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1993 Annual AMS-IMS-MAA Survey

(First Report)

Report on the 1993 Survey of New Doctorates
Donald E. McClure
Salary Survey for New Doctorates
Faculty Salary Survey

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Salary Survey for New Doctorates
Faculty Salary Survey
Doctoral Degrees Conferred, 1992–1993

This first report on the 1993 Survey includes a report on the 1993 survey of new doctorates, a report on salaries of new doctorates, salary data on faculty members in four-year colleges and universities, and a list of names and thesis titles for members of the 1992–1993 Ph.D. class. 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 and later to the recipients of doctoral degrees granted by these departments between July 1992 and June 1993, inclusive. 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 1993 Survey, in a spring 1994 issue of the *Notices*.

The 1993 Annual AMS-IMS-MAA Survey represents the thirty-seventh in an annual series begun in 1957 by the Society. The 1993 Survey is under the direction of the AMS-IMS-MAA Data Committee, whose members are Edward A. Connors, Lincoln K. Durst (consultant), John D. Fulton, James F. Hurley, Don O. Loftsgaarden, David J. Lutzer, James W. Maxwell (*ex officio*), Donald E. McClure (chair), Donald B. Rubin, Donald C. Rung, and Ann K. Stehney. Comments or suggestions regarding this Survey may be directed to the 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 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]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

- U.S. institutions awarded 1202 doctorates in the mathematical sciences from July 1, 1992, to June 30, 1993, an increase of more than 14 percent from last year's fall count.
- The number of U.S. citizens reported to have received doctorates in the mathematical sciences is 526, which is 22 percent greater than the number earning doctorates last year. The count is 45 percent above the record lows reported in 1986–1987 and 1987–1988 and is the highest count of U.S. citizens since 1980–1981.
- The number of non-U.S. citizens receiving doctorates is a record high of 671 in 1992–1993, up 14.5 percent from the 1991–1992 count. The number of non-U.S. citizen recipients is more than twice the number reported ten years earlier.
- Of the 526 U.S. citizen doctoral recipients, 7 are black and 37 are members of other minority groups. In 1991–1992 the U.S. citizen doctorates included 6 blacks and 27 other minority members.
- The unemployment rate for new doctorates reached its second highest reported level since fall 1975. Among those whose employment status is known, 12.4 percent were unemployed as of late September 1993, nearly equaling the recent high figure of 12.7 percent in fall 1992. Total employment of new doctorates in the U.S. increased by 11 percent from the level reported in fall 1992.
- The number of women among U.S. citizen doctorates increased by 41 percent from last year's fall count to a new high count of 145. The percentage of women among U.S. citizen doctorates also reached a new high of 28 percent.
- The median starting salary of new doctorates reporting teaching (or teaching and research) was $34,000 for men, unchanged from last year, and $33,800 for women, down from last year's figure of $34,900.
- In all but two instances the mean salary for Associate and Full professors reported for 1993–1994 increased less than 4 percent over the mean for 1992–1993.

Report on the 1993 Survey of New Doctorates

Donald E. McClure

This report presents a statistical profile of recipients of doctoral degrees in the mathematical sciences awarded by universities in the United States during the period July 1, 1992, through June 30, 1993. It includes an analysis of the employment market for 1992–1993 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, sex, and racial/ethnic group. Table 1 provides the response rates for the 1993 Survey of New Doctorates (see box on preceding page for description of Groups).

TABLE 1: Response Rates

Group I	39 of 39
Group II	40 of 43 including 5 with 0 degrees
Group III	81 of 90 including 22 with 0 degrees
Group IV	62 of 75 including 3 with 0 degrees
Group Va	14 of 18 including 4 with 0 degrees
Group Vb	17 of 33 including 1 with 0 degrees

Commencing with this thirty-seventh Annual Survey, the Institute of Mathematical Statistics (IMS) is a cosponsor with the AMS and MAA of the Annual Survey and other activities of the joint AMS-IMS-MAA Data Committee.

Doctorates Granted

The number of new doctorates reported in 1992–1993 by U.S. mathematical sciences departments is 1202. Table 2A gives the fall and spring 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 1993 Survey, to appear in a spring 1994 issue of the *Notices*.

Table 2A: U.S. New Doctorates, Fall and Spring Counts

Fall/Spring		Fall/Spring		Fall/Spring		Fall/Spring		Fall/Spring	
88–89		89–90		90–91		91–92		92–93	
905	919	933	950	1074	1125	1050	1062	1202	*

* To appear in a spring 1994 issue of the *Notices*.

The fall count of the total number of new doctorates represents an increase of 14.5 percent from the fall count of 1050 in the 1992 Survey. This year's fall count shows an increase of 64 percent over the 1984–1985 fall count of 732 new doctorates from U.S. institutions, one of the lowest counts within the last twenty years.

Table 2B records the annual number of new doctorates in the mathematical sciences in the U.S. from the year 1988–1989, 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 Doctorates Awarded by Groups I–Va

	88–89	89–90	90–91	91–92	92–93
I-Va	854	881	1034	1008	1104**

** This is a fall count. The other entries in Table 2B are spring counts. Table 2B will be updated to include a spring count for 1992–1993 in a spring 1994 issue of the *Notices*.

A small part of the increased count is associated with the increased response rate in Group IV (statistics), but most of the increased numbers are due to higher rates of doctorate production by departments of all types. Only Group II showed a negligible decrease in the rate of production: 4.7 degrees per department in 1992–1993 vs. 4.8 degrees per department in 1991–1992. All other Survey Groups showed substantial increases in the rate of production of new doctorates (see Table 3B on the next page). The rate of awarding new doctorates increased by 6 percent in Groups I–III combined, by 13 percent in Group IV, and by 5 percent in Group V.

Employment Status of U.S. New Doctorates, 1992–1993

The Annual Survey of New Doctorates 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 1992 Second Report, *Notices*, July/August 1993, pages 601–610, for data on the numbers of positions departments attempted to fill and characteristics of the people hired.

Table 3A shows the employment status, by type of employer and field of degree, of the 1202 recipients of doctoral degrees conferred by the mathematical sciences departments in the U.S. between July 1, 1992, and June 30, 1993. The names of the individuals are listed with their thesis titles in a later section of this First Report of the 1993 Annual Survey. The employment information was obtained initially from the departments granting the degrees and subsequently from data provided by the degree recipients themselves.

Most new doctorates seek and accept academic positions. Of the 721 new doctorates employed in the U.S., a total of 554 (77 percent) hold jobs in academia. For comparison, last year's First Report showed 648 new doctorates employed in the U.S., including 538 (83 percent) in academic positions. Thus total U.S. employment of new doctorates has increased and the concentration of positions in academia has declined. Concomitantly, the number of nonacademic positions in the U.S. for new doctorates has increased by 52 percent to 167, the highest number of nonacademic positions taken by new doctorates since 1981–1982. Most of the increase in total U.S. employment is nonacademic.

Table 3A: Employment Status of 1992–1993 U.S. New Doctorates in the Mathematical Sciences

TYPE OF EMPLOYER	FIELD OF THESIS											TOTAL
	Algebra/ Number Theory	Real or Complex Analysis	Geometry/ Topology	Logic	Probability	Statistics	Applied Math	Discr. Math/ Combina-torics	Numerical Analysis	Linear or Nonlinear Optim.	Other	
Group I	19	24	30	2	5	2	14	3	2			101
Group II	3	7	12	1	3	3	13	1	1	2		46
Group III	4	10	3		3	10	16	4	3	2	1	56
Group IV						40						40
Group V					1	1	5			2		9
Masters	12	7	12	2	1	16	4	3	1	4	2	64
Bachelors	35	22	15	2	4	8	14	8	6	1	1	116
Two-year Colleges	5	5	3			3	2	3		1		22
Other Academic Departments	3	2	1	3	2	26	11	2	4	9	8	71
Research Institutes	3	4	6		1	4	7	2	2			29
Government	1	2			1	16	5		1	3	3	32
Business and Industry	7	3	5	3	6	59	17	7	10	11	7	135
Foreign, Academic	21	21	26	5	7	35	17	4	8	5	7	156
Foreign, Nonacademic		1	1		2	11	2	2			3	22
Not seeking employment	2	2	2			5	3	1				15
Still seeking employment	25	16	18	2	5	17	22	8	3	7	6	129
Unknown (U.S.)	11	8	7	3	4	16	26	7	4	5	7	98
Unknown (non-U.S.)*	7	6	4	2	2	15	10	4	4	2	5	61
Column Total	158	140	145	25	47	287	188	59	49	54	50	1202
Column Subtotals Male	115	114	118	19	36	205	149	40	38	39	42	915
Column Subtotals Female	43	26	27	6	11	82	39	19	11	15	8	287

