

# 1996 AMS-IMS-MAA Annual Survey

(First Report)

## Report on the 1996 Survey of New Doctoral Recipients Salary Survey for New Doctoral Recipients Faculty Salary Survey

### Report on the 1996 Survey of New Doctoral Recipients

*John D. Fulton*

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, 1995, through June 30, 1996. It includes an analysis of the employment market for 1995-1996 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, gender, and racial/ethnic group. Table 1 provides the response rates for the 1996 Survey of New Doctoral Recipients. Please see pages 1501-1502 for a description of the Groups, newly defined for the 1996 Survey.

**Table 1: Response Rates**

<b>Group I</b>	47 of 48
<b>Group II</b>	54 of 56 including 3 with 0 degrees
<b>Group III</b>	63 of 72 including 17 with 0 degrees
<b>Group IV</b>	54 of 80 including 4 with 0 degrees
<b>Group Va</b>	16 of 19
<b>Group Vb</b>	13 of 33 including 2 with 0 degrees

#### Doctoral Degrees Granted

The number of new doctoral recipients reported in 1995-1996 by U.S. mathematical sciences departments is 1,153. Table 2A gives the fall and spring counts for the past four Annual Surveys together with the current fall count. This year's

This first report on the 1996 Survey includes a report on the 1996 survey of new doctoral recipients, a report on salaries of 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 and later to the recipients of doctoral degrees granted by these departments between July 1995 and June 1996, 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 1996 Survey in a spring 1997 issue of the Notices.

The 1996 Annual AMS-IMS-MAA Survey represents the fortieth in an annual series begun in 1957 by the Society. The 1996 Survey is under the direction of the AMS-IMS-MAA Data Committee, whose members are Paul W. Davis, Lorraine Denby, John D. Fulton (chair), Malay Ghosh, Don O. Loftsgaarden, James W. Maxwell (ex officio), S. Brent Morris, M. Beth Ruskai, Ann K. Stehney, and Ann E. Watkins. Comments or suggestions regarding this Survey Report may be directed to the committee.

fall count will be updated in the Second Report of the 1996 Survey, to appear in a spring 1997 issue of *Notices*.

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

Year	Fall	Spring
1991-1992	1050	1062
1992-1993	1202	1214
1993-1994	1059	1076
1994-1995	1226	1237
1995-1996	1153	*

\*To appear in a spring 1997 issue of *Notices*.

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**Highlights**

The unemployment rate for new doctoral recipients declined to the lowest level reported since the fall 1990 rate of 5.7 percent. Among those whose employment status is known, 9.4 percent were unemployed as of late September 1996. This represents a decrease of 5.3 percentage points from the record high of 14.7 percent reported in fall 1995. An additional 3.2 percent of the 1995-1996 new doctoral recipients reported that they were employed part-time. Total employment of new doctoral recipients in the U.S. increased for the second year in a row. Of those doctoral recipients employed in the U.S., 26.8% were employed by business and industry, up from 22.9% last year.

The U.S. mathematical sciences departments surveyed awarded 1,153 doctoral degrees from July 1, 1995, to June 30, 1996, a decrease of 6 percent from last year's fall count of 1,226, an all-time high number.

The number of U.S. citizens reported to have received doctoral degrees in the mathematical sciences is 493, which is 13.1 percent less than the number earning doctoral degrees last year. The count of 493 is still 36.2 percent above the record low reported in 1986-1987.

The number of non-U.S. citizens receiving doctoral degrees is 657, a number which is within 2.1 percent of the 1992-1993 record high of 671.

Of the 493 U.S. citizen doctoral recipients, 9 are black; 9 are Mexican American, Puerto Rican, or other Hispanic; and 21 are members of other minority groups. Of the 1994-1995 U.S. citizen doctoral recipients, 6 are black; 9 are Mexican American, Puerto Rican, or other Hispanic; and 25 are members of other minority groups.

The number of women among U.S. citizen doctoral recipients decreased by 17.7 percent from last year's fall count to 116. The percentage of women among U.S. citizen doctoral recipients is 23.5 percent. Last year, 24.9 percent of the U.S. citizen doctoral recipients were women.

The median starting salary of new doctoral recipients reporting teaching (or teaching and research) was \$36,000, an increase over the \$35,000 median for last year. The median for women increased from \$35,000 to \$36,500 and the median for men increased from \$35,000 to \$36,000.

The fall count of the total number of new doctoral recipients represents a decrease of 6.0 percent from the fall all-time high count of 1,226 in the 1995 Survey. This year's fall count still represents an increase, of 57.5 percent, over the 1984-1985 fall count of 732 new doctoral recipients from U.S. institutions, one of the lowest counts within the last twenty years.

Table 2B records the annual number of new doctoral recipients in the mathematical sciences in the U.S. from the year 1991-1992, 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	91-92	92-93	93-94	94-95	95-96
I-Va	998	1104	1025	1148	1098

The columns in Table 3B indicate how the count of 1,153 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 4.3 percent in the fall count of new doctoral recipients. Because of the new groupings of mathematics departments, it would not be meaningful to make comparisons involving Groups I, II, or III individually with the counts of 1994-1995 or previous years.

**Employment Status of U.S. New Doctoral Recipients, 1995-1996**

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 1995 Second Report, *Notices*, August 1996, pages 848-858, 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 1,153 recipients of doctoral degrees conferred by mathematical sciences departments in the U.S. between July 1, 1995, and June 30, 1996. The names of the individuals will be listed with their thesis titles in a later issue of *Notices*. The employment information was obtained initially from the departments granting the degrees and subsequently from data provided by the degree recipients themselves.

Most new doctoral recipients seek and accept academic positions. Of the 732 new doctoral recipients employed in the U.S., a total of 506 (69.1 percent) hold jobs in academia. For compari-

**Table 3A: Employment Status of 1995-1996 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 Approximations	Functional Analysis	Linear Nonlinear Optim./Control	Differential Integral and Difference Equations	Harmonic Analysis and Topological Groups	Other/Unknown		
Group I (Public)	15	4	15	4	4	3	5	5	2	7	5	1	70	
Group I (Private)	11	2	14	5	2	3	4		1	3	3	1	48	
Group II	9	2	12	2	5	3	4	3	1	6	1		48	
Group III	7	1	1	1	8	1			1	4	2	2	28	
Group IV		1			28	1							30	
Group V			1	2		5	4		2		1		15	
Masters	14	3	4	10	10	3	5	2	2	6	2	4	65	
Bachelors	23	5	17	10	14	1	8	5	3	4	4	7	101	
Two-Year Colleges	3		3		1	3		1	1	1	2		15	
Other Academic Depts.	4		6	6	30	16	3			2	1		68	
Research Institutes	3		5	2	1	1	2		1	1	2		18	
Government	4	1	4	2	11	2	4			2			30	
Business and Industry	12	3	12	9	79	37	11	4	14	11	3	1	196	
Foreign, Academic	24	6	25	11	20	12	7	4	2	19	6		136	
Foreign, Nonacademic	2		1	1	2	2	1		1				10	
Not seeking employment	2	1	1		4	3	2	6	1	4	1		25	
Still seeking employment	13	6	13	10	11	7	10	6	2	11	4	1	94	
Unknown (U.S.)	13	2	7	12	14	8	5		3	5		2	71	
Unknown (non-U.S.)*	9	6	10	7	22	11	6	1	3	5	4	1	85	
<b>Column Total</b>	<b>168</b>	<b>43</b>	<b>151</b>	<b>94</b>	<b>266</b>	<b>122</b>	<b>81</b>	<b>37</b>	<b>40</b>	<b>91</b>	<b>41</b>	<b>19</b>	<b>1153</b>	
<b>Column</b>	Male	135	33	125	77	196	98	67	30	33	72	30	8	904
<b>Subtotals</b>	Female	33	10	26	17	70	24	14	7	7	19	11	11	249

\*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 1995-1996 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)	46	16	6			2	70	54	16	
Group I (Private)	18	24	3	1		2	48	41	7	
Group II	20	7	16	1	3	1	48	38	10	
Group III	7	2	3	11	4	1	28	21	7	
Group IV	1		1	1	26	1	30	24	6	
Group V	3	1				11	15	14	1	
Masters	20	4	19	14	4	4	65	43	22	
Bachelors	22	9	37	26	4	3	101	75	26	
Two-Year Colleges	8	1	6				15	12	3	
Other Academic Depts.	11	9	7	3	23	15	68	51	17	
Research Institutes	7	7	2		1	1	18	17	1	
Government	11	3	1	2	10	3	30	23	7	
Business and Industry	31	16	29	18	55	47	196	163	33	
Foreign, Academic	44	31	26	10	15	10	136	109	27	
Foreign, Nonacademic	2	3	1	1		3	10	8	2	
Not seeking employment	7	2	5	6	3	2	25	20	5	
Still seeking employment	23	14	34	12	6	5	94	70	24	
Unknown (U.S.)	23	14	10	5	6	13	71	54	17	
Unknown (non-U.S.)*	21	11	16	13	12	12	85	67	18	
<b>Column Total</b>	<b>325</b>	<b>174</b>	<b>222</b>	<b>124</b>	<b>172</b>	<b>136</b>	<b>1153</b>	<b>904</b>	<b>249</b>	
<b>Column</b>	Male	263	137	181	89	126	904			
<b>Subtotals</b>	Female	62	37	41	35	46	249			

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

son, last year's First Report showed 724 new doctoral recipients employed in the U.S., including 534 (73.8 percent) in academic positions. Thus total U.S. employment of new doctoral recipients increased for the second year in a row but the rate of increase this year, 1.1 percent, was slight. The percentage of positions in academia decreased by 5.2 percent. Concomitantly, the number of nonacademic positions in the U.S. taken by new doctoral recipients increased by 18.9 percent to 226.

