

1995
Annual AMS-IMS-MAA Survey
(Second Report)

Enrollments, Faculty Characteristics, and
Update on New Doctoral Recipients
John D. Fulton

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and Update on New Doctoral Recipients, Fall 1995

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This is the second report of the 1995 Survey. A first report appeared in the *Notices* of December 1995, pages 1504–1519. It included a report on the 1994–1995 doctoral recipients, starting salaries, and faculty salaries. A list of names and thesis titles of the 1994–1995 doctoral recipients appeared in the *Notices* of January 1996. A supplementary list of 1994–1995 doctoral recipients appears at the end of this report.

The 1995 Annual AMS-IMS-MAA Survey represents the thirty-ninth in an annual series begun in 1957 by the Society. The 1995 Survey was under the direction of the AMS-IMS-MAA Data Committee whose members are Paul W. Davis, Lorraine Denby, John D. Fulton (chair), Don O. Loftsgaarden, S. Brent Morris, Samuel M. Rankin III (*ex officio*), Donald B. Rubin, Donald C. Rung, Ann K. Stehney, and Ann E. Watkins. Comments or suggestions regarding the Annual Survey may be directed to members of the AMS-IMS-MAA Data Committee.

For these reports, departments are divided into groups according to the highest degree offered in the mathematical sciences:

Groups I and II include the leading departments of mathematics in the U.S. according to the 1982 Assessment of Research-Doctorate Programs conducted by the Conference Board of Associated Research Councils in which departments were rated according to the quality of graduate faculty.¹

Group I is composed of 39 departments with scores in the 3.0–5.0 range.

Group II is composed of 43 departments with scores in the 2.0–2.9 range.

Group III contains the remaining U.S. departments reporting a doctoral program.

Group IV contains U.S. departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program.

Group V contains U.S. departments (or programs) in applied mathematics/applied science, operations research, and management science that report a doctoral program.

Group Va is applied mathematics/applied science; **Group Vb** is operations research and management science.

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

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

¹These findings were published in *An Assessment of Research-Doctorate Programs in the United States: Mathematical and Physical Sciences*, edited by Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall, National Academy Press, Washington, D.C., 1982. The information on mathematics, statistics and computer science was presented in digest form in the April 1983 issue of the *Notices*, pages 257–267, and an analysis of the above classifications was given in the June 1983 *Notices*, pages 392–393. For a listing of departments in Groups I and II see the April 1988 *Notices*, pages 532–533.

Highlights

- The final (spring) count of new doctoral recipients shows a total of 1,237 doctoral recipients in the mathematical sciences awarded by U.S. institutions in the period July 1, 1994, through June 30, 1995. This represents a new all-time high for the Groups we currently survey. The proportion of the 1994–1995 doctoral recipients who were females increased from 22% last year to 23% this year.
- The final count shows 579 U.S. citizens among the 1,209 doctoral recipients whose citizenship was known. This number represents a significant increase over the 473 last year and the percent of U.S. citizens among the new doctoral recipients rose to 48% from the 44% for each of the previous two years.
- Recruitment of new faculty showed the first increase in five years. The increase of 9.4% in positions under recruitment by mathematics departments in 1994–1995 placed the number of such positions well above the 1993–1994 level.
- Final counts indicate that the unemployment figure for 1994–1995 new doctoral recipients remained constant over 1994–1995 at the record high rate of 10.7% for the time of the spring update of employment status. In addition, 5% of the new doctoral recipients took part-time employment.
- The number of full-time faculty in mathematics departments decreased slightly. The number of untenured, tenure-track, doctoral faculty decreased by 3.9%. The number of nontenure-track, full-time, doctoral faculty decreased by 6.5% while the number of part-time faculty increased by 1.0%.
- The total number of full-time, first-year graduate students in Ph.D.-granting mathematics departments declined from fall 1994 to fall 1995. This decline marks the fourth consecutive year such a decline was reported.

I. Introduction

The Annual AMS-IMS-MAA Survey collects information each year about departments, faculties, and students in the mathematical sciences at four-year colleges and universities in the United States. This article reports results from two parts of the 1995 Annual AMS-IMS-MAA Survey. First, we update information about new doctoral recipients reported earlier in the December 1995 issue of the *Notices* (see pages 1504–1519). Second, we present results about the characteristics of faculties and of instructional programs at the undergraduate and graduate levels.

In the interest of continuity in the analysis and presentation, and to make year-to-year comparisons possible, we report the same kinds of information that were included in last year's Second Report. Details are presented concerning employment patterns for new doctoral recipients, department faculty characteristics, and distribution of enrollments in different types of departments.

We follow the procedure started in the 1991 Second Report of reporting projections of survey responses to the entire population of mathematical sciences departments. The projections of survey responses to the entire population are done within strata defined by the survey Groups. For example, on the part of the Departmental Profile Survey concerned with faculty, there were 37 usable responses from the 39 departments in Group I (see Table 3A). The 37 responding departments reported 31 full-time faculty to have retired or died, and this tally was multiplied by 39/37 to obtain the projected value of 33 for the Group as a whole.

We caution the reader that survey responses and the proportional projections are potentially biased due to (i) selection bias of the responding departments and (ii) inhomogeneity of departments within the survey-Groups. The responses and projections for total faculty size are slightly affected by this bias. Nonetheless, the problems of a possible selection bias are mitigated by the generally high response rates to the Annual Survey. In Groups with lower response rates (e.g., Groups M and B), there is greater risk of biased projections.

II. Update on the 1994–1995 Doctoral Recipients

Information about recipients of doctoral degrees awarded between July 1, 1994, and June 30, 1995, was collected from doctorate-granting departments in late spring 1995 and from a follow-up census of individual degree recipients. The First Report of the 1995 Annual Survey (December 1995 issue of the *Notices*, pages 1504–1519) presents the survey results obtained about new doctoral recipients up to late September 1995. Here we update the earlier figures on the basis of more complete returns.