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

Table 3B: Employment Status of 1992–1993 U.S. New Doctorates by Type of Granting Department

TYPE OF EMPLOYER	TYPE OF DOCTORATE-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	84	7	4	1	5	101	74	27
Group II	19	17	4	2	4	46	35	11
Group III	20	9	20	7		56	42	14
Group IV	1	1		38		40	25	15
Group V	2				7	9	3	6
Masters	28	9	15	12		64	47	17
Bachelors	38	37	34	5	2	116	87	29
Two-year Colleges	2	6	13	1		22	17	5
Other Academic Departments	15	4	4	23	25	71	54	17
Research Institutes	18	1		4	6	29	20	9
Government	5	3	5	14	5	32	23	9
Business and Industry	24	13	18	48	32	135	104	31
Foreign, Academic	72	19	15	33	17	156	123	33
Foreign, Nonacademic	2		3	11	6	22	20	2
Not seeking employment	4	4	3	2	2	15	10	5
Still seeking employment	44	30	24	11	20	129	104	25
Unknown (U.S.)	38	19	15	11	15	98	78	20
Unknown (non-U.S.)*	23	8	10	10	10	61	49	12
Column Total	439	187	187	233	156	1202	915	287
Column Subtotals Male	344	145	142	168	116	915		
Column Subtotals Female	95	42	45	65	40	287		

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

The 554 U.S. academic positions this year include a total of 252 in U.S. doctorate-granting departments (Groups I–V). This number is 24 percent higher than last year (204 positions in Groups I–V). The number hired by Group I has remained essentially constant at 100 since 1988. The numbers hired in Group II and Group III increased for the first time in three years and are slightly greater than the numbers reported in the 1991 Survey. The numbers of new doctorates employed by master's and bachelor's degree-granting colleges and universities decreased by 23 (11 percent) from the numbers reported last year.

The job market for 1992–1993 new doctorates has been equally as difficult as the market for 1990–1991 and 1991–1992 degree recipients. Table 3A shows that among those whose employment status is known, 12.4 percent are unemployed. (The corresponding rate of unemployment for 1991–1992 doctoral recipients from U.S. institutions, reported in fall 1992, was 12.7 percent.) The 1993 unemployment level ranks with the highest ever observed since employment information about new doctorates was first reported in the current format in 1971; it is exceeded only by the 1975 level of 13.7 percent and the 1992 level of 12.7 percent. In contrast to the current high unemployment rate, throughout the 1980s the rate reported in the November issue of the *Notices* ranged between a low of 3.7 percent in 1981 and a high of 6.8 percent in 1989, averaging 5.0 percent over the decade.

The data in Table 3A were obtained in many instances early in the summer of 1993 and do not reflect subsequent hiring. Nonetheless, the year-to-year comparisons are all based on data acquired over the same time period of each year and they reliably reflect the relative difficulty of this year's market. An update of Table 3A will appear in the Second Report in a spring 1994 issue of the *Notices*. At the time of the Second Report last year, the percentage of 1991–1992 new doctorates from U.S. institutions who had reported not finding employment was 6.7 percent (see *Notices*, November 1992, page 1028, and July/August 1993, page 603).

Beyond the unemployment statistics that are explicitly reported in Table 3A, the 1993 Survey reveals other indicators of a difficult job market. For example, 50 new doctorates are reported to hold part-time positions and, based on individual responses, approximately 20 of these individuals are still seeking full-time employment. Seventy-two new doctorates hold employment at the same institution that awarded their degree. All of these positions are not necessarily in the same department in which the degree was earned. However, out of the 252 jobs reported in the doctorate-granting departments, 55 positions are held by new doctorates from that same department. Both of these indicators of a weak employment market are worse than the corresponding statistics in 1992.

The Survey of New Doctorates per se does not reveal underlying causes of the high rates of unemployment and underemployment. However, data reported in the 1992 Second Report show that many faculty positions being vacated by death, incentive retirements, and other retirements are simply not being filled. Rates of faculty attrition due to deaths and retirements are currently relatively high, and levels of recruitment have declined substantially for at least two successive years (*Notices*, July/August 1993, page 604).

Some information is available from the survey concerning the nature of the academic positions filled. To date, 276 individual responses have been received from new doctorates employed by academic institutions. Fifty-three percent of these respondents report that their position is not tenure-eligible, and the remaining 47 percent report that their position is a tenure-track position. Out of the 144 nontenure-eligible respondents, 35 percent can hold their current position for a maximum of one year and 53 percent can hold their position for up to two years. Thus the incumbents of many of the nontenure-eligible positions will again be seeking jobs during the current year.

The proportion of the jobs filled which are tenure-eligible varies significantly between the survey Groups. Among the 276 individual respondents holding jobs in academic institutions, 103 have positions in a doctorate-granting department and 91 have positions in a bachelor's or master's degree-granting department. In the doctorate-granting departments, 77 percent of the positions held by new doctorates are not tenure eligible, while only 23 percent of the positions in bachelor's and master's degree-granting departments are not tenure eligible. None of the 36 individual respondents whose position is in a Group I department holds a tenure-track position.

Table 3B reveals the dependence of employment patterns on the type of department from which the doctorate is received. The patterns of compartmentalization and stratification of the job market for new doctorates are similar to the patterns seen in the 1992 Survey. For example, Table 3B shows that persons hired for positions in doctorate-granting mathematics departments are drawn predominantly from mathematics doctorates: 91 percent of the positions filled in Groups I, II, and III are held by new doctorates who received their degree from a Group I, II, or III department. Similarly, 95 percent of the Group IV jobs went to Group IV degree recipients. Also, 83 percent of the Group I jobs went to Group I degree recipients.

Associated with the dependence of employment patterns on the type of department from which the doctorate is received are differing patterns of employment for men and women. Women represent 23.9 percent of the population of new doctorates, up from 21.2 percent in 1991–1992, but the proportion is not uniform across different types of departments. For example, 22.4 percent of the new doctorates in mathematics are women (up from 20 percent last year) and 27.9 percent of the new doctorates from statistics departments are women (up from 26.6 percent last year). The proportion of women among new doctorates hired by doctorate-granting mathematics departments (25.6 percent) is slightly higher than their proportion among mathematics doctorates. The rate of unemployment for the female new doctorates (9.8 percent) is lower than the rate for the male new doctorates (13.2 percent).

Table 3B shows different rates of unemployment for doctorate recipients from the five Groups. The percentages unemployed, among those whose employment status is known, are Group I–11.6 percent, Group II–18.8 percent, Group III–14.8 percent, Group IV–5.2 percent, and Group V–15.3 percent.

Table 3C shows the pattern of employment within broad job categories broken down by the citizenship status of the new doctorates from U.S. institutions. The citizenship status is known for 1193 of the 1202 new doctorates. The rate of unemployment is higher for non-U.S. citizens (14.2 percent of those whose job status is known) than it is for U.S. citizens (10.0 percent). The unemployment rate for U.S. citizens is 1.4 percentage points below the level reported in November 1992 for 1991–1992 new doctorates. The percentage of U.S. citizens in U.S. nonacademic jobs is considerably higher than the percentage of noncitizens in the same category (20.5 percent of citizens versus 12.2 percent of noncitizens whose job status is known). The percentages of U.S. citizens and of non-U.S. citizens holding positions in U.S. doctorate-granting departments are approximately the same (24 percent), while citizens hold positions in non-doctorate granting U.S. departments in substantially higher proportion than do noncitizens (37.3 percent of citizens compared to 16.7 percent of noncitizens); here all percentages exclude new doctorates whose job status is unknown.

If complete information about the visa status of the non-U.S. citizens were known, then it would be more natural and common to group those holding permanent-resident status with the U.S. citizens for the comparison of employment patterns. However, the visa status is unknown for many of the non-U.S. citizens simply because this is a detail of their immigration status which is not always known to departmental staff; visa status is not known for 28 percent of the non-U.S. citizens.

Nonetheless, the distribution of job categories was reported for 93 noncitizen new doctorates who are known to be permanent U.S. residents. Of those whose employment status is known, 14 percent are employed by a doctorate-granting department in the U.S., 30 percent are employed by a non-doctorate granting department in the U.S., 20 percent hold a nonacademic position in the U.S., and 28 percent are unemployed.

