Mathematics Graduates in the Labor Force: Where Are They, What Do They Do?
Data and Tools for Discovery

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Overview

• Terminology: science field vs. scientist
• Degree production in mathematics
• Graduate enrollments in mathematics
• Workforce characteristics
• Tools to explore the data
Who is a Scientist or Engineer?

• Can be defined by education, occupation or skill/expertise

• By education: hold a degree in any S&E or S&E-related field
  • Mathematics and statistics enrollments and degrees awarded (we can measure this)

• By occupation: hold a job that is considered to be S&E or S&E-related
  • Mathematicians and statisticians at a minimum, but all other occupations held by mathematics or statistics degree holders (we can measure this)

• By skill: hold a job that needs significant expertise in S&E
  • Mathematics/statistics knowledge could be necessary in a range of occupations across sectors and industries (very hard to measure)
Mathematics and Statistics Graduate Student Enrollment, by Race/Ethnicity and Citizenship: 2008-2017


Interactive Link to generate a custom tabulation (including by institution):
https://ncsesdata.nsf.gov/ids/gss

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Mathematics and statistics degrees earned in U.S. universities, by degree level: 2000-15

Interactive Links (to review other fields, access to sources and notes)
Bachelor’s: https://www.nsf.gov/statistics/2018/nsb20181/figures/fig02-10

Source(s)

Interactive Link (view other fields, access to sources and notes)
Mathematics/Statistics Degree Holders In the US (2017)

- With at least one degree in mathematics/statistics: 1,194,000
  - Highest degree in mathematics/statistics: 757,000
    - Some of these individuals have lower level degrees in other fields
  - Highest degree in some other field: 439,000
    - Individuals who earn a mathematics/statistics degree, then earn a higher level degree in another field


Interactive Link to generate a custom tabulation: https://ncsesdata.nsf.gov/sestat/sestat.html

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Mathematics/Statistics Degree Holders and Mathematical Scientists: 2017

- Persons with a degree in mathematics/statistics: 1,194,000
- Employed in Non-math occupations: 767,000
  - Unemployed: 27,000
  - Not in Labor Force: 292,000
- Persons whose principal occupation is as a mathematical scientist or postsecondary teacher of math/stat: 292,000
- Mathematics/statistics degrees AND working as a mathematical scientist or postsecondary teacher of math/stat: 109,000
- No math/stat degrees, working as a mathematical scientist or postsecondary teacher of math/stat: 183,000


Interactive Link to generate a custom tabulation: https://ncsesdata.nsf.gov/sestat/sestat.html
Doctorates in Mathematics & Statistics in the workforce, 2013

- 75% of PhDs have been in the workforce for 5-9 years and are engaged in R&D.
- 44% have been in the workforce for 10-14 years and are employed outside of 4-year academic institutions.
- 93% have been in the workforce for 15+ years and are satisfied with their jobs across all employment sectors.

Percentage working in each employment sector by career stage:

- **Education**: 4-year colleges and universities, 2-year and pre-college institutions.
- **Business**: For-profit companies, Non-profit organizations.
- **Government**: Federal government, State & local government.

Interactive Link (view other fields, access to sources and notes)

Figure 5-19
S&E doctorate holders employed in academia in a postdoctoral position, by S&E degree field: Selected years, 1973–2015

Note(s): Data for computer sciences are not available for 1973. Data for computer sciences for 2003 are suppressed for reasons of confidentiality and/or reliability. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes, excluding those employed part time who are students or retired. Physical sciences include earth, atmospheric, and ocean sciences; life sciences include biological, agricultural, environmental, and health sciences.


Science and Engineering Indicators 2018

Interactive Link (view other fields, access to sources and notes)
Early career S&E doctorate holders employed in full-time faculty positions with federal support, by field: 1991 and 2015

![Bar chart showing the percentage of early career S&E doctorate holders employed in full-time faculty positions with federal support by field for 1991 and 2015.](https://www.nsf.gov/statistics/2018/nsb20181/figures/fig05-21)

**Notes:**
In this figure, early career faculty are those within 4–7 years of having received their doctorate. Academic employment is limited to U.S. doctorate holders employed at 2- or 4-year colleges or universities, medical schools, and university research institutes. See Appendix Table 5-24.

**Source(s):** National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (SDR).

*Science and Engineering Indicators 2018*

**Interactive Link (view other fields, access to sources and notes)**
Additional Resources
NSF Graduate Student Internship Opportunities

- **NSF Mathematical Sciences Graduate Internship**
  The internships are aimed at students who are interested in understanding the application of advanced mathematical and statistical techniques to "real world" problems, regardless of whether they plan to pursue an academic or nonacademic career.

- **INTERN Dear Colleague Letter: Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity**
  The Nation's global competitiveness depends critically on the readiness of the Nation's Science, Technology, Engineering and Mathematics (STEM) workforce and NSF seeks to continue to invest in programs that directly advance this workforce.
The π-Shaped Scientist/Engineer

- Teamwork
- Communication
- Teaching
- Leadership
- Entrepreneurship

Interdisciplinary Training

- Deep Disciplinary Knowledge
- Computational Skills
Integration Across Domains
The VITAE Researcher Development Framework