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1994
Annual AMS-IMS-MAA Survey

(Second Report)

Enrollments, Faculty Characteristics, and
Update on New Doctoral Recipients

John D. Fulton

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This is the second report of the 1994 Survey. A first report appeared in the November 1994 *Notices*, pages 1121–1136. It included a report on the 1993–1994 doctoral recipients, starting salaries, faculty salaries, and a list of names and thesis titles of the 1993–1994 doctoral recipients. A supplementary list of 1993–1994 doctoral recipients appears in the April 1995 issue of the *Notices*.

The 1994 Annual AMS-IMS-MAA Survey represents the thirty-eighth in an annual series begun in 1957 by the Society. The 1994 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 their 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.

[1]These 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 1,076 doctoral recipients in the mathematical sciences awarded by U.S. institutions in the period July 1, 1993, through June 30, 1994. This represents a decrease of 11.4% from the all-time high of 1,214 in 1970–1971 and 1992–1993. The proportion of the 1993–1994 doctoral recipients who were women declined from 24% last year to 22% this year.

- The final count shows 473 U.S. citizens among the 1,076 doctoral recipients. While the number is down from the 532 last year, the percent of U. S. citizens among the new doctoral recipients remained constant at 44%.

- Recruitment of new faculty showed a decrease for the fifth year in a row. The decline of 1.8% in positions under recruitment by mathematics departments in 1993–1994 is approximately half the decline recorded the previous year. The cumulative effect of the five-year decline translates into recruitment for almost one third fewer positions in mathematics departments in 1993–1994 than in 1989–1990.

- Final counts indicate that the unemployment figure for 1993–1994 new doctoral recipients represents a new record high rate of 10.7% at 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 3.3%. The number of nontenure-track, full-time, doctoral faculty increased by 9.5% while the number of part-time faculty increased by 2.6%.

- The total number of full-time, first-year graduate students in Ph.D.-granting mathematics departments declined 3.5% from fall 1993 to fall 1994 after a 7.2% decline from fall 1992 to fall 1993.

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 1994 Annual AMS-IMS-MAA Survey. First, we update information about new doctoral recipients reported earlier in the November/December 1994 issue of the *Notices* (see pages 1121–1136). 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 48 full-time faculty to have retired or died, and this tally was multiplied by 39/37 to obtain the projected value of 51 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 1993–1994 Doctoral Recipients

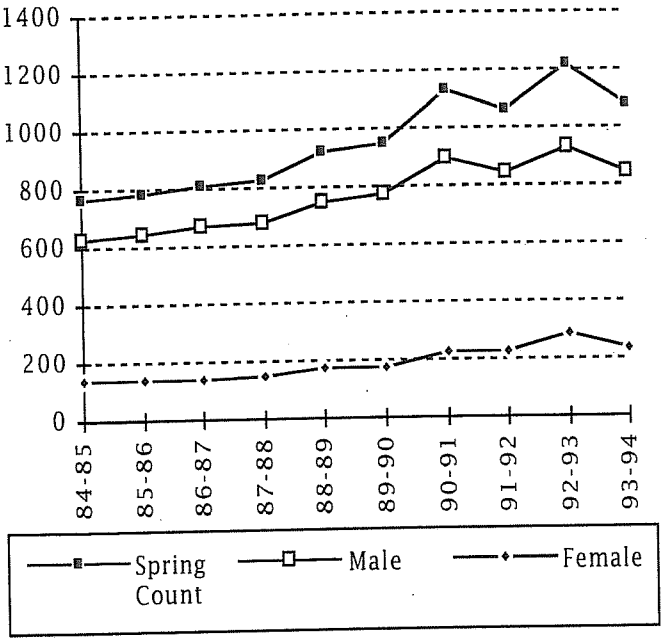
Information about recipients of doctoral degrees awarded between July 1, 1993, and June 30, 1994, was collected from doctorate-granting departments in late spring 1994 and from a follow-up census of individual degree recipients. The First Report of the 1994 Annual Survey (November/December 1994 issue of the *Notices*, pages 1121–1136) presents the survey results obtained about new doctoral recipients up to late September 1994. 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 1,076 doctorates in mathematical sciences awarded by U.S. institutions. This represents a decline of 11.4% from the 1,214 doctorates awarded during 1992–1993. The 1,214 doctorates awarded during 1992–1993 represented the highest number awarded in the past 20 years, and equaled the 1970–1971 count. (The 1970–1971 count has been adjusted to show only the total for the Groups we currently survey. The reported count of 1,414 included both Computer Science and Canadian departments). Table 1B shows the overall and by gender trends in the spring count of new doctoral recipients from 1984–1985 through 1993–1994.

