WHY SOCIAL SCIENCE?

Because It Can Shed Light on Representation in the STEM Workforce

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Every 2 years, the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF) publishes a congressionally mandated report on the demographic makeup of the population working in and studying science and engineering (S&E). For decades, the employment section of this report largely focused on those working in S&E occupations, which generally require at least a 4-year degree. However, a thriving economy is served by a wide array of science, technology, engineering, and mathematics (STEM) jobs that may not require a bachelor's degree—from electricians to technicians to construction workers. Historically, these professions were not included in NCSES analyses, leaving a notable gap in our understanding of the STEM enterprise.

Drawing from years of social science research, the National Science Board and NCSES introduced a more complete definition of the STEM workforce in the 2021 *Science and Engineering Indicators* report The STEM Labor Force of Today: Scientists, Engineers, and Skilled Technical Workers. The new definition encompasses more workers in STEM occupations, regardless of their educational attainment. NCSES's 2023 report *Diversity and STEM: Women, Minorities, and Persons with Disabilities* builds on this definition to develop a better picture of who is represented in the STEM workforce.

"...the STEM workforce is not homogenous."

Diversity and STEM represents the federal government's most comprehensive collection of data on diversity trends in STEM, compiling data not just from NCSES surveys but also from surveys from the Census Bureau and the National Center for Education Statistics. Although the following is drawn primarily from the report's chapters on the STEM workforce, the full report provides much more detailed information, including data on postsecondary S&E education. You can read the full report on the NCSES website or download a high-level overview of the findings. The following is based on data from the Census Bureau's Current Population Survey for 2021 (unless otherwise indicated).

Occupations within the STEM Workforce

As the report defines it, the STEM workforce is made up of individuals at all education levels who work in a wide variety of occupations across three broad categories:

1. ***Science and engineering (S&E) occupations*** typically require a bachelor's degree for entry and are broadly composed of workers who are computer and mathematical scientists; biological, agricultural, and environmental life scientists; physical scientists; social scientists; and engineers.

2. ***S&E-related occupations*** require STEM skills and expertise, but they do not fall into the five main S&E occupational categories listed above. The main occupational categories and positions that make up this group include health care workers, S&E managers, S&E precollege teachers, and technologists and technicians.

3. ***Middle-skill occupations*** require considerable STEM skills and expertise but do not typically require a bachelor's degree for entry. These positions are primarily in the areas of construction trades, installation, maintenance, and production.

As stated above, prior reports in this series looked primarily at representation of women, minorities, and people with disabilities in just the first category, S&E occupations, which numbered nearly 9 million people in 2021. When accounting for all three occupation classes, the STEM workforce totaled 35 million people in 2021, with workers in S&E occupations accounting for 25% of that total workforce. Not only does the expanded definition recognize the contributions made by millions more people to the STEM enterprise, but it also highlights distinct patterns in the representation of different groups among the types of occupations.

Middle-Skill Occupations

Within the overall STEM workforce, 38% of people in 2021 performed middle-skill jobs, which require specialized expertise but not necessarily a 4-year degree. These jobs had the lowest earnings and highest unemployment in STEM work in 2020—regardless of sex, race, or ethnicity.

The vast majority—89%—of middle-skill workers were men. More than half of men in STEM worked in middle-skill jobs.

Nearly two-thirds of Hispanic workers in STEM fields (63%) worked in middle-skilled jobs. Hispanic workers accounted for nearly a quarter of the overall middle-skilled workforce.

More than half of American Indian or Alaska Natives in STEM worked in these occupations.

S&E-Related Occupations

Thirty-seven percent of STEM workers were employed in S&E-related occupations, which include jobs like health care workers, S&E managers, S&E primary and secondary teachers, and technologists and technicians.

Women dominated S&E related occupations: nearly two-thirds (65%) of workers in S&E-related occupations in 2021 were women.

68% of women in STEM worked in S&E-related occupations.

The largest segment of Black workers in STEM worked in S&E-related occupations. Black STEM workers made up 10% of the S&E-related workforce.

S&E Occupations

A quarter of the STEM workforce consists of workers in S&E occupations, which consist of computer and mathematical scientists; biological, agricultural, and environmental life scientists; physical scientists; social scientists; and engineers. Workers in S&E occupations had the highest median annual salaries of all STEM occupation types ($90,000 versus $64,000 for all STEM workers).