The 506 U.S. academic positions this year include a total of 239 in U.S. doctoral degree-granting departments (Groups I-V). This number is 3.9 percent higher than last year (230 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) decreased by 35 (17.4 percent) from the number reported last year. While the numbers of new doctoral recipients hired by government remained constant and new doctoral recipients hired by research institutes increased slightly from those reported last year (by 5.9 percent), hiring by business and industry increased markedly (by 18.1 percent). Employment of the new doctoral recipients by business and industry constitutes 26.8 percent of all U.S. employment of these new doctoral recipients. Last year, 22.9 percent were hired by business and industry.

Though the number of positions into which new doctoral recipients have been hired has decreased (by 2.5 percent), the job market for 1995-1996 new doctoral recipients has been somewhat better than the corresponding markets for 1991-1992, 1992-1993, 1993-1994, and 1994-1995. Table 3A shows that among those whose employment status is known, 9.4 percent are unemployed. (The corresponding rate of unemployment for 1994-1995 doctoral recipients from U.S. institutions, reported in fall 1995, was 14.7 percent). The 1996 unemployment level ranks as the lowest since the fall 1990 rate of 5.7 percent. Last year's unemployment rate of 14.7 percent ranked as the highest ever observed since 1971, when employment information about new doctoral recipients was first reported in the current format.

The data in Table 3A were obtained in many instances early in the summer of 1996 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 state of this year's market. An update of Table 3A will appear in the 1996 Second Report. Table 3C shows the trend in the unemployment figures reported in the respective Annual Survey Reports for the 1989-1990 through 1994-1995 cohorts of new doctoral recipients.

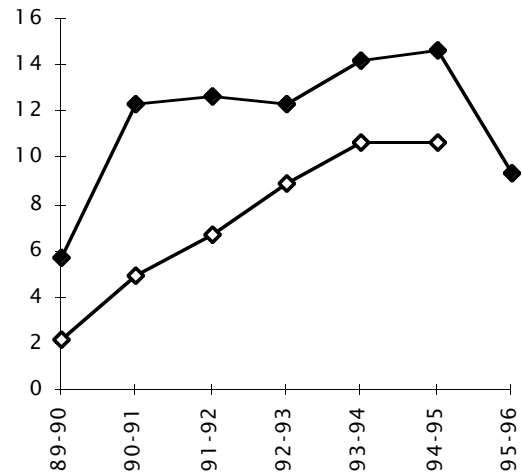
Beyond the unemployment statistics that are explicitly reported in Tables 3A and 3C, the 1996 Survey reveals other indicators of a somewhat improved job market. For example, 32 (3.2 percent) new doctoral recipients are reported to hold part-time posi-

tions, and 69 (6.9 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 1995, 45 (4.2 percent) were part-time and 78 (7.2 percent) were held by doctoral recipients in the same institutions where they earned their doctoral degrees.

**Table 3C: Percentage of New Doctoral Recipients Unemployed (as reported in the respective Annual Survey Reports 1990-1995)**

Year	Fall	Spring
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	*

\*To appear in a spring 1997 issue of *Notices*.



The Survey of New Doctoral Recipients per se does not reveal underlying causes of the high rates of unemployment and underemployment reported since fall 1990. However, data reported in the 1995 Second Report show that many faculty positions being vacated by death, incentive retirements, and other retirements are not being filled. In mathematics departments, rates of faculty attrition due to deaths and retirements are currently relatively high, and levels of recruitment have declined substantially (27 percent) since 1990 (*Notices*, August, 1995, page 870), with 1994-1995 showing the first increase in positions under recruitment in five years.

Some information is available from the survey concerning the nature of the academic positions filled. To date, 256 individual responses have been received from new doctoral recipients

employed by academic institutions. Sixty-four percent of these respondents report that their positions are not tenure-eligible and the remaining 34.5 percent report that their positions are tenured or tenure-track positions (1.5 percent are unknown). Out of the 164 nontenure-eligible respondents, 24.4 percent can hold their current positions for a maximum of one year, and 53.7 percent can hold their positions 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 tenured or tenure-eligible varies significantly between the survey Groups. Among the 256 individual respondents holding jobs in academic institutions, 101 have positions in a doctoral degree-granting department, and 85 have positions in a bachelor's or master's degree-granting department. In the doctoral degree-granting departments 84.2 percent of the positions held by new doctoral recipients are not tenure-eligible, while 37.6 percent of the positions in bachelor's and master's degree-granting departments are not tenure-eligible.

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 similar to the patterns seen in the 1995 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 mathematics degree recipients: 93.3 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, 86.7 percent of the Group IV jobs held by new doctoral recipients went to Group IV degree recipients.

These percentages compare with 86 percent and 90 percent, respectively, from the 1995 Survey.

Women represent 21.6 percent of the population of new doctoral recipients, down from 22.9 percent in 1994-1995, but the proportion is not uniform across different types of departments. For example, 20.7 percent of the new doctoral recipients in mathematics (Groups I+II+III) are women (down from 22.2 percent last year), and 26.1 percent of the new doctoral recipients from statistics departments are women (up from 24.1 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 (11.2 percent) is greater than the rate for the male new doctoral recipients (8.9 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)-8.2 percent, Group I (Private)-9.4 percent, Group II-17.3 percent, Group III-11.3 percent, Group IV-3.9 percent, and Group V-4.5 percent.

Table 3D shows the pattern of employment within broad job categories broken down by the citizenship status of the new doctoral recipients (from U.S. institutions). The citizenship status is known for 1,144 of the 1,153 new doctoral recipients. For those whose job status is known, the rate of unemployment for non-U.S. citizens is nearly 3 percentage points higher than that for U.S. citizens (10.8 percent noncitizens and 8.0 percent citizens). The unemployment rate for U.S. citizens is 5.6 percentage points below the level reported in the 1995 First Report for 1994-1995 new doctoral recipients. The percentage of U.S. citizens in U.S. nonacademic jobs is higher than the percentage of noncitizens in the same category (24.1 percent of citizens versus 21.6 percent of noncitizens).

**Table 3D: Employment Status of 1995-1996 U.S. New Doctoral Recipients by Citizenship Status\***

TYPE OF EMPLOYER	TYPE OF CITIZENSHIP				TOTAL DOCTORAL RECIPIENTS WHOSE CITIZENSHIP IS KNOWN*	
	U.S. Citizens		Non-U.S. Citizens		Number	Percent
	Number	Percent	Number	Percent		
U.S. Academic, Ph.D. Department	108	22	131	20	239	21
U.S. Academic, non-Ph.D. Department	174	35	72	11	246	22
U.S. Research Institute	5	1	13	2	18	2
U.S. Nonacademic	111	22	114	18	225	20
Foreign Academic	18	4	116	18	134	12
Foreign Nonacademic	0		10	2	10	1
Not seeking employment	8	2	15	2	23	2
Still seeking employment	37	7	57	9	94	8
Unknown status (U.S. address)	41	8	29	5	70	6
Unknown status (foreign address)	0		85	13	85	7
<b>TOTALS</b>	<b>502</b>	<b>100.0**</b>	<b>642</b>	<b>100.0**</b>	<b>1144</b>	<b>100.0**</b>

\* The adjusted total varies from that in Table 5 because the data are gathered on different surveys.

\*\* Column percents are rounded to the nearest whole percent.

The percentage of U.S. citizens holding positions in U.S. doctoral degree-granting departments (23.4 percent) is slightly lower than the percentage for non-U.S. citizens (24.8 percent). U.S. citizens hold positions in nondoctoral-degree granting U.S. departments in substantially higher proportion than do noncitizens (37.7 percent of citizens compared to 13.6 percent of noncitizens). All percentages exclude new doctoral recipients 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 24.8 percent of the non-U.S. citizens.

Nonetheless, the distribution of job categories was gathered for 123 non-U.S. citizens new doctoral recipients who are known to be permanent U.S. residents. Of those whose employment status is known, 23.6 percent are employed by a doctoral degree-granting department in the U.S., 17.9 percent are employed by a non-doctoral degree-granting department in the U.S., and 16.3 percent are unemployed.

**Gender, Ethnicity, and Citizenship of U.S. New Doctoral Recipients, 1995–1996**

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 and in a few cases from the recipients themselves.

