1997 AMS-IMS-MAA Annual Survey

(First Report)

Report on the 1997 Survey of New Doctoral Recipients Faculty Salary Survey

Paul W. Davis, James W. Maxwell, and Kinda M. Remick

Report on the 1997 Survey of New Doctoral Recipients

This report presents a statistical profile of recipients of doctoral degrees awarded by departments in the mathematical sciences at universities in the United States during the period July 1, 1996, through June 30, 1997. It includes a preliminary analysis of the employment market for 1996–1997 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, gender, and racial/ethnic group. Table 1 provides the response rates for the 1997 Survey of New Doctoral Recipients. Please see page 40 for a description of the Groups, newly defined for the 1996 Survey.

Table 1: Response Rates

Group I	48 of 48
Group II	53 of 56 including 1 with 0 degrees
Group III	65 of 72 including 15 with 0 degrees
Group IV	60 of 81 including 6 with 0 degrees
Group Va	15 of 18
GroupVb	11 of 31 including 2 with 0 degrees

Revised Procedure for Survey of Employment Status

In prior years, the Data Committee has determined the employment status of doctoral recipients in two stages: departments were asked in May about the employment status of that year's doctoral recipients (using the Doctorates Granted form), and the individual recipients themselves were polled during the summer (using the Salaries and Professional Experience or SAPE form). Obviously, the employment information obtained from individuals is more accurate than the preliminary data obtained from departments, and it is the department data updated by the SAPE form that has been presented in previous First Reports from the Committee.

Beginning with the current year, the summer sampling of individual degree recipients using the SAPE form has been replaced by a fall mailing using an instrument known as Employment Experiences of New Doctoral Recipients. This new procedure will gather additional information and permit comparisons with employment patterns in other disciplines, but its timing prevents having the more accurate employment data from individuals available for the Committee's First Report.

To permit comparisons with last year's employment data, some of that data has been adjusted using 1995–1996 departmental responses

This first report on the 1997 Survey includes information about the employment of 1996–1997 new doctoral recipients and salary data on faculty members in four-year colleges and universities. The report is based on information collected from questionnaires distributed in May to departments in the mathematical sciences in colleges and universities in the United States. A further questionnaire concerned with data on fall enrollments, majors, and departmental size was distributed in September. These data will appear in the Second Report on the 1997 Survey in a summer 1998 issue of the *Notices*.

The 1997 Annual AMS-IMS-MAA Survey represents the forty-first in an annual series begun in 1957 by the Society. The 1997 Survey is under the direction of the AMS-IMS-MAA Data Committee, whose members are Paul W. Davis (chair), Malay Ghosh, Mary W. Gray, Don O. Loftsgaarden, James W. Maxwell (ex officio), M. Beth Ruskai, Ann K. Stehney, and Ann E. Watkins. The committee is assisted by AMS staff member Kinda Remick. Comments or suggestions regarding this Survey Report may be directed to the committee.

Highlights

Based on responses from departments alone (see Revised Employment Status Survey Procedure), the preliminary unemployment rate among the 1,158 new doctoral recipients from the 1996–1997 academic year has dropped to 6.8 percent, a significant change from the prior year's adjusted figure of 10.1 percent. This fraction is the lowest since the fall 1990 rate of 5.7 percent. Of those doctoral recipients employed in the U.S., 63.9 percent hold jobs in academia, down from the prior year's adjusted figure of 70.1 percent. The fraction employed in nonacademic positions has increased significantly from 29.9 percent to 36.1 percent.

Of the 1996–1997 doctoral recipients, 3.3 percent hold part-time positions and 7.5 percent are employed at the same institution that awarded their degree, though not necessarily in the same department. Adjusted figures from 1995–1996 are 2.7 percent part-time and 6.1 percent in the same institution.

Women account for 28.7 percent of U.S. citizens receiving doctorates, the highest proportion ever reported. Among U.S. citizen doctoral recipients, 9 are black (6 men, 3 women) and 14 are Mexican American, Puerto Rican, or other Hispanic (9 men, 5 women). The former total is the same as last year's, while the latter is an increase of 5.

The total number of 1,158 doctoral degrees awarded by U.S. mathematical sciences departments is nearly unchanged from last year's 1,153, the first moderation in the peak-to-peak oscillations of about 150 degrees that characterized the preceding four years. Of those degrees, 516 were awarded to U.S. citizens, an increase of 4.5 percent from last year's fall count of 493; 642 non-U.S. citizens received doctorates, down slightly from 657 in 1995–1996.

only, excluding updates from the individual SAPE forms. This adjusted 1995–1996 employment data is described at appropriate points in the text of the report. Otherwise, the employment data contained in this report is not comparable to data presented in prior reports from the Committee. The Committee's Second Report, which will appear in a future issue of *Notices*, will present employment data comparable with those in prior reports by virtue of its incorporation of responses from individual degree recipients.

Since sex, race/ethnicity, and citizenship reported by departments are not changed significantly by the individual SAPE forms, those data in this report can reasonably be compared with past reports from the Committee.

Doctoral Degrees Granted

The number of new doctoral recipients reported in 1996–1997 by U.S. mathematical sciences departments is 1,158. Table 2A gives the fall and final counts for the past four Annual Surveys together with the current fall count. This year's fall count will be updated in the Second Report of the 1997 Survey, to appear in a summer 1998 issue of *Notices*.

Table 2A: U.S. New Doctoral Recipients, Fall and Final Counts

Year	Fall	Final
1992–1993	1202	1214
1993–1994	1059	1076
1994–1995	1226	1237
1995–1996	1153	1154
1996–1997	1158	*

*To appear in a summer 1998 issue of *Notices*.

The 1997 fall count of the total number of new doctoral recipients of 1,158 represents only a slight increase from the 1996 fall count of 1,153. After four years of the fall count oscillating by about 150 individuals every other year, the count has leveled off near the midpoint for the second year in a row.

Table 2B records the annual number of new doctoral recipients in the mathematical sciences in the U.S. from the year 1992–1993, exclusive of Group Vb. The response rate for Group Vb, which includes some departments in engineering and management science, is the lowest of all groups.

Table 2B: New Doctoral Degrees Awarded by Groups I–Va, Fall Count

Year	92–93	93–94	94–95	95–96	96–97
I–Va	1104	1025	1148	1098	1123

The columns in Table 3B indicate how the count of 1,158 new doctoral recipients was spread over the mathematical sciences departments in Groups I–V. For mathematics departments (Groups I, II, and III combined), there was a decrease of 1.1 percent in the fall count of new doctoral recipients over the previous year.

Employment Status of U.S. New Doctoral Recipients, 1996–1997

The Annual Survey of New Doctoral Recipients provides a view of the employment market for new Ph.D.s in the mathematical sciences from the perspective of job applicants. Additional information about recruitment by four-year colleges and universities is reported in the Second Report of the Annual Survey; see the 1996 Second Report, *Notices*, September 1997, pages 911–921, for data on the numbers of positions departments attempted to fill and characteristics of the people hired for fall 1996.

As described in "Revised Procedure of Survey of Employment Status" at the beginning of this

Paul W. Davis is professor of mathematics at Worcester Polytechnic Institute. James (Jim) W. Maxwell is AMS associate executive director for Professional Programs and Services. Kinda M. Remick is AMS survey specialist.

