

2006 Annual Survey of the Mathematical Sciences

(First Report)

Report on the 2005–2006 New Doctoral Recipients Faculty Salary Survey

Ellen E. Kirkman, James W. Maxwell, and Colleen Rose

The First Report of the 2006 Annual Survey gives a broad picture of 2005–06 new doctoral recipients from U.S. departments in the mathematical sciences, including their employment status in fall 2006. The First Report also presents salary data for faculty members in U.S. departments of mathematical sciences in four-year colleges and universities. This report is based on information collected from two questionnaires distributed to departments in April 2006. A follow-up questionnaire was distributed to the individual new doctoral recipients in October 2006. This questionnaire will be used to update and revise results in this report, which are based on information from the departments that produced the new doctorates. Those results will be published in the Second Report of the 2006 Annual Survey in the August 2007 issue of the Notices of the AMS. Another questionnaire concerned with data on fall 2006 course enrollments, graduate students, and departmental faculty was distributed to departments in September 2006. Results from this questionnaire will appear in the Third Report of the 2006 Annual Survey in the November 2007 issue of the Notices of the AMS.

The 2006 Annual Survey represents the fiftieth in an annual series begun in 1957 by the American Mathematical Society. The 2006 Survey is under the direction of the Data Committee, a joint committee of the American Mathematical Society, the American Statistical Association, the Institute of Mathematical Statistics, the Society of Industrial and Applied Mathematics, and the Mathematical Association of America. The current members of this committee are Richard Cleary, Amy Cohen-Corwin, Donald M. Davis, Nicholas M. Ercolani, Abbe H. Herzig, Donald R. King, Ellen E. Kirkman (chair), David J. Lutzer, Peter March, James W. Maxwell (ex officio), Polly Phipps, David E. Rohrlich, and Henry Schenck. The committee is assisted by AMS survey analyst Colleen A. Rose. Comments or suggestions regarding this Survey Report may be directed to the committee.

Ellen E. Kirkman is professor of mathematics, Wake Forest University. James W. Maxwell is AMS associate executive director for special projects. Colleen A. Rose is AMS survey analyst.

Report on the 2005–2006 New Doctoral Recipients

This report presents a statistical profile of recipients of doctoral degrees awarded by departments in the mathematical sciences at universities in the United States during the period July 1, 2005, through June 30, 2006. It includes a preliminary analysis of the fall 2006 employment plans of 2005–06 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, sex, and racial/ethnic group. All information came from the departments that awarded the degrees.

Table 1: Number of Departments Responding to Doctorates Granted Survey

Group I (Pu)	25 of 25 including 0 with 0 degrees
Group I (Pr)	22 of 23 including 0 with 0 degrees
Group II	52 of 56 including 0 with 0 degrees
Group III	67 of 75 including 11 with 0 degrees
Group IV	60 of 88 including 10 with 0 degrees
Group Va	19 of 21 including 1 with 0 degrees

See "Definitions of the Groups" on page 245.

Table 1 provides the departmental response rates for the 2006 Survey of New Doctoral Recipients. See page 245 for a description of the groups. No adjustments were made in this report for nonresponding departments.

This preliminary report will be updated in the Second Report of the 2006 Annual Survey using information gathered from the new doctoral recipients. The Second Report will appear in the August 2007 issue of the *Notices of the AMS*.

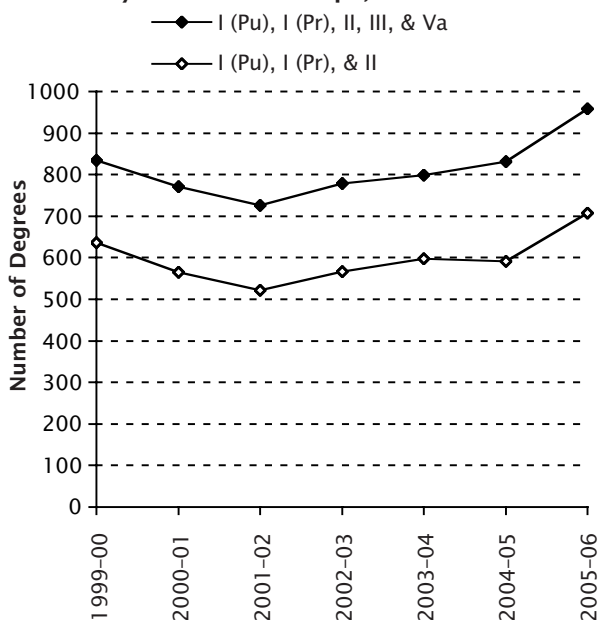
Changes in the Annual Survey occur over time, and these changes need to be considered when comparing results in this report to those in prior years. Information about changes that occurred in 1997 or later can be found in the First Report for the 2000 Annual Survey in the February 2001 issue of the *Notices of the AMS*.

In this First Report's tables referring to new doctoral recipients, "Fall" refers to results based on information about new doctoral recipients received from departments granting their degrees. This information is gathered in the first fall following the academic year in which the degrees were granted. "Final" refers to results based on supplemental information received from the new doctoral recipients themselves as well as additional new doctoral recipients not reported by departments in time for publication in the First Report. These

Table 2: New Doctoral Degrees Awarded by Group, Fall Count

Group	I (Pu)	I (Pr)	II	III	IV	Va	TOTAL
1996-97	297	187	228	132	197	72	1123
1997-98	306	174	264	129	213	77	1163
1998-99	292	152	241	136	243	69	1133
1999-00	256	157	223	132	284	67	1119
2000-01	233	129	203	125	237	81	1008
2001-02	218	139	164	124	222	81	948
2002-03	258	138	170	121	239	91	1017
2003-04	195	187	215	111	243	90	1041
2004-05	243	146	203	153	285	86	1116
2005-06	307	184	216	140	287	111	1245

Figure 1: New Doctoral Degrees Awarded by Combined Groups, Fall Count



Highlights

There were 1,245 new doctoral recipients reported for 2005-06 by departments responding in time for the 2006 First Report. This is the highest number ever reported.

