



Pennsylvania

According to the latest data released by the National Science Board in its [2022 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 doctoral degrees, and is the largest producer of output from knowledge- and technology-intensive service industries.

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 science, technology, engineering, and math (STEM) workforce, investment in research and development, and venture capital funding.

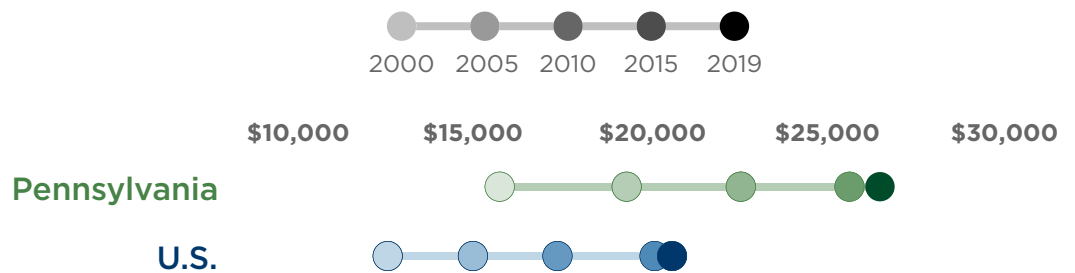
Rising Cost of a Bachelor's Degree

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

Nationally, 36% of the total U.S. workforce has a bachelor's degree or higher. In contrast, 45% of workers in the STEM workforce have a bachelor's degree or higher.

Average annual in-state cost of a public 4-year institution

(Adjusted for inflation to 2019 dollars)

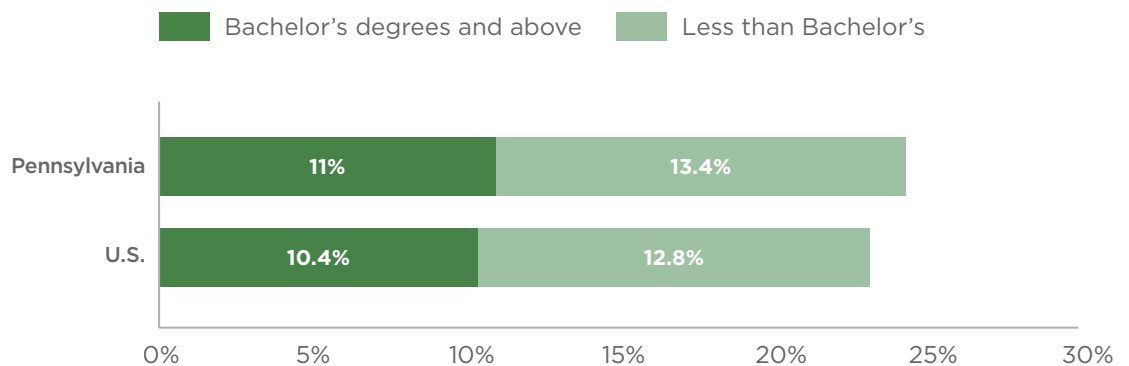


Source: National Center for Education Statistics, *Digest of Education Statistics*

STEM Workforce: People Working in STEM Occupations

Using an updated definition that includes workers of all educational backgrounds and the wide variety of occupations that require significant STEM knowledge and expertise, in 2019 there were approximately 36 million STEM workers nationally, representing 23% of the total U.S. workforce. Within this expanded STEM workforce, 55% of STEM workers do not have a bachelor's degree (the skilled technical workforce - STW).

Jobs in S&E as a percent of all jobs in 2019



Source: U.S. Census Bureau, American Community Survey (ACS), 2019, Public Use Microdata Sample (PUMS), Data as of 25 October 2020.

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.