The citizenship status is known for 1,150 of the 1,153 new doctoral recipients, including 493 U.S. citizens. (Because different survey forms are used to compile the summary of gender,

ethnicity, 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 3D). The number of U.S. citizen new doctoral recipients is 13.1 percent less than the 1994–1995 figure of 567, which had been the highest reported since 1980–1981. 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 42.9 percent, a significant decrease from last year's percentage of 47.0 percent, and very close to the all-time low of 42.3 percent in 1991–1992. A total of 657 noncitizens were awarded doctoral degrees by U.S. institutions in 1995–1996. This represents an increase of 17 individuals (2.7 percent) from last year's count. The 1995–1996 count is 99 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 (7 men and 2 women) and 9 are Mexican American, Puerto Rican, or other Hispanic (8 men and 1 women). The former is up 3 from last year, while the latter remained the same.

Women account for 23.5 percent of the U.S. citizens receiving doctoral degrees in the mathematical sciences from U.S. universities. This is the fourth highest percentage ever reported but down from the record high percentage (28 percent) reported in 1993 and also down from the percentage (24.9 percent) reported last year. The total number of U.S. citizen women who were 1995–1996 doctoral recipients (116) decreased by 17.7 percent from last year's reported 141, and is 29 less than the highest number, reported in 1992–1993 (see Table 6).

**Table 4: Gender, Ethnicity, and Citizenship of 1995–1996 U.S. New Doctoral Recipients**

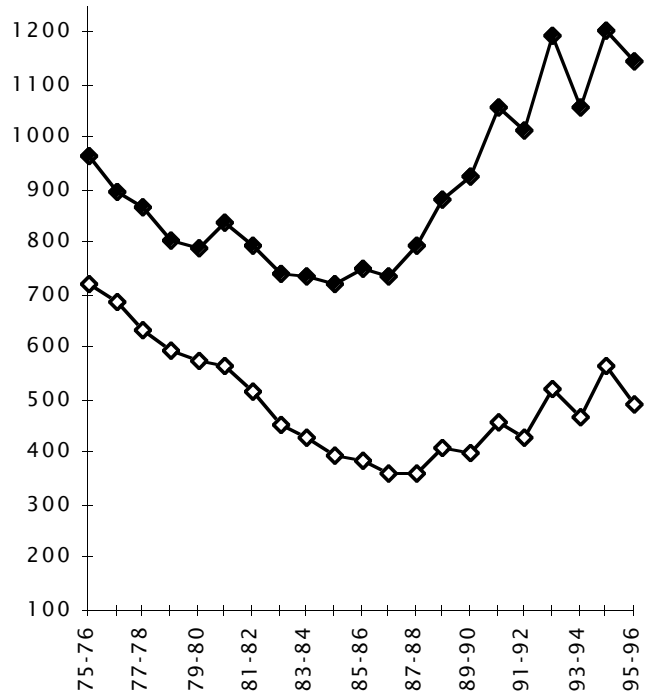
RACIAL/ETHNIC GROUP	MEN				WOMEN				TOTAL
	CITIZENSHIP			Total Men	CITIZENSHIP			Total Women	
	U.S.	Other	Not Known		U.S.	Other	Not Known		
Asian, Pacific Islander	13	303	2	318	7	82		89	407
Black	7	8		15	2	2		4	19
American Indian, Eskimo, Aleut	1			1					1
Mexican American, Puerto Rican, or other Hispanic	8	28		36	1	6		7	43
White (non-Hispanic)	347	179	1	527	105	44		149	676
Unknown	1	5		6	1			1	7
TOTAL	377	523	3	903	116	134		250	1153

**Table 5: U.S. Citizen Doctoral Recipients**

	Adjusted Total* of Degrees Granted by U.S. Institutions	Total of U.S. Citizen Doctoral Recipients	%
75-76	965	722	75
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

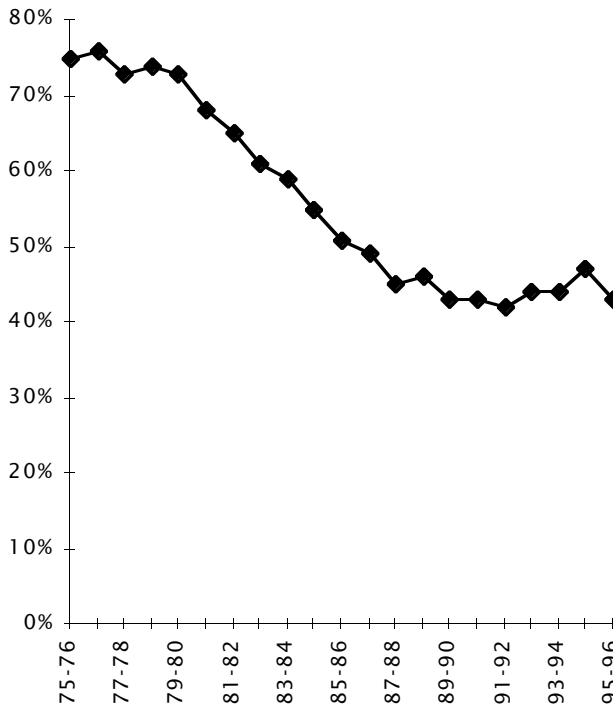
\*Number of doctorates whose citizenship is known. Total may vary from that on Table 3D because the data are gathered on different surveys.

**Graph for Table 5: U.S. Citizen Doctoral Recipients  
Total of Doctoral Recipients by Percent**



Upper line - Adjusted total of doctorates granted by U.S. Universities.  
Lower line - Total of U.S. citizen doctoral recipients.

**Graph for Table 5: U.S. Citizen Doctoral Recipients**



**Table 6: U.S. Citizen Doctoral Recipients,  
Male and Female**

	Total of U.S. Citizen Doctoral Recipients	Male	Female	% Female
75-76	722	636	86	12
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

Note that in Table 5 and Table 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, 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 1996 Annual AMS-IMS-MAA Survey. Kinda Remick has provided indispensable support and taken many initiatives to facilitate the Data Committee's work. Kinda Remick and Jim Maxwell share credit for the companion articles on starting salaries of new doctoral recipients and on faculty salaries.

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## 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*,<sup>1</sup> These rankings update those reported in a previous study published in 1982.<sup>2</sup> Consequently, the departments that now comprise Groups I, II, and III differ significantly from those used in prior surveys. The reader should keep this in mind when attempting to make comparisons by group with previous Annual Survey reports. A list of the departments in each of these groupings appears below.

The subdivision of the Group I institutions into Group I Public and Group I Private is new with the 1996 Annual 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.

<sup>1</sup>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

<sup>2</sup>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.

### GROUP I Public

#### 25 Mathematics Departments (Scores between 3.00 and 5.00)

CUNY, Graduate School and  
University Center  
Georgia Institute of Technology  
Indiana University at Bloomington  
Michigan State University  
Ohio State University, Columbus  
Pennsylvania State University,  
University Park  
Purdue University  
Rutgers University  
SUNY at Stony Brook  
University of California, Berkeley  
University of California, Los Angeles  
University of California, San Diego  
University of California, Santa  
Barbara

University of Illinois at Chicago  
University of Illinois at Urbana-  
Champaign  
University of Maryland, College Park  
University of Michigan  
University of Minnesota, Minneapolis  
University of North Carolina at  
Chapel Hill  
University of Oregon  
University of Texas at Austin  
University of Utah  
University of Virginia  
University of Washington  
University of Wisconsin, Madison

### GROUP I Private

#### 23 Mathematics Departments (Scores between 3.00 and 5.00)

Boston University  
Brandeis University

Brown University  
California Institute of Technology  
Carnegie Mellon University  
Columbia University  
Cornell University  
Duke University  
Harvard University  
Johns Hopkins University  
Massachusetts Institute of  
Technology  
New York University, Courant  
Institute  
Northwestern University  
Princeton University  
Rensselaer Polytechnic Institute  
Rice University  
Stanford University  
University of Chicago  
University of Notre Dame

University of Pennsylvania  
 University of Southern California  
 Washington University  
 Yale University

**GROUP II**

**56 Mathematics Departments  
 (Scores between 2.00 and 2.99)**

Arizona State University  
 Auburn University  
 Case Western Reserve University  
 Claremont Graduate School  
 Clemson University  
 Colorado State University  
 Dartmouth College  
 Florida State University  
 Iowa State University  
 Kansas State University  
 Kent State University  
 Lehigh University  
 Louisiana State University, Baton Rouge  
 North Carolina State University  
 Northeastern University  
 Oregon State University  
 Polytechnic University  
 SUNY at Albany  
 SUNY at Binghamton  
 SUNY at Buffalo  
 Syracuse University  
 Temple University  
 Texas A & M University  
 Texas Tech University  
 Tulane University  
 University of Arizona  
 University of California, Davis  
 University of California, Irvine  
 University of California, Riverside  
 University of California, Santa Cruz  
 University of Cincinnati  
 University of Colorado, Boulder  
 University of Connecticut, Storrs  
 University of Delaware  
 University of Florida  
 University of Georgia  
 University of Hawaii  
 University of Houston  
 University of Iowa  
 University of Kentucky  
 University of Massachusetts, Amherst  
 University of Miami