TABLE 3C: Employment Status of 1992–1993 U. S. New Doctorates by citizenship status*

TYPE OF EMPLOYER	TYPE OF CITIZENSHIP				TOTAL DOCTORATES WHOSE CITIZENSHIP IS KNOWN*	
	U.S. Citizens		Non-U.S. Citizens			
	Number	Percent	Number	Percent	Number	Percent
U.S. Academic, Ph.D. Department	117	22	133	20	250	21
U.S. Academic, non-Ph.D. Department	180	34	93	14	273	23
U.S. Research Institute	16	3	13	2	29	2
U.S. Nonacademic	99	19	68	10	167	14
Foreign Academic	15	3	140	21	155	13
Foreign Nonacademic	2		20	3	22	2
Not seeking employment	5	1	10	1	15	1
Still seeking employment	48	9	79	12	127	11
Unknown status (U.S. address)	39	7	56	8	95	8
Unknown status (foreign address)	1		59	9	60	5
TOTALS	522	100%**	671	100%**	1193	100%**

* The adjusted total varies from that on Table 5 because the data are gathered on different surveys.
** Column percents are rounded to the nearest whole percent.

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, 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.

Several people have made essential contributions to the preparation of the reports on the 1993 Annual AMS-IMS-MAA Survey. Elizabeth Foulkes has provided indispensable support and taken many initiatives to facilitate the Data Committee's work. Elizabeth Foulkes and Jim Maxwell share credit for the companion articles on starting salaries of new doctorates and on faculty salaries.

TABLE 4A: Sex, Racial/Ethnic Group, and Citizenship of U.S. New Doctorates
July 1, 1992 — June 30, 1993

RACIAL/ETHNIC GROUP	MEN					WOMEN					TOTAL
	CITIZENSHIP				Total Men	CITIZENSHIP				Total Women	
	U.S.	Canada	Other	Not Known		U.S.	Canada	Other	Not Known		
Asian, Pacific Islander	22	1	339	3	365	11		77		88	453
Black	4	1	10		15	3		1		4	19
American Indian, Eskimo, Aleut											
Mexican American, Puerto Rican, or other Hispanic			30		30	4		14		18	48
White (non-Hispanic)	343	8	144		495	126	3	42		171	666
Unknown	12			2	14	1	1			2	16
Total	381	10	523	5	919	145	4	134		283	1202

Sex, Racial/Ethnic Group, and Citizenship of U.S. New Doctorates, 1992–1993

Table 4A presents a breakdown according to sex, racial/ethnic group, and citizenship of the new doctorates. The information reported in this table was obtained in summary form from the departments granting the degrees and in a few cases from the recipients themselves.

The citizenship status is known for 1197 of the 1202 new doctorates, including 526 U.S. citizens. (Because different survey forms are used to compile the summary of sex, race, and citizenship than are used to learn the country of citizenship of each individual, and the unknown or missing items from the two survey forms may not coincide, this count of known citizenship status and of U.S. citizens differs from the count shown in Table 3C.) The number of U.S. citizen new doctorates is 22.3 percent greater than in 1991–1992. This year's count of U.S. citizens is the highest reported since 1981–1982. 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 doctorates is 43.9 percent, up from the all-time low of 42.3 percent in 1991–1992. A total of 671 noncitizens were awarded doctorates by U.S. institutions in 1992–1993. This represents an increase of 85 individuals (14.5 percent) from last year's count. The 1992–1993 count is 132 percent greater than the number awarded by U.S. institutions ten years ago (289 in 1982–1983).

The areas of the world from which noncitizen new doctorates come are reported in Table 4B. (Table 4B is based on the survey of individual data, not on the summary survey used for Table 4A.) To show how the distribution of region of citizenship has changed, Table 4B also reports the percentage change in numbers for each region from the baseline period of 1983–1986. This four-year period in the mid-1980s was a time when the total number of new doctorates was relatively stable and near its recent low, the number of U.S. citizen new doctorates was declining moderately, and the sharp rise in the number of non-U.S. citizens had barely begun.

Among the U.S. citizens receiving doctoral degrees in the mathematical sciences, 7 are black (4 men and 3 women) and 4 are Mexican American, Puerto Rican, or other Hispanic (all women). Both of these counts are essentially the same as last year's counts.

Women account for 28 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 (145) is the highest number ever reported, eclipsing last year's count by 42 (up 41 percent). See Table 6. Only a small part of the increased count can be attributed to the higher response rate in Group IV. In all types of departments the percentage of women among recipients of new doctorates increased, as described in the previous section with reference to Table 3B.

Note that in Table 5 and Table 6 all years prior to 1982–1983 include doctorates granted by computer science departments.

TABLE 4B: Region of Citizenship of 1992–1993 U.S. New Doctorates

GEOGRAPHICAL REGION	Number	% Change from 1983–86 Annual Average
U.S.A.	522	+26
Canada	15	+36
Central and South America	49	+36
Western Europe	84	+107
Eastern Europe*	40	+272
Middle East	36	–12
Southern Asia**	64	+65
Far East***	338	+193
Africa	26	+24
Australia and Oceania****	19	+58
Unknown country of citizenship	9	——
Total	1202	+61

* Including European Republics of the former Soviet Union. The distinction between "east" and "west" for European countries is determined by the political geography of 1945–1991.

** Bounded by Iran to the west, by the former Soviet Union and China to the north, and by Indochina to the east.

*** Including Indochina.

**** Including Central and South Pacific islands, Australia, New Zealand, and the Malay Archipelago.

TABLE 5: U.S. Citizen Doctorates

	Adjusted Total* of Doctorates Given by U.S. Universities	Total of Doctorates who are U.S. Citizens	%
1973–1974	938	677	72
1974–1975	999	741	74
1975–1976	965	722	75
1976–1977	901	689	76
1977–1978	868	634	73
1978–1979	806	596	74
1979–1980	791	578	73
1980–1981	839	567	68
1981–1982	798	519	65
1982–1983	744	455	61
1983–1984	738	433	59
1984–1985	726	396	55
1985–1986	755	386	51
1986–1987	739	362	49
1987–1988	798	363	45
1988–1989	884	411	46
1989–1990	929	401	43
1990–1991	1061	461	43
1991–1992	1016	430	42
1992–1993	1197	526	44

*Number of doctorates whose citizenship is known. Total will vary from that on Table 3C because the data are gathered on different surveys.

Graph for Table 5: U.S. Citizen Doctorates
Total of Doctorates by Percent

Graph for Table 5: U.S. Citizen Doctorates

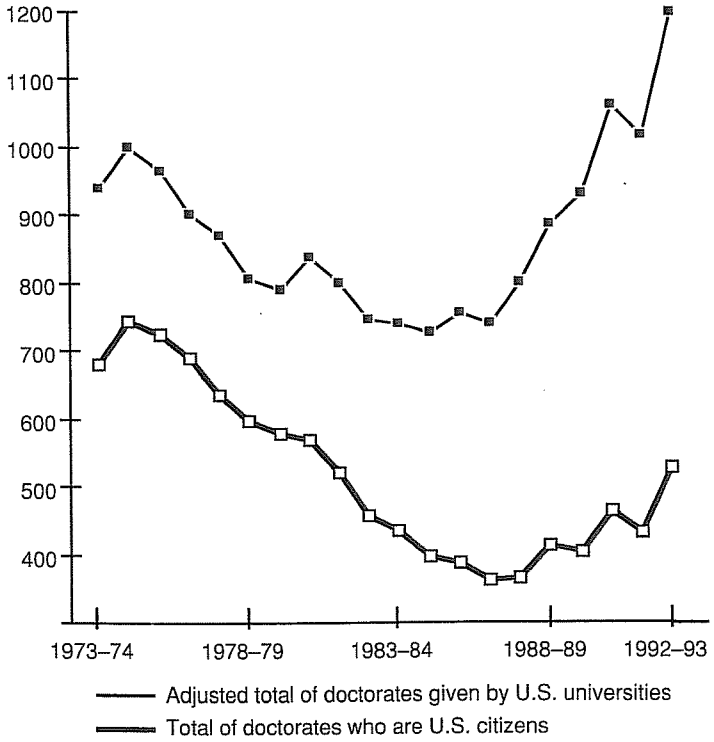

TABLE 6: U.S. Citizen Doctorates, Male and Female

	Doctorates who are U.S. Citizens	Male	Female	% Female
1973–1974	677	618	59	9
1974–1975	741	658	83	11
1975–1976	722	636	86	12
1976–1977	689	602	87	13
1977–1978	634	545	89	14
1978–1979	596	503	93	16
1979–1980	578	491	87	15
1980–1981	567	465	102	18
1981–1982	519	431	88	17
1982–1983	455	366	89	20
1983–1984	433	346	87	20
1984–1985	396	315	81	20
1985–1986	386	304	82	21
1986–1987	362	289	73	20
1987–1988	363	287	76	21
1988–1989	411	313	98	24
1989–1990	401	312	89	22
1990–1991	461	349	112	24
1991–1992	430	327	103	24
1992–1993	526	381	145	28

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Salary Survey for New Recipients of Doctorates, 1992–1993

The figures for 1993 were compiled from questionnaires sent to individuals who received doctorates in the mathematical sciences during the 1992–1993 academic year from universities in the United States.

