

Preliminary Report on the 2011-2012 New Doctoral Recipients

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This report presents a statistical profile of recipients of doctoral degrees awarded by departments in the mathematical sciences at universities in the United States during the period July 1, 2011, through June 30, 2012. All information in the report was provided over the summer and early fall of 2012 by the departments that awarded the degrees. The report includes a preliminary analysis of the fall 2012 employment plans of 2011-2012 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, sex, and racial/ethnic group. This preliminary report will be updated to reflect subsequent reports of additional 2011-2012 doctoral recipients from the departments that did not respond in time for this report, along with additional information provided by the doctoral recipients themselves. A list of the nonresponding departments is on page 324. Note this report uses the new groupings of doctorat-granting mathematics departments recently adopted by the Joint Data Committee. Additional detail is provided on page 323.

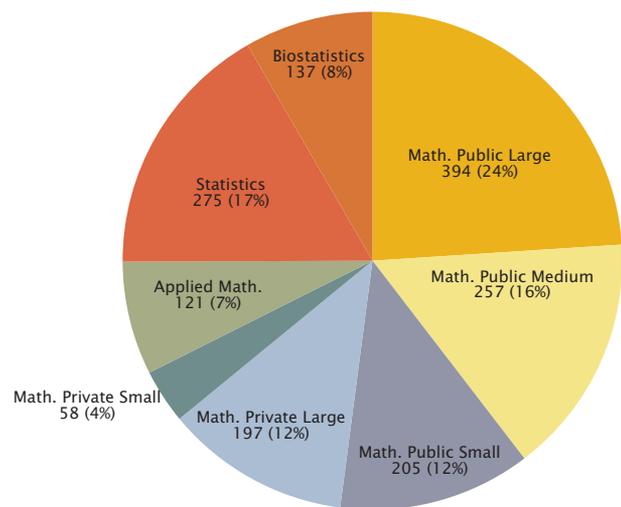
Detailed information, including tables which traditionally appeared in this report, is available on the AMS website at www.ams.org/annual-survey/2012Survey-NewDoctorates-Prelim.

Doctoral Degrees Awarded

Figure A.1: Number and Percentage of Degrees Awarded by Department Grouping*

Based on the data collected it appears the number of Ph.D.s being awarded increased in 2011-2012, and the final figure is likely to exceed the record total of 1,653 reported the previous year. For 2011-2012, the preliminary count for new Ph.D.'s awarded by the 277 responding departments is 1,644. This is an increase of 6.5% over the 1,543 degrees awarded by the same set of departments in 2010-2011. (See page 324 for a list of departments still to respond.)

29% (473) of the new Ph.D.'s had a dissertation in statistics/biostatistics (including 72 from mathematics and applied mathematics combined), followed by algebra/number theory (226) and applied mathematics (235) both with 14%.



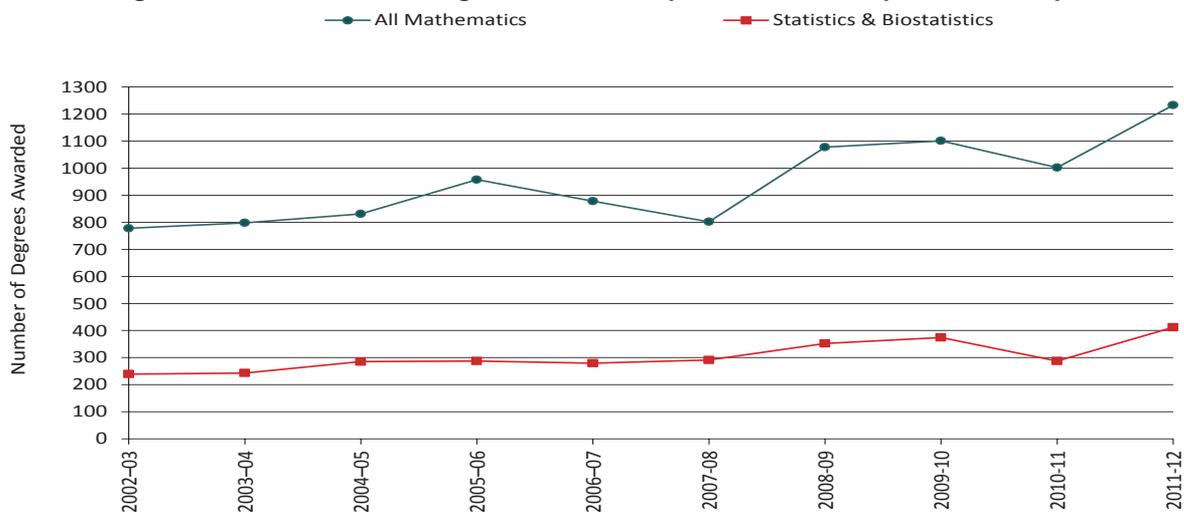
Total Degrees Awarded: 1,644

*A description of the department groupings is on page 323.