University of Missouri, Columbia  
 University of Nebraska, Lincoln  
 University of North Texas  
 University of Oklahoma  
 University of Pittsburgh, Pittsburgh  
 University of Rochester  
 University of South Carolina, Columbia  
 University of Tennessee  
 University of Texas at Arlington  
 Vanderbilt University  
 Virginia Polytechnic Institute & State University  
 Washington State University  
 Wayne State University  
 Wesleyan University

**GROUP III**

**72 Mathematics Departments  
 (Scores below 2.00, or unranked)**

Adelphi University  
 Air Force Institute of Technology  
 American University  
 Bowling Green State University  
 Brigham Young University  
 Bryn Mawr College  
 Catholic University of America  
 Central Michigan University  
 Clark University  
 Clarkson University  
 College of William and Mary  
 Colorado School of Mines  
 Drexel University  
 Emory University  
 Florida Atlantic University  
 George Washington University  
 Howard University  
 Idaho State University  
 Illinois Institute of Technology  
 Illinois State University  
 Indiana University-Purdue University, Indianapolis  
 Marquette University  
 Mississippi State University  
 Montana State University, Bozeman  
 Naval Postgraduate School  
 New Jersey Institute of Technology  
 New Mexico State University  
 North Dakota State University  
 Northern Illinois University  
 Ohio University

Oklahoma State University  
 Old Dominion University  
 Portland State University  
 Rockefeller University  
 Southern Illinois University at Carbondale  
 Southern Methodist University  
 St. Louis University  
 Stevens Institute of Technology  
 Tufts University  
 University of Alabama, Birmingham  
 University of Alabama, Huntsville  
 University of Alabama, Tuscaloosa  
 University of Alaska, Fairbanks  
 University of Arkansas at Fayetteville  
 University of Central Florida  
 University of Colorado, Denver  
 University of Denver  
 University of Idaho  
 University of Kansas<sup>1</sup>  
 University of Maryland Baltimore County  
 University of Memphis  
 University of Mississippi  
 University of Missouri, Kansas City  
 University of Missouri, Rolla  
 University of Montana  
 University of New Hampshire  
 University of New Mexico<sup>1</sup>  
 University of North Carolina, Charlotte  
 University of Northern Colorado  
 University of Rhode Island  
 University of South Florida  
 University of Southwestern Louisiana  
 University of Texas at Dallas  
 University of Toledo  
 University of Vermont  
 University of Wisconsin, Milwaukee  
 University of Wyoming  
 Utah State University  
 West Virginia University  
 Western Michigan University  
 Wichita State University  
 Worcester Polytechnic Institute

<sup>1</sup>These departments were in Group II based on the 1982 NRC rankings. They are now in Group III because they were not included in the NRC study published in 1995.

## Salary Survey for New Recipients of Doctoral Degrees

The figures for 1996 were compiled from questionnaires sent to individuals who received doctoral degrees in the mathematical sciences during the 1995–1996 academic year from universities in the United States.

Questionnaires requesting information on salaries and professional experience were distributed to 922 recipients of degrees using addresses provided by the departments granting the degrees; 364 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 doctoral degree 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 1995 median salary in hundreds of dollars. Values plotted for other years are converted to 1995 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce. The 1996 salary data are not shown on the graphs because the deflator is not yet available for this year.

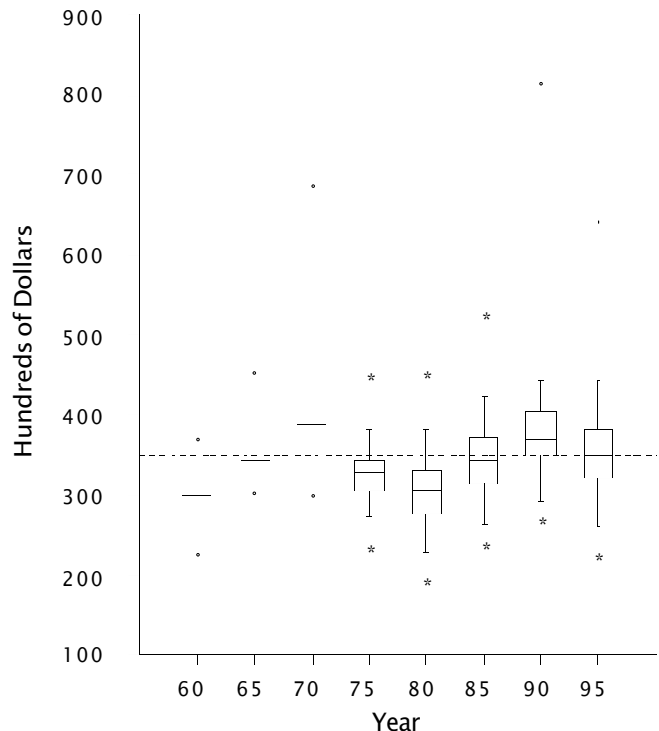
For a given year, the box shows the first and third quartiles and the median salary. (Prior to 1975, the quartiles are not available, and only the median is depicted by the horizontal stroke.) The “whiskers” give additional information about the spread of the data, extending to points that are 1.5 interquartile 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.

### Teaching or Teaching and Research Nine-Month Salaries (102 men + 38 women)

Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	49		65		80	300
1965	70		80		105	344
1970	85		110		195	387
1975	90	120	128	135	173	326
1980	105	155	171	185	250	305
1985	170	230	250	270	380	343
1990	230	305	320	350	710	368
1993	160	310	340	370	750	357
1994	150	330	350	375	730	334
1995	220	320	350	382	640	350
1996	240	333	360	400	636	----
<hr/>						
1993M	160	310	340	370	750	
1993F	230	310	338	380	520	
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1994M	150	329	350	378	730	
1994F	270	330	348	370	520	
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1995M	220	320	350	388	640	
1995F	240	323	350	380	525	
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1996M	240	330	360	400	636	
1996F	270	345	365	399	500	
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One year or less experience (79 men + 29 women)						
1996M	240	340	360	400	636	
1996F	280	350	374	399	500	

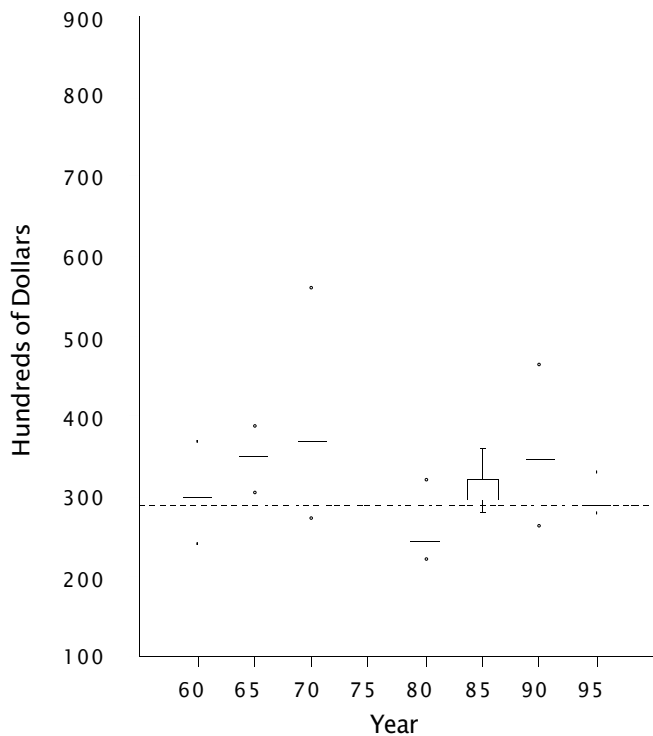
### Teaching or Teaching and Research Nine-Month Salaries



**Research  
Nine-Month Salaries  
(2 men + 1 woman)**

Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	52		65		80	300
1965	71		81		90	349
1970	78		105		160	369
1975	100		-----		110	-----
1980	125		137		180	244
1985	205		235		250	322
1990	230		300		404	345
1993	260		298		380	313
1994	254		280		300	267
1995	280		290		330	290
1996	240		-----		410	-----
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1993M	260		275		320	
1993F	-----		-----		-----	
<hr/>						
1994M	254		280		300	
1994F	-----		-----		-----	
<hr/>						
1995M	280		290		330	
1995F	-----		-----		-----	
<hr/>						
1996M	-----		-----		-----	
1996F	-----		-----		-----	
<hr/>						
One year or less experience (2 men + 1 woman)						
1996M	-----		-----		-----	
1996F	-----		-----		-----	

