National Science Board
Science & Engineering Indicators
2018

FOREIGN-BORN STUDENTS AND WORKERS IN THE U.S. SCIENCE AND ENGINEERING ENTERPRISE

Foreign-born individuals have long been major contributors to science and engineering (S&E) in the United States (U.S.). The following four indicators, drawn from ***2018 Science & Engineering Indicators***, illustrate key data on people from around the world who come to the U.S. to study and work.

An Increasing Percentage of the Most Educated Scientists in the U.S. Are Foreign-Born

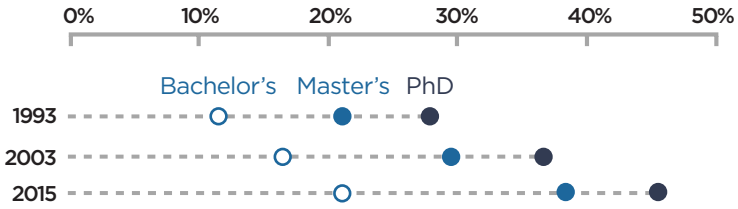
The U.S. has long benefitted from the inflow of foreign-born scientists and engineers and the S&E skills and knowledge they bring. Foreign-born is a broad category, ranging from long-term U.S. residents with strong roots in the U.S. to recent immigrants whose main social, educational, and economic ties are in their countries of origin. In 2015, 58% of foreign-born individuals in the U.S. with an S&E highest degree were from Asia and 13% were from Europe. The leading country of origin was India, which accounted for 21% of all foreign-born S&E degree holders; China was second with 10%. The countries of origin for foreign-born S&E doctoral holders were more concentrated, with China providing a higher proportion (22%) than India (16%).

In academia, just over half (51%) of U.S.-trained postdocs were born overseas, as are 28% of full-time S&E faculty.

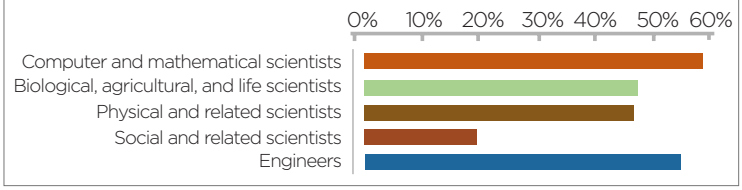
The share of foreign-born S&E workers has increased significantly in the last 25 years. In most S&E occupations, the higher the degree level, the greater the proportion of the workforce that is foreign-born.

The percentages are highest in the fields of engineering and computer science – about 6 out of 10.

Percent of All Science & Engineering Workers Who Are Foreign-Born



Detail: Foreign-Born PhDs Working in S&E Fields (2015)



Rising Competition for Global S&E Talent

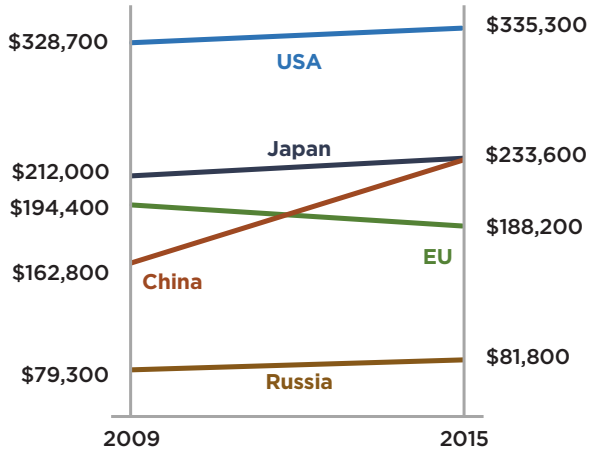
The Organisation for Economic Co-operation and Development (OECD) combines data on gross domestic expenditures on research & development (R&D) with data on the number of researchers in a country or region to estimate R&D spending per researcher. Despite uncertainties in the precise size and characteristics of this specialized subset of the S&E workforce, the OECD data provide a reasonable starting point for estimating the worldwide growth in the number of researchers.

The number of researchers in the U.S. continues to grow steadily, and the U.S. leads in investment per researcher. However, many nations have recognized the value of high-skilled S&E workers to their economies and increasingly compete for this globally mobile talent.

U.S. investment in researchers has increased only slightly since 2009, while China has substantially increased its rate of investment.

