

Report on the 2015–2016 New Doctoral Recipients

Amanda L. Golbeck, Thomas H. Barr, and Colleen A. Rose

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, 2015 through June 30, 2016. Information in this report was provided by 298 of the 322 doctoral-granting departments surveyed, with additional information provided by the individual new doctoral recipients. Readers should keep in mind that the drops seen in the Statistics and Biostatistics groups are likely the result of nonresponse; 23 (10 Statistics & 13 Biostatistics) of 105 departments did not respond in time for the publication of this report.

The 2015–2016 Report on Employment Experiences of New Doctoral Recipients immediately following this report provides an analysis of the fall 2016 employment plans of the 730 PhD recipients who responded to this survey, as well as a summary of their demographic characteristics.

Detailed information, including tables not appearing in this report, is available on the AMS website at www.ams.org/annual-survey.

Doctoral Degrees Awarded

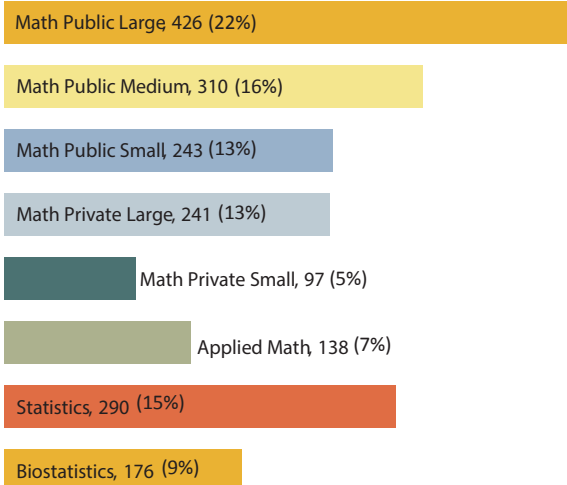
In mathematical sciences 1,921 PhDs were awarded by 279 doctoral-granting departments; 19 doctoral-granting departments awarded no doctoral degrees.

The highest percentage, 30% (575) of the new PhDs had a dissertation in statistics/biostatistics, followed by algebra/number theory with 15% (279) and applied mathematics with 13% (248).

Comparing PhDs awarded in 2015–16 to 2014–15 the number of PhDs awarded:

- Increased about 1% from 1,901 to 1,921. In the 272 departments that responded both this year and last year the number of PhDs awarded decreased from 1,901 to 1,871.
- Increased in all groups except Applied Math, Statistics, and Biostatistics.
- Increased 22% in Math Public Small, 28% in Math Private Small, 10% in Math Private large, and less than 3% in both Math Public Large and Medium.
- Decreased 7% in Applied Math, 16% in Statistics, and 9% in Biostatistics.

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

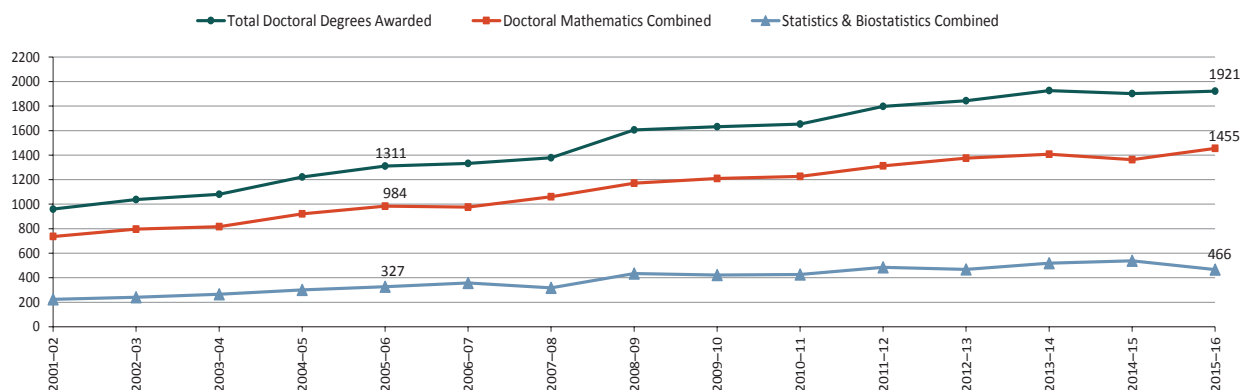


Total Degrees Awarded: 1,921

*See page 358 for a description of the department groupings.

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Figure A.2: New PhDs Awarded by Group



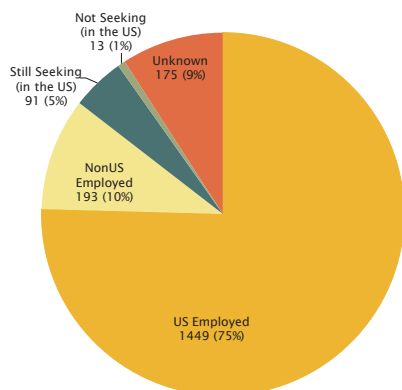
Comparing PhDs awarded in 2015-16 with those awarded in 2005-06:

- PhDs awarded have increased more than 46% over the last 10 years.
- Degrees awarded by Doctoral Math and by Statistics/Biostatistics combined have increased 48% and 43%, respectively.

Employment

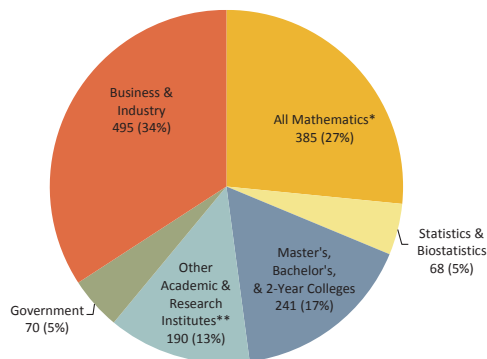
The employment plans are known for 1,746 of the 1,921 new doctoral recipients. The number of new doctoral recipients employed in the US is 1,449, essentially the same as last year. Among those new PhDs employed in Doctoral Math departments, 68% are in postdoc positions, down from 75% last year. The number of new PhDs taking positions in Business & Industry is 495; last year's count was 492. All groups except Math Public Medium, Statistics and Biostatistics showed an increase in Business & Industry. The overall US unemployment rate for the new doctoral recipients is 5.9%, essentially the same as the 6.1% in 2014-15. (Details on the calculations are on page 357.)

Figure E.1: Employment Status



- 52% (757) of those who are employed in the US are US citizens, up from 50% in 2014-15.
- 79% (692) of non-US citizens whose employment status is known are employed in the US, the remaining 179 non-US citizens are either employed outside of the US or are unemployed.
- 8% (133) of the new PhDs who are employed are working at the institution that granted their degree, down from 9% last year. These individuals constitute 15% of total US academic employed.
- 57% of those still seeking employment in the US are US citizens.

