

Fall 2015 Departmental Profile Report

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This report presents a profile of mathematical sciences (MS) departments at four-year colleges and universities in the United States, as of fall 2015. The information presented includes the numbers of faculty in various categories, undergraduate and graduate course enrollments, numbers of Bachelors and Masters degrees awarded during the preceding year, and the number of graduate students. Definitions of categorized terms such as “Mathematical Sciences,” “Math,” and “Statistics” along with a description of the faculty categories are provided at the end of this report.

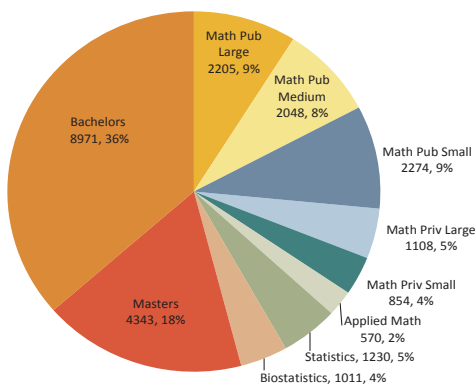
Data collected earlier from these departments on recruitment, hiring, and faculty salaries were presented in the Report on 2014–2015 Academic Recruitment and Hiring (pages 383–387 of the April 2016 issue of *Notices of the AMS*) and the 2014–2015 Faculty Salaries Report (pages 390–396 of the April 2016 issue of *Notices of the AMS*).

Detailed information, including tables, is available on the AMS website at www.ams.org/annual-survey.

Faculty Size

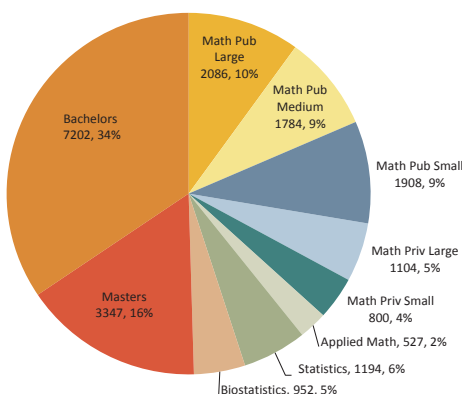
The estimated number of full-time faculty in MS for fall 2015 is 24,614. Of these, 22,373 were in Math (down slightly from 22,537 last year) and 2,241 were in Statistics (down from 2,328 last year). Full-time faculty in the Doctoral Math group increased slightly to 9,059 from 8,961 last year. In Math we estimate that the number of nondoctoral full-time faculty is 3,615, essentially unchanged from last year, with a standard error of 99. The total part-time faculty in Math is estimated to be 7,684 (with a standard error of 222), down 4% from 8,014 last year. In Statistics, the part-time faculty count is estimated to be 233, down 12% from 264 last year.

Figure F.1: Full-time Faculty by Department Grouping



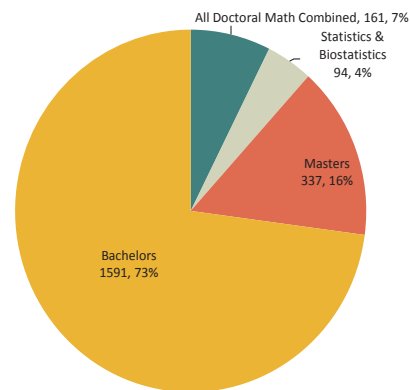
Total: 24,614

Figure F.2: Full-time Doctoral Faculty by Department Grouping



Total: 20,904

Figure F.3 Full-time Faculty Teaching Courses Outside of the Mathematical Sciences



Total: 2,183*
*(35% teach only computer science courses)

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Doctoral Faculty

The estimated number of full-time doctoral (i.e., doctorate-holding) faculty in MS is 20,904. In Math this estimate is 18,758 (with a standard error of 99), down slightly from last year's number of 18,932; in Statistics it is 2,146, down 2% from 2,189 last year. Respectively for Math and Statistics, the total doctoral tenured faculty are 11,653 and 1,011 compared to 11,909 and 1,088 for fall 2014. Sixty-six percent of all doctoral tenured faculty in Math are full professors, while 12% are tenure-eligible. Females hold 22% of all doctoral tenured faculty and 18% of doctoral tenured full professor appointments.