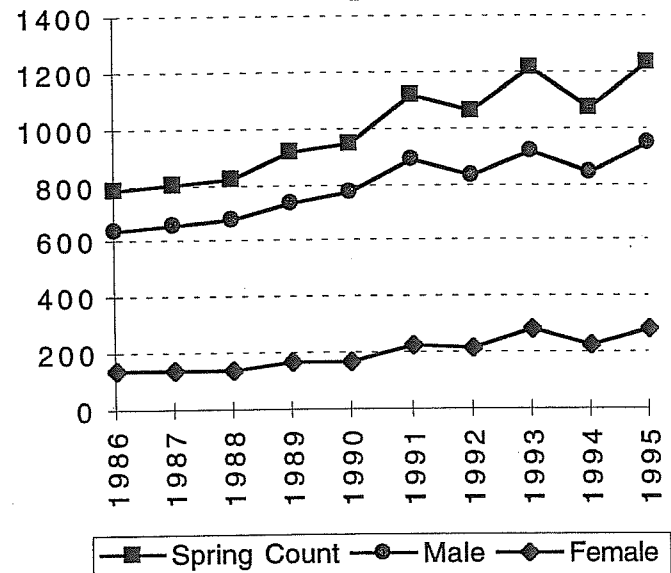
The spring count of new doctoral recipients (Table 1A) shows a total of 1,237 doctorates in mathematical sci-

ences awarded by U.S. institutions. This represents an increase of 15% from the 1,076 doctorates awarded during 1993–1994 and an all-time high number. Table 1B shows the overall and by gender trends in the spring count of new doctoral recipients from 1985–1986 through 1994–1995.

Table 1A: New Doctoral Recipients, Fall and Spring Counts

| 1990–91 | | 1991–92 | | 1992–93 | | 1993–94 | | 1994–95 | |
|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| 1074 | 1125 | 1050 | 1062 | 1202 | 1214 | 1059 | 1076 | 1226 | 1237 |

Table 1B: Trend Chart of Spring Count of New Doctoral Recipients, 1986–1995



Citizenship status is known for 1209 of the 1237 new doctoral recipients. The spring count of new doctoral recipients who are U.S. citizens is 579. The proportion of 1994–1995 new doctoral recipients who are U.S. citizens is 48%, up from the reported 44% of the past two years. The spring count of new doctoral recipients who are non-U.S. citizens increased by about 4% to 630, but still was below the record high of 679 reported in the spring count two years ago. Pages 1510–1519 of the First Report present further information related to the citizenship of the 1994–1995 new doctoral recipients.

Of the 579 U.S. citizen new doctoral recipients, 142 are women and 437 are men. The 142 women new doctoral recipients comprise 24.5% of the U.S. citizen total for 1994–1995, approximately the same percentage as last year. The 437 U.S. citizen men who were awarded Ph.D. degrees in mathematical sciences during 1994–1995 increased by 23% over 1993–1994, and represents the most new doctorates awarded to U.S. citizen males since 1980–1981.

Tables 2A and 2B display updates of employment data for the fall count of 1994–1995 doctoral recipients, partitioned by field of thesis research and by the survey Group

Table 2A: Employment Status of 1994–1995 U.S. New Doctoral Recipients in the Mathematical Sciences, Updated May 1996

| TYPE OF EMPLOYER | FIELD OF THESIS | | | | | | | | | | | | TOTAL |
|--------------------------|------------------------------|--------------------------------|-----------------------|---|----------------------------|-----------------|---|------------------------|--|--|---|-------|-------|
| | Algebra/ Number Theory | Real or Complex Analysis | Geometry/ Topology | Discr. Math/ Combin/ Logic/ Comp Sci | Probability/ Statistics | Applied Math | Numerical Analysis/ Approx- imations | Functional Analysis | Linear or Nonlinear Optim./ Control | Differential, Integral and Difference Equations | Harmonic Analysis and Topological Groups | Other | |
| Group I | 22 | 8 | 17 | 17 | 4 | 11 | 4 | 6 | 1 | 5 | 4 | 8 | 107 |
| Group II | 8 | | 5 | 5 | 4 | 3 | 6 | | 2 | 5 | 1 | 5 | 44 |
| Group III | 10 | 2 | 8 | 8 | 12 | 2 | 2 | | | 5 | | 7 | 56 |
| Group IV | | | | | 20 | | | | | 1 | | | 21 |
| Group V | 1 | | | 2 | 3 | 8 | 2 | | | 4 | | 1 | 21 |
| Masters | 14 | 4 | 7 | 13 | 15 | 4 | 2 | 1 | 5 | 7 | 2 | 3 | 77 |
| Bachelors | 24 | 10 | 18 | 16 | 20 | 9 | 6 | 10 | 2 | 11 | 1 | 6 | 133 |
| Two-year Colleges | 5 | 2 | 2 | 1 | 2 | 2 | 2 | | 1 | 3 | 3 | 2 | 25 |
| Other Academic Depts. | 3 | 3 | 3 | 4 | 28 | 12 | 5 | 2 | 4 | 4 | 1 | 7 | 76 |
| Research Institutes | 5 | 2 | 3 | 0 | 1 | 2 | | | | 4 | | 2 | 19 |
| Government | 3 | | | 2 | 4 | 8 | 4 | 1 | 1 | | 1 | 1 | 25 |
| Business and Industry | 13 | 4 | 7 | 17 | 66 | 36 | 9 | 4 | 9 | 14 | 3 | 8 | 190 |
| Foreign, Academic | 26 | 5 | 14 | 14 | 40 | 11 | 8 | 10 | 1 | 19 | 4 | 6 | 158 |
| Foreign, Nonacademic | 5 | 1 | 2 | | 7 | 3 | 3 | | 2 | 1 | | | 24 |
| Not seeking employment | 4 | | 5 | 3 | 2 | | | 2 | | 2 | 2 | 1 | 21 |
| Still seeking employment | 21 | 6 | 20 | 10 | 22 | 7 | 5 | 6 | 2 | 11 | | 10 | 120 |
| Unknown (U.S.) | 11 | 1 | 5 | 3 | 15 | 4 | 4 | 1 | 2 | 7 | 1 | 24 | 78 |
| Unknown (non-U.S.)* | 1 | 1 | 4 | 2 | 9 | 5 | 1 | 1 | 2 | 2 | 1 | 2 | 31 |
| Column Total | 176 | 49 | 120 | 117 | 274 | 127 | 63 | 44 | 34 | 105 | 24 | 93 | 1226 |
| Column Subtotals | Male | 128 | 40 | 98 | 90 | 207 | 102 | 56 | 35 | 29 | 77 | 62 | 946 |
| | Female | 48 | 9 | 22 | 27 | 67 | 25 | 7 | 9 | 5 | 28 | 31 | 280 |

*Non-U.S. citizens who returned to their country of citizenship and whose status is reported as "unknown" or "still seeking employment".

