 2001**

Field and sector	Cross-sectoral articles	Share of cross-sectoral articles					
		Academic	Industry	Federal Government	Nonprofit institutions	FFRDCs	State and local government
	Number	Percent					
<b>Engineering/technology</b>							
All sectors .....	3,326	na	na	na	na	na	na
Academic .....	2,936	na	61.4	22.5	4.2	19.8	0.6
Industry .....	2,131	84.6	na	13.6	2.5	9.2	0.8
Federal Government .....	870	76.0	33.2	na	4.7	9.0	0.0
Nonprofit institutions .....	187	65.8	28.3	21.9	na	8.0	1.1
FFRDCs .....	724	80.1	27.2	10.8	2.1	na	0.0
State/local government .....	32	59.4	50.0	0.0	6.3	0.0	na
<b>Mathematics</b>							
All sectors .....	270	na	na	na	na	na	na
Academic .....	260	na	51.5	15.4	25.0	10.8	0.8
Industry .....	144	93.1	na	5.6	2.8	3.5	0.0
Federal Government .....	46	87.0	17.4	na	10.9	2.2	0.0
Nonprofit institutions .....	66	98.5	6.1	7.6	na	0.0	0.0
FFRDCs .....	31	90.3	16.1	3.2	0.0	na	0.0
State/local government .....	2	100.0	0.0	0.0	0.0	0.0	na
<b>Psychology</b>							
All sectors .....	1,072	na	na	na	na	na	na
Academic .....	1,025	na	16.7	29.6	43.0	0.1	11.6
Industry .....	202	84.7	na	13.9	19.8	0.0	2.5
Federal Government .....	321	94.4	8.7	na	10.0	0.0	2.8
Nonprofit institutions .....	468	94.2	8.5	6.8	na	0.0	5.8
FFRDCs .....	1	100.0	0.0	0.0	0.0	na	0.0
State/local government .....	122	97.5	4.1	7.4	22.1	0.0	na
<b>Social sciences</b>							
All sectors .....	834	na	na	na	na	na	na
Academic .....	788	na	15.5	24.2	54.6	1.9	5.7
Industry .....	142	85.9	na	9.9	11.3	0.7	0.7
Federal Government .....	222	86.0	6.3	na	19.4	1.8	1.8
Nonprofit institutions .....	457	94.1	3.5	9.4	na	0.4	0.4
FFRDCs .....	20	75.0	5.0	20.0	10.0	na	0.0
State/local government .....	48	93.8	2.1	8.3	4.2	0.0	na
<b>Health/professional</b>							
All sectors .....	1,919	na	na	na	na	na	na
Academic .....	1,774	na	24.6	25.6	44.7	0.5	11.7
Industry .....	507	86.0	na	12.6	20.1	0.4	3.9
Federal Government .....	527	86.1	12.1	na	22.0	0.2	11.6
Nonprofit institutions .....	881	90.0	11.6	13.2	na	0.0	7.4
FFRDCs .....	9	88.9	22.2	11.1	0.0	na	0.0
State/local government .....	244	84.8	8.2	25.0	26.6	0.0	na

FFRDC federally funded research and development center

na Not applicable

NOTES: Article counts are on a whole-count basis, where each institutional author is credited with a whole count. Sector shares may exceed 100 percent in cases of articles with multiple institutional authors. Sum of the institutional article counts exceeds the total number of cross sectoral articles because of whole counting of articles with multiple institutional authors.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-43

## Breadth of international coauthorship ties for selected countries/economies: 1994 and 2001

Country/economy	Collaborating countries		Country/economy	Collaborating countries		Country/economy	Collaborating countries	
	1994	2001		1994	2001		1994	2001
United States .....	154	166	Singapore .....	36	57	Moldova .....	16	31
France .....	140	152	Slovakia .....	51	54	Bolivia .....	20	30
United Kingdom .....	143	150	Peru .....	24	53	Benin .....	7	29
Germany .....	125	130	Slovenia .....	44	53	Côte d'Ivoire .....	28	29
Netherlands .....	115	127	Yugoslavia .....	40	53	Paraguay .....	9	26
Italy .....	114	121	Nigeria .....	59	52	Oman .....	18	26
Canada .....	119	120	Croatia .....	44	52	Jamaica .....	18	25
Spain .....	88	116	Pakistan .....	37	52	Syria .....	24	25
Switzerland .....	112	116	Ghana .....	32	51	Papua New Guinea .....	12	25
Japan .....	97	114	Senegal .....	35	50	Trinidad-Tobago .....	6	24
Belgium .....	100	112	Armenia .....	38	48	Gambia .....	21	24
Australia .....	93	106	Georgia .....	29	48	Mali .....	16	24
China .....	78	103	Sri Lanka .....	24	48	Myanmar .....	5	21
Brazil .....	85	102	Cameroon .....	36	47	Barbados .....	6	20
Sweden .....	110	102	Estonia .....	29	47	Gabon .....	9	19
India .....	90	101	Lebanon .....	19	46	Sierra Leone .....	6	19
Denmark .....	83	100	Bangladesh .....	31	46	Libya .....	12	19
South Africa .....	58	95	Philippines .....	38	46	Bosnia and Herzegovina .....	9	18
Austria .....	73	93	Vietnam .....	25	46	Azerbaijan .....	11	18
Mexico .....	69	89	Ecuador .....	23	44	Honduras .....	17	17
Russia .....	89	88	Uganda .....	31	44	Guinea .....	2	17
Norway .....	64	87	Iran .....	20	44	Lesotho .....	7	17
Israel .....	71	86	Burkina Faso .....	15	43	Namibia .....	8	17
Portugal .....	51	86	Nepal .....	20	43	Yemen .....	5	17
Greece .....	68	82	Zambia .....	26	42	Kyrgyzstan .....	6	17
Finland .....	73	81	Zimbabwe .....	27	41	Mongolia .....	15	16
Turkey .....	51	79	Algeria .....	25	41	El Salvador .....	2	15
Poland .....	73	79	Kuwait .....	27	41	Swaziland .....	0	15
South Korea .....	52	78	Ethiopia .....	30	40	Malta .....	19	15
Argentina .....	58	76	Morocco .....	25	39	Tajikistan .....	12	15
Colombia .....	38	75	Lithuania .....	36	38	Laos .....	0	15
Hungary .....	64	74	Uzbekistan .....	37	38	Botswana .....	6	14
Venezuela .....	32	73	Costa Rica .....	28	37	Mozambique .....	8	14
Czech Republic .....	65	72	Dominican Republic .....	20	37	Niger .....	11	14
Ireland .....	57	71	Sudan .....	16	37	Turkmenistan .....	9	14
Cuba .....	29	70	Cyprus .....	24	37	Brunei .....	8	14
Kenya .....	50	69	Uruguay .....	23	36	Bahamas .....	1	13
Thailand .....	59	69	Iceland .....	27	36	Albania .....	8	13
Egypt .....	72	67	Jordan .....	27	34	Mauritania .....	1	12
Taiwan .....	46	66	Tunisia .....	29	34	Mauritius .....	8	12
New Zealand .....	55	66	Luxembourg .....	25	34	Cambodia .....	7	12
Chile .....	57	64	Macedonia .....	13	34	Togo .....	2	11
Saudi Arabia .....	51	63	Kazakhstan .....	25	34	Congo, Republic of the .....	25	10
Romania .....	49	61	Latvia .....	28	34	Guyana .....	0	9
Tanzania .....	43	60	Madagascar .....	12	33	Central African Republic .....	6	9
Indonesia .....	37	60	Malawi .....	15	33	Belize .....	3	8
Ukraine .....	55	59	Guatemala .....	10	32	Suriname .....	0	8
Malaysia .....	40	58	Panama .....	10	32	Qatar .....	13	8
Bulgaria .....	55	57	Nicaragua .....	7	31			

NOTES: Number of countries that have jointly authored articles (based on institutional address) with indicated country. Countries ranked by number of countries collaborating in 2001.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-44

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## U.S. international scientific collaboration with selected countries/economies: 1994 and 2001

Region and country/economy	1994				2001			
	S&E articles	Internationally coauthored articles	Share of internationally coauthored articles	U.S. share of internationally coauthored articles	S&E articles	Internationally coauthored articles	Share of internationally coauthored articles	U.S. share of internationally coauthored articles
	Number	Number	Percent	Percent	Number	Number	Percent	Percent
<b>North America</b>								
Canada.....	28,983	8,189	28.3	52.6	28,846	11,070	38.4	53.1
Mexico.....	2,138	836	39.1	48.7	4,393	2,066	47.0	42.2
United States.....	216,862	34,226	15.8	na	228,015	52,862	23.2	na
<b>Western Europe</b>								
Austria.....	4,112	1,640	39.9	24.9	6,476	3,291	50.8	25.5
Belgium.....	6,620	2,889	43.6	23.8	8,818	4,724	53.6	23.0
Croatia.....	678	290	42.8	26.9	934	382	40.9	27.5
Cyprus.....	46	33	71.7	33.3	139	93	66.9	41.9
Denmark.....	5,800	2,310	39.8	29.5	7,136	3,609	50.6	29.2
Finland.....	4,851	1,571	32.4	33.7	6,747	2,892	42.9	28.6
France.....	34,284	11,135	32.5	27.1	41,397	17,918	43.3	25.6
Germany.....	44,434	13,591	30.6	30.2	57,231	23,887	41.7	29.9
Greece.....	2,505	938	37.4	30.8	4,371	1,812	41.5	27.6
Iceland.....	197	97	49.2	46.4	316	219	69.3	28.8
Ireland.....	1,481	545	36.8	24.6	2,280	1,065	46.7	18.3
Italy.....	20,574	6,734	32.7	34.1	28,384	11,269	39.7	32.2
Macedonia.....	48	28	58.3	46.4	101	46	45.5	15.2
Netherlands.....	14,579	4,659	32.0	30.0	17,134	7,692	44.9	29.9
Norway.....	3,558	1,313	36.9	29.6	4,503	2,112	46.9	26.3
Portugal.....	1,236	570	46.1	22.6	3,056	1,619	53.0	18.7
Slovenia.....	598	232	38.8	25.4	1,184	524	44.3	27.9
Spain.....	12,536	3,651	29.1	26.6	19,809	7,508	37.9	26.9
Sweden.....	11,239	4,073	36.2	29.8	14,096	6,524	46.3	27.5
Switzerland.....	10,056	4,474	44.5	31.5	12,067	6,455	53.5	31.2
Turkey.....	1,613	398	24.7	37.4	4,704	1,078	22.9	41.0
United Kingdom.....	52,714	13,253	25.1	31.3	60,438	22,328	36.9	30.6
Yugoslavia.....	624	209	33.5	25.4	705	286	40.6	22.4
<b>Asia</b>								
Bangladesh.....	193	101	52.3	22.8	277	176	63.5	28.4
China.....	7,846	2,181	27.8	33.7	24,638	6,703	27.2	37.4
Hong Kong.....	1,485	568	38.2	31.3	na	na	na	na
India.....	10,757	1,516	14.1	38.8	12,561	2,685	21.4	36.9
Indonesia.....	224	178	79.5	33.7	420	347	82.6	25.6
Japan.....	50,309	6,898	13.7	49.5	64,073	12,622	19.7	42.8
Malaysia.....	437	170	38.9	18.8	673	308	45.8	13.6
Pakistan.....	406	159	39.2	23.3	389	186	47.8	30.1
Philippines.....	221	137	62.0	29.2	284	205	72.2	32.7
Singapore.....	1,208	337	27.9	32.0	3,212	1,107	34.5	30.0
South Korea.....	3,496	1,005	28.7	64.9	12,801	3,296	25.7	57.2
Sri Lanka.....	120	62	51.7	22.6	125	84	67.2	27.4
Taiwan.....	4,916	862	17.5	71.5	9,115	1,897	20.8	58.2
Thailand.....	572	339	59.3	34.8	1,096	638	58.2	35.3
Vietnam.....	102	72	70.6	4.2	300	245	81.7	16.3
<b>Eastern Europe/Central Asia</b>								
Armenia.....	232	86	37.1	24.4	261	157	60.2	28.7
Azerbaijan.....	214	46	21.5	13.0	90	35	38.9	5.7
Bulgaria.....	1,311	512	39.1	19.7	1,182	682	57.7	18.9
Belarus.....	1,127	189	16.8	6.3	743	372	50.1	13.7
Czech Republic.....	2,746	1,179	42.9	16.6	3,753	1,936	51.6	19.8
Estonia.....	290	149	51.4	18.8	506	280	55.3	20.4
Georgia.....	190	91	47.9	8.8	196	136	69.4	15.4
Hungary.....	2,460	1,198	48.7	30.8	3,624	1,987	54.8	29.0
Kazakhstan.....	236	76	32.2	11.8	160	70	43.8	27.1
Latvia.....	230	128	55.7	13.3	246	147	59.8	15.0

