

INFOBRIEF

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DIVERSITY IN THE FEDERAL SCIENCE AND ENGINEERING WORKFORCE

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Women, blacks, Hispanics, American Indians, and persons with disabilities are underrepresented in the federal science and engineering (S&E) workforce compared with their proportions of the U.S. population.² The federal government employed 235,000 scientists and engineers in the United States in 2009.³ This InfoBrief addresses gender, racial/ethnic, and disability characteristics of federal scientists and engineers,

including breakouts by agency, occupation, and level (Senior Executive Service [SES] or non-SES).

Over at least the past decade, the federal S&E workforce has become more diverse, with increasing numbers and percentages of women and minorities. Women's share of the federal S&E workforce rose from 21% in 2000 to 27% in 2009 (table 1). The share of minori-

TABLE 1. Federal scientists and engineers, by sex and race/ethnicity: 2000–09
(Percent)

Year	All federal scientists and engineers (number)	Sex		Race/ethnicity					
		Female	Male	Asian/Pacific			American Indian/		
				White	Islander	Black	Hispanic	Alaska Native	Unknown
2000	187,396	21.2	78.8	82.0	7.7	5.8	3.7	0.9	0.1
2001	193,448	22.0	78.0	81.5	7.8	5.9	3.7	0.9	0.1
2002	206,182	22.9	77.1	80.8	8.1	6.2	3.9	0.9	0.1
2003 ^a	206,620	23.9	76.1	80.5	8.3	6.1	3.9	0.9	0.2
2004 ^a	209,994	24.5	75.5	80.2	8.4	6.3	4.0	0.9	0.1
2005 ^a	209,747	24.9	75.1	79.8	8.6	6.4	4.2	0.9	0.1
2006	215,929	25.7	74.3	79.3	8.8	6.8	4.1	0.9	0.1
2007	219,383	26.2	73.8	78.7	8.8	7.2	4.3	0.9	0.1
2008	223,189	26.8	73.2	78.2	9.1	7.5	4.3	0.9	0.1
2009	235,110	27.2	72.8	77.7	9.1	7.8	4.4	0.9	0.1

^a Data for 2003 to 2005 were obtained from two sources—the Defense Manpower Data Center for Department of Defense agencies and from the Central Personnel Data File (CPDF) of the Office of Personnel Management—and may not be strictly comparable to data for other years. Total includes unknown sex not shown separately.

NOTE: Percentages may not add to 100% due to rounding.

SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.



Information and data from the Division of Science Resources Statistics are available on the web at <http://www.nsf.gov/statistics/>. To request a printed copy of this report go to <http://www.nsf.gov/publications/orderpub.jsp> or call (703) 292-PUBS (7827). For NSF's Telephonic Device for the Deaf, dial toll-free (800) 281-8749 or (703) 292-5090.

ties (Asians, blacks, Hispanics, and American Indians)⁴ rose from 18% in 2000 to 22% in 2009, with Asians at 9%; blacks, 8%; Hispanics, 4%; and American Indians, 1%. In 2009, minority women accounted for 8%, and persons with disabilities accounted for 5% of federal scientists and engineers (table 2).

Occupation

Men and women, racial/ethnic groups, and persons with and without disabilities differ in their distributions across S&E occupations within the federal government. A smaller proportion of women than of men are engineers, and a larger proportion are social scientists (table 2). Asians are more likely to be engineers and less likely to be social scientists than other racial/ethnic groups. Blacks are more likely to be computer and mathematical scientists and less likely to be life scientists and engineers than other racial/ethnic groups. The occupational distributions for scientists and engineers

with and without disabilities are more similar than those for men and women and for different racial/ethnic groups. However, a higher proportion of persons with disabilities than of those without disabilities are computer and mathematical scientists, and a lower proportion are engineers.

Agency

The federal agencies with the largest proportions of scientists and engineers are the National Aeronautics and Space Administration (NASA), Nuclear Regulatory Commission (NRC), Environmental Protection Agency (EPA), National Science Foundation (NSF), and Department of Energy (DOE).⁵ Differences in diversity within specific federal agencies are related to differences in diversity of occupations.