Figure E.2: US Employed by Type of Employer

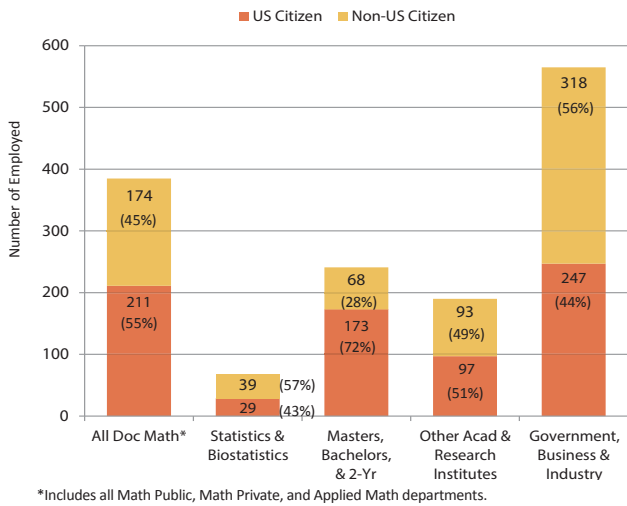


*Includes all Math Public, Math Private, and Applied Math departments.
**Other Academic consists of departments outside the mathematical sciences including numerous medical-related units.

- US academic hiring increased 2% to 884 compared to 864 last year.
- Government hiring decreased 20% (from 88 to 70); all doctoral-granting groups except Math Public Medium, Math Private Large, Math Private Small, and Applied Math showed decreases in the number of PhDs taking positions in this sector.

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Figure E.3: Employment in the US by Type of Employer and Citizenship
Total: 1,449

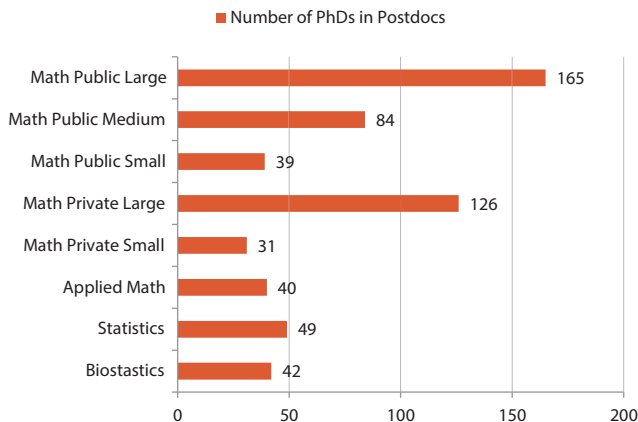


- Total known to be employed as of this report: 1,642

Of the US Citizens whose employment status is known, 87% (757) are employed in the US, and of these:

- 32% are employed in PhD-granting departments.
- 36% are employed in all other academic categories.
- 33% are employed in government, business and industry.
- 35% (576) of the new PhDs that are employed are reported to be in postdoc positions, down 4% from 603 in 2014-15.
- 52% of the new PhDs awarded by the Math Private Large group are employed in postdocs, while only 16% of new PhDs awarded by the Math Public Small group and 17% of PhDs awarded by the Statistics group are in postdocs.
- 48% of the new PhDs having US academic employment are in postdocs, down from 51% last year.

Figure E.4: PhDs Employed in Postdocs by Degree-Granting Department Group



Looking at Figure E.5, we see that:

- US citizens hold the majority of postdoc positions in the employment sectors of Masters, Bachelors, & 2-Year, and Government and Business/Industry. In other sectors they hold between 41-49% of postdoc positions.
- 22% of the new PhDs in postdoc positions are employed outside the US; the same percentage as 2014-15.
- 71% of the new PhDs employed in Doctoral Math departments are in postdoc positions, down from 75% last year.

Figure E.5: New PhDs Employment by Citizenship, Type of Position, and Type of Employer

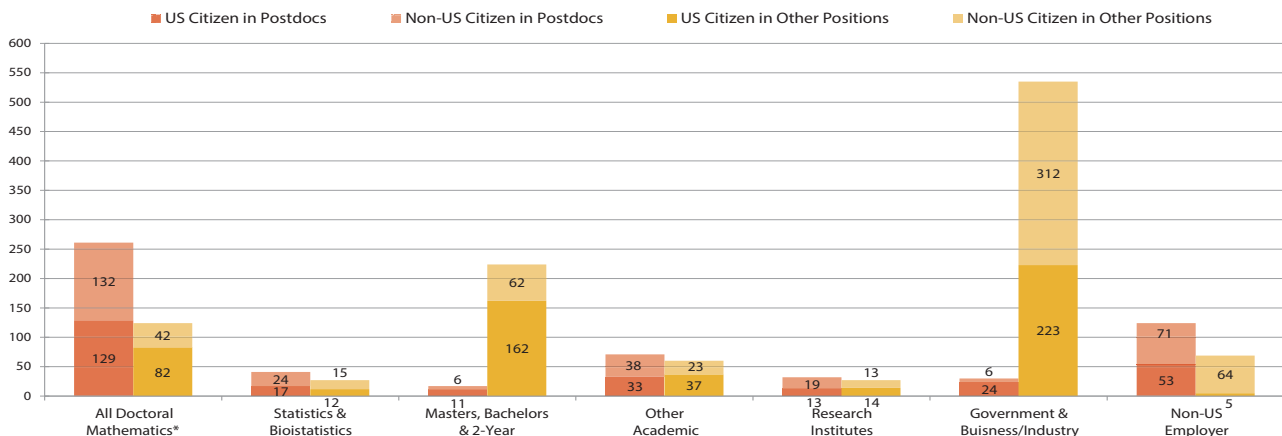
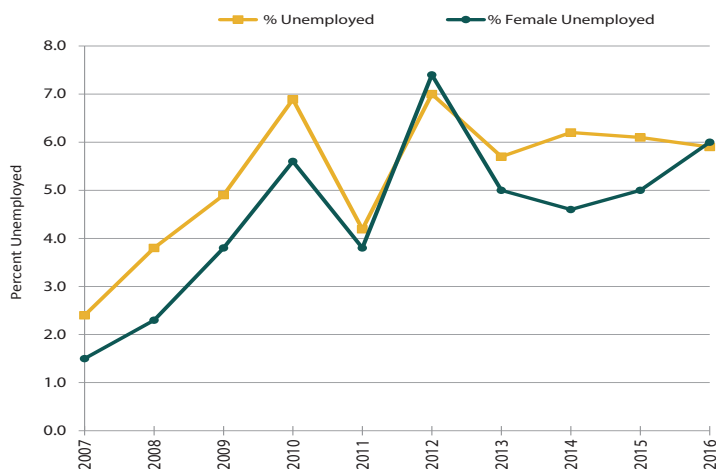


Figure E.6 displays the US unemployment rate for new doctorates; details on the calculations are on page 781.