Table 2B: Employment Status of 1994–1995 U.S. New Doctoral Recipients by Type of Granting Department, Updated May 1996

| TYPE OF EMPLOYER | TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT | | | | | ROW TOTAL | ROW SUBTOTALS | |
|--------------------------|---|------------------|-------------------|------------------------|----------------------------|-----------|---------------|--------|
| | Group I Math | Group II Math | Group III Math | Group IV Statistics | Group V Applied Math/OR | | Male | Female |
| Group I | 89 | 5 | 2 | 2 | 9 | 107 | 85 | 22 |
| Group II | 19 | 14 | 4 | 1 | 6 | 44 | 35 | 9 |
| Group III | 20 | 6 | 21 | 7 | 2 | 56 | 37 | 19 |
| Group IV | | | 2 | 19 | | 21 | 16 | 5 |
| Group V | 3 | 1 | | 1 | 16 | 21 | 15 | 6 |
| Masters | 24 | 21 | 15 | 13 | 4 | 77 | 52 | 25 |
| Bachelors | 33 | 41 | 45 | 7 | 7 | 133 | 90 | 43 |
| Two-year Colleges | 4 | 5 | 15 | 1 | | 25 | 16 | 9 |
| Other Academic Depts. | 17 | 9 | 10 | 24 | 16 | 76 | 62 | 14 |
| Research Institutes | 17 | | | 1 | 1 | 19 | 16 | 3 |
| Government | 7 | 1 | 7 | 2 | 8 | 25 | 21 | 4 |
| Business and Industry | 40 | 29 | 27 | 50 | 44 | 190 | 162 | 28 |
| Foreign, Academic | 78 | 23 | 15 | 32 | 10 | 158 | 126 | 32 |
| Foreign, Nonacademic | 9 | 2 | 4 | 5 | 4 | 24 | 21 | 3 |
| Not seeking employment | 14 | 1 | 4 | 1 | 1 | 21 | 11 | 10 |
| Still seeking employment | 53 | 27 | 25 | 10 | 5 | 120 | 95 | 25 |
| Unknown (U.S.) | 27 | 14 | 20 | 12 | 5 | 78 | 64 | 14 |
| Unknown (non-U.S.)* | 4 | 6 | 4 | 7 | 10 | 31 | 22 | 9 |
| Column Total | 458 | 205 | 220 | 195 | 148 | 1226 | 946 | 280 |
| Column Subtotals | Male | 370 | 148 | 170 | 148 | 110 | 946 | |
| | Female | 88 | 57 | 50 | 47 | 38 | 280 | |

*Non-U.S. citizens who returned to their country of citizenship and whose status is reported as "unknown" or "still seeking employment".

of their degree department. At the time of the spring report, the employment status of 1117 of the 1,226 1994–1995 doctoral recipients was known. Of the 1117, 50% assumed academic employment in the U.S., and 64% took academic employment in the U.S. or other countries. Both of these percentages are approximately equal to similar percentages reported last year, but down from their 1992–1993, 1991–1992, and 1990–1991 levels.

Employment of 1994–1995 doctoral recipients by U.S. Ph.D.-granting institutions increased by 16% from the corresponding figure for 1993–1994. Employment of the 1994–1995 doctoral recipients by research institutes, government, and business and industry, increased by 29% (including a 61% increase in employment by business and industry). Foreign academic employment of new doctoral recipients increased only slightly.

Among those 1994–1995 doctoral recipients taking employment in the U.S., 27% took nonacademic employment (government or business and industry). This percentage was 4 percentage points more than for the 1993–1994 doctoral recipients. The fraction of the 1994–1995 doctoral recipients taking nonacademic employment varied significantly by field of thesis. Of those whose field of thesis was either Algebra/Number Theory, Real or Complex Analysis, or Geometry/Topology, 13% took nonacademic employment. For Probability or Statistics, the analogous figure is 39%, and for Applied Math, Discrete Math/Combinatorics/Logic/Computer Science, Numerical Analysis/Approximations, or Linear/Nonlinear Optimization, the analogous figure is 35%.

Group I departments continued to award the most doctorates. Of the 1,226 doctoral degrees awarded in the mathematical sciences between July 1, 1994 and June 30, 1995, 37% (458) were awarded by Group I departments (420), more than double the number of any other Group. Production of new doctoral recipients increased significantly in all Groups except Group II, in which the increase was about 1%.

The fall unemployment rate for new doctoral recipients, based on information gathered by the time of the spring report, increased significantly from 6.7% for 1991–1992, to 8.9% for 1992–1993, to 10.7% for 1993–1994. For 1994–1995, this unemployment rate remained at 10.7%. The counts on which these rates are determined do not include those new doctoral recipients whose fall employment status was unknown at the time of the spring report. This year's rate ties last year's 10.7% rate as the highest ever reported in the spring report of the Annual Survey, and is over three times the highest rate ever reported in the spring report prior to the 5% rate for 1990–

1991.

Table 2C presents the 1977–1978 through 1994–1995 trend in the unemployment rate of new doctoral recipients at the time of the spring count. The disturbingly sharp increase in the unemployment rate beginning in 1990–1991 is evident from the trend chart.

