National Science Board
Science & Engineering Indicators
2020

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. The following four indicators, drawn from ***2020 Science & Engineering Indicators***, illustrate key data on people from around the world who come to the U.S. to study and work.

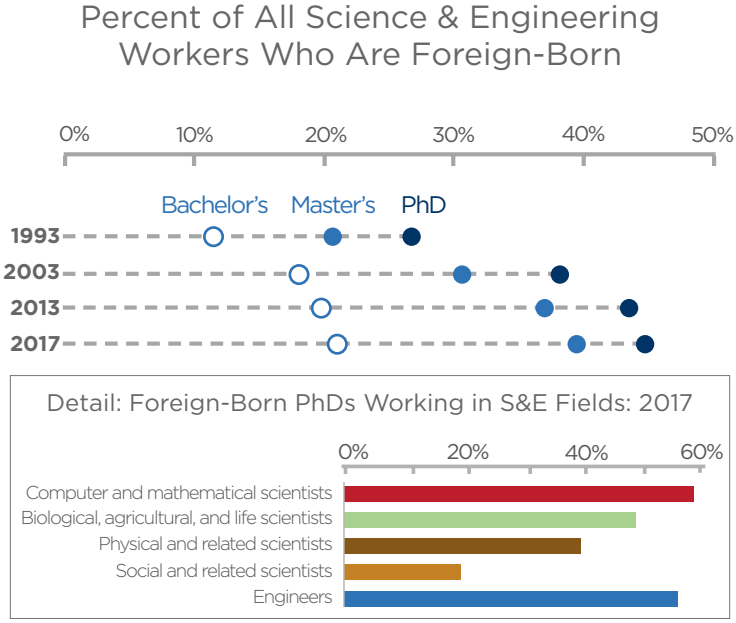
An Increasing Percentage of the U.S.' Most Educated Scientists are Foreign-Born

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 2017, half of the foreign-born individuals in the United States with an S&E highest degree were from Asia, with India (23%) and China (10%) as the leading countries of origin. For the foreign-born holders of S&E doctorates, however, China provided a higher proportion (24%) than India (15%). These patterns by source region and country for foreign-born S&E highest degree holders in the United States have been stable since at least 2003.

In academia, just about half (49%) of U.S.-trained postdocs were born overseas, as are 29% 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 for doctorates in engineering and math and computer sciences — about 6 out of 10.

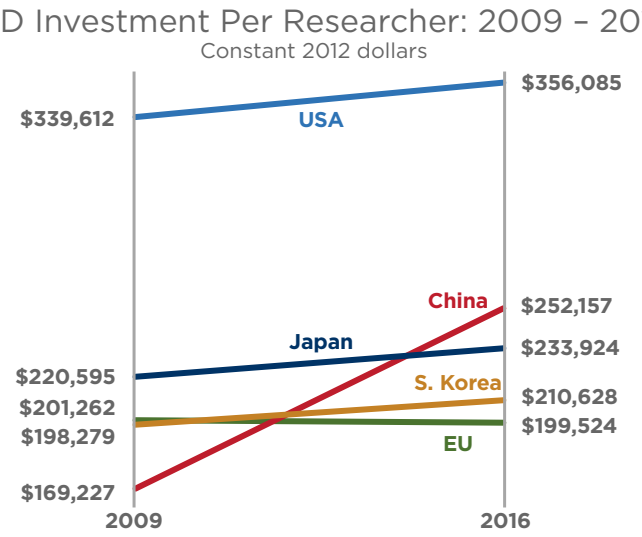


Rising Competition for Global S&E Talent

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.