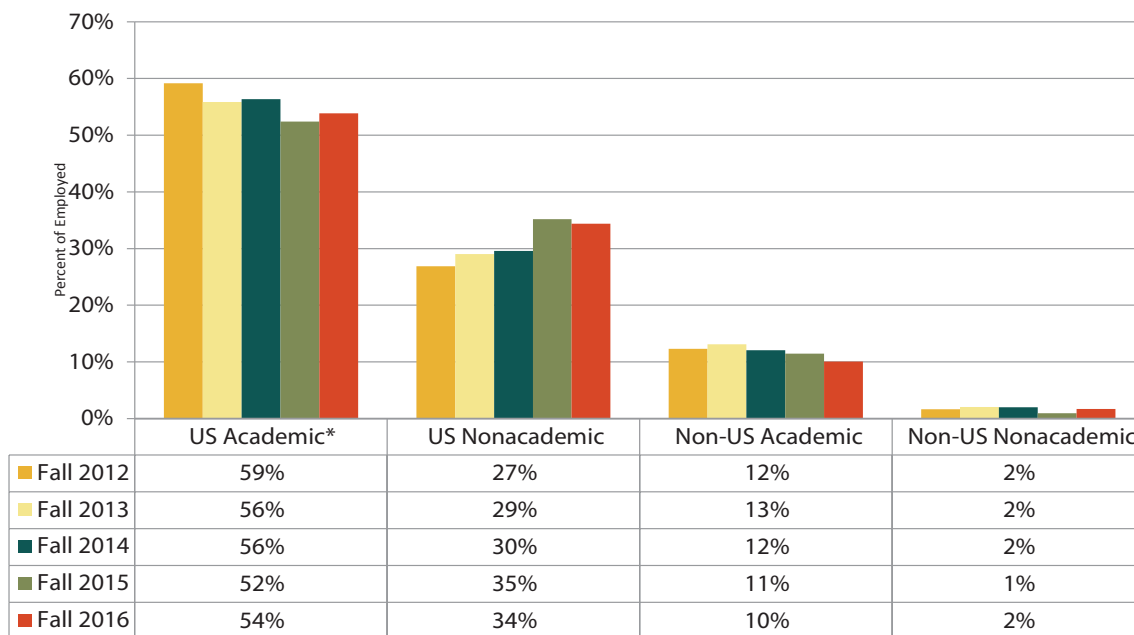
Figure E.6: Percentage of New Doctoral Recipients Unemployed 2007-16*



Among new doctorates reported to be in the US and whose employment status is known:

- Overall unemployment is 5.9%.
- 6.4% of US citizens are unemployed, compared to 6.7% in fall 2015.
- 5.3% of non-US citizens are unemployed, essentially the same as the 2015 rate.
- New doctorates from the Math Private Small Group reported the highest unemployment rate at 13.7%, essentially unchanged from 13.1% last year.
- New doctorates from the Biostatistics Group reported the lowest unemployment at 2.3%.

Figure E.7: Percentage of Employed New PhDs by Type of Employer



* Includes other academic departments and research institutes/other non-profits.

Here are a few notable features of Figure E.7 for 2016.

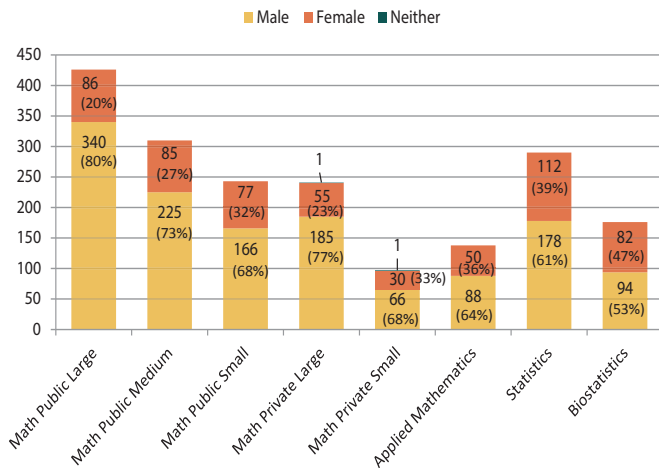
- US academic hiring increased to 54%, while US nonacademic hiring dropped to 34%.
- Non-US academic hiring dropped to 10% (a five-year low).
- Detailed information on new PhDs employed in the US by degree-granting department group is available on the AMS website at www.ams.org/annual-survey.

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Demographics

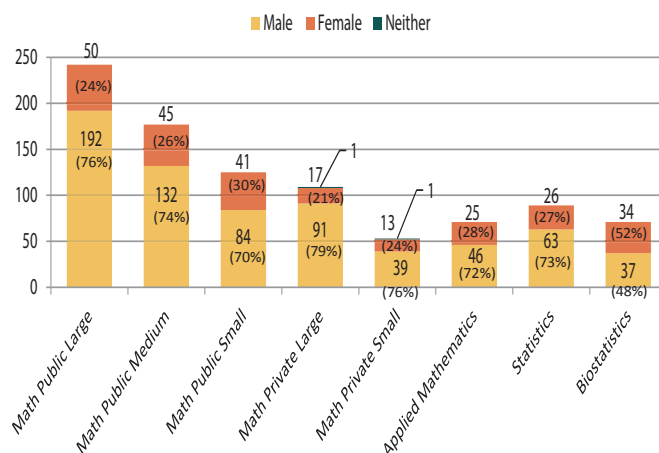
Gender and citizenship were known for all 1,921 new PhDs reported for 2015-16. The percentage of US citizens is 49%, up from 46% last year. Females accounted for 27% of the US citizen total, down from 31% last year. Non-US citizens receiving a PhD decreased to 51% from 54% last year. 10% (66) of the non-US citizens employed in the US have permanent visa status, almost unchanged from 9% last year. 5% (95) of PhDs awarded were to underrepresented minorities.

Figure D.1: Gender of Doctoral Recipients by Degree-Granting Grouping



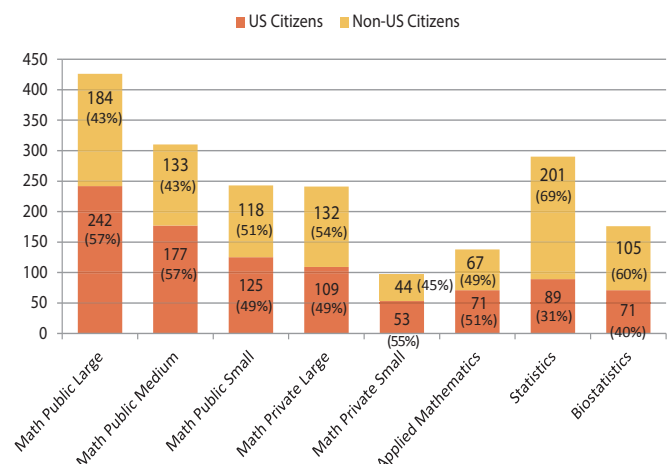
- Females account for 30% (576) of 1,921 PhDs, down from 31% last year.
- Two individuals gender-identified as neither male or female.

Figure D.3: Gender of US Citizen Doctoral Recipients by Degree-Granting Grouping



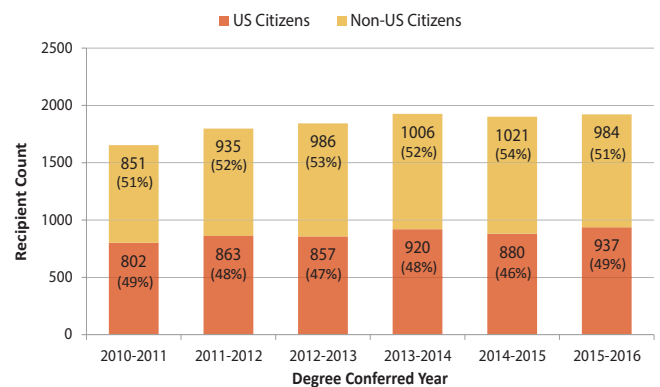
- 51% of the males, 44% of the females, and 100% of the neither are US citizens.
- Females accounted for 27% of the US citizens.
- Among the US citizens: 2 are American Indian or Alaska Native, 75 are Asian, 29 are Black or African American, 45 are Hispanic or Latino, 7 are Native Hawaiian or Other Pacific Islander, 754 are White, and 25 are of unknown race/ethnicity.
- Math Public Large awarded the highest number (23) of PhDs to US citizen minorities, while Biostatistics awarded the smallest number (2), followed by Statistics with 3.