Appendix table 5-44

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## U.S. international scientific collaboration with selected countries/economies: 1994 and 2001

Region and country/economy	1994				2001			
	S&E articles	Internationally coauthored articles	Share of internationally coauthored articles	U.S. share of internationally coauthored articles	S&E articles	Internationally coauthored articles	Share of internationally coauthored articles	U.S. share of internationally coauthored articles
Lithuania .....	261	121	46.4	18.2	425	257	60.5	16.7
Moldova .....	193	62	32.1	3.2	132	93	70.5	11.8
Poland .....	5,384	2,346	43.6	24.5	7,901	3,798	48.1	26.7
Romania .....	885	369	41.7	25.2	1,486	812	54.6	20.1
Russia .....	24,463	5,080	20.8	22.1	20,356	7,774	38.2	24.1
Slovakia .....	1,424	490	34.4	15.5	1,445	814	56.3	20.0
Ukraine .....	3,396	859	25.3	9.8	3,187	1,603	50.3	18.7
Uzbekistan .....	336	80	23.8	11.3	263	96	36.5	15.6
Near East/North Africa								
Algeria .....	207	140	67.6	9.3	354	231	65.3	2.6
Egypt .....	1,635	462	28.3	34.4	1,853	553	29.8	32.4
Iran .....	290	104	35.9	39.4	1,155	296	25.6	26.0
Israel .....	7,045	2,669	37.9	59.7	8,502	3,561	41.9	52.2
Jordan .....	182	67	36.8	41.8	315	137	43.5	35.8
Kuwait .....	222	66	29.7	36.4	319	107	33.5	28.0
Lebanon .....	82	35	42.7	57.1	277	131	47.3	45.8
Morocco .....	334	266	79.6	14.3	756	525	69.4	7.4
Oman .....	63	29	46.0	31.0	131	60	45.8	20.0
Saudi Arabia .....	854	218	25.5	31.2	727	248	34.1	33.9
Tunisia .....	208	123	59.1	8.1	489	265	54.2	7.2
United Arab Emirates .....	142	77	54.2	20.8	224	115	51.3	16.5
Pacific								
Australia .....	14,663	3,606	24.6	36.2	18,589	6,751	36.3	37.2
New Zealand .....	2,941	873	29.7	38.3	3,716	1,435	38.6	34.2
Central/South America								
Argentina .....	2,118	676	31.9	33.1	3,812	1,587	41.6	34.9
Brazil .....	3,989	1,624	40.7	40.1	9,078	3,369	37.1	39.0
Chile .....	1,076	475	44.1	36.2	1,780	954	53.6	39.2
Colombia .....	233	149	63.9	46.3	554	373	67.3	40.8
Costa Rica .....	118	85	72.0	58.8	182	145	79.7	48.3
Cuba .....	192	89	46.4	10.1	491	334	68.0	9.3
Peru .....	106	71	67.0	56.3	205	180	87.8	53.9
Uruguay .....	124	69	55.6	18.8	263	184	70.0	29.3
Venezuela .....	562	259	46.1	40.5	789	434	55.0	35.9
Sub-Saharan Africa								
Cameroon .....	142	98	69.0	22.4	148	114	77.0	17.5
Ethiopia .....	125	71	56.8	16.9	158	106	67.1	17.0
Ghana .....	96	50	52.1	30.0	152	105	69.1	21.9
Kenya .....	418	239	57.2	36.4	436	337	77.3	35.0
Nigeria .....	573	184	32.1	23.4	430	166	38.6	27.1
Senegal .....	130	87	66.9	23.0	126	103	81.7	7.8
South Africa .....	2,830	667	23.6	32.8	3,050	1,266	41.5	31.1
Tanzania .....	176	127	72.2	22.8	180	156	86.7	19.9
Uganda .....	62	36	58.1	50.0	160	120	75.0	47.5
Zimbabwe .....	191	95	49.7	30.5	179	114	63.7	28.9

na not applicable

NOTES: Internationally coauthored articles are those with at least one coauthor from another country. Article counts are on a whole-count basis, where each coauthor's country, including the United States, is credited with a whole count. Countries whose share of world article output is less than 0.01 percent are excluded.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

## Intra-regional scientific collaboration in Western Europe: 1994 and 2001

Country	International articles	Belgium	Denmark	Finland	France	Germany	Ireland	Italy	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom
	Number	Percent													
Belgium															
1994 .....	2,889	na	2.7	1.9	26.0	14.5	0.9	8.3	16.7	1.5	1.7	5.4	5.4	6.1	13.9
2001 .....	4,724	na	3.1	2.7	23.6	17.3	1.1	9.5	15.8	1.6	1.7	6.4	6.1	5.6	16.7
Change.....	1,835	na	0.4	0.8	-2.3	2.8	0.1	1.2	-0.9	0.1	0.0	1.0	0.7	-0.5	2.8
Denmark															
1994 .....	2,310	3.4	na	4.5	10.5	16.8	1.0	7.1	7.5	7.0	1.4	4.2	17.4	4.8	16.8
2001 .....	3,609	4.0	na	5.8	11.1	17.9	1.1	7.8	8.6	6.9	1.5	5.2	14.6	5.3	19.1
Change.....	1,299	0.6	na	1.2	0.5	1.1	0.2	0.7	1.1	-0.1	0.1	1.0	-2.8	0.5	2.2
Finland															
1994 .....	1,571	3.4	6.7	na	8.9	11.6	0.8	5.7	6.2	5.2	1.4	4.6	19.0	5.9	11.1
2001 .....	2,892	4.4	7.2	na	10.0	16.4	1.3	7.7	8.4	5.4	1.8	5.3	19.4	6.2	15.7
Change.....	1,321	1.0	0.5	na	1.0	4.8	0.5	2.0	2.2	0.2	0.4	0.6	0.4	0.3	4.5
France															
1994 .....	11,135	6.7	2.2	1.3	na	13.3	0.4	9.1	5.1	1.0	1.2	6.7	3.1	6.8	12.1
2001 .....	17,918	6.2	2.2	1.6	na	15.3	0.6	11.3	5.0	1.3	1.6	7.2	3.8	6.4	13.9
Change.....	6,783	-0.5	0.0	0.4	na	2.1	0.1	2.1	-0.1	0.3	0.3	0.5	0.7	-0.4	1.8
Germany															
1994 .....	13,591	3.1	2.9	1.3	10.9	na	0.5	6.9	5.9	1.2	0.6	3.5	3.8	8.4	11.3
2001 .....	23,887	3.4	2.7	2.0	11.5	na	0.5	8.0	6.6	1.2	0.8	4.4	4.3	7.6	13.0
Change.....	10,296	0.3	-0.2	0.6	0.6	na	0.1	1.1	0.8	0.0	0.2	0.9	0.5	-0.8	1.7
Ireland															
1994 .....	545	5.0	4.0	2.2	8.8	12.1	na	4.6	6.8	1.7	1.8	3.9	3.3	5.0	40.2
2001 .....	1,065	4.8	3.8	3.5	9.8	12.2	na	8.8	7.4	2.7	2.0	5.3	6.2	3.5	42.8
Change.....	520	-0.2	-0.2	1.3	1.0	0.1	na	4.2	0.6	1.1	0.1	1.4	2.9	-1.5	2.6
Italy															
1994 .....	6,734	3.5	2.4	1.3	15.1	13.8	0.4	na	5.1	1.0	0.9	6.3	3.6	8.4	15.2
2001 .....	11,269	4.0	2.5	2.0	17.9	16.9	0.8	na	6.8	1.5	1.3	8.3	4.3	7.3	17.2
Change.....	4,535	0.4	0.1	0.7	2.8	3.0	0.5	na	1.7	0.4	0.4	2.0	0.7	-1.2	2.0
Netherlands															
1994 .....	4,659	10.4	3.7	2.1	12.2	17.1	0.8	7.4	na	2.3	1.2	4.7	5.2	5.9	18.1
2001 .....	7,692	9.7	4.0	3.1	11.7	20.6	1.0	9.9	na	2.2	1.7	5.8	5.2	5.2	20.2
Change.....	3,033	-0.7	0.3	1.1	-0.6	3.5	0.2	2.6	na	-0.1	0.5	1.1	0.0	-0.7	2.0
Norway															
1994 .....	1,313	3.3	12.3	6.2	8.7	12.1	0.7	5.3	8.1	na	1.8	4.0	21.3	5.8	15.3
2001 .....	2,112	3.6	11.8	7.3	10.9	13.1	1.4	7.8	8.0	na	1.8	4.4	21.6	5.3	20.7
Change.....	799	0.3	-0.5	1.2	2.3	1.0	0.7	2.4	-0.1	na	0.0	0.4	0.3	-0.5	5.4
Portugal															
1994 .....	570	8.6	5.6	3.9	24.4	14.7	1.8	10.2	9.8	4.0	na	13.5	7.7	8.6	25.4
2001 .....	1,619	4.9	3.3	3.2	17.7	12.4	1.3	8.8	8.3	2.3	na	17.2	6.2	4.5	24.2
Change.....	1,049	-3.7	-2.3	-0.7	-6.7	-2.3	-0.5	-1.3	-1.5	-1.7	na	3.7	-1.5	-4.1	-1.2

## Intraregional scientific collaboration in Western Europe: 1994 and 2001

Country	International articles	Belgium	Denmark	Finland	France	Germany	Ireland	Italy	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom
	Number	Percent													
Spain															
1994 .....	3,651	4.3	2.6	2.0	20.4	13.2	0.6	11.6	5.9	1.5	2.1	na	4.2	5.2	17.7
2001 .....	7,508	4.0	2.5	2.0	17.2	14.1	0.7	12.5	5.9	1.2	3.7	na	3.8	5.1	17.2
Change.....	3,857	-0.2	-0.2	0.0	-3.2	0.9	0.2	0.9	0.0	-0.2	1.6	na	-0.4	-0.1	-0.5
Sweden															
1994 .....	4,073	3.8	9.8	7.3	8.4	12.6	0.4	5.9	5.9	6.9	1.1	3.8	na	5.0	12.7
2001 .....	6,524	4.4	8.1	8.6	10.4	15.8	1.0	7.4	6.1	7.0	1.5	4.4	na	4.3	15.8
Change.....	2,451	0.6	-1.8	1.3	2.0	3.2	0.6	1.5	0.2	0.1	0.5	0.6	na	-0.7	3.1
Switzerland															
1994 .....	4,474	3.9	2.5	2.1	16.9	25.4	0.6	12.7	6.1	1.7	1.1	4.2	4.5	na	13.1
2001 .....	6,455	4.1	3.0	2.8	17.7	28.1	0.6	12.7	6.2	1.7	1.1	5.9	4.3	na	14.6
Change.....	1,981	0.2	0.5	0.7	0.8	2.7	0.0	0.0	0.1	0.0	0.0	1.7	-0.2	na	1.5
United Kingdom															
1994 .....	13,253	3.0	2.9	1.3	10.1	11.6	1.7	7.7	6.4	1.5	1.1	4.9	3.9	4.4	na
2001 .....	22,328	3.5	3.1	2.0	11.2	13.9	2.0	8.7	6.9	2.0	1.8	5.8	4.6	4.2	na
Change.....	9,075	0.5	0.1	0.7	1.0	2.3	0.4	1.0	0.6	0.4	0.7	0.9	0.7	-0.2	na

na not applicable

NOTES: Data are share of indicated country's articles internationally coauthored with other countries in the same region. Internationally coauthored articles are on a whole-count basis, where each coauthor's country is credited with a whole count. Because of the high degree of intra European collaboration, shares exceed 100 percent in some cases.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

*Science and Engineering Indicators – 2004*

Appendix table 5-46  
**Intraregional scientific collaboration in Asia: 1994 and 2001**