R&D Investment Per Researcher: 2009 – 2015

Constant 2010 dollars



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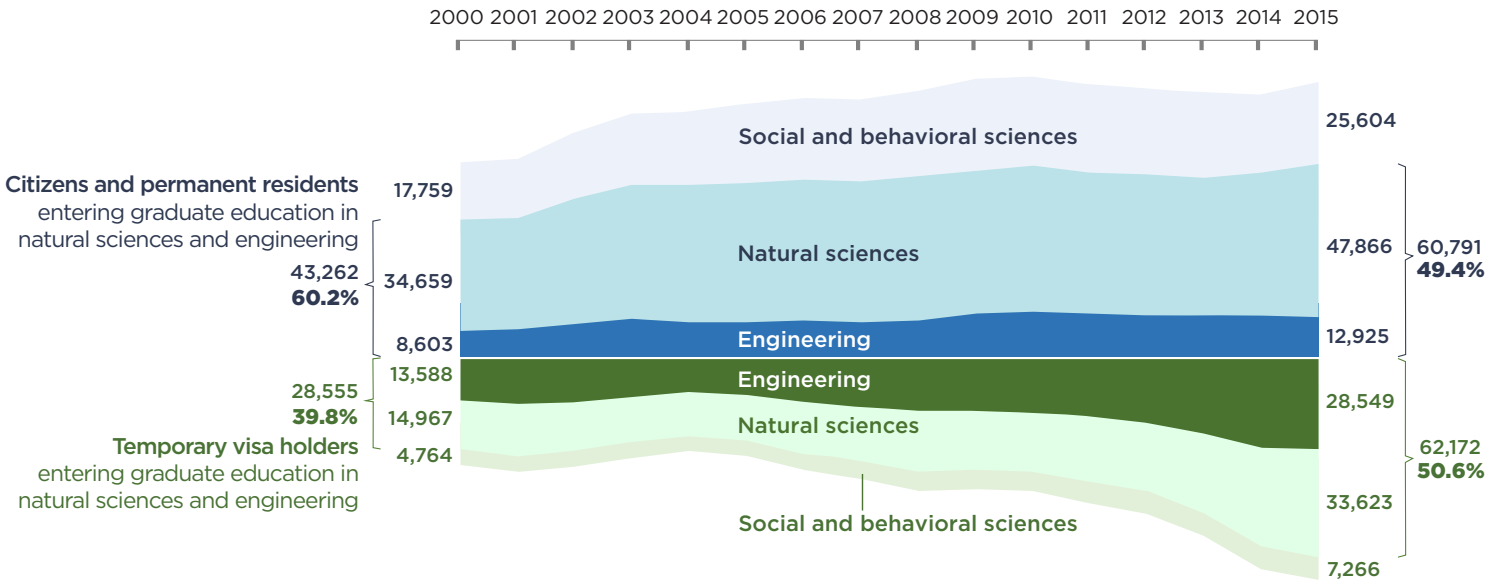
Temporary Visa Holders are a Growing Share of S&E Graduate Students in the U.S.

Science & Engineering Graduate Students, by Citizenship and Field: 2000 to 2015

Full-time students in their first year of enrollment



Since 2000, the U.S. has increased its capacity in S&E graduate programs. During that time, the number of domestic students entering graduate school in the natural sciences & engineering increased by about one-third, while the number of foreign students in those areas has doubled.

*In 2015, a majority of the **first-year, full-time** graduate students in the natural sciences & engineering were foreign-born.*

In 2015, the **total** number of international students enrolled in S&E graduate programs in the U.S. was 240,000. They earned roughly one-third of S&E doctorates and master's degrees. These students are highly concentrated in computer sciences, engineering, mathematics and statistics, and economics. The top countries of origin in 2017 continue to be India and China, together accounting for 69% of the international S&E graduate students in the U.S.

International Enrollment Trends May Be Changing

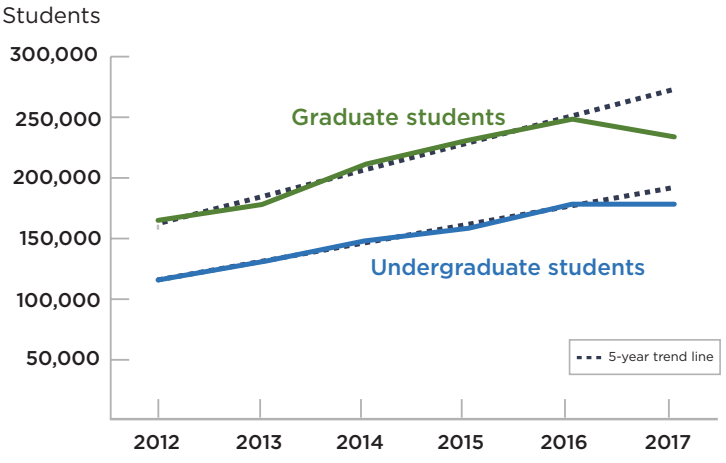
International students are a critical part of the U.S. S&E enterprise, especially in the high demand fields of engineering and computer science, where they account for over 57% of graduate enrollments. The majority — approximately 7 in 10 — choose to stay and work in the U.S. after completing their degrees.

Overall, "stay rates" have risen from 58% in 2001 to 70% in 2015. But the stay rates for students from China and India, the two largest source countries for U.S. S&E doctorate recipients with temporary visas, have declined in the last 15 years – falling from approximately 98% to 85% for China and from 89% to 83% for India.

As more countries offer their students reasons to stay in their own country for their education or to return home after earning a degree, the U.S. could face a shortage in a critical segment of its workforce.

As seen in the figure to the right, between 2016 and 2017, international enrollments in S&E higher education in the U.S. fell 6%, after five years of growth.

International Science & Engineering Students Enrolled in U.S. Institutions of Higher Education: 2012 to 2017



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