Figure D.2: Citizenship of Doctoral Recipients by Degree-Granting Grouping



- 57% of all the PhDs awarded by the Math Public Large and Medium groups were to US citizens, while only 31% of the PhDs awarded by the Statistics group were to US citizens.
- All groups except Math Private Large, Statistics, and Biostatistics awarded more PhDs to US citizens than Non-US citizens.

Figure D.4: Citizenship of New PhD Recipients, 2010-16



Looking at the last six years, we see that:

- The proportion of PhDs awarded to US citizens is at a six-year high, 49% (937). While this is a 7% increase from last year, it is the same percentage as in fall 2010-11.
- Non-US citizen counts decreased 4% to 984 from 1,021 last year. While this is the first year-to-year drop in six-years the non-US citizen count has increased 16% over that in 2010-11.

Female New Doctoral Recipients

The proportion of female new doctoral recipients is 30% essentially unchanged from 31% last year. Of the 1,049 new PhDs hired into academic positions, 31% (320) were women, compared with 30% as last year. Twenty-six percent of those hired into postdoc positions were women, with 42% of the women in postdocs being US citizens, down from 45% last year. The US unemployment rate for females is 6.0%, compared to 5.9% for males and 5.9% overall.

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

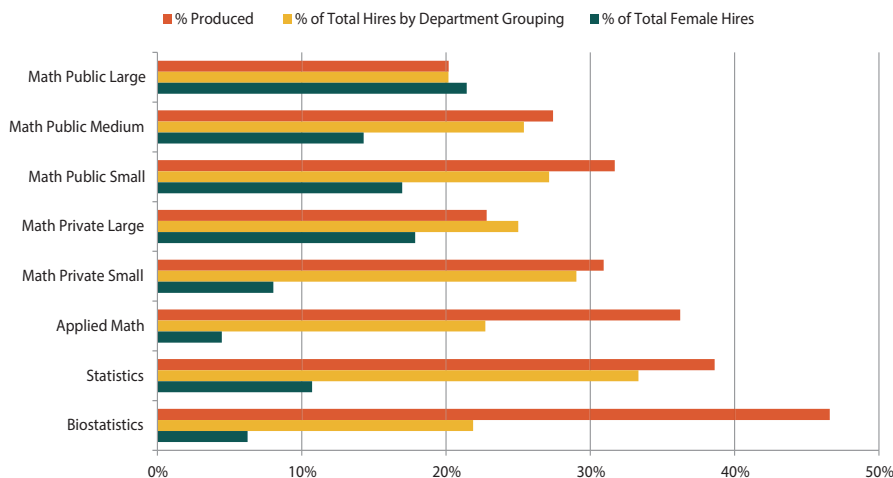
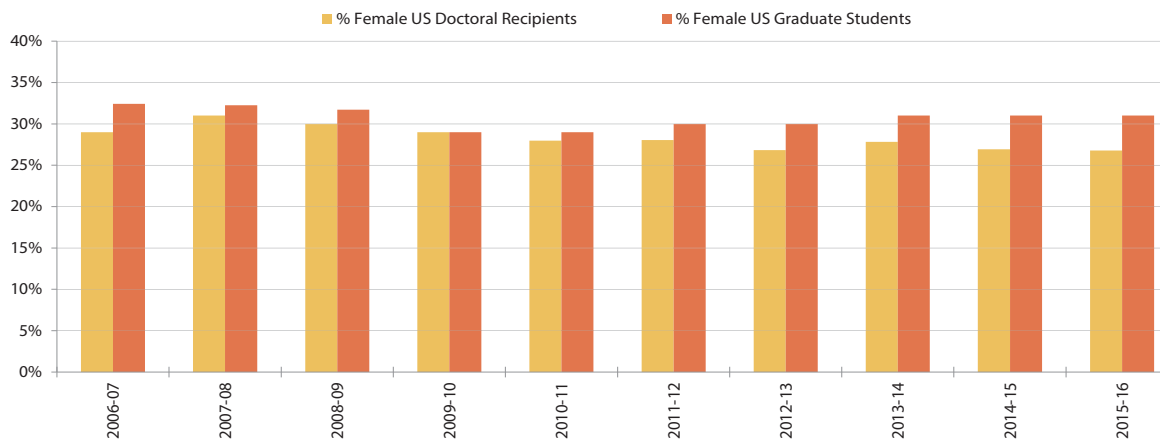


Table F.1: Number of Female New Doctoral Recipients Produced by and Hired by Department Groupings

Department Grouping	Females Produced	Females Hired
Math Public Large	86	24
Math Public Medium	85	16
Math Public Small	77	19
Math Private Large	55	20
Math Private Small	30	9
Applied Math	50	5
Statistics	111	12
Biostatistics	82	7
Total	576	112

- 32% of those hired into US academic positions were female (up from 31% last year).
- 42% of those hired by the Bachelor’s Group were women (same as last year), 38% of those hired by the Master’s Group were women (up from 26% last year), and 24% of those hired by the PhD Math groups combined were women.
- 41% of those hired into Research Institutes/Other non-profit positions were women (up from 26% last year).
- 33% of those hired into Government positions were women (down from 42% last year).
- 60% of the women employed in all doctoral groups are in postdoc positions, compared to 69% of males employed in these groups.

Figure F.2: Females as a Percentage of US Citizen Doctoral Recipients and Graduate Students

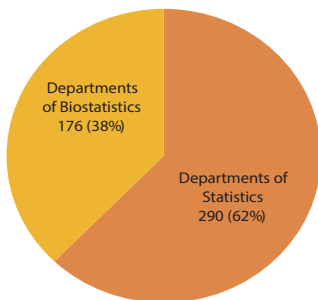


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PhDs Awarded by Statistics and Biostatistics (Stat/Biostat) Departments

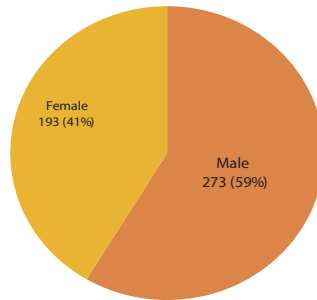
This section contains information about new doctoral recipients as reported by 82 (49 of 59 statistics and 33 of 46 biostatistics) Stat/Biostat departments that responded to this survey. These departments produced 466 new doctorates, all of whom had dissertations in statistics/biostatistics. This is a 13% decrease in the number reported for fall 2015, which was 538. In addition, Math Public, Math Private and Applied Math departments combined had 110 PhD recipients with dissertations in statistics. 34% (160) of the new PhDs awarded by Stat/Biostat are US citizens (while in the other groups combined, 53% are US citizens). The unemployment rate for US citizens with new Stat/Biostat PhDs is 3.0%, essentially the same as in 2014-15. Underrepresented minorities received 6% of all degrees awarded to US citizens and permanent residents in Stat/Biostat (199).