The record-tying high unemployment rate of 10.7% among the 1994–1995 mathematical sciences doctoral recipients at the time of the spring report is not the only employment concern. An additional 5% of the new doctoral recipients took part-time employment. The data presented in Tables 2A and 2B do not reflect the fact that 60% of the 437 1994–1995 doctoral recipients who took academic employment responded individually that they assumed academic positions that are not tenure-track, up 3% from last year. Fifty-five percent of those nontenure-track positions have contract durations of two years or less, down from 56% in 1993–1994. Of the 249 positions in U.S. Ph.D.-granting departments filled by 1994–1995 doctoral recipients, 37% were held by new doctoral recipients who received their degree from the same institution. Fifty-seven (5.8%) of the 976 positions reported as filled in Table 2A are part-time, and at least 17 of the 57 incumbents are still seeking full-time employment.

The names of the 1994–1995 doctoral recipients and their thesis titles were published in the January 1996 *Notices*, with a supplemental list appearing at the end of this report.

III. Faculty Characteristics

The Departmental Profile Survey, sent in fall 1995 to mathematical sciences departments at four-year colleges and universities as part of the Annual Survey, provided information about faculty and instructional programs. In order that more reliable year-to-year comparisons could be made, data for fall 1994 and fall 1995 was gathered, except for data on retirement, deaths, and faculty recruitment. The percent change figures reported in Tables 3E and 3F, Tables 4A and 4D, and Tables 5A, 5C, and 5D are based on these two years of data. On pages 1512–1518 of the December 1995 issue of the *Notices*, the First Report presented information collected earlier about faculty salaries. Since the salary reports for Groups V and M were inadvertently omitted from the December 1995 *Notices*, the reports for all Groups were published in the February 1996 issue on pages 209–212.

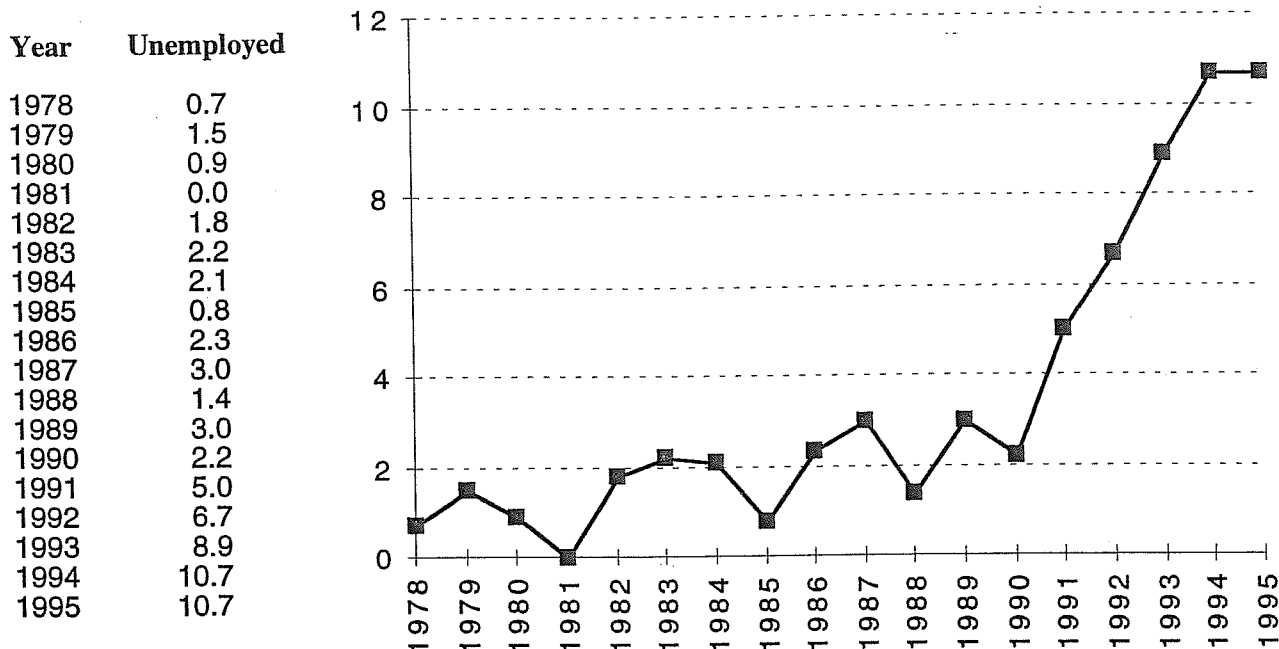
Table 3A displays losses of full-time mathematical sciences faculty due to retirements or deaths.¹ The fall

¹ The percentages of full-time faculty in Table 3A of the Second Report of the 1994 Annual Survey in the August 1995 issue of *Notices*, page 868, were reported in error. The table below presents the correct data.

Table 3A. Faculty Attrition (Corrected)

| | I | II | III | I+II+III | GROUP IV | V | M | B | I+II+III+ M+B |
|---------------------------------|------|------|------|----------|-------------|------|------|------|------------------|
| % of full-time faculty in Group | 2.5% | 2.2% | 2.7% | 2.4% | 2.2% | 1.6% | 2.2% | 2.2% | 2.3% |

Table 2C: Percentage of New Doctoral Recipients Unemployed, as reported in the respective Annual Survey Second Report, 1978 to 1995



1995 mathematical sciences faculty attrition rates for mathematics departments (Groups I+II+III+M+B) was 2.2%, a decrease from the fall 1993 reported rate of 2.3% and the fall 1994 reported rate of 2.6%. All three percentages are significantly ahead of the 1.8% faculty attrition rate reported for fall 1991. Likely, these increased attrition rates reported for fall 1992 through fall 1995 reflect the many early retirement incentive programs which have been established in academic institutions. Table 3B depicts the trend in the faculty attrition rates for mathematics departments during the years 1986–1995.

Table 3C displays Departmental Profile Survey information on the number of full-time faculty positions in mathematical sciences departments under recruitment in 1994–1995. The number of positions in mathematics departments under recruitment decreased 33% over the five straight years from 1989–1990 to 1993–1994, while an increase of 9.4% was reported for 1994–1995. Table 3D presents the trend of steady decrease in positions under recruitment in mathematics departments during 1991 through 1994, followed by the increase in 1995. Table 3C of this spring's report as compared with Table 3C of the spring 1994 report indicates that Groups III and IV had slight decreases in positions under recruitment, while increases were reported for all other Groups.