Table 3A: Employment Status of 1996–1997 U.S. New Doctoral Recipients in the Mathematical Sciences

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 Nonlinear Optim./ Control	Differential Integral and Difference Equations	Harmonic Analysis and Topological Groups	Other/ Unknown	
Group I (Public)		13	7	15	6	4	4	2	4	0	6	1	0	62
Group I (Private)		8	2	13	3	5	1	0	2	1	6	1	0	42
Group II		10	1	7	3	4	1	2	4	1	4	3	2	42
Group III		3	2	1	2	3	2	1	3	0	3	2	2	24
Group IV		1	0	0	0	31	1	0	0	0	0	0	0	33
Group V		0	0	0	0	2	3	0	0	0	2	0	1	8
Masters		9	1	9	7	11	3	2	2	0	5	0	3	52
Bachelors		20	6	19	18	4	6	3	5	1	13	5	8	108
Two-Year Colleges		1	0	0	3	0	2	2	0	0	3	0	1	12
Other Academic Depts.		2	2	3	9	24	10	3	1	1	4	2	3	64
Research Institutes		6	0	2	4	2	2	2	1	0	0	1	0	20
Government		5	1	2	2	13	3	4	0	0	1	1	0	32
Business and Industry		17	4	14	15	97	31	19	6	7	17	5	0	232
Foreign, Academic		18	1	13	15	19	13	10	8	5	14	4	0	120
Foreign, Nonacademic		2	1	0	0	5	2	0	0	0	0	2	1	13
Not seeking employment		3	1	2	2	0	2	2	1	0	1	0	1	15
Still seeking employment		11	5	6	6	12	7	2	1	3	7	4	0	64
Unknown (U.S.)		17	0	18	12	29	19	2	2	2	9	4	4	118
Unknown (non-U.S.)*		14	2	17	2	27	5	5	5	3	11	5	1	97
Column Total		**160**	**36**	**141**	**109**	**292**	**117**	**61**	**45**	**24**	**106**	**40**	**27**	**1158**
Column	Male	123	29	118	81	194	88	48	39	19	82	34	16	871
Subtotals	Female	37	7	23	28	98	29	13	6	5	24	6	11	287

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

Table 3B: Employment Status of 1996–1997 U.S. New Doctoral Recipients by Type of Granting Department

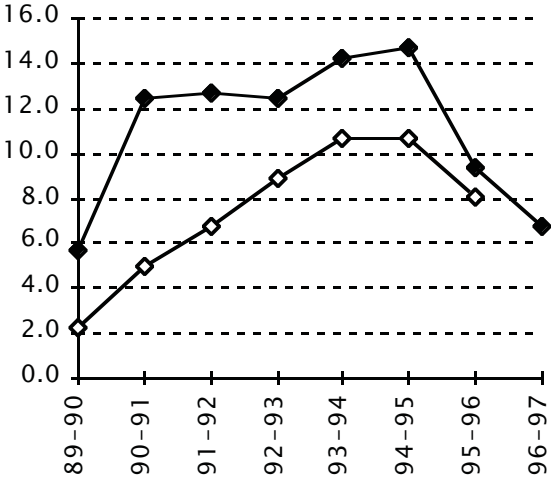
TYPE OF EMPLOYER		TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT						ROW TOTAL	ROW SUBTOTAL	
		Group I (Public) Math	Group I (Private) Math	Group II Math	Group III Math	Group IV Statistics	Group V Applied Math/OR		Male	Female
Group I (Public)		35	19	6	1	0	1	62	53	9
Group I (Private)		13	25	2	1	1	0	42	33	9
Group II		14	7	16	3	2	0	42	32	10
Group III		2	3	5	10	4	0	24	17	7
Group IV		0	1	1	0	31	0	33	24	9
Group V		1	1	1	1	0	4	8	8	0
Masters		16	3	11	15	4	3	52	39	13
Bachelors		30	6	40	22	6	4	108	67	41
Two-Year Colleges		0	0	7	4	0	1	12	8	4
Other Academic Depts.		8	7	13	7	18	11	64	45	19
Research Institutes		7	11	1	1	0	0	20	18	2
Government		10	2	4	5	9	2	32	22	10
Business and Industry		39	32	32	31	70	28	232	173	59
Foreign, Academic		38	21	26	9	13	13	120	105	15
Foreign, Nonacademic		2	2	1	1	3	4	13	12	1
Not seeking employment		7	2	4	2	0	0	15	9	6
Still seeking employment		19	4	19	5	7	10	64	46	18
Unknown (U.S.)		29	25	22	9	14	19	118	91	27
Unknown (non-U.S.)*		27	16	27	5	15	7	97	69	28
Column Total		**297**	**187**	**238**	**132**	**197**	**107**	**1158**	**871**	**287**
Column	Male	239	157	175	96	123	81	871		
Subtotals	Female	58	30	63	36	74	26	287		

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

Table 3C: Percentage of New Doctoral Recipients Unemployed (as reported in the respective Annual Survey Reports 1991–1997)

Year	Fall	Final
1989–1990	5.7	2.2
1990–1991	12.4	5.0
1991–1992	12.7	6.7
1992–1993	12.4	8.9
1993–1994	14.2	10.7
1994–1995	14.7	10.7
1995–1996	9.4	8.1
1996–1997	6.8	*

*To appear in a summer 1998 issue of *Notices*.



Caution: see Revised Procedure for Survey of Employment Status

report, the employment information provided by departments on their doctoral recipients is updated and expanded by questionnaires sent to each doctoral recipient. In prior years these forms were mailed out at the beginning of June, and early returns of these questionnaires were incorporated into the data that was analyzed and reported in the First Report. For the 1997 Annual Survey, the mailing to individual doctoral recipients took place in October. Hence, the 1997 figures on employment reported here do not reflect updated information from individuals, and they may not be strictly comparable with those of prior Annual Surveys.

In an effort to enable more reliable comparisons of this year's employment data with that from last year, last year's department-supplied data without the updated information provided by the individual recipients was analyzed. It is these adjusted 1996 figures which are compared with the 1997 figures, except where noted.

Table 3A shows the employment status, by type of employer and field of degree, of the 1,158 recipients of doctoral degrees conferred by mathematical sciences departments in the U.S. between July 1, 1996, and June 30, 1997. The names of the individuals are listed with their thesis titles in this issue of *Notices* (pages 45–63).

Table 3A shows that among those whose employment status is known, 6.8 percent are unemployed. The corresponding rate of unemployment from 1995–1996, based on departmental response alone, without responses from individual recipients, is approximately 10.1 percent. An update of Table 3A, incorporating the results of the followup questionnaire to individual recipients, will appear in the 1997 Second Report. The unemployment figures in this report will be comparable to those of the 1996 Second Report.

Beyond the unemployment statistics that are explicitly reported in Tables 3A, 3B, and 3C, the 1997 Survey provides other indicators about the job market. For example, 31 (3.3 percent) new doctoral recipients are reported to hold part-time positions, and 71 (7.5 percent) new doctoral recipients hold employment at the same institution that awarded their degree, although not necessarily in the same department in which the degree was earned. To compare with the corresponding statistics in 1996, 26 positions (2.7 percent) were part-time and 59 (6.1 percent) were held by doctoral recipients in the same institutions where they earned their doctoral degrees.

Most new doctoral recipients seek and accept academic positions. Of the 731 new doctoral recipients employed in the U.S., a total of 467 (63.9 percent) hold jobs in academia (including research institutes). For comparison, last year's adjusted data showed 695 new doctoral recipients employed in the U.S., including 487 (70.1 percent) in academic positions. Thus total U.S. employment of new doctoral recipients has increased by 5.2 percent. The percentage of positions in academia decreased by 4.1 percent. Concomitantly, the number of nonacademic positions in the U.S. taken by new doctoral recipients increased from 29.9 percent to 36.1 percent of those employed in the U.S.

The 467 U.S. academic positions this year include a total of 211 in U.S. doctoral degree-granting departments (Groups I–V). This number is 9.8 percent lower than last year's adjusted count (234 positions in Groups I–V). The number of new doctoral recipients employed by master's and bachelor's degree-granting colleges and universities (Groups M and B) increased by 7 (4.4 percent) from the number reported last year. While the number of new doctoral recipients hired by research institutes decreased (by 23.1 percent), the number of new doctoral recipients hired by government increased (by 14.3 percent) and hiring by business and industry increased markedly (by 28.9 percent) from last year. Employment of the new doctoral recipients by business and industry constitutes 31.7 percent of all U.S. employment of these new doctoral recipients. Last year, 25.9 percent were hired by business and industry.

