



## Field Composition of Postdocs Shifts as Numbers Decline in Biological Sciences and in Clinical Medicine

by Caren A. Arbeit and Kelly H. Kang<sup>1</sup>

**T**he total number of postdoctoral appointees (postdocs) in science, engineering, and health (SEH) in U.S. academic institutions held steady at nearly 64,000 in 2015. While the majority of the postdocs still worked in biological sciences and in clinical medicine, the share of postdocs in these two fields has declined over the past five years. From 2010 to 2015, biological sciences' share of postdocs fell from 34.2% to 30.2% while clinical medicine dropped from 26.0% to 24.8%.

The total number of science and engineering (S&E) graduate students in 2015 increased to 618,008, up 2.7% from 2014. Much of this growth stems from the continued rise, now for 10 straight years, in graduate students on temporary visas. Among the U.S. citizens and permanent residents, Hispanic or Latino S&E graduate students showed the largest increase from 2014 to 2015 at 7.6%.

These and other findings presented herein are from the 2015 Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS), cosponsored by the National Center for Science and Engineering Statistics

(NCSES) within the National Science Foundation (NSF) and by the National Institutes of Health (NIH).

### Postdoctoral Appointees in SEH

In 2015, there were 63,861 SEH postdocs at U.S. academic institutions (and their affiliates, such as research centers and hospitals) with SEH graduate programs. The total number increased by only 0.4% (268) from the previous year (table 1).

Between 2010 and 2015, the number of postdocs in biological sciences and in clinical medicine declined while postdocs in most other science fields and in engineering grew. In biological sciences, there was a 13.7% decline in postdocs from 2010 to 2014, followed by a 1.3% decline in 2015 (table 1).<sup>2</sup> In clinical medicine the decline was 2.1% from 2010 to 2014, with a further 2.3% drop in 2015. Declines in biological sciences (-2,422) and health (-553) from 2010 to 2015 were offset by increases in the number of postdocs in neuroscience (1,119); engineering (687); social sciences (468); earth, atmospheric, and ocean sciences (389); and agricultural sciences (335) (figure 1).

The number of SEH postdocs declined at a similar rate among U.S. citizens and permanent residents and among temporary visa holders between 2010 and 2014 (1.7% and 1.6%, respectively) (table 1). However, these rates diverged in 2015 when the number of U.S. citizen and permanent resident SEH postdocs fell 4.5%, while the number of temporary visa holders rose 4.9%. The share of SEH postdocs on temporary visas grew from 52.5% in 2010 to 55.0% in 2015.

Among the U.S. citizens and permanent residents, Hispanics or Latinos and Blacks or African Americans slightly increased their shares of SEH postdoctoral appointments between 2010 and 2015 (from 4.2% and 3.2% to 5.3% and 3.7%, respectively). By contrast, the share of Asian postdocs declined from 19.7% to 17.8% over the same period.

About 40% of the SEH postdocs in 2015 were women. The proportion of female U.S. citizen and permanent resident postdocs increased from 43.9% in 2010 to 46.3% in 2015, while the share of female postdocs on temporary visas remained the same at around 34%.

TABLE 1. Postdoctoral appointees in science, engineering, and health fields in all institutions, by sex, citizenship, ethnicity, race and field: 2010–15