Figure S.1: PhDs Awarded by Statistics/Biostatistics Departments



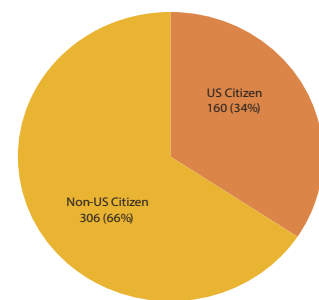
- 24% of all mathematical sciences PhDs awarded were in the Stat/Biostat group.
- Females account for 38% of Statistics and 47% of Biostatistics PhDs awarded.

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



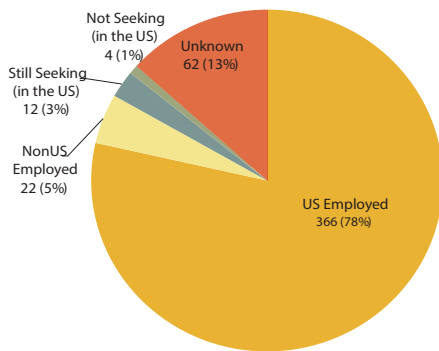
- Females accounted for 41% of the 466 PhDs in Stat/Biostat, compared to Doctoral Math, where 26% are female.

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



- 38% of Stat/Biostat US citizen PhD recipients are females, while in Doctoral Math 25% of the US citizens are females.

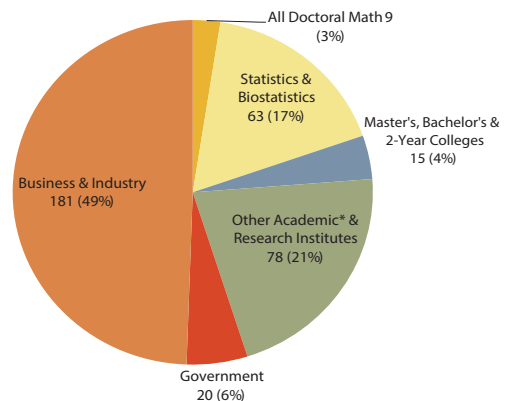
Figure S.4: Employment Status of PhD Recipients from Statistics/Biostatistics Departments



Total PhDs Awarded: 466

- 3.2% of Stat/Biostat PhDs are unemployed, (compared to 6.8% among Doctoral Math), essentially unchanged from 2014-15.
- Unemployment among new PhDs with dissertations in statistics/biostatistics is 2.6%, down from 3.8%. Among all other dissertation groupings, 5.6% are unemployed.

Figure S.5: US-Employed PhD Recipients from Statistics/Biostatistics Departments by Type of Employer



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

Total US Employed: 366

- 49% of Stat/Biostat PhDs are employed in Business/Industry, compared to 29% in Math.
- 28% of those hired by Stat/Biostat were females, compared to 24% in Math.

Remarks on US Unemployment Rate Calculations

In the unemployment calculations provided in this report, the individuals employed outside the US have been removed from the denominator used in the calculation of the rate, in addition to the routine removal of all individuals whose employment status is unknown. This is a change from Annual Survey Reports prior to 2009. As a consequence, the unemployment rate now being reported more accurately reflects the US labor market experienced by the new doctoral recipients. This change tends to increase the rate of unemployment over that reported in prior years.

Another small change from prior years is that, those individuals reported as not seeking employment have also been removed from the denominator. The number of individuals so designated is small each year, and the impact of this change is to produce a slight increase in the rate over that reported in prior years.

The unemployment rates for years prior to 2009 shown in this report have been recalculated using this method. One can view a comparison of the unemployment rates using the earlier method and the current method by visiting the AMS website at www.ams.org/annual-survey/surveyreports.html.

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 PhDs awarded between 2000 and 2010, based on their reports to the Annual Survey during this period. Furthermore, doctorate-granting

departments which self-classify their PhD 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 www.ams.org/notices/201209/rtx120901262p.pdf.

Department Grouping Response Rates

Doctorates Granted
Departmental Response Rates by Grouping

Math Public Large	26 of 26 including 0 with no degrees
Math Public Medium	40 of 40 including 0 with no degrees
Math Public Small	62 of 64 including 8 with no degrees
Math Private Large	24 of 24 including 0 with no degrees
Math Private Small	28 of 29 including 1 with no degrees
Applied Math	30 of 30 including 2 with no degrees
Statistics	49 of 59 including 4 with no degrees
Biostatistics	33 of 46 including 4 with no degrees
Total	298 of 322 including 19 with no degrees

As of press time for this issue of *Notices*, the following departments had not responded to the survey. Therefore, any PhDs which may have been awarded by these departments are not included in this report.

Mathematics Departments

Yeshiva University

Statistics Departments

George Washington University
Michigan State University
North Carolina State University
Oklahoma State University
University of Arizona
University of California, Davis
University of California, Los Angeles
University of California, Santa Barbara
University of Virginia
Western Michigan University

Biostatistics Departments

Brown University
Columbia University
Georgia Southern University, College of Public Health
Saint Louis University College for Public Health & Social Justice
University of Cincinnati, Medical College
University of Colorado, Denver
University of Illinois at Chicago
University of Kentucky
University of Louisville
University of Oklahoma, Health Science Center
University of South Carolina
University of South Florida
Virginia Commonwealth University, Medical Center

Department Groupings

In this report, *Mathematical Sciences* departments are those in four-year institutions in the US that refer to themselves with a name that incorporates (with a few exceptions) “Mathematics” or “Statistics” in some form. For instance, the term includes, but is not limited to, departments of “Mathematics,” “Mathematical Sciences,” “Mathematics and Statistics,” “Mathematics and Computer Science,” “Applied Mathematics,” “Statistics,” and “Biostatistics.” Also, *Mathematics (Math)* refers to departments that (with exceptions) have “mathematics” in the name; *Stat/Biostat* refers to departments that incorporate (again, with exceptions) “statistics” or “biostatistics” in the name but do not use “mathematics.” The streamlining of language here militates against the possible objection to foreshortening the full subject names.

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

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

Math Public Small consists of departments with an annual rate of production of PhDs of 3.8 or less per year.

Math Private Large consists of departments with an annual rate of production of PhDs, ranging between 3.9 and 19.8 per year.

Math Private Small consists of departments with an annual rate of production of PhDs 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-degree-granting biostatistics departments.

Masters contains US departments granting a master’s degree as the highest graduate degree.

Bachelors contains US departments granting a baccalaureate degree only.

Doctoral Math contains all US math public, math private, and applied math mathematics departments granting a PhD as the highest graduate degree.

Mathematics (Math) contains all US Math Public, Math Private, and Applied Math, Masters, and Bachelors Groups above.

Stat/Biostat contains all doctoral-degree-granting statistics and biostatistics departments.

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

Starting with reports on the 2012 AMS-ASA-IMS-MAA-SIAM Annual Survey of the Mathematical Sciences, the Joint Data Committee implemented a new method for grouping 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 PhDs awarded between 2000 and 2010, based on their reports to the Annual Survey during that period.