Questionnaires requesting information on salaries and professional experience were distributed to 921 recipients of degrees using addresses provided by the departments granting the degrees. 381 individuals returned forms between late June and mid-September. Responses with insufficient data, or from individuals who indicated they had part-time employment, were not yet employed, or were not seeking employment, were considered unusable. Numbers of usable responses for each salary category are reported in the following tables.

Readers should be warned that the data in this report are obtained from a self-selected sample, and inferences from them may not be representative of the population.

Key to Tables. *Salaries* are listed in hundreds of dollars. Nine-month salaries are based on 9–10 months teaching and/or research, not adding extra stipends for summer grants or summer teaching or the equivalent. *Years* listed refer to the academic year in which the doctorate was received. *M* and *F* are Male and Female respectively. *One year or less experience* means that the persons had experience limited to one year or less in the same position or a position similar to the one reported; some persons receiving a doctorate had been employed in their present position for several years. Quartile figures are given only in cases where the number of responses is large enough to make them meaningful.

Graphs. The graphs show variants of standard box plots summarizing salary distribution information. The horizontal line shows the 1992 median salary in hundreds of dollars. Values plotted for other years are converted to 1992 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce. The 1993 salary data are not shown on the graphs because the deflator is not yet available for this year.

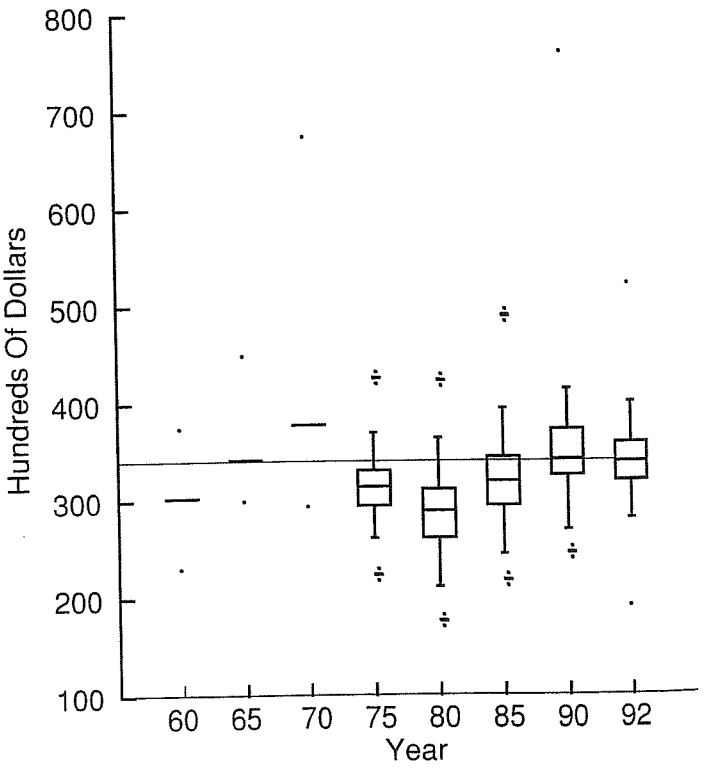
For a given year, the box shows the first and third quartiles and the median salary. (Prior to 1975, the quartiles are not available, and only the median is depicted by the horizontal stroke.) The "whiskers" give additional information about the spread of the data, extending to points that are 1.5 interquartile distances from the median. Minimum and maximum salaries are depicted by asterisks or dots outside the whiskers; dots are used to distinguish extreme outliers, i.e., values that are more than 3 interquartile distances from the median.

Note that salaries for teaching or teaching and research have yet to return to their high point of 1970, although considerable progress has been made since 1980.

Nine-Month Salaries

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 1992 $
TEACHING OR TEACHING AND RESEARCH (125 men + 50 women)						
1960	49		65		80	303
1965	70		80		105	341
1970	85		110		195	378
1975	90	120	128	135	173	315
1980	105	155	171	185	250	289
1985	170	230	250	270	380	321
1990	230	305	320	350	710	342
1991	150	310	330	360	610	340
1992	190	320	340	360	520	340
1993	160	310	340	370	750	—
1990M	230	306	320	350	710	
1990F	250	300	325	360	493	
1991M	150	310	330	360	610	
1991F	260	310	332	360	550	
1992M	190	310	340	360	520	
1992F	250	330	349	371	500	
1993M	160	310	340	370	750	
1993F	230	310	338	380	520	
One year or less experience (91 men + 36 women)						
1993M	210	308	340	368	750	
1993F	250	311	334	367	422	

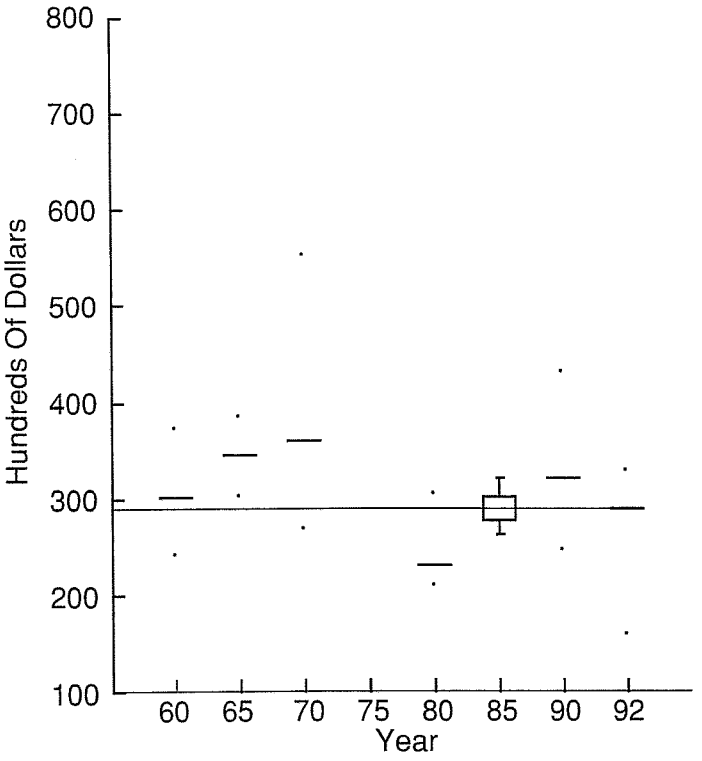
Nine-Month Teaching or Teaching and Research



Nine-Month Salaries

Ph.D. Year	Min	Median	Max	Reported Median in 1992 $
		RESEARCH (5 men + 1 woman)		
1960	52	65	80	303
1965	71	81	90	345
1970	78	105	160	361
1975	100	—	110	—
1980	125	137	180	231
1985	205	235	250	302
1990	230	300	404	321
1991	260	295	470	304
1992	160	290	330	290
1993	260	298	380	—
1990M	230	300	404	
1990F	—	—	—	
1991M	260	290	360	
1991F	—	—	—	
1992M	160	290	330	
1992F	—	—	—	
1993M	260	275	320	
1993F	—	—	—	
One year or less experience (4 men + 1 woman)				
1993M	260	298	320	
1993F	—	—	—	

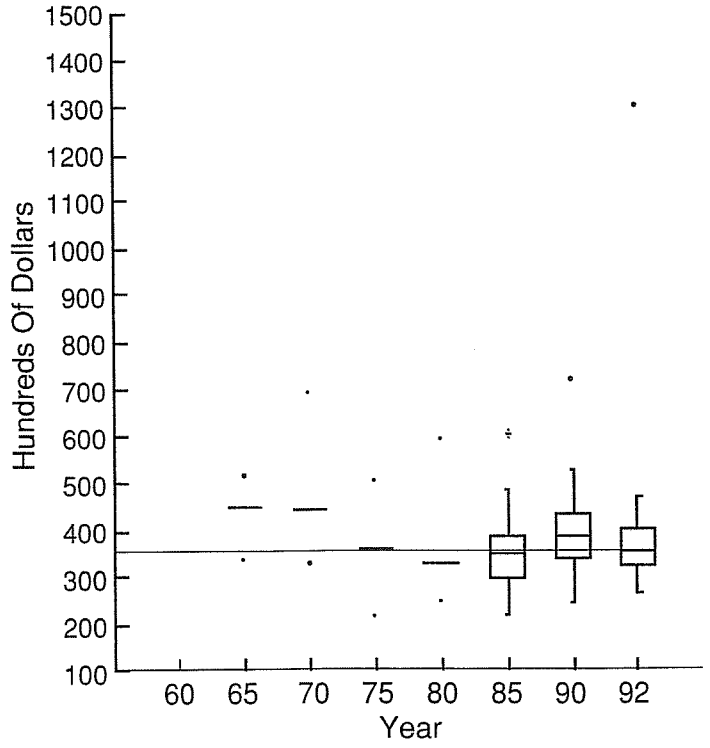
Nine-Month Research



Twelve-Month Salaries

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 1992 $
			TEACHING OR TEACHING AND RESEARCH (7 men + 6 women)			
1960	.....		No data.....			
1965	78		104		121	444
1970	95		128		200	440
1975	87		145		204	357
1980	143		195		350	329
1985	220	230	273	300	470	350
1990	225	318	365	404	670	390
1991	290	310	350	408	758	360
1992	265	325	355	402	1300	355
1993	300	355	370	500	680	—
1990M	225	316	360	400	670	
1990F	250	320	383	420	425	
1991M	290	310	350	400	530	
1991F	300	310	472	530	758	
1992M	300	330	355	420	1300	
1992F	—	—	—	—	—	
1993M	360	427	500	505	680	
1993F	300	334	353	370	370	
One year or less experience (5 men + 6 women)						
1993M	360	389	464	500	510	
1993F	300	334	353	370	370	