Sex, citizenship, ethnicity, race, and field	2010	2011	2012	2013	2014old <sup>a</sup>	2014new <sup>a</sup>	2015	% change	
								2014new–15	2010–14old
All surveyed fields	63,439	62,639	62,851	61,942	62,379	63,593	63,861	0.4	-1.7
Male	38,869	38,167	38,166	37,585	37,752	38,491	38,566	0.2	-2.9
Female	24,570	24,472	24,685	24,357	24,627	25,102	25,295	0.8	0.2
U.S. citizens and permanent residents <sup>b</sup>	30,155	29,712	29,864	29,546	29,630	30,095	28,726	-4.5	-1.7
Male	16,920	16,556	16,452	16,218	16,165	16,429	15,439	-6.0	-4.5
Female	13,235	13,156	13,412	13,328	13,465	13,666	13,287	-2.8	1.7
Hispanic or Latino	1,276	1,359	1,351	1,490	1,501	1,543	1,526	-1.1	17.6
Not Hispanic or Latino									
American Indian or Alaska Native	97	90	85	121	96	98	85	-13.3	-1.0
Asian	5,944	5,638	5,367	5,440	5,300	5,430	5,114	-5.8	-10.8
Black or African American	980	1,042	1,104	1,132	1,197	1,209	1,061	-12.2	22.1
Native Hawaiian or Other Pacific Islander	94	85	99	77	76	77	82	6.5	-19.1
White	17,256	17,286	17,280	17,348	17,179	17,448	17,239	-1.2	-0.4
More than one race	143	221	186	263	249	256	394	53.9	74.1
Unknown ethnicity and race	4,365	3,991	4,392	3,675	4,032	4,034	3,225	-20.1	-7.6
Temporary visa holders	33,284	32,927	32,987	32,396	32,749	33,498	35,135	4.9	-1.6
Male	21,949	21,611	21,714	21,367	21,587	22,062	23,127	4.8	-1.6
Female	11,335	11,316	11,273	11,029	11,162	11,436	12,008	5.0	-1.5
Science and engineering	44,320	44,121	43,841	43,395	43,476	44,623	45,295	1.5	-1.9
Science	37,351	37,335	36,738	36,289	36,184	37,316	37,639	0.9	-3.1
Agricultural sciences	1,190	1,256	1,290	1,319	1,395	1,402	1,525	8.8	17.2
Biological sciences	21,726	21,107	20,086	19,330	18,749	19,554	19,304	-1.3	-13.7
Computer sciences	763	759	760	765	833	834	888	6.5	9.2
Earth, atmospheric, and ocean sciences	1,740	1,774	1,956	2,032	2,059	2,061	2,129	3.3	18.3
Mathematics and statistics	791	830	902	932	956	959	1,011	5.4	20.9
Multidisciplinary and interdisciplinary studies	785	704	742	891	1,045	1,045	972	-7.0	33.1
Neuroscience	838	1,398	1,525	1,696	1,778	1,878	1,957	4.2	112.2
Physical sciences	7,583	7,490	7,430	7,197	7,089	7,277	7,358	1.1	-6.5
Psychology	1,132	1,124	1,132	1,023	1,062	1,066	1,130	6.0	-6.2
Social sciences	711	774	799	938	1,050	1,051	1,179	12.2	47.7
Other sciences <sup>c</sup>	92	119	116	166	168	189	186	-1.6	82.6
Engineering	6,969	6,786	7,103	7,106	7,292	7,307	7,656	4.8	4.6
Aerospace engineering	212	202	170	202	220	220	217	-1.4	3.8
Biomedical engineering	1,023	1,069	1,161	1,103	1,196	1,198	1,201	0.3	16.9
Chemical engineering	1,077	1,137	1,098	1,230	1,244	1,244	1,283	3.1	15.5
Civil engineering	571	551	590	587	629	629	670	6.5	10.2
Electrical engineering	1,095	1,035	1,152	1,180	1,177	1,179	1,160	-1.6	7.5
Industrial and manufacturing engineering	151	121	127	133	131	131	142	8.4	-13.2
Mechanical engineering	1,021	889	985	1,034	1,055	1,058	1,161	9.7	3.3
Metallurgical/materials engineering	841	860	854	809	776	780	911	16.8	-7.7
Other engineering	978	922	966	828	864	868	911	5.0	-11.7
Health	19,119	18,518	19,010	18,547	18,903	18,970	18,566	-2.1	-1.1
Clinical medicine	16,515	16,165	16,361	15,831	16,164	16,216	15,850	-2.3	-2.1
Other health	2,604	2,353	2,649	2,716	2,739	2,754	2,716	-1.4	5.2

<sup>a</sup> In 2014, the survey frame was updated following a comprehensive frame evaluation study. The study identified potentially eligible but not previously surveyed U.S. academic institutions with master's- or doctorate-granting programs in science, engineering, or health. For information on the impact of the frame update, see <https://www.nsf.gov/statistics/2016/nsf16314/>.

