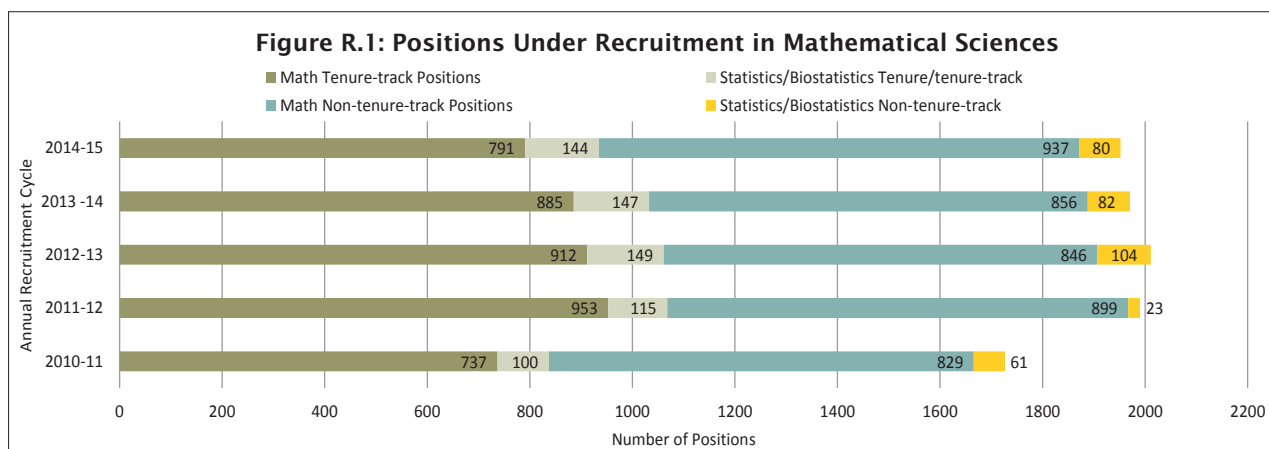


Report on 2014–2015 Academic Recruitment, Hiring, and Attrition

William Yslas Vélez, Thomas H. Barr, and Colleen A. Rose

Each year in academic mathematical sciences departments around the United States, new full-time faculty are recruited, and a subset of those positions are filled. The hiring infuses a new cohort of mathematical scientists actively engaged in research and teaching. At the same time, others retire, resign, or die, and this process removes a segment of the population of mathematical scientists. This report provides a snapshot of that process to aid in understanding the current status of such variables as: hiring rates, gender distribution, position type, and prior experience. Along with current data the report provides historical context to aid the reader in discerning trends and patterns.

During the 2014–15 academic year, the estimated number of full-time positions under recruitment in mathematical sciences departments was 1,952. This figure breaks down as follows: 791 tenure-track mathematics positions, 937 non-tenure-track mathematics positions, 144 tenure-track statistics or biostatistics positions, and 80 non-tenure-track statistics or biostatistics positions. See Figure R.1 for comparisons. For the cycles 2011–2012 through 2013–2014, recruitment was up in comparison with the preceding three years, likely a reflection of economic conditions during that time. In the period from 2008 to 2015, the overall percentage of positions under recruitment that were tenure-track ranged from 48% to 63%, with the highest percentages in the first two years of this range of time.¹