Figure D.1: Full-time Tenured Doctoral Faculty by Department Grouping

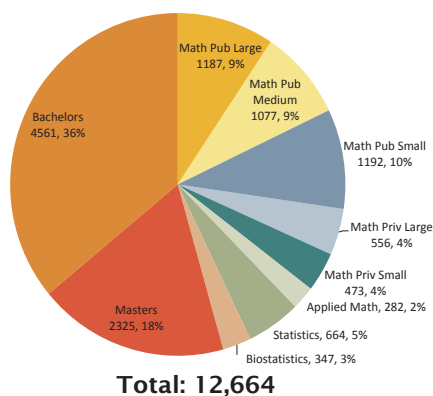


Figure D.2: Full-time Tenure-eligible Doctoral Faculty by Department Grouping

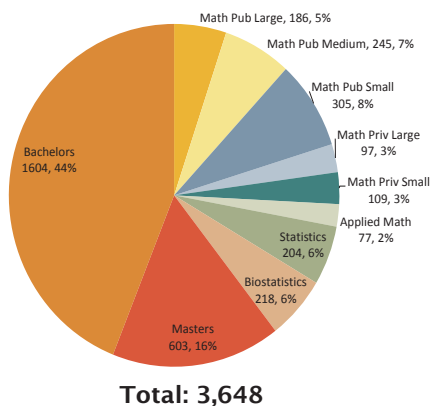
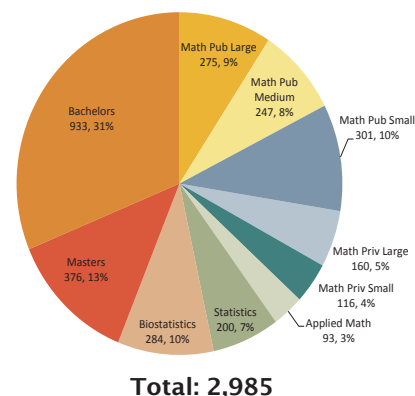


Figure D.3: Full-time Non-tenure-track Doctoral Faculty (excluding Postdocs) by Department Grouping



Features of full-time doctoral faculty data:

- 76% of all tenured doctoral faculty in the Doctoral Math group are full professors (3,615), with 71% of these appointments in Math Public departments.
- Tenure-eligible doctoral faculty increased 1% among the Doctoral Math group, while the Bachelors' and Biostatistics' groups both showed a 2% decrease.
- Postdoctoral appointments among the Doctoral Math group decreased to 1,231 for fall 2015. This is a 2% decrease from last year and 15% of the total full-time doctoral faculty in these departments (the same as last year). In Statistics postdocs increased 9% to 229.

- Females hold 21% of all postdoctoral appointments (the same as last year).
- 15% of the doctoral faculty in the Doctoral Math group are in non-tenure-track positions. The majority of these faculty hold renewable (79%) and fixed-term appointments (17%); last year these percentage were 77% and 20%, respectively.

Features of part-time doctoral faculty data:

- Total part-time doctoral faculty decreased 1% to 2,075 from 2,091 last year. Of these, 25% receive benefits, and 4% are in phased retirement.
- 27% of all part-time doctoral faculty are in Doctoral Math departments.
- Females hold 29% of all part-time doctoral faculty positions (up from 28% last year).

Figure D.4: Full-time Tenured Doctoral Full Professor Faculty by Department Grouping

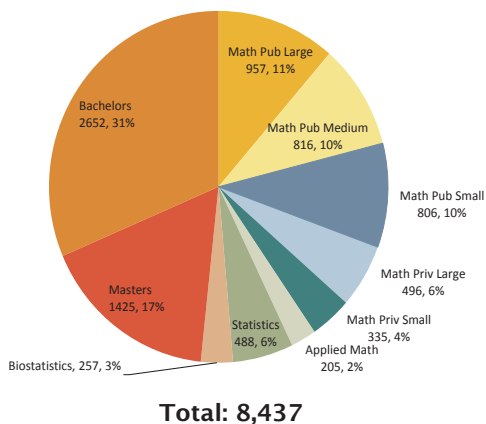
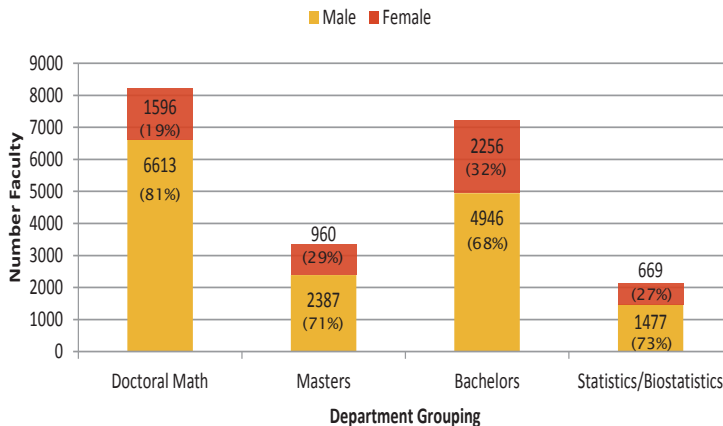


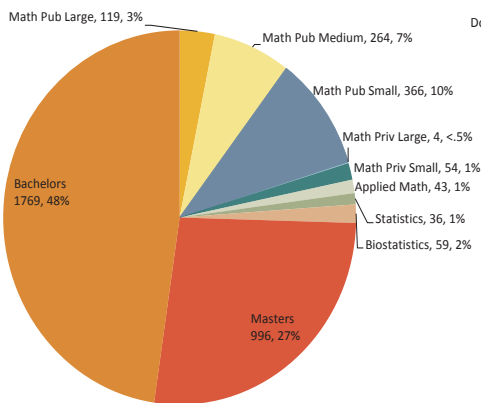
Figure D.5: Gender of Full-time Doctoral Faculty Total: 20,904



Nondoctoral Faculty

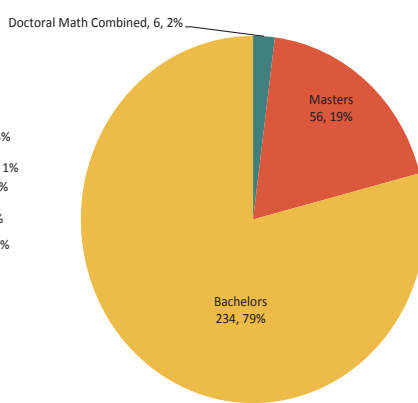
The estimated number of nondoctoral (i.e., without a doctorate) full-time faculty in MS is 3,710, of which 3,615 are in Math and 95 are in Statistics. This count is down 1% from last year, and it represents 15% of all full-time faculty. In Math, nondoctoral tenured faculty decreased 8% from 320 to 296 this year; in Statistics there were no nondoctoral tenured faculty. One hundred forty-one of the nondoctoral faculty in Math are tenure-eligible, 4% of all tenure-eligible. Nondoctoral full-time non-tenure-track faculty increased 1% to 3,271; this is 88% of all nondoctoral Math faculty, up from 86% last year. Females composed 55% of all nondoctoral faculty.