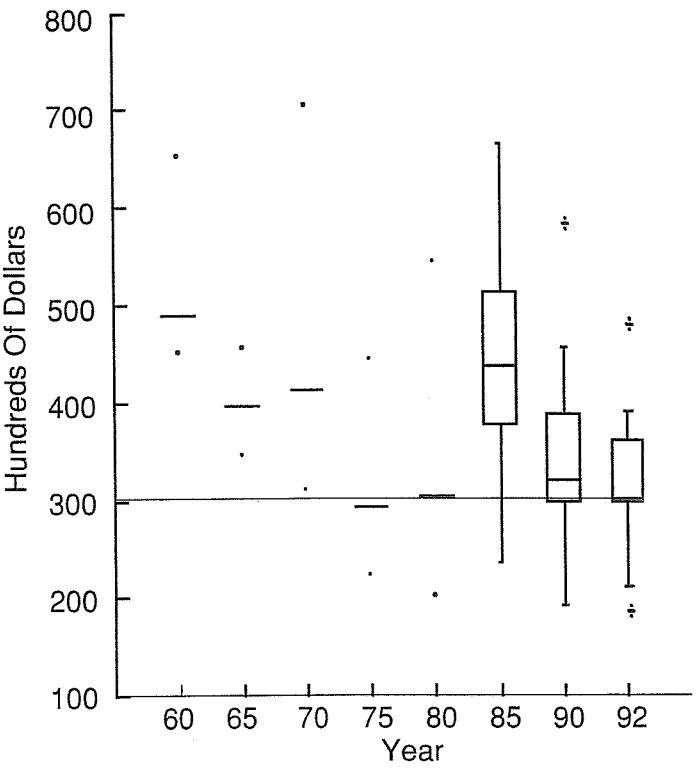
Twelve-Month Teaching or Teaching and Research



Twelve-Month Salaries

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 1992 $
RESEARCH (11 men + 8 women)						
1960	97		105		140	489
1965	81		93		107	397
1970	90		120		205	413
1975	90		119		180	293
1980	120		180		321	304
1985	190	295	342	400	520	439
1990	180	280	300	365	546	321
1991	190	277	320	380	480	329
1992	186	300	302	360	480	302
1993	237	300	330	400	570	—
1990M	180	280	300	360	546	
1990F	330	330	365	400	400	
1991M	190	290	310	360	480	
1991F	240	272	340	405	450	
1992M	210	300	300	358	480	
1992F	186	250	370	380	400	
1993M	237	272	310	365	480	
1993F	300	330	365	400	570	
One year or less experience (9 men + 4 women)						
1993M	237	270	300	330	480	
1993F	300	315	330	355	380	

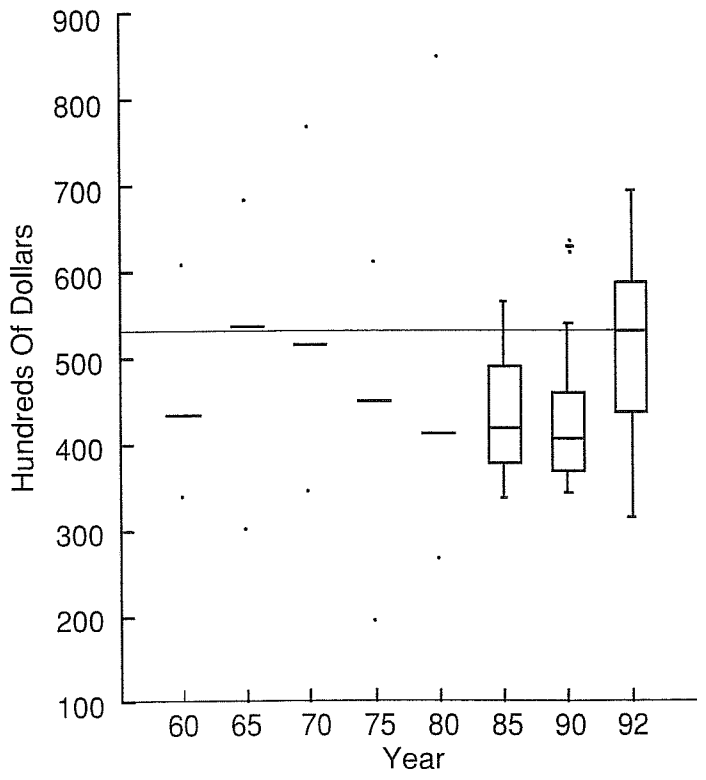
Twelve-Month Research



Twelve-Month Salaries

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 1992 $
GOVERNMENT (8 men + 4 women)						
1960	72		93		130	433
1965	70		126		160	537
1970	100		150		223	516
1975	78		182		247	448
1980	156		244		501	412
1985	263	294	325	381	440	417
1990	320	345	378	430	587	404
1991	230	365	423	497	630	435
1992	315	438	530	587	692	530
1993	300	378	412	571	800	—
1990M	320	345	375	430	587	
1990F	330	354	378	429	480	
1991M	230	345	424	497	630	
1991F	—	—	—	—	—	
1992M	315	419	460	615	692	
1992F	—	—	—	—	—	
1993M	300	402	480	611	800	
1993F	340	350	378	462	528	
One year or less experience (5 men + 4 women)						
1993M	300	400	404	540	620	
1993F	340	350	378	462	528	

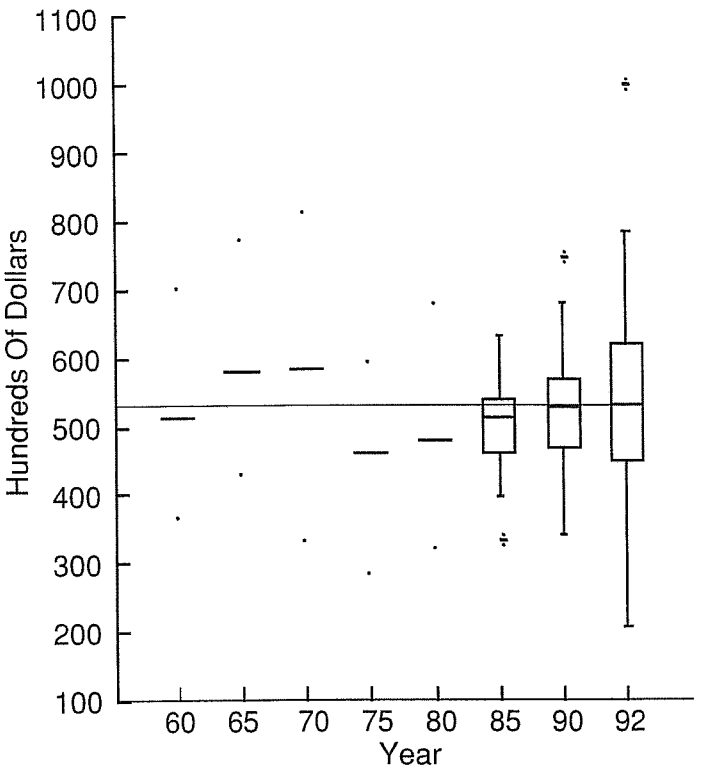
Twelve-Month Government



Twelve-Month Salaries

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 1992 $
BUSINESS AND INDUSTRY (33 men + 10 women)						
1960	78		110		150	512
1965	100		136		180	580
1970	96		170		235	585
1975	114		187		240	460
1980	190		284		400	480
1985	260	360	400	420	493	513
1990	320	438	495	533	700	529
1991	235	480	510	573	830	525
1992	208	450	530	620	1000	530
1993	270	480	560	600	1100	—
1990M	320	443	490	533	630	
1990F	390	440	500	525	700	
1991M	330	500	520	587	830	
1991F	235	420	481	554	720	
1992M	300	440	520	625	1000	
1992F	208	528	549	591	850	
1993M	270	500	560	600	1100	
1993F	424	475	568	600	670	
One year or less experience (17 men + 7 women)						
1993M	270	480	543	600	700	
1993F	424	458	584	595	600	