All groups, except Group III, reported increased numbers of new doctorates. Group I (Pu) had the largest increase (64) (the highest number reported by this group since 1997-1998 (306)), and Group IV, while reaching a ten year high, showed the smallest increase (2). Only 522 (42%) of the new doctoral recipients for 2005-06 are U.S. citizens.

Based on responses from departments alone, the fall 2006 unemployment rate for the 1,066 new doctoral recipients whose employment status is known is 4.4%, down from 7.3% for fall 2005.

Sixty new doctoral recipients hold positions at the institution that granted their degree, although not necessarily in the same department. This is 6% of the new doctoral recipients who are currently known to have jobs and 9% of those who have academic positions in the U.S. Fourteen new doctoral recipients have part-time positions.

The number of new doctoral recipients employed in the U.S. is 884, up 133 from last year. The number of new doctoral recipients employed in academic positions in the U.S. increased to 671 from 602 last year. This is the highest number reported in the last two decades.

Of the 884 new doctoral recipients taking positions in the U.S., 167 (19%) have jobs in business and industry; the number of new doctoral recipients taking jobs in business and industry oscillated in the late 1990s, declined during 2001-2003, and has increased for the last three consecutive years 2004-2006. The fall 2006 number is up 45% from fall 2005, and the fall 2006 number is 1 less than the fall 2001 number. The number of new doctoral recipients taking jobs in government is up 12 (35%) over fall 2005.

Among the 884 new doctoral recipients having employment in the U.S., 404 (46%) are U.S. citizens (up from 325 (43%) last year). The number of non-U.S. citizens having employment in the U.S. is 480, up 13% from 426 last year.

Among the 343 new doctoral recipients hired by U.S. doctoral-granting departments, 43% are U.S. citizens (up from 38% last year). Among the 328 having other academic positions in the U.S., 54% are U.S. citizens (up from 51% last year).

Of the 1,245 new doctoral recipients, 394 (32%) are females, up 64 from fall 2005. Of the 552 U.S. citizen new doctoral recipients, 143 (27%) are females, up 23 from fall 2005.

Among the 522 U.S. citizen new doctoral recipients, 3 are American Indian or Alaska Native, 34 are Asian, 17 are Black or African American, 17 are Hispanic or Latino, 3 are Native Hawaiian or Other Pacific Islander, 444 are White, and 4 are unknown; each of these numbers is the same or larger than last year's number.

Group IV produced 287 new doctorates, of which 134 (47%) are females, compared to all other groups combined, where 260 (27%) are females. In Group IV, 84 (29%) of the new doctoral recipients are U.S. citizens (while in the other groups 46% are U.S. citizens).

Three hundred ninety-six new doctorates had a dissertation in statistics/ biostatistics (331) or probability (65), a 6% increase over last year's number. The next highest number was in algebra and number theory with 184. Those with dissertations in statistics/biostatistics or probability accounted for 32% of the new doctorates in 2005-06.

Table 3: Full-Time Graduate Students in Groups I, II, III, & Va, Fall 1996 to Fall 2005

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total full-time graduate students	9476	9003	8791	8838	9637	9361	9972	10444	10707	10565
Female	2760	2691	2770	2766	3016	2899	3136	3215	3245	3111
% Female	29%	30%	32%	31%	31%	31%	31%	31%	30%	29%
% U.S. citizen	57%	55%	55%	53%	53%	49%	51%	54%	55%	56%
Total first-year graduate students	2443	2386	2458	2664	2839	2875	2996	2711	3004	2832
Female	795	836	859	866	879	1014	1038	902	983	851
% Female	33%	35%	35%	33%	31%	35%	35%	33%	33%	30%

(Data Reprinted from Table 6B in Third Report, 2005 Annual Survey)

results are published each August in the Second Report.

Doctoral Degrees Granted in 2005–06

Table 2 shows the number of new doctoral degrees granted by the different doctoral groups surveyed in the Annual Survey for the past ten years. The 1,245 new doctorates granted by these departments in 2005–06 is an increase of 129 from the fall count for 2004–05, and the highest number of new doctorates ever reported in a First Report. Figure 1 presents the trends in doctorates granted for Groups I (Pu), I (Pr), II, III, and Va combined and Groups I (Pu), I (Pr), and II combined.

The response rates were above 90% for all groups except Groups III, and IV. Response rates increased in all groups, except Groups III and IV. Overall, five more departments responded in time for the First Report this year than responded last year.

The number 1,245 of new doctoral recipients is a preliminary count. A final count will appear in the Second Report in the August 2007 issue of the *Notices of the AMS*. Efforts continue to obtain data

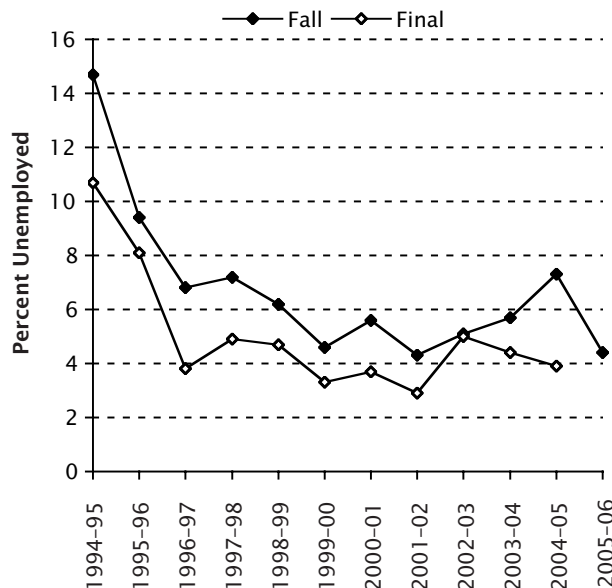
from as many of the nonresponding departments as possible.

From Table 2 we see that all groups, except Group III, showed an increase in the number of doctoral recipients from the previous year, but most of the increase (102) was in Group I (Pu) and Group I (Pr), combined. Group I (Pu) had the largest increase (64) (attaining the highest number of new doctorates reported by this group since 1997-1998 (306)), and Group IV, while reaching an eight year high, showed the smallest increase (2). Group V had the largest percentage increase (29%).