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

1989–90		1990–91		1991–92		1992–93		1993–94	
Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
933	950	1074	1125	1050	1062	1202	1214	1059	1076

Table 1B: Trend Chart of Spring Count of New Doctoral Recipients, 1985–1994



Citizenship status is known for all of the 1076 new doctoral recipients. The spring count of new doctoral recipients who are U.S. citizens is 473. The proportion of 1993–1994 doctoral recipients who are U.S. citizens has remained constant at 44% for the past two years. The spring count of new doctoral recipients who are non-U.S. citizens decreased by 11% from the record high of 679 from last year's spring count. Pages 1125–1127 of the First Report present further information related to the citizenship of the 1993–1994 new doctoral recipients.

Of the 473 U.S. citizen new doctoral recipients, 119 are women and 354 are men. The 119 women new doctoral recipients comprise 25% of the U.S. citizen total for 1993–1994, a decrease of 2 percentage points from the 1992–1993 figure which was an all-time high both in number and in percent. The 354 U.S. citizen men who

Table 2A: Employment Status of 1993–1994 U.S. New Doctoral Recipients in the Mathematical Sciences, Updated March 1995

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/ Approxi-mations	Functional Analysis	Linear or Nonlinear Optim./ Control	Differential, Integral and Difference Equations	Harmonic Analysis and Topological Groups	Other	
Group I	22	4	15	8	4	3	5	6	1	10	2	7	87
Group II	6	1	4	2	2	1	1	5	3	2		2	29
Group III	13	2	4	4	13	6	5	3	2	5	2	3	62
Group IV					25	1							26
Group V					1	2	1	1	2	2		1	10
Masters	14	2	5	9	5	3	3	7		8	2	3	61
Bachelors	22	10	14	19	12	10	6	9	3	11	5	5	126
Two-year Colleges	4	1	2	2	1	1	1			1			13
Other Academic Depts.	2		1	2	20	13	3	1	1	3	1	7	54
Research Institutes	7	2	3	2	8	3	2			4	1	2	34
Government	1			1	13	8	3	1			1	2	30
Business and Industry	5		5	10	46	13	15	2	5	8	3	6	118
Foreign, Academic	25	8	17	14	37	7	11	7	6	10	8	6	156
Foreign, Nonacademic	1	1	4		4	5	1			1	1		18
Not seeking employment	2		2	3	2	2	2	1		2		1	17
Still seeking employment	21	2	15	5	12	16	4	10	4	8	2	2	101
Unknown (U.S.)	7	5	5	12	14	9	4	1	3	3	1	4	68
Unknown (non-U.S.)*	4	2	7	4	9	3	7	2		5	2	4	49
Column Total	156	40	103	97	228	106	74	56	30	83	31	55	1059
Column Subtotals Male	119	38	80	76	157	82	64	42	28	72	25	44	827
Column Subtotals Female	37	2	23	21	71	24	10	14	2	11	6	11	232

*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 1993–1994 U.S. New Doctoral Recipients by Type of Granting Department, Updated March 1995

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	68	9	6	1	3	87	75	12
Group II	13	14	2			29	24	5
Group III	27	8	17	7	3	62	42	20
Group IV	1			24	1	26	15	11
Group V	1				9	10	10	
Masters	18	18	18	6	1	61	40	21
Bachelors	36	43	40	6	1	126	84	42
Two-year Colleges	4	3	6			13	9	4
Other Academic Depts.	10	6	7	16	15	54	42	12
Research Institutes	24	2	2	5	1	34	26	8
Government	4	2	7	9	8	30	25	5
Business and Industry	28	10	19	36	25	118	98	20
Foreign, Academic	79	21	19	27	10	156	123	33
Foreign, Nonacademic	10	3		1	4	18	13	5
Not seeking employment	9	4	3	1		17	14	3
Still seeking employment	37	32	18	7	7	101	86	15
Unknown (U.S.)	31	16	11	7	3	68	60	8
Unknown (non-U.S.)*	20	12	13	4		49	41	8
Column Total	420	203	188	157	91	1059	827	232
Column Subtotals Male	344	153	146	105	79	827		
Column Subtotals Female	76	50	42	52	12	232		

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

were awarded Ph.D. degrees in mathematical sciences during 1993–1994 represent an 8% decrease from 1992–1993, during which the most new doctorates were awarded to U.S. citizen males since 1981–1982.

