



PENNSYLVANIA

According to the latest data released by the National Science Board in its *2018 Science and Engineering Indicators* report, the United States leads in a number of science and engineering (S&E) measures. For example, the U.S. invests the most in research and development, attracts the most venture capital, awards the most advanced degrees, and provides the most business, financial, and information services.

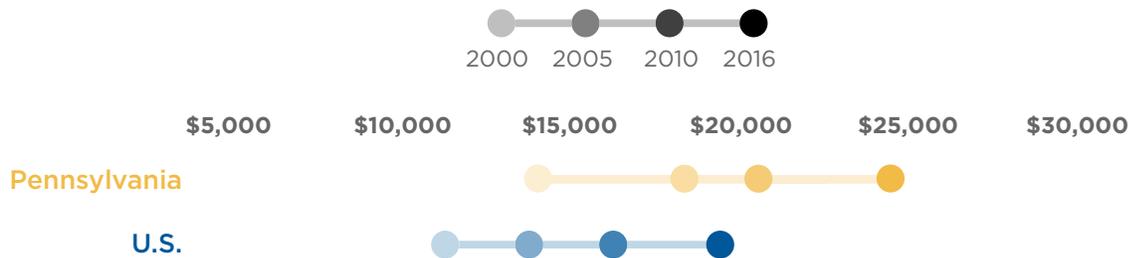
A state's S&E performance helps fuel its and the nation's economy. Four benchmarks of Pennsylvania's S&E performance are highlighted here: the cost of public higher education, the size of the STEM workforce, investment in research and development, and venture capital funding.

Rising Cost of a Bachelor's Degree

A bachelor's degree is one of several entry points to higher paying jobs associated with science, engineering, and many technical occupations.

Nationally, 31% of the total U.S. workforce has a bachelor's degree or higher. In contrast, 75% of workers in S&E occupations have a bachelor's degree or higher.

Average annual in-state cost of a public 4-year institution (Adjusted for inflation to 2016 dollars)

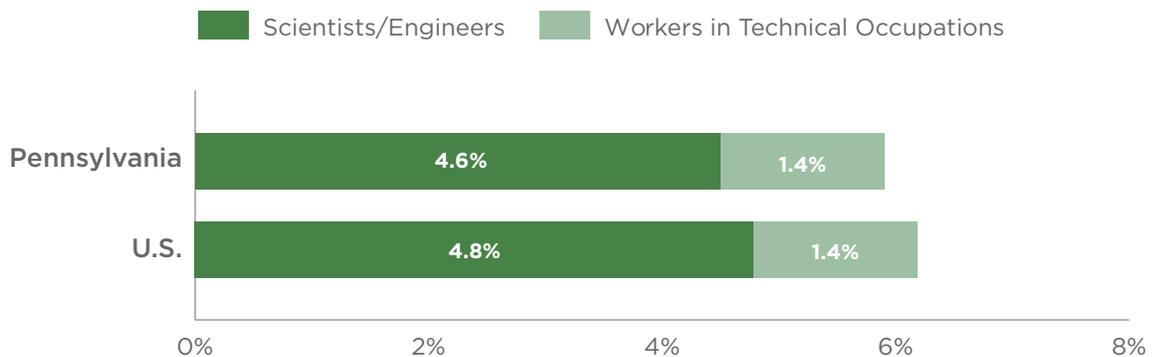


Source: National Center for Education Statistics, *Digest of Education Statistics*

STEM Workforce: People Working in STEM Occupations

Nationally, about 1 in 16 workers (6.2% or 8.7 million) have occupations as scientists or engineers (4.8%), or technical workers (1.4%). The STEM workforce is larger still when defined as either those who hold a bachelor's degree or higher in S&E (23.2 million) or those who use technical expertise in S&E in their jobs (19.4 million).

Jobs in S&E as a percent of all jobs in 2016



Source: U.S. Department of Labor, Bureau of Labor Statistics, Occupational Employment Statistics Survey

Real Change in Research & Development Performed

Research and development (R&D) spending is a driver of innovation. Investing in science and technology today has ripple-effect benefits throughout the economy over the long term.