Table 3B reveals the dependence of employment patterns on the type of department from which the doctoral degree is received. The patterns of compartmentalization and stratification of the job market for new doctoral recipients are even stronger than the patterns seen in the 1996 Survey. For example, Table 3B shows that new doctoral recipients hired for positions

in doctoral degree-granting mathematics departments (Groups I, II, III) are drawn predominantly from these same departments: 95.3 percent of the positions filled in Groups I, II, and III are held by those who received their degrees from Group I, II, or III departments. Similarly, 93.9 percent of the Group IV jobs held by new doctoral recipients went to Group IV degree recipients. These percentages compare with 91.5 percent and 87.1 percent, respectively, from the 1996 adjusted figures.

Women represent 24.8 percent of the population of new doctoral recipients, up from 21.6 percent in 1995–1996, but the proportion is not uniform across different types of departments. For example, 21.9 percent of the new doctoral recipients in mathematics (Groups I+II+III) are women (up from 20.7 percent last year), and 37.6 percent of the new doctoral recipients from statistics departments are women (up from 26.7 percent last year). The proportion of women among new doctoral recipients hired by doctoral degree-granting mathematics departments (20.6 percent) is slightly less than their proportion among mathematics doctoral recipients. The rate of unemployment for the female new doctoral recipients (7.8 percent) is greater than the rate for the male new doctoral recipients (6.5 percent).

Table 3B shows different rates of unemployment for doctoral recipients from the five groups. The percentages unemployed, among those whose employment status is known, are Group I (Public)–7.9 percent, Group I (Private)–2.7 percent, Group II–10.1 percent, Group III–4.2 percent, Group IV–4.2 percent, and Group V–12.3 percent.

Table 3D shows the pattern of employment within broad job categories broken down by the citizenship status of the new doctoral recipients. The citizenship status is known for all of the 1,158 new doctoral recipients. For those whose job status is known, the rate of unemployment for non-U.S. citizens is more than 3 percentage points lower than that for U.S. citizens (5.3 percent for noncitizens and 8.4 percent for citizens). Nevertheless, the unemployment rate for U.S. citizens is 2.3 percentage points below the level of last year's adjusted data. The percentage of U.S. citizens in U.S. nonacademic jobs is lower than the percentage of noncitizens in the same category (23.0 percent of citizens versus 32.6 percent of noncitizens). The percentage of U.S. citizens holding positions in U.S. doctoral degree-granting departments (22.1 percent) is slightly lower than the percentage for non-U.S. citizens (22.6 percent). U.S. citizens hold positions in nondoctoral-degree granting U.S. departments in substantially higher proportion than do noncitizens (39.2 percent of citizens compared to 12.0 percent of noncitizens). All percentages exclude new doctoral recipients whose job status is unknown.

Of the temporary residents who received doctorates this year, 49.9 percent obtained U.S. employment, while 64.0 percent of the permanent residents found U.S. employment.

Gender, Ethnicity, and Citizenship of U.S. New Doctoral Recipients, 1996–1997

Table 4 presents a breakdown according to gender, ethnic group, and citizenship of the new doctoral recipients. The information reported in this table was obtained in summary form from the departments granting the degrees.

The citizenship status is known for all of the 1,158 new doctoral recipients, including 516 U.S. citizens. The number of U.S. citizen new doctoral recipients is 4.0 percent more than the 1995–1996 figure of 496. Table 5 shows the changes from year to year in the numbers and proportions of U.S. citizens.

The percentage of U.S. citizens among the new doctoral recipients is 44.5 percent, a slight increase from last year's percentage of 43.4 percent. A total of 642 noncitizens were awarded doctoral degrees by U.S. institutions in 1996–1997. This represents a decrease of 4 individuals (0.6 percent) from last year's count of

Table 3D: Employment Status of 1996–1997 U.S. New Doctoral Recipients by Citizenship Status

TYPE OF EMPLOYER	CITIZENSHIP								TOTAL DOCTORAL RECIPIENTS WHOSE CITIZENSHIP IS KNOWN*	
	U.S. CITIZENS		NON-U.S. CITIZENS Permanent Visa		NON-U.S. CITIZENS Temporary Visa		NON-U.S. CITIZENS Unknown Visa			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
U.S. Academic, Ph.D. Department	100	19.4	22	16.2	82	17.6	7	17.1	211	18.2
U.S. Academic, non-Ph.D. Department	177	34.3	22	16.2	31	6.7	6	14.6	236	20.4
U.S. Research Institute	10	1.9	1	0.7	9	1.9	0	0.0	20	1.7
U.S. Nonacademic	104	20.2	42	30.9	110	23.7	8	19.5	264	22.8
Foreign Academic	14	2.7	4	2.9	96	20.6	6	14.6	120	10.4
Foreign Nonacademic	3	0.6	0	0.0	9	1.9	1	2.4	13	1.1
Not seeking employment	6	1.2	2	1.5	7	1.5	0	0.0	15	1.3
Still seeking employment	38	7.4	10	7.4	16	3.4	0	0.0	64	5.5
Unknown (U.S. address given)	63	12.2	30	22.1	20	4.3	5	12.2	118	10.2
Unknown (foreign address given)	1	0.2	3	2.2	85	18.3	8	19.5	97	8.4
TOTAL	516	100.0*	136	100.0*	465	100.0*	41	100.0*	1158	100.0*

* Column totals are rounded to the nearest whole percent.

646. The 1996–1997 count is 94.5 percent greater than the number awarded by U.S. institutions ten years ago (330 in 1984–1985).

Among the U.S. citizens receiving doctoral degrees in the mathematical sciences, 9 are black (6 men and 3 women) and 14 are Mexican American, Puerto Rican, or other Hispanic (9 men and 5 women). The former remained the same as compared to last year, while the latter increased by 5 individuals.

Women account for 28.7 percent of the U.S. citizens receiving doctoral degrees in the mathematical sciences from U.S. universities. This is the highest percentage ever reported. The total number of U.S. citizen women who were 1996–1997 doctoral recipients (148) increased by 27.6 percent from last year's reported 116, and is 3 more than the previous highest number, reported in 1992–1993 (see Table 6).

Note that in Tables 5 and 6 all years prior to 1982–1983 include doctoral recipients from computer science departments.

Acknowledgments

The Annual AMS-IMS-MAA 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 AMS-IMS-MAA 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.

Bibliography

D. O. Loftsgaarden, D. C. Rung, and A. E. Watkins, *Statistical abstract of undergraduate programs in the mathematical sciences in the U.S.*, Fall 1995 CBMS Survey, MAA Reports No. 2, 1997.

American Association of University Professors. *The annual report on the economic status of the profession* 1992–1993, Academe: Bulletin of the AAUP (March/April 1993), Washington, DC.

W. G. Bowen, and N. L. Rudenstine, *In pursuit of the Ph.D.*, Princeton University Press, Princeton, NJ, 1992.

Commission on Professionals in Science and Technology, Occasional Papers, prepared by Betty M. Vetter. *Supply and demand for engineers in the 1990s* (90–1), April 1990; *Who is in the pipeline? Science, math, and engineering education* (90–2), July 1990; *Recruiting doctoral scientists and engineers for the twenty-first century* (90–3), October 1990; *Women in science and engineering, an illustrated progress report* (90–4), December 1990; *Recruiting and retaining a diverse, quality technical work force* (91-1), April 1991; *By the year 2000: Myths and facts* (91-2), July 1991; *Cultural diversity in higher education* (91-3), October 1991; *Supply and demand in science and engineering* (91-4), January 1992; *American minorities in science and engineering* (92-1), April 1992; *Foreign citizens among U.S. scientists and engineers* (92-2), July 1992; *What's holding up the glass ceiling? Barriers in the work force* (92-3), October 1992; *Setting the record straight: Shortages in perspective* (92-4), January 1993; CPST, Washington, DC.