Figure ND.1: Full-time Nondoctoral Faculty by Department Grouping



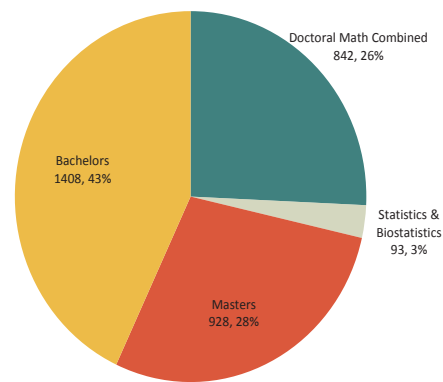
Total: 3,710

Figure ND.2: Full-time Nondoctoral Tenured Faculty by Department Grouping



Total: 296

Figure ND.3: Full-time Nondoctoral Non-tenure-track Faculty by Type of Appointment (excluding Postdocs)



Total: 3,271

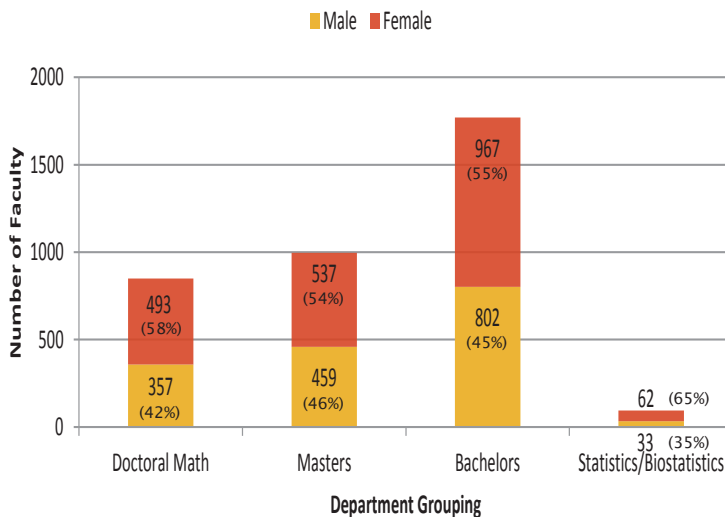
Features of full-time nondoctoral faculty data:

- 30% of all tenured nondoctoral faculty in MS are full professors (88) with 88% of these appointments in the Bachelors group. Statistics reported no faculty in this category.
- Master's and Bachelor's departments combined reported the majority of the nondoctoral nontenure-track faculty holding renewable and fixed-term appointments with 70% and 79%, respectively.
- Females account for 55% of full-time nondoctoral faculty in Math (down from 56% last year), compared to females accounting for 26% of all doctoral full-time faculty and 31% of all full-time faculty in these same groups.

Features of part-time nondoctoral faculty data:

- Total part-time nondoctoral faculty decreased 6% to 5,842 from 6,187 last year. Of these faculty, 18% receive benefits and 1% are in phased retirement.
- 74% of all part-time faculty are nondoctoral; females hold 50% of these positions.
- Part-time nondoctoral faculty increased 4% to 811 in Doctoral Math departments, this is 64% of all part-time faculty in this group.

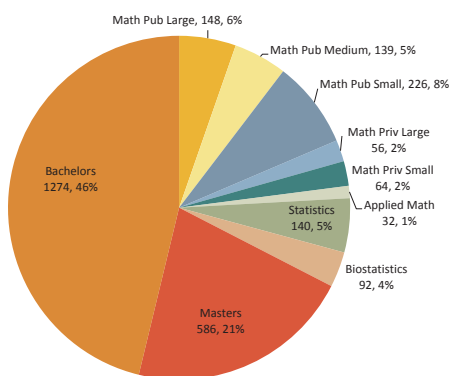
Figure ND.4: Gender of Full-time Nondoctoral Faculty Total: 3,710



Female Faculty

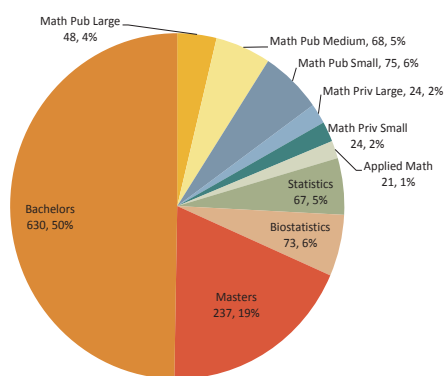
Females account for 31% (7,540) of all full-time faculty in MS. In Math, women comprised 30% (6,809 with a standard error of 158) of the full-time faculty (22,373) in fall 2015. For the Doctoral Math departments, women compose 16% of the combined doctorate-holding tenured and tenure-eligible faculty and 28% of the doctorate-holding non-tenure-track (including postdocs) faculty in fall 2015. In the other departments these respective percentages are: 24% and 33% in Statistics, 29% and 49% in Biostatistics, 28% and 33% in Masters, and for Bachelors faculty they are 31% and 34%. Among the nondoctoral full-time faculty in Math, women compose 55%. Females account for 42% of all part-time faculty in Math.