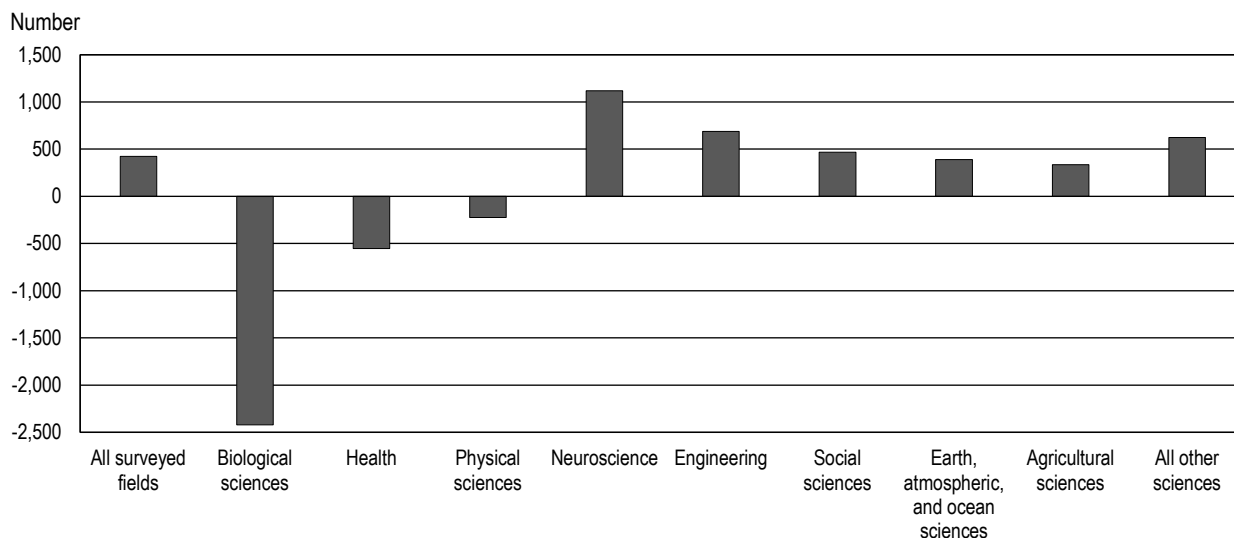
<sup>b</sup> Race and ethnicity data are available for U.S. citizens and permanent residents only.

<sup>c</sup> Includes communication, and family and consumer sciences and human sciences.

NOTE: "Field" refers to the field of the unit that reports postdoctoral appointees.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

FIGURE 1. Change in the number of postdoctoral appointees, by field: 2010–15



NOTE: "Field" refers to the field of the unit that reports postdoctoral appointees.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

## Nonfaculty Researchers in SEH

The total number of other doctorate-holding nonfaculty researchers (NFRs) in SEH grew 9.1% between 2010 and 2014, and another 6.7% in 2015 to 25,292 (table 2).<sup>3</sup> Similar to the SEH postdocs, about one-half of the NFRs were in biological sciences (27.5%) or in clinical medicine (21.7%) in 2015. Engineering fields employed 11.6% of the NFRs, with another 10.7% working in the physical sciences. As with the SEH postdocs, larger proportions of the NFRs overall were men (60.3%) than women (39.7%).

## Graduate Student Enrollment in S&E

SEH graduate students totaled 685,397 in 2015—2.8% more than in 2014—with 618,008 of those students enrolled in S&E fields (table 3). Male enrollment in S&E graduate programs grew slightly faster than female enrollment from the previous year (2.9% compared to 2.4%), and men accounted

for 58.0% of S&E graduate students. The enrollment of U.S. citizen and permanent resident S&E graduate students remained stable in 2015 after declining 4.4% between 2010 and 2014. The number of U.S. citizen and permanent resident women showed a slight increase (0.9%) in 2015, while the number of men showed a slight decline (0.7%). Women constituted 47.1% of U.S. citizen and permanent resident S&E graduate students and 33.8% of temporary visa holders.