Tables 2A and 2B display updates of employment data for the fall count of 1993–1994 doctoral recipients, partitioned by field of thesis research and by the survey Group of their degree department. At the time of the spring report, the employment status of 942 of the 1,059 1993–1994 doctoral recipients was known. Of the 942, 50% assumed academic employment in the U.S., and 66% took academic employment in the U.S. or other countries. Both of these percentages are down from their 1992–1993, 1991–1992, and 1990–1991 levels.

Employment of 1993–1994 doctoral recipients by U.S. Ph.D.-granting institutions decreased by 20% from the corresponding figure for 1992–1993. Employment of the 1993–1994 doctoral recipients by research institutes, government, and business and industry, declined by 14% (including a 20% decline in employment by business and industry). Foreign academic employment of new doctoral recipients declined by 4%.

Among those 1993–1994 doctoral recipients taking employment in the U.S., 23% took nonacademic employment (government or business and industry). This percentage was the same for the 1992–1993 doctoral recipients. The fraction of the 1993–1994 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, 6% 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 29%.

Group I departments continued to award the most doctorates. Of the 1,076 doctoral degrees awarded in the mathematical sciences between July 1, 1993 and June 30, 1994, 39% (420) were awarded by Group I departments, more than double that of any other Group. Production of new doctoral recipients decreased significantly in Groups I, IV, and V. Production increased in Group II, and was approximately constant in Group III.

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. 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. For the past three years the fall unemployment rates for new doctoral recipients at the time of the spring report have risen steadily to the present rate of 10.7%. This year's rate is 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 1991–1992.

Table 2C (on the following page) presents the 1977–1978 through 1993–1994 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 high unemployment rate of 10.7% among the 1993–1994 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 57% of 345 1993–1994 doctoral recipients responded individually that they assumed academic positions that are not tenure-track, up three percentage points from last year. Fifty-six percent of those nontenure-track positions have contract durations of two years or less, up from 54% in 1992–1993. Of the 214 positions in U.S. Ph.D.-granting departments filled by 1993–1994 doctoral recipients, 23% were held by new doctoral recipients who received their degree from the same institution. Forty-seven (5.7%) of the 824 positions reported as filled in Table 2A are part-time, and at least 19 of the 47 incumbents are still seeking full-time employment.

The names of the 1993–1994 doctoral recipients and their thesis titles were published in the November/December 1994 *Notices*, with a supplemental list to be published in the September 1995 *Notices*.

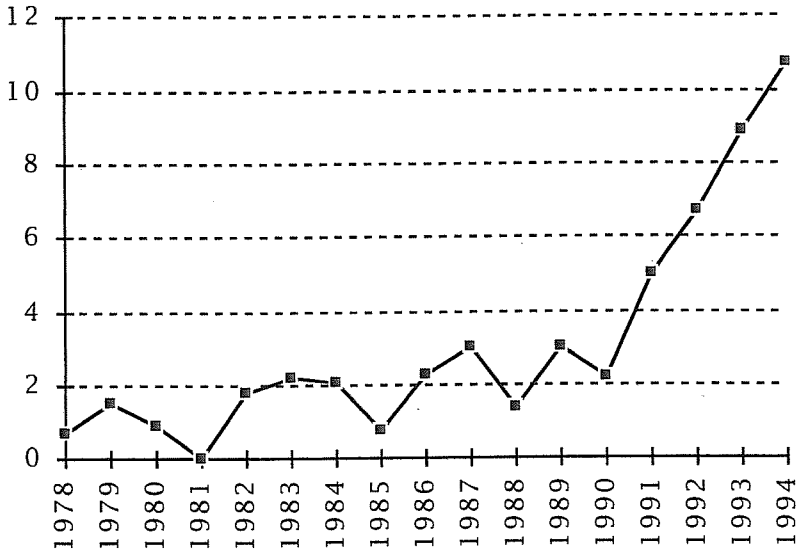
III. Faculty Characteristics

The Departmental Profile Survey, sent in fall 1994 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 1993 and fall 1994 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 1129–1136 of the November/December 1994 issue of the *Notices*, the First Report presented information collected earlier about faculty salaries.

