

Mathematical Sciences Seminar
March 2, 2004
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Employment of Mathematical Sciences Majors

Most of the following statistical information is taken from National Science Foundation's report *Characteristics of Recent Science and Engineering Graduates: 2001* (NSF 04-302). This is the most recent report by the NSF, and was published in October 2003. Links to this report and to prior and related reports can be found at:

<http://www.nsf.gov/sbe/srs/nsrcg/start.htm>

1. What types of jobs do people typically get with an undergraduate degree in the mathematical sciences?

Summary: The following table lists the primary work activities reported by the 21,100 employed mathematical sciences undergraduate degree recipients surveyed for NSF 04-302.

Primary work activity	n	%
Research and development	3300	16
Computer applications	3600	17
Management, sales, administration	4500	21
Teaching	8000	38
Other	1700	8

Source: Table D-11a in NSF04-302.

2. What types of jobs do people get with a master's degree in the mathematical sciences?

Summary: The following table lists the primary work activities reported by the 5,500 employed mathematical sciences undergraduate degree recipients surveyed for NSF 04-302.

Primary work activity	n	%
Research and development	1300	24
Computer applications	1700	31
Management, sales, administration	0	0
Teaching	2000	36
Other	0	0

Source: Table D-12a in NSF04-302.

3. Who hires these graduates?

Summary: The following table lists the employment sector for the 21,100 bachelor's degree recipients and 5500 master's degree recipients surveyed for NSF 04-302.

Employment Sector	Bachelor's	Master's
Private industry	51 %	44 %
Educational Inst.	43 %	49 %
Government	< 1%	< 2%

4. What mathematical skills are associated with these jobs?

Several jobs are listed below with typical mathematical skill requirements and the professional organization recommending those skills. More job description information (including general training requirements) is available in the Bureau of Labor Statistics Occupation Outlook Handbook <http://stats.bls.gov/oco/> . Direct links to BLS job descriptions are included below.

Accounting (CPA): Mathematics and statistics including sampling, correlation and regression analysis, statistical decision theory; American Institute of CPAs:

<http://www.aicpa.org/nolimits/become/courses/index.htm>

BLS: <http://www.bls.gov/oco/ocos001.htm>

Actuary: Calculus, linear algebra, calculus-based probability and statistics; Society of Actuaries

<http://www.beanactuary.com/college/preparing.cfm>

BLS: <http://www.bls.gov/oco/ocos041.htm>

Computer related jobs: Mathematics degrees can count toward CCP (Certified Computing Professional) certification through the Institute for Certification of Computing Professionals.

<http://www.iccp.org/iccpnew/about.html>

The Association for Computing Machinery has guidelines for computer science curriculum.

<http://www.acm.org/education/curricula.html>

BLS job descriptions:

Computer programmer: <http://stats.bls.gov/oco/ocos110.htm>

System analyst, database administrator:

<http://stats.bls.gov/oco/ocos042.htm>

Computer software engineer: <http://www.bls.gov/oco/ocos267.htm>

Economist, survey and market researcher: Degrees in statistics or mathematics; Marketing Research Association

<http://www.mra-net.org/content.cfm?ID=146>

BLS: <http://www.bls.gov/oco/ocos055.htm>

Financial analyst, personal financial advisor: Mathematics background is helpful in some certification programs. A list of programs is included in the BLS job description.

BLS: <http://www.bls.gov/oco/ocos259.htm>

Operations research analyst: Calculus, linear algebra, statistics, probability, other advanced mathematics; Institute for Operations Research and the Management Sciences

<http://www.informs.org/Edu/Career/q9.html>

BLS: <http://www.bls.gov/oco/ocos044.htm>

Teaching: High school teaching requires a mathematics education degree, or satisfaction of lateral entry requirements. For college teaching, a master's degree including 18 hours of graduate credit in mathematics.

Statistician: Bachelor's degree in statistics.

BLS: <http://www.bls.gov/oco/ocos045.htm>

Related Questions

5. Do the mathematical sciences graduates actually use their degrees in their jobs?

Summary: Of the employed mathematical sciences graduates interviewed in NSF 04-302, about 53% described their job as “closely related” to their degree, and 32% described their job as “somewhat related.”

For master's graduates, 67% described their job as “closely related” and 27% described their job as “somewhat related.”

Source: Tables D-5a and D-6a in NSF04-302. (See also Table D1.)

6. How do employment levels for mathematical sciences majors compare to those for other majors?

Summary: Restricting attention to those graduates who were in the labor force, over 99.5% of mathematical sciences graduates were employed, as compared to 96.1% of science and engineering graduates overall. Viewed as an unemployment rate, the unemployment rate for science and engineering majors was almost eight times that for mathematical science majors.

For master's recipients, the unemployment rate was too small to be accurately measured.

Source: Tables C-5a and C-6a in NSF04-302.

7. Let's see the dirt: How about math vs other disciplines?

For people with undergraduate degrees:

Discipline	% Unemployed
Computer Science	6.1%
Life Sciences	2.6 %
Math	< 0.5%
Physical Sciences	< 0.5%
Psychology	3.7 %
Social Sciences	4.8 %

Source: Table C-5a and C-6a in NSF04-302.

Unemployment for all master's graduates was unmeasurably small.

8. What proportion of mathematical sciences majors plan to attend graduate school?

Summary: Of the mathematical sciences graduates interviewed in NSF 04-302, 66% said it was very likely that they would take additional college courses. Approximately 42.6% had taken additional college courses, while 27.0% took courses in an advanced degree program. 17.6% were enrolled as full time students at the time of the survey.

Source: Tables B-11a, B-13a, B-15a, and B-17a in NSF04-302.

That's what "average" people do with math degrees.
What *could* I do?

Other good resources:

Career and Employment Resources for Math Students
<http://www.maa.org/students/career.html>

101 Careers in Mathematics QA10.5 .A15 1996
(The new edition has been ordered.)

American Statistical Association
<http://www.amstat.org/careers/index.html>

Explore Math Careers <http://www.ams.org/careers/>