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 www.ams.org/journals/notices/201209/rtx120901262p.pdf.

Doctoral Degrees Conferred 2015–2016

Supplementary List

The following list supplements the list of thesis titles published in the February 2017 Notices, pages 281–301.

TEXAS

Southern Methodist University (1)

STATISTICAL SCIENCES

Chang, Po-Yao, Self-shrinkers to the mean curvature flow asymptotic to isoparametric cones.

Ohio

University of Toledo (5)

MATHEMATICS AND STATISTICS

Karki, Manoj, Invariant Riemannian metrics in four dimensional Lie groups.

Liu, Gang, A new approach to ANOVA methods for autocorrelated data.

Mei, Jingning, Inference for autoregressive coefficients and error distribution.

Pokharel, Krishna, An isospectral flow for complex upper Hessenberg matrices.

Tang, Lin, Efficient inference for periodic autoregressive coefficients with polynomial spline smooth approach.

PENNSYLVANIA

Bryn Mawr College (1)

MATHEMATICS

Bryant, Kathryn, Slice implies mutant ribbon for odd, stranded pretzel knots.

VIRGINIA

George Mason University (2)

MATHEMATICAL SCIENCES

Locke, Rachel, Multiplication operators in discrete settings of an infinite graph and the discrete Zygmund space.

Stephens, Thomas, Topological methods for evolution equations.

TEXAS

Southern Methodist University (1)

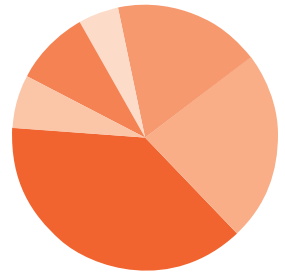
STATISTICAL SCIENCES

Liao, Yijie, Marginal posterior distribution of regression parameters for the Cox model under Dirichlet and gamma process priors.

Acknowledgments

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.

The Annual Survey is co-sponsored by the American Mathematical Society (AMS), the American Statistical Association (ASA), Institute for Mathematical Statistics (IMS), Mathematical Association of America (MAA), and the Society for Industrial and Applied Mathematics (SIAM).



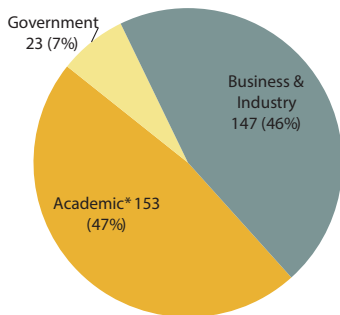
Report on the 2015–2016 Employment Experiences of the New Doctoral Recipients

Amanda L. Golbeck, Thomas H. Barr, and Colleen A. Rose

This report provides information on employment gathered from a subset of the 2015–16 new PhDs on the Employment Experiences of New Doctoral Recipients (EENDR) Survey. It expands on the details of employment that are not available through the departments.

The EENDR survey was sent to the 1,656 new PhDs for which departments provided current contact information by early October of 2016. Of these individuals, 730 (44%) responded. The employment status is known for 721 of these individuals. Of the 698 who reported being employed, 4% are part-time and 24% indicated they were actively looking for new employment. The US unemployment among this group is 2.8%

Figure EE.1: EENDR Respondents Reporting Permanent US Employment by Sector

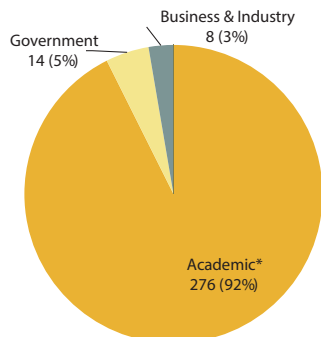


* Includes research institutes and other non-profits.

Of the 323 permanently employed:

- 37% are women.
- 63% of those reporting academic employment hold tenured/tenure-track positions (up from 58% last year).

Figure EE.2: EENDR Respondents Reporting Temporary US Employment by Sector

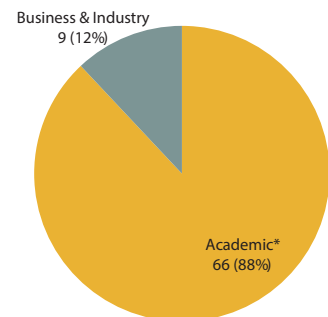


* Includes research institutes and other non-profits.

Of the 298 temporarily employed:

- 31% are women.
- 46% were unable to find a suitable permanent position (down from 47% last year).
- 72% are employed in postdocs, and 38% of these reported they could not find a suitable permanent position.

Figure EE.3: EENDR Respondents Employed Outside the US by Sector



* Includes research institutes and other non-profits.

Of the 75 employed outside the US:

- 17% are women.
- 17% are US citizens.
- 72% are employed in postdocs.

Table EE.1: Number and Percentage of EENDR Respondents Employed in the US by Job Status

Year	Permanent		Temporary		Temporary		Temporary Postdocs		#(%) Unknown		
	Total	%	Total	%	Perm Not Avail	% of Temp Total	Total	% of Temp Total			
Fall 2012	261	44%	328	56%	127	39%	242	74%	108	45%	0
Fall 2013	374	53%	335	47%	173	52%	247	74%	106	43%	0
Fall 2014	363	51%	343	49%	148	43%	260	76%	88	34%	0
Fall 2015	357	51%	341	49%	160	47%	258	76%	102	40%	0
Fall 2016	323	52%	298	48%	136	46%	214	72%	82	38%	2 (<1%)

Table EE.1 compares the status of EENDR respondents employed in the US over the last five years:

- 52% of those employed for fall 2016 are in permanent positions. While this is higher than the proportion reported for fall 2015, it is lower than the high of 53% for fall 2013.
- The proportion of those in temporary positions is 48%, this is a drop from last year's figure and 8 percentage points lower than the five-year high of 56%.
- 46% of those holding temporary positions were unable to find suitable permanent positions. While this is down from last year, it is higher than the five-year low of 39% for fall 2012.
- 38% of those holding postdoc positions were unable to find suitable permanent positions. This figure is down seven percentage points from the five-year high of 45%; and up four percentage points from the low in Fall 2014.

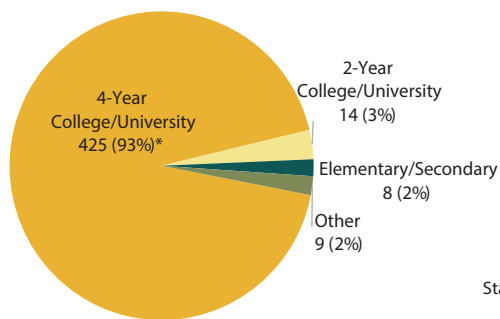
Table EE.2: Percentage of EENDR Respondents Employed in the US by Employment Sector within Job Status

Year	Permanent			Temporary		
	Acad	Govn	B/I	Acad	Govn	B/I
Fall 2012	61%	8%	32%	92%	5%	2%
Fall 2013	53%	7%	40%	92%	4%	4%
Fall 2014	54%	6%	40%	92%	5%	3%
Fall 2015	44%	8%	48%	93%	3%	4%
Fall 2016	47%	7%	46%	93%	5%	3%

Looking at Table EE.2, we see that

- Permanent employment in the academic sector rebounded slightly to 47% after dropping to a five-year low of 44% last year, whereas employment in business/industry and government dropped to 46% and 7%, respectively.
- Temporary employment in all three sectors has remained essentially unchanged over this five-year period.