Table 3A displays losses of full-time mathematical sciences faculty due to retirements or deaths. The fall 1994 mathematical sciences faculty attrition rates for the (combined) Groups I+II+III+M+B was 2.6%, an increase over the fall 1992 reported rate of 2.4% and the fall 1993 reported rate of 2.3%. 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 1994 reflect the many early retirement programs which have been established in the past few years in academic institutions. Numbers of retirements within specific Groups tend to fluctuate substantially from year to year. For example, faculty attrition in Group M increased by 47% from the reported figure for fall 1991 to the reported figure for fall 1992, remained

Table 2C: Percentage of New Doctoral Recipients Unemployed, as reported in the respective Annual Survey Second Report 1978–1994

Year	% Unemployed
1978	0.7
1979	1.5
1980	0.9
1981	0.0
1982	1.8
1983	2.2
1984	2.1
1985	0.8
1986	2.3
1987	3.0
1988	1.4
1989	3.0
1990	2.2
1991	5.0
1992	6.7
1993	8.9
1994	10.7



constant from the fall 1992 figure to the fall 1993 figure, and decreased by 32% to the fall 1994 figure. The line graph in Table 3B depicts the trend of steady increases in the faculty attrition rates for mathematics departments (Groups I+II+III+M+B) during the years 1985–1994.

Table 3C displays Departmental Profile Survey information on the number of full-time faculty positions in mathematical sciences departments under recruitment in 1993–1994. The number of positions in mathematics departments under recruitment has decreased significantly for five straight years (by 33% since 1989–1990 and by 1.8% from last year). The bar chart in Table 3D presents the trend of steady decrease in positions under recruitment in mathematics departments (Groups I+II+III+M+B) during 1990–1994. A comparison of Table 3B in the spring 1994 report with the Table 3B of the spring 1993 report indicates that every group except Groups II and B had increases in the number of positions under recruitment, yet declines in Groups II and B accounted for an overall decrease in the number of positions under recruitment. Table 3C of this spring's report as compared with Table 3B of the spring 1994 report indicates that Groups I and III had decreases in positions under recruitment, Groups II, IV, V, and M, had little or no change, and Group B had an increase in positions under recruitment.

Table 3C indicates that 89% of the positions under recruitment in 1993–1994 by mathematics departments were available to new doctoral recipients. However, only 69% of the positions under recruitment were tenured/tenure-track positions. The total number of tenured/tenure-track positions under recruitment by mathematics departments increased by 2% 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 decreased slightly from fall 1993 to fall 1994. For the second year in a row, among all Groups significant increases were recorded in the numbers of nontenure-track, doctoral, full-time faculty. In mathematics departments this number increased by 9.5% (I+II+III+M+B entry). Correspondingly, among all Groups except Groups V and B, there were significant decreases in the number of untenured, tenure-track, doctoral faculty. Table 3F indicates that women accounted for major portions of the increases in nontenure-track, doctoral, full-time faculty, except in Groups I, II, and V. For two consecutive years, the number of nontenure-track, doctoral, full-time faculty who are women has increased by 20% in mathematics departments.

Table 3A. Faculty Attrition*

	GROUP I	II	III	I+II+III	IV	V	M	B	I+II+III+M+B
Number of full-time faculty who retired or died (Group total)	51	39	68	157	25	6	117	171	446
% of full-time faculty in Group	3.1%	2.5%	3.0%	2.9%	2.6%	2.0%	2.5%	2.5%	2.6%
Number of usable responses**	37 (95%)	35 (81%)	68 (76%)	140 (81%)	52 (69%)	17 (61%)	134 (56%)	419 (43%)	693 (50%)

* Number and percentage of full-time faculty who were in the department in fall 1993 but were reported to have retired or died by fall 1994.
** 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