The top five federal agencies with the highest proportions of female scientists and engineers (between 41%

TABLE 2. Federal scientists and engineers, by occupation, sex, race/ethnicity and disability status: 2009

Sex, race/ethnicity, and disability status	All scientists and engineers	Scientists					Engineers
		All scientists	Computer and mathematical scientists	Life scientists	Physical scientists	Social scientists	
Both sexes	235,110	142,243	49,650	39,534	24,339	28,720	92,867
White	182,687	110,906	34,973	32,454	20,620	22,859	71,781
Asian/Pacific Islander	21,509	11,052	5,198	3,005	1,824	1,025	10,457
Black	18,229	13,032	7,035	1,764	1,013	3,220	5,197
Hispanic	10,258	5,530	1,953	1,660	690	1,227	4,728
American Indian/Alaska Native	2,080	1,437	439	549	142	307	643
Unknown	347	286	52	102	50	82	61
Female	64,107	50,325	16,223	14,512	6,427	13,163	13,782
White	45,937	36,442	10,031	11,538	5,068	9,805	9,495
Asian/Pacific Islander	6,240	4,530	2,085	1,311	575	559	1,710
Black	8,172	6,660	3,343	841	467	2,009	1,512
Hispanic	2,974	2,040	601	602	241	596	934
American Indian/Alaska Native	658	535	145	168	55	167	123
Unknown	126	118	18	52	21	27	8
Male	171,003	91,918	33,427	25,022	17,912	15,557	79,085
White	136,750	74,464	24,942	20,916	15,552	13,054	62,286
Asian/Pacific Islander	15,269	6,522	3,113	1,694	1,249	466	8,747
Black	10,057	6,372	3,692	923	546	1,211	3,685
Hispanic	7,284	3,490	1,352	1,058	449	631	3,794
American Indian/Alaska Native	1,422	902	294	381	87	140	520
Unknown	221	168	34	50	29	55	53
Disability status							
No disability	223,713	134,584	46,348	37,896	23,302	27,038	89,129
With disability	11,397	7,659	3,302	1,638	1,037	1,682	3,738

SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.

and 47%) were the Department of Education (ED), Department of Justice (DOJ), Department of Health and Human Services (HHS), Social Security Administration (SSA), and Department of Veterans Affairs (VA) (table 3). Conversely, the agencies with the lowest proportion of female scientists and engineers (about

one in five) were the Department of Defense (DOD), NRC, Department of Transportation (DOT), DOE, and NASA. More than half of scientists and engineers employed in these agencies are engineers (NSF/SRS 2009b), an occupation with a relatively small proportion of women.

TABLE 3. Federal scientists and engineers, by agency, sex, and race/ethnicity: 2009