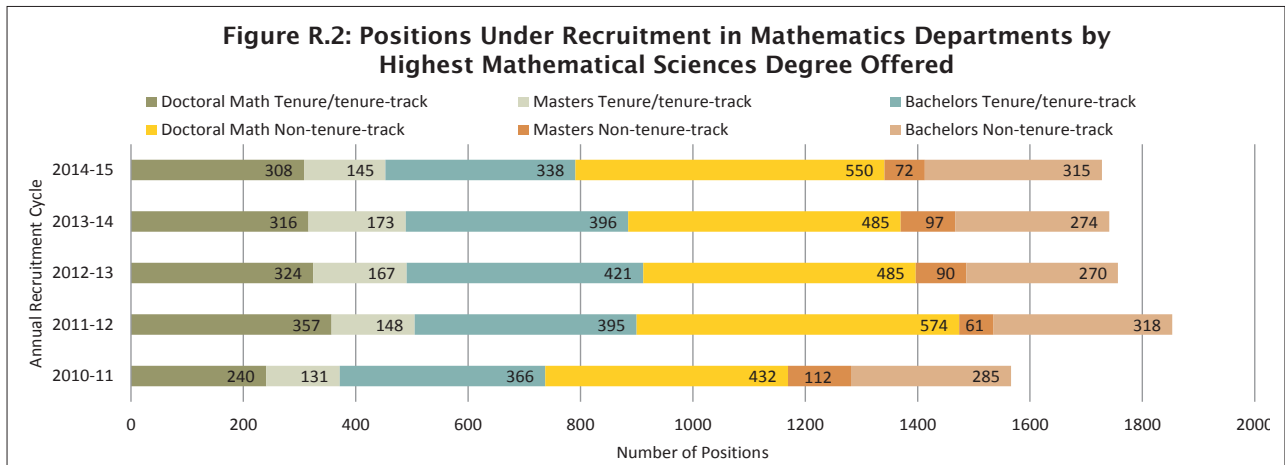


- Overall features in the 2014–2015 cycle:
 - The estimated number of positions under recruitment was 1,952; this figure represents a slight decrease from last year's estimate of 1,970 positions; 88% (1,726) of these positions were filled.
 - Females account for 29% of those hired; this is up from 23% in the previous year.
 - Since 2007 recruitment has increased 61% in all Mathematical Sciences, increasing 60% in Mathematics and 70% in Statistics.
- Tenure-track positions under recruitment:
 - Open tenure-track positions dropped 9% overall from last year, with all groups reporting decreases except Math Private Small and Statistics, which reported increases of 77% and 3%, respectively.
 - 48% (935) of all positions under recruitment were tenure-track. Of these 935 positions:
 - 85% (793) were open to new PhDs; this is down 10% from the previous year. Only the Math Private, Statistics, and Biostatistics groups reported increases in the number positions open to new PhDs.
 - 23% (213) were at the rank of associate/full professor, down 9% from the previous year. All groups reported increases in recruitment in this category except Math Public Small, Math Private Large, and Bachelor's.

¹Detailed information, including tables, is available on the AMS website at www.ams.org/annual-survey.

William Yslas Vélez is a professor in the Department of Mathematics at the University of Arizona. Thomas H. Barr is AMS special projects officer. Colleen A. Rose is AMS survey analyst.

- Non-tenure-track positions under recruitment:
 - Non-tenure-track positions increased 8% overall, up to 1,017 from 937 in the previous year; only groups Math Public Medium, Math Private Small, Statistics, and Master's reported decreases in recruitment in this category.
 - 52% (1,017) of all positions under recruitment were non-tenure-track. Of these 1,017 positions:
 - 92% (931) were open to new PhDs; this is up 4% from last year.
 - 34% (345) were temporary (one-year) appointments; this is down 14% from the prior year.



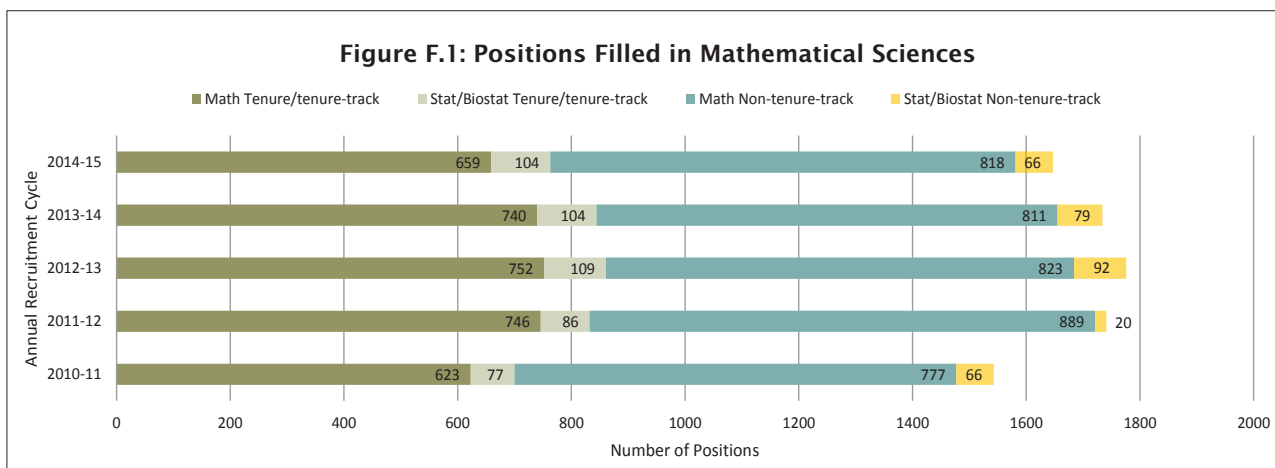
In Mathematics Departments the number of positions under recruitment (1,728) in 2014-15 is comparable with the previous year (1,741) but has dropped for the third consecutive year. As with the overall picture for Mathematical Sciences, recruitment in the 2012-13 through 2014-15 cycles is higher than in the 2009-10 and 2011-12 cycles. In comparison with 2009-10, recruitment in Doctoral departments has increased by 71%, increased in Master's departments increased by 46%, and in Bachelor's departments increased by 52%. Over the longer period since 2004-05 recruitment in Doctoral departments has increased by 26%, in Master's departments decreased by 45%, and in Bachelor's departments increased by 4%. In the same ten-year period, the number of mathematics positions under recruitment has increased by 2%.