Twelve-Month Business and Industry



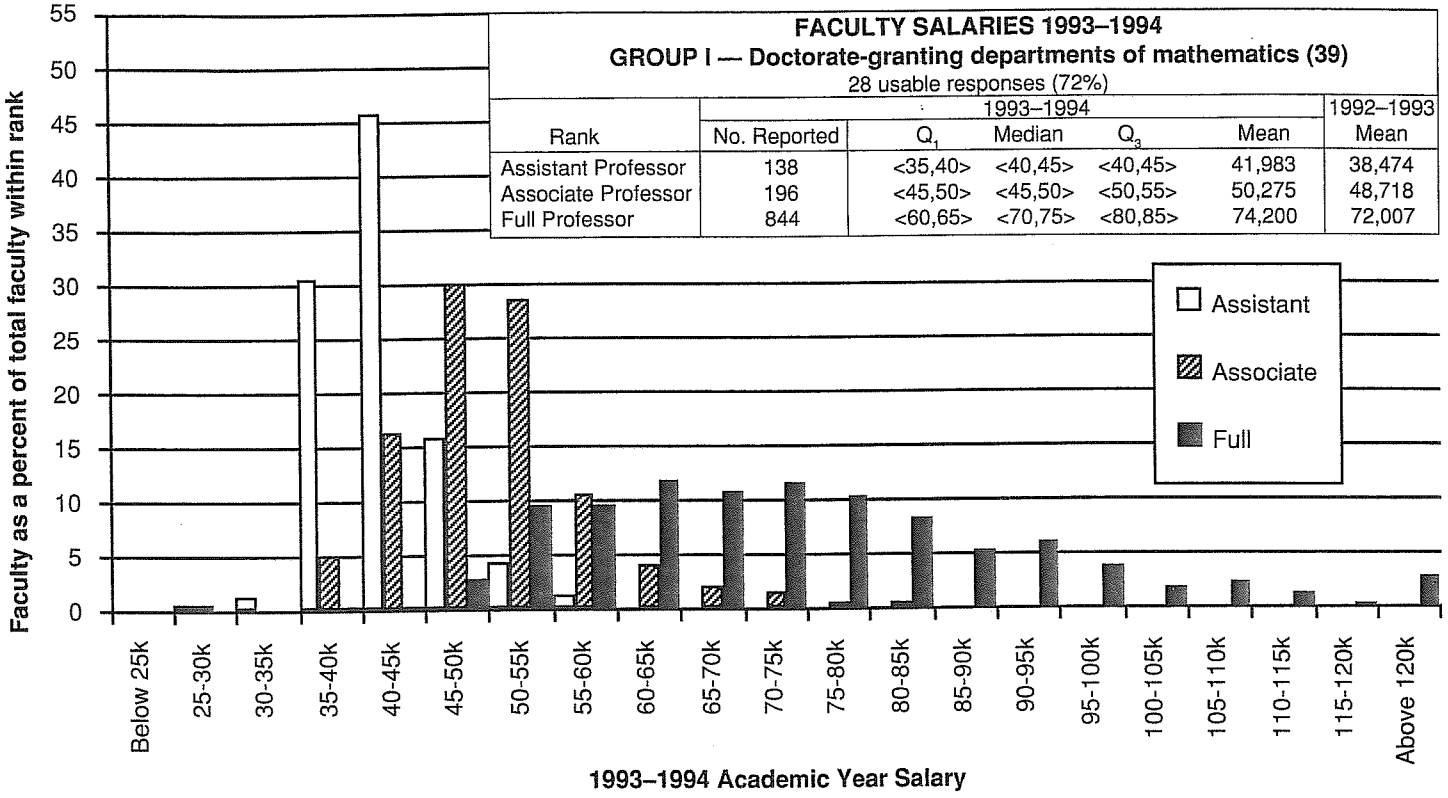
Faculty Salary Survey 1993–1994 Salaries

The charts on the following pages display faculty salary data for Groups I–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.

Departments were asked to report the number of faculty whose 1993–1994 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>.

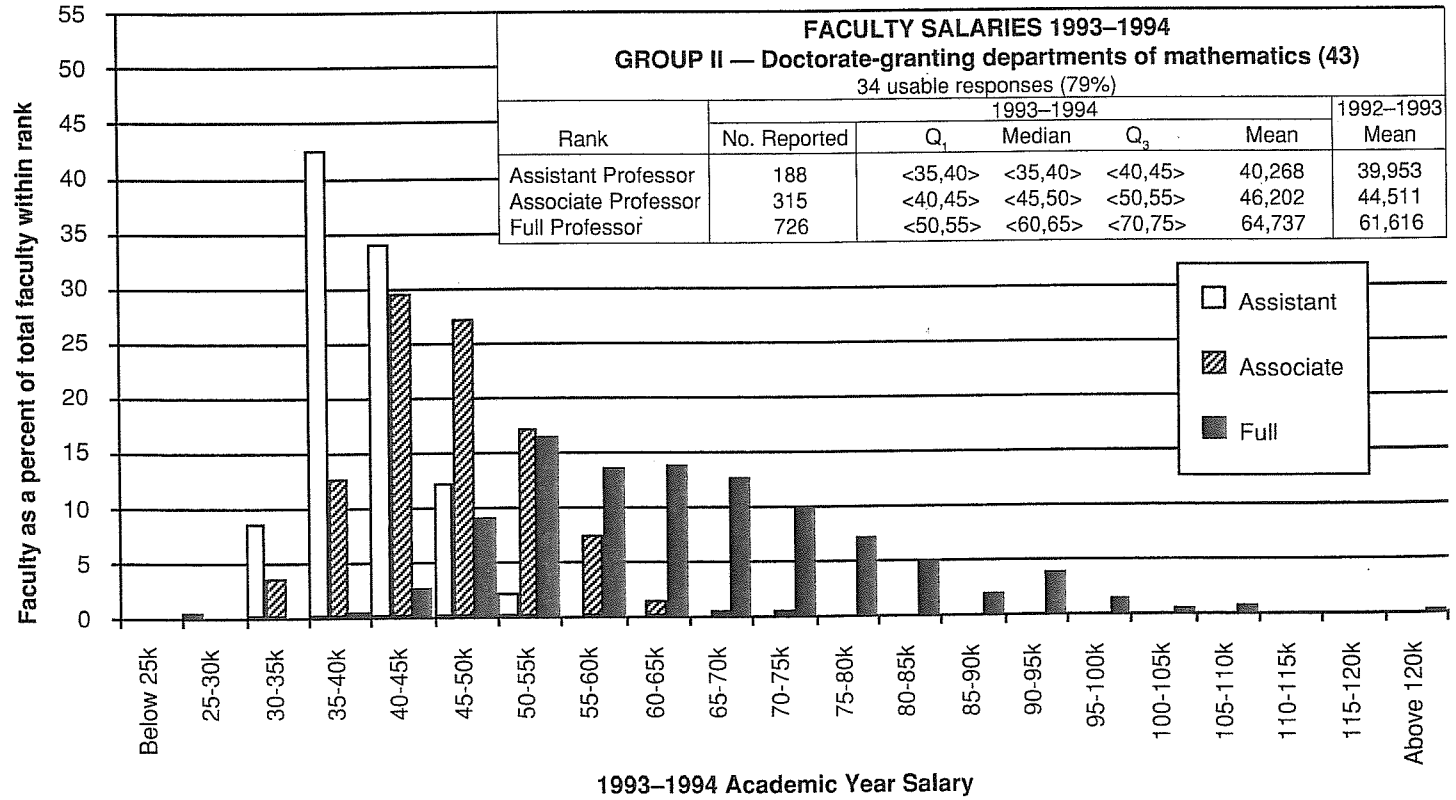
FACULTY SALARIES 1993–1994
GROUP I — Doctorate-granting departments of mathematics (39)
28 usable responses (72%)

Rank	No. Reported	1993–1994 Q_1	1993–1994 Median	1993–1994 Q_3	1993–1994 Mean	1992–1993 Mean
Assistant Professor	138	<35,40>	<40,45>	<40,45>	41,983	38,474
Associate Professor	196	<45,50>	<45,50>	<50,55>	50,275	48,718
Full Professor	844	<60,65>	<70,75>	<80,85>	74,200	72,007