Among the U.S. citizens and permanent residents, the number of Hispanic or Latino S&E graduate students grew 7.6% in 2015. Asian enrollment also grew in 2015, up 3.0% over the previous year. Between 2010 and 2015 both Hispanics or Latinos and Asians increased their share of S&E graduate student enrollment (from 7.3% to 9.9% and 8.2% to 9.1%, respectively).

In 2015, the number of S&E graduate students on temporary visas rose by

7.3%, the third consecutive increase of more than 7% per year. This group's share of S&E graduate enrollment grew to 38.1% in 2015, up from 29.9% in 2010.

In contrast to the 12.2% increase in the number of social science postdocs in 2015, the number of social science graduate students declined by 2.9% from the previous year (table 4), continuing the downward trend in which the number of these students fell by 4.4% between 2010 and 2014. The number of graduate students in earth, atmospheric, and ocean sciences also decreased by 1.7% in 2014–15.

Continuing growth can be seen in the number of graduate students in computer sciences (12.6%), mechanical engineering (6.5%), and agricultural sciences (6.3%) in 2015. The electrical engineering graduate enrollment increased by 2.0% from 2014, following two consecutive years of relatively large annual increases (7.6% in 2012–13 and 9.9% in 2013–14).

TABLE 2. Doctorate-holding nonfaculty researchers in science, engineering, and health fields in all institutions, by sex and field: 2010–15

Field and sex	2010	2011	2012	2013	2014old <sup>a</sup>	2014new <sup>a</sup>	2015	% change	
								2014new–15	2010–14old
All surveyed fields	21,345	21,498	21,908	22,465	23,290	23,706	25,292	6.7	9.1
Male	12,927	13,105	13,250	13,617	14,099	14,314	15,249	6.5	9.1
Female	8,418	8,393	8,658	8,848	9,191	9,392	10,043	6.9	9.2
Science and engineering	15,157	15,675	15,761	16,426	17,027	17,419	18,596	6.8	12.3
Male	9,790	10,140	10,190	10,504	10,925	11,126	11,865	6.6	11.6
Female	5,367	5,535	5,571	5,922	6,102	6,293	6,731	7.0	13.7
Science	12,751	13,363	13,264	13,932	14,283	14,674	15,667	6.8	12.0
Male	7,819	8,245	8,167	8,534	8,777	8,977	9,568	6.6	12.3
Female	4,932	5,118	5,097	5,398	5,506	5,697	6,099	7.1	11.6
Agricultural sciences	572	581	567	550	609	616	747	21.3	6.5
Biological sciences	6,271	6,224	6,249	6,527	6,492	6,841	6,948	1.6	3.5
Computer sciences	318	326	349	459	450	450	459	2.0	41.5
Earth, atmospheric, and ocean sciences	1,362	1,625	1,513	1,518	1,499	1,500	1,754	16.9	10.1
Mathematics and statistics	173	174	209	224	221	221	235	6.3	27.7
Multidisciplinary and interdisciplinary studies	467	509	497	538	658	661	630	-4.7	40.9
Neurobiology and neuroscience	191	378	356	417	650	666	718	7.8	240.3
Physical sciences	2,251	2,322	2,296	2,312	2,433	2,445	2,701	10.5	8.1
Psychology	467	434	431	457	411	411	472	14.8	-12.0
Social sciences	617	672	740	853	769	770	898	16.6	24.6
Other sciences <sup>b</sup>	62	118	57	77	91	93	105	12.9	46.8
Engineering	2,406	2,312	2,497	2,494	2,744	2,745	2,929	6.7	14.0
Male	1,971	1,895	2,023	1,970	2,148	2,149	2,297	6.9	9.0
Female	435	417	474	524	596	596	632	6.0	37.0
Health	6,188	5,823	6,147	6,039	6,263	6,287	6,696	6.5	1.2
Male	3,137	2,965	3,060	3,113	3,174	3,188	3,384	6.1	1.2
Female	3,051	2,858	3,087	2,926	3,089	3,099	3,312	6.9	1.2
Clinical medicine	5,011	4,830	5,074	4,985	5,084	5,098	5,494	7.8	1.5
Other health	1,177	993	1,073	1,054	1,179	1,189	1,202	1.1	0.2

<sup>a</sup> In 2014, the survey frame was updated following a comprehensive frame evaluation study. The study identified potentially eligible but not previously surveyed U.S. academic institutions with master's- or doctorate-granting programs in science, engineering, or health. For information on the impact of the frame update, see <https://www.nsf.gov/statistics/2016/nsf16314/>.