_____, *Salaries of scientists, engineers, and technicians: A summary of salary surveys*, 12th ed., Washington, DC, 1992.

_____, *Professional women and minorities–1994*, Washington, DC, 1994.

_____, *Preparing for the 21st century: Human resources in science and technology*, Proceedings of a Symposium, March 26–27, 1992, Washington, DC, 1992.

A. Jackson, *Top producers of women mathematics doctorates*, *Notices* of the AMS, September 1991.

B. Madison, and T. A. Hart, *A challenge of numbers: People in the mathematical sciences*, National Academy Press, Washington, DC, 1990.

Table 4: Gender, Ethnicity, and Citizenship of 1996–1997 U.S. New Doctoral Recipients

RACIAL/ETHNIC GROUP	CITIZENSHIP MEN					CITIZENSHIP WOMEN					
		NON-U.S. CITIZEN					NON-U.S. CITIZEN				
	U.S. CITIZEN	Permanent Visa	Temporary Visa	Unknown Visa	Total Men	U.S. CITIZEN	Permanent Visa	Temporary Visa	Unknown Visa	Total Women	TOTAL
Asian or Pacific Islander	16	51	227	16	310	5	29	58	3	95	405
Black (non-Hispanic)	6	1	5	0	12	3	0	3	0	6	18
American Indian or Alaskan Native	1	0	0	0	1	0	0	0	0	0	1
Hispanic	9	3	23	1	36	5	1	7	0	13	49
White (non-Hispanic)	335	40	116	20	511	135	11	26	1	173	684
Unknown	1	0	0	0	1	0	0	0	0	0	1
TOTAL	368	95	371	37	871	148	41	94	4	287	1158

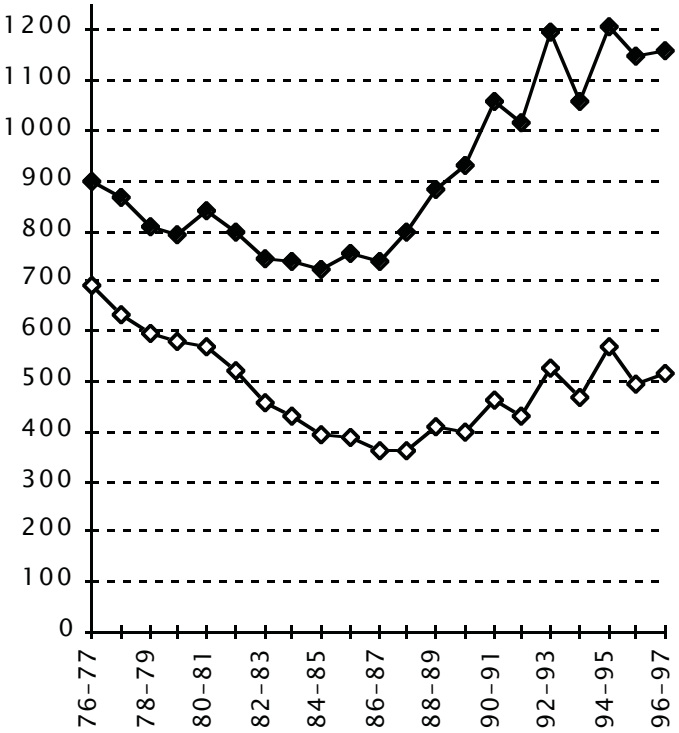
Table 5: U.S. Citizen Doctoral Recipients

	Adjusted Total* Doctorates Granted by U.S. Institutions	Total U.S. Citizen Doctoral Recipients	%
76–77	901	689	76
77–78	868	634	73
78–79	806	596	74
79–80	791	578	73
80–81	839	567	68
81–82	798	519	65
82–83	744	455	61
83–84	738	433	59
84–85	726	396	55
85–86	755	386	51
86–87	739	362	49
87–88	798	363	45
88–89	884	411	46
89–90	929	401	43
90–91	1061	461	43
91–92	1016	430	42
92–93	1197	526	44
93–94	1059	469	44
94–95	1207	567	47
95–96	1150	493	43
96–97	1158	516	45

*Number of doctoral recipients whose citizenship is known. Total may vary from that reported on Table 3D of the respective First Reports as the data is gathered on different surveys.

Graph 5A: U.S. Citizen Doctoral Recipients

UPPER LINE - Adjusted Total Doctorates Granted by U. S. Institutions
LOWER LINE - Total U.S. Citizen Doctoral Recipients



Graph 5B: U.S. Citizen Doctoral Recipients by Percent

UPPER LINE- Total U.S. Citizen Doctoral Recipients as a Percent of Total Doctorates Granted
LOWER LINE - Female U.S. Citizen Doctoral Recipients as a Percent of Total U.S. Citizen Doctoral Recipients

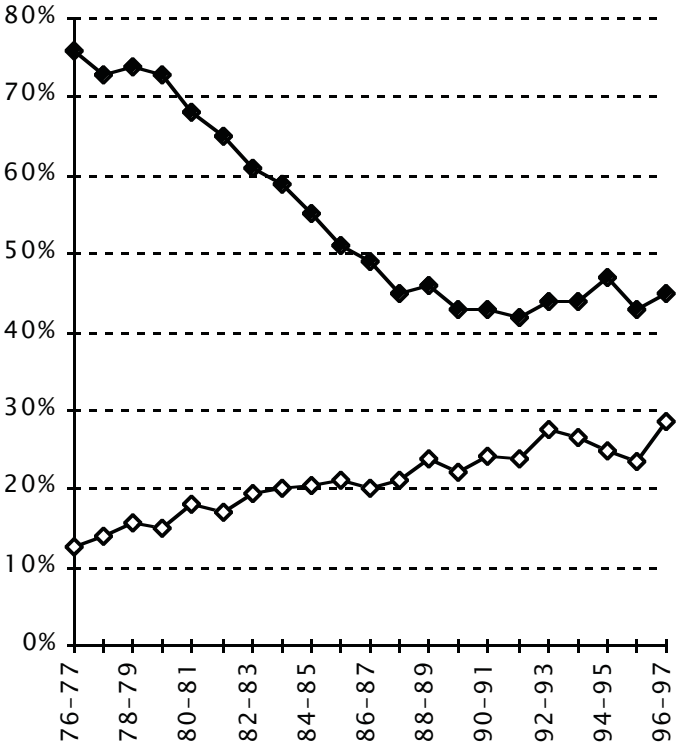


Table 6: U.S. Citizen Doctoral Recipients by Sex

	Total U.S. Citizen Doctoral Recipients	Male	Female	% Female
76–77	689	602	87	13
77–78	634	545	89	14
78–79	596	503	93	16
79–80	578	491	87	15
80–81	567	465	102	18
81–82	519	431	88	17
82–83	455	366	89	20
83–84	433	346	87	20
84–85	396	315	81	20
85–86	386	304	82	21
86–87	362	289	73	20
87–88	363	287	76	21
88–89	411	313	98	24
89–90	401	312	89	22
90–91	461	349	112	24
91–92	430	327	103	24
92–93	526	381	145	28
93–94	469	345	124	26
94–95	567	426	141	25
95–96	493	377	116	24
96–97	516	368	148	29

Reclassification of Departments

As has been the case for a number of years, much of the data in these reports is presented for departments divided into groups according to several characteristics, the principal one being the highest degree offered in the mathematical sciences. Doctorate-granting departments of mathematics are further subdivided according to their ranking of "scholarly quality of program faculty" as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change*.[1] These rankings update those reported in a previous study published in 1982.[2] Consequently, the departments which now comprise Groups I, II, and III differ significantly from those used prior to the 1996 Survey.