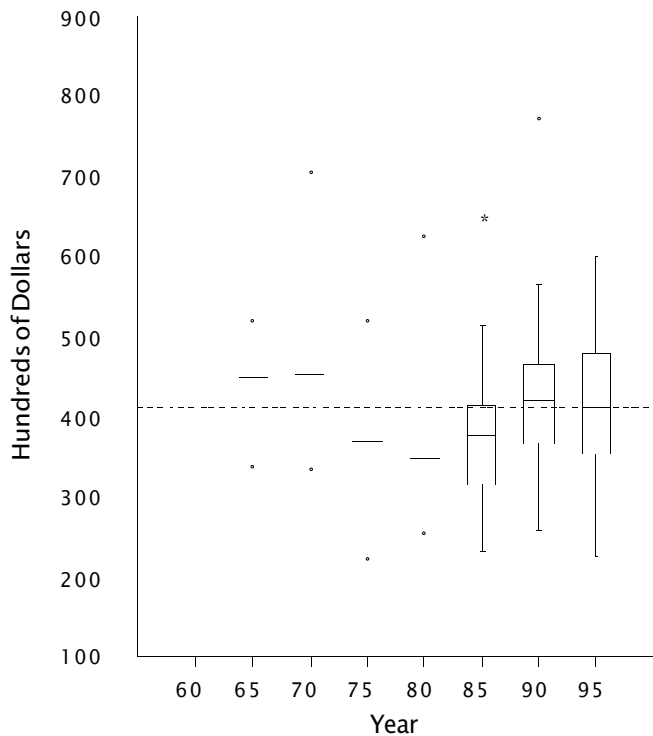
**Research  
Nine-Month Salaries**



**Teaching or Teaching and Research  
Twelve-Month Salaries  
(20 men + 7 women)**

Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	.....No data.....					
1965	78		104		121	448
1970	95		128		200	450
1975	87		145		204	370
1980	143		195		350	347
1985	220	230	273	300	470	374
1990	225	318	365	404	670	420
1993	300	355	370	500	680	388
1994	365	391	480	503	510	458
1995	300	354	410	478	600	410
1996	150	302	340	390	720	-----
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1993M	360	427	500	505	680	
1993F	300	334	353	370	370	
<hr/>						
1994M	365	401	455	510	510	
1994F	370	380	480	500	505	
<hr/>						
1995M	300	380	420	490	600	
1995F	-----	-----	-----	-----	-----	
<hr/>						
1996M	150	280	330	460	720	
1996F	330	340	358	368	400	
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One year or less experience (13 men + 6 women)						
1996M	150	240	303	360	560	
1996F	330	340	349	360	400	

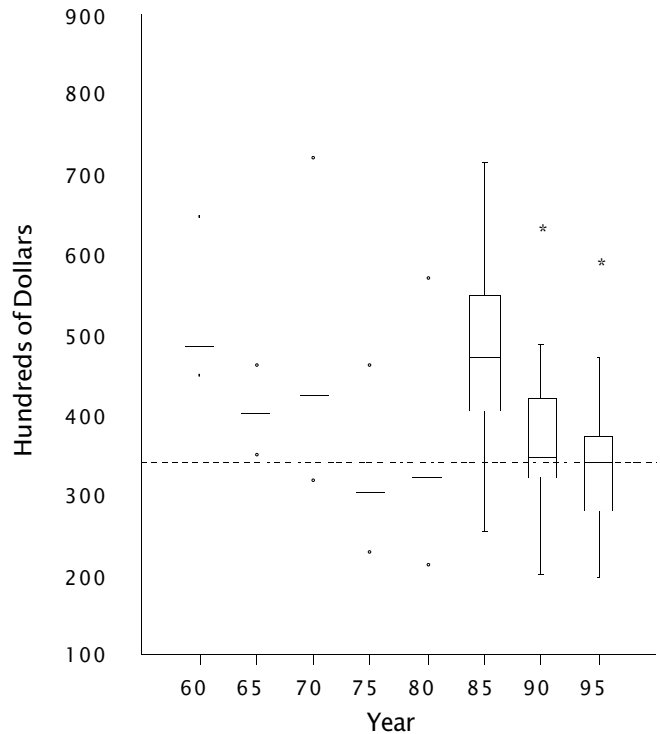
**Teaching or Teaching and Research  
Twelve-Month Salaries**



**Research  
Twelve-Month Salaries  
(23 men + 8 women)**

Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	97		105		140	485
1965	81		93		107	400
1970	90		120		205	422
1975	90		119		180	303
1980	120		180		321	321
1985	190	295	342	400	520	469
1990	180	280	300	365	546	345
1993	237	300	330	400	570	346
1994	210	330	350	400	490	334
1995	196	280	340	370	587	340
1996	192	270	330	400	585	-----
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1993M	237	272	310	365	480	
1993F	300	330	365	400	570	
<hr/>						
1994M	210	300	340	433	490	
1994F	330	340	365	400	400	
<hr/>						
1995M	196	280	350	370	587	
1995F	200	-----	287	-----	400	
<hr/>						
1996M	210	273	330	360	585	
1996F	192	265	390	455	500	
<hr/>						
One year or less experience (18 men + 5 women)						
1996M	210	275	330	360	400	
1996F	260	380	400	450	500	

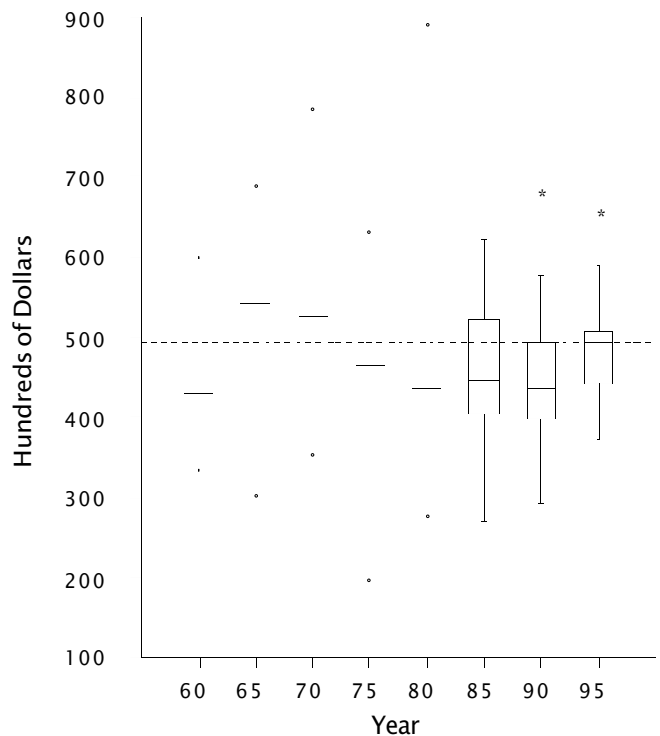
**Research  
Twelve-Month Salaries**



**Government  
Twelve-Month Salaries  
(11 men + 3 women)**

Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	72		93		130	430
1965	70		126		160	542
1970	100		150		223	528
1975	78		182		247	464
1980	156		244		501	435
1985	263	294	325	381	440	446
1990	320	345	378	430	587	435
1993	300	378	412	571	800	432
1994	250	355	455	530	576	434
1995	370	440	494	507	650	494
1996	360	420	427	504	650	-----
<hr/>						
1993M	300	402	480	611	800	
1993F	340	350	378	462	528	
<hr/>						
1994M	250	350	423	550	576	
1994F	-----	-----	-----	-----	-----	
<hr/>						
1995M	440	-----	499	-----	650	
1995F	-----	-----	-----	-----	-----	
<hr/>						
1996M	360	405	427	500	650	
1996F	-----	-----	-----	-----	-----	
<hr/>						
One year or less experience (10 men + 1 woman)						
1996M	360	390	425	500	534	
1996F	-----	-----	-----	-----	-----	

