

Keeping the United States Competitive

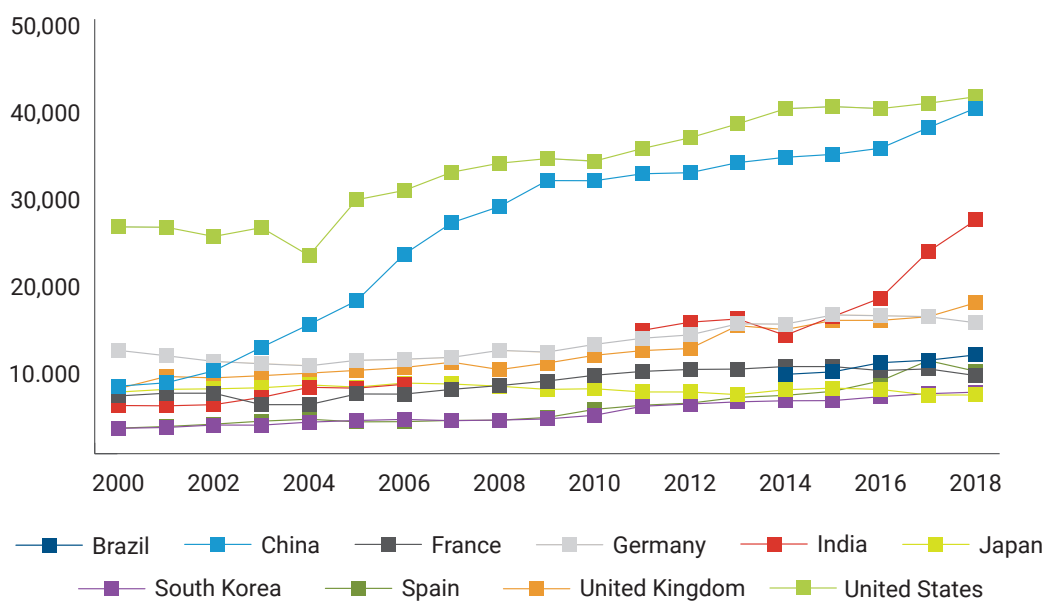
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U.S. colleges and universities play a vital role in expanding our nation’s science, technology, engineering, and mathematics (STEM) capacity and building a strong STEM workforce. STEM jobs have above-average growth and higher average wages than other fields. Nearly all STEM jobs require some postsecondary education, and there is especially strong demand for doctoral degrees.¹ Postsecondary institutions are meeting the challenge by producing more STEM doctorates, particularly in engineering and biological sciences. Partnerships between the federal government and postsecondary institutions are crucial in this work. The federal government supports graduate students through direct funding from a number of agencies, such as the National Science Foundation, the National Institutes of Health, and the U.S. Department of Defense.



The U.S. awards more doctorates in STEM fields than other developed nations, topping 40,000 degrees in 2018.

Figure 1. STEM doctoral degrees by country, 2000–18



Source: Data from Josh Trapani and Katherine Hale, *Science and Engineering Indicators 2020: Higher Education in Science and Engineering* (NSB-2019-7) (Alexandria, VA: National Science Board, National Science Foundation, 2019). <https://nces.nsf.gov/pubs/nsb20197/>.

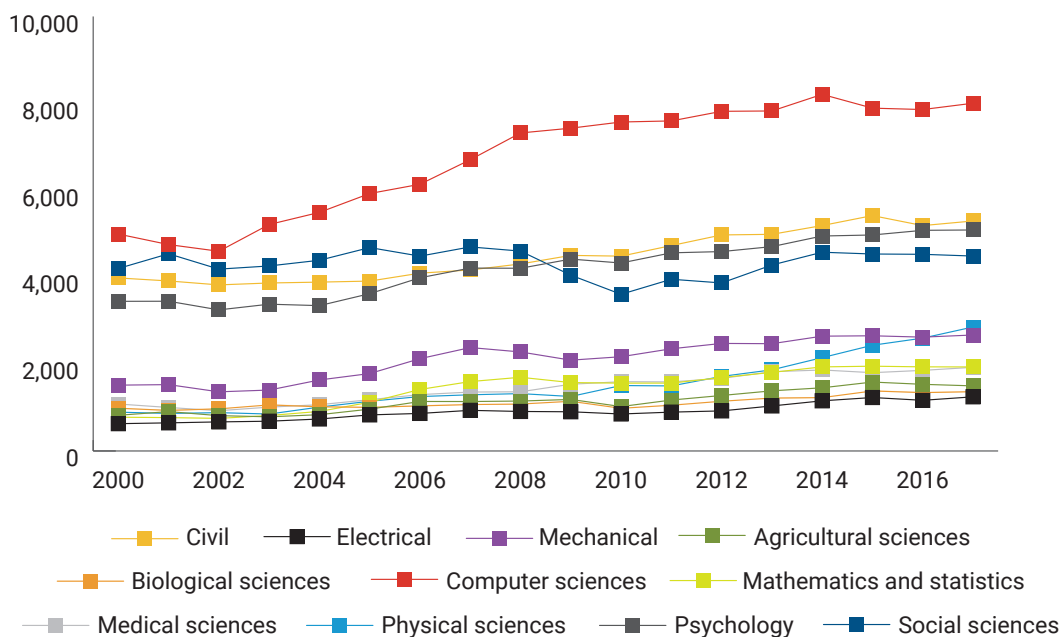
¹ Stella Fayer, Alan Lacey, and Audrey Watson, *STEM Occupations: Past, Present, and Future*, Spotlight on Statistics (Washington, DC: U.S. Bureau of Labor Statistics, 2017).

U.S. colleges and universities are currently producing more STEM doctorates when compared with other developed nations. With over 40,000 STEM doctorates awarded in 2018, the U.S. continues to expand its capacity to develop new technology and research that will strengthen the economy. Other countries are catching up by making massive investments in education and research. China is the most prominent example, quickly increasing the number of STEM doctorates awarded by Chinese institutions each year and now almost matching the U.S. in output.



The number of doctoral degrees in engineering is rising quickly. Engineering and biological sciences are the two most common STEM doctoral degrees awarded in the U.S.

Figure 2. Doctoral degrees awarded by field, 2000–17



Source: Data from Josh Trapani and Katherine Hale, *Science and Engineering Indicators 2020: Higher Education in Science and Engineering* (NSB-2019-7) (Alexandria, VA: National Science Board, National Science Foundation, 2019). <https://nces.nsf.gov/pubs/nsb20197/>.

Doctoral degrees in engineering outpace other STEM fields, followed by biological sciences. Over 10,000 doctoral degrees in engineering were awarded in 2017, up from about 7,500 in 2007. The last decade has also seen steady growth in the number of medical science doctorates. Though the COVID-19 pandemic has made the future difficult to predict, the U.S. Bureau of Labor Statistics estimates that jobs in research and development in physical, engineering, and life sciences will see much larger growth than anticipated, as will those in medical-oriented occupations.²

The U.S. maintains a leading edge in both research capacity and advanced degrees awarded, but this advantage has narrowed. Other nations, including China, India, and South Korea, have undertaken massive efforts to match or exceed the U.S. in these areas. Federal investment in scientific research and development and accompanying support for advanced education in STEM fields is essential to maintaining or expanding global competitiveness for the U.S.

² Lindsey Ice, Michael J. Rieley, and Samuel Rinde, "Employment Projections in a Pandemic Environment," *Monthly Labor Review* (U.S. Bureau of Labor Statistics) (February 2021). <https://doi.org/10.21916/mlr.2021.3>.