<sup>b</sup> Includes communication, and family and consumer sciences and human sciences.

NOTE: "Field" refers to the field of the unit that reports nonfaculty researchers.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

## Data Sources and Limitations

Conducted since 1966, the GSS is an annual survey of all academic institutions in the United States that grant research-based master's or doctoral degrees in SEH fields. The 2015 GSS collected data from 15,202 organizational units (departments, programs, affiliated research centers, and health care facilities) at 711 eligible institu-

tions and their affiliates in the United States, Puerto Rico, and Guam. The unit response rate was 99.5%. An overview of the survey is available at <https://www.nsf.gov/statistics/srvygrad-postdoc/>.

GSS health fields are collected under the advisement of NIH. These GSS fields are about one-third of all health fields in the U.S. Department of Educa-

tion's Classification of Instructional Programs (CIP) taxonomy.<sup>4</sup> NIH information on trends seen within these selected health fields can be found at <https://report.nih.gov/nihdatabook/>.

In 2014, the survey frame was updated following a comprehensive frame evaluation study. A total of 151 newly eligible institutions were added, and two private for-profit institutions

TABLE 3. Graduate enrollment in all institutions by science and engineering enrollment status, sex, citizenship, race, and ethnicity: 2010–15

Characteristic	2010	2011	2012	2013	2014old <sup>a</sup>	2014new <sup>a</sup>	2015	% change	
								2014new–15	2010–14old
All surveyed fields	632,652	626,820	627,243	633,010	650,738	666,586	685,397	2.8	2.9
Science and engineering	556,532	560,941	561,418	570,300	587,161	601,883	618,008	2.7	5.5
Full-time enrollment	409,107	411,168	414,384	424,508	440,523	447,096	459,405	2.8	7.7
Part-time enrollment	147,425	149,773	147,034	145,792	146,638	154,787	158,603	2.5	-0.5
Male	316,051	318,209	318,870	324,913	338,940	348,390	358,423	2.9	7.2
Female	240,481	242,732	242,548	245,387	248,221	253,493	259,585	2.4	3.2
U.S. citizens and permanent residents <sup>b</sup>	390,403	392,160	385,343	381,225	373,378	382,512	382,634	*	-4.4
Full-time enrollment	263,871	262,043	258,477	256,211	251,858	253,886	253,503	-0.2	-4.6
Part-time enrollment	126,532	130,117	126,866	125,014	121,520	128,626	129,131	0.4	-4.0
Male	207,408	208,400	204,836	202,271	198,397	204,105	202,596	-0.7	-4.3
Female	182,995	183,760	180,507	178,954	174,981	178,407	180,038	0.9	-4.4
Hispanic or Latino	28,609	30,808	31,406	32,819	33,146	35,132	37,807	7.6	15.9
Not Hispanic or Latino									
American Indian or Alaska Native	2,500	2,392	2,188	2,198	2,048	2,112	2,012	-4.7	-18.1
Asian	32,185	33,147	32,700	32,917	32,981	33,745	34,762	3.0	2.5
Black or African American	31,094	32,197	31,338	30,911	29,714	30,482	30,788	1.0	-4.4
Native Hawaiian or Other Pacific Islander	1,088	1,008	920	882	876	902	935	3.7	-19.5
White	255,256	256,096	250,783	246,518	240,295	245,103	241,649	-1.4	-5.9
More than one race	4,989	6,103	7,578	8,015	9,136	9,335	10,030	7.4	83.1
Unknown race and ethnicity	34,682	30,409	28,430	26,965	25,182	25,701	24,651	-4.1	-27.4
Temporary visa holders	166,129	168,781	176,075	189,075	213,783	219,371	235,374	7.3	28.7
Full-time enrollment	145,236	149,125	155,907	168,297	188,665	193,210	205,902	6.6	29.9
Part-time enrollment	20,893	19,656	20,168	20,778	25,118	26,161	29,472	12.7	20.2
Male	108,643	109,809	114,034	122,642	140,543	144,285	155,827	8.0	29.4
Female	57,486	58,972	62,041	66,433	73,240	75,086	79,547	5.9	27.4