Table 3C indicates that 84% of the positions under recruitment in 1994–1995 by mathematics departments were available to new doctoral recipients but only 64% were tenured/tenure-track. The number of tenured/tenure-track positions under recruitment by mathematics departments increased by 1% from last year's count.

Tables 3E and 3F describe the makeup of faculties by sex, tenure status, and doctoral/nondoctoral degree in the

different Groups. Table 3E indicates that the total number of full-time faculty in mathematics departments slightly decreased from fall 1994 to fall 1995. After two consecutive years of increases, the numbers of nontenure-track, doctoral, full-time faculty in mathematics departments decreased by 6.5%. Only Group II departments reported an overall increase in such faculty. On the other hand, among all Groups except Groups I and IV, there were significant decreases in the number of untenured, tenure-track doctoral faculty with an overall decrease of 3.9% in mathematics departments. Table 3F indicates that females accounted for major portions of the decreases in nontenure-track, doctoral, full-time faculty, except in Group III. After two consecutive years during which the number of nontenure-track, doctoral, full-time faculty who are females increased by 20% in mathematics departments, mathematics departments reported an 11% decline in such faculty.

Table 3A. Faculty Attrition*

| | I | II | III | I+II+III | GROUP IV | V | M | B | I+II+III+M+B |
|---|-------------|-------------|-------------|--------------|-------------|-------------|--------------|--------------|--------------|
| Number of full-time faculty who retired or died (Group total) | 33 | 35 | 41 | 109 | 17 | 18 | 125 | 198 | 431 |
| % of full-time faculty in Group | 1.6% | 2.0% | 1.5% | 1.7% | 1.4% | 2.9% | 2.4% | 2.6% | 2.2% |
| Number of usable responses** | 37 (95%) | 36 (84%) | 75 (80%) | 148 (85%) | 55 (71%) | 25 (74%) | 122 (50%) | 418 (43%) | 688 (49%) |

* Number and percentage of full-time faculty who were in the department in fall 1994 but were reported to have retired or died by fall 1995.

** The number of usable returns varies for different sections of the Departmental Profile Survey. The response rates reported here apply to faculty size and recruitment data only. All counts are projected from the survey response to the respective Group as a whole.

Table 3B. Percent of Full-Time Doctoral Faculty in Groups I+II+III+M+B Who Retired or Died

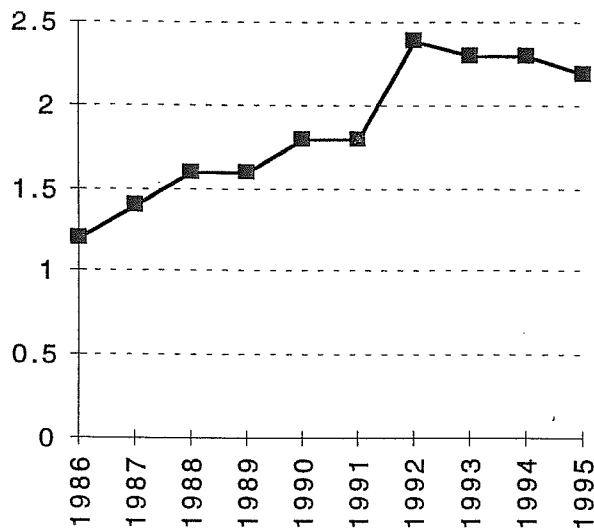


Table 3D. Number of Full-time Doctoral Positions Under Recruitment in Groups I+II+III+M+B

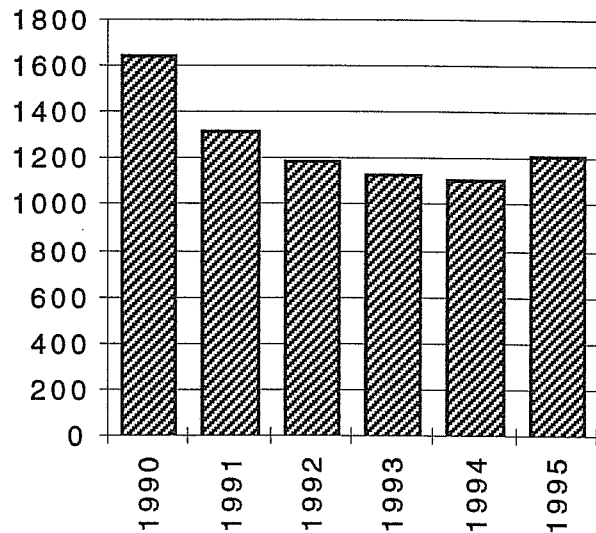


Table 3C. Recruitment of Doctoral Faculty

| | I | II | III | I+II+III | GROUP IV | V | M | B | I+II+III+M+B |
|--|-----|----|-----|----------|----------|----|-----|-----|--------------|
| Number of open doctoral positions (Group total)* | 198 | 81 | 139 | 419 | 75 | 38 | 276 | 524 | 1215 |
| # tenured/tenure-track | 73 | 55 | 100 | 228 | 54 | 34 | 221 | 324 | 772 |
| # open to new doctoral recipients | 157 | 69 | 108 | 334 | 65 | 25 | 247 | 442 | 1023 |
| # tenured/tenure-track | 36 | 47 | 85 | 168 | 50 | 22 | 199 | 300 | 667 |
| Doctoral hires, male | 151 | 55 | 98 | 303 | 34 | 21 | 137 | 286 | 726 |
| Doctoral hires, female | 26 | 17 | 24 | 67 | 16 | 4 | 66 | 123 | 257 |
| Nondoctoral hires, male | 1 | 1 | 3 | 5 | 0 | 0 | 10 | 19 | 33 |
| Nondoctoral hires, female | 1 | 0 | 3 | 4 | 0 | 0 | 10 | 28 | 42 |
| Number of unfilled positions | 19 | 8 | 13 | 40 | 26 | 12 | 50 | 47 | 137 |

* Number of full-time doctoral positions under recruitment in 1994–1995 to be filled for 1995–1996. Subtotals of rounded table values may exhibit rounding errors.