Figure FF.1: Full-time Tenured Female Doctoral Faculty by Department Grouping



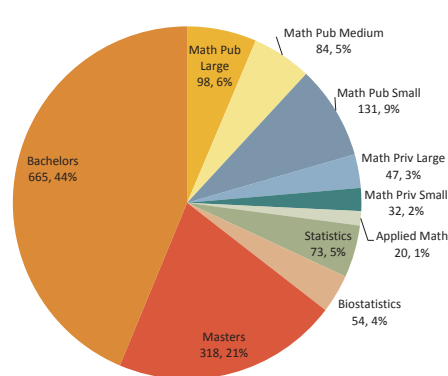
Total: 2,757

Figure FF.2: Full-time Tenure-eligible Female Doctoral Faculty by Department Grouping



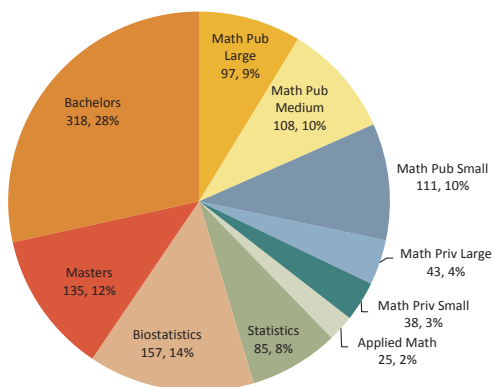
Total: 1,267

Figure FF.3: Female Doctoral Full Professor Faculty by Department Grouping



Total: 1,522

Figure FF.4: Full-time Female Doctoral Non-tenure-track Faculty (excluding Postdocs) by Department Grouping



Total: 1,117

Features of full-time female faculty data:

- Females hold 14% of full-time tenured and 26% of full-time tenure-eligible positions in Doctoral Math departments.
- 43% of all full-time female faculty are in the Bachelors departments.
- Biostatistics departments reported the highest percentage of full-time female faculty (39%), followed by the Bachelors departments (39%), and Masters (36%), while Math Private Large reported the lowest (16%).
- Females hold 21% of all postdoctoral appointments. Thirty-five percent of postdocs in Biostatistics are held by women. The majority of the Doctoral Math groups reported 22% of postdocs were held by females with only Math Public Large and Applied Math reporting fewer females in these positions with 20% and 15%, respectively.
- 89% of all female nondoctoral non-tenure-track faculty appointments (1,649) are renewable; 11% are fixed-term, and 1% are other types of appointments.

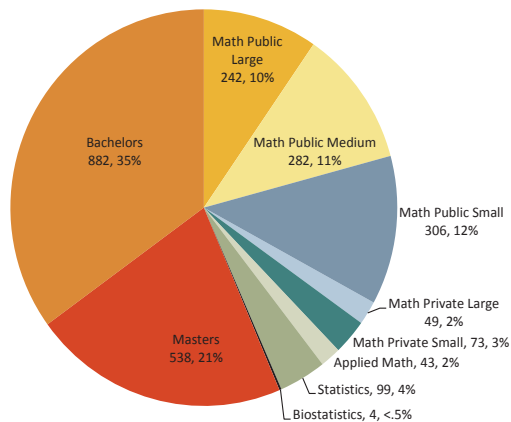
Features of part-time female faculty data:

- 60% of all part-time female faculty in Math are found in the Bachelors departments.
- 82% of all part-time female faculty hold nondoctoral positions. Of these faculty, 17% receive benefits and 1% are phased retirements.

Undergraduate Course Enrollments

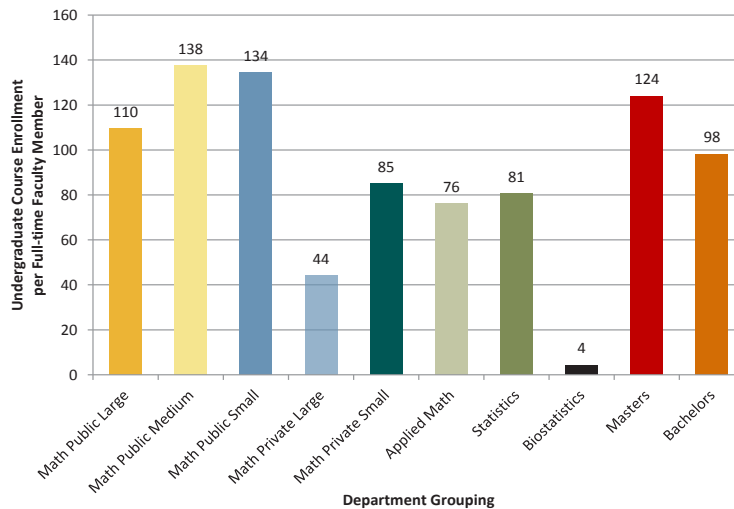
Total undergraduate enrollments for all groups combined increased slightly from 2,481,000 to 2,518,000 (with a standard error of 22,000). MS departments reported an overall increase of 3% in the number of undergraduate course enrollments per full-time faculty member.