Positions Filled

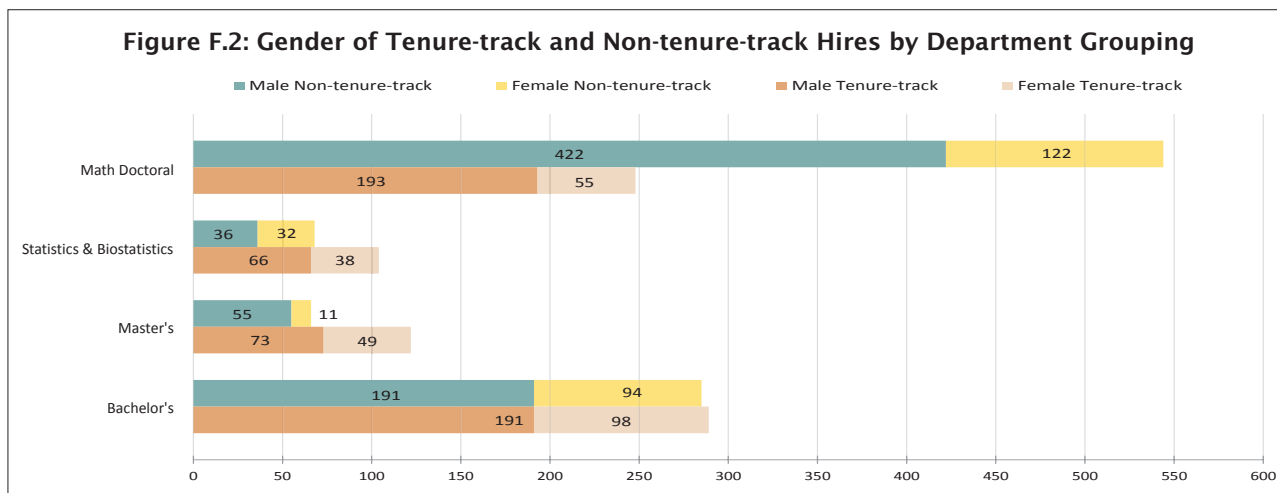
A total of 1,726 full-time positions in Mathematical Sciences were filled during the 2014-15 academic cycle, 1,554 from Mathematics Departments and 172 from Statistics or Biostatistics. Figure F.1 gives a breakdown. The total for Mathematics is up 22% from the 2008-09 cycle and up 4% from the 2003-04 cycle. For Statistics and Biostatistics combined, the number of filled positions is up 31% from 2008-09 and up 55% from 2003-04. One interesting feature implicit in this data is that the success rate for filling mathematical sciences tenure-track positions over the period 2008-2014 is about 82%, whereas the success rate for non-tenure-track is about 97%.

Figure F.2 gives a breakdown on hiring by gender and department grouping. Here are further highlights and comparisons from the data:

- Overall features of hires in mathematical sciences:
 - Of all positions under recruitment, 88% (1,726) were filled. Females hold 29% (499) of those positions.
 - Of all hires, 44% (763) were tenure-track; females constitute 31% (240) of these.
 - Of all hires, 56% (963) were non-tenure track; females constitute 27% (259) of these.
- Tenure-track hires in mathematical sciences:
 - Of the tenure-track positions under recruitment, 82% (763) were filled.
 - Of tenure-track positions filled, 70% (536) were filled by doctoral faculty (i.e., not new PhDs). Of these positions filled by doctoral faculty, 31% went to females. In comparison with last year, all groups except Public Medium, Private Small, Statistics, and Biostatistics reported decreases in tenure-track hires of doctoral faculty.
 - Of the 30% of tenure-track hires who were new PhDs, 33% were female. For comparison, in 2013-14, 28% of tenure-track hires were new PhDs and 39% were female.