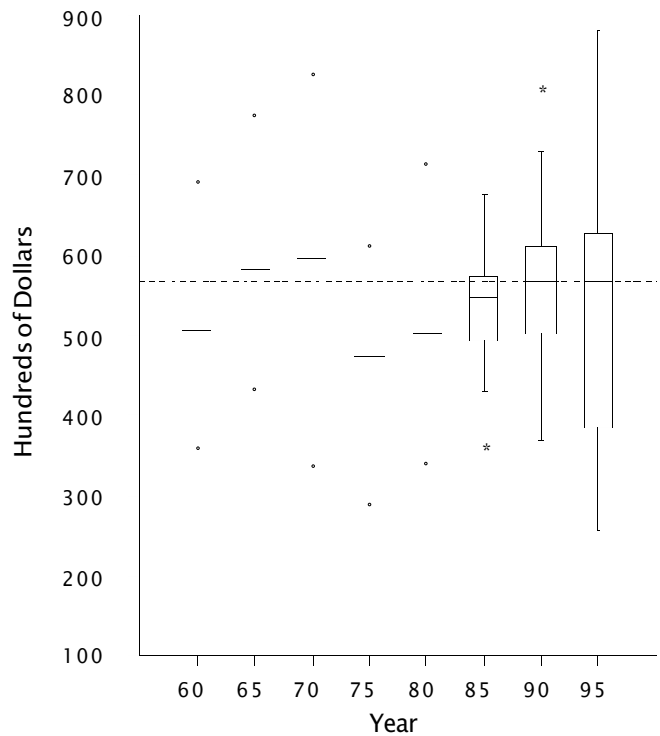
**Government  
Twelve-Month Salaries**



**Business and Industry  
Twelve-Month Salaries  
(42 men + 4 women)**

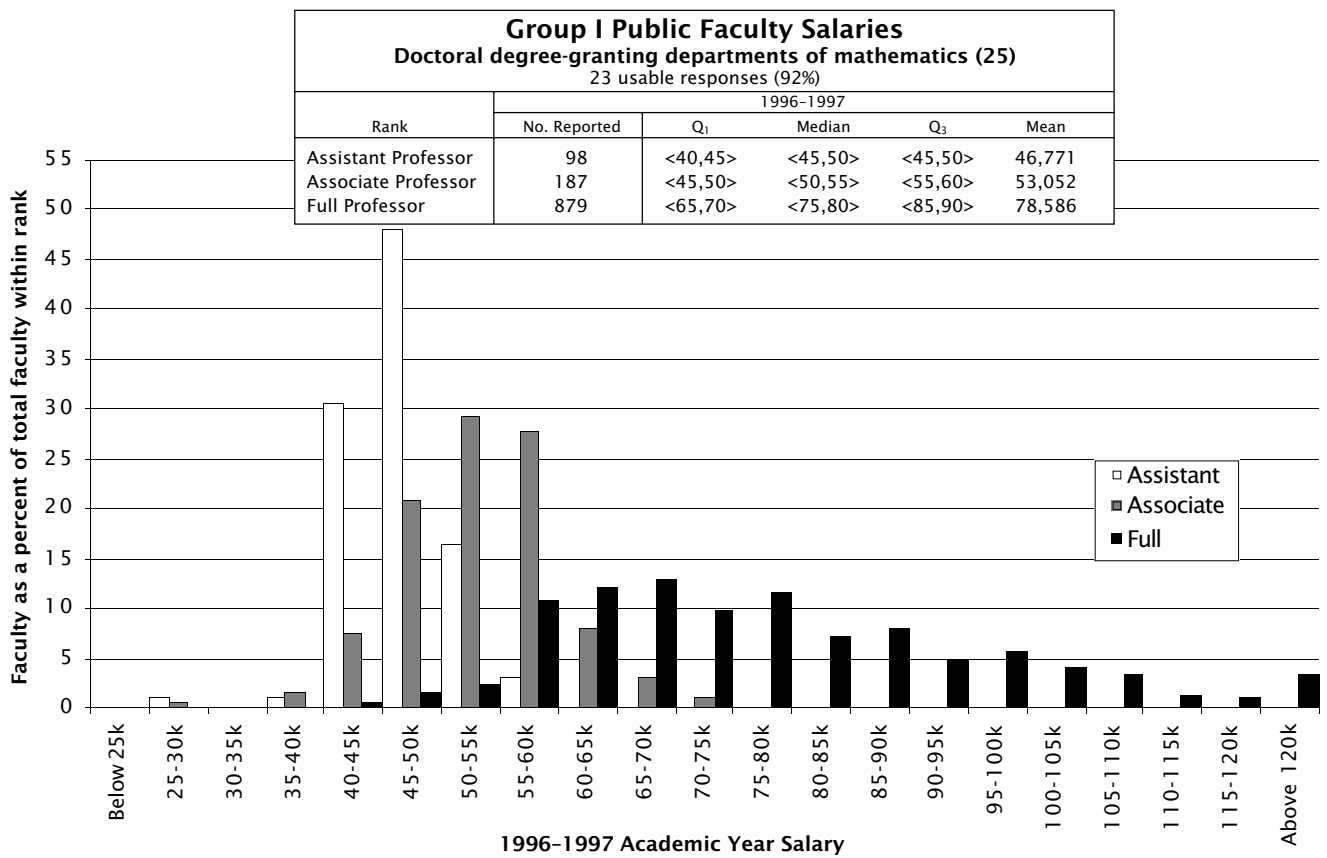
Ph.D. Year	Min	Q <sub>1</sub>	Median	Q <sub>3</sub>	Max	Reported Median in 1995 \$
1960	78		110		150	508
1965	100		136		180	585
1970	96		170		235	598
1975	114		187		240	477
1980	190		284		400	506
1985	260	360	400	420	493	548
1990	320	438	495	533	700	569
1993	270	480	560	600	1100	587
1994	200	418	525	600	750	501
1995	288	480	568	690	1250	568
1996	250	510	580	610	1000	-----
<hr/>						
1993M	270	500	560	600	1100	
1993F	424	475	568	600	670	
<hr/>						
1994M	200	405	490	600	750	
1994F	-----	-----	-----	-----	-----	
<hr/>						
1995M	288	480	550	690	1250	
1995F	397	550	630	680	1000	
<hr/>						
1996M	250	480	580	610	1000	
1996F	520	-----	590	-----	650	
<hr/>						
One year or less experience (28 men + 3 women)						
1996M	320	481	580	615	950	
1996F	-----	-----	-----	-----	-----	