Figure UE.1: Undergraduate Course Enrollments by Department Grouping



Total Undergraduate Enrollments (thousands): 2,518

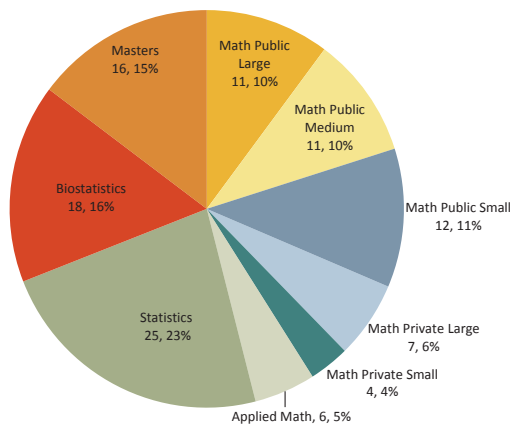
Figure UE.2: Undergraduate Course Enrollment per Full-Time Faculty Member, Fall 2015



Graduate Course Enrollments

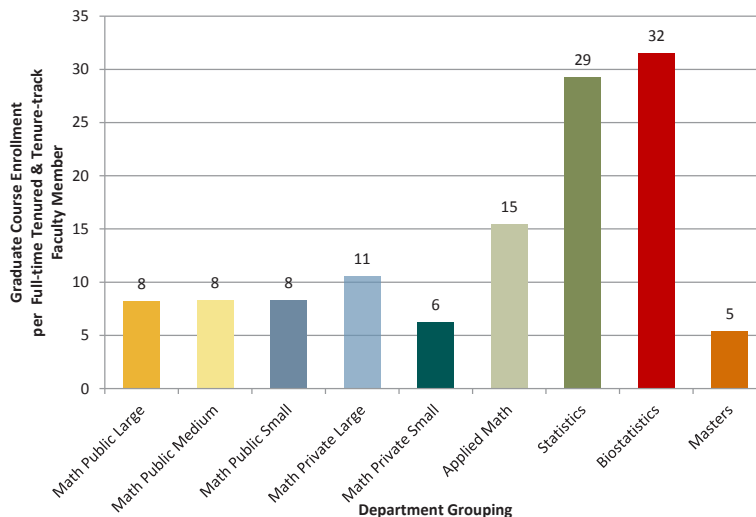
Total graduate course enrollments have increased from 107,000 to 110,000 (with a standard error of 4,000). MS departments reported an overall increase of 6% in the estimated number of graduate course enrollments per full-time tenured and tenure-eligible faculty member.

Figure GE.1: Graduate Course Enrollments by Department Grouping



Total Graduate Enrollments (thousands): 110

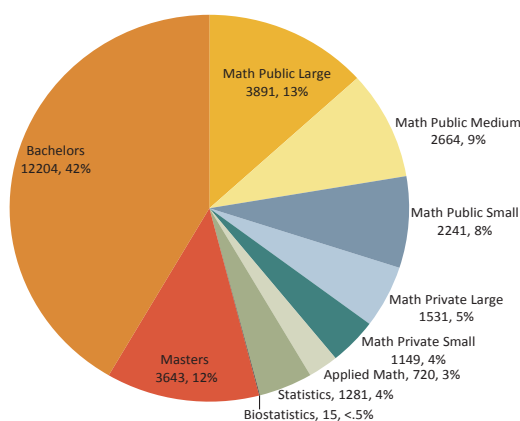
Figure GE.2: Graduate Course Enrollment per Full-Time Tenured and Tenure-eligible Faculty Member, Fall 2015



Bachelors Degrees Awarded

For the period 2014–15, the estimated number of Bachelors degrees awarded in MS departments is 29,339, down slightly from the previous year’s estimate of 29,673. The standard error estimate is 348. Of these, 11,955 were earned by females (41%), a 3% decrease from last year’s count of 12,316. In Math, this year’s estimated number of bachelors degrees awarded is 28,043, a count that includes 11,411 degrees earned by females, 762 Statistics-only degrees, and 1,925 Computer-Science-only degrees. This figure represents a slight drop from last year’s estimate of 28,277 degrees awarded by Math departments.

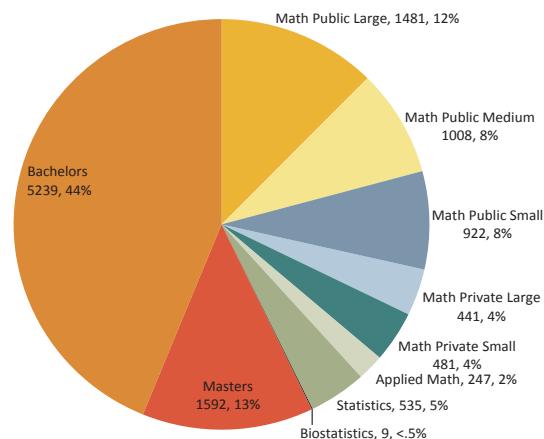
Figure UD.1: Undergraduate Degrees Awarded* by Department Grouping



Total: 29,339

* Degrees awarded between July 1, 2014 and June 30, 2015.

