

PhDs pay: study reveals economic benefit of funding doctorates

Investment pays off for the economy, finds groundbreaking US study

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A US study has used “hard data” to show the economic benefit of providing research funding for science PhD students.

Researchers found that recipients of doctorates in all science fields disproportionately gained placements in large and high-wage private businesses, as well as additional business characteristics associated with high productivity.

The [study](#), “Wrapping it up in a person: examining employment and earnings outcomes for PhD recipients”, also revealed that 40 per cent of PhD recipients took jobs in the private sector, while the rest went on to jobs in academia or government.

Engineers and computer scientists whose doctoral research was federally or non-federally funded were most likely to go to young firms. The highest-earning recent graduates were those who studied mathematics, computer science and engineering. Life sciences PhDs typically did not earn high salaries, which the researchers suggested may be attributable to a high proportion initially taking jobs as postdoctoral researchers.

The research also found that employers were clustered near the universities where the doctoral recipients conducted their funded research and received their training, showing that these graduates contribute to local and national economic growth.

The findings are the culmination of seven years of research aimed at determining how to measure the initial economic impact of research funding. They are based on the 2010-12 earnings of 3,197 PhD recipients funded with research grants at the universities of Indiana, Iowa, Michigan, Minnesota, Ohio State, Purdue, Penn State and Wisconsin.

Hunter Rawlings, president of the Association of American Universities (AAU), said the study was “one of the first to use hard data to provide direct evidence of some of the benefits” of research universities.

The research comes a decade after Jack Marburger, physicist and former college president who served as science advisor to George W. Bush, [challenged academics to come up with scientific evidence](#) on the impact of federal research investment. In December 2014, the National Science Foundation (NSF), an independent federal agency that supports science and engineering research, [revised its guidelines](#) to state that a “nontechnical project description” must explain the significance and importance of each project and serve as “public justification” for NSF funding by

articulating how the project “serves the national interest”.

The study, which will be [published in Science](#) on 11 December, was led by Julia Lane, professor in the Wagner Graduate School of Public Service at New York University; Bruce Weinberg, associate professor in the department of economics at Ohio State University; and Jason Owen Smith, professor of sociology at the University of Michigan.

Professor Lane said the research shows the “complex ways” in which investments in research contribute to economic activity.

“The partnership with the Census Bureau has been critical, and will permit rigorous examination of a variety of other economic effects, ranging from business start-ups to firm productivity, growth and employment dynamics. The data infrastructure at the new [Institute for Research on Innovation in Science](#) will provide for many other partnerships, such as with the Association of Research Libraries and the U.S. Patent and Trademark Office, to investigate scientific and other outcomes,” she said.

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