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Doctoral Degrees Awarded

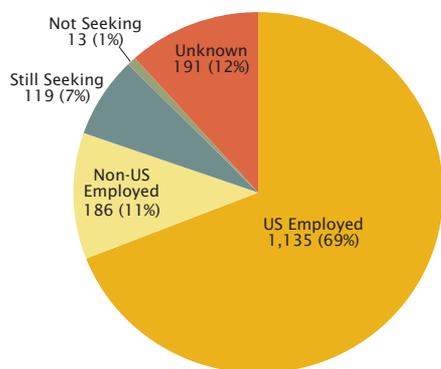
Figure A.2: New Doctoral Degrees Awarded by Combined Groups, Preliminary Counts



Employment of New Doctoral Recipients

The number of new doctoral recipients employed in the U.S. is 1,135. The comparable figure for the 2010–2011 cohort of new doctoral recipients is 942.

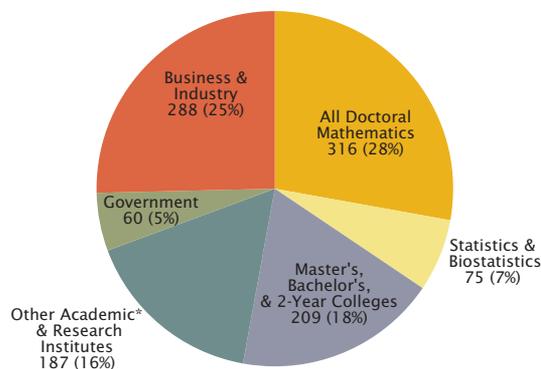
Figure E.1: Employment Status



Total New Ph.D.'s Reported: 1,644

- 9% of new Ph.D.'s are working at the institution which granted their degree, the same as last year.
- 52% (595) of those employed in the U.S. are U.S. citizens, down from 54% last year.
- 14% of new Ph.D.'s are employed outside of the U.S. compared to 13% last year.
- 73% (540) of non-U.S. citizens known to have employment are employed in the U.S.; the remaining 196 non-U.S. citizens are either employed outside of the U.S. or unemployed.

Figure E.2: U.S. Employed by Type of Employer



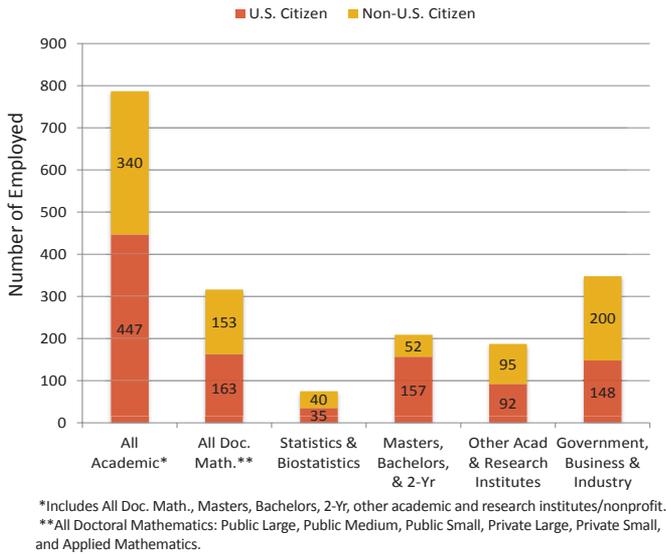
Total U.S. Employed: 1,135

*Other Academic consists of departments outside the mathematical sciences including numerous medical related units.

- The fraction of new Ph.D.'s taking positions in business & industry has increased to 25% this year compared to 19% this time last year.
- U.S. academic hiring, while up in absolute terms, declined to 69% compared to 76% this time last year.