**Table 3E. Faculty Size, Fall 1995,
and Percentage Change in Size, Fall 1994 to Fall 1995**

| | I | II | III | I+II+III | GROUP IV | V | M | B | I+II+III+M+B |
|--|-------|--------|-------|----------|----------|--------|--------|-------|--------------|
| Total number of full-time faculty (Group total) | 2023 | 1749 | 2805 | 6576 | 1181 | 616 | 5270 | 7726 | 19572 |
| % change in full-time faculty | -1.0% | -1.1% | 0.7% | -0.3% | 1.5% | -3.4% | -1.4% | -1.9% | -1.2% |
| Number of doctoral full-time faculty | 1990 | 1623 | 2534 | 6148 | 1140 | 573 | 4296 | 5836 | 16272 |
| % change in doctoral full-time faculty | -1.0% | -0.7% | -0.3% | -0.7% | 1.1% | -3.8% | -0.6% | -1.0% | -0.8% |
| Number of tenured doctoral full-time faculty | 1451 | 1335 | 1904 | 4691 | 770 | 435 | 3318 | 4069 | 12077 |
| % change in tenured doctoral full-time faculty | 0.1% | 0.5% | 2.2% | 1.1% | 0.6% | -1.1% | 0.4% | 0.3% | 0.6% |
| Number of untenured, tenure-track doctoral f-t faculty | 158 | 183 | 470 | 811 | 218 | 79 | 849 | 1450 | 3111 |
| % change in untenured, tenure-track doctoral f-t faculty | 4.2% | -11.0% | -8.5% | -6.9% | 6.9% | -2.8% | -0.2% | -4.2% | -3.9% |
| Number of nontenure-track doctoral full-time faculty | 381 | 105 | 160 | 646 | 152 | 58 | 129 | 317 | 1091 |
| % change in nontenure-track doctoral full-time faculty | -7.0% | 3.5% | -3.0% | -4.4% | -3.6% | -20.7% | -22.0% | -2.9% | -6.5% |
| Number of part-time faculty | 156 | 152 | 595 | 903 | 162 | 31 | 1516 | 2980 | 5399 |
| % change in part-time faculty | 35.8% | 18.7% | -5.6% | 3.4% | 6.5% | 19.0% | 0.0% | 0.8% | 1.0% |

**Table 3F. Female Faculty Size, Fall 1995,
and Percentage Change in Size, Fall 1994 to Fall 1995**

| | I | II | III | I+II+III | GROUP IV | V | M | B | I+II+III+M+B |
|---|-------|--------|-------|----------|----------|--------|--------|--------|--------------|
| Total number of full-time female faculty (Group total) | 180 | 208 | 440 | 828 | 203 | 60 | 1177 | 1885 | 3890 |
| % change in full-time female faculty | 4.3% | -5.4% | 8.0% | 3.5% | 2.9% | -3.4% | 1.4% | 0.6% | 1.5% |
| Number of doctoral f-t female faculty | 153 | 135 | 286 | 574 | 176 | 54 | 723 | 1122 | 2418 |
| % change in doctoral f-t female faculty | 0.0% | -3.4% | 4.1% | 1.1% | 1.6% | -0.8% | 4.7% | 0.0% | 1.6% |
| Number of tenured doctoral f-t female faculty | 64 | 79 | 139 | 282 | 55 | 15 | 436 | 656 | 1374 |
| % change in tenured doctoral f-t female faculty | 0.0% | 6.5% | 2.8% | 3.1% | 0.0% | 4.0% | 6.4% | 2.9% | 4.0% |
| Number of untenured, tenure-track doctoral f-t female faculty | 17 | 35 | 104 | 156 | 74 | 13 | 243 | 407 | 806 |
| % change in untenured, tenure-track doctoral f-t female faculty | 23.1% | -12.1% | 1.2% | -0.2% | 15.6% | -10.3% | 9.0% | -1.1% | 1.9% |
| Number of nontenure-track doctoral f-t female faculty | 72 | 22 | 43 | 136 | 47 | 9 | 44 | 58 | 238 |
| % change in nontenure-track doctoral f-t female faculty | -4.2% | -18.2% | 17.2% | -1.2% | -13.2% | -2.4% | -24.1% | -19.4% | -11.1% |
| Number of part-time female faculty | 45 | 60 | 241 | 346 | 48 | 6 | 639 | 1280 | 2265 |
| % change in part-time female faculty | 53.6% | 4.2% | 4.9% | 9.3% | 25.9% | 0.0% | -1.2% | 4.0% | 3.2% |

IV. Enrollment Profile and Undergraduate Majors

The Departmental Profile Survey obtains information about enrollments and distribution of instructional effort in the mathematical sciences departments.

Table 4A indicates that undergraduate mathematical sciences course enrollments increased by 1.3% from fall 1994 to fall 1995. The graduate course enrollments also increased by 1.3% over the same period. A comparison of Table 4B, which displays fall 1995 undergraduate enrollments distribution, with Table 4B from last year's Second Report, page 870 of the August 1995 *Notices*, shows a similar pattern of enrollment distributions. A comparison of Table 4C with Table 4C from last year's

second report shows a considerable increase both in undergraduate and total course enrollments per full-time faculty member for Groups III, IV, V, and B, while for Group II and M, there were slight increases, and for Group I, no change reported. Also, graduate course enrollments per full-time faculty member remained essentially constant except for Groups IV and V, where the ratio increased significantly.

Table 4D reports that the total number of junior/senior majors in mathematics departments (Groups I+II+III+M+B), decreased by 2.7% from fall 1994 to fall 1995. The number of female junior/senior majors declined by 4.2% during the same period. Groups II, V, and B reported increases in female majors, with Group V reporting a sizable increase.