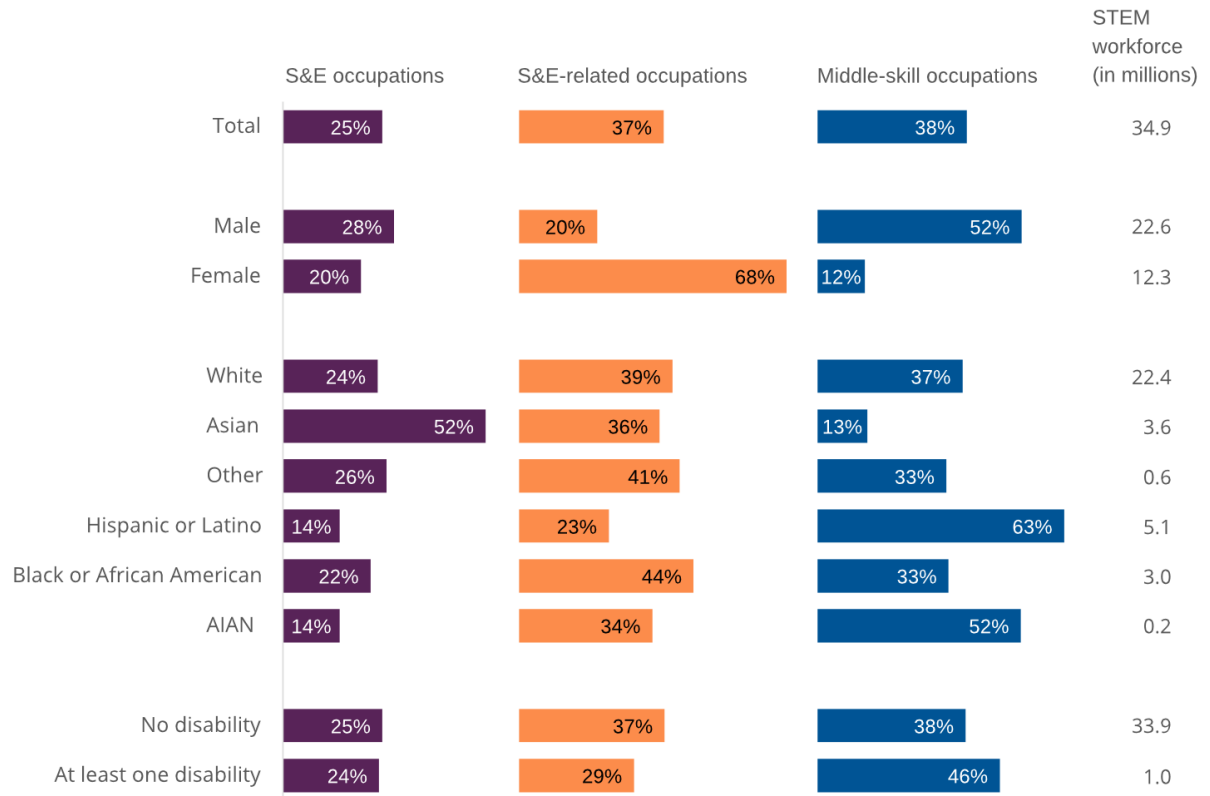*Men made up 72% of workers in S&E occupations.*

Over half of Asians in the STEM workforce (52%) worked in S&E occupations.

Asian workers made up 21% of the S&E workforce.

As this report shows, the STEM workforce is not homogenous. The detailed data in *Diversity and STEM* can help policymakers, program managers, and researchers develop a clearer understanding of the distribution of demographic groups across the STEM enterprise. Why social science? Because it can shed light on representation in the STEM workforce.

Figure 3-1

Occupations of the STEM workforce ages 18–74, by sex, ethnicity, race, and disability status: 2021

	S&E occupations	S&E-related occupations	Middle-skill occupations	STEM workforce (in millions)
Total	25%	37%	38%	34.9
Male	28%	20%	52%	22.6
Female	20%	68%	12%	12.3
White	24%	39%	37%	22.4
Asian	52%	36%	13%	3.6
Other	26%	41%	33%	0.6
Hispanic or Latino	14%	23%	63%	5.1
Black or African American	22%	44%	33%	3.0
AIAN	14%	34%	52%	0.2
No disability	25%	37%	38%	33.9
At least one disability	24%	29%	46%	1.0

AIAN = American Indian or Alaska Native; S&E = science and engineering; STEM = science, technology, engineering, and mathematics.

Note(s):
Civilian noninstitutionalized population plus armed forces living off post or with their families on post. Hispanic or Latino may be any race; race categories exclude Hispanic origin. Other includes Native Hawaiian and Other Pacific Islander and more than one race. Respondents can report more than one disability. Those who reported difficulty with one or more functionalities were classified as having a disability. Due to rounding, percentages may not sum to 100.

Source(s):
Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2021.

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