Employment of New Doctoral Recipients

Figure E.3: Employment in the U.S. by Type of Employer and Citizenship



Looking at U.S. citizens whose employment status is known:

- 83% (595) are employed in the U.S., of these:
 - 33% are employed in Ph.D.-granting departments
 - 42% are employed in all other academic positions
 - 25% are employed in government, business and industry positions

Figure E.5: New Ph.D. Employment by Type of Position and Type of Employer

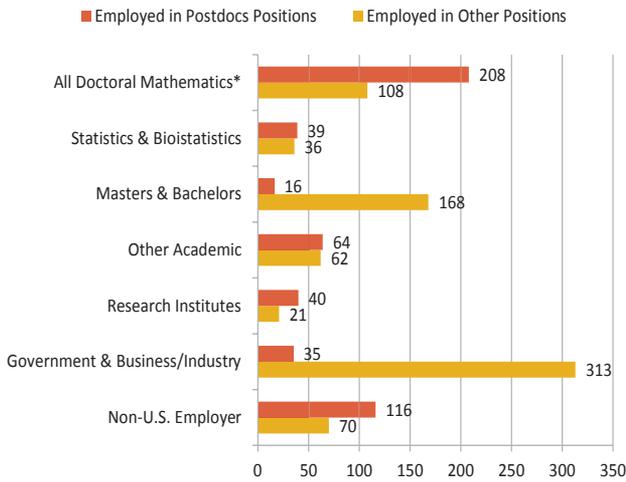
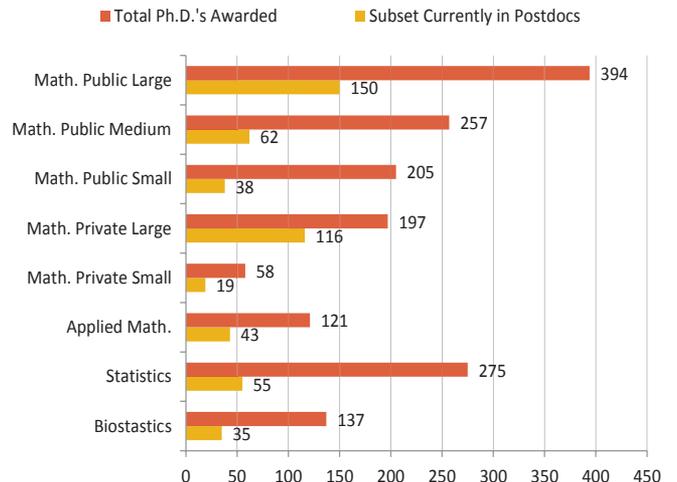


Figure E.4: Ph.D.'s Awarded by Degree-Granting Department Group

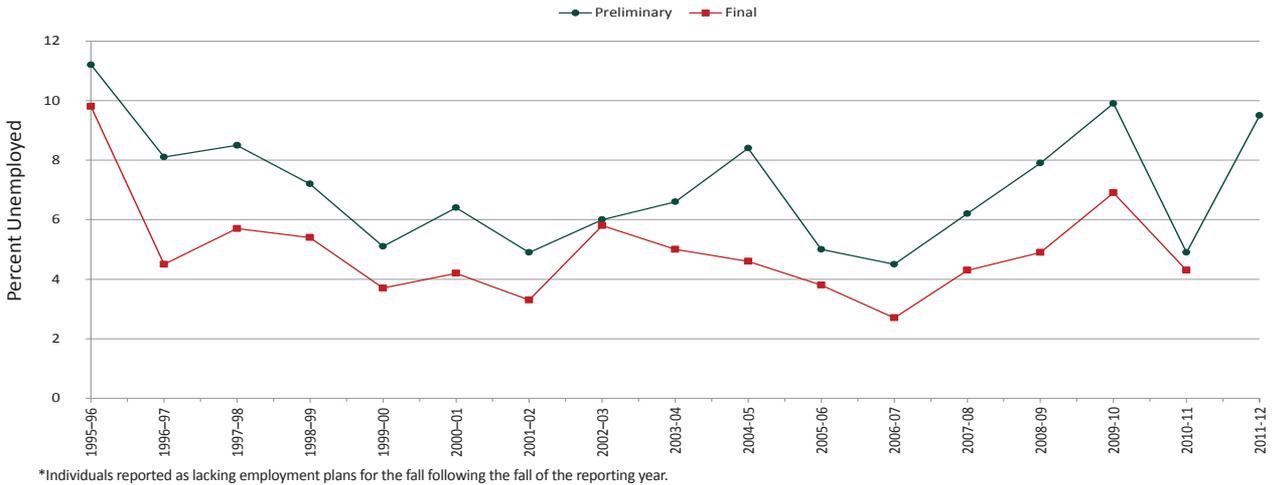


- 59% of the new Ph.D.'s from the Math. Public Large Group are employed in postdocs, while only 19% of new Ph.D.'s from the Math. Public Small Group are in postdocs; last year figures were 55% and 13%, respectively.
- 32% (518) of the new Ph.D.'s are reported to be in postdoc positions.
- 22% of the new Ph.D.'s in postdoc positions are employed outside the U.S.
- 47% of the new Ph.D.'s having U.S. academic employment are in postdocs; the same as last year.
- 63% of the new Ph.D.'s employed in Ph.D.-granting departments are in postdoc positions, 29% of these postdocs received their Ph.D.'s from Math. Public Large institutions.