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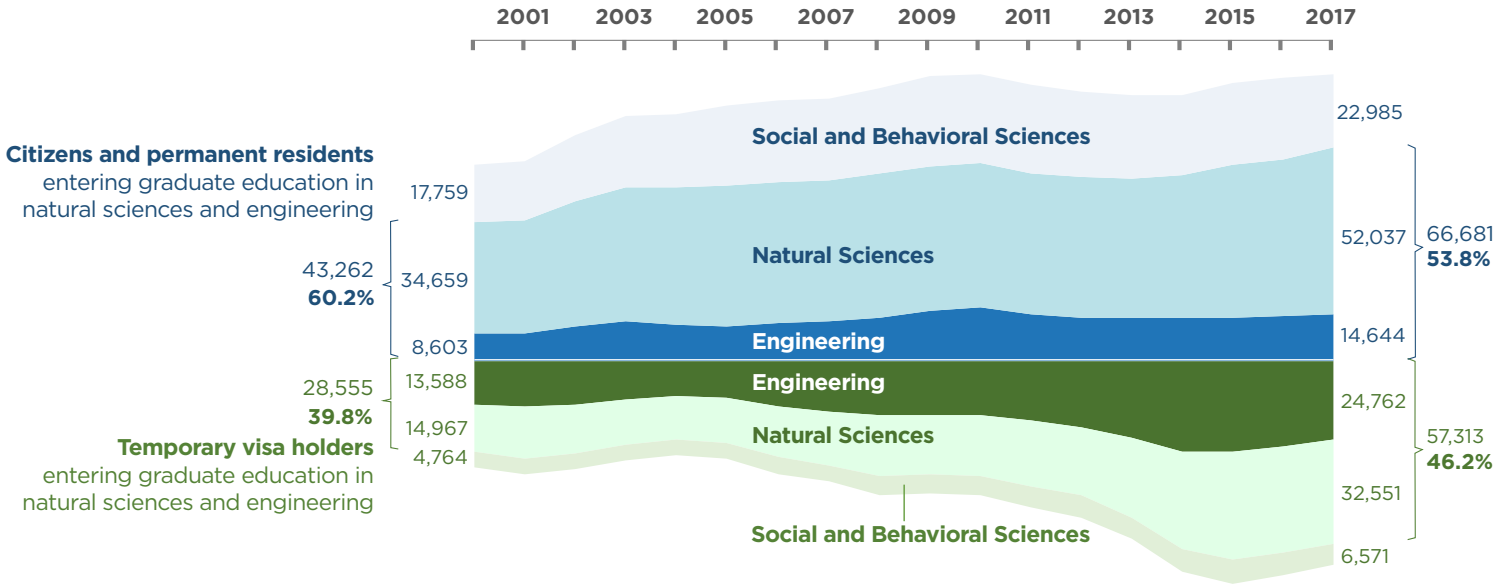
Temporary Visa Holders are a Large Share of S&E Graduate Students in the U.S.

Science & Engineering Graduate Students, by Citizenship and Field: 2000 to 2017

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 half, while the number of foreign students in those areas has doubled.

*In 2017, nearly half of the **first-year, full-time** graduate students in the natural sciences & engineering were foreign-born.*

In 2017, the **total** number of international students enrolled in S&E graduate programs in the U.S. was 229,310. They earned just over one-third of S&E doctorates and master's degrees. These students are highly concentrated in engineering and mathematics and computer sciences. The top countries of origin in 2018 continue to be India and China, together accounting for 68% of the international S&E graduate students in the U.S.

International Enrollment Trends May Be Changing

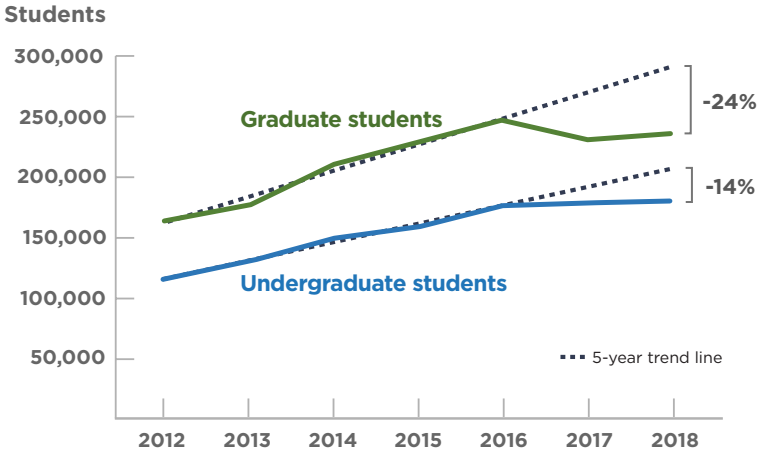
International students are a critical part of the U.S. S&E enterprise, especially in the high demand fields of engineering and computer science, where they account for over 56% of graduate enrollments. The majority — approximately 7 in 10 — choose to stay and work in the U.S. after completing their doctorate degrees.

Overall, "stay rates" have risen from 58% in 2001 to 71% in 2017. 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 95% to 83% 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, international enrollments in S&E higher education in the U.S. fell 1.8% between 2016 and 2018, representing a notable decline compared with the pre-2016 growth trend.

International Science & Engineering Students Enrolled in U.S. Institutions of Higher Education: 2012 to 2018



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