Country/economy	International articles	China	India	Indonesia	Japan	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand	Vietnam
	Number	Percent										
<b>China</b>												
1994 <sup>a</sup> .....	2,181	na	0.9	0.1	14.9	0.3	0.1	1.2	2.0	1.7	0.3	0.0
2001 <sup>b</sup> .....	6,703	na	1.7	0.2	17.0	0.8	0.2	3.9	3.7	3.5	0.5	0.1
Change.....	4,522	na	0.8	0.0	2.2	0.5	0.1	2.7	1.7	1.8	0.2	0.1
<b>India</b>												
1994 .....	1,516	1.3	na	0.0	7.9	0.5	0.5	0.2	0.7	0.7	0.5	0.1
2001 .....	2,685	4.2	na	0.1	10.2	1.0	0.7	1.2	2.8	3.6	0.6	0.2
Change.....	1,169	2.9	na	0.1	2.3	0.5	0.2	1.0	2.0	2.9	0.2	0.2
<b>Indonesia</b>												
1994 .....	178	1.7	0.0	na	22.5	0.6	2.2	0.6	0.0	0.0	0.6	0.0
2001 .....	347	3.2	1.2	na	26.2	2.9	1.7	1.4	0.3	1.4	2.6	1.2
Change.....	169	1.5	1.2	na	3.8	2.3	-0.5	0.9	0.3	1.4	2.0	1.2
<b>Japan</b>												
1994 .....	6,898	4.7	1.7	0.6	na	0.3	0.4	0.4	3.3	1.1	1.0	0.1
2001 .....	12,622	9.0	2.2	0.7	na	0.3	0.3	0.7	5.8	1.8	1.2	0.3
Change.....	5,724	4.3	0.4	0.1	na	0.0	-0.1	0.3	2.5	0.7	0.1	0.2
<b>Malaysia</b>												
1994 .....	170	3.5	4.1	0.6	13.5	na	0.6	3.5	0.6	1.8	1.2	0.0
2001 .....	308	16.9	8.8	3.2	14.0	na	0.6	6.8	1.6	1.6	9.1	0.3
Change.....	138	13.4	4.6	2.7	0.4	na	0.1	3.3	1.0	-0.1	7.9	0.3
<b>Philippines</b>												
1994 .....	137	2.2	5.1	2.9	20.4	0.7	na	0.0	0.7	0.0	4.4	0.0
2001 .....	205	7.8	9.3	2.9	19.0	1.0	na	1.0	2.0	2.4	6.3	1.5
Change.....	68	5.6	4.2	0.0	-1.4	0.2	na	1.0	1.2	2.4	2.0	1.5
<b>Singapore</b>												
1994 .....	337	8.0	0.9	0.3	7.4	1.8	0.0	na	0.6	3.3	0.3	0.0
2001 .....	1,107	23.7	2.9	0.5	7.7	1.9	0.2	na	1.1	3.7	0.9	0.5
Change.....	770	15.7	2.0	0.2	0.3	0.1	0.2	na	0.5	0.4	0.6	0.5
<b>South Korea</b>												
1994 .....	1,005	4.3	1.1	0.0	22.5	0.1	0.1	0.2	na	0.8	0.0	0.0
2001 .....	3,296	7.4	2.2	0.0	22.2	0.2	0.1	0.4	na	3.2	0.5	0.4
Change.....	2,291	3.2	1.2	0.0	-0.3	0.1	0.0	0.2	na	2.4	0.5	0.4
<b>Taiwan</b>												
1994 .....	862	4.2	1.2	0.0	8.9	0.3	0.0	1.3	0.9	na	0.1	0.0
2001 .....	1,897	12.2	5.1	0.3	12.0	0.3	0.3	2.2	5.5	na	0.6	0.4
Change.....	1,035	8.1	3.9	0.3	3.0	-0.1	0.3	0.9	4.6	na	0.5	0.4
<b>Thailand</b>												
1994 .....	339	1.8	2.1	0.3	20.9	0.6	1.8	0.3	0.0	0.3	na	1.2
2001 .....	638	5.2	2.7	1.4	22.9	4.4	2.0	1.6	2.4	1.7	na	1.3
Change.....	299	3.4	0.6	1.1	1.9	3.8	0.3	1.3	2.4	1.4	na	0.1
<b>Vietnam</b>												
1994 .....	72	0.0	1.4	0.0	12.5	0.0	0.0	0.0	0.0	0.0	5.6	na
2001 .....	245	3.3	2.4	1.6	15.1	0.4	1.2	2.0	5.3	3.3	3.3	na
Change.....	173	3.3	1.1	1.6	2.6	0.4	1.2	2.0	5.3	3.3	-2.3	na

na not applicable

<sup>a</sup>Excludes Hong Kong.

<sup>b</sup>Includes Hong Kong.

NOTES: Data are share of indicated country's articles internationally coauthored with other countries in the same region. Internationally coauthored articles are on a whole-count basis, where each coauthor's country is credited with a whole count.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.



Appendix table 5-47  
**Intraregional scientific collaboration in Central and South America: 1994 and 2001**

Country	International articles	Argentina	Brazil	Chile	Colombia	Costa Rica	Cuba	Mexico	Panama	Peru	Uruguay	Venezuela
	Number	Percent										
<b>Argentina</b>												
1994 .....	676	na	8.6	4.4	0.3	0.1	0.3	1.5	0.0	0.4	1.2	1.5
2001 .....	1,587	na	12.6	4.5	2.2	0.1	0.7	4.3	0.0	0.4	1.8	1.1
Change.....	911	na	4.0	0.0	1.9	-0.1	0.4	2.9	0.0	0.0	0.6	-0.3
<b>Brazil</b>												
1994 .....	1,624	3.6	na	2.0	0.7	0.1	0.4	1.6	0.0	0.4	0.7	0.6
2001 .....	3,369	5.9	na	1.7	1.7	0.5	1.3	3.3	0.1	0.9	1.0	1.0
Change.....	1,745	2.4	na	-0.3	0.9	0.5	0.9	1.7	0.1	0.6	0.3	0.5
<b>Chile</b>												
1994 .....	475	6.3	6.9	na	0.6	0.0	0.4	3.4	0.0	0.2	0.8	2.1
2001 .....	954	7.4	6.1	na	1.2	0.2	0.7	4.1	0.2	0.7	1.3	1.2
Change.....	479	1.1	-0.9	na	0.5	0.2	0.3	0.7	0.2	0.5	0.4	-1.0
<b>Colombia</b>												
1994 .....	149	1.3	8.1	2.0	na	1.3	0.0	12.8	1.3	2.0	0.0	1.3
2001 .....	373	9.4	15.0	2.9	na	0.8	2.7	12.3	0.3	3.8	1.6	3.5
Change.....	224	8.0	7.0	0.9	na	-0.5	2.7	-0.4	-1.1	1.7	1.6	2.1
<b>Costa Rica</b>												
1994 .....	85	1.2	1.2	0.0	2.4	na	1.2	8.2	5.9	0.0	0.0	0.0
2001 .....	145	0.7	12.4	1.4	2.1	na	0.0	4.8	2.1	1.4	0.0	0.7
Change.....	60	-0.5	11.2	1.4	-0.3	na	-1.2	-3.4	-3.8	1.4	0.0	0.7
<b>Cuba</b>												
1994 .....	89	2.2	6.7	2.2	0.0	1.1	na	15.7	0.0	0.0	0.0	3.4
2001 .....	334	3.3	12.9	2.1	3.0	0.0	na	28.1	0.6	0.0	0.6	2.1
Change.....	245	1.0	6.1	-0.2	3.0	-1.1	na	12.4	0.6	0.0	0.6	-1.3
<b>Mexico</b>												
1994 .....	836	1.2	3.1	1.9	2.3	0.8	1.7	na	0.2	0.5	0.4	0.2
2001 .....	2,066	3.3	5.3	1.9	2.2	0.3	4.5	na	0.1	0.5	0.5	1.8
Change.....	1,230	2.1	2.2	0.0	-0.1	-0.5	2.8	na	-0.1	0.0	0.1	1.6
<b>Panama</b>												
1994 .....	38	0.0	0.0	0.0	5.3	13.2	0.0	5.3	na	0.0	0.0	2.6
2001 .....	89	0.0	4.5	2.2	1.1	3.4	2.2	2.2	na	1.1	0.0	2.2
Change.....	51	0.0	4.5	2.2	-4.1	-9.8	2.2	-3.0	na	1.1	0.0	-0.4
<b>Peru</b>												
1994 .....	71	4.2	8.5	1.4	4.2	0.0	0.0	5.6	0.0	na	0.0	0.0
2001 .....	180	3.9	17.2	3.9	7.8	1.1	0.0	5.6	0.6	na	1.1	2.8
Change.....	109	-0.3	8.8	2.5	3.6	1.1	0.0	-0.1	0.6	na	1.1	2.8
<b>Uruguay</b>												
1994 .....	69	11.6	17.4	5.8	0.0	0.0	0.0	4.3	0.0	0.0	na	2.9
2001 .....	184	15.2	18.5	6.5	3.3	0.0	1.1	5.4	0.0	1.1	na	2.7
Change.....	115	3.6	1.1	0.7	3.3	0.0	1.1	1.1	0.0	1.1	na	-0.2
<b>Venezuela</b>												
1994 .....	259	3.9	3.5	3.9	0.8	0.0	1.2	0.8	0.4	0.0	0.8	na
2001 .....	434	4.1	8.1	2.5	3.0	0.2	1.6	8.5	0.5	1.2	1.2	na
Change.....	175	0.3	4.6	-1.3	2.2	0.2	0.5	7.8	0.1	1.2	0.4	na

na not applicable

NOTES: Data are share of indicated country's articles internationally coauthored with other countries in the same region. Internationally coauthored articles are on a whole-count basis, where each coauthor's country is credited with a whole count.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-48

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## Citation of S&amp;E articles, by region and country/economy: 1992, 1996, and 2001

Region and country/economy	1992		1996		2001	
	Number	Percent worldwide	Number	Percent worldwide	Number	Percent worldwide
Worldwide .....	2,684,777	100.00	3,325,455	100.00	3,846,519	100.00
North America .....	1,503,880	56.02	1,770,128	53.23	1,830,781	47.60
Canada .....	111,661	4.16	141,278	4.25	144,247	3.75
Mexico .....	2,906	0.11	4,243	0.13	8,241	0.21
United States .....	1,389,314	51.75	1,624,607	48.85	1,678,293	43.63
Western Europe .....	812,461	30.26	1,082,741	32.56	1,363,912	35.46
Austria .....	11,023	0.41	16,437	0.49	23,775	0.62
Belgium .....	20,776	0.77	28,118	0.85	34,731	0.90
Croatia .....	0	0.00	871	0.03	1,510	0.04
Cyprus .....	24	0.00	60	0.00	196	0.01
Denmark .....	20,271	0.76	26,288	0.79	32,558	0.85
Finland .....	14,704	0.55	21,493	0.65	30,461	0.79
France .....	116,453	4.34	153,159	4.61	187,325	4.87
Germany .....	157,285	5.86	207,673	6.24	274,520	7.14
Greece .....	3,359	0.13	5,132	0.15	8,971	0.23
Iceland .....	314	0.01	578	0.02	868	0.02
Ireland .....	3,440	0.13	4,639	0.14	8,148	0.21
Italy .....	54,805	2.04	83,353	2.51	115,461	3.00
Macedonia .....	0	0.00	22	0.00	135	0.00
Netherlands .....	57,498	2.14	76,260	2.29	91,238	2.37
Norway .....	10,221	0.38	13,079	0.39	16,212	0.42
Portugal .....	1,460	0.05	2,793	0.08	5,807	0.15
Slovenia .....	0	0.00	871	0.03	2,317	0.06
Spain .....	22,199	0.83	42,731	1.28	68,894	1.79
Sweden .....	48,980	1.82	57,349	1.72	66,394	1.73
Switzerland .....	43,605	1.62	58,346	1.75	69,675	1.81
Turkey .....	1,134	0.04	2,519	0.08	6,565	0.17
United Kingdom .....	221,955	8.27	278,930	8.39	316,752	8.23
Yugoslavia .....	2,865	0.11	1,822	0.05	771	0.02
All others .....	89	0.00	218	0.01	630	0.02
Asia .....	209,591	7.81	279,456	8.40	392,036	10.19
Bangladesh .....	208	0.01	331	0.01	317	0.01
China .....	9,910	0.37	16,539	0.50	33,245	0.86
India .....	14,421	0.54	19,250	0.58	24,442	0.64
Indonesia .....	164	0.01	293	0.01	485	0.01
Japan .....	174,471	6.50	219,688	6.61	280,360	7.29
Malaysia .....	386	0.01	499	0.02	986	0.03
Pakistan .....	362	0.01	421	0.01	456	0.01
Philippines .....	341	0.01	467	0.01	642	0.02
Singapore .....	1,179	0.04	2,787	0.08	5,650	0.15
South Korea .....	2,260	0.08	6,563	0.20	23,551	0.61
Sri Lanka .....	184	0.01	147	0.00	201	0.01
Taiwan .....	4,763	0.18	11,150	0.34	19,422	0.50
Thailand .....	787	0.03	1,042	0.03	1,716	0.04
Vietnam .....	57	0.00	164	0.00	307	0.01
All others .....	99	0.00	117	0.00	256	0.01
Eastern Europe/Central Asia .....	52,023	1.94	60,215	1.81	76,898	2.00
Armenia .....	0	0.00	118	0.00	243	0.01
Azerbaijan .....	0	0.00	59	0.00	51	0.00
Bulgaria .....	1,522	0.06	2,110	0.06	2,193	0.06
Belarus .....	0	0.00	500	0.02	1,060	0.03
Czechoslovakia .....	5,468	0.20	6,540	0.20	7,591	0.20
Estonia .....	0	0.00	376	0.01	1,204	0.03
Georgia .....	0	0.00	88	0.00	264	0.01
Hungary .....	4,755	0.18	5,988	0.18	8,345	0.22
Kazakhstan .....	0	0.00	77	0.00	120	0.00
Latvia .....	0	0.00	224	0.01	443	0.01
Lithuania .....	0	0.00	270	0.01	710	0.02
Moldova .....	0	0.00	105	0.00	141	0.00
Poland .....	8,671	0.32	10,692	0.32	14,909	0.39
Romania .....	571	0.02	1,109	0.03	1,751	0.05