Employment of New Doctoral Recipients

The fall 2012 employment plans are known for 1,453 of the 1,644 new doctoral recipients. 9.5% of the 1,254 individuals based in the U.S. were reported as lacking employment plans for fall 2012. (Another 13 individuals in the U.S. were reported as not seeking employment.)

Figure E.6: Percentage of New Doctoral Recipients Unemployed* 1995-2012

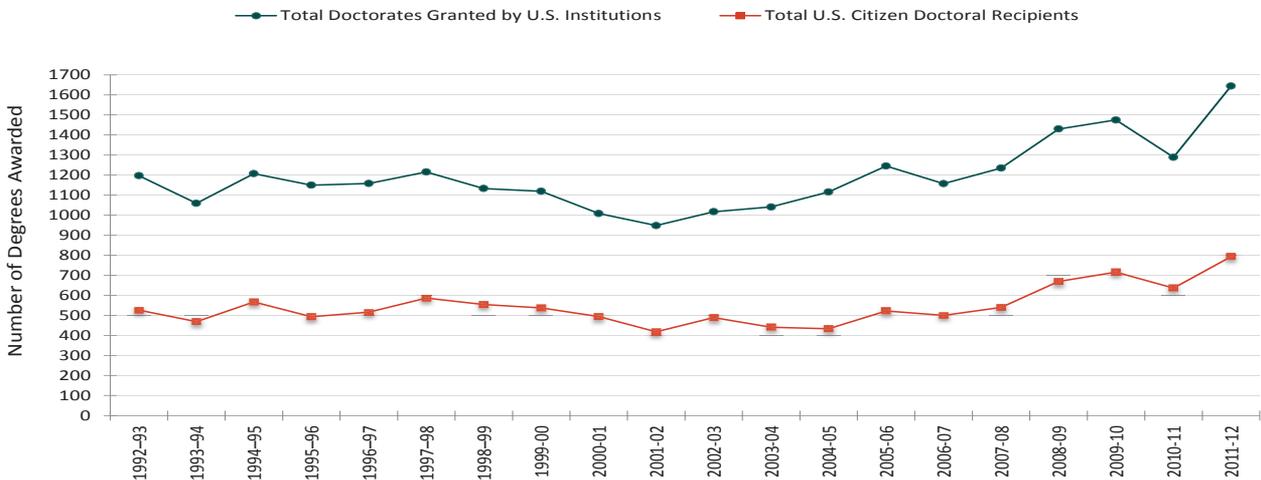


Looking at unemployment among those new Ph.D.'s in the U.S.:

- Unemployment among those whose employment status is known is 9.5%, up from 4.9% for fall 2011.
- Applied Mathematics Group had the highest unemployment at 17.3%.
- Math. Private Large Group had the lowest unemployment at 5.0%.
- 10.4% of the U.S. citizens Ph.D.'s are unemployed, compared to 6.4% in fall 2011.
- 8.5% of non-U.S. citizens are unemployed; the rates by visa status are 8.9% for those with a temporary visa and 4.9% for those with a permanent visa.

Demographics of New Doctoral Recipients

Figure D.1: U.S. Citizen Doctoral Recipients Preliminary Counts



Demographics of New Doctoral Recipients

Gender and citizenship was known for all 1,644 new Ph.D.'s reported for 2011-2012. The proportion of U.S. citizens is essentially unchanged at 48%.