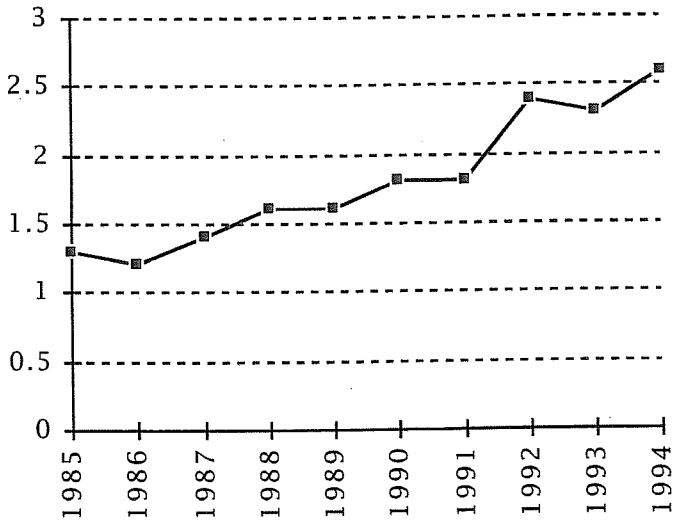


Table 3D. Number of full-time doctoral positions under recruitment in Groups I+II+III+M+B

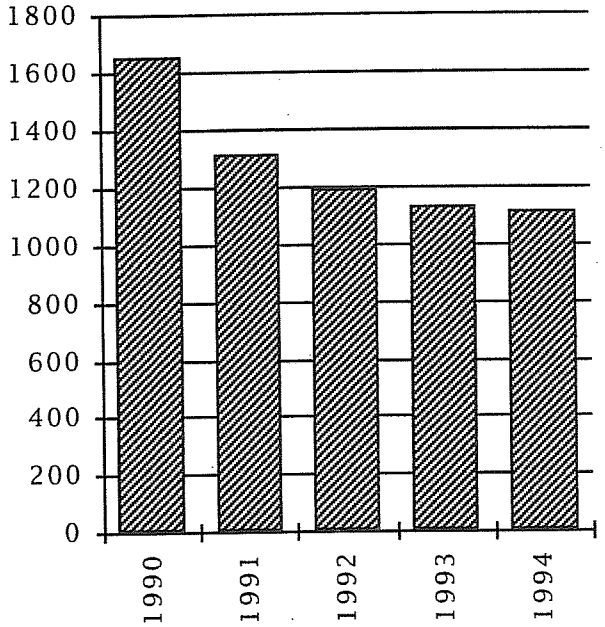


Table 3C. Recruitment of Doctoral Faculty

	GROUP I	II	III	I+II+III	IV	V	M	B	I+II+III+M+B
Number of open doctoral positions (Group total)*	167	74	146	387	78	35	264	460	1111
# tenured/tenure-track	57	37	99	193	53	21	201	371	765
# open to new doctoral recipients	133	57	132	322	59	32	243	422	987
# tenured/tenure-track	40	27	93	160	42	20	183	333	676
Doctoral hires, male	138	59	105	302	43	22	135	284	721
Doctoral hires, female	18	11	23	52	20	7	61	108	221
Nondoctoral hires, male	0	0	0	0	0	2	9	16	25
Nondoctoral hires, female	1	0	1	2	0	0	5	9	16
Number of unfilled positions	9	4	17	30	14	5	56	49	135

* Number of full-time doctoral positions under recruitment in 1993–1994 to be filled for 1994–1995.
Subtotals of rounded table values may exhibit rounding errors.

Table 3E. Faculty Size, Fall 1994, and Percentage Change in Size, Fall 1993 to Fall 1994