Appendix table 5-48

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## Citation of S&amp;E articles, by region and country/economy: 1992, 1996, and 2001

Region and country/economy	1992		1996		2001	
	Number	Percent worldwide	Number	Percent worldwide	Number	Percent worldwide
Russia .....	0	0.00	19,047	0.57	31,602	0.82
Slovakia .....	0	0.00	777	0.02	2,411	0.06
USSR.....	31,036	1.16	9,852	0.30	0	0.00
Ukraine .....	0	0.00	2,078	0.06	3,606	0.09
Uzbekistan .....	0	0.00	173	0.01	219	0.01
All others.....	0	0.00	32	0.00	35	0.00
Near East/North Africa .....	25,502	0.95	31,975	0.96	43,463	1.13
Algeria.....	127	0.00	194	0.01	282	0.01
Egypt.....	1,455	0.05	1,643	0.05	2,391	0.06
Iran .....	143	0.01	347	0.01	1,756	0.05
Israel.....	21,192	0.79	27,261	0.82	34,625	0.90
Jordan.....	218	0.01	165	0.00	382	0.01
Kuwait.....	460	0.02	154	0.00	571	0.01
Lebanon.....	62	0.00	79	0.00	273	0.01
Morocco.....	180	0.01	295	0.01	740	0.02
Oman.....	48	0.00	52	0.00	121	0.00
Saudi Arabia.....	1,078	0.04	1,104	0.03	1,291	0.03
Tunisia .....	170	0.01	199	0.01	438	0.01
United Arab Emirates.....	33	0.00	141	0.00	261	0.01
All others.....	336	0.01	341	0.01	332	0.01
Pacific .....	58,661	2.18	70,735	2.13	92,447	2.40
Australia.....	49,989	1.86	60,266	1.81	78,789	2.05
New Zealand .....	8,498	0.32	10,326	0.31	13,507	0.35
All others.....	174	0.01	143	0.00	151	0.00
Central/South America.....	12,657	0.47	19,714	0.59	34,879	0.91
Argentina .....	3,386	0.13	4,856	0.15	8,631	0.22
Brazil.....	5,132	0.19	8,630	0.26	17,365	0.45
Chile.....	1,826	0.07	2,560	0.08	3,559	0.09
Colombia.....	256	0.01	335	0.01	654	0.02
Costa Rica.....	174	0.01	197	0.01	362	0.01
Cuba .....	136	0.01	262	0.01	665	0.02
Peru .....	223	0.01	218	0.01	278	0.01
Uruguay .....	104	0.00	464	0.01	685	0.02
Venezuela.....	789	0.03	1,296	0.04	1,491	0.04
All others.....	630	0.02	896	0.03	1,189	0.03
Sub-Saharan Africa .....	10,001	0.37	10,491	0.32	12,104	0.31
Cameroon .....	87	0.00	159	0.00	238	0.01
Ethiopia.....	117	0.00	173	0.01	226	0.01
Ghana .....	50	0.00	110	0.00	164	0.00
Kenya.....	791	0.03	822	0.02	983	0.03
Nigeria .....	744	0.03	651	0.02	519	0.01
Senegal.....	358	0.01	372	0.01	279	0.01
South Africa.....	6,348	0.24	6,397	0.19	7,056	0.18
Tanzania.....	123	0.00	231	0.01	324	0.01
Uganda.....	68	0.00	121	0.00	287	0.01
Zimbabwe .....	274	0.01	239	0.01	301	0.01
All others.....	1,042	0.04	1,216	0.04	1,727	0.04

NOTES: Citation counts are based on a 3-year window with a 2-year lag. For example, citations for 1999 are references made in articles published in 1999 to articles published in 1995–97. Country/economy is determined by the cited article's institutional address. Percents may not sum to 100 because of rounding. German data for 1992 includes former East Germany. China data includes Hong Kong. Czech Republic data for 1992 and 1996 includes the former Czechoslovakia.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-49  
**Relative prominence of cited S&E literature, by country/region: 1992, 1996, and 2001**  
 (Relative Citation Index)

Year	United States	Western Europe	Asia	Eastern Europe	Near East and North Africa	Pacific	Central and South America	Sub-Saharan Africa
<b>Worldwide</b>								
1992 .....	1.00	0.65	0.43	0.11	0.45	0.63	0.30	0.29
1996 .....	1.01	0.68	0.42	0.16	0.48	0.60	0.34	0.30
2001 .....	1.01	0.72	0.41	0.23	0.53	0.73	0.37	0.36
<b>United States</b>								
1992 .....	1.85	0.61	0.39	0.08	0.43	0.57	0.25	0.23
1996 .....	1.87	0.63	0.37	0.11	0.46	0.54	0.30	0.24
2001 .....	1.95	0.67	0.38	0.16	0.49	0.59	0.30	0.28
<b>Western Europe</b>								
1992 .....	1.00	1.57	0.46	0.14	0.46	0.70	0.33	0.34
1996 .....	1.01	1.49	0.45	0.20	0.51	0.67	0.37	0.35
2001 .....	1.02	1.45	0.43	0.29	0.55	0.71	0.40	0.43
<b>Asia</b>								
1992 .....	0.96	0.66	3.24	0.13	0.42	0.52	0.30	0.24
1996 .....	0.98	0.68	2.76	0.18	0.45	0.51	0.31	0.26
2001 .....	0.98	0.71	2.31	0.27	0.52	0.55	0.37	0.25
<b>Eastern Europe</b>								
1992 .....	0.78	0.86	0.66	3.57	0.51	0.50	0.41	0.22
1996 .....	0.80	0.93	0.56	3.85	0.58	0.48	0.52	0.28
2001 .....	0.78	0.96	0.59	4.50	0.67	0.55	0.56	0.32
<b>Near East and North Africa</b>								
1992 .....	1.16	0.76	0.51	0.15	11.74	0.67	0.31	0.58
1996 .....	1.13	0.82	0.45	0.22	11.63	0.71	0.45	0.48
2001 .....	1.09	0.85	0.53	0.33	10.89	0.64	0.54	0.42
<b>Pacific</b>								
1992 .....	1.01	0.82	0.40	0.08	0.38	10.00	0.33	0.58
1996 .....	1.05	0.83	0.41	0.13	0.45	8.60	0.42	0.50
2001 .....	1.06	0.84	0.40	0.17	0.49	8.02	0.40	0.68
<b>Central and South America</b>								
1992 .....	1.01	0.86	0.55	0.17	0.61	0.71	18.12	0.69
1996 .....	1.02	0.88	0.48	0.25	0.57	0.72	15.65	0.77
2001 .....	0.93	0.90	0.51	0.39	0.67	0.76	12.13	0.73
<b>Sub-Saharan Africa</b>								
1992 .....	0.87	0.86	0.45	0.10	0.69	1.39	0.82	27.84
1996 .....	0.87	0.88	0.41	0.16	0.68	1.35	0.95	29.96
2001 .....	0.85	0.93	0.41	0.24	0.67	1.26	0.76	33.44

NOTES: Relative prominence of S&E literature is based on region's relative citation index. This index measures the frequency of citation of a country or region's S&E literature, adjusted for its world share of S&E articles. An index of 1.00 would indicate that the region's share of cited literature was equal to its world share of S&E literature. An index greater or less than 1.00 would indicate that the region was cited relatively more or less frequently than indicated by its share of world S&E literature. Country/region's citations of its own literature are not included in its relative citation index.

SOURCES: Institute for Scientific Information, Science and Social Citation Indexes; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-50

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## Relative prominence of cited S&amp;E literature, by selected field and country/economy: 1994 and 2001

Field, rank, and country/economy	1994	2001	Field, rank, and country/economy	1994	2001
All fields .....			Clinical medicine		
1 Switzerland.....	1.19	1.19	1 United States.....	0.99	0.99
2 United States.....	1.01	1.01	2 Switzerland.....	0.98	0.96
3 Netherlands.....	0.88	0.95	3 Canada.....	0.83	0.92
4 Denmark.....	0.84	0.90	4 Netherlands.....	0.84	0.90
5 Sweden.....	0.87	0.86	5 Finland.....	0.69	0.87
6 United Kingdom.....	0.83	0.85	6 Ireland.....	0.77	0.82
7 Finland.....	0.71	0.83	7 United Kingdom.....	0.80	0.81
8 Canada.....	0.72	0.82	8 Belgium.....	0.81	0.81
9 Belgium.....	0.81	0.81	9 Sweden.....	0.78	0.81
10 Germany.....	0.74	0.80	10 Denmark.....	0.69	0.80
11 Austria.....	0.70	0.78	11 New Zealand.....	0.69	0.75
12 Ireland.....	0.68	0.77	12 Norway.....	0.59	0.75
13 France.....	0.73	0.76	13 Italy.....	0.62	0.74
14 Israel.....	0.67	0.74	14 France.....	0.67	0.73
15 Italy.....	0.62	0.71	15 Australia.....	0.67	0.73
16 Norway.....	0.61	0.68	16 Germany.....	0.57	0.69
17 Australia.....	0.61	0.67	17 Austria.....	0.61	0.65
18 New Zealand.....	0.56	0.60	18 Israel.....	0.52	0.62
19 Spain.....	0.45	0.57	19 Spain.....	0.50	0.57
20 Japan.....	0.55	0.57	20 Hong Kong.....	0.50	0.57
21 Hong Kong.....	0.43	0.53	21 Hungary.....	0.44	0.55
22 Hungary.....	0.40	0.49	22 Japan.....	0.53	0.54
23 Portugal.....	0.40	0.47	23 Thailand.....	na	0.53
24 Chile.....	0.33	0.43	24 Portugal.....	na	0.53
25 Singapore.....	0.39	0.43	25 South Korea.....	0.49	0.52
26 Greece.....	0.32	0.42	26 Czech Republic.....	na	0.45
27 Slovenia.....	na	0.41	27 Greece.....	0.34	0.44
28 Argentina.....	0.33	0.39	28 Singapore.....	0.40	0.42
29 Czech Republic.....	na	0.38	29 Poland.....	0.37	0.42
30 Mexico.....	0.36	0.37	30 Mexico.....	0.42	0.42
31 South Africa.....	0.34	0.37	31 Taiwan.....	0.46	0.39
32 South Korea.....	0.34	0.37	32 Argentina.....	0.33	0.39
33 Brazil.....	0.30	0.35	33 South Africa.....	0.34	0.39
34 Poland.....	0.28	0.34	34 Brazil.....	0.31	0.38
35 Taiwan.....	0.33	0.34	35 China.....	0.27	0.31
36 Bulgaria.....	0.19	0.29	36 Egypt.....	0.21	0.30
37 Slovakia.....	na	0.28	37 Chile.....	0.17	0.30
38 Croatia.....	na	0.27	38 Saudi Arabia.....	0.29	0.29
39 Iran.....	na	0.27	39 India.....	0.19	0.25
40 Saudi Arabia.....	0.25	0.26	40 Turkey.....	0.19	0.25