Table 3 gives historical information about various types of full-time graduate students in Groups I, II, III, and Va combined. These data, gathered in the 2005 Departmental Profile survey, are reprinted from Table 6B of the Third Report of the 2005 Annual Survey (*Notices of the AMS*, December 2006). From this data we can see that total full-time graduate enrollment in the doctoral mathematics groups has been generally increasing since 1999, although it was down in fall 2005. Similarly, the number of first-year full-time graduate students declined in 2005 after steadily increasing since 1998. The number of full-time graduate students who are U.S. citizens has been increasing since 2002, and the number of non-U.S. citizens has been decreasing since 2003. The number of female full-time graduate students, which had been increasing since 2002, dropped 4% in 2005. The percentage of females among full-time graduate students in the combined mathematics groups has remained relatively stable over the 10-year period shown.

Figure 2: Percentage of New Doctoral Recipients Unemployed (as reported in the respective Annual Survey Reports 1994–2006)

Report	Fall	Final
1994-95	15.0%	11.0%
1995-96	9.4%	8.1%
1996-97	6.8%	3.8%
1997-98	7.2%	4.9%
1998-99	6.2%	4.7%
1999-00	4.6%	3.3%
2000-01	5.6%	3.7%
2001-02	4.3%	2.9%
2002-03	5.1%	5.0%
2003-04	5.7%	4.4%
2004-05	7.3%	3.9%
2005-06	4.4%	*



*To appear in the Second Report. Note: Prior to 1998-99, the percentages include new doctoral recipients from Group Vb.

The 2005-06 numbers in Table 2 will be broken down in various ways, such as by sex, in later sections of this report. The names of the 1,245 new doctoral recipients are found on pages 264-82 of this issue of the *Notices*.

Employment Plans of 2005-06 New Doctoral Recipients

Tables 4A, 4B, and 4C each provide a different cross-tabulation of the 1,245 new doctoral recipients

**Table 4A: Employment Status of 2005-06 New Doctoral Recipients
in the Mathematical Sciences by Field of Thesis**

TYPE OF EMPLOYER	FIELD OF THESIS												TOTAL	
	Algebra/ Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/ Topology	Discr. Math./ Combin./ Logic/ Comp. Sci.	Probability	Statistics/ Biostat.	Applied Math.	Numerical Analysis/ Approximations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown		
Group I (Public)	17	8	9	7	0	1	9	6	1	13	1	0	72	
Group I (Private)	17	3	18	2	7	3	9	4	1	11	0	0	75	
Group II	17	15	5	5	4	2	5	4	3	10	0	0	70	
Group III	4	2	5	5	2	10	5	3	0	7	2	0	45	
Group IV	0	0	0	1	7	59	1	0	0	0	1	0	69	
Group Va	0	0	0	1	1	1	4	4	1	0	0	0	12	
Master's	12	3	4	6	3	13	2	3	0	7	3	0	56	
Bachelor's	32	11	17	10	7	12	7	11	2	14	5	1	129	
Two-Year College	2	2	0	0	0	2	0	0	1	2	2	0	11	
Other Academic Dept.	2	5	2	6	3	45	19	5	1	6	2	1	97	
Research Institute/ Other Nonprofit	8	0	4	2	0	10	5	1	1	4	0	0	35	
Government	3	2	0	2	0	15	12	7	2	3	0	0	46	
Business and Industry	8	9	5	8	14	88	22	5	3	5	0	0	167	
Non-U.S. Academic	31	9	17	14	5	9	8	2	2	7	1	1	106	
Non-U.S. Nonacademic	4	0	2	1	2	7	3	0	0	2	0	0	21	
Not Seeking Employment	3	0	1	0	1	2	1	0	0	0	0	0	8	
Still Seeking Employment	8	3	3	8	3	4	7	5	0	6	0	0	47	
Unknown (U.S.)	9	5	7	4	2	14	19	3	1	8	2	0	74	
Unknown (non-U.S.)*	7	4	7	2	4	34	21	13	3	9	0	1	105	
TOTAL	184	81	106	84	65	331	159	76	22	114	19	4	1245	
Column	Male	148	61	84	61	52	176	109	53	17	81	8	1	851
Subtotals	Female	36	20	22	23	13	155	50	23	5	33	11	3	394

*Includes those whose status is reported as "unknown" or "still seeking employment".

**Table 4B: Employment Status of 2005-06 New Doctoral Recipients
in the Mathematical Sciences by Type of Degree-Granting Department**

TYPE OF EMPLOYER	TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT							TOTAL	Row Subtotals	
	Group I (Public) Math.	Group I (Private) Math.	Group II Math.	Group III Math.	Group IV Statistics	Group Va Applied Math.	Male		Female	
Group I (Public)	33	19	14	1	0	3	72	58	14	
Group I (Private)	27	34	4	0	3	7	75	62	13	
Group II	28	13	17	3	2	7	70	52	18	
Group III	5	4	8	19	6	3	45	30	15	
Group IV	3	0	1	1	62	2	69	41	28	
Group Va	1	3	0	0	0	8	12	7	5	
Master's	7	3	21	18	6	1	56	37	19	
Bachelor's	40	13	37	28	7	4	129	94	35	
Two-Year College	3	1	2	2	0	3	11	9	2	
Other Academic Dept.	10	9	12	14	44	8	97	61	36	
Research Institute/ Other Nonprofit	8	9	7	0	7	4	35	17	18	
Government	7	3	11	2	13	10	46	29	17	
Business and Industry	27	14	19	9	80	18	167	101	66	
Non-U.S. Academic	34	25	22	14	8	3	106	83	23	
Non-U.S. Nonacademic	6	5	2	1	6	1	21	17	4	
Not Seeking Employment	1	2	1	2	1	1	8	2	6	
Still Seeking Employment	10	10	7	8	4	8	47	32	15	
Unknown (U.S.)	24	6	14	10	14	6	74	53	21	
Unknown (non-U.S.)*	31	11	17	8	24	14	105	66	39	
TOTAL	307	184	216	140	287	111	1245	851	394	
Column	Male	233	147	158	91	153	69	851		
Subtotals	Female	74	37	58	49	134	42	394		

*Includes those whose status is reported as "unknown" or "still seeking employment".