	GROUP I	II	III	I+II+III	IV	V	M	B	I+II+III+ M+B
Total number of full-time faculty (Group total)	2064	1789	2569	6422	1134	379	5237	7763	19422
% change in full-time faculty	–1.2%	–1.1%	1.0%	–0.3%	1.0%	2.8%	0.1%	–0.3%	–0.2%
Number of doctoral full-time faculty	2032	1648	2355	6034	1099	377	4178	5710	15923
% change in doctoral full-time faculty	–1.5%	–1.5%	1.7%	–0.3%	1.1%	2.8%	0.3%	2.3%	0.8%
Number of tenured doctoral full-time faculty	1479	1337	1718	4533	730	259	3191	3972	11696
% change in tenured doctoral full-time faculty	–1.6%	–0.4%	2.8%	0.4%	1.8%	1.1%	0.7%	2.5%	1.2%
Number of untenured, tenure-track doctoral f-t faculty	147	203	474	823	211	56	835	1452	3110
% change in untenured, tenure-track doctoral f-t faculty	–10.3%	–13.6%	–6.5%	–9.0%	–10.4%	15.2%	–2.9%	0.0%	–3.3%
Number of nontenure-track doctoral full-time faculty	407	108	163	687	159	62	153	286	1117
% change in nontenure-track doctoral full-time faculty	2.4%	12.8%	19.4%	7.7%	17.0%	0.5%	13.3%	11.9%	9.5%
Number of part-time faculty	122	143	590	855	138	15	1683	3320	5858
% change in part-time faculty	2.7%	18.4%	0.5%	3.4%	4.3%	–1.8%	0.6%	3.4%	2.6%

Table 3F. Women Faculty Size, Fall 1994, and Percentage Change in Size, Fall 1993 to Fall 1994

	GROUP I	II	III	I+II+III	IV	V	M	B	I+II+III+ M+B
Total number of full-time women faculty (Group total)	167	233	368	768	189	28	1178	1875	3820
% change in full-time women faculty	–1.2%	–2.1%	3.7%	0.8%	6.5%	2.0%	3.3%	2.8%	2.6%
Number of doctoral f-t women faculty	148	147	250	545	169	28	687	1079	2311
% change in doctoral f-t women faculty	–5.4%	–2.4%	8.6%	1.4%	7.3%	2.0%	5.8%	6.5%	5.1%
Number of tenured doctoral f-t women faculty	63	80	131	274	53	14	417	601	1292
% change in tenured doctoral f-t women faculty	–3.2%	–3.0%	17.9%	5.9%	15.6%	11.7%	4.5%	3.6%	4.4%
Number of untenured, tenure-track doctoral f-t women faculty	14	39	85	138	61	7	209	413	759
% change in untenured, tenure-track doctoral f-t women faculty	–13.3%	3.2%	–9.9%	–6.9%	–4.5%	45.7%	0.9%	5.4%	1.7%
Number of nontenure-track doctoral f-t women faculty	71	28	34	133	55	8	61	66	260
% change in nontenure-track doctoral f-t women faculty	–5.6%	–8.0%	36.8%	2.0%	15.2%	–28.6%	41.7%	55.6%	20.4%
Number of part-time women faculty	31	54	200	284	42	3	667	1379	2331
% change in part-time women faculty	3.6%	25.7%	–4.4%	1.0%	–3.3%	0.0%	0.5%	1.9%	1.4%

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 declined slightly by 0.2% from fall 1993 to fall 1994. The graduate course enrollments declined by 1.6% over the same period. A comparison of Table 4B, which displays fall 1994 undergraduate enrollments distribution, with Table 4B from last year's Second Report, p. 604 of the July/August 1994 *Notices*, shows a similar pattern of enrollment distributions except that in Ph.D.-granting mathematics departments (Groups I+II+III) there is a decline in the proportion of the enrollments in remedial mathematics and precalculus courses. A comparison of Table 4C and Table 4C from the spring 1993 report in the July/August 1994 *Notices* shows some considerable decline both in undergraduate and total course enrollments per full-time faculty member for Groups I, III, IV, and V, while for Group II there was a significant increase. For Groups M and B, the undergraduate and total course enrollments per full-time faculty member remained essentially constant. Group IV for undergraduate course enrollments, and Group V for total course enrollments were exceptions. Also, graduate course enrollments per full-time faculty member remained essentially constant except Group V where the ratio decreased significantly.