Figure D.2: Gender of Doctoral Recipients by Department Grouping

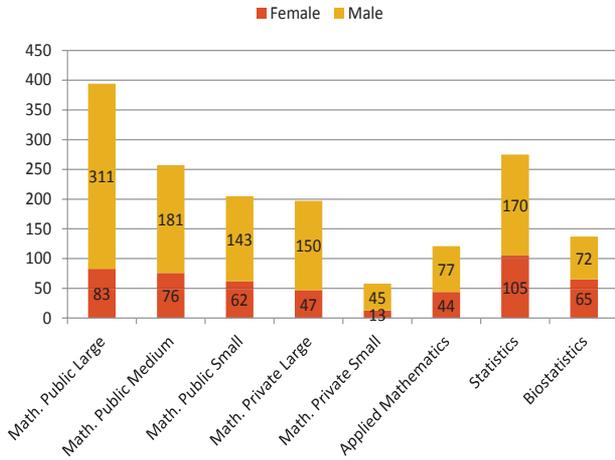
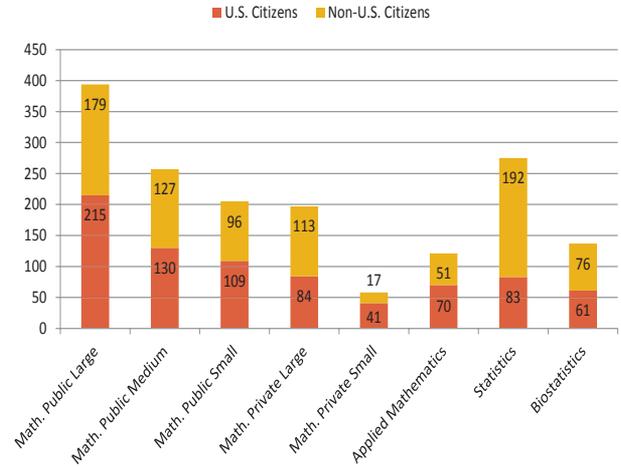
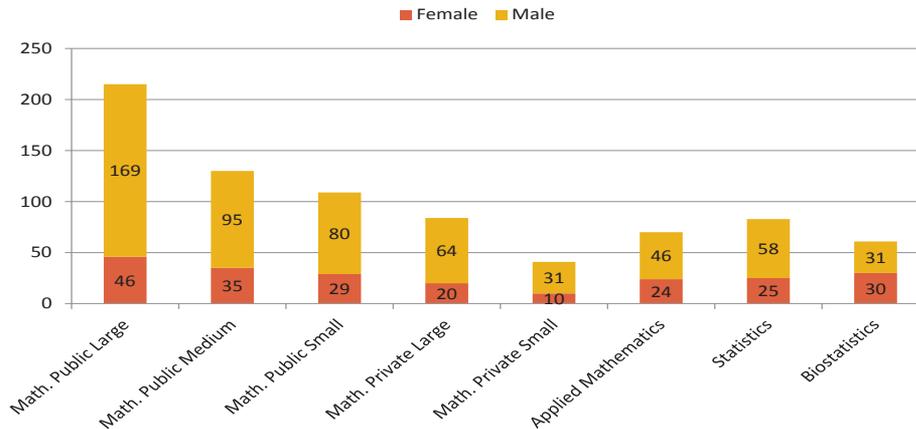


Figure D.3: Citizenship of Doctoral Recipients by Department Grouping



- Females account for 30% (495) of the 1,644 Ph.D.'s; the same percentage as last year.
- 32% (276) of non-U.S. citizens receiving Ph.D.'s were females (down from 34% last year).
- All groups reported awarding more degrees to U.S. citizens than non-U.S. citizens, with the exception of Math. Private Large, Statistics, and Biostatistics Groups which awarded 57%, 70%, and 55%, respectively to non-U.S. Citizens.

Figure D.4: Gender of U.S. Citizen Doctoral Recipients by Degree-Granting Department



- 28% (219) of the U.S. citizens are female; last year's figure was 27%.
- Statistics departments awarded 30% of their degrees to U.S. citizens, the lowest percentage among the groups.
- Math. Private Small groups awarded 71% of their Ph.D.'s to U.S. citizens, the highest percentage among all the groups.
- Among the U.S. citizens: 7 are American Indian or Alaska Native, 52 are Asian, 25 are Black or African American, 32 are Hispanic or Latino, 5 are Native Hawaiian or Other Pacific Islander, 622 are White, and 50 are of unknown race/ethnicity.

Female New Doctoral Recipients

The proportion of female new doctoral recipients has remained flat at 30% (495), based on preliminary counts. The number of females receiving Ph.D.'s increased from 30% (393) in fall 2011. The unemployment rate for females is 9.9%, compared to 9.3% for males and 9.5% overall.

Figure F.1: Females as a Percentage of New Doctoral Recipients Produced by and Hired by Department Grouping