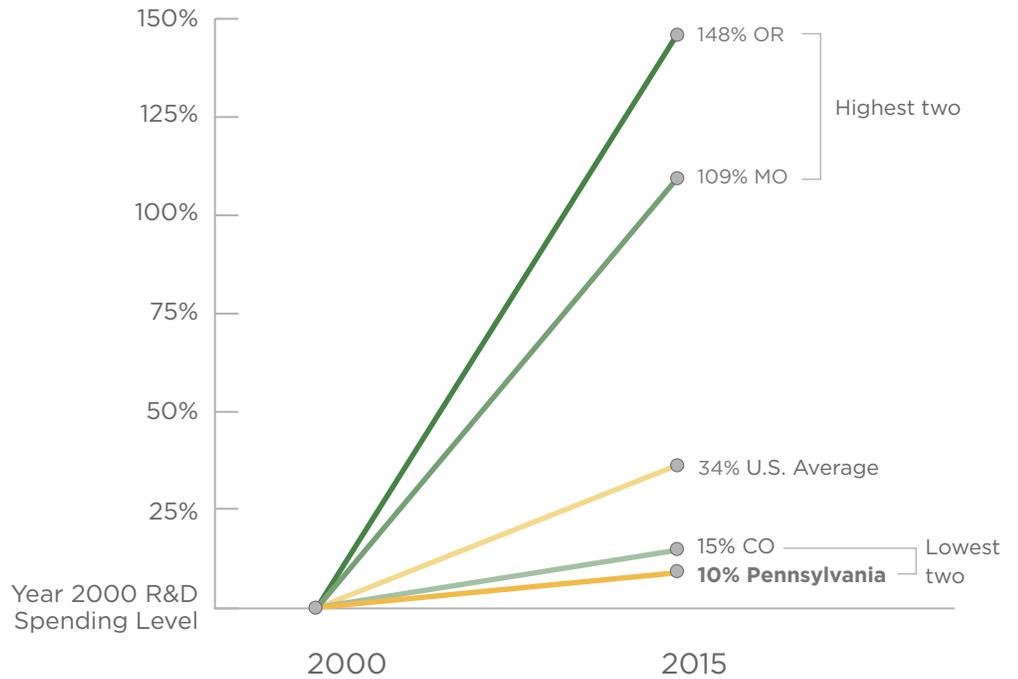
Annual state performance in R&D varies considerably, from \$253 million (WY) to \$125 billion (CA). Pennsylvania is one of 15 states that performs between \$5-\$15 billion per year in R&D. In this figure, Pennsylvania's percent change in R&D spending is compared to the two highest states and the second lowest state within this group.

Total 2015 Research and Development Performed

PA \$14.8B
U.S. \$495.1B

Percent change in R&D spending: 2000 to 2015

(Adjusted for inflation)



Source: NSF, National Center for Science and Engineering Statistics, National Patterns of R&D Resources

Venture Capital Investment

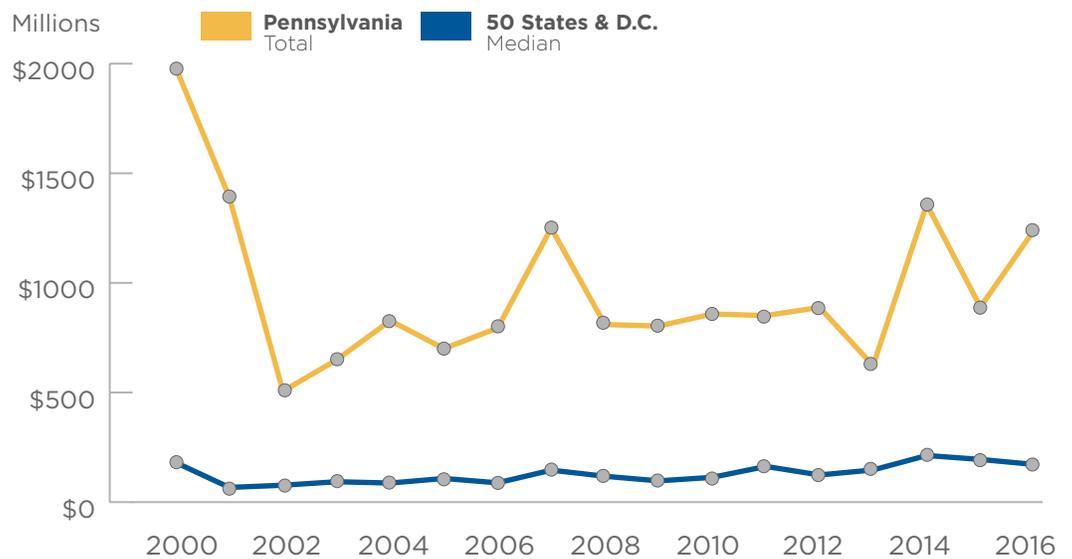
Venture capital investment supports U.S. businesses that take on the risk of developing and commercializing cutting-edge, emerging technologies. States with high values are successful at attracting venture capital to fuel new kinds of business, and ultimately, expand economic growth.

Total 2016 Venture Capital Investment

PA \$1.2B
U.S. \$70.3B

Total annual venture capital investment: 2000 to 2016

(Adjusted for inflation to 2016 dollars)



Source: Pitchbook Venture Capital and Private Equity Database