Figure UD.2: Undergraduate Degrees Awarded* to Females by Department Grouping



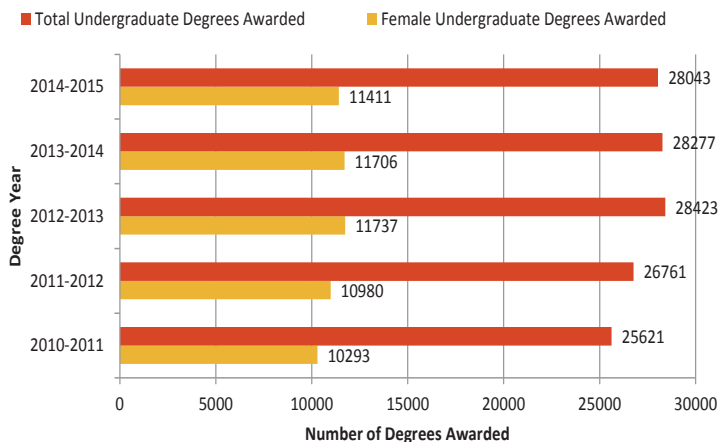
Total: 11,955

* Degrees awarded between July 1, 2014 and June 30, 2015.

- Math Doctoral departments awarded 8% more Bachelors degrees this year, up 919 from last year, 42% of all degrees awarded.
- Applied Math departments showed the largest percentage increase in degrees awarded, up 27% from last year, followed by the Math Public Large and Math Private Small groups which both increased 10%.
- Biostatistic departments showed the largest percentage decrease, down 66% from last year. Masters departments reported the largest absolute decrease of 934 degrees, netting 3,643 for 2015.
- Bachelors departments awarded 42% of all the degrees in MS, the same as last year.
- Statistics departments awarded 1,281 degrees, down 5% from 1,352 last year; females received 42% of these degrees (down from 44% last year).
- Total Statistics-only degrees in Math departments remained essentially unchanged at 762; 48% of these degrees were awarded by the Bachelors group.

- Among Math departments surveyed, 80% of Computer Science degrees were awarded by Bachelor’s departments.
- Math Doctoral departments awarded 38% of all degrees awarded to females, up from 34% last year.
- Since 2010, the annual number of Bachelors degrees awarded has increased by 9%, and the number of degrees awarded to females has increased by 11%.

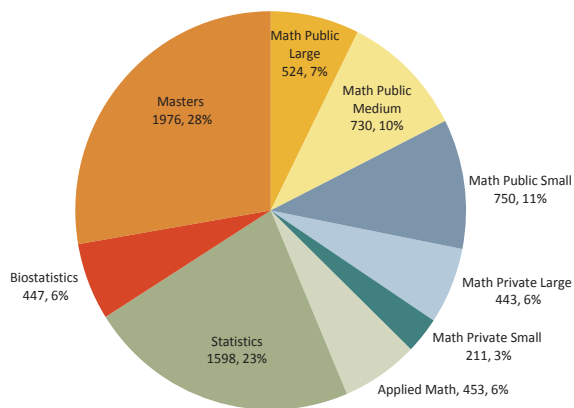
Figure UD.3: Undergraduate Degrees Awarded All Mathematics Departments Combined



Masters Degrees Awarded

For the period 2014–2015, the estimated number of Masters degrees awarded in MS departments is 7,132, an increase of 9% over the previous year’s estimate of 6,546. The standard error in this estimate is 149. Of these, 3,034 were earned by females (43%), the same as last year and a 7% increase over last year’s 2,843. In Math, this year’s estimated number of Masters degrees awarded is 5,087, a count that includes 2,009 degrees earned by females, 770 Statistics-only degrees, and 104 Computer-Science-only degrees. This figure represents a 1% increase over last year’s estimate of 4,548 Masters degrees awarded by Math departments.

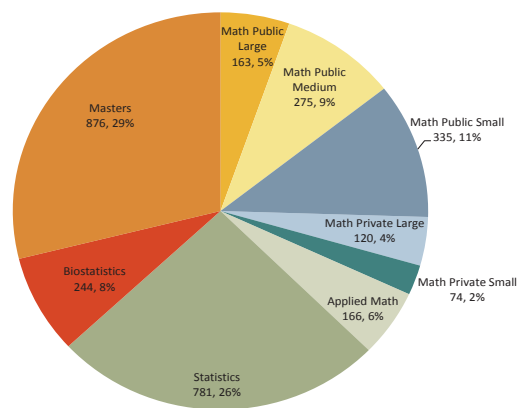
Figure MD.1: Masters Degrees Awarded* by Department Grouping



Total: 7,132

*Degrees awarded between July 1, 2014 and June 30, 2015.

Figure MD.2: Masters Degrees Awarded* to Females by Department Grouping



Total: 3,034

* Degrees awarded between July 1, 2014 and June 30, 2015.

Overall features:

- In all groups except Biostatistics, production of Masters degrees increased from last year. Most groups showed increases between 11% and 18%, with the exception of Math Public Large which increased 3%.
- In the Statistics group, production of Master’s degrees increased 4% compared with last year.
- 43% of all Masters degrees were awarded to females.
- Females were awarded 47% of the Masters degrees in statistics-only and 78% of those in computer-science-only (up from 41% and 38%, respectively).

- Degrees awarded to females increased by 6% in the Statistics group and decreased 7% in the Biostatistics group.
- 58% of all Statistics-only degrees were awarded by the Statistics group, down from 64% last year.