\* = < 0.5%

<sup>a</sup> In 2014, the survey frame was updated following a comprehensive frame evaluation study. The study identified potentially eligible but not previously surveyed U.S. academic institutions with master's- or doctorate-granting programs in science, engineering, or health. For information on the impact of the frame update, see <https://www.nsf.gov/statistics/2016/nsf16314/>.

<sup>b</sup> Race and ethnicity data are available for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

offering mostly practitioner-based graduate degrees were determined to be ineligible. This frame update added a total of 14,722 SEH graduate students, an increase of 2.5%; 1,214 SEH postdocs, an increase of 1.9%; and 416 SEH NFRs, an increase of 1.8%, over the previous frame. Due to the survey frame update, data comparisons across years should be made with caution. This is especially true for counts; however, proportions or shares are typically robust enough to allow

for such comparisons. In this report, the data comparisons between 2014 and earlier years use the “2014old” data, and those between 2014 and 2015 use the “2014new” data. The effect of the frame update can be evaluated using the “2014old” and “2014new” data. For more information on the survey frame update, see the special report *Assessing the Impact of Frame Changes on Trend Data from the Survey of Graduate Students and Postdoctorates in Science and Engineering*.<sup>5</sup>

In 2011, the GSS field taxonomy was updated to conform to the 2010 CIP. The impact on overall GSS counts as a result of this change was minimal as described in appendix A, “Technical Notes” in *Graduate Students and Postdoctorates in Science and Engineering: Fall 2011*.<sup>6</sup>

Data tables from the 2015 GSS are available at <https://www.nsf.gov/statistics/srvygradpostdoc/>. For more information, contact NCSES author Kelly H. Kang.

TABLE 4. Graduate enrollment in science, engineering, and health fields in all institutions, by field: 2010–15

Characteristic	2010	2011	2012	2013	2014old <sup>a</sup>	2014new <sup>a</sup>	2015	% change	
								2014new–15	2010–14old
All surveyed fields	632,652	626,820	627,243	633,010	650,738	666,586	685,397	2.8	2.9
Science and engineering	556,532	560,941	561,418	570,300	587,161	601,883	618,008	2.7	5.5
Science	407,291	414,440	413,033	417,251	425,148	437,395	448,654	2.6	4.4
Agricultural sciences	15,656	16,129	16,234	16,429	16,947	17,505	18,610	6.3	8.2
Biological sciences	74,928	75,423	76,447	76,649	76,029	78,490	80,096	2.0	1.5
Computer sciences	51,546	51,234	51,789	56,339	68,766	76,546	86,192	12.6	33.4
Earth, atmospheric, and ocean sciences	15,655	15,820	16,069	15,816	15,423	15,710	15,447	-1.7	-1.5
Mathematics and statistics	23,136	23,801	24,575	24,804	25,502	25,874	26,444	2.2	10.2
Physical sciences	38,973	39,694	39,928	40,019	40,196	40,332	40,386	0.1	3.1
Psychology <sup>d</sup>	53,419	54,486	54,117	54,102	50,938	48,833	49,740	1.9	-4.6
Social sciences	109,220	111,661	108,169	107,278	104,445	105,742	102,706	-2.9	-4.4
Other sciences <sup>c</sup>	24,758	26,192	25,705	25,815	26,902	28,363	29,033	2.4	8.7
Engineering	149,241	146,501	148,385	153,049	162,013	164,488	169,354	3.0	8.6
Aerospace engineering	5,540	5,691	5,069	5,181	5,116	5,116	5,345	4.5	-7.7
Architecture	6,795	3,111	2,363	2,176	1,812	1,817	1,565	-13.9	-73.3
Biomedical engineering	8,497	9,175	9,157	9,198	9,510	9,510	9,761	2.6	11.9
Chemical engineering	8,668	8,828	9,222	9,698	9,853	9,870	10,008	1.4	13.7
Civil engineering	19,559	19,596	19,922	20,110	20,660	20,789	20,978	0.9	5.6
Electrical engineering	41,336	41,580	42,347	45,562	50,051	51,909	52,940	2.0	21.1
Industrial and manufacturing engineering	15,205	14,494	14,469	14,363	14,659	14,845	16,284	9.7	-3.6
Mechanical engineering	22,509	21,883	23,088	24,087	25,508	25,651	27,314	6.5	13.3
Metallurgical/materials engineering	6,274	6,649	6,985	7,144	7,473	7,518	7,741	3.0	19.1
Other engineering	14,858	15,494	15,763	15,530	17,371	17,463	17,418	-0.3	16.9
Health <sup>b</sup>	76,120	65,879	65,825	62,710	63,577	64,703	67,389	4.2	-16.5
Clinical medicine	25,699	26,634	26,798	26,362	26,914	27,048	28,606	5.8	4.7
Other health	50,421	39,245	39,027	36,348	36,663	37,655	38,783	3.0	-27.3