Sex and agency	All racial/ethnic groups	White	Asian/Pacific Islander	Black	Hispanic	American Indian/ Alaska Native	Unknown
Both sexes, all agencies	235,110	182,687	21,509	18,229	10,258	2,080	347
Female, all agencies	64,107	45,937	6,240	8,172	2,974	658	126
Department of Agriculture	6,128	5,077	300	370	254	104	23
Department of Commerce	3,505	2,517	392	452	125	13	6
Department of Defense	20,080	14,355	2,035	2,611	942	133	4
Department of Education	169	110	24	32	3	0	0
Department of Energy	1,071	765	86	126	75	19	0
Department of Health and Human Services	5,652	3,390	1,348	641	155	118	0
Department of Homeland Security	1,509	1,070	114	175	127	10	13
Department of Housing and Urban Development	97	49	17	28	3	0	0
Department of the Interior	4,409	3,860	152	118	160	119	0
Department of Justice	3,032	2,094	140	568	206	21	3
Department of Transportation	1,307	827	165	210	89	16	0
Department of the Treasury	1,522	792	214	456	50	8	2
Department of Veterans Affairs	4,356	3,300	258	585	180	32	1
Environmental Protection Agency	4,011	2,925	307	474	227	30	48
General Services Administration	185	103	31	44	5	2	0
National Aeronautics and Space Administration	2,554	1,921	199	267	149	18	0
National Science Foundation	221	183	17	14	7	0	0
Nuclear Regulatory Commission	488	295	42	85	64	2	0
Social Security Administration	1,020	607	127	252	30	4	0
All other agencies	2,791	1,697	272	664	123	9	26
Male, all agencies	171,003	136,750	15,269	10,057	7,284	1,422	221
Department of Agriculture	13,976	11,932	592	622	578	213	39
Department of Commerce	8,264	6,976	644	404	198	27	15
Department of Defense	82,115	65,978	7,835	4,449	3,417	415	21
Department of Education	190	138	24	20	6	2	0
Department of Energy	3,746	3,042	326	157	180	41	0
Department of Health and Human Services	6,905	4,598	1,580	420	170	137	0
Department of Homeland Security	3,310	2,403	284	243	325	13	42
Department of Housing and Urban Development	171	104	28	23	15	1	0
Department of the Interior	10,263	9,153	258	201	344	307	0
Department of Justice	3,618	2,799	214	346	229	25	5
Department of Transportation	5,179	3,804	635	394	304	42	0
Department of the Treasury	2,799	1,960	342	372	110	15	0
Department of Veterans Affairs	6,244	4,877	428	618	264	56	1
Environmental Protection Agency	5,907	4,787	422	379	242	30	47
General Services Administration	599	418	90	60	24	7	0
National Aeronautics and Space Administration	8,940	7,156	721	499	514	50	0
National Science Foundation	329	278	32	6	12	1	0
Nuclear Regulatory Commission	1,975	1,490	237	124	114	10	0
Social Security Administration	1,389	1,017	135	191	39	7	0
All other agencies	5,084	3,840	442	529	199	23	51

SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.

The top five agencies with the highest proportions of Asian scientists and engineers (and, for the most part, Asian female scientists and engineers) were HHS, Department of Housing and Urban Development (HUD), General Services Administration, ED, and Department of the Treasury (Treasury) (tables 3 and 4). This proportion ranges from 13% to 23%. The agencies with the largest proportions of black scientists and engineers (ranging from 14% to 19%) are Treasury, HUD, SSA, ED, and DOJ; in addition, these agencies have relatively high proportions of black female scientists and engineers. The proportions of Hispanic scientists and engineers are highest (between 6% and 9%) in the Department of Homeland Security (DHS), NRC, HUD, DOJ, and DOT; DOJ, DHS, and NRC are also the agencies with the highest proportions of Hispanic female scientists and engineers. Agencies with the lowest proportions of minority scientists and engineers (about 11% to 21%) were the Department of the Interior, Department of Agriculture, NSF, Department of Commerce, NASA, and DOE. Minorities are often a larger share of the S&E workforce in agencies with relatively more computer scientists and social scientists and, in the case of Asians, with more engineers.

As is the case with minorities, persons with disabilities' share of the S&E workforce within agencies reflects to some degree the prevalence of computer scientists within those agencies. Although the proportion of federal scientists and engineers with disabilities is low across the federal government, the agencies with the highest proportions are the VA, NSF, and Treasury (9%, 7%, and 7%, respectively) (figure 1).