From 2010 to 2015 the annual number of Masters degrees from Math departments has increased by 15%. The number awarded to females has increased by the same percentage over time.

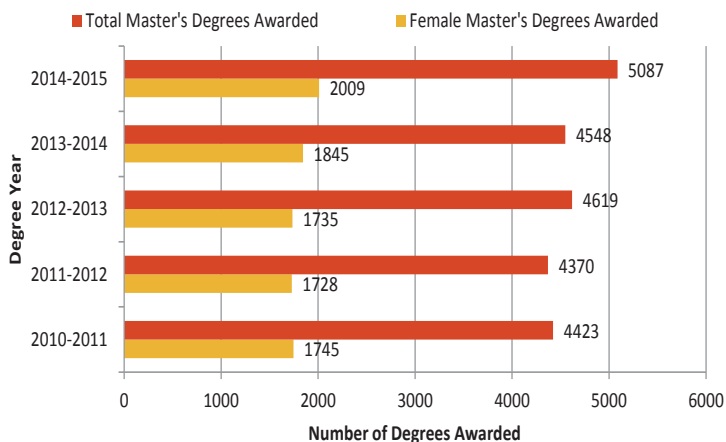
Features of the Math group:

- Masters departments awarded the highest percentage of degrees (28%, up from 27% last year).
- Math Private Small awarded the smallest percentage of degrees with 3%, the same as last year.
- Females received 39% of all degrees awarded among all the Math groups, down from 41% last year.
- 17% of degrees awarded in Math departments were in Statistics-only or Computer-Science-only. Statistics-only and Computer-Science-only degrees increased 40% and 55%, respectively, over last year.

Features of the Statistics group:

- Statistics departments awarded 1,598 degrees, an increase of 4% over last year.
- Biostatistics departments awarded 447 degrees, down 4% from last year.

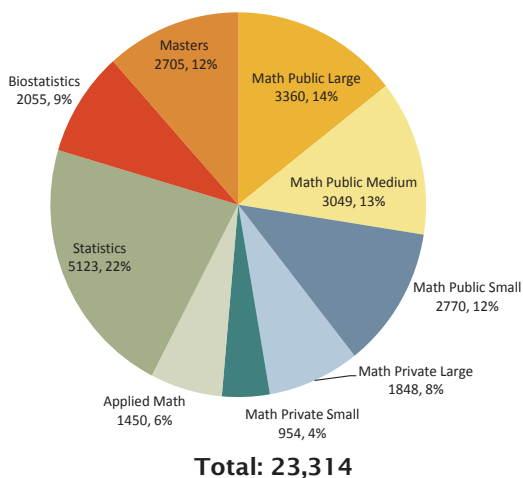
Figure MD.3: Masters Degrees Awarded by Mathematics Departments



Graduate Students

In fall 2015, the total number of full-time graduate students is estimated at 23,314, with 16,136 in Math (up from 15,939 in fall 2014) and 7,187 in Statistics. The total number of full-time graduate students in Doctoral Math departments is 13,431 (up from 12,023). In Doctoral Math departments, counts of full-time and first-year graduate students who are US citizens or permanent residents have remained essentially unchanged at 7,123 and 1,827, respectively. For the Masters group, full-time graduate students decreased 7% to 2,705, the number of US citizens and permanent residents is 1,930 (down from 2,022), and the number of first-year students is 1,203 (down from 1,287). Statistics and Biostatistics reported full-time graduate students at 7,178, up from 6,557. Females account for 37% (8,597) of all full-time graduate students.

Figure GS.1: Graduate Students by Department Grouping



- First-year graduate students increased in all groups, except Math Public Medium, Math Private Large, and Masters; Math Public Large, Statistics, and Biostatistics groups had the largest percentage increases with 10%, 10%, and 17%, respectively.
- US citizen and permanent resident graduate students remained essentially unchanged at 11,823 while most groups reported decreases of less than 5%, the Math Public Small group reported an 11% decrease; the Statistics group reported an increase of 4%, followed by the Math Public Medium and Math Public Large groups which both reported increases of 3%.
- Underrepresented minorities accounted for 14% of US citizen and permanent resident graduate students and 12% of first-year graduate students. Females compose 37% of both of these categories.
- All groups reported an increase in underrepresented minorities except Math Public Large and Statistics which showed decreases of 28% and 17%, respectively.
- Non-US citizen full-time graduate students and full-time female graduate student counts increased in all groups except Masters, where these respective counts decreased by 13% and 5%.

Features of full-time graduate student data:

- Full-time graduate students and full-time female graduate students increased in all groups except Math Private Small and Masters.
- Statistics departments had the largest percentage and number increase in graduate students with 11% (up from 4,597 to 5,123)

Features of part-time graduate student data:

- Total part-time graduate student counts increased in all groups except in Math Private Large and Applied Math, where there were decreases of 22% and 9%, respectively.
- Part-time US citizen and permanent resident graduate student counts increased 5% to 3,853, and non-US citizen counts increased 11% to 726.
- Underrepresented minorities account for 16% of part-time US citizen and permanent resident graduate students, the same as last year.