Table 4C: Field of Thesis of 2005–06 New Doctoral Recipients by Type of Degree-Granting Department

TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT	FIELD OF THESIS											TOTAL	
	Algebra/Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/Topology	Discr. Math./Combin./Logic/Comp. Sci.	Probability	Statistics/Biostat.	Applied Math.	Numerical Analysis/Approximations	Linear Nonlinear Optim./Control	Differential, Integral, & Difference Equations	Math. Educ.		Other/Unknown
Group I (Public)	82	26	43	24	28	8	30	12	4	44	3	3	307
Group I (Private)	53	11	29	19	11	3	34	5	2	17	0	0	184
Group II	33	32	22	13	9	8	38	24	8	26	3	0	216
Group III	15	12	12	20	2	25	14	12	1	14	12	1	140
Group IV	0	0	0	0	6	272	9	0	0	0	0	0	287
Group Va	1	0	0	8	9	15	34	23	7	13	1	0	111
Column Total	184	81	106	84	65	331	159	76	22	114	19	4	1245

Table 5A: 2005–06 New Doctoral Recipients Employed in the U.S. by Type of Degree-Granting Department

Type of Employer in U.S.	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Groups I, II, III, IV, and Va	99	73	44	24	73	30	343
Master's, Bachelor's, and 2-Year Colleges	50	17	60	48	13	8	196
Other Academic and Research Institutes	18	18	19	14	51	12	132
Government	7	3	11	2	13	10	46
Business and Industry	27	14	19	9	80	18	167
TOTAL	201	125	153	97	230	78	884

in the mathematical sciences. These tables contain a wealth of information about these new doctoral recipients, some of which will be discussed in this report. Note that these tables give a breakdown by sex for type of employer, type of degree-granting department, and field of thesis. Keep in mind that the results in this report come from the departments giving the degrees and not from the degree recipients themselves. These tables will be updated using information from the doctoral recipients themselves and will appear in the 2006 Second Report in the August 2007 issue of the *Notices of the AMS*.

The last column (Total) in Table 4A can be used to find the overall unemployment rate. In this and other unemployment calculations in this report, the individuals whose employment status is not known (Unknown (U.S.) and Unknown (non-U.S.)) are first removed, and the unemployment fraction is the number still seeking employment divided by the total number of individuals left after the "Unknowns" are removed. The overall unemployment rate for these data is 4.4%. This figure will be updated later with information gathered from the individual new doctoral recipients. The figure for fall 2005 was 7.3%. Figure 2 shows how this unemployment rate compares with other years over the past decade. The unemployment rates, calculated using Table 4B, vary from group to group, with a high of 8.8% for Group Va and lows of 1.6% and 3.8% for Groups IV and II, respectively.

There are 884 new doctoral recipients employed in the U.S. Table 5A gives a breakdown of type of employer by type of degree-granting department

Table 5B: Number of New Doctoral Recipients Taking Positions in Business and Industry in the U.S. by Type of Degree-Granting Department, Fall 2002 to Fall 2006

Year	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Fall 2002	15	12	19	6	56	15	123
Fall 2003	19	13	5	8	45	7	97
Fall 2004	9	13	9	9	50	9	99
Fall 2005	5	9	14	15	64	8	115
Fall 2006	27	14	19	9	80	18	167

Table 5C: Number of New Doctoral Recipients Taking U.S. Academic Positions by Type of Degree-Granting Department, Fall 2002 to Fall 2006

Year	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Fall 2002	120	83	91	86	92	31	503
Fall 2003	123	76	117	60	118	40	534
Fall 2004	110	113	130	70	142	49	614
Fall 2005	131	88	130	83	131	39	602
Fall 2006	167	108	123	86	137	50	671

Table 5D: Academic Positions in U.S. Filled by New Doctoral Recipients by Type of Hiring Department, Fall 2002 to Fall 2006

Year	Group					TOTAL
	I-III	IV	Va	M&B	Other	
Fall 2002	213	46	7	138	99	503
Fall 2003	203	39	9	156	127	534
Fall 2004	222	63	17	154	158	614
Fall 2005	231	45	12	188	126	602
Fall 2006	262	69	12	185	143	671

for these 884 new doctoral recipients. Of these, 671 (76%) hold academic positions, 46 (5%) are employed by government, and 167 (19%) hold positions in business and industry.

In the First Report for 2004–05, there were 751 new doctoral recipients employed in the U.S., of which 602 (80%) held academic positions, 34 (5%) were in government, and 115 (15%) were in business and industry. The number of new doctoral recipients employed in the U.S. increased in all categories of Table 5A. "Business and Industry" showed the largest increase at 45%, and "Master's, Bachelor's and Two-Year Colleges" showed the smallest increase at 1%.

Table 5B shows the number of new doctoral recipients who took positions in business and industry by the type of department granting their degree for fall 2002 to fall 2006. The number of new doctoral recipients taking jobs in business and industry oscillated in the late 1990s, declined during 2001–2003, and has increased for the three consecutive years 2004–2006. The fall 2006 number is up 45% from fall 2005, and the fall 2006 number is 1 less than the fall 2001 number (168). The number of new doctoral recipients taking jobs in government is up 12 (35%) over fall 2005.

Among the 884 new doctoral recipients known to have employment in the U.S. in fall 2006, Group III has the smallest percentage taking jobs in business and industry at 9% and Group IV the highest at 35%.

Table 5C shows the number of new doctoral recipients who took academic positions in the U.S. by type of department granting their degree for fall 2002 to fall 2006. The number of new doctoral recipients taking academic employment in fall 2006 has increased 11%, reaching a 20 year high. Among the 884 new doctoral recipients employed in the U.S. in fall 2006, 76% have academic positions. This percentage is highest for Group III at 89% and lowest for Groups IV at 60%.

Table 5D shows the number of positions filled with new doctoral recipients for each type of academic employer. Increases in positions filled by new doctoral recipients were realized by all groups except Groups Va, and M&B (combined).

The biggest increases in hires of new doctorates into academic positions were hires in Group IV (53% increase) and in Group I(Pr) (50% increase). Hires of new doctorates into positions at research institutes increased 59%, from 22 in 2005 to 35 in 2006.

