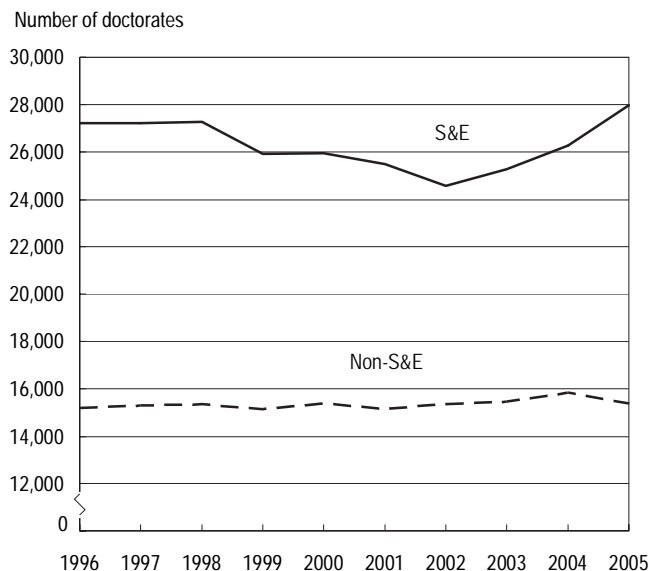


S&E DOCTORATES HIT ALL-TIME HIGH IN 2005

by Susan T. Hill

In 2005, total doctorate awards in science and engineering (S&E) increased for the third year in a row, up to 27,974, surpassing the previous all-time high from 1998 (27,273). The number of S&E doctorate awards increased from 26,272 in 2004 and from 25,274 in 2003. Although there has been a 3-year increase in academic years 2002 through 2005, this follows a 4-year decrease (1998–2002) in S&E doctorate awards. The increase in the number of doctorate awards from 1996 to 2005 was only 2.7% (figure 1).

FIGURE 1. Doctorate awards in S&E and non-S&E fields: 1996–2005



NOTE: See table 1 for the fields of study included in S&E vs. non-S&E.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Several demographic groups (women, non-U.S. citizens, and U.S. citizen Asians and underrepresented minorities) also received record numbers of S&E doctorates in 2005 (table 1). Post-9/11, there is little evidence of a decline in the number of or growth in noncitizens earning S&E doctorates from U.S. institutions. There was a slight drop in 2002, but that was also true for U.S. citizens. For the entire period from 2001 to 2005, S&E doctorates awarded to noncitizens increased by 25% and accounted for virtually all of the overall growth in S&E doctorate awards during the period.

For several S&E fields, the 2005 counts were higher than the previous period of increase in the late 1990s. Fields reaching new highs in 2005 were:

- Biological sciences (6,368)
- Engineering (6,404)
- Mathematics (1,203)
- Computer sciences (1,136)

Psychology and social sciences, in contrast, remained unchanged from 2004. For the broad non-S&E fields, the 2005 total of 15,380 represented a decline from the all-time high of 15,845 in 2004 (table 2).

In 2005, a total of 19,564 doctorates were awarded to women—10,533 of these in science and engineering fields. The number of female S&E doctorate recipients has continued to increase overall, but their share of each field varies considerably by field of study (table 3).



TABLE 1. S&E doctorate awards, by selected characteristics of doctorate recipients: 2001–05

Characteristic of recipient	2001	2002	2003	2004	2005	% change	
						2001–05	2004–05
All doctorates	25,496	24,582	25,274	26,272	27,974	9.7	6.5
Male	16,166	15,369	15,757	16,415	17,405	7.7	6.0
Female	9,286	9,163	9,517	9,856	10,533	13.4	6.9
U.S. citizen	15,049	14,341	14,635	14,741	14,912	-0.9	1.2
White	12,225	11,486	11,612	11,630	11,848	-3.1	1.9
Asian	1,053	1,035	1,008	1,066	1,114	5.8	4.5
Underrepresented racial/ethnic minority ^a	1,282	1,354	1,346	1,393	1,428	11.4	2.5
Non-U.S. citizen	9,213	8,861	9,480	10,154	11,516	25.0	13.4

^aAmerican Indians/Alaska Natives, blacks, and Hispanics.