Appendix table 5-50

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## Relative prominence of cited S&amp;E literature, by selected field and country/economy: 1994 and 2001

Field, rank, and country/economy	1994	2001	Field, rank, and country/economy	1994	2001
Biomedical research .....			Biology		
1 Switzerland.....	1.17	1.24	1 Switzerland .....	1.06	1.18
2 United States.....	1.14	1.13	2 Netherlands.....	0.86	1.00
3 Israel .....	0.80	0.89	3 Sweden .....	0.93	1.00
4 United Kingdom .....	0.86	0.89	4 United Kingdom.....	0.81	0.98
5 Germany.....	0.83	0.81	5 Denmark .....	0.92	0.89
6 Netherlands.....	0.73	0.80	6 Hong Kong.....	na	0.88
7 Canada.....	0.68	0.78	7 Austria.....	0.57	0.87
8 Austria.....	0.78	0.77	8 Estonia .....	na	0.86
9 Singapore.....	0.53	0.74	9 France.....	0.65	0.85
10 Finland .....	0.60	0.74	10 Finland .....	0.68	0.84
11 Sweden .....	0.70	0.74	11 Germany .....	0.73	0.82
12 France .....	0.70	0.73	12 Norway.....	0.73	0.82
13 Denmark .....	0.69	0.70	13 Belgium.....	0.72	0.82
14 Belgium .....	0.69	0.67	14 United States.....	0.79	0.80
15 Australia .....	0.57	0.66	15 Ireland.....	0.81	0.77
16 Ireland.....	0.52	0.65	16 Israel .....	0.73	0.73
17 Japan .....	0.58	0.58	17 Canada.....	0.68	0.72
18 Norway.....	0.55	0.57	18 Indonesia.....	na	0.71
19 New Zealand .....	0.46	0.55	19 Philippines.....	0.39	0.66
20 Italy .....	0.46	0.54	20 Australia .....	0.61	0.63
21 Spain.....	0.32	0.46	21 Italy .....	0.56	0.63
22 Hong Kong.....	na	0.43	22 Hungary .....	0.54	0.60
23 Chile.....	0.27	0.40	23 South Korea.....	0.63	0.60
24 Portugal.....	0.28	0.40	24 New Zealand .....	0.54	0.57
25 Hungary.....	0.33	0.39	25 Portugal.....	0.58	0.57
26 Mexico.....	0.27	0.34	26 Kenya.....	0.37	0.56
27 Greece.....	0.28	0.34	27 Czech Republic.....	na	0.56
28 Taiwan.....	0.34	0.32	28 Colombia .....	0.52	0.55
29 South Korea.....	0.27	0.32	29 Spain.....	0.38	0.55
30 Czech Republic.....	na	0.29	30 South Africa.....	0.41	0.50
31 Poland .....	0.21	0.27	31 Thailand .....	0.47	0.50
32 South Africa.....	0.22	0.26	32 Venezuela.....	0.44	0.48
33 Argentina.....	0.23	0.25	33 Japan.....	0.46	0.47
34 Brazil .....	0.16	0.22	34 Argentina.....	0.45	0.47
35 Slovakia.....	na	0.21	35 Chile.....	0.49	0.44
36 Turkey .....	na	0.18	36 Poland.....	0.38	0.44
37 China.....	0.28	0.18	37 Singapore.....	0.44	0.43
38 Bulgaria.....	0.07	0.17	38 Mexico .....	0.46	0.42
39 India .....	0.11	0.14	39 Brazil.....	0.38	0.41
40 Russia .....	na	0.12	40 Greece .....	0.40	0.40

Appendix table 5-50

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## Relative prominence of cited S&amp;E literature, by selected field and country/economy: 1994 and 2001

Field, rank, and country/economy	1994	2001	Field, rank, and country/economy	1994	2001
Chemistry			Physics		
1 Netherlands	1.07	1.19	1 Switzerland	1.29	1.27
2 Switzerland	1.17	1.16	2 Denmark	1.19	1.26
3 Denmark	0.97	1.09	3 United States	1.15	1.13
4 United States	1.13	1.06	4 New Zealand	0.89	1.08
5 Israel	0.90	1.04	5 Netherlands	1.06	1.04
6 Sweden	1.15	1.01	6 Austria	0.79	1.00
7 Canada	0.97	1.00	7 Germany	0.98	0.96
8 Hong Kong	0.68	0.99	8 Israel	0.82	0.88
9 United Kingdom	0.85	0.94	9 United Kingdom	0.80	0.87
10 Ireland	0.77	0.89	10 Ireland	0.91	0.87
11 Belgium	0.71	0.89	11 Sweden	0.80	0.85
12 Australia	0.80	0.82	12 France	0.81	0.83
13 Germany	0.74	0.79	13 Belgium	0.72	0.80
14 Austria	0.69	0.78	14 Finland	0.84	0.80
15 Italy	0.70	0.77	15 Canada	0.76	0.79
16 France	0.68	0.74	16 Italy	0.65	0.75
17 New Zealand	0.74	0.71	17 Norway	0.62	0.74
18 Finland	0.63	0.70	18 Spain	0.52	0.74
19 Spain	0.50	0.70	19 Australia	0.61	0.68
20 Singapore	0.56	0.67	20 Hong Kong	na	0.68
21 Greece	0.46	0.64	21 Slovenia	na	0.66
22 Japan	0.58	0.63	22 Hungary	0.49	0.66
23 Norway	0.66	0.63	23 Portugal	0.57	0.60
24 Portugal	0.50	0.58	24 Greece	0.51	0.58
25 Slovenia	na	0.50	25 Japan	0.55	0.56
26 Venezuela	na	0.48	26 Slovakia	na	0.55
27 Brazil	0.41	0.48	27 Czech Republic	na	0.51
28 Argentina	0.35	0.47	28 Argentina	0.43	0.49
29 Taiwan	0.49	0.47	29 South Africa	0.40	0.48
30 South Korea	0.44	0.45	30 Poland	0.39	0.48
31 South Africa	0.53	0.44	31 Bulgaria	0.28	0.45
32 Hungary	0.39	0.43	32 Iran	na	0.43
33 Czech Republic	na	0.42	33 Brazil	0.41	0.43
34 Bulgaria	0.31	0.42	34 South Korea	0.44	0.40
35 Mexico	0.38	0.40	35 Taiwan	0.32	0.39
36 Chile	0.24	0.36	36 Singapore	na	0.37
37 India	0.25	0.34	37 Lithuania	na	0.36
38 Poland	0.32	0.32	38 Mexico	0.35	0.35
39 Iran	na	0.31	39 Romania	0.27	0.35
40 Croatia	na	0.30	40 India	0.28	0.35

Appendix table 5-50

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## Relative prominence of cited S&amp;E literature, by selected field and country/economy: 1994 and 2001

Field, rank, and country/economy	1994	2001	Field, rank, and country/economy	1994	2001
Earth and space sciences .....			Engineering and technology <sup>a</sup>		
1 Chile .....	1.06	1.11	1 Switzerland .....	1.04	1.14
2 Netherlands .....	0.82	1.00	2 Denmark .....	1.23	1.10
3 United States .....	0.97	0.96	3 Netherlands .....	0.88	0.94
4 Germany .....	0.79	0.92	4 Slovenia .....	na	0.88
5 Switzerland .....	1.05	0.89	5 Austria .....	0.56	0.87
6 Israel .....	0.65	0.87	6 Germany .....	0.60	0.86
7 United Kingdom .....	0.80	0.85	7 United States .....	0.86	0.85
8 Denmark .....	0.74	0.83	8 Ireland .....	0.82	0.82
9 Italy .....	0.70	0.77	9 Sweden .....	0.81	0.80
10 France .....	0.78	0.72	10 France .....	0.73	0.76
11 Sweden .....	0.75	0.69	11 Belgium .....	0.80	0.75
12 Australia .....	0.72	0.69	12 United Kingdom .....	0.70	0.72
13 Canada .....	0.69	0.66	13 Israel .....	0.64	0.71
14 Belgium .....	0.66	0.64	14 Australia .....	0.73	0.70
15 Austria .....	0.44	0.62	15 Hong Kong .....	0.50	0.70
16 Norway .....	0.61	0.60	16 Norway .....	0.63	0.70
17 Finland .....	0.49	0.60	17 Spain .....	0.73	0.67
18 Ireland .....	0.60	0.60	18 Italy .....	0.57	0.66
19 Hong Kong .....	na	0.58	19 Czech Republic .....	na	0.66
20 Mexico .....	0.51	0.58	20 Belarus .....	na	0.65
21 Japan .....	0.53	0.56	21 Portugal .....	0.38	0.65
22 Poland .....	0.39	0.55	22 New Zealand .....	0.63	0.65
23 Spain .....	0.49	0.55	23 Canada .....	0.58	0.62
24 Brazil .....	0.42	0.51	24 Finland .....	0.78	0.62
25 Hungary .....	0.34	0.51	25 Argentina .....	0.47	0.60
26 Argentina .....	0.37	0.49	26 Hungary .....	0.54	0.60
27 Portugal .....	0.28	0.47	27 Japan .....	0.52	0.54
28 South Africa .....	0.49	0.47	28 South Korea .....	0.53	0.53
29 Czech Republic .....	na	0.45	29 Kuwait .....	0.25	0.52
30 New Zealand .....	0.42	0.42	30 Brazil .....	0.53	0.52
31 Greece .....	0.23	0.40	31 Greece .....	0.47	0.51
32 Ukraine .....	na	0.40	32 Poland .....	0.30	0.48
33 South Korea .....	0.22	0.37	33 South Africa .....	0.43	0.48
34 Slovakia .....	na	0.35	34 Malaysia .....	na	0.47
35 Bulgaria .....	0.24	0.33	35 Slovakia .....	na	0.47
36 Singapore .....	na	0.30	36 Bulgaria .....	0.34	0.45
37 Taiwan .....	0.43	0.28	37 Singapore .....	0.33	0.45
38 Turkey .....	0.27	0.28	38 Mexico .....	0.58	0.44
39 Russia .....	na	0.27	39 Jordan .....	na	0.43
40 India .....	0.18	0.27	40 India .....	0.32	0.43



Appendix table 5-50

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## Relative prominence of cited S&amp;E literature, by selected field and country/economy: 1994 and 2001