The subdivision of the Group I institutions into Group I Public and Group I Private was new for last year's survey. With the increase in number of the Group I departments from 39 to 48, the AMS-IMS-MAA Data Committee judged that a further subdivision along the lines of public and private would provide more meaningful reporting of the data for these departments.

Brief descriptions of the groupings used for reporting purposes are as follows:

Group I is composed of 48 departments with scores in the 3.00–5.00 range.

Group I Public and Group I Private are Group I departments at public institutions and private institutions, respectively.

Group II is composed of 56 departments with scores in the 2.00–2.99 range.

Group III contains the remaining U.S. departments reporting a doctoral program, including a number of departments not included in the 1995 ranking program faculty.

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 which 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]Research-doctorate programs in the United States: continuity and change, *edited by Marvin L. Goldberger, Brendan A. Maher, and Pamela Ebert Flattau; National Academy Press, Washington, D.C., 1995.*

[2]*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 classifications was given in the June 1983* Notices, *pages 392–393.*

D. E. McClure, *Academic hiring survey*, 1991–1992, *Notices* of the AMS, April 1992.

____, *Employment experiences of 1990–1991 U.S. institution doctoral recipients in the mathematical sciences*, *Notices* of the AMS, July 1995.

National Research Council, *Summary report 1993, Doctorate recipients from U. S. universities*, National Academy Press, Washington, DC, 1995.

____, *Moving beyond myths: Revitalizing undergraduate mathematics*, National Academy Press, Washington, DC, 1991.

____, *Everybody counts: A report to the nation on the future of mathematics education*, National Academy Press, Washington, DC, 1989.

____, *Renewing U.S. mathematics: A plan for the 1990s*, National Academy Press, Washington, DC, 1990.

National Science Board, *Science and engineering indicators–1993*, U.S. Government Printing Office, Washington, DC, 1993 (NSB 93-1).

National Science Foundation, *Science and technology data book*, NSF 94-323, Washington, DC, 1994.

____, *Science and engineering degrees: 1966–89*, NSF 91–314, Washington, DC, 1991.

____, *Science and engineering doctorate awards: 1993*, NSF 94–318, Selected Data Tables, Arlington, VA, 1994.

____, *Science and engineering doctorates: 1960–1991*, NSF 93–301, Detailed Statistical Tables, Washington, DC, 1993.

____, *Academic science and engineering: Graduate enrollment and support*, 1989, NSF 90–324, Detailed Statistical Tables, Washington, DC, 1991.

____, *Selected data on graduate students and postdoctorates in science and engineering*, Fall 1991, NSF 92-335; Selected Pamphlet No. 11: Institutional Listings, NSF 90–324–11; Selected Pamphlet No. 12: Postdoctorates and Other Nonfaculty Research Staff, NSF 90–324–12; Washington, DC, 1990.

____, *Survey of mathematics and statistics departments at higher education institutions*, Higher Education Surveys Report, Survey Number 5, Washington, DC, December 1990.

____, *Foreign participation in U.S. academic science and engineering: 1991*, NSF 93-302, Washington, DC, 1993.

Salary Survey for Faculty

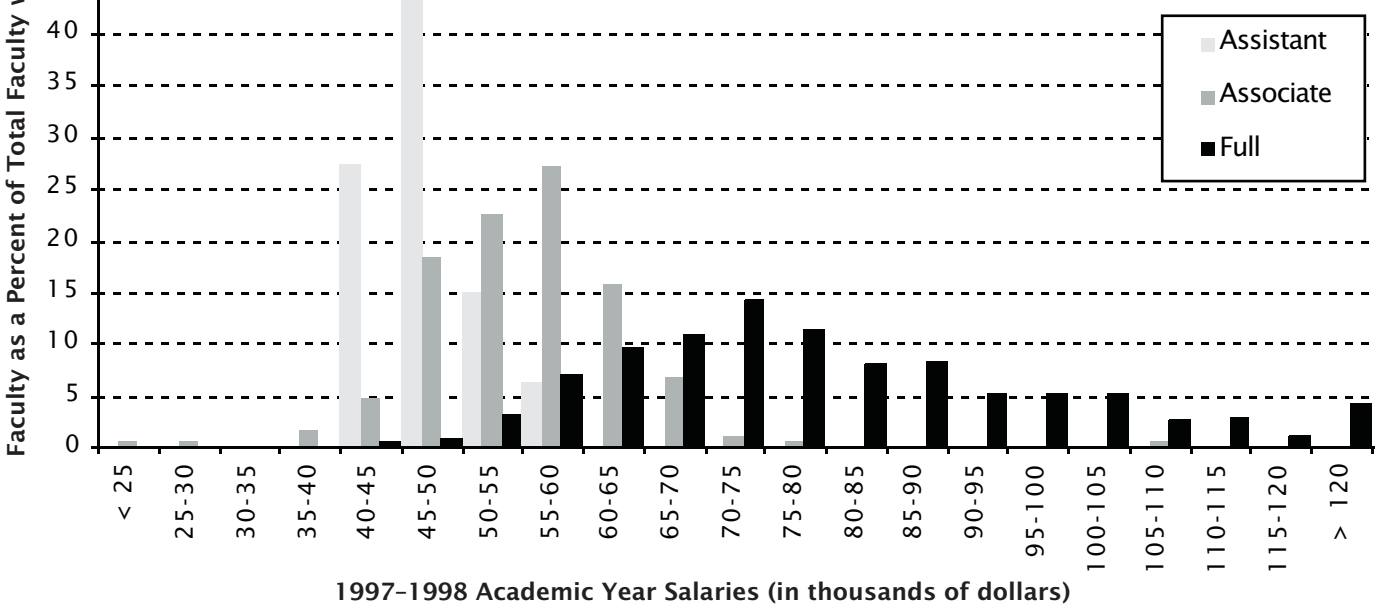
The charts on the following pages display faculty salary data for Groups I Public, I Private, II, III, IV, V, M, and B: faculty salary distribution by rank, mean salaries by rank, information on quartiles by rank, and the number of usable returns for the group. Since groupings used for the mathematics departments in this year's report differ from years prior to 1995–1996, comparisons are possible only to last year's data. Departments were asked to report the number of faculty whose 1997–1998 academic-year salaries fell within given salary intervals. Reporting salary data in this fashion eliminates some of the concerns about confidentiality but does not permit determination of actual quartiles. What can be determined is the salary interval in which the quartiles occur; the salary intervals containing the quartiles are denoted by <n, n+5>.

Group I Public Faculty Salaries

Doctoral degree-granting departments of mathematics (25)

21 usable responses (84%)

Rank	1997–1998 No. Reported	1997–1998 Q_1	1997–1998 Median	1997–1998 Q_3	1997–1998 Mean	1996-1997 Mean
Assistant Professor	80	<40,45>	<45,50>	<45,50>	47,451	46,771
Associate Professor	191	<45,50>	<55,60>	<55,60>	55,087	53,052
Full Professor	783	<65,70>	<75,80>	<90,95>	80,370	78, 586