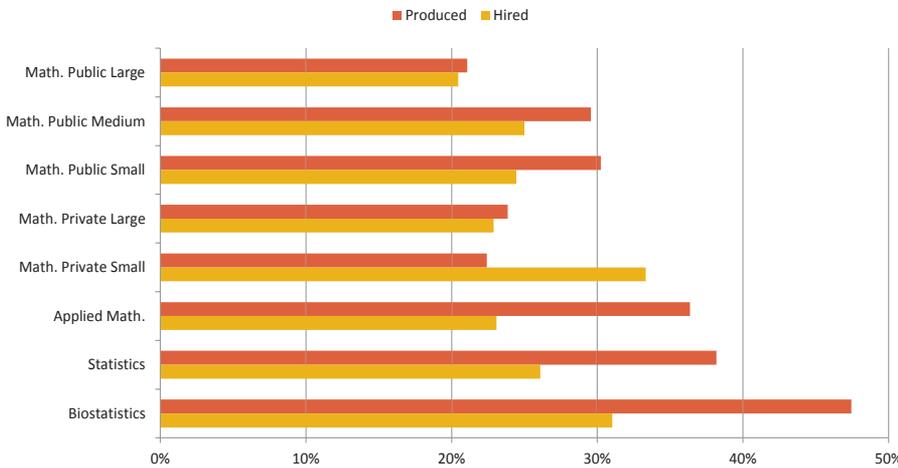
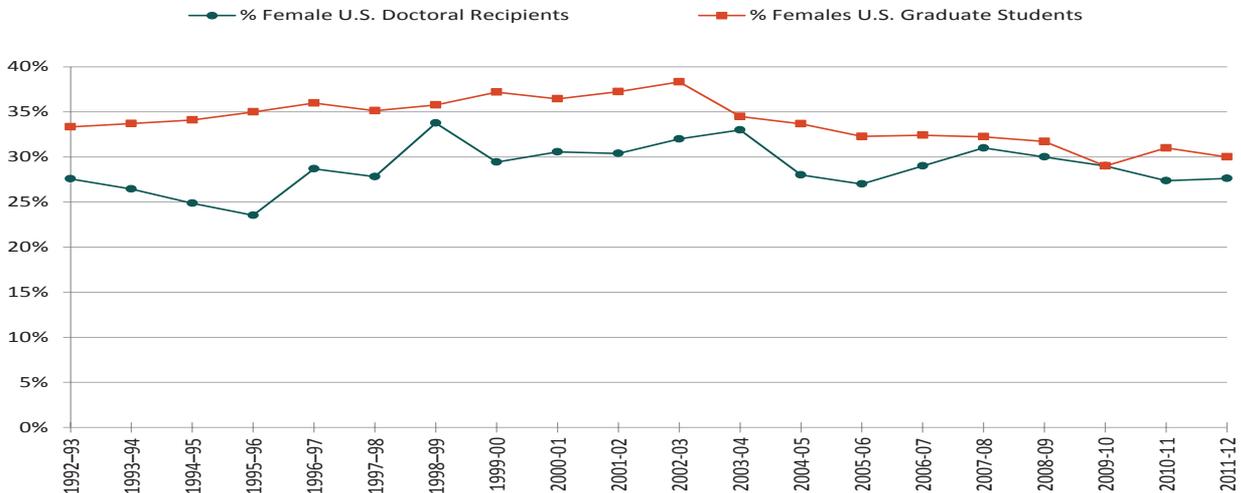


Table F.1: Number of Female New Doctoral Recipients Produced by and Hired by Department Groupings

Department Grouping	Females Produced	Females Hired
Math. Public Large	83	18
Math. Public Medium	76	15
Math. Public Small	62	11
Math. Private Large	47	19
Math. Private Small	13	9
Applied Math.	44	3
Statistics	105	12
Biostatistics	65	9

- 36% of those hired by the Bachelors Group were women (the same as last year) and 30% of those hired by the Masters Group were women (the same as last year).
- 25% of those reporting having postdoc positions (518) are women.
- 59% of the women employed in Ph.D.-granting departments are in postdoc positions (down slightly from 60% last year).

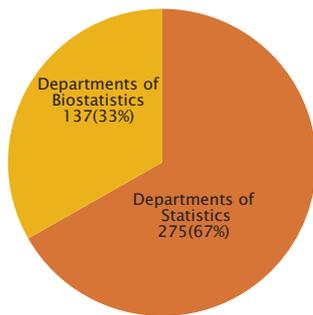
Figure F.2: Females as a Percentage of U.S. Citizen Doctoral Recipients



Ph.D.'s Awarded by Statistics or Biostatistics Departments

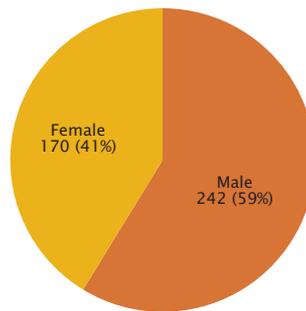
This section contains information about doctoral degrees awarded by Statistics or Biostatistics departments. These departments produced 412 new doctorates, of which all but 11 had dissertations in statistics or biostatistics. This is a 44% increase over the preliminary number reported for fall 2011 of 287. In addition, all Mathematics Groups combined had 72 Ph.D. recipients with dissertations in statistics. In Statistics or Biostatistics, 144 (35%) of the new doctoral recipients are U.S. citizens (while in the other groups 53% are U.S. citizens). While the unemployment rate for new Ph.D.'s with dissertations in statistics or probability has increased to 6.3%, the unemployment among the Statistics or Biostatistics new Ph.D.'s is 6.0%.