Table GS.2: Full-Time Graduate Students in All Doctoral Math Combined by Gender and Citizenship, Fall 2006–2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total full-time graduate students	10984	10936.7	10883	11286.5	13048	12514	12684	12961	13023	13431
Female	3279	3249	3193	3248	3839	3773	3771	3969	3925	4039
% Female	30%	30%	29%	29%	29%	30%	30%	31%	30%	30%
% US Citizen & Permanent Residents ¹	56%	56%	55%	56%	57%	56%	54%	53%	55%	53%
% Underrepresented minorities ²	9%	9%	9%	9%	11%	8%	8%	9%	11%	15%
Total first-year full-time graduate students	2960	2964	2924	3040	3313	3288	3394	3623	3551	3646
Female	961	950	870	904	1019	1077	1036	1205	1193	1188
% Female	32%	32%	30%	30%	31%	33%	31%	33%	34%	33%
% US Citizen & Permanent Residents ¹	55%	56%	56%	55%	51%	50%	54%	53%	55%	53%
% Underrepresented minorities ²	10%	10%	10%	9%	9%	9%	7%	10%	13%	14%

¹ Starting with 2014 departments were asked to report US citizen and permanent resident counts together; previously permanent residents were included in the non-US citizen counts. All percentages prior to 2014 have been updated to allow for comparison with previous years' data.

² Prior to 2014 these counts only included US Citizens. Underrepresented minorities includes any person having origins within the categories American Indian or Alaskan Native, Black or African American, Hispanic or Latino, and Native Hawaiian or Other Pacific Islander.

Faculty Categories

The faculty categories used in this report are described below. Departments were asked to report any faculty member who was considered to be full-time in the institution for the academic year and at least half-time in the department. Each faculty member was reported in exactly one of these categories.

Tenure-track faculty includes full-time faculty who hold tenured/tenure-eligible positions (i.e., only those individuals who are tenured full professors, other tenured and tenure-eligible faculty).

Postdoctoral faculty includes full-time faculty who have teaching and/or research responsibilities, but for a strictly limited term of employment (i.e., those individuals who hold a temporary position primarily intended to provide an opportunity to continue training or to further research experience).

Non-tenure-track faculty includes full-time faculty eligible for benefits and with an appointment that lasts at least one academic year. These faculty hold appointments that are renewable (potentially unlimited), fixed-term but not renewable, or temporary. Typical titles for these positions are Lecturer, Senior Lecturer, Instructor, Senior Instructor, Associate/Assistant/Full Teaching Professor, Professor of the Practice, or Clinical Professor, and similar titles for research-only faculty.

Part-time faculty includes those individuals who are hired term-by-term and are paid by the course and those in phased retirement.

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; *Statistics* refers to departments that incorporate (again, with exceptions) “statistics” in the name but do not use “mathematics.” The streamlining of language here militates against the possible objection to foreshortening the full subject names.

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.

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.

Master's contains US departments granting a Master's degree as the highest graduate degree.

Bachelor's 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 contains all US math public, math private, and applied math, Master's, and Bachelor's groups above.

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

Remarks on Statistical Procedures

The questionnaire on which this report is based, "Departmental Profile," is sent to all Doctoral, Master's and Bachelor's departments in the US.

Response rates vary substantially across the different department groups. For most of the data collected on the Departmental Profile form, the year-to-year changes in a given department's data are small when compared to the variations among the departments within a given group. As a result of this, the most recent prior year's response is used (imputed) if deemed suitable. After the inclusion of prior responses, standard adjustments for the remaining nonresponses are then made to arrive at the estimates reported for the entire groups.

Standard errors were calculated for some of the key estimates for the Doctoral Math Group (Math Public, Math Private, and Applied Math), Master's Group and Bachelor's, and Statistics and Biostatistics' Groups. Standard errors are calculated using the variability in the data and can be used to measure how close our estimate is to the true

value for the population. As an example, the number of full-time faculty in the Master's Group is estimated at 4,343 with a standard error of 107. This means the actual number of full-time faculty in the Master's Group is most likely between 4,343 plus or minus two standard errors, or between 4,129 and 4,557. This is much more informative than simply giving the estimate of 4,343.

Estimates are also given for parameters that are totals from all groups, such as the total number of full-time faculty. For example, an estimate of the total number of full-time faculty in all groups except Statistics and Biostatistics combined is 22,373, with a standard error of 205.

The careful reader will note that a row or column total may differ slightly from the sum of the individual entries. All table entries are the rounded values of the individual projections associated with each entry, and the differences are the result of this rounding (as the sum of rounded numbers is not always the same as the rounded sum).

Department Grouping Response Rates

Survey Response Rates by Grouping

**Departmental Profile
Department Response Rates**

Department Group	Number	Percent	Imputed ¹
Math Public Large	26 of 26	100%	8
Math Public Medium	40 of 40	100%	5
Math Public Small	58 of 64	91%	7
Math Private Large	24 of 24	100%	5
Math Private Small	28 of 29	97%	7
Applied Math	24 of 25 ²	96%	1
Statistics	54 of 58	93%	13
Biostatistics	35 of 45 ²	78%	6
Masters	123 of 175	70%	39
Bachelors	599 of 1,017	59%	250
Total	1,011 of 1,503	67%	341

¹ See paragraph two under 'Remarks on Statistical Procedures.'

² The populations for Applied Math and Biostatistics are slightly less than for the Doctorates Granted Survey because some programs do not formally "house" faculty, teach undergraduate courses, or award undergraduate degrees.

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.