Table 4A. Undergraduate and Graduate Enrollments (thousands), Fall 1995, and Percentage Change in Enrollments, Fall 1994 to Fall 1995

| | I | II | III | I+II+III | GROUP IV | V | M | B | Total |
|--|-------------|-------------|-------------|--------------|-------------|-------------|--------------|--------------|--------------|
| Number of undergraduate course enrollments (thousands) | 164 | 192 | 318 | 673 | 62 | 26 | 565 | 729 | 2055 |
| % change in undergraduate course enrollments | 3.0% | 5.4% | 1.8% | 3.1% | 6.0% | 5.4% | -1.6% | 1.3% | 1.3% |
| Number of graduate course enrollments (thousands) | 9 | 7 | 12 | 28 | 22 | 8 | 18 | 3 | 79 |
| % change in graduate course enrollments | 0.5% | -2.9% | -1.3% | -1.2% | 2.6% | 2.8% | 0.6% | 8.0% | 1.3% |
| Number of usable responses | 37 (95%) | 35 (81%) | 75 (80%) | 147 (85%) | 52 (67%) | 18 (53%) | 120 (49%) | 415 (43%) | 682 (49%) |

* The number of usable returns varies for different sections of the Departmental Profile Survey. The response rates reported here apply to Tables 4A through 4C on enrollments only. All counts are projected from the survey response to the respective Group as a whole.

Table 4B. Distribution of Undergraduate Enrollments (thousands), Fall 1995

| COURSES | I | | II | | III | | GROUP I+II+III | | IV | | V | | M | | B | |
|---|-----------|-----|-----------|-----|-----------|-----|----------------|-----|-----------|-----|-----------|-----|-----------|-----|-----------|-----|
| | thousands | % | thousands | % | thousands | % | thousands | % | thousands | % | thousands | % | thousands | % | thousands | % |
| Remedial mathematics* (thousands, %**) | 15 | 9% | 11 | 6% | 39 | 12% | 65 | 10% | | | | | 93 | 16% | 117 | 16% |
| Precalculus | 24 | 14% | 43 | 23% | 72 | 23% | 139 | 21% | 1 | 1% | | | 96 | 17% | 99 | 14% |
| 1st-year Calculus (mainstream) | 54 | 33% | 41 | 22% | 54 | 17% | 149 | 22% | | | 2 | 6% | 68 | 12% | 95 | 13% |
| 1st-year Calculus (non-mainstream) | 19 | 11% | 24 | 13% | 27 | 8% | 69 | 10% | 1 | 1% | | | 37 | 7% | 37 | 5% |
| Statistics | 2 | 1% | 6 | 3% | 19 | 6% | 27 | 4% | 58 | 93% | 6 | 22% | 52 | 9% | 66 | 9% |
| Computer Science | 1 | 1% | | | 5 | 2% | 6 | 1% | | | 1 | 5% | 27 | 5% | 74 | 10% |
| Other department courses for majors | 32 | 19% | 29 | 15% | 44 | 14% | 105 | 16% | 1 | 2% | 8 | 33% | 63 | 11% | 80 | 11% |
| Other undergraduate courses | 18 | 11% | 36 | 19% | 58 | 18% | 113 | 17% | 1 | 2% | 8 | 32% | 127 | 22% | 162 | 22% |

* Arithmetic, high school algebra, geometry.

** Percents are "column percents" describing relative enrollments within the respective Survey Groups of the different types of undergraduate courses.

Table 4C. Undergraduate and Graduate Enrollments per Full-time Faculty Member, Fall 1995

| | I | II | III | GROUP IV | V | M | B |
|---|----|-----|-----|-------------|----|-----|----|
| Undergraduate course enrollments per full-time faculty member | 79 | 107 | 124 | 55 | 68 | 108 | 94 |
| Graduate course enrollments per full-time faculty member | 4 | 4 | 5 | 19 | 20 | 3 | 1 |
| Total course enrollments per full-time faculty member | 84 | 111 | 128 | 74 | 88 | 111 | 95 |

Table 4D. Undergraduate Junior/Senior Majors (hundreds), and Undergraduate Female Junior/Senior Majors (hundreds), Fall 1995, and Percentage Change in Majors, Fall 1994 to Fall 1995

| | I | II | III | IV | GROUP V | M | B | I+II+III+ M+B |
|--|-------------|-------------|-------------|-------------|-------------|--------------|--------------|------------------|
| Number of junior/senior majors (hundreds) | 52 | 41 | 71 | 8 | 29 | 217 | 291 | 671 |
| % change in junior/senior majors | -4.5% | 0.6% | -8.3% | -4.2% | 11.4% | -9.0% | 4.0% | -2.7% |
| Number of female junior/senior majors (hundreds) | 19 | 16 | 31 | 3 | 11 | 92 | 125 | 284 |
| % change in female junior/senior majors | -4.4% | 2.1% | -9.1% | -10.5% | 33.1% | -10.8% | 1.8% | -4.2% |
| Number of usable responses* | 35 (92%) | 34 (81%) | 72 (78%) | 34 (61%) | 17 (71%) | 104 (42%) | 361 (37%) | 606 (44%) |

* The number of usable returns varies for different sections of the Departmental Profile Survey. The response rates reported here apply to undergraduate major data only. All counts are projected from the survey response to the respective Group as a whole.

Acknowledgment

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

V. Graduate Student Profile

Tables 5A, 5C, and 5D summarize population statistics for graduate students gathered by the 1995 Departmental Profile Survey. Table 5A indicates that the total number of full-time graduate students in mathematics departments (Groups I+II+III+M) declined by 3.8% from fall 1994 to fall 1995 and declined in every Group except Groups IV and M. Table 5C data shows that the total number of female full-time graduate students in mathematics departments decreased by 0.8% and decreased in all Groups except Groups II, IV, and M. For the fourth year in a row, the Ph.D.-granting mathematics departments (Groups I+II+III) reported a decline in the number of full-time, first-year graduate students. The decline of 2% between fall 1994 and fall 1995 was less than the 3.5% decline reported last year between fall 1993 and fall 1994. Table 5D indicates a decline of 5.7%

in the total number of U.S. citizen full-time mathematics graduate students from fall 1994 to fall 1995, with Group I reporting the largest decline (8.7%). On the other hand, the number of full-time, first-year female graduate students in Ph.D.-granting mathematics departments increased slightly after three consecutive years of decline.