In fall 2006, 60 new doctoral recipients held positions in the institution that granted their degree, although not necessarily in the same department. This represents 6.8% of new doctoral recipients who are currently employed in the U.S. and 9% of the U.S. academic positions held by new doctoral recipients. In fall 2005 there were 57 such individuals making up 6.5% of the new doctoral recipients who were employed at the time of the First Report. Fourteen new doctoral recipients have taken part-time positions in fall 2006 compared with 23 in fall 2005.

Table 5E: Females as a Percentage of 2005–06 New Doctoral Recipients Produced by and Hired by Doctoral-Granting Groups

Percent	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Produced	24%	20%	27%	35%	47%	38%	32%
Hired	19%	17%	26%	33%	41%	42%	27%

Table 5G: 2005–06 New Doctoral Recipients Having Employment in the U.S. by Type of Employer and Citizenship

U.S. EMPLOYER	CITIZENSHIP		TOTAL
	U.S.	Non-U.S.	
Academic	322	349	671
Groups I–Va	146	197	343
M, B, & 2-Year	127	69	196
Other Acad. & Research Inst.	49	83	132
Government, Business & Industry	82	131	213
TOTAL	404	480	884

Table 5F: Employment Status of 2005–06 New Doctoral Recipients by Citizenship Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	404	50	410	20	884
U.S. Academic	322	34	301	14	671
Groups I, II, III, and Va	119	16	132	7	274
Group IV	27	6	34	2	69
Non-Ph.D. Department	162	10	116	5	293
Research Institute/Other Nonprofit	14	2	19	0	35
U.S. Nonacademic	82	16	109	6	213
Non-U.S. Employer	33	1	93	0	127
Non-U.S. Academic	32	1	73	0	106
Non-U.S. Nonacademic	1	0	20	0	21
Not Seeking Employment	4	1	3	0	8
Still Seeking Employment	30	4	13	0	47
SUBTOTAL	471	56	519	20	1066
Unknown (U.S.)	50	7	17	0	74
Unknown (non-U.S.)*	1	1	101	2	105
TOTAL	522	64	637	22	1245

*Includes those whose status is reported as "unknown" or "still seeking employment".

Table 6: Sex, Race/Ethnicity, and Citizenship of 2005–06 New Doctoral Recipients

RACIAL/ETHNIC GROUP	MALE					FEMALE					TOTAL
	U.S. CITIZENS	NON-U.S. CITIZENS			Total Male	U.S. CITIZENS	NON-U.S. CITIZENS			Total Female	
		Permanent Visa	Temporary Visa	Unknown Visa			Permanent Visa	Temporary Visa	Unknown Visa		
American Indian or Alaska Native	3	0	0	0	3	0	0	0	0	0	3
Asian	21	15	263	5	304	13	16	144	3	176	480
Black or African American	12	2	14	1	29	5	2	4	0	11	40
Hispanic or Latino	12	3	27	0	42	5	2	8	1	16	58
Native Hawaiian or Other Pacific Islander	3	0	1	0	4	0	0	1	0	1	5
White	324	14	114	4	456	120	9	52	4	185	641
Unknown	4	1	8	0	13	0	0	5	0	5	18
TOTAL	379	35	427	10	851	143	29	214	8	394	1245

Information about 2005–06 Female New Doctoral Recipients

Tables 4A and 4B give male and female breakdowns of the new doctoral recipients in 2005–06 by Field of Thesis, by Type of Degree-Granting Department, and by Type of Employer.

Overall, 394 (32%) of the 1,245 new doctoral recipients in 2005–06 are female. In 2004–05, 330 (30%) of the new doctoral recipients were female. This percentage varies over the different groups, and these percentages are given in the first row of Table 5E. This year the percentage of females produced is highest again for Group IV at 47%, compared with 44% last year. While Group I (Pr) produced the lowest percentage again this year (20%), it is up from last year's percentage of 18%.

The second row of Table 5E gives the percentage of the new doctoral recipients hired who are female for each of the Groups I, II, III, IV, and Va. In addition, 34% of the new doctoral recipients hired in Group M, master's departments, are female; 27% of the new doctoral recipients hired in Group B, bachelor's departments, are female, up from 29% last year. This year, as well as last year, Group IV hired the highest percentage of women (41% this year and 42% last year).

The unemployment rate for female new doctoral recipients is 4.5%, compared to 4.4% for males and 4.4% overall.

The percentage of female new doctoral recipients within fields of thesis ranged from 20% in both algebra/number theory and probability, to 47% in statistics, and 58% in mathematics education.

Later sections in this First Report give more information about the female new doctoral recipients by citizenship and the female new doctoral recipients in Group IV.

Employment Information about 2005–06 New Doctoral Recipients by Citizenship and Type of Employer

Table 5F shows the pattern of employment within employer categories broken down by citizenship status of the new doctoral recipients.

The unemployment rate for the 522 U.S. citizens is 6.4% compared to 5.3% in fall 2005. The unemployment rate for non-U.S. citizens is 2.9%. This varies by type of visa. The unemployment rate for non-U.S. citizens with a permanent visa is 7.1%, while that for non-U.S. citizens with a temporary visa is 2.5%. Among U.S. citizens whose employment status is known, 86% are employed in the U.S. Among non-U.S. citizens with a permanent visa whose employment status is known, 89% have jobs in the U.S. (last year this percentage was 85%), while the similar percentage for non-U.S. citizens with a temporary visa is 79% (last year the percentage was 72%). The number of non-U.S. citizens having employment in the U.S. is 480, up 13% from 426 last year.

Table 5G is a cross-tabulation of the 884 new doctoral recipients who have employment in the U.S. by citizenship and broad employment categories, using numbers from Table 5F. Of the 884 new doctoral recipients having jobs in the U.S., 46% are U.S. citizens (up from 43% last year). Of the 343 new doctoral recipients who took jobs in U.S. doctoral-granting departments, 43% are U.S. citizens (up from 38% last year). Of the 328 who took other academic positions, 54% are U.S. citizens (up from 51% last year). Of the 213 who took nonacademic positions, 38% are U.S. citizens. Of the 404 U.S. citizens employed in the U.S., 36% have jobs in a doctoral-granting department, 44% are in other academic positions, and 20% are in nonacademic positions. For the 480 non-U.S. citizens employed in the U.S., the analogous percentages are 41%, 32%, and 27% respectively.