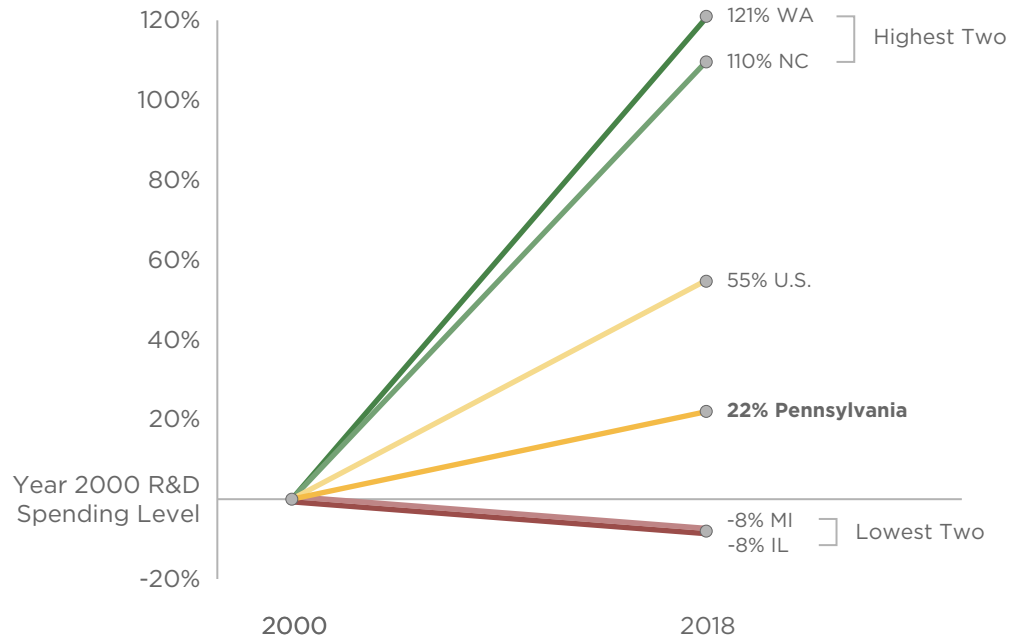
Annual state performance in R&D varies considerably, from \$157 million (WY) to \$164.4 billion (CA). Pennsylvania is one of ten states that performs between \$15-\$36 billion per year in R&D. In this figure, Pennsylvania's percent change in R&D spending is compared to the two highest and the two lowest states within this group.

Total 2018 Research and Development Performed

PA \$17.5B
U.S. \$606.1B

Percent change in R&D spending: 2000 to 2018

(Adjusted for inflation to 2018 dollars)



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

Venture Capital Investment

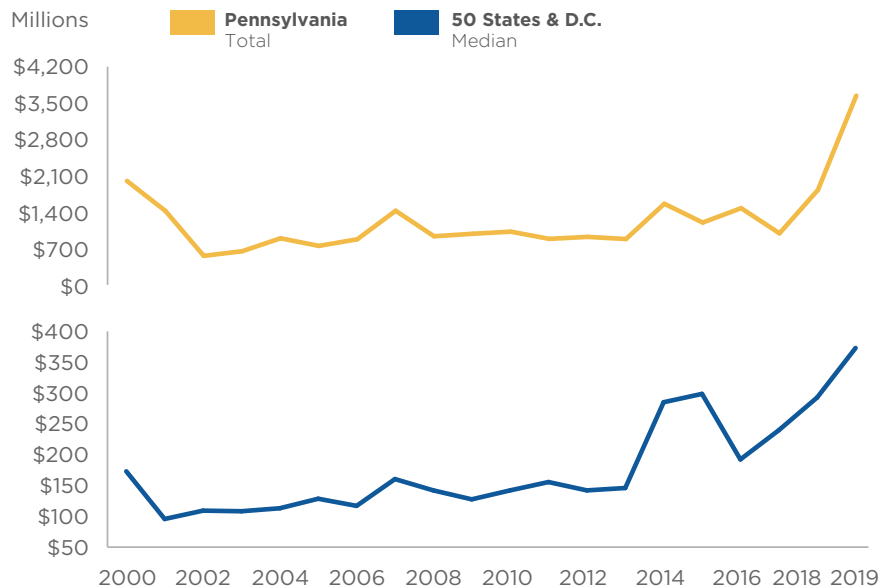
Venture capital investment supports U.S. businesses that take on the risk of developing and commercializing cutting-edge, emerging technologies. States with high values are successful at attracting venture capital to fuel new kinds of business, and ultimately, expand economic growth.

Total 2019 Venture Capital Investment

PA \$3.6B
U.S. \$132.7B

Total annual venture capital investment: 2000 to 2019

(Adjusted for inflation to 2019 dollars)



Source: PitchBook Venture Capital and Private Equity Database