Table 4A. Undergraduate and Graduate Enrollments (thousands), Fall 1994, and Percentage Change in Enrollments, Fall 1993 to Fall 1994

	GROUP								
	I	II	III	I+II+III	IV	V	M	B	total
Number of undergraduate course enrollments (thousands)	162	187	277	627	57	14	558	699	1954
% change in undergraduate course enrollments	1.6%	–0.6%	0.0%	0.2%	1.2%	–4.0%	0.0%	–1.1%	–0.3%
Number of graduate course enrollments (thousands)	9	7	11	28	16	6	18	3	70
% change in graduate course enrollments	–9.1%	–8.8%	1.6%	–5.0%	–2.6%	–2.5%	5.2%	1.3%	–1.6%
Number of usable responses	37 (95%)	34 (79%)	67 (74%)	138 (80%)	47 (63%)	16 (57%)	134 (56%)	416 (42%)	688 (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 1994

COURSES	GROUP															
	I		II		III		I+II+III		IV		V		M		B	
Remedial mathematics* (thousands, %**)	15	9%	14	7%	36	13%	65	10%					93	17%	121	17%
Precalculus	24	15%	41	22%	68	24%	132	21%	1	2%			104	19%	104	15%
1st-year Calculus (mainstream)	51	32%	40	21%	50	18%	141	22%			2	13%	66	12%	89	13%
1st-year Calculus (non-mainstream)	17	10%	25	13%	23	8%	64	10%	1	1%			33	6%	33	5%
Statistics	3	2%	6	3%	17	6%	26	4%	53	92%	4	28%	50	9%	66	9%
Computer Science	1	1%			6	2%	7	1%			1	8%	36	6%	75	11%
Other department courses for majors	29	18%	30	16%	36	13%	95	15%			4	32%	63	11%	71	10%
Other undergraduate courses	23	14%	31	17%	42	15%	96	15%	2	4%	3	19%	113	20%	139	20%

* 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 4D reports that both total number of junior/senior majors in mathematics departments (Groups I+II+III+M+B), and number of women junior/senior majors from fall 1993 to fall 1994 remained essentially constant. However, only Groups III and V reported increases in women majors.

Table 4C. Undergraduate and Graduate Enrollments per Full-time Faculty Member, Fall 1994

	GROUP I	II	III	IV	V	M	B
Undergraduate course enrollments per full-time faculty member	79	105	108	51	37	106	90
Graduate course enrollments per full-time faculty member	5	4	4	14	15	3	0.3
Total course enrollments per full-time faculty member	83	109	112	64	53	110	90

Table 4D. Undergraduate Junior/Senior Majors (hundreds), and Undergraduate Women Junior/Senior Majors (hundreds), Fall 1994, and Percentage Change in Majors, Fall 1993 to Fall 1994

	GROUP I	II	III	IV	V	M	B	I+II+III+M+B
Number of junior/senior majors (hundreds)	54	39	74	10	20	223	272	663
% change in junior/senior majors	–0.3%	–2.9%	2.2%	–18.0%	14.3%	0.7%	–0.6%	0.0%
Number of women junior/senior majors (hundreds)	20	16	33	4	7	97	120	285
% change in women junior/senior majors	–1.7%	–1.5%	1.8%	–8.1%	17.4%	–0.5%	–0.1%	–0.2%
Number of usable responses*	35 (92%)	32 (76%)	65 (73%)	32 (55%)	11 (50%)	120 (50%)	366 (37%)	618 (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. Elizabeth Foulkes has made essential contributions to the coordination of the Annual Survey, management of the work of the Data Committee, full computerization of the data analysis, and preparation of the reports. The Data Committee expresses special thanks to her.

V. Graduate Student Profile

Tables 5A, 5C, and 5D summarize population statistics for graduate students gathered by the 1994 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 1.3% from fall 1993 to fall 1994 and declined in every Group except Groups II and III. Table 5C data shows that the total number of women full-time graduate students in mathematics departments increased by 0.6% and increased in all Groups except Groups I and IV. For the third 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 3.5% between fall 1993 and fall 1994 was less than the 7.2% decline reported last year between fall 1992 and fall 1993. Table 5D indicates a slight decline of 0.1% in the total number of U.S. citizen full-time mathematics graduate students from fall 1993 to fall 1994, with Group I reporting the largest decline (7.2%).

All three tables show significant declines in first-year graduate students from fall 1993 to fall 1994 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 and M and in tables 5A and 5C for Group V (the relatively small response rate from Group M departments increases the risk of bias in the Group M projections). The three successive years of declines for the doctorate-granting mathematics departments are enough to suggest a decline in the number of new doctoral recipients three to five years hence. The bar chart in Table 5B presents the trend in percentage change of first-year graduate students in Ph.D.-granting mathematics departments (Groups I+II+III) during the years 1985–1994. The extent of the decline will depend on next year's figure for first-year graduate students as well as possible changes in the next three to five years in the rate of attrition from mathematical doctoral programs.