Table 7: U.S. Citizen Doctoral Recipients, Fall Counts

Year	Total Doctorates Granted by U.S. Institutions	Total U.S. Citizen Doctoral Total	%
1980-81	839	567	68%
1985-86	755	386	51%
1990-91	1061	461	43%
1995-96*	1150	493	43%
1999-00	1119	537	48%
2000-01	1008	494	49%
2001-02	948	418	44%
2002-03	1017	489	48%
2003-04	1041	441	42%
2004-05	1116	433	39%
2005-06	1245	522	42%

*Prior to 1998-99, the counts include new doctoral recipients from Group Vb. In addition, prior to 1982-83, the counts include recipients from computer science departments.

Sex, Race/Ethnicity, and Citizenship Status of 2005-06 New Doctoral Recipients

Table 6 presents a breakdown of new doctoral recipients according to sex, racial/ethnic group, and citizenship status. The information reported in this table was obtained in summary form from the departments granting the degrees.

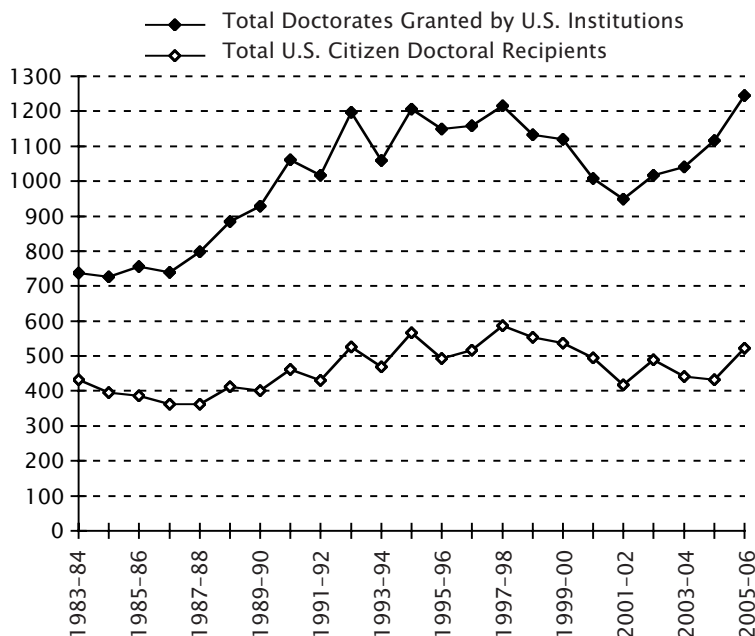
There were 522 (42%) U.S. citizens among the 1,245 new doctoral recipients in 2005-06. Among U.S. citizens, 3 are American Indian or Alaska Native (male), 34 are Asian (21 males and 13 females), 17 are Black or African American (12 males and 5 females), 17 are Hispanic or Latino (12 males and 5 females), 3 are Native Hawaiian or Other Pacific Islander (males), 444 are White (324 males and 120 females), and 4 are Unknown (males). Among non-U.S. citizens, there are 446 Asians, 23 Blacks or African Americans, 41 Hispanics or Latinos, 2 Native Hawaiian or Other Pacific Islander, 197 Whites,

Table 8: Sex of U.S. Citizen Doctoral Recipients, Fall Counts

Year	Total U.S. Citizen Doctoral Recipients	Male	Female	% Female
1980-81	567	465	102	18%
1985-86	386	304	82	21%
1990-91	461	349	112	24%
1995-96*	493	377	116	24%
1999-00	537	379	158	29%
2000-01	494	343	151	31%
2001-02	418	291	127	30%
2002-03	489	332	157	32%
2003-04	441	297	144	33%
2004-05	433	313	120	28%
2005-06	522	379	143	27%

*Prior to 1998-99, the counts include new doctoral recipients from Group Vb. In addition, prior to 1982-83, the counts include recipients from computer science departments.

Figure 3: U.S. Citizen Doctoral Recipients, Fall Counts



and 14 unknown. The total number in each ethnic group was up in 2006 over 2005, as well as the total number of American citizens of each ethnic group; e.g. the number of Black or Afro-American U.S. citizens increased from 14 to 17, and the number of Hispanic or Latino U.S. citizens increased from 12 to 17.

Table 7 (and Figure 3) gives the number of new U.S. doctoral recipients and the number of U.S. citizens back to 1980-81. The 522 U.S. citizen new doctoral recipients is down by 15 (3%) from 1999-

Figure 4: Females as a Percentage of U.S. Citizen Doctoral Recipients and Graduate Students, Fall Counts

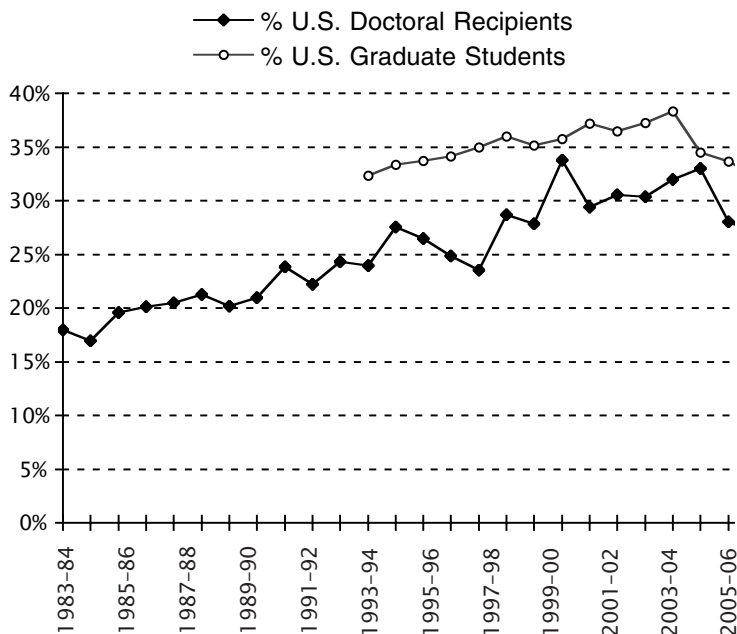


Table 9: Sex and Citizenship of 2005–06 New Doctoral Recipients by Type of Degree Granting Department

CITIZENSHIP	GROUP												TOTAL	
	I (Pu)		I (Pr)		II		III		IV		Va			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
U.S.	112	30	70	19	78	24	36	22	50	34	33	14	379	143
Non-U.S.	121	44	77	18	80	34	55	27	103	100	36	28	472	251
TOTAL	233	74	147	37	158	58	91	49	153	134	69	42	851	394

00. The percentage of U.S. citizen new doctoral recipients has increased this year to 42% from 39% in fall 2005, while in both years the total number of doctorates granted increased.