Tables 5A and 5D show significant declines in first-year graduate students from fall 1994 to fall 1995 for doctorate-granting mathematics departments. Running counter to these declines are the significant increases in first-year graduate students reported in all three tables for Groups IV. The four successive years of declines for the doctorate-granting mathematics departments are enough to suggest a decline in the number of new doctoral recipients four to five years hence. Table 5B presents the trend in annual percentage change of first-year graduate students in Ph.D.-granting mathematics departments during the years 1986 to 1995.

Table 5A. Full-time Graduate Students, Fall 1995, and Percentage Change in Graduate Students, Fall 1994 to Fall 1995

| | GROUP | | | | | | | |
|---|-------------|-------------|-------------|--------------|-------------|-------------|--------------|--------------|
| | I | II | III | I+II+III | IV | V | M | I+II+III+M |
| Total number of full-time graduate students | 3250 | 2501 | 3389 | 9140 | 3061 | 2181 | 2844 | 11984 |
| % change in full-time graduate students | -7.5% | -3.8% | -4.0% | -5.2% | 2.3% | -0.8% | 0.9% | -3.8% |
| Number of first-year graduate students | 702 | 687 | 1070 | 2459 | 1000 | 624 | 1140 | 3599 |
| % change in first-year graduate students | -6.5% | -1.8% | 1.0% | -2.0% | 9.2% | 0.7% | -12.3% | -5.5% |
| Number of usable responses* | 36 (92%) | 37 (86%) | 73 (78%) | 146 (83%) | 56 (71%) | 28 (78%) | 112 (46%) | 258 (61%) |

* The number of usable returns varies for different sections of the Departmental Profile Survey. The response rates reported here apply to Tables 5A through 5C on graduate student enrollments. All counts are projected from the survey response to the respective Group as a whole.

Table 5B. Annual Percentage Change in Full-time, First-year Graduate Students in Groups I+II+III, 1986 to 1995

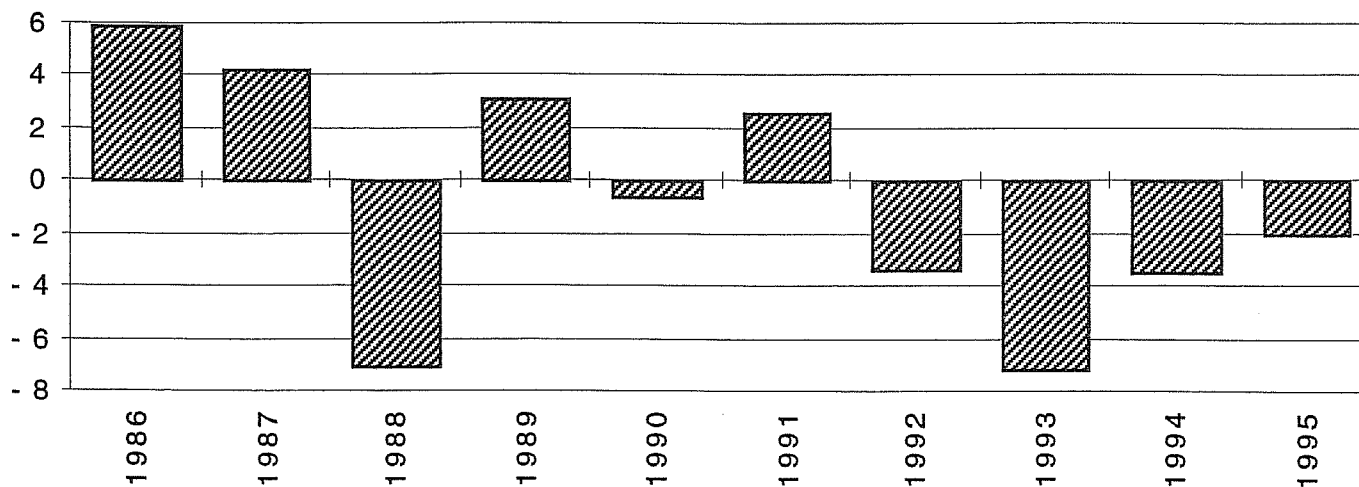


Table 5C. Female Full-time Graduate Students, Fall 1995, and Percentage Change in Female Graduate Students, Fall 1994 to Fall 1995

| | I | II | III | I+II+III | GROUP IV | V | M | I+II+III+M |
|--|-------|-------|-------|----------|----------|--------|-------|------------|
| Total number of full-time female graduate students | 778 | 777 | 1141 | 2696 | 1287 | 512 | 1216 | 3912 |
| % change in full-time female graduate students | -5.8% | 3.1% | -4.5% | -2.8% | 5.9% | -5.7% | 3.9% | -0.8% |
| Number of first-year female graduate students | 191 | 235 | 397 | 822 | 481 | 151 | 512 | 1334 |
| % change in first-year female graduate students | -4.9% | -1.0% | 3.4% | 0.1% | 20.9% | -10.1% | -7.9% | -3.1% |

Table 5D. U.S. Citizen Full-time Graduate Students, Fall 1995, and Percentage Change in U.S. Citizen Graduate Students, Fall 1994 to Fall 1995

| | I | II | III | I+II+III | GROUP IV | V | M | I+II+III+M |
|--|-------|-------|-------|----------|----------|-------|--------|------------|
| Total number of full-time U.S. citizen graduate students | 1642 | 1525 | 2094 | 5261 | 1697 | 1227 | 1881 | 7142 |
| % change in full-time U.S. citizen graduate students | -8.7% | -2.6% | -4.9% | -5.5% | 3.3% | -1.9% | -6.3% | -5.7% |
| Number of first-year U.S. citizen graduate students | 364 | 446 | 667 | 1477 | 581 | 369 | 742 | 2219 |
| % change in first-year U.S. citizen graduate students | -8.9% | -4.7% | -3.5% | -5.3% | 4.8% | -0.3% | -21.3% | -11.3% |

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