- Of tenure-track hires, 27% (208) had a non-tenure-track position last year; of these individuals, 16% were female. All groups except Applied Math and Bachelor's reported increases in tenure-track hires, and this count is 45% higher than the previous year's 143.
 - Of tenure-track hires, 24% (181) held a postdoc last year, and 50% of these postdocs were female. All groups except Statistics reported a decrease in this category, and overall the count is 40% less than the prior year.
- Non-tenure-track hires:
 - Of the 1,017 non-tenure-track positions under recruitment, 95% were filled.
 - Of non-tenure-track hires, 40% (382) were filled by doctoral faculty (excluding new PhDs); 31% of these doctoral faculty hires were female.
 - Of non-tenure-track hires, 52% (502) were filled by new PhDs; 22% these new PhD hires were female.
 - Of non-tenure-track hires, 8% (79) were filled by non-doctoral faculty; 38% of these non-doctoral hires were female. Over half of these non-doctoral, non-tenure-track hires were in Bachelor's departments; in Doctoral Math departments the number of non-doctoral, non-tenure-track hires decreased by 42% over the previous year.
 - Of non-tenure-track hires, 22% (214) are temporary (one-year); 28% of these temporary hires are female. About half of temporary hires were in Bachelor's departments. Of all groups, the Master's group had the highest percentage (42%) of its non-tenure-track hires in temporary appointments.
 - Of non-tenure-track hires, 41% (391) were in postdoctoral positions; 22% of these postdocs were female.

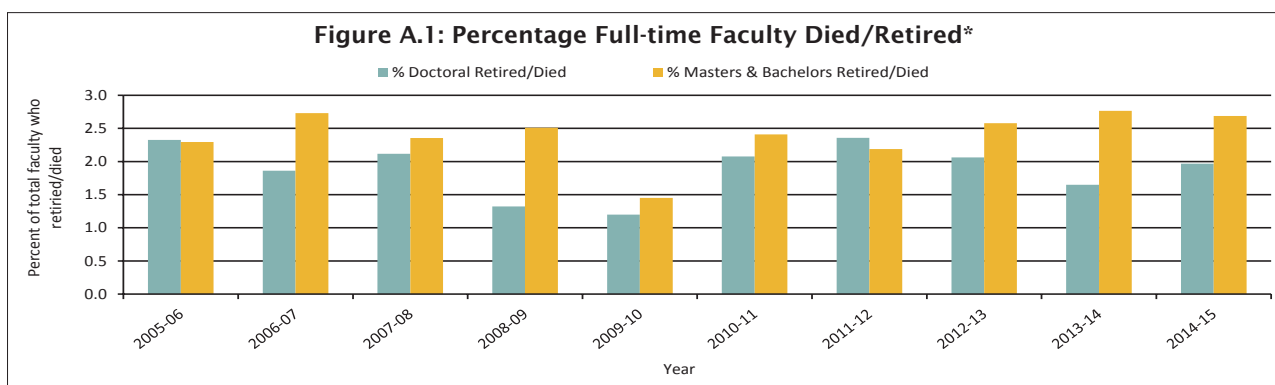


- Female hires:
 - Of all hires, 29% (499) were female; of these women, Bachelor's departments hired 38%, and Doctoral Math departments hired 35%.
 - In the Doctoral Math group, female hires increased by 67% to 177.
 - All groups except Applied Math, Master's, and Bachelor's reported increases in the number of female hires over last year.

- The number of females hired into tenure-track positions dropped by 11% to 240; the number hired into non-tenure-track positions decreased by 3% to 259.
- Females accounted for 31% of all tenure-track and 27% of all non-tenure track hires; last year these percentages were, respectively, 33% and 30%.