Females make up 27% of the 522 U.S. citizens receiving doctoral degrees in the mathematical sciences in 2005–06. Last year this percentage was 28%. Among the 723 non-U.S. citizen new doctoral recipients, 35% (251) are female, up from last year’s 31%.

Table 8 (and Figure 4) gives the historical record of U.S. citizen new doctoral recipients, broken down by male and female for past years, going back to 1980–81. The number of female U.S. citizen new doctoral recipients is down 15 (9%) from 158 in 1999–00 and down 24% from an all-time high of 187 in 1998–99. Figure 4 also displays the percentage of females among U.S. citizen (full-time) graduate students beginning in fall 1993. Recent increases in the number of U.S. citizen graduate students (see Table 3) are due to increases in the number of males, hence the declines in the percentage of females.

Table 9 gives a sex and citizenship breakdown of the new doctorates within each of the six groups of doctoral-granting departments. Among all 1,245 new doctoral recipients, 45% of the males and 36% of the females are U.S. citizens. Within the groups the percentage of the new doctoral recipients who are U.S. citizens is lowest in Group IV at 29% and highest in Groups I(Pr) and I(Pu), both at 48%. The number of

U.S. citizen new doctoral recipients is lower than the number of non-U.S. citizen new doctoral recipients in all doctoral granting groups for 2005–06, with the exception of females in Group I(Pr).

2005–06 New Doctoral Recipients with Dissertations in Statistics/Biostatistics and Probability

Group IV contains U.S. departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program. In the Annual Survey Reports, Group IV is referred to as the Statistics Group. In addition, other groups in the Annual Survey produce new doctoral recipients with dissertations in statistics/biostatistics or probability. The other groups produced 118 new doctoral recipients with dissertations in statistics/biostatistics or probability in 2005–06 and have averaged 84.2 per year over the ten period reported in Table 10. Information about these 118 new doctoral recipients and the 287 new doctoral recipients in Group IV is found in this section of the report.

Table 10 contains information about new doctoral recipients in Group IV as well as those with dissertations in statistics/biostatistics and probability in other groups for this year as well as for the past nine years. The last two rows of Table 10 give a split of the 2005–06 results between the 55 statistics departments and the 33 biostatistics and biometrics departments in Group IV. This year 396

Table 10: New Doctoral Recipients with Dissertations in Statistics/Biostatistics and Probability

Year	Depts Surveyed	Depts Responding (percent)	New Doctoral Recipients in Group IV				New Doctoral Recipients in Statistics/Biostatistics and Probability				New Doctoral Recipients Hired by Group IV	
			Total	Female (percent)	Jobs in Bus & Ind	Percentage Unemployed	Total	Group IV	Other Groups	Percentage Unemployed	Male	Female
1996–97	81	60 (74%)	197	74 (38%)	70	4.2%	292	187	105	5.1%	24	9
1997–98	82	59 (72%)	213	73 (34%)	70	3.2%	294	199	95	3.7%	25	10
1998–99	91	72 (79%)	243	87 (36%)	57	4.9%	320	240	80	5.8%	29	20
1999–00	89	75 (84%)	284	110 (39%)	79	2.4%	351	278	73	2.0%	24	22
2000–01	86	70 (81%)	237	98 (41%)	59	5.1%	289	221	68	5.3%	27	14
2001–02	86	72 (84%)	222	92 (41%)	56	6.0%	288	221	67	5.4%	31	15
2002–03	86	74 (86%)	239	98 (41%)	45	2.1%	302	234	68	3.3%	20	19
2003–04	87	65 (75%)	243	97 (40%)	50	3.0%	318	241	77	4.0%	48	15
2004–05	87	63 (72%)	285	126 (44%)	64	5.0%	374	283	91	5.0%	26	19
2005–06	88	60 (68%)	287	134 (47%)	80	2.0%	396	278*	118**	2.0%	41	28
Statistics	55	40 (73%)	211	88 (42%)	28	1.0%					29	15
Biostatistics	33	20 (61%)	76	46 (61%)	16	2.0%					12	13

* Of 278, there were 272 in statistics/biostatistics and 6 in probability. For complete details, see Table 4C.

** Of 118, there were 59 in statistics/biostatistics and 59 in probability. For complete details, see Table 4C.

new doctorates had a dissertation in statistics/biostatistics (331) or probability (65), a 6% increase over last year's number. Those with dissertations in statistics/biostatistics and probability accounted for 32% of new doctorates in 2005–06. Quite a bit of the variation in numbers from year to year in Table 10 is due to the changes made in the departments in Group IV over the ten years and to the relatively low response rate for this group. At the time of the Second Report last year, 66 of 87 (75%) of Group IV departments had responded.

Group IV has 88 departments for 2005–06, 13 more than the next largest doctoral group. It contains 30% of all doctoral departments surveyed, and the 60 Group IV departments responding to the Annual Survey reported 287 new doctoral recipients, 23% of all new doctoral recipients in 2005–06. While this is the lowest percentage of responding Group IV departments since 1995–96 when it was 68%, it is the largest number of new doctoral recipients reported since 1999–00, when it was 284. The number of new doctoral recipients in Group IV is up 2 from the number reported at this time last year, while the number of departments responding is down three from the number responding by this time last year.