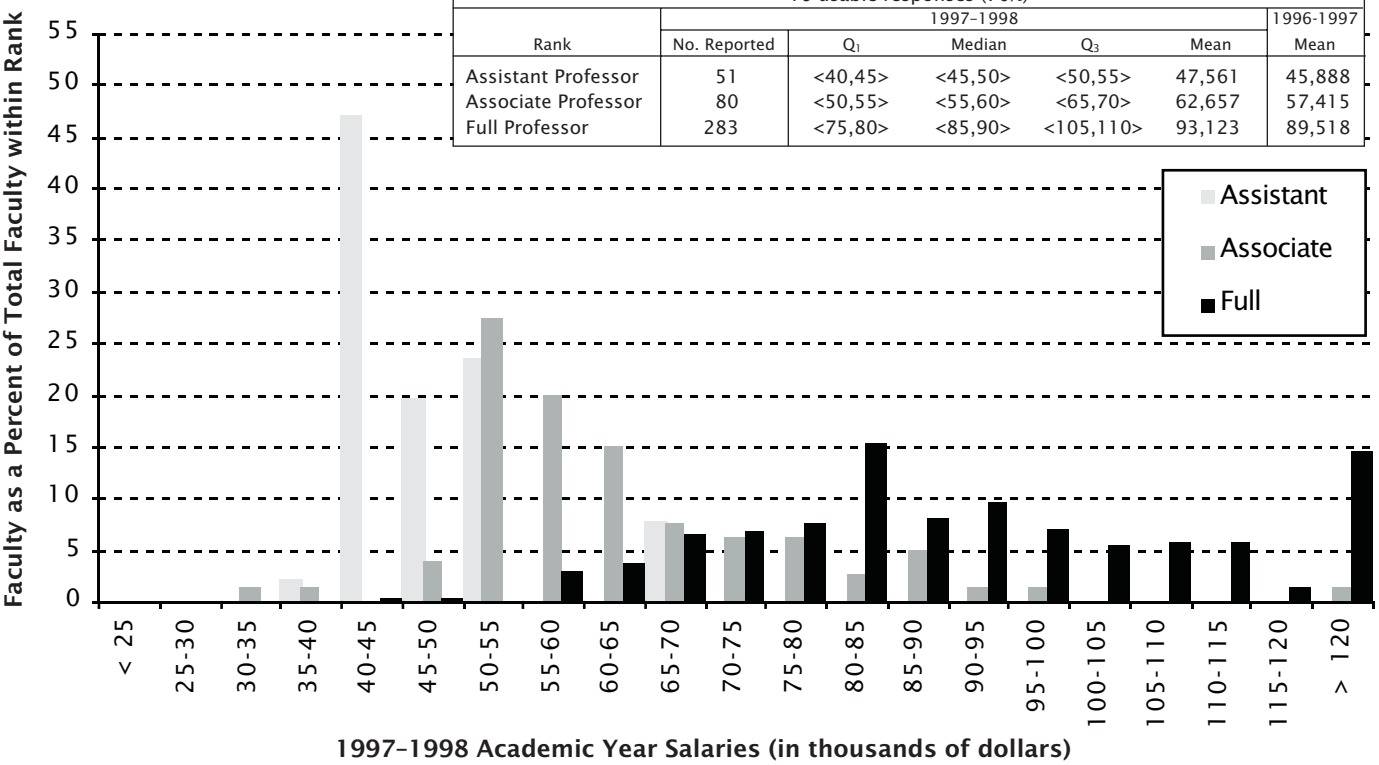


Group I Private Faculty Salaries

Doctoral degree-granting departments of mathematics (23)

16 usable responses (70%)

Rank	1997–1998 No. Reported	1997–1998 Q_1	1997–1998 Median	1997–1998 Q_3	1997–1998 Mean	1996-1997 Mean
Assistant Professor	51	<40,45>	<45,50>	<50,55>	47,561	45,888
Associate Professor	80	<50,55>	<55,60>	<65,70>	62,657	57,415
Full Professor	283	<75,80>	<85,90>	<105,110>	93,123	89,518

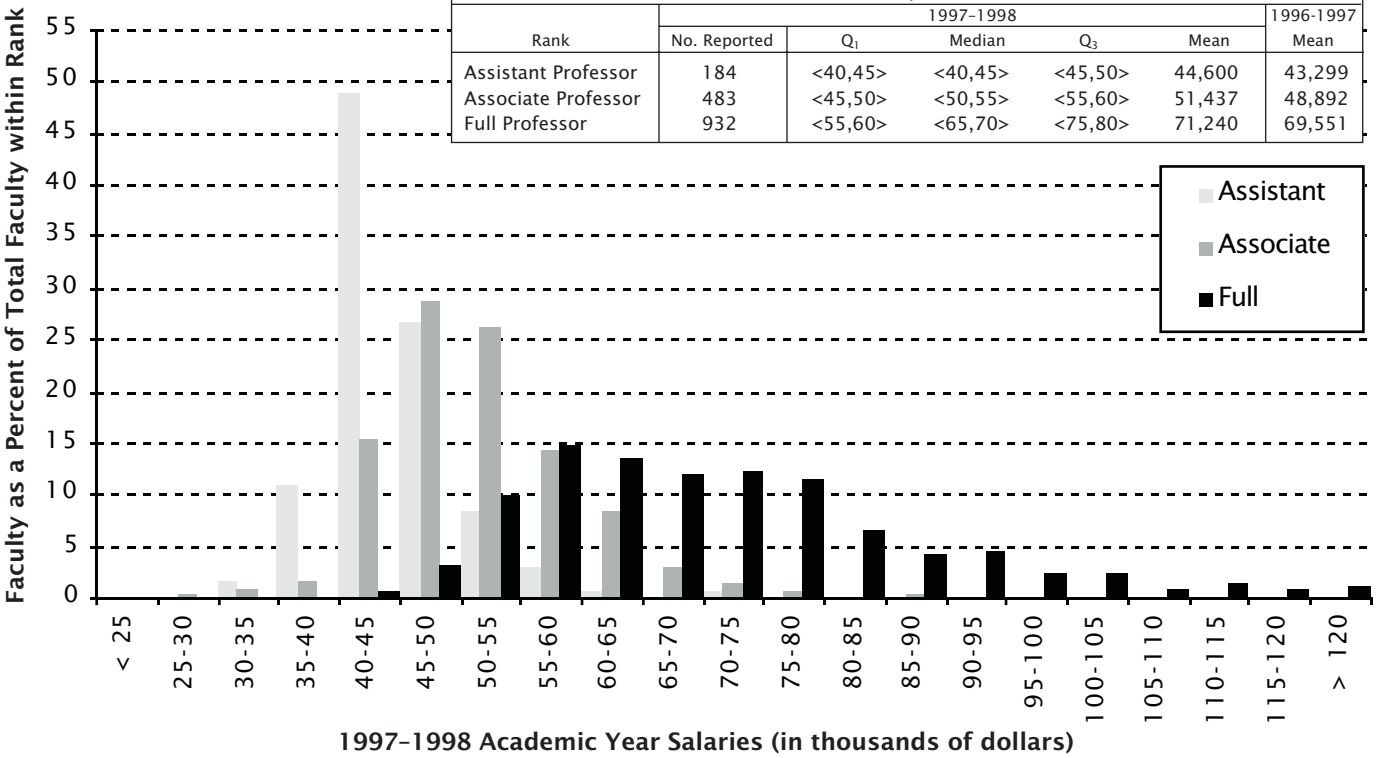


Group II Faculty Salaries

Doctoral degree-granting departments of mathematics (56)

45 usable responses (80%)

Rank	1997–1998 No. Reported	Q_1	Median	Q_3	Mean	1996-1997 Mean
Assistant Professor	184	<40,45>	<40,45>	<45,50>	44,600	43,299
Associate Professor	483	<45,50>	<50,55>	<55,60>	51,437	48,892
Full Professor	932	<55,60>	<65,70>	<75,80>	71,240	69,551