Field, rank, and country/economy	1994	2001	Field, rank, and country/economy	1994	2001
<b>Mathematics</b>			<b>Social sciences</b>		
1 Denmark .....	1.58	1.19	1 United States .....	0.85	0.80
2 Switzerland .....	0.78	1.18	2 Singapore .....	0.36	0.80
3 Hong Kong .....	0.68	1.07	3 Sweden .....	0.63	0.77
4 Singapore .....	0.48	0.95	4 Belgium .....	0.49	0.77
5 Ireland .....	0.21	0.94	5 Denmark .....	1.35	0.74
6 United Kingdom .....	0.94	0.87	6 Hong Kong .....	0.33	0.72
7 United States .....	0.86	0.86	7 South Korea .....	0.37	0.70
8 Chile .....	0.47	0.84	8 Switzerland .....	0.42	0.67
9 Sweden .....	1.10	0.81	9 United Kingdom .....	0.55	0.66
10 Norway .....	0.88	0.80	10 New Zealand .....	0.47	0.66
11 Germany .....	0.59	0.79	11 Norway .....	0.67	0.65
12 Belgium .....	0.66	0.76	12 Netherlands .....	0.50	0.65
13 Netherlands .....	0.76	0.75	13 Canada .....	0.61	0.62
14 Austria .....	0.53	0.74	14 Spain .....	0.51	0.60
15 Canada .....	0.55	0.74	15 Italy .....	0.44	0.56
16 Israel .....	0.65	0.71	16 Israel .....	0.59	0.56
17 Czech Republic .....	na	0.65	17 Mexico .....	0.42	0.54
18 Finland .....	0.69	0.61	18 Austria .....	0.39	0.51
19 Australia .....	0.70	0.60	19 Ireland .....	0.32	0.51
20 Saudi Arabia .....	0.63	0.59	20 Portugal .....	na	0.48
21 Italy .....	0.51	0.59	21 France .....	0.33	0.47
22 Argentina .....	0.73	0.58	22 Australia .....	0.42	0.43
23 France .....	0.70	0.57	23 Finland .....	0.48	0.43
24 New Zealand .....	0.83	0.56	24 Brazil .....	0.37	0.43
25 Bulgaria .....	0.51	0.55	25 China .....	0.46	0.43
26 Greece .....	0.37	0.53	26 Hungary .....	0.46	0.40
27 Vietnam .....	0.53	0.52	27 Chile .....	na	0.39
28 Belarus .....	na	0.48	28 South Africa .....	0.27	0.39
29 Mexico .....	0.44	0.47	29 Germany .....	0.24	0.39
30 Spain .....	0.52	0.46	30 Greece .....	0.38	0.36
31 Portugal .....	0.47	0.45	31 Japan .....	0.34	0.34
32 Japan .....	0.46	0.45	32 Poland .....	0.39	0.31
33 South Africa .....	0.54	0.45	33 Nigera .....	0.28	0.30
34 Slovenia .....	na	0.43	34 Turkey .....	0.31	0.29
35 Poland .....	0.36	0.43	35 Taiwan .....	0.16	0.29
36 India .....	0.34	0.42	36 Argentina .....	0.31	0.27
37 Hungary .....	0.46	0.41	37 India .....	0.15	0.22
38 Brazil .....	0.68	0.40	38 Croatia .....	na	0.13
39 South Korea .....	0.36	0.40	39 Russia .....	na	0.11
40 Slovakia .....	na	0.39	40 Czech Republic .....	na	0.08

Appendix table 5-50 (Page 6 of 6)

**Relative prominence of cited S&E literature, by selected field and country/economy: 1994 and 2001**

Field, rank, and country/economy	1994	2001
Psychology		
1 Canada.....	0.76	0.83
2 Argentina.....	0.60	0.80
3 New Zealand.....	0.60	0.77
4 United Kingdom.....	0.73	0.77
5 United States.....	0.77	0.77
6 Netherlands.....	0.73	0.75
7 Sweden.....	0.81	0.68
8 Finland.....	0.71	0.68
9 Italy.....	0.62	0.67
10 Denmark.....	0.42	0.65
11 Belgium.....	0.63	0.65
12 Australia.....	0.56	0.63
13 Israel.....	0.47	0.61
14 Hong Kong.....	0.32	0.60
15 Switzerland.....	0.51	0.59
16 Norway.....	0.55	0.58
17 Brazil.....	0.40	0.55
18 France.....	0.49	0.55
19 Poland.....	0.40	0.51
20 Spain.....	0.43	0.49
21 China.....	0.22	0.48
22 Austria.....	0.44	0.48
23 Germany.....	0.33	0.47
24 Ireland.....	0.21	0.46
25 Mexico.....	0.18	0.34
26 South Korea.....	na	0.33
27 Taiwan.....	0.23	0.29
28 Japan.....	0.26	0.29
29 Greece.....	na	0.27
30 Turkey.....	na	0.26
31 India.....	0.14	0.25
32 Hungary.....	0.26	0.22
33 South Africa.....	0.30	0.20
34 Czech Republic.....	na	0.11
35 Russia.....	na	0.05
36 Slovakia.....	na	0.05

na not applicable

<sup>a</sup>Computer sciences are included in engineering and technology.

NOTES: Relative prominence of S&E literature is measured on the basis of the relative citation index of the country. This index is the country's share of cited literature adjusted for its share of published literature. A country's citation of its own literature is excluded. An index of 1.00 would indicate that the country's share of cited literature is equal to the country's world share of S&E literature. An index greater (less) than 1.00 would indicate that the country is cited relatively more (less) than is indicated by the country's share of S&E literature. Countries with less than a 0.10 percent share of world publications in the cited field or that did not cite S&E literature over the period are excluded or are marked na. Countries ranked by descending order of relative citation index in 2001.

SOURCES: Institute for Scientific Information, Science Citation Index and Social Citation Index, CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-51  
**Citations of foreign S&E literature, by country/region: 1992, 1996, and 2001**

Citing country/region	Total	Foreign	United States	Western Europe	Asia	Eastern Europe/ Central Asia	Near East/ North Africa	Pacific	Central/ South America	Sub-Saharan Africa
	Number of citations		Percent of foreign citations							
Worldwide										
1992 .....	2,684,777	1,473,021	na	na	na	na	na	na	na	na
1996 .....	3,325,455	1,944,734	na	na	na	na	na	na	na	na
2001 .....	3,846,519	2,393,242	na	na	na	na	na	na	na	na
United States										
1992 .....	1,173,270	355,366	na	63.2	14.7	2.3	4.8	2.4	0.9	0.7
1996 .....	1,337,438	438,673	na	63.9	14.6	2.4	4.3	2.2	1.1	0.6
2001 .....	1,403,472	523,280	na	64.1	15.6	2.3	4.5	2.2	1.4	0.5
Western Europe										
1992 .....	920,630	468,446	74.6	na	10.3	2.4	3.5	1.5	0.7	0.6
1996 .....	1,229,784	617,966	72.5	na	11.5	2.8	3.5	1.6	0.9	0.5
2001 .....	1,445,547	696,234	68.2	na	13.8	3.3	4.2	1.9	1.4	0.6
Asia										
1992 .....	244,033	154,015	57.6	32.6	na	1.7	2.1	1.1	0.5	0.3
1996 .....	340,525	220,167	54.6	35.0	na	1.9	2.1	1.1	0.6	0.3
2001 .....	497,305	319,094	49.0	39.4	na	2.4	2.4	1.4	1.0	0.3
Eastern Europe/Central Asia										
1992 .....	89,194	61,577	42.6	38.6	10.9	na	1.9	1.2	0.6	0.3
1996 .....	91,519	66,811	39.6	42.4	9.9	na	1.7	1.3	0.9	0.3
2001 .....	114,418	85,656	33.4	46.0	12.1	na	2.1	1.5	1.3	0.3
Pacific										
1992 .....	64,372	47,846	51.1	34.5	6.1	0.9	na	0.8	0.5	0.7
1996 .....	87,640	67,886	49.0	35.5	6.8	1.2	na	0.9	0.6	0.5
2001 .....	102,426	78,959	44.3	38.7	8.1	1.2	na	1.1	0.9	0.6
Near East/North Africa										
1992 .....	29,132	23,444	54.4	29.3	7.2	1.7	2.1	na	0.4	0.7
1996 .....	38,151	31,427	49.5	33.5	7.5	2.0	2.2	na	0.7	0.4
2001 .....	51,504	41,976	42.9	37.2	10.0	2.2	2.2	na	1.1	0.3
Central/South America										
1992 .....	20,857	16,741	47.7	33.3	7.7	1.9	2.3	1.3	na	0.8
1996 .....	32,015	25,979	45.3	35.9	7.6	2.1	2.3	1.1	na	0.7
2001 .....	56,068	44,637	37.8	40.1	10.0	2.8	2.7	1.4	na	0.6
Sub-Saharan Africa										
1992 .....	11,745	8,788	43.7	36.0	6.8	1.2	4.8	1.5	1.2	na
1996 .....	11,522	8,826	41.1	38.3	6.8	1.5	4.6	1.4	1.5	na
2001 .....	13,789	10,734	35.1	42.8	8.2	1.7	4.6	1.5	1.6	na

na Not applicable

NOTES: Citations are references to U.S. S&E articles in journals indexed and tracked by the Institute for Scientific Information's Science Citation Index and Social Sciences Citation Index. Citation counts are based on a 3-year window with a 2-year lag. For example, citations for 1999 are references made in articles published in 1999 to articles published in 1995–97. Country/region is determined by the cited article's institutional address. Share of foreign citations do not add up to 100 percent because Canada and Mexico are not included.

SOURCE: Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-52

**U.S. patent citations to S&E articles, by field and country/region: 1995-2002**

Field and region/country	1995	1996	1997	1998	1999	2000	2001	2002
	Number							
All citations.....	28,068	39,380	54,156	73,621	71,745	67,429	74,013	71,807
	Percent distribution							
All fields .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Clinical medicine .....	27.0	28.8	31.4	32.4	31.4	29.9	30.6	30.0
Biomedical research .....	33.6	38.3	41.3	44.2	43.8	42.1	41.5	39.1
Biology .....	2.6	2.6	2.2	2.3	3.0	3.0	2.9	2.5
Chemistry.....	14.8	12.8	11.6	9.4	9.7	11.5	12.3	13.5
Physics.....	12.6	9.2	7.3	5.9	6.3	6.9	6.6	8.2
Earth/space sciences.....	0.4	0.3	0.2	0.3	0.3	0.4	0.3	0.3
Engineering/technology .....	8.9	7.8	5.7	5.3	5.3	5.9	5.6	6.2
Mathematics .....	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social & behavioral sciences .....	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.2
Worldwide .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America .....	62.6	63.4	63.7	64.0	62.7	62.1	61.3	58.8
Canada.....	3.3	3.6	3.5	3.6	3.7	3.6	3.4	3.4
Mexico .....	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1
United States.....	59.2	59.7	60.1	60.4	59.0	58.4	57.8	55.3
Western Europe .....	22.8	22.8	23.3	23.8	24.4	25.0	25.6	26.2
France.....	3.2	3.2	3.2	3.5	3.6	3.6	3.4	3.5
Germany .....	4.4	4.0	4.5	4.3	4.3	4.8	5.1	5.5
Italy.....	1.4	1.2	1.4	1.5	1.6	1.8	1.7	2.1
The Netherlands .....	1.6	1.5	1.5	1.4	1.7	1.7	1.7	1.7
Switzerland .....	1.5	1.6	1.7	1.7	1.7	1.7	1.8	1.7
United Kingdom.....	6.3	6.7	6.5	6.7	6.7	6.5	6.6	6.4
Other.....	4.5	4.5	4.6	4.8	4.7	4.9	5.4	5.3
Asia.....	11.1	10.1	9.3	8.5	9.1	9.2	9.5	11.1
Emerging East Asia.....	0.9	0.9	0.8	0.8	1.2	1.4	1.6	2.2
Japan.....	9.5	8.8	8.0	7.3	7.5	7.4	7.5	8.4
Other.....	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Other.....	3.5	3.7	3.7	3.8	3.8	3.7	3.6	3.8

NOTES: Citations are references to U.S. S&E articles in journals indexed and tracked by the Institute for Scientific Information's Science Citation Index and Social Sciences Citation Index. Citation counts are based on a 6-year window with a 2-year lag. For example, citations for 2002 are references made in U.S. patents issued in 2002 to articles published in 1995-2000. 2002 patent data are preliminary and subject to change. Country/region is determined by the cited article's institutional address. Emerging East Asia consists of China, Hong Kong, Singapore, South Korea, and the Taiwan economy. Computer sciences are included in engineering and technology. Social & behavioral sciences consist of psychology, social sciences, health sciences, and professional fields.