**Business and Industry  
Twelve-Month Salaries**

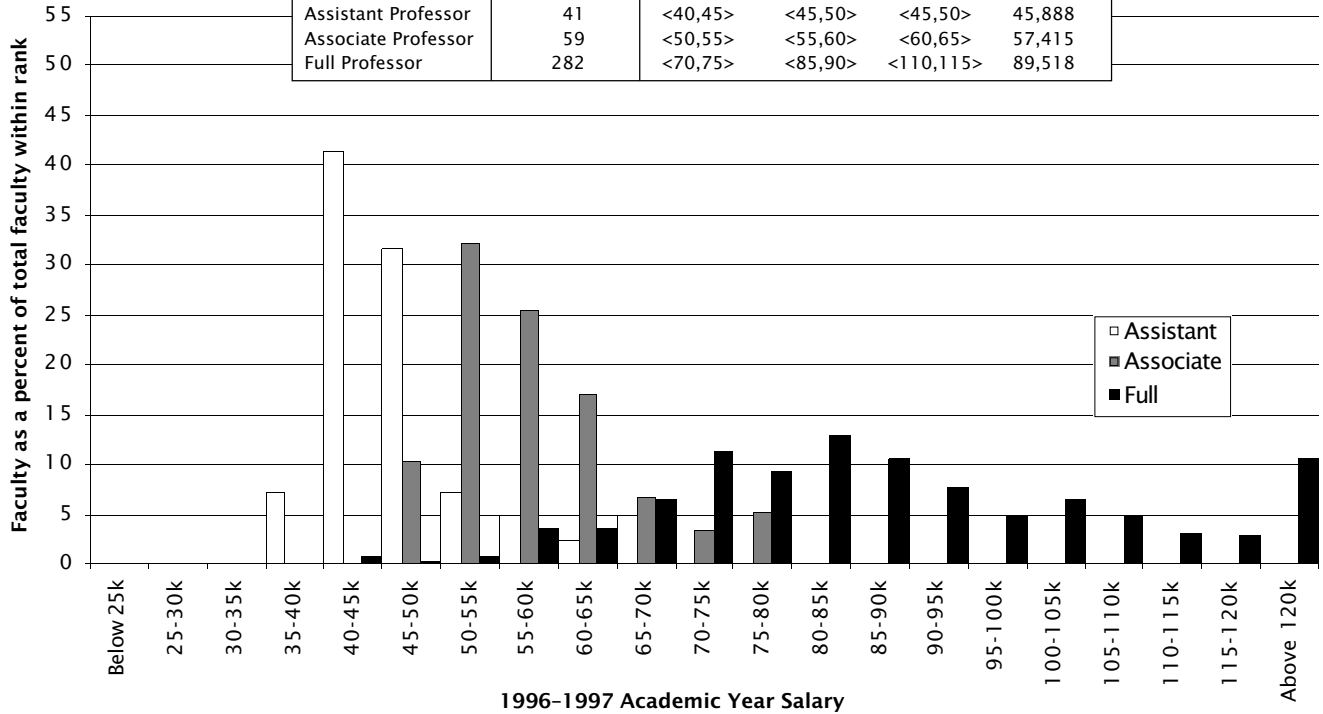


## Salary Survey for Faculty

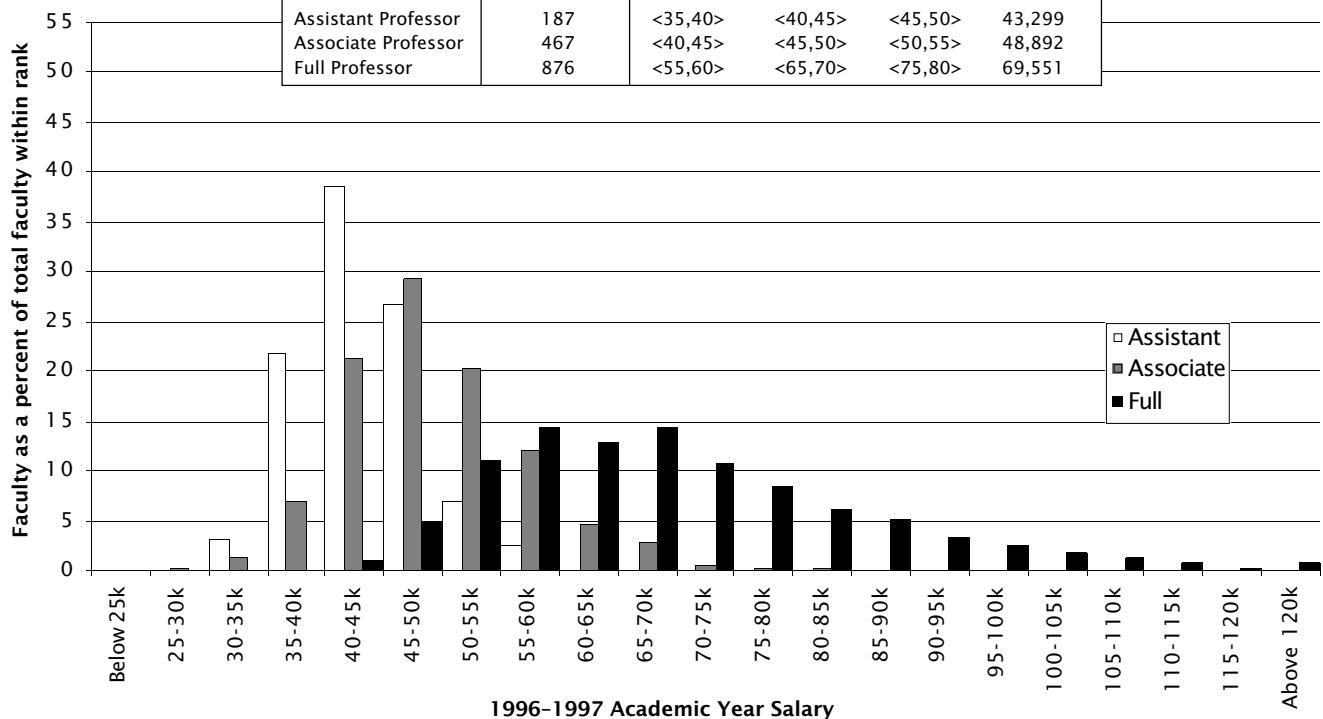
The charts on the following pages display faculty salary data for Groups I Public, I Private, II, III, IV, V, M, and B: faculty salary distribution by rank, mean salaries by rank, information on quartiles by rank, and the number of usable returns for the group. Since groupings used for the mathematics departments in this year's report differ from prior years, comparisons are not possible. Departments were asked to report the number of faculty whose 1996-1997 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  $\langle n, n+5 \rangle$ .



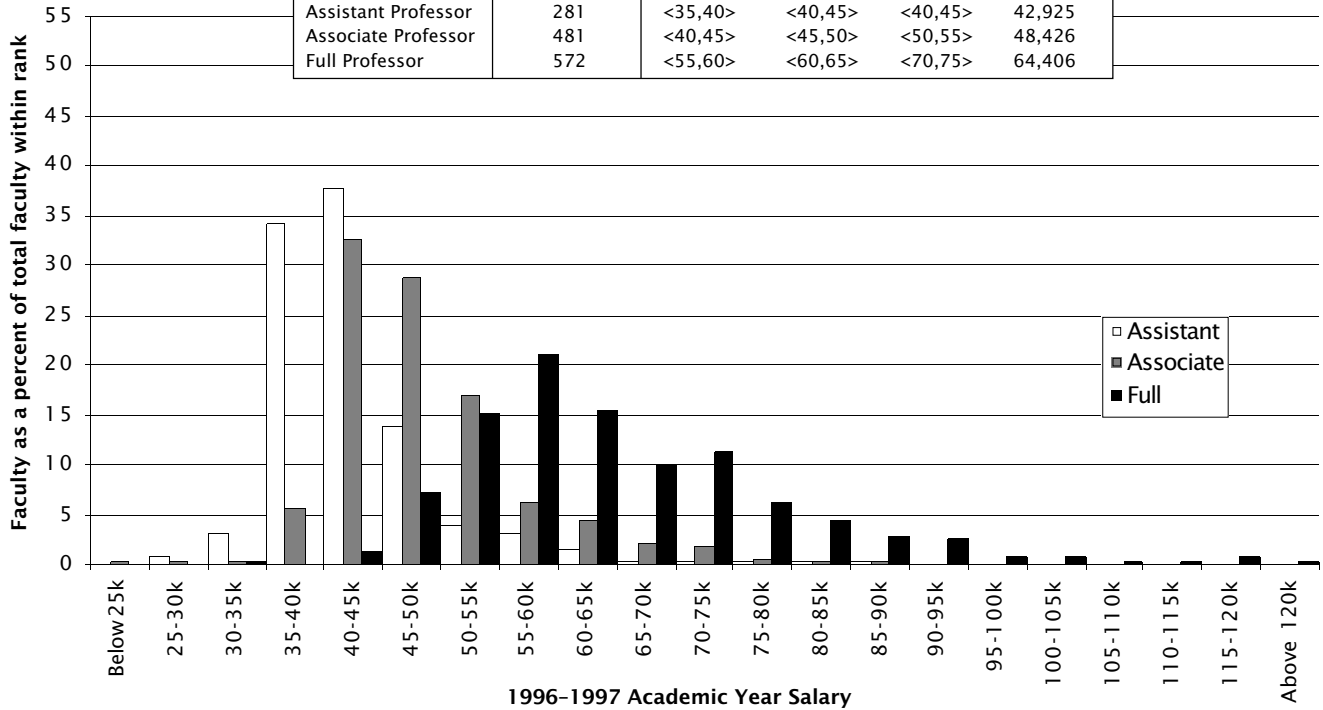
Group I Private Faculty Salaries					
Doctoral degree-granting departments of mathematics (23)					
15 usable responses (65%)					
Rank	1996-1997				
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean
Assistant Professor	41	<40,45>	<45,50>	<45,50>	45,888
Associate Professor	59	<50,55>	<55,60>	<60,65>	57,415
Full Professor	282	<70,75>	<85,90>	<110,115>	89,518



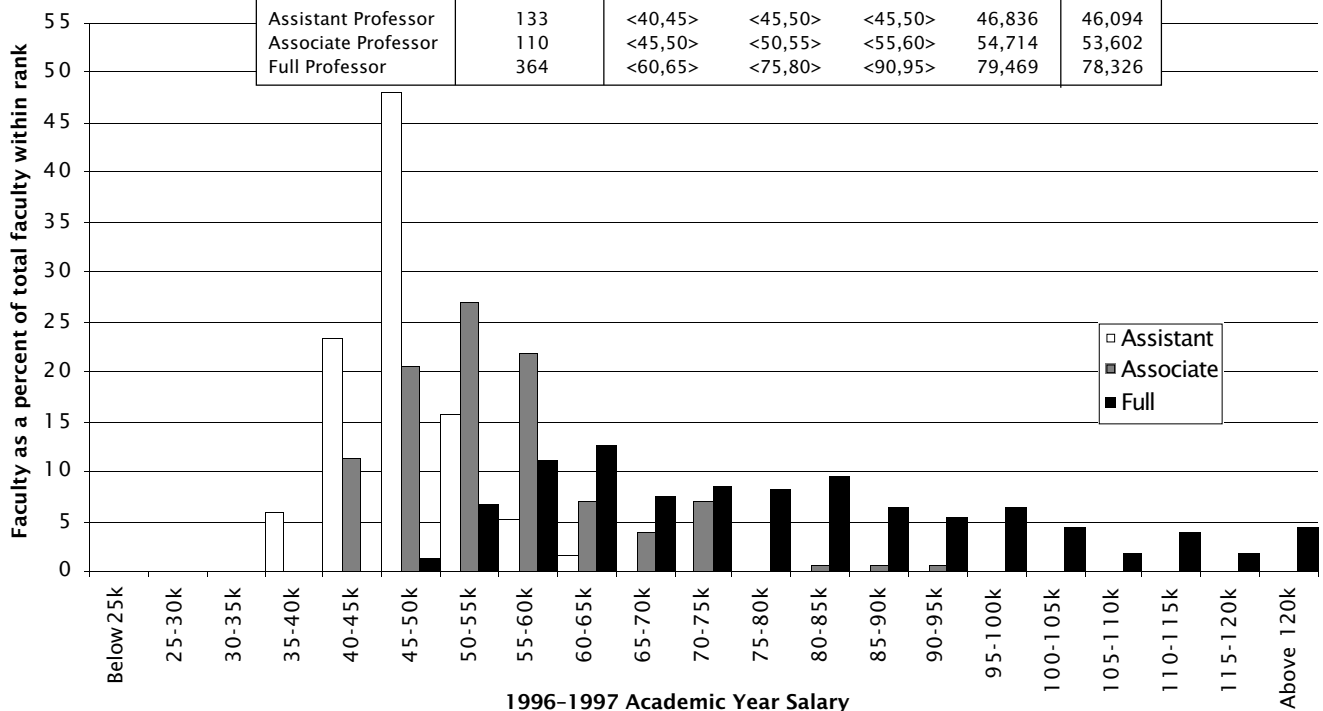
Group II Faculty Salaries					
Doctoral degree-granting departments of mathematics (56)					
45 usable responses (80%)					
Rank	1996-1997				
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean
Assistant Professor	187	<35,40>	<40,45>	<45,50>	43,299
Associate Professor	467	<40,45>	<45,50>	<50,55>	48,892
Full Professor	876	<55,60>	<65,70>	<75,80>	69,551