Figure S.1: Ph.D.s Awarded by Statistics/Biostatistics Departments



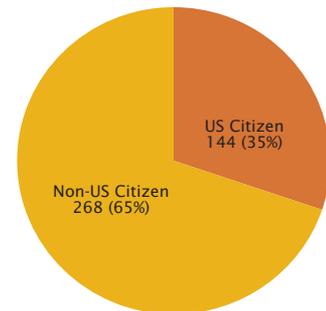
- 25% of all Ph.D.'s awarded were in Statistics/Biostatistics.
- Females account for 38% of statistics and 47% of biostatistics Ph.D.'s awarded.

Figure S.2: Gender of Ph.D. Recipients from Statistics/Biostatistics Departments



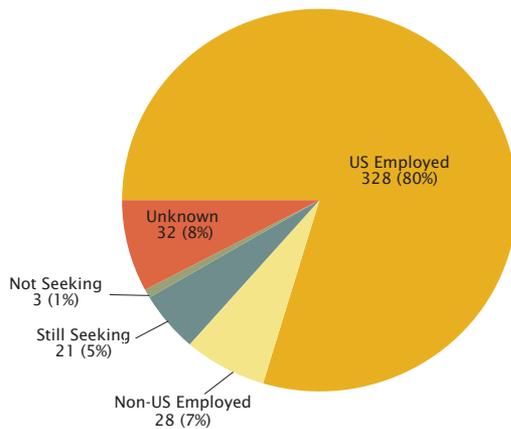
- Females accounted for 41% of the 412 Ph.D.'s in statistics/biostatistics, compared to all other groups combined, where 25% (325) are female.

Figure S.3: Citizenship of Ph.D. Recipients from Statistics/Biostatistics Departments



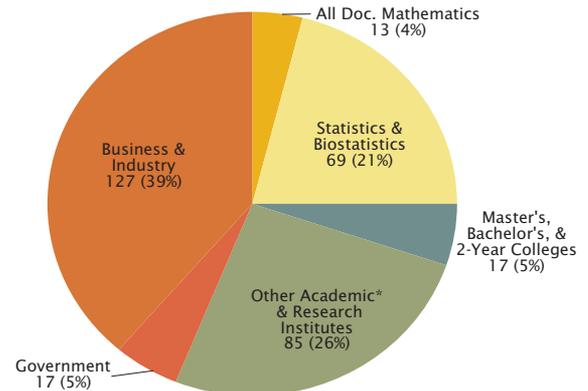
- 38% of Statistics/Biostatistics U.S. citizens are females, while in all other groups 25% are females.

Figure S.4: Employment Status of Ph.D. Recipients from Statistics/Biostatistics Departments



- 6.0% of Statistics/Biostatistics Ph.D.'s are unemployed compared to 10.8% among all other groups. This is up from 2.9% last year.
- Unemployment among new Ph.D.'s with dissertations in statistics/probability is 6.3%, up from 3.1%. Among all other dissertation groupings 9.2% are unemployed, up from 4.6%.

Figure S.5: U.S.-Employed Ph.D. Recipients from Statistics/Biostatistics Departments by Type of Employer



*Other Academic consists of departments outside the mathematical sciences including numerous medical related units.

- 39% of Statistics/Biostatistics Ph.D.'s are employed in Business/Industry, compared to 20% in all other groups.
- 26% of those hired by Statistics and 31% of those hired by Biostatistics departments were females, compared to 24% in all other groups.

Departmental Groupings and Response Rates

Starting with reports on the 2012 AMS-ASA-IMS-MAA-SIAM Annual Survey of the Mathematical Sciences, the Joint Data Committee has implemented a new method for grouping the doctorate-granting mathematics departments. These departments are first grouped into those at public institutions and those at private institutions. These groups are further subdivided based on the size of their doctoral program as reflected in the average annual number of Ph.D.'s awarded between 2000 and 2010, based on their reports to the Annual Survey during this period. Furthermore, doctorate-granting departments which self-classify their Ph.D. program as being in applied mathematics will join with the other applied mathematics departments previously in Group Va to form their own group. The former Group IV will be divided into two groups, one for departments in statistics and one for departments in biostatistics.