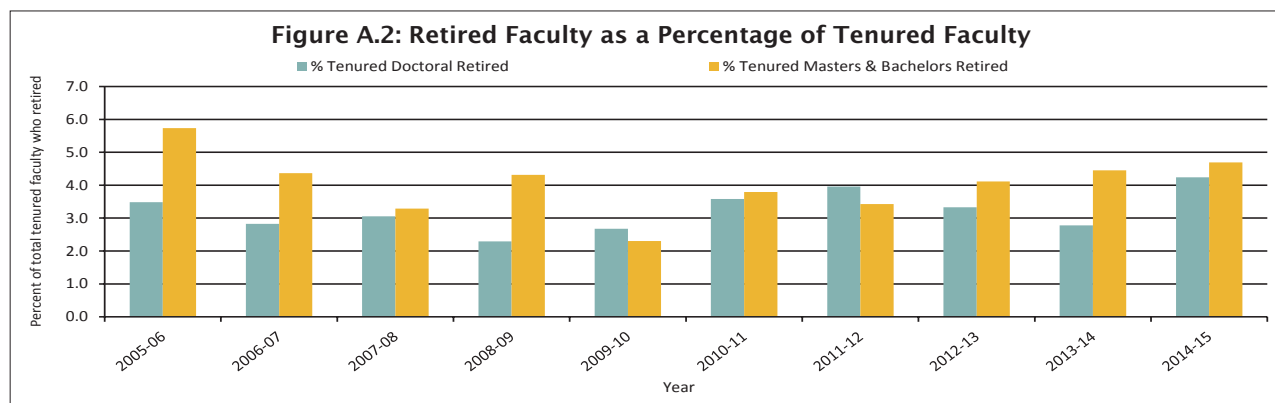
Faculty Attrition

Figure A.1 shows the variation in attrition from deaths and retirements among full-time faculty for the academic years 2005-06 through 2014-15. Attrition rates reached a minimum in 2009-10, a phenomenon likely linked to economic conditions at the time. On average over the period shown, the percentage of faculty in doctoral departments retiring or dying each year is about 1.9%, and in Master's and Bachelor's departments that percentage is about 2.4%.



* The percentage of full-time faculty who died or retired is the number of faculty who died or retired at some point during the academic year (September 1 through August 31) divided by the number of full-time faculty at the start of the academic year.

During the same period, in the respective groups, the percentages of tenured faculty who retired averaged 3.3% for Doctoral Math departments, 4% for Bachelor's and Master's, and 2.7% for Statistics. The majority of individuals who are reported by their department as retiring are, in fact, members of the tenured faculty. For instance, data collected for 2013-15 indicate that approximately 82% of those retiring were tenured. Figure A.2 provides a ten-year summary.



* Each percentage in this figure is the number of full-time faculty that retired at some point during the academic year (September 1 through August 31) divided by the number of full-time tenured faculty at the start of the academic year.

Here are a few other highlights from the attrition data from the 2014-15 cycle:

- Overall retirements by tenured faculty increased by 7% to 552.
- Deaths and retirements increased by 7% to 587.
- Overall retirements break down by departmental type as follows:
 - 41% (228) were from Bachelor's departments
 - 30% (166) were from Doctoral Math departments
 - 22% (120) were from Master's departments
 - 7% (38) were from Statistics departments

Survey Groups and Response Rates

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.”

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.

Response Rates by Survey Groups

Faculty Recruitment & Hiring Response Rates*

Group	Received (%)
Math. Public Large	24 of 26 with 24 recruiting (92%)
Math. Public Medium	40 of 40 with 34 recruiting (100%)
Math. Public Small	56 of 64 with 47 recruiting (88%)
Math. Private Large	21 of 24 with 19 recruiting (88%)
Math. Private Small	25 of 29 with 22 recruiting (86%)
Applied Math.	20 of 23 with 16 recruiting (87%)
Statistics	46 of 58 with 37 recruiting (79%)
Biostatistics	36 of 46 with 30 recruiting (78%)
Master’s	129 of 175 with 75 recruiting (74%)
Bachelor’s	624 of 1017 with 270 recruiting (61%)
Total	1021 of 1502 with 574 recruiting (68%)

* Doctoral programs that do not formally “house” faculty and their salaries are excluded from this survey.

Other Information

The interested reader may view additional details on the results of this survey and prior year trends by visiting the AMS website at www.ams.org/annual-survey.

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. Comments or suggestions regarding this Survey Report may be emailed to the committee at ams-survey@ams.org.