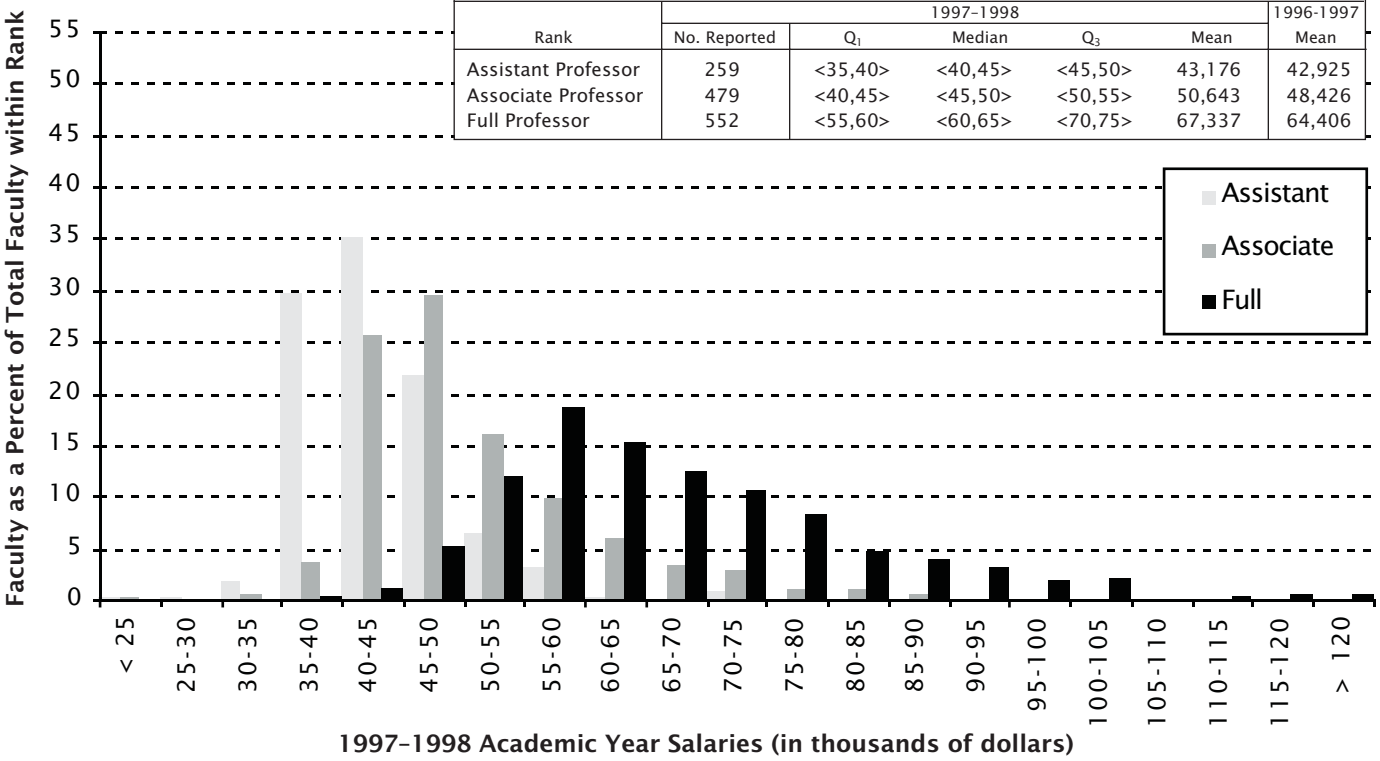


Group III Faculty Salaries

Doctoral degree-granting departments of mathematics (72)

58 usable responses (81%)

Rank	1997–1998 No. Reported	Q_1	Median	Q_3	Mean	1996-1997 Mean
Assistant Professor	259	<35,40>	<40,45>	<45,50>	43,176	42,925
Associate Professor	479	<40,45>	<45,50>	<50,55>	50,643	48,426
Full Professor	552	<55,60>	<60,65>	<70,75>	67,337	64,406

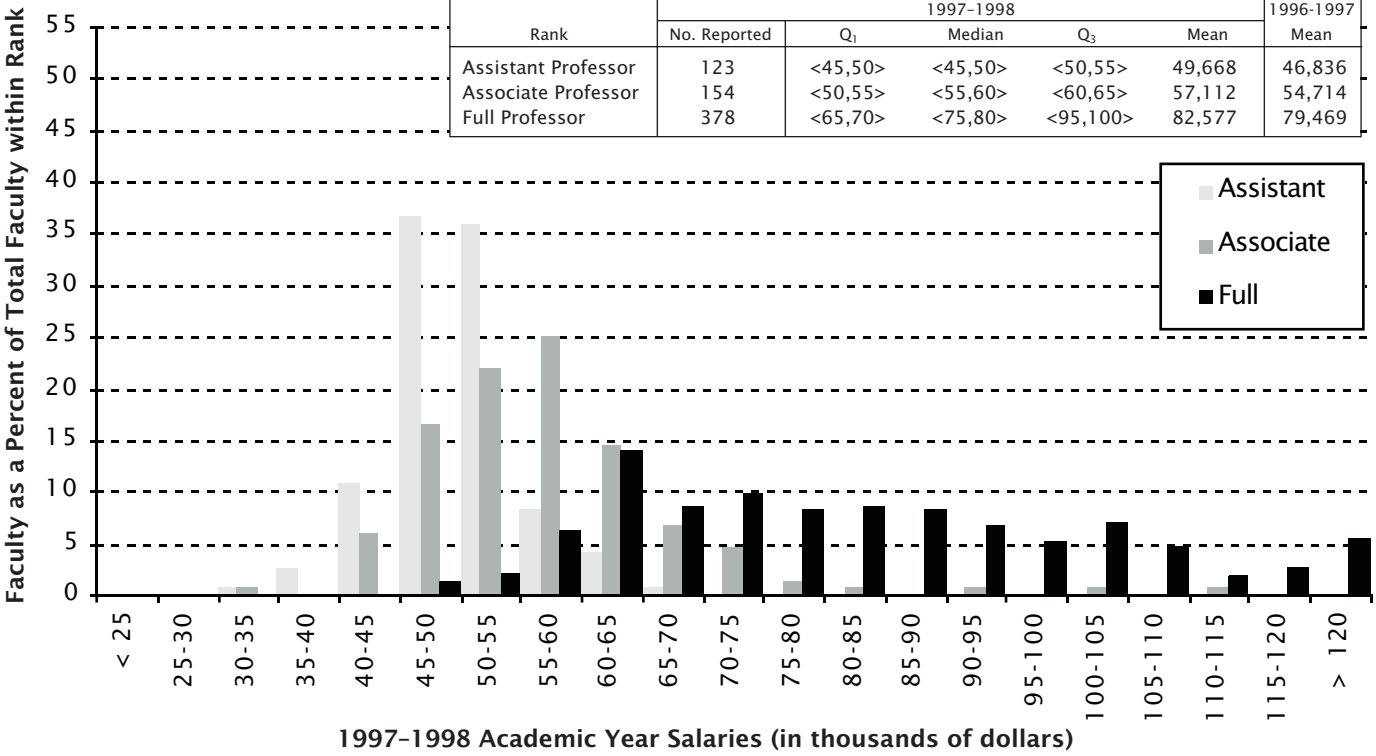


Group IV Faculty Salaries

Doctoral degree-granting departments of statistics, biostatistics, biometrics (77)

53 usable responses (69%)

Rank	1997–1998 No. Reported	1997–1998 Q_1	1997–1998 Median	1997–1998 Q_3	1997–1998 Mean	1996-1997 Mean
Assistant Professor	123	<45,50>	<45,50>	<50,55>	49,668	46,836
Associate Professor	154	<50,55>	<55,60>	<60,65>	57,112	54,714
Full Professor	378	<65,70>	<75,80>	<95,100>	82,577	79,469