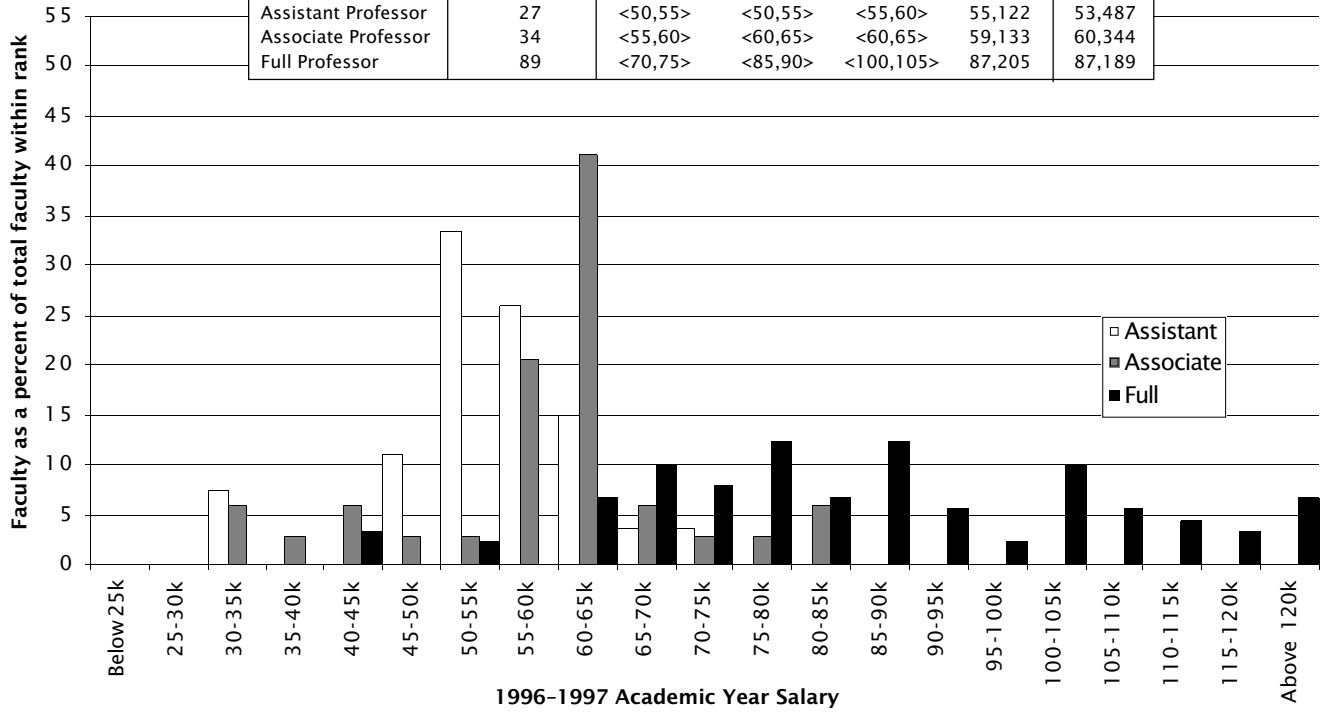
Group III Faculty Salaries					
Doctoral degree-granting departments of mathematics (72)					
58 usable responses (81%)					
Rank	1996-1997				
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean
Assistant Professor	281	<35,40>	<40,45>	<40,45>	42,925
Associate Professor	481	<40,45>	<45,50>	<50,55>	48,426
Full Professor	572	<55,60>	<60,65>	<70,75>	64,406



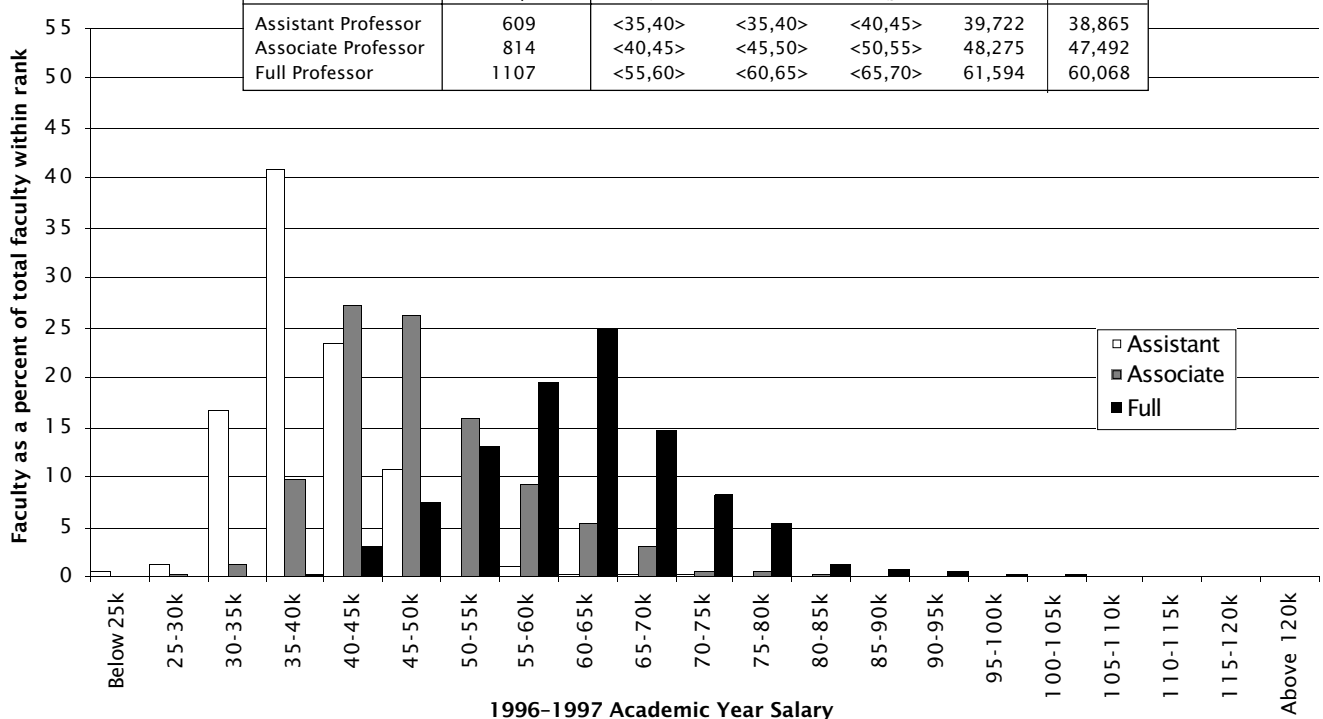
Group IV Faculty Salaries						
Doctoral degree-granting departments of statistics, biostatistics, biometrics (80)						
50 usable responses (63%)						
Rank	1996-1997					1995-1996
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean	Mean
Assistant Professor	133	<40,45>	<45,50>	<45,50>	46,836	46,094
Associate Professor	110	<45,50>	<50,55>	<55,60>	54,714	53,602
Full Professor	364	<60,65>	<75,80>	<90,95>	79,469	78,326



Group V Faculty Salaries						
Doctoral degree-granting departments of applied mathematics and oper. res. (33)						
11 usable responses (33%)						
Rank	1996-1997					1995-1996
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean	Mean
Assistant Professor	27	<50,55>	<50,55>	<55,60>	55,122	53,487
Associate Professor	34	<55,60>	<60,65>	<60,65>	59,133	60,344
Full Professor	89	<70,75>	<85,90>	<100,105>	87,205	87,189



Group M Faculty Salaries						
Master's degree-granting departments of mathematics (255)						
148 usable responses (58%)						
Rank	1996-1997					1995-1996
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean	Mean
Assistant Professor	609	<35,40>	<35,40>	<40,45>	39,722	38,865
Associate Professor	814	<40,45>	<45,50>	<50,55>	48,275	47,492
Full Professor	1107	<55,60>	<60,65>	<65,70>	61,594	60,068



Group B Faculty Salaries						
Bachelor's degree-granting departments of mathematics (884)						
394 usable responses (45%)						
Rank	1996-1997					1995-1996
	No. Reported	Q <sub>1</sub>	Median	Q <sub>3</sub>	Mean	Mean
Assistant Professor	792	<30,35>	<35,40>	<40,45>	32,993	37,127
Associate Professor	916	<35,40>	<40,45>	<45,50>	45,268	44,863
Full Professor	996	<45,50>	<55,60>	<60,65>	57,151	56,145