Table 5A. Full-time Graduate Students, Fall 1994, and Percentage Change in Graduate Students, Fall 1993 to Fall 1994

	GROUP							
	I	II	III	I+II+III	IV	V	M	I+II+III+M
Total number of full-time graduate students	3703	2635	3376	9714	2894	1411	3206	12920
% change in full-time graduate students	–5.5%	0.5%	1.0%	–1.7%	–1.6%	–3.1%	–0.2%	–1.3%
Number of first-year graduate students	735	721	1091	2546	869	543	1496	4042
% change in first-year graduate students	–7.7%	–6.4%	1.6%	–3.5%	9.6%	2.0%	13.4%	2.1%
Number of usable responses*	37 (95%)	33 (77%)	68 (76%)	138 (80%)	51 (68%)	17 (61%)	116 (48%)	254 (62%)

* 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. Percent change in Full-time, First-year Graduate Students in Groups I+II+III, 1985–1994

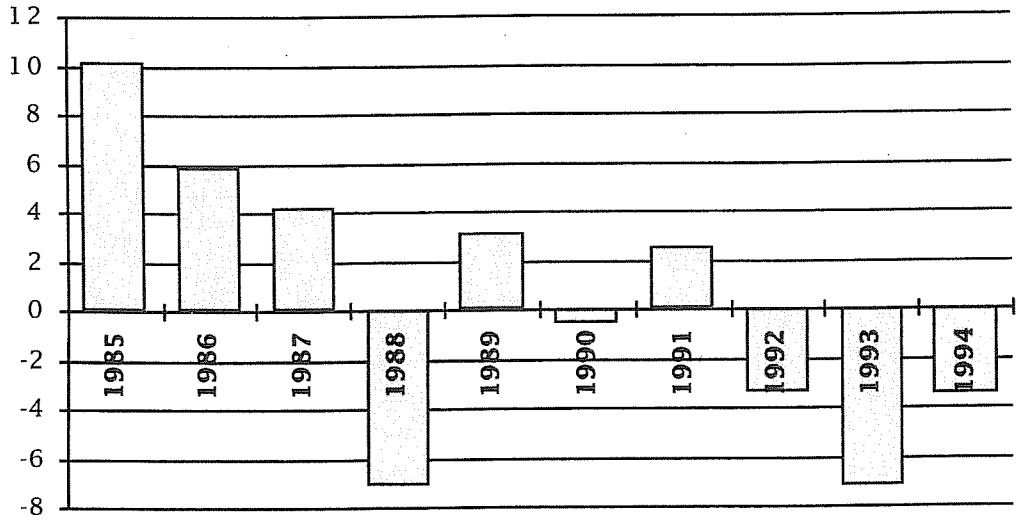


Table 5C. Women Full-time Graduate Students, Fall 1994, and Percentage Change in Women Graduate Students, Fall 1993 to Fall 1994

	GROUP							
	I	II	III	I+II+III	IV	V	M	I+II+III+M
Total number of full-time women graduate students	851	790	1132	2772	1151	361	1305	4077
% change in full-time women graduate students	–2.9%	1.3%	0.2%	–0.4%	–2.6%	7.0%	2.8%	0.6%
Number of first-year women graduate students	196	249	376	821	379	152	646	1467
% change in first-year women graduate students	–6.5%	–5.0%	–6.6%	–6.1%	15.7%	19.5%	19.2%	3.6%

Table 5D. U.S. Citizen Full-time Graduate Students, Fall 1994, and Percentage Change in U.S. Citizen Graduate Students, Fall 1993 to Fall 1994

	GROUP							
	I	II	III	I+II+III	IV	V	M	I+II+III+M
Total number of full-time U.S. citizen graduate students	1924	1625	2130	5678	1560	726	2206	7884
% change in full-time U.S. citizen graduate students	–7.2%	4.9%	0.9%	–0.9%	1.2%	–4.1%	2.2%	–0.1%
Number of first-year U.S. citizen graduate students	403	504	698	1604	513	248	1060	2664
% change in first-year U.S. citizen graduate students	–3.5%	1.3%	–3.3%	–2.0%	14.1%	–3.7%	10.4%	2.6%

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