Because of its size, the data from Group IV have a large effect on the results when all doctoral groups are combined. Furthermore, Group IV results are often quite different from those for Groups I (Pu), I (Pr), II, III, and Va. Group IV results can mask important changes in the other doctoral groups. In the following paragraphs some of these differences are presented. The trends noted below have also been observed in past reports.

Group IV is producing a larger percentage of female doctorates than the other doctoral groups. Table 9 shows that for the Group IV new doctoral recipients, 134 of 287 (47%) are female, while 260 of 958 (27%) are female in the other doctoral groups. Among U.S. citizens, females accounted for 34 of the 84 (40%) Group IV new doctoral recipients, while for the other groups 109 of 438 (25%) were female. Overall, 143 of 522 (27%) U.S. citizen new doctoral recipients were female.

Group IV is producing a smaller percentage of U.S. citizen new doctorates than the other doctoral groups. In Group IV, 84 of 287 (29%) new doctoral recipients are U.S. citizens, while in other groups 438 of 958 (46%) are U.S. citizens. In Group IV, 100 (75%) of the 134 females were not U.S. citizens.

Group IV doctorates are more likely to take jobs in business and industry than those in other doctoral groups. Of the 230 new doctoral recipients from Group IV who found employment in the U.S., 80 (35%) took jobs in business or industry. From the other groups, 654 new doctoral recipients found employment in the U.S., of which 87 (13%) took jobs in business or industry.

Group IV doctorates have a lower unemployment rate than the other doctoral groups. The employment status for 249 Group IV new doctoral recipients is known, and 4 (1.6%) are unemployed. For the other groups, the employment status of 817 is known, and 43 (5.3%) are unemployed. Group IV is hiring a bigger percentage of females than the other doctoral groups. Twenty-eight of 69 (41%) new doctoral recipients hired by Group IV departments were female, down from last year's 42%, the lowest percentage of female hires reported since 1999–2000. The other doctoral groups reported that 65 of 274 (24%) new doctoral recipients hired were female, up from last year's 22%.

Group IV had 278 new doctoral recipients with fields of thesis in statistics/biostatistics (272) and probability (6), and the other doctoral departments had 118 with fields of thesis in statistics/biostatistics (59) and probability (59) (last year the other doctoral departments had 65 new doctorates in statistics and 26 in probability). The distribution of these degrees among the various groups can be found in Table 4C. The number of new doctoral recipients with theses in statistics/biostatistics and probability (396) is substantially larger than any other field, with algebra and number theory next with 184.

Faculty Salary Survey

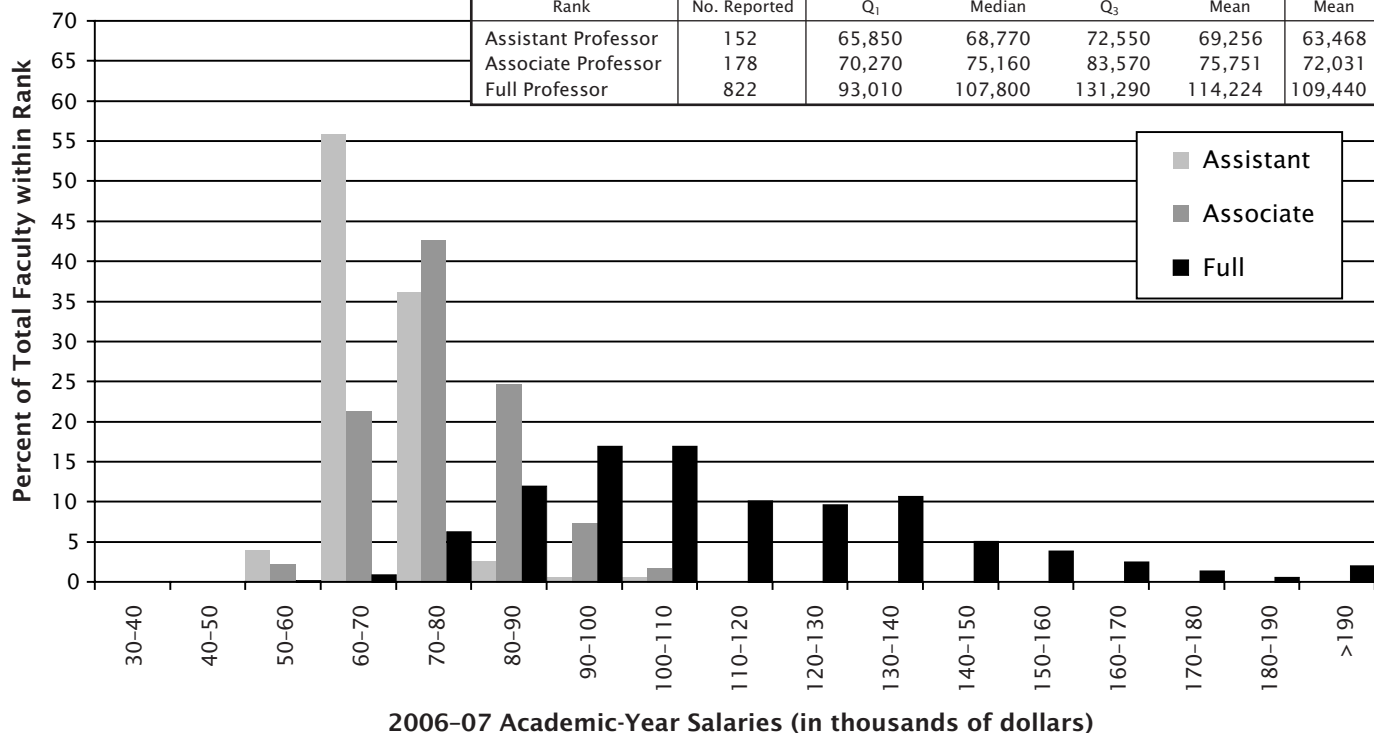
The charts on the following pages display faculty salary data for Groups I (Pu), I (Pr), II, III, IV (Statistics), IV (Biostatistics), Va, M, and B: faculty salary distribution by rank, mean salaries by rank, information on quartiles by rank, and the