SOURCES: U.S. Patent and Trademark Office; Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-53

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**U.S. patent citations to S&E articles, by field and sector: 1995–2002**

(Percent distribution)

Field and sector	1995	1996	1997	1998	1999	2000	2001	2002
All fields (number of articles).....	16,105	22,780	31,570	43,339	41,232	38,360	41,475	38,392
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	58.3	59.5	59.1	59.6	60.6	61.9	61.7	60.9
Industry.....	22.7	21.2	20.1	19.8	18.9	18.7	18.1	19.1
Federal Government .....	7.2	7.4	7.6	7.8	7.7	6.6	6.5	6.2
Nonprofit institutions .....	7.6	8.5	10.0	9.7	9.6	9.4	9.9	9.8
FFRDCs .....	2.7	2.1	1.9	1.9	2.0	1.9	2.4	2.6
State/local government.....	0.8	0.7	0.7	0.6	0.7	0.9	0.7	0.6
Unknown.....	0.6	0.5	0.5	0.6	0.5	0.5	0.6	0.8
Clinical medicine (number of articles) .....	4,461	6,679	10,063	14,133	13,240	11,805	12,961	11,776
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	59.6	58.6	57.8	58.8	58.6	58.9	59.7	58.0
Industry.....	17.4	17.9	18.9	18.8	18.4	18.4	17.4	18.1
Federal Government .....	8.7	9.0	8.6	8.5	9.1	8.3	8.2	8.3
Nonprofit institutions .....	11.7	12.0	12.3	11.6	11.6	12.4	12.7	13.5
FFRDCs .....	0.9	0.8	0.9	0.8	0.9	0.6	0.6	0.6
State/local government .....	0.9	1.1	0.8	0.7	0.8	0.7	0.6	0.6
Unknown.....	0.8	0.8	0.7	0.8	0.7	0.7	0.9	1.0
Biomedical research (number of articles) .....	5,944	9,619	14,383	20,993	19,771	17,717	19,335	17,251
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	59.6	59.9	59.0	60.2	61.6	62.9	61.7	61.3
Industry.....	19.1	18.6	18.1	17.9	17.1	17.0	17.1	18.0
Federal Government .....	8.4	8.1	8.1	8.1	7.3	6.2	6.1	5.5
Nonprofit institutions .....	10.9	11.2	12.6	11.8	11.9	11.9	12.5	12.3
FFRDCs .....	1.5	1.5	1.3	1.4	1.4	1.2	1.7	2.0
State/local government .....	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.3
Unknown.....	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.7
Biology (number of articles) .....	399	585	705	940	1,185	1,041	1,079	873
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	62.0	69.9	66.5	64.0	69.1	66.8	64.8	62.3
Industry.....	17.3	10.7	14.3	15.2	12.6	14.3	14.7	16.1
Federal Government .....	14.9	13.0	12.3	13.7	11.9	12.3	14.5	15.7
Nonprofit institutions .....	4.0	4.1	5.2	5.7	5.4	6.0	5.2	5.0
FFRDCs .....	0.9	1.1	0.9	0.9	0.5	0.5	0.4	0.7
State/local government .....	0.4	0.2	0.4	0.2	0.2	0.1	0.2	0.0
Unknown.....	0.4	1.0	0.5	0.2	0.3	0.0	0.3	0.2
Chemistry (number of articles).....	2,098	2,631	3,254	3,567	3,469	3,943	4,666	4,725
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	65.4	63.8	61.3	59.4	57.3	63.6	58.8	60.7
Industry.....	23.8	27.0	29.2	29.4	29.4	26.1	27.0	26.6
Federal Government .....	2.6	3.1	2.7	3.7	4.7	2.9	2.2	1.6
Nonprofit institutions .....	3.6	3.2	3.3	3.9	3.5	2.7	5.6	5.1
FFRDCs .....	3.8	2.5	3.0	3.2	4.6	4.3	5.7	5.0
State/local government .....	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.2
Unknown.....	0.7	0.3	0.3	0.2	0.3	0.4	0.6	0.6
Physics (number of articles).....	2,153	2,172	2,236	2,468	2,438	2,513	2,534	2,686
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	39.7	42.9	43.9	42.5	47.0	48.4	52.9	50.5
Industry.....	45.5	44.8	40.2	41.5	38.4	39.2	32.8	35.2
Federal Government .....	5.2	3.8	6.4	5.6	4.6	4.0	4.6	4.8
Nonprofit institutions .....	1.5	1.1	2.3	1.6	1.7	0.6	0.8	0.7
FFRDCs .....	7.8	7.1	6.9	8.5	7.9	7.5	8.8	8.5
State/local government .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown.....	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.3
Engineering/technology (number of articles) .....	1,460	1,713	1,782	2,119	1,996	2,050	2,005	2,154
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	44.1	46.2	45.6	45.1	48.0	49.1	49.9	49.3
Industry.....	46.7	44.8	45.1	44.5	42.3	41.0	39.8	40.8
Federal Government .....	3.0	3.7	2.7	3.4	2.7	3.4	3.6	4.0
Nonprofit institutions .....	1.5	1.3	1.5	1.8	1.3	1.0	1.0	1.1
FFRDCs .....	3.3	3.0	3.7	3.4	3.9	4.1	4.5	4.3
State/local government .....	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Unknown.....	1.3	1.1	1.4	1.7	1.8	1.1	1.2	0.6

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**U.S. patent citations to S&E articles, by field and sector: 1995–2002**

(Percent distribution)

Field and sector	1995	1996	1997	1998	1999	2000	2001	2002
Other (number of articles) .....	112	128	155	241	229	326	221	244
All sectors .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Academic .....	66.1	60.9	62.5	62.5	66.5	68.3	65.5	57.7
Industry .....	14.4	19.8	14.6	13.4	17.0	14.5	16.6	17.1
Federal Government .....	9.2	7.5	8.4	11.9	8.7	6.8	7.1	9.6
Nonprofit institutions .....	0.3	5.7	7.0	4.3	2.1	3.7	5.2	4.8
FFRDCs .....	7.8	3.0	3.2	2.7	1.7	2.3	2.8	5.3
State/local government .....	1.0	1.5	2.3	1.2	0.9	1.0	1.1	2.3
Unknown .....	1.1	1.7	2.0	3.9	2.9	3.4	1.7	3.2

FFRDC federally funded research and development center

NOTES: Citations are references to U.S. S&E articles in journals covered by the Institute for Scientific Information's Science Citation Index and Social Sciences Citation Index. Citation counts are based on a 6-year window with a 2-year lag. For example, citations for 2002 are references made in U.S. patents issued in 2002 to articles published in 1995–2000. 2002 patent data are preliminary and subject to change. Sector is determined by the cited article's institutional address. S&E field is determined by CHI's classification of the journal. Computer sciences are included in engineering and technology. Other includes the fields of earth and space sciences, mathematics, social sciences, psychology, health sciences, and professional field. Percents may not sum to 100 because of rounding.

SOURCES: U.S. Patent and Trademark Office; Institute for Scientific Information, Science Citation Index and Social Sciences Citation Index; CHI Research, Inc.; and National Science Foundation, Division of Science Resources Statistics, special tabulations.

Appendix table 5-54

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**U.S. patenting activity of U.S. universities and colleges: 1981–2001**

Institution and type	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Number of institutions awarded patents.....	84	78	86	105	118	125	128	128	153	151
Public.....	48	45	53	57	66	74	70	68	86	87
Private.....	33	29	29	45	46	47	51	52	58	57
Other.....	3	4	4	3	6	4	7	8	9	7
Number of patents awarded to all institutions.....	436	458	434	551	589	670	820	814	1,225	1,182
Public.....	222	244	226	259	307	356	397	408	653	672
Private.....	167	164	155	235	234	263	363	365	528	480
Other.....	47	50	53	57	48	51	60	41	44	30
Largest recipients, 1991–2001										
Top 25.....	238	238	229	281	299	340	439	459	673	657
Percent.....	54.6	52.0	52.8	51.0	50.8	50.7	53.5	56.4	54.9	55.6
Top 100.....	359	386	357	440	481	546	697	709	1,086	1,065
Percent.....	82.3	84.3	82.3	79.9	81.7	81.5	85.0	87.1	88.7	90.1
Top 100 patenting institutions, 1991–2001										
Public universities										
University of California.....	38	42	48	46	42	54	67	60	81	65
University of Texas.....	6	7	5	8	20	25	21	21	51	56
University of Wisconsin.....	26	17	13	16	17	17	12	24	29	16
University of Florida.....	4	0	6	10	7	10	13	21	33	33
State University of New York.....	2	8	2	11	5	11	18	10	25	20
University of Michigan.....	1	2	2	1	1	10	6	14	23	27
Iowa State University.....	12	15	10	14	21	9	15	15	28	30
University of Minnesota.....	12	10	5	6	11	16	28	26	40	38
Michigan State University.....	1	1	3	3	3	10	6	8	2	7
University of Washington.....	0	7	2	3	1	2	1	5	3	7
North Carolina State University.....	4	1	0	2	3	4	6	5	10	14
University of Utah.....	7	14	15	9	11	7	12	9	13	14
University of North Carolina.....	0	0	1	0	0	3	2	2	6	8
Georgia Institute of Technology.....	7	8	3	6	11	9	9	7	8	18
University of Pittsburgh.....	3	2	5	8	3	8	10	6	11	11
University of Maryland.....	0	0	1	0	0	3	2	2	1	4
Pennsylvania State University.....	0	0	0	0	0	0	0	0	1	1
Rutgers University.....	0	0	0	1	1	0	2	2	7	2
Louisiana State University.....	2	0	1	1	1	1	3	4	9	4
Ohio State University.....	4	5	8	3	10	5	12	14	13	10
Texas A&M University.....	3	3	2	3	8	3	6	9	8	9
University of Nebraska.....	5	4	0	5	1	1	1	4	0	3
University of Illinois.....	8	7	8	8	10	12	4	9	15	7
University of Alabama.....	2	3	1	1	5	3	5	3	3	6
University of Iowa.....	4	5	3	4	1	8	8	6	8	12
University of Massachusetts.....	0	0	0	1	1	0	2	1	3	3
University of Kentucky.....	4	6	6	7	5	7	4	7	6	4
Virginia Polytechnic Institute.....	0	0	0	0	0	0	0	2	7	4
University of Arkansas.....	0	0	0	0	0	1	1	1	2	3
Purdue University.....	15	11	11	14	18	9	4	2	11	15
University of Georgia.....	0	0	7	7	5	6	4	0	3	5
University of Virginia.....	3	8	4	2	1	4	3	4	8	12
University of Colorado.....	0	0	0	0	0	0	1	0	3	9
University of New Mexico.....	0	0	0	0	2	3	1	3	9	9
University of Oklahoma.....	1	0	1	1	3	2	2	6	2	4
University of South Florida.....	0	0	0	0	0	1	0	0	2	2
University of Tennessee.....	1	1	0	1	5	8	8	8	12	14
University of Akron.....	1	4	1	3	3	2	0	6	6	9
Oregon Health Sciences University.....	0	0	0	0	0	0	3	0	3	4
Wayne State University.....	0	2	1	0	1	5	6	7	16	9
University of Missouri.....	2	9	5	4	0	3	8	9	5	6
Arizona State University.....	0	0	0	1	1	1	2	0	9	9
Kansas State University.....	2	2	4	3	2	4	4	3	4	1
University of Connecticut.....	1	0	0	0	1	1	2	1	2	8
University of Cincinnati.....	0	0	0	2	2	1	8	3	8	9
City University of New York, Mt. Sinai.....	5	4	3	2	1	2	1	3	2	2
University of Central Florida.....	0	0	0	0	0	0	0	0	1	0
Florida State University.....	0	0	0	1	0	2	2	1	1	1
Temple University.....	1	2	0	2	0	1	5	7	10	9

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**U.S. patenting activity of U.S. universities and colleges: 1981–2001**