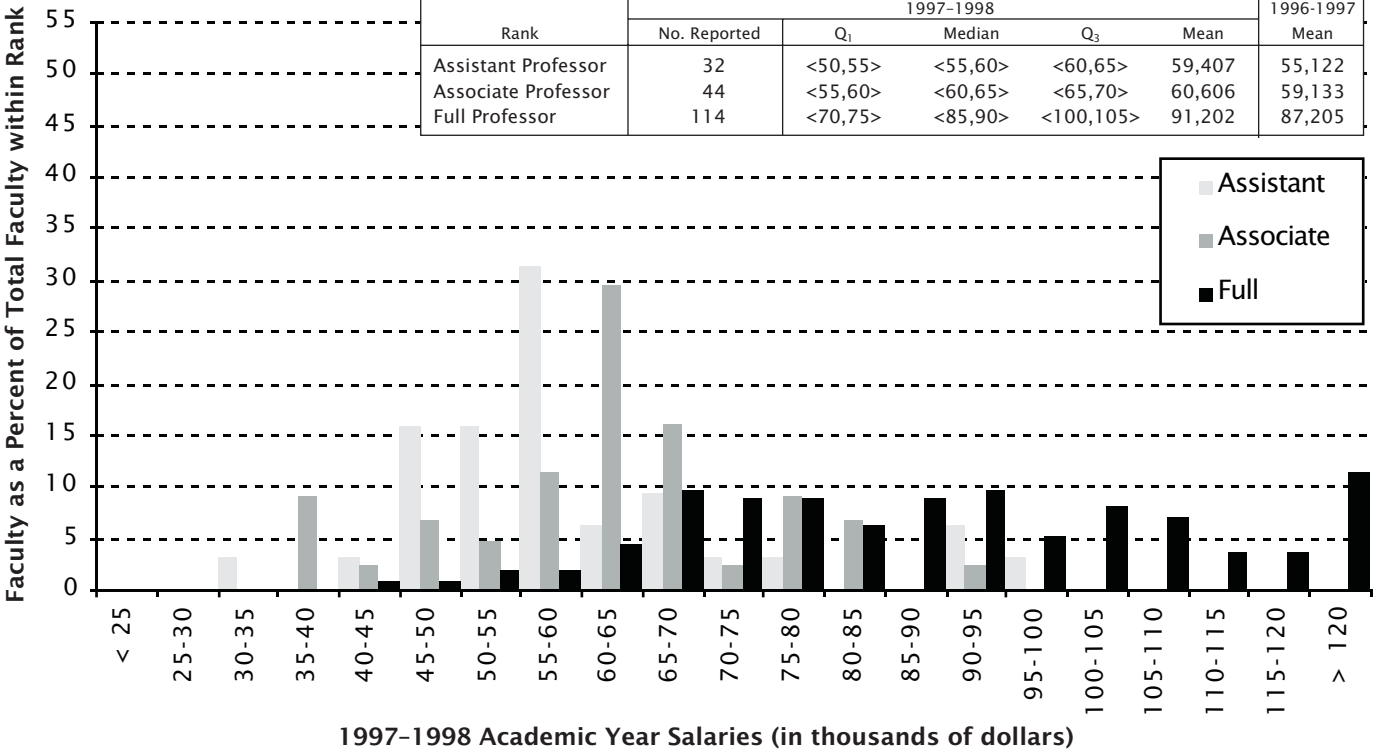


Group V Faculty Salaries

Doctoral degree-granting departments of applied mathematics and oper. res. (31)

16 usable responses (52%)

Rank	1997–1998 No. Reported	1997–1998 Q_1	1997–1998 Median	1997–1998 Q_3	1997–1998 Mean	1996-1997 Mean
Assistant Professor	32	<50,55>	<55,60>	<60,65>	59,407	55,122
Associate Professor	44	<55,60>	<60,65>	<65,70>	60,606	59,133
Full Professor	114	<70,75>	<85,90>	<100,105>	91,202	87,205

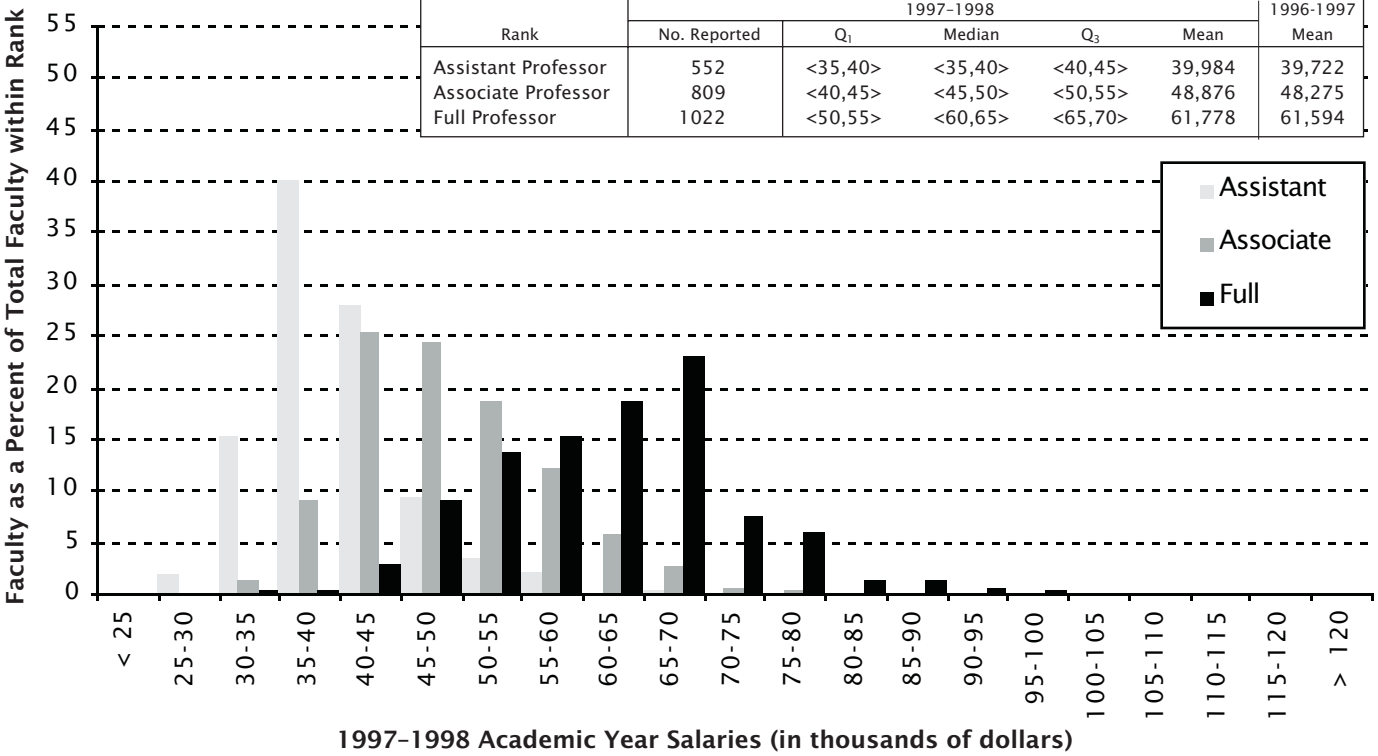


Group M Faculty Salaries

Master's degree-granting departments of mathematics (234)

132 usable responses (56%)

Rank	1997–1998 No. Reported	Q_1	Median	Q_3	Mean	1996-1997 Mean
Assistant Professor	552	<35,40>	<35,40>	<40,45>	39,984	39,722
Associate Professor	809	<40,45>	<45,50>	<50,55>	48,876	48,275
Full Professor	1022	<50,55>	<60,65>	<65,70>	61,778	61,594



Group B Faculty Salaries

Bachelor's degree-granting departments of mathematics (923)

364 usable responses (39%)

Rank	1997–1998 No. Reported	Q_1	Median	Q_3	Mean	1996-1997 Mean
Assistant Professor	778	<30,35>	<35,40>	<40,45>	37,905	32,993
Associate Professor	883	<40,45>	<45,50>	<50,55>	46,377	45,268
Full Professor	981	<45,50>	<55,60>	<65,70>	58,107	57,151