NOTE: Those of unknown sex, unknown citizenship or unknown/other race/ethnicity are included in total but are not shown separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

TABLE 2. Doctorates awarded, by field of study: 1996–2005

Field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
All fields	42,437	42,535	42,637	41,092	41,361	40,651	39,953	40,740	42,117	43,354
Science and engineering	27,240	27,229	27,273	25,931	25,966	25,496	24,582	25,274	26,272	27,974
Science	20,931	21,115	21,352	20,601	20,643	19,988	19,505	19,995	20,497	21,570
Agricultural sciences	1,118	1,078	1,109	1,065	1,037	975	1,009	1,060	1,045	1,038
Biological sciences	5,724	5,788	5,846	5,581	5,853	5,693	5,690	5,693	5,939	6,368
Computer sciences	920	909	927	856	860	825	807	866	948	1,136
Earth, atmospheric, and ocean sciences	724	804	765	723	694	660	689	683	686	713
Mathematics	1,122	1,123	1,177	1,083	1,050	1,007	919	993	1,076	1,203
Physical sciences	3,826	3,746	3,800	3,562	3,378	3,364	3,185	3,289	3,338	3,647
Astronomy	192	198	206	159	185	186	141	167	165	186
Chemistry	2,149	2,147	2,216	2,132	1,989	1,981	1,921	2,041	1,987	2,127
Physics	1,485	1,401	1,378	1,271	1,204	1,197	1,123	1,081	1,186	1,334
Psychology	3,494	3,557	3,673	3,668	3,616	3,385	3,197	3,273	3,327	3,327
Social sciences	4,003	4,110	4,055	4,063	4,155	4,079	4,009	4,138	4,138	4,138
Engineering	6,309	6,114	5,921	5,330	5,323	5,508	5,077	5,279	5,775	6,404
Aeronautical/astronautical engineering	287	273	241	206	214	203	209	200	201	219
Chemical engineering	798	767	776	674	726	730	705	648	725	875
Civil engineering	698	655	650	584	556	595	627	673	673	757
Electrical engineering	1,741	1,720	1,595	1,478	1,543	1,577	1,393	1,465	1,650	1,852
Industrial/manufacturing engineering	259	246	229	211	176	206	230	214	217	222
Materials/metallurgical engineering	574	582	565	469	451	497	396	474	511	540
Mechanical engineering	1,052	1,022	1,022	855	864	953	827	814	852	978
Other engineering	900	849	843	853	793	747	690	791	946	961
Non-science and engineering	15,197	15,306	15,364	15,161	15,395	15,155	15,371	15,466	15,845	15,380
Education	6,785	6,573	6,569	6,546	6,432	6,332	6,491	6,638	6,633	6,229
Health	1,324	1,421	1,499	1,407	1,591	1,541	1,653	1,633	1,719	1,777
Humanities	4,711	5,035	5,117	5,035	5,213	5,160	5,029	5,018	5,013	4,947
Professional/other/unknown	2,377	2,277	2,179	2,173	2,159	2,122	2,198	2,177	2,480	2,427

NOTE: Categories are grouped differently from questionnaire and summary reports in that linguistics, history of science, American studies, and archaeology are included in social sciences and not in humanities, and public administration is included in social sciences and not in professional fields, according to National Science Foundation taxonomy.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