Senior Executive Service

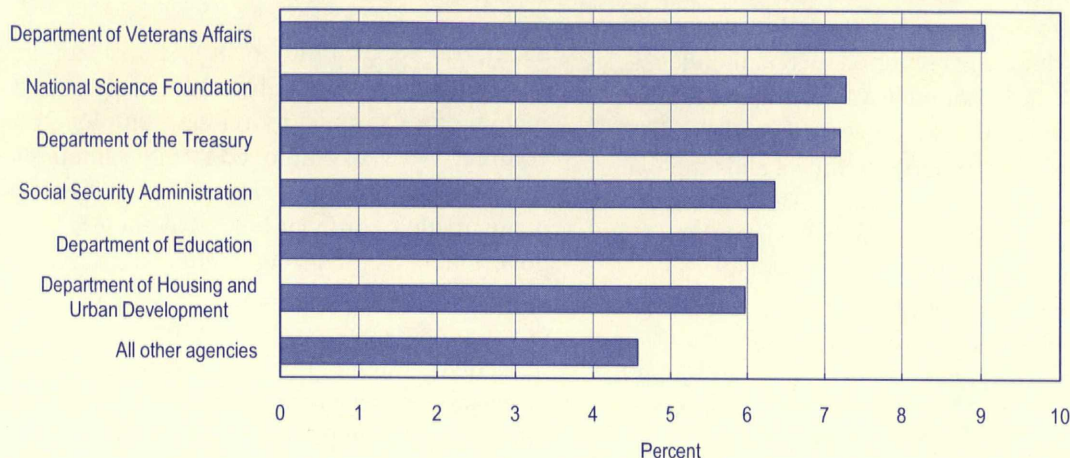
SES includes senior managerial, supervisory, and policy positions in the executive branch of the federal government. The proportion of scientists and engineers who are in the SES is small (1%) and mostly white (88%), male (80%), and without disabilities (96%) (table 5). Men are a larger percentage of SES than of non-SES S&E occupations; women, minorities, and minority women are all smaller percentages of SES than of non-SES S&E occupations. Persons with disabilities are similar percentages of both categories. Female and minority scientists and engineers in the federal government are younger, on average, than their male and white counterparts (NSF/SRS 2009b).

TABLE 4. Federal scientists and engineers, by agency and race/ethnicity: 2009

Agency	All racial/ethnic groups	White	Asian/Pacific Islander	Black	Hispanic	American Indian/Alaska Native	Unknown
All agencies	235,110	182,687	21,509	18,229	10,258	2,080	347
Department of Agriculture	20,104	17,009	892	992	832	317	62
Department of Commerce	11,769	9,493	1,036	856	323	40	21
Department of Defense	102,195	80,333	9,870	7,060	4,359	548	25
Department of Education	359	248	48	52	9	2	0
Department of Energy	4,817	3,807	412	283	255	60	0
Department of Health and Human Services	12,557	7,988	2,928	1,061	325	255	0
Department of Homeland Security	4,819	3,473	398	418	452	23	55
Department of Housing and Urban Development	268	153	45	51	18	1	0
Department of the Interior	14,672	13,013	410	319	504	426	0
Department of Justice	6,650	4,893	354	914	435	46	8
Department of Transportation	6,486	4,631	800	604	393	58	0
Department of the Treasury	4,321	2,752	556	828	160	23	2
Department of Veterans Affairs	10,600	8,177	686	1,203	444	88	2
Environmental Protection Agency	9,918	7,712	729	853	469	60	95
General Services Administration	784	521	121	104	29	9	0
National Aeronautics and Space Administration	11,494	9,077	920	766	663	68	0
National Science Foundation	550	461	49	20	19	1	0
Nuclear Regulatory Commission	2,463	1,785	279	209	178	12	0
Social Security Administration	2,409	1,624	262	443	69	11	0
All other agencies	7,875	5,537	714	1,193	322	32	77

SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.

FIGURE 1. Proportion of scientists and engineers in the federal government with disabilities, by agency: 2009



SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.

TABLE 5. Federal scientists and engineers, by SES status, sex, race/ethnicity, and disability status: 2009