<sup>a</sup> In 2014, the survey frame was updated following a comprehensive frame evaluation study. The study identified potentially eligible but not previously surveyed U.S. academic institutions with master's- or doctorate-granting programs in science, engineering, or health. For information on the impact of the frame update, see <https://www.nsf.gov/statistics/2016/nsf16314/>.

<sup>b</sup> More rigorous follow-up was done in recent years with institutions regarding the exclusion of practitioner-oriented graduate degree programs in psychology and in other health (a subfield of health). This change may affect interpretation of trends in these fields.

<sup>c</sup> Includes communication, family and consumer sciences and human sciences, neuroscience, and multidisciplinary and interdisciplinary studies.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

## Notes

1. Kelly H. Kang, Human Resources Statistics Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230 (kkang@nsf.gov; 703-292-7796). Caren A. Arbeit, RTI International, 3040 Cornwallis Road, P.O. Box 12194, Research Triangle Park, NC 27709-2194.

2. Due to the survey frame update in 2014, data comparisons across years should be made with caution. In this report, data comparisons between 2014 and earlier years use the “2014old” data, and those between 2014 and 2015 use the “2014new” data. See “Data Sources and Limitations” for more information.

3. For more information on the NFR data, see Einaudi P, Heuer R, Green P, Kang KH. 2015. *Examining the Reporting of Nonfaculty Doctorate Researchers in the Survey of Graduate Students and Postdoctorates in Science and Engineering*. Working Paper NCSES 15-201. Arlington, VA: National Science Foundation, National Center for Science and Engineering Statistics. Available at <https://www.nsf.gov/statistics/2015/ncses15201/>.

4. The CIP provides a taxonomic scheme that supports the consistent reporting of fields of study and program completions activity. For more information see <http://nces.ed.gov/ipeds/cipcode/>.

5. Arbeit CA, Einaudi P, Green P, Kang KH. 2016. *Assessing the Impact of Frame Changes on Trend Data from the Survey of Graduate Students and Postdoctorates in Science and Engineering*. Special Report NSF 16-314. Arlington, VA: National Science Foundation, National Center for Science and Engineering Statistics. Available at <https://www.nsf.gov/statistics/gradpostdoc/>.

6. National Science Foundation, National Center for Science and Engineering Statistics. 2013. *Graduate Students and Postdoctorates in Science and Engineering: Fall 2011*. Detailed Statistical Tables NSF 13-331. Arlington, VA. Available at <https://www.nsf.gov/statistics/nsf13331/>.

RETURN THIS COVER SHEET TO ROOM P35 IF YOU  
DO NOT WISH TO RECEIVE THIS MATERIAL  OR  
IF CHANGE OF ADDRESS IS NEEDED  INDICATE  
CHANGE INCLUDING ZIP CODE ON THE LABEL (DO  
NOT REMOVE LABEL).

**National Science Foundation**  
ARLINGTON, VA 22230  
OFFICIAL BUSINESS

NSF 17-309