TABLE 3. Doctorates awarded to women, by field of study: 1996–2005

Field	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Percent	
											1996	2005
All fields	16,955	17,241	17,848	17,481	18,126	17,855	18,117	18,496	19,157	19,564	40.0	45.1
Science and engineering	8,648	8,934	9,348	9,081	9,393	9,286	9,163	9,517	9,856	10,533	31.7	37.7
Science	7,871	8,184	8,575	8,293	8,555	8,356	8,272	8,606	8,835	9,359	37.6	43.4
Agricultural sciences	304	287	328	311	317	339	319	374	399	376	27.2	36.2
Biological sciences	2,415	2,495	2,536	2,394	2,622	2,550	2,545	2,604	2,756	3,105	42.2	48.8
Computer sciences	139	150	159	157	141	155	166	176	199	225	15.1	19.8
Earth, atmospheric, and ocean sciences	152	191	198	185	196	198	211	213	238	243	21.0	34.1
Mathematics	231	263	297	277	259	276	266	264	305	326	20.6	27.1
Physical sciences	839	843	917	825	827	828	847	891	865	972	21.9	26.7
Astronomy	41	37	45	33	40	41	27	40	46	49	21.4	26.3
Chemistry	605	613	695	632	624	627	644	655	636	723	28.2	34.0
Physics	193	193	177	160	163	160	176	196	183	200	13.0	15.0
Psychology	2,329	2,363	2,456	2,449	2,410	2,260	2,132	2,231	2,246	2,264	66.7	68.0
Social sciences	1,462	1,592	1,684	1,695	1,783	1,750	1,786	1,853	1,827	1,848	36.5	44.7
Engineering	777	750	773	788	838	930	891	911	1,021	1,174	12.3	18.3
Aeronautical/astronautical engineering	24	16	15	17	21	28	24	27	24	29	8.4	13.2
Chemical engineering	143	122	140	123	152	180	176	154	173	210	17.9	24.0
Civil engineering	79	80	100	89	88	111	121	126	134	176	11.3	23.2
Electrical engineering	169	150	156	155	195	204	163	181	227	249	9.7	13.4
Industrial/manufacturing engineering	51	40	40	42	35	45	67	55	43	41	19.7	18.5
Materials/metallurgical engineering	84	106	84	88	83	105	80	101	91	120	14.6	22.2
Mechanical engineering	78	88	93	96	96	91	96	88	95	120	7.4	12.3
Other engineering	149	148	145	178	168	166	164	179	234	229	16.6	23.8
Non-science and engineering	8,307	8,307	8,500	8,400	8,733	8,569	8,954	8,979	9,301	9,031	54.7	58.7
Education	4,187	4,121	4,131	4,195	4,174	4,092	4,292	4,389	4,370	4,154	61.7	66.7
Health	860	936	1,005	899	1,066	989	1,125	1,089	1,179	1,209	65.0	68.0
Humanities	2,343	2,381	2,469	2,419	2,593	2,578	2,523	2,518	2,597	2,485	49.7	50.2
Professional/other/unknown	917	869	895	887	900	910	1,014	983	1,155	1,183	38.6	48.7

NOTE: Categories are grouped differently from questionnaire and summary reports in that linguistics, history of science, American studies, and archaeology are included in social sciences and not in humanities, and public administration is included in social sciences and not in professional fields, according to National Science Foundation taxonomy.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

In S&E fields, the concentration of female doctorate recipients in 2005 is highest within psychology (68%), biological sciences (49%), and social sciences (45%) (figure 2).

In the fields where women had the lowest representation there were increases between 1996 and 2005. Female representation (table 3) increased among:

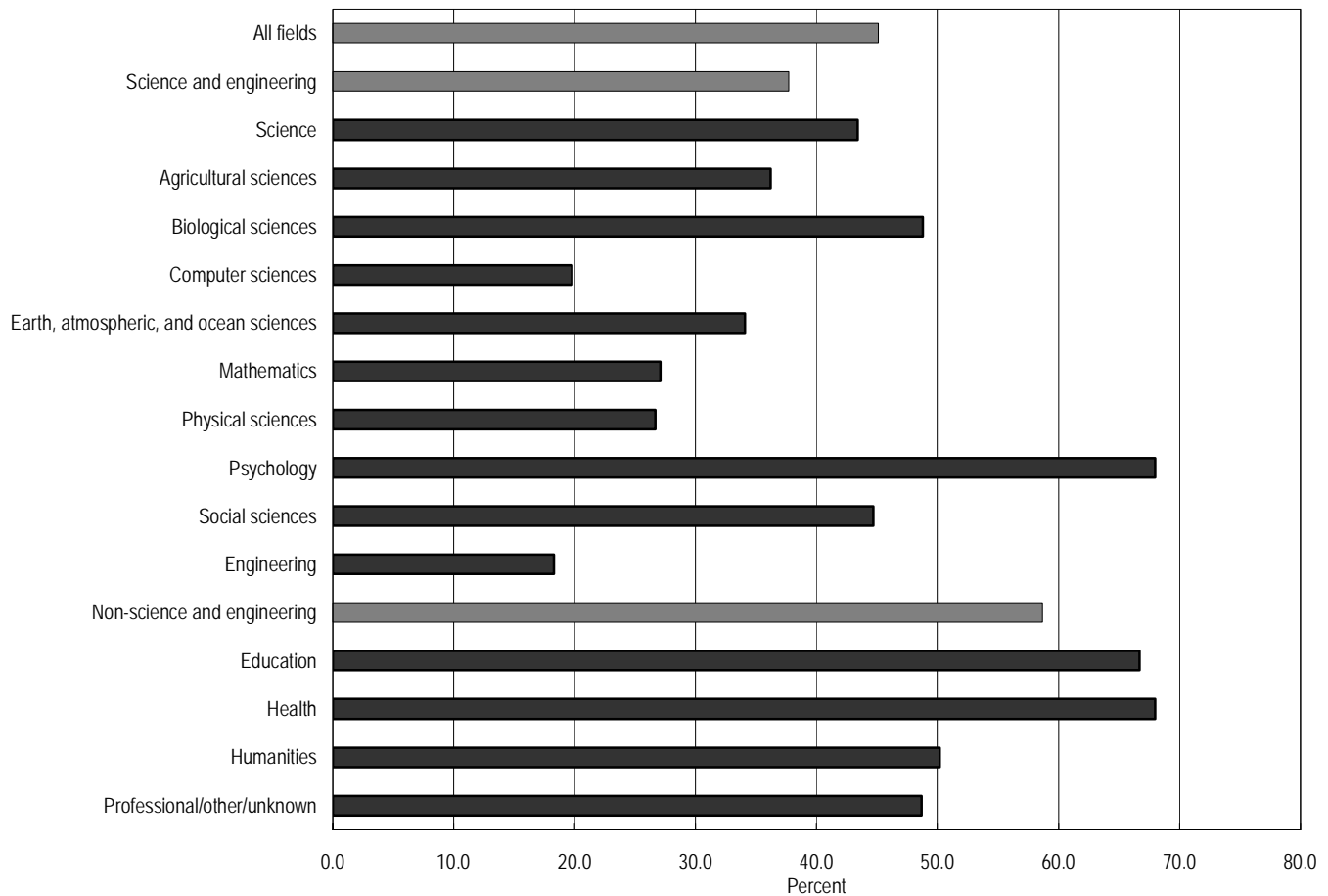
- Engineering PhDs, from 12% to 18%
- Physics PhDs, from 13% to 15%
- Computer science PhDs, from 15% to 20%

Survey Information

The data presented here are from the Survey of Earned Doctorates (SED) for academic year 2005 (July 2004 to June 2005). Each person completing requirements for a research doctorate from a university in the United States (including Puerto Rico) is given the SED; the survey response rate in 2005 was 92% of the 43,354 new doctorate recipients. The field of study information used in this report was obtained for all doctorate recipients in 2005.

This survey is sponsored by six federal agencies: the National Science Foundation, the National Institutes of

FIGURE 2. Female doctorate recipients, by field of study: 2005



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Health, the U.S. Department of Education, the U.S. Department of Agriculture, the National Endowment for the Humanities, and the National Aeronautics and Space Administration. Additional data are available in the interagency report *Doctorate Recipients from U.S. Universities: Summary Report 2005*.

The full set of detailed tables from this survey will be available in the report *Science and Engineering Doctorate Awards: 2005* at <http://www.nsf.gov/statistics/doctorates/>. Individual detailed tables from the

2005 survey may be available in advance of publication of the full report. For further information, contact

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