Institution and type	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Virginia Commonwealth University .....	0	0	0	0	0	0	0	0	0	1
University of Medicine and Dentistry of New Jersey .....	0	1	1	0	1	4	7	2	4	7
Oregon State University .....	1	0	1	0	2	3	0	2	1	1
Clemson University .....	0	0	0	2	2	1	3	3	6	6
University of Toledo .....	0	2	1	2	0	1	0	0	3	0
University of Hawaii .....	0	1	1	0	2	0	1	3	2	6
Indiana University .....	1	0	3	2	4	0	3	1	6	1
Washington State University .....	1	3	2	0	2	2	2	1	5	3
University of Delaware .....	12	12	6	5	9	7	5	8	8	11
University of Kansas .....	1	0	2	2	1	0	2	0	1	3
University of Houston .....	2	0	0	0	0	1	0	0	3	3
University of Arizona .....	1	1	2	1	2	2	0	0	1	2
<b>Private universities</b>										
Massachusetts Institute of Technology .....	66	51	47	47	35	45	63	64	101	109
Stanford University .....	10	4	16	36	38	33	48	54	43	36
California Institute of Technology .....	16	19	16	15	16	23	27	18	56	30
Cornell University .....	8	6	10	14	20	13	30	16	22	34
Johns Hopkins University .....	9	8	6	10	15	18	18	21	27	15
University of Pennsylvania .....	1	1	2	4	5	1	2	1	9	19
Columbia University .....	0	0	2	3	4	7	6	15	19	16
Washington University .....	1	0	1	1	3	1	7	6	12	7
Duke University .....	1	3	3	6	4	6	4	9	11	7
Harvard University .....	3	11	10	7	1	2	9	17	15	23
Rockefeller University .....	3	3	1	3	5	4	9	11	6	8
New York University .....	1	7	3	4	5	3	5	4	10	14
Thomas Jefferson University .....	2	2	4	10	5	3	3	2	7	5
Yale University .....	0	0	2	2	5	3	12	6	11	10
Princeton University .....	1	0	0	0	0	0	2	1	12	4
Northwestern University .....	1	7	3	2	2	8	10	10	7	5
Boston University .....	2	1	2	2	3	6	9	9	9	11
Baylor University .....	3	3	2	2	3	2	7	3	8	8
Emory University .....	0	0	0	0	1	1	0	0	7	3
University of Chicago .....	0	2	0	2	0	0	1	6	7	2
Carnegie-Mellon University .....	0	0	0	3	3	3	1	2	5	3
University of Southern California .....	2	5	1	7	5	5	4	7	8	6
Case Western Reserve University .....	1	0	0	1	1	6	3	1	1	2
Northeastern University .....	0	1	0	0	3	2	2	1	3	4
Vanderbilt University .....	1	2	1	0	0	5	4	4	4	5
University of Rochester .....	7	8	9	6	2	8	9	11	11	13
Brown University .....	0	0	0	1	2	2	1	3	3	3
Yeshiva University .....	0	3	0	1	4	1	6	1	5	1
Georgetown University .....	2	1	4	5	1	0	4	3	1	5
Tufts University .....	0	0	0	0	0	0	1	2	7	1
Rensselaer Polytechnic Institute .....	6	4	0	4	5	6	2	2	5	4
Tulane University .....	0	0	0	1	2	1	1	3	4	4
Wake Forest University .....	0	0	0	0	0	0	2	3	3	0
Dartmouth College .....	3	0	2	0	2	1	0	3	2	4
University of Miami .....	2	2	0	4	4	3	15	6	5	1
Brigham Young University .....	0	0	1	3	3	6	2	1	8	9
<b>Affiliated organizations</b>										
Mayo Foundation .....	0	0	0	0	3	1	1	0	3	4
Associated Universities, Inc. ....	0	0	0	0	0	0	0	1	3	7
Research Triangle Institute .....	1	2	3	0	2	2	4	2	3	6



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**U.S. patenting activity of U.S. universities and colleges: 1981–2001**

Institution and type	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of institutions awarded patents.....	162	157	163	171	166	180	181	177	186	188	190
Public.....	94	91	98	101	99	103	109	100	111	113	112
Private.....	57	55	58	60	59	69	65	69	68	69	72
Other.....	11	11	7	10	8	8	7	8	7	6	6
Number of patents awarded to all institutions.....	1,342	1,541	1,620	1,779	1,878	2,154	2,436	3,151	3,340	3,087	3,203
Public.....	792	901	936	1,069	1,197	1,344	1,517	1,842	2,038	1,893	1,907
Private.....	508	598	645	668	645	768	872	1,262	1,248	1,159	1,252
Other.....	41	42	39	42	36	41	46	47	53	35	43
Largest recipients, 1991–2001											
Top 25.....	755	811	880	990	998	1,195	1,310	1,774	1,861	1,727	1,733
Percent.....	56.3	52.6	54.3	55.6	53.1	55.5	53.8	56.3	55.7	55.9	54.1
Top 100.....	1,201	1,407	1,482	1,641	1,729	1,976	2,253	2,941	3,081	2,871	2,972
Percent.....	89.5	91.3	91.5	92.2	92.1	91.7	92.5	93.3	92.2	93.0	92.8
Top 100 patenting institutions, 1991–2001											
Public universities											
University of California.....	84	81	115	163	213	266	277	395	437	435	402
University of Texas.....	84	73	86	98	90	88	81	97	93	90	89
University of Wisconsin.....	45	43	57	50	52	65	64	85	87	66	73
University of Florida.....	38	42	34	26	31	36	43	52	50	64	51
State University of New York.....	27	34	31	38	31	37	45	51	54	54	41
University of Michigan.....	21	21	19	28	30	25	53	50	51	69	51
Iowa State University.....	39	23	29	37	37	38	36	53	45	34	29
University of Minnesota.....	32	31	28	28	25	31	32	43	49	46	38
Michigan State University.....	11	19	13	21	15	32	41	59	53	42	39
University of Washington.....	8	11	11	13	17	25	37	47	47	59	43
North Carolina State University.....	11	24	27	32	31	26	24	26	23	24	31
University of Utah.....	5	13	20	22	17	32	31	37	35	20	43
University of North Carolina.....	3	11	14	13	21	22	39	29	43	27	36
Georgia Institute of Technology.....	11	16	16	20	21	22	16	17	34	38	32
University of Pittsburgh.....	16	10	10	10	13	12	17	32	39	38	38
University of Maryland.....	4	14	21	15	21	20	18	24	37	25	33
Pennsylvania State University.....	1	0	4	11	16	20	19	26	36	37	52
Rutgers University.....	15	12	15	18	20	18	21	26	31	25	21
Louisiana State University.....	5	20	16	12	14	16	22	38	15	21	35
Ohio State University.....	15	21	10	10	17	22	27	24	22	26	20
Texas A&M University.....	12	14	22	20	16	15	14	21	23	19	25
University of Nebraska.....	4	4	10	16	21	29	24	25	23	27	18
University of Illinois.....	8	10	13	14	12	16	17	21	29	26	34
University of Alabama.....	3	7	6	7	9	13	19	27	37	26	32
University of Iowa.....	6	7	11	9	17	11	14	25	30	17	38
University of Massachusetts.....	6	5	4	5	12	14	15	24	52	21	18
University of Kentucky.....	7	7	4	3	11	14	14	21	29	25	20
Virginia Polytechnic Institute.....	11	18	12	16	6	14	17	16	21	14	9
University of Arkansas.....	10	16	8	10	5	6	8	9	30	18	28
Purdue University.....	11	5	6	11	10	12	24	22	19	11	13
University of Georgia.....	8	10	18	7	10	12	11	18	10	19	18
University of Virginia.....	11	9	7	5	10	13	13	20	15	14	18
University of Colorado.....	6	19	7	14	18	16	21	19	8	3	3
University of New Mexico.....	10	11	5	9	15	8	13	12	15	23	13
University of Oklahoma.....	3	7	13	7	11	9	16	9	15	17	20
University of South Florida.....	7	5	7	4	6	13	14	18	18	20	15
University of Tennessee.....	10	12	4	5	14	8	13	9	12	16	22
University of Akron.....	14	11	9	17	11	12	5	9	12	11	13
Oregon Health Sciences University.....	6	5	5	6	10	12	16	13	13	21	13
Wayne State University.....	8	16	12	14	9	8	8	10	10	8	12
University of Missouri.....	7	9	8	7	10	8	16	13	16	6	12
Arizona State University.....	12	6	3	6	12	19	12	6	11	7	14
Kansas State University.....	7	7	9	20	11	9	4	7	12	8	9
University of Connecticut.....	3	9	9	2	8	9	13	11	17	13	7
University of Cincinnati.....	9	7	8	7	8	7	10	5	5	16	16
City University of New York, Mt. Sinai.....	5	3	3	4	5	9	13	16	15	9	12
University of Central Florida.....	0	0	4	4	6	9	14	12	14	11	19
Florida State University.....	1	2	9	5	10	8	6	13	9	14	7
Temple University.....	3	14	9	9	11	7	9	6	5	4	6

Appendix table 5-54

(Page 4 of 4)

**U.S. patenting activity of U.S. universities and colleges: 1981–2001**

Institution and type	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Virginia Commonwealth University .....	1	3	6	4	2	4	7	6	18	18	9
University of Medicine and Dentistry of New Jersey .....	2	6	1	4	5	3	7	15	9	5	14
Oregon State University .....	6	9	5	13	6	4	7	8	3	2	8
Clemson University .....	2	10	4	10	8	7	9	8	2	4	7
University of Toledo .....	2	4	7	6	14	7	9	6	5	4	5
University of Hawaii .....	2	5	8	6	7	6	6	6	8	10	4
Indiana University .....	3	6	1	7	6	8	11	12	5	6	2
Washington State University .....	3	3	2	4	4	2	5	5	10	12	13
University of Delaware .....	10	10	5	4	5	5	4	6	2	3	5
University of Kansas .....	4	7	3	2	2	6	3	6	11	5	9
University of Houston .....	4	1	3	5	8	6	4	5	4	10	8
University of Arizona .....	1	1	3	6	4	4	9	8	7	5	3
<b>Private universities</b>											
Massachusetts Institute of Technology .....	101	125	112	99	104	119	102	138	142	113	125
Stanford University .....	57	42	50	62	54	55	64	79	83	103	84
California Institute of Technology .....	36	32	29	46	38	24	46	93	99	103	124
Cornell University .....	40	41	35	39	36	52	50	65	64	49	61
Johns Hopkins University .....	25	20	33	23	28	27	48	79	97	72	80
University of Pennsylvania .....	18	26	34	37	25	45	55	69	59	31	52
Columbia University .....	8	17	17	18	18	33	35	55	55	51	58
Washington University .....	22	18	18	19	21	18	22	41	50	36	37
Duke University .....	6	9	12	29	20	37	21	30	36	33	57
Harvard University .....	9	16	17	16	14	32	28	49	41	26	32
Rockefeller University .....	14	23	23	13	9	8	20	35	34	42	25
New York University .....	8	11	19	16	15	19	23	23	27	26	33
Thomas Jefferson University .....	7	8	9	13	14	15	25	29	26	26	36
Yale University .....	4	12	14	13	16	7	20	34	28	29	29
Princeton University .....	13	4	11	7	12	13	16	24	30	28	39
Northwestern University .....	4	8	8	12	18	10	27	35	24	17	33
Boston University .....	6	22	15	14	14	16	20	19	15	16	18
Baylor University .....	6	9	11	11	7	18	18	27	22	29	15
Emory University .....	10	6	14	5	11	12	12	35	26	20	18
University of Chicago .....	0	0	6	14	16	13	22	22	25	16	27
Carnegie-Mellon University .....	5	10	4	8	10	13	9	26	27	33	12
University of Southern California .....	5	18	13	15	6	15	18	16	13	15	20
Case Western Reserve University .....	1	9	6	8	8	6	9	15	28	18	18
Northeastern University .....	6	11	10	15	16	11	12	11	9	15	6
Vanderbilt University .....	7	4	7	6	9	6	11	16	14	21	20
University of Rochester .....	12	10	11	10	6	3	5	15	7	12	16
Brown University .....	4	5	1	4	6	6	9	18	19	12	19
Yeshiva University .....	0	1	4	3	3	11	6	14	10	17	17
Georgetown University .....	3	5	5	7	6	7	8	11	8	13	8
Tufts University .....	5	7	9	6	3	8	4	11	6	9	12
Rensselaer Polytechnic Institute .....	2	2	7	7	7	12	6	4	5	9	8
Tulane University .....	7	5	6	6	5	7	4	9	2	6	6
Wake Forest University .....	1	0	3	4	1	6	6	6	9	11	12
Dartmouth College .....	1	1	4	4	3	4	2	9	8	11	7
University of Miami .....	1	5	2	5	5	5	14	3	2	3	3
Brigham Young University .....	5	9	13	3	3	2	5	2	2	4	2
<b>Affiliated organizations</b>											
Mayo Foundation .....	4	8	9	4	6	12	17	20	28	18	27
Associated Universities, Inc. ....	7	5	5	14	12	12	13	9	1	0	0
Research Triangle Institute .....	8	4	7	7	7	2	4	6	10	10	8

NOTES: Data include institutions affiliated with academic institutions, such as university and alumni organizations, federally funded research and development centers, foundations, and university associations. Top 100 patenting institutions are determined by the sum of their patents from 1991 through 2001. Institutions are listed in declining order. Data for certain institutions are for the systemwide university and incorporate data from various campuses.

SOURCES: U.S. Patent and Trademark Office, *Technology Assessment and Forecast Report: U.S. Colleges and Universities, 1969–2001* (Washington, DC, 2001); and National Science Foundation, Division of Science Resources Statistics, special tabulations.