Sex, race/ethnicity, and disability status	All scientists and engineers	SES	Non-SES
Both sexes	235,110	1,483	233,627
White	182,687	1,303	181,384
Asian/Pacific Islander	21,509	57	21,452
Black	18,229	63	18,166
Hispanic	10,258	40	10,218
American Indian/Alaska Native	2,080	9	2,071
Unknown	347	11	336
No disability	223,713	1,426	222,287
With disability	11,397	57	11,340
Female	64,107	292	63,815
White	45,937	244	45,693
Asian/Pacific Islander	6,240	19	6,221
Black	8,172	14	8,158
Hispanic	2,974	9	2,965
American Indian/Alaska Native	658	3	655
Unknown	126	3	123
No disability	61,525	286	61,239
With disability	2,582	6	2,576
Male	171,003	1,191	169,812
White	136,750	1,059	135,691
Asian/Pacific Islander	15,269	38	15,231
Black	10,057	49	10,008
Hispanic	7,284	31	7,253
American Indian/Alaska Native	1,422	6	1,416
Unknown	221	8	213
No disability	162,188	1,140	161,048
With disability	8,815	51	8,764

SES = Senior Executive Service.

SOURCE: National Science Foundation/Division of Science Resources Statistics, tabulations from data provided by the Office of Personnel Management.

Data Sources and Limitations

This report presents data on the demographic and employment characteristics of scientists and engineers who hold at least a bachelor's degree and who were employed by the U.S. government during the years 2000 through 2009. Federal white-collar employees were classified as scientists and engineers by examining the occupation definitions of federal occupational groups and series and determining whether those descriptions fit within the NSF taxonomy for S&E occupations. General job series rather than individual job descriptions were examined and categorized; employees within these series or groups are not necessarily working as scientists and engineers or doing S&E work. Conversely, there are some occupations that have not been classified as S&E occupations. For example, patent examiners have not been included in S&E occupations, even though some of the employees within this occupation are trained as scientists and engineers.

Data for this report were obtained from the Office of Personnel Management (OPM). In 2006 OPM effected changes to the way it collects data on race/ethnicity. The changes (1) allow individuals to report more than one race and (2) make Native Hawaiian/Other Pacific Islander and Asian separate categories. To keep data consistent over time, OPM aggregated 2006–08 data in this report according to the previous race/ethnic-

ity categories. Thus, Asian includes Native Hawaiian/Other Pacific Islander, and non-Hispanic individuals who reported two or more races are included in the largest of the non-white races reported by that individual. OPM's database does not include information for the following federal civilian employees (thus, these data are excluded from this report): members and employees of Congress; Architect of the Capitol; Botanic Garden; Library of Congress; Government Accountability Office; Congressional Budget Office; John C. Stennis Center for Public Service Training and Development; Office of Compliance; U.S. Court of Appeals for Veterans Claims; Commission on Security and Cooperation in Europe; members and employees of the judicial branch; White House Office; Office of the Vice President; Office of Policy Development; Board of Governors of the Federal Reserve System; Panama Canal Commission; Central Intelligence Agency; National Security Agency; National Geospatial-Intelligence Agency; U.S. Postal Service; Postal Regulatory Commission; Tennessee Valley Authority; and foreign nationals employed overseas.

Information on data quality and survey methodology can be found at FedScope at <http://www.fedscope.opm.gov/datadefn/acpdf.asp>. The OPM website on federal civilian workforce statistics can be accessed at http://www.opm.gov/Statistics_Information_Instructions/. NSF data on federal scientists and engineers are available at <http://www.nsf.gov/statistics/fedworkforce/>.

Notes

1. Joan S. Burrelli (jburrell@nsf.gov; 703-292-7793) and Jaqueline C. Falkenheim (jfalkenh@nsf.gov; 703-292-7798), Science and Engineering Indicators Program, Division of Science Resources Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230.

2. See NSF/SRS 2009a for data on demographics of the U.S. population.

3. Federal S&E employment includes employees in pay status within the federal government. It does not include, for example, individuals employed under contract, or those employed through Intergovernmental Personnel Act Assignments (IPAs). IPAs are assignments made to or from federal agencies, state and local governments, colleges and universities, American Indian tribal governments, federally funded research and development centers, and qualified nonprofit organizations involved in public management. IPA appointees often serve as program officers or executives, among other positions in the federal government.

4. Asians include Pacific Islanders, and American Indians include Alaska Natives.

5. For data on total U.S. employment by agency, see <http://www.fedscope.opm.gov/employment.asp> (December 2009).

References

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