

The Culture of Research and Scholarship in Mathematics: Federal Support for Academic Research in the Mathematical Sciences¹

Academic research in the mathematical sciences, like research in engineering and the life, physical, and computer sciences, is financially supported by foundations, industry, and the federal government. Approximately 65% of the external funding available for academic research in the mathematical sciences comes from the federal government, down from 80% forty years ago. Most federal funding for mathematical and statistical research comes from the National Science Foundation (NSF), the Department of Defense, the Department of Energy, and the National Institutes of Health. The NSF provides for approximately 64% of the federal support for academic research in the mathematical sciences, and is the only agency that supports all branches of the mathematical sciences.

Amongst doctorate holders employed in academia, 64% of mathematical scientists describe research as a primary or secondary activity, quite like the 68% of physical scientists, 70% of computer scientists, and 69% of life scientists who make such a report. Nonetheless, a much smaller proportion of academic mathematical scientists are supported by the federal government. The proportion of science and engineering doctorate holders and researchers in academia who receive federal research support has varied over time, and varies by field. In FY2015, 52% of all science and engineering doctorate holders in academia for whom research was a primary or secondary activity reported federal government support: 66% of physical scientists, 55% of computer scientists, and 64% of life scientists, yet only 37% of mathematical scientists.² Many productive mathematicians receive little or no external support for their research.

As compared to fields, there is also a large disparity in the per capita level of funding available to mathematical scientists. In FY2015, across all fields of science and engineering, the federal government provided about \$244,000 per academic researcher. By field, this breaks down to \$307,000 per academic researcher in computer science, \$142,000 per academic researcher in the physical sciences, and \$495,000 per academic researcher in the life sciences. By contrast, in 2015 the federal government provided about \$48,000 per academic researcher in the mathematical sciences.³

1 All numbers come from the NSF Science & Engineering Indicators 2018, and are for FY2015, which is the most recent year for which comprehensive data are available: <https://www.nsf.gov/statistics/2018/nsb20181/report/sections/academic-research-and-development/introduction>

The NSF considers the “mathematical sciences” to be mathematics and statistics.

2 In this paragraph, the numbers are rounded to nearest percent and come from appendix tables 5-19 and 5-21.

3 In this paragraph, numbers are rounded to thousands place. Numerators come from appendix table 5-5; denominators from appendix table 5-19.