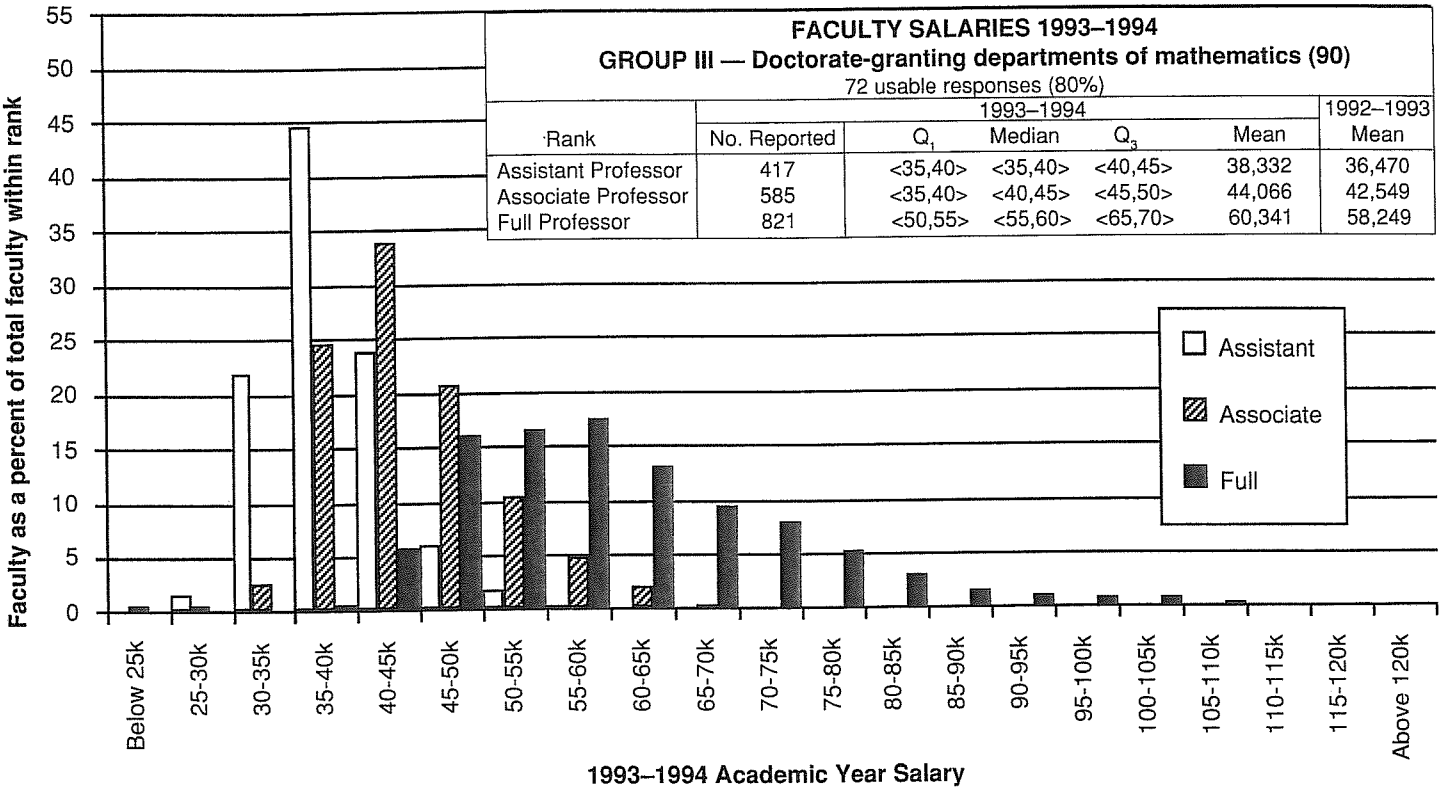
FACULTY SALARIES 1993–1994
GROUP II — Doctorate-granting departments of mathematics (43)
34 usable responses (79%)

Rank	No. Reported	1993–1994 Q_1	1993–1994 Median	1993–1994 Q_3	1993–1994 Mean	1992–1993 Mean
Assistant Professor	188	<35,40>	<35,40>	<40,45>	40,268	39,953
Associate Professor	315	<40,45>	<45,50>	<50,55>	46,202	44,511
Full Professor	726	<50,55>	<60,65>	<70,75>	64,737	61,616



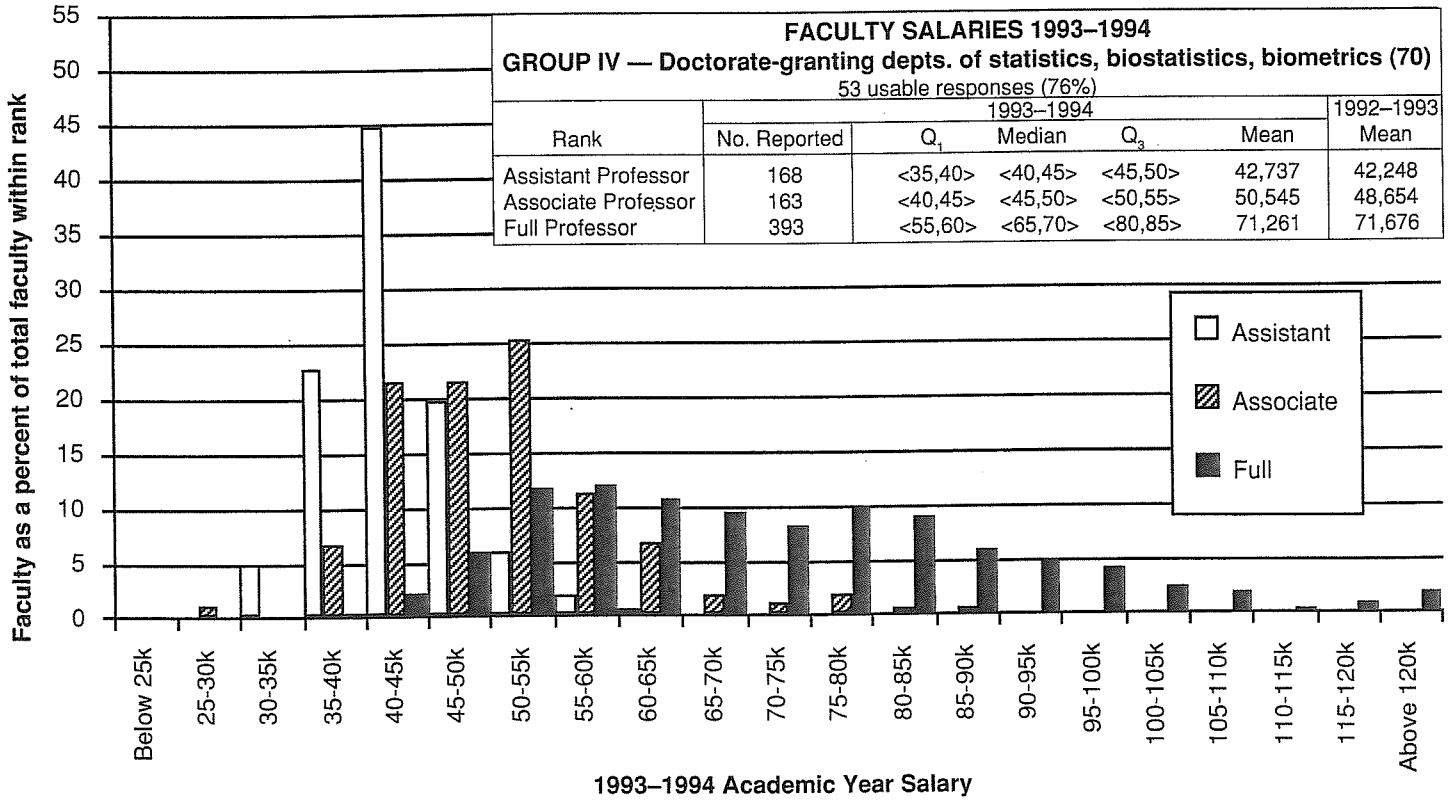
FACULTY SALARIES 1993–1994
GROUP III — Doctorate-granting departments of mathematics (90)
72 usable responses (80%)

Rank	1993–1994 No. Reported	Q_1	Median	Q_3	Mean	1992–1993 Mean
Assistant Professor	417	<35,40>	<35,40>	<40,45>	38,332	36,470
Associate Professor	585	<35,40>	<40,45>	<45,50>	44,066	42,549
Full Professor	821	<50,55>	<55,60>	<65,70>	60,341	58,249



FACULTY SALARIES 1993–1994
GROUP IV — Doctorate-granting depts. of statistics, biostatistics, biometrics (70)
53 usable responses (76%)

Rank	1993–1994 No. Reported	Q_1	Median	Q_3	Mean	1992–1993 Mean
Assistant Professor	168	<35,40>	<40,45>	<45,50>	42,737	42,248
Associate Professor	163	<40,45>	<45,50>	<50,55>	50,545	48,654
Full Professor	393	<55,60>	<65,70>	<80,85>	71,261	71,676