Figure EE.4. Employment by Type of Educational Institution (Educ)

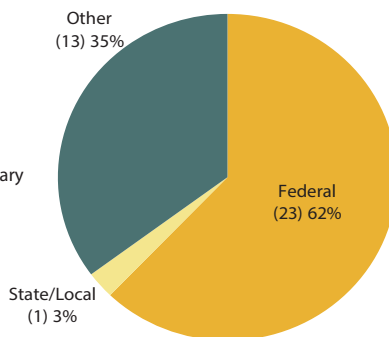


* Includes research institutes and other non-profits.

Looking at those employed in education (456) we see that:

- US citizens hold 65% of these positions; 62% are employed at a 4-Year college/university.
- Females hold 33% of these positions; 63% of these are US citizens and 30% hold temporary positions.
- 66% of these positions are temporary; of those in temporary positions 62% are US citizens and 46% could not find a suitable permanent position.
- 31% of those employed in education are currently looking for another position.

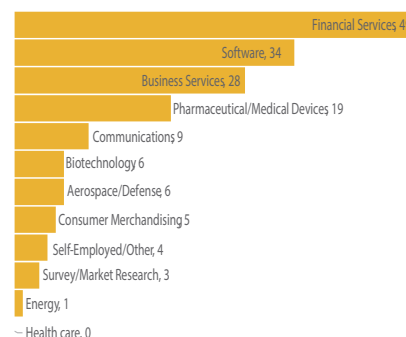
Figure EE.5. Employment by Type of Government (Gov)



Looking at those employed in government (37) we see that:

- US citizens hold 47% of these positions.
- 38% are female; of these women, 64% work in the federal government.
- 38% hold temporary positions; 86% are US citizens and 8% could not find a suitable permanent position.
- 87% of those employed in Gov are currently looking for another position.

Figure EE.6. Employment by Type of Business/Industry (BI)



Looking at those employed by type of Business/Industry (164) we see that:

- 47% are US citizens.
- Females hold 32% of BI positions; 51% of these are US citizens and 23% work in financial services.
- 6% hold temporary positions; almost all are held by non-US citizens and 10% could not find a suitable permanent position.
- 14% of those employed in BI are currently looking form another position.

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Figure EE.7. Age Distribution of New PhD Respondents

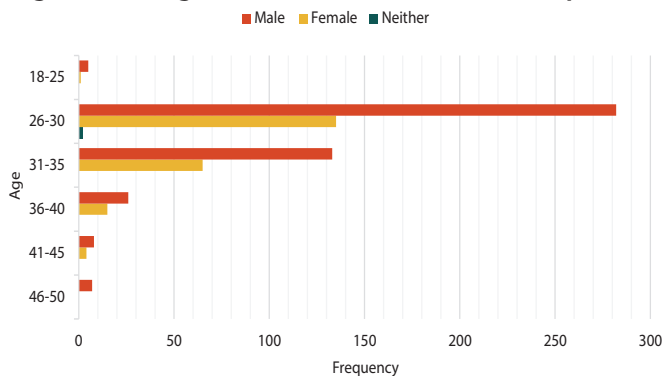


Figure EE.7 gives the age distribution of the 683 new doctoral recipients who respond to this question. The median age of new doctoral recipients was 29 while the mean was 30.5.

- The youngest new PhD recipient was 18 and the oldest was 50.
- 61% of all new PhD recipients are between the ages of 26-30
- The mode is 28 (21% of females and 18% of males reported being age 28).

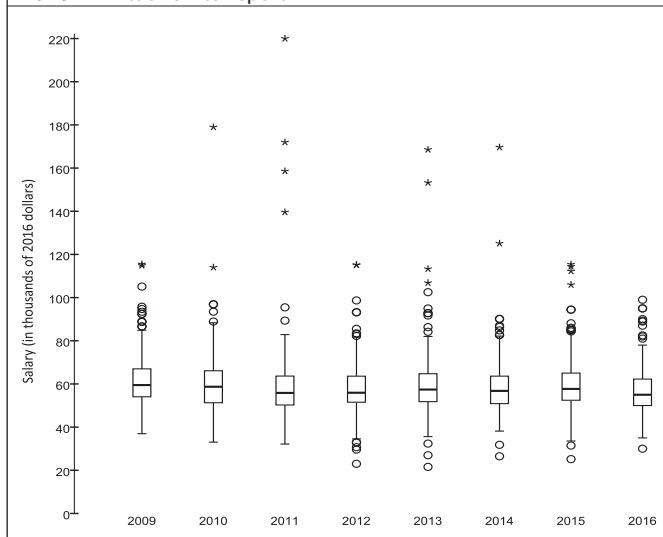
Starting Salaries of the 2015-2016 Doctoral Recipients

The starting salary figures were compiled from information gathered on the EENDR questionnaires sent to 1,656 individuals using addresses provided by the departments granting the degrees; 730 individuals responded between late October 2016 and June 2017. Responses with insufficient data or from individuals who indicated they had part-time or non-US employment were excluded. Numbers of usable responses for each salary category are reported in the following tables.

Readers should be warned that the data in this report are obtained from a self-selected sample, and inferences from them may not be representative of the full population. Detailed information, including boxplots which traditionally appeared in this report, is available on the AMS website at www.ams.org/annual-survey/survey-reports.

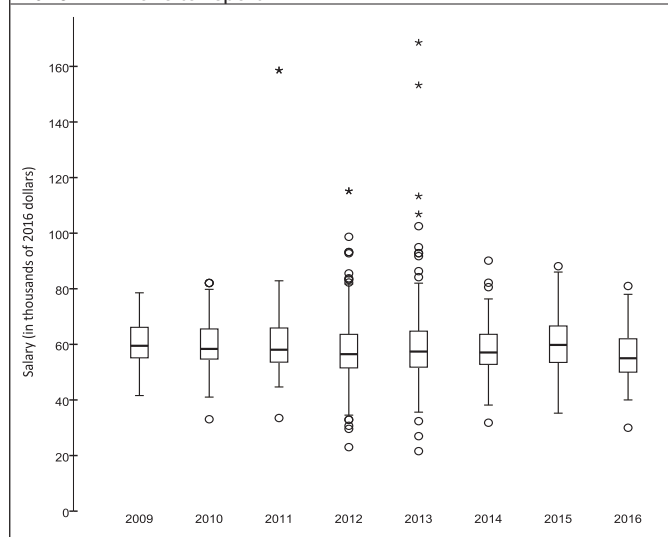
**Academic Teaching/Teaching and Research
9-10-Month Starting Salaries[†]
(in thousands of dollars)**

PhD Year	Min	Q ₁	Median	Q ₃	Max
Total (148 male/95 female/1 neither)					
2016 M	30.0	50.0	55.5	63.0	99.0
2016 F	35.0	50.0	55.0	60.5	82.0
2016 N	too few to report				
One year or less experience (130 male/84 female/1 neither)					
2016 M	30.0	50.0	55.0	63.0	99.0
2016 F	35.0	50.0	55.0	60.0	77.0
2016 N	too few to report				