For further details on the change in the doctoral department groupings see the article in the October 2012 issue of *Notices of the AMS* at <http://www.ams.org/notices/201209/rtx120901262p.pdf>.

Survey Response Rates by New Groupings

Doctorates Granted
Departmental Response Rates*

Math. Public Large	26 of 26 including 0 with no degrees
Math. Public Medium	37 of 40 including 0 with no degrees
Math. Public Small	62 of 64 including 9 with no degrees
Math. Private Large	24 of 24 including 0 with no degrees
Math. Private Small	26 of 28 including 5 with no degrees
Applied Math.	27 of 30 including 2 with no degrees
Statistics	53 of 59 including 5 with no degrees
Biostatistics	24 of 36 including 2 with no degrees
Total	277 of 307 including 21 with no degrees

*A list of the departments yet to respond with their doctoral degrees awarded is on page 324.

Acknowledgements

The Annual Survey attempts to provide an accurate appraisal and analysis of various aspects of the academic mathematical sciences scene for the use and benefit of the community and for filling the information needs of the professional organizations. Every year, college and university departments in the United States are invited to respond. The Annual Survey relies heavily on the conscientious efforts of the dedicated staff members of these departments for the quality of its information. On behalf of the Data Committee and the Annual Survey Staff, we thank the many secretarial and administrative staff members in the mathematical sciences departments for their cooperation and assistance in responding to the survey questionnaires.

Group Descriptions

Math. Public Large consists of departments with the highest annual rate of production of Ph.D.'s, ranging between 7.0 and 24.2 per year.

Math. Public Medium consists of departments with an annual rate of production of Ph.D.'s, ranging between 3.9 and 6.9 per year.

Math. Public Small consists of departments with an annual rate of production of Ph.D.'s of 3.8 or less per year.

Math. Private Large consists of departments with an annual rate of production of Ph.D.'s, ranging between 3.9 and 6.9 per year.

Math. Private Small consists of departments with an annual rate of production of Ph.D.'s of 3.8 or less per year.

Applied Mathematics consists of doctoral degree granting applied mathematics departments.

Statistics consists of doctoral degree granting statistics departments.

Biostatistics consists of doctoral granting biostatistics departments.

Group M contains U.S. departments granting a master's degree as the highest graduate degree.

Group B contains U.S. departments granting a baccalaureate degree only.

Listings of the actual departments which compose these groups are available on the AMS website at www.ams.org/annual-survey/groups.

Doctoral Degrees Not Yet Reported

The following mathematical sciences, statistics, biostatistics, and applied mathematics departments have not yet responded with their doctoral degrees awarded. Every effort will be made to collect this information for inclusion in the New Doctoral Recipients Report which will be published in August 2013 issue of *Notices of the AMS*.

Departments yet to respond can obtain copies of the Doctorates Granted survey forms on the AMS website at www.ams.org/annual-survey/surveyforms, by sending email to ams-survey@ams.org, or by calling 1-800-321-4267, ext. 4189.

Math. Public Large

All departments responded.

Math. Public Medium

Bowling Green State University
Virginia Polytechnic Institute and State University

Math. Public Small

College of William & Mary
University of Nevada, Las Vegas

Math. Private Large

All departments responded.

Math. Private Small

Lehigh University
Stevens Institute of Technology

Applied Mathematics

Columbia University
Naval Postgraduate School
Stony Brook University

Statistics

Colorado State University
University of California, Los Angeles
University of Iowa
University of Minnesota-Twin Cities
University of North Carolina at Chapel Hill
University of Pittsburgh

Biostatistics

LSU Health Science Center, New Orleans
The University of Albany, SUNY
Tulane University
University of California, Los Angeles
University of Cincinnati, Medical College
University of Colorado, Denver
University of Illinois at Chicago
University of Massachusetts, Amherst
University of Michigan
University of Minnesota-Twin Cities
University of South Carolina
Virginia Commonwealth University

About the Annual Survey

The Annual Survey series, begun in 1957 by the American Mathematical Society, is currently under the direction of the Data Committee, a joint committee of the American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society of Industrial and Applied Mathematics. The current members of this committee are Pam Arroway, Richard Cleary (chair), Steven R. Dunbar, Sue Geller, Boris Hasselblatt, Ellen Kirkman, Peter March, David R. Morrison, James W. Maxwell (ex officio), Bart S. Ng, and William Velez. The committee is assisted by AMS survey analyst Colleen A. Rose. In addition, the Annual Survey is sponsored by the Institute of Mathematical Statistics. Comments or suggestions regarding this Survey Report may be emailed to the committee at ams-survey@ams.org