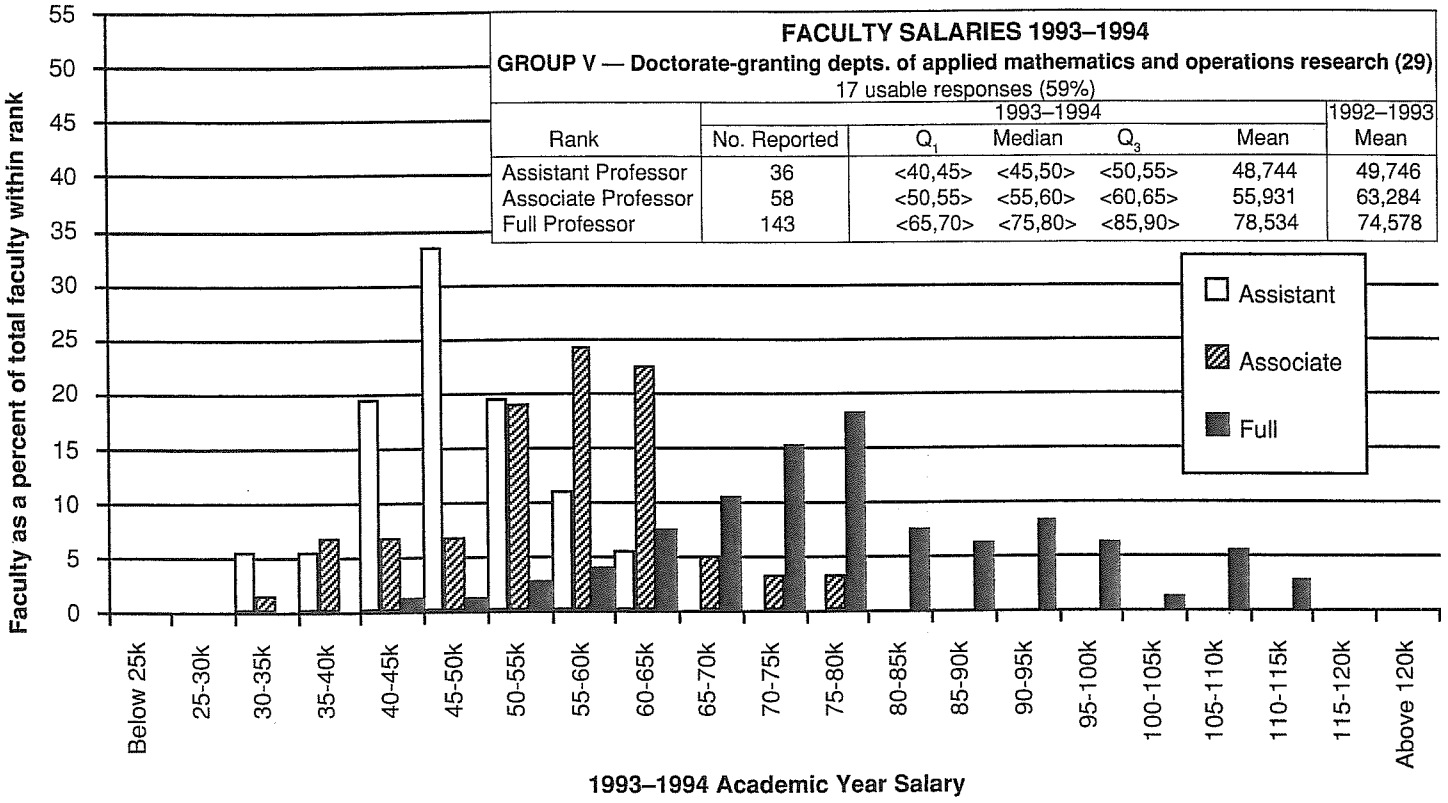


FACULTY SALARIES 1993–1994

GROUP V — Doctorate-granting depts. of applied mathematics and operations research (29)

17 usable responses (59%)

Rank	1993–1994 No. Reported	Q_1	Median	Q_3	Mean	1992–1993 Mean
Assistant Professor	36	<40,45>	<45,50>	<50,55>	48,744	49,746
Associate Professor	58	<50,55>	<55,60>	<60,65>	55,931	63,284
Full Professor	143	<65,70>	<75,80>	<85,90>	78,534	74,578

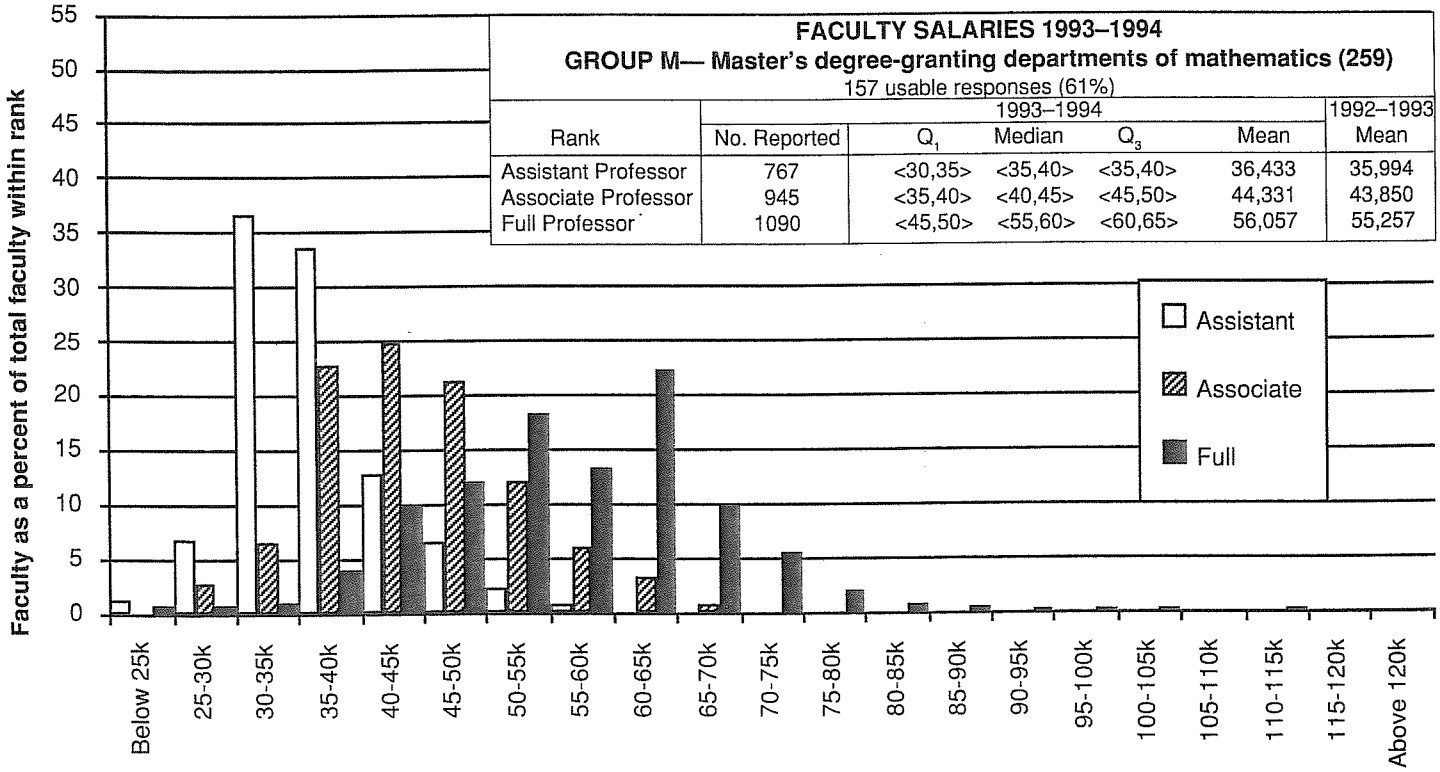


FACULTY SALARIES 1993–1994

GROUP M— Master's degree-granting departments of mathematics (259)

157 usable responses (61%)

Rank	1993–1994 No. Reported	Q_1	Median	Q_3	Mean	1992–1993 Mean
Assistant Professor	767	<30,35>	<35,40>	<35,40>	36,433	35,994
Associate Professor	945	<35,40>	<40,45>	<45,50>	44,331	43,850
Full Professor	1090	<45,50>	<55,60>	<60,65>	56,057	55,257



FACULTY SALARIES 1993–1994

GROUP B — Bachelor's degree-granting departments of mathematics (1001)

445 usable responses (44%)

Rank	1993–1994 No. Reported	Q_1	Median	Q_3	Mean	1992–1993 Mean
Assistant Professor	1102	<30,35>	<30,35>	<35,40>	35,340	33,882
Associate Professor	1019	<35,40>	<40,45>	<45,50>	42,324	41,420
Full Professor	1105	<45,50>	<50,55>	<60,65>	52,761	51,538