**Academic Postdoctorates Only[†]
9-10-Month Starting Salaries
(in thousands of dollars)**

PhD Year	Min	Q ₁	Median	Q ₃	Max
Total (64 male/25 female/0 neither)					
2016 M	30.0	49.3	55.0	61.3	81.0
2016 F	45.0	53.5	55.0	62.6	78.0
2016 N	none to report				
One year or less experience (59 male/23 female/0 neither)					
2016 M	30.0	49.2	55.0	60.5	81.0
2016 F	45.0	54.3	59.0	62.8	78.0
2016 N	none to report				

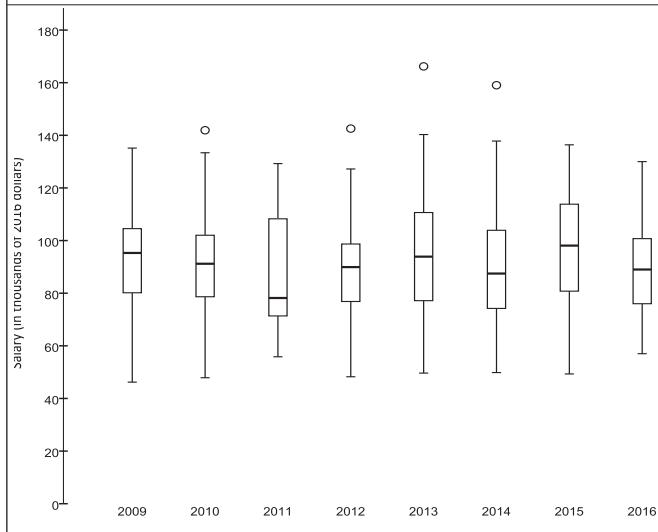


[†] Includes postdoctoral salaries.

[†] A postdoctoral appointment is a temporary position primarily intended to provide an opportunity to extend graduate training or to further research experience.

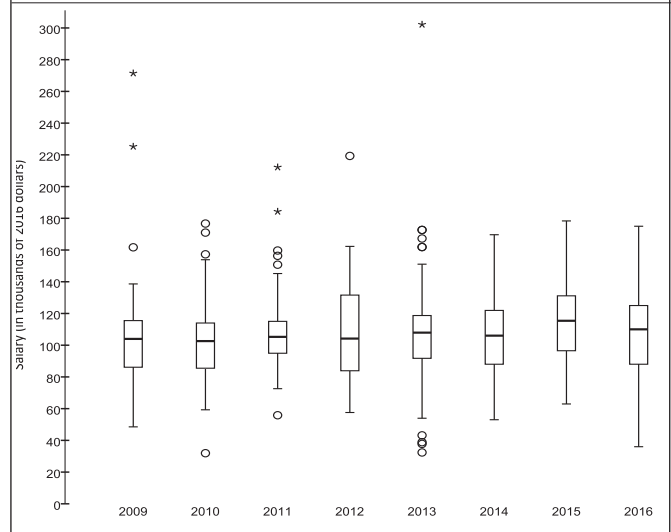
Government 11–12-Month Starting Salaries (in thousands of dollars)

PhD Year	Min	Q ₁	Median	Q ₃	Max
Total (23 male/14 female/0 neither)					
2016 M	57.0	74.8	85.7	93.3	130.0
2016 F	68.5	86.8	98.2	101.1	112.0
2016 N	none to report				
One year or less experience (20 male/9 female/0 neither)					
2016 M	77.0	74.5	85.4	97.0	130.0
2016 F	68.5	81.0	98.0	98.2	112.0
2016 N	none to report				



Business and Industry 11–12-Month Starting Salaries (in thousands of dollars)

PhD Year	Min	Q ₁	Median	Q ₃	Max
Total (102 male/49 female/0 neither)					
2016 M	36.0	86.8	110.0	125.0	175.0
2016 F	65.0	89.5	107.0	125.0	160.0
2016 N	none to report				
One year or less experience (76 male/39 female/0 neither)					
2016 M	45.0	84.2	106.5	125.0	175.0
2016 F	70.0	91.5	105.4	125.0	143.0
2016 N	none to report				



Remarks on Starting Salaries

Key to Tables and Graphs. Salaries are those reported for the fall immediately following the survey cycle. Years listed denote the survey cycle in which the doctorate was received—for example, survey cycle July 1, 2015–June 30, 2016 is designated as 2016. Salaries reported as 9–10 months exclude stipends for summer grants or summer teaching or the equivalent. M and F are male and female, respectively. Male and female figures are not provided when the number of salaries available for analysis in a particular category was five or fewer. All categories of “Teaching/Teaching and Research” and “Research Only” contain those recipients employed at academic institutions only.

Graphs. The graphs show standard boxplots summarizing salary distribution information for the years 2009 through 2016. Values plotted for 2009 through 2015 are converted to 2016 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, US Department of Commerce. These categories are based on work activities reported in EENDR. Salaries of postdoctorates are shown separately. They are also

included in other academic categories with matching work activities.

For each boxplot the box shows the first quartile (Q₁), the median (M), and the third quartile (Q₃). Upper whiskers extend from Q₃ to the largest data value below Q₃+1.5IQR, and lower whiskers from Q₁ down to the smallest data value above Q₁-1.5IQR. Data points falling between Q₃+1.5IQR and Q₃+3IQR or Q₁-1.5IQR and Q₁-3IQR are designated as outliers and plotted as circles (o). Data outside the range Q₁-3IQR to Q₃+3IQR are designated as extreme outliers and plotted as stars (*).

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Response Rates

New PhD Recipient Response Rates
by Granting Department Grouping

Granting Department Group	Number	Percent
Math Public Large	152 of 348	44%
Math Public Medium	130 of 305	43%
Math Public Small	103 of 218	47%
Math Private Large	112 of 215	52%
Math Private Small	41 of 84	49%
Applied Math	51 of 97	53%
Statistics	82 of 246	33%
Biostatistics	59 of 143	41%
Total	730 of 1656	44%

Distribution of New PhD Recipient Responses
by Employer Type

Employer Type	Number	Percent
Math Public Large	49	7%
Math Public Medium	31	4%
Math Public Small	34	5%
Math Private Large	32	4%
Math Private Small	17	2%
Applied Math	7	1%
Statistics	11	2%
Biostatistics	16	2%
Masters	33	5%
Bachelors	96	13%
Two-Year institutions	14	2%
Other Academic	57	8%
Research Institute/Other Non-profit	33	5%
Government	37	5%
Business/Industry	157	22%
Non-US Academic	66	9%
Non-US Nonacademic	8	1%
Not Seeking (US)	5	1%
Still Seeking (US)	18	2%
Unknown (US)	1	0%
Non-US: Not seeking, Still seeking, Unknown	8	1%
Total	730	100%

Acknowledgments

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. For this EENDR report, we thank the PhD recipients responded to the survey. Their participation is vital to our provided accurate and timely information.

The Annual Survey is co-sponsored by the American Mathematical Society (AMS), the American Statistical Association (ASA), Institute for Mathematical Statistics (IMS), Mathematical Association of America (MAA), and the Society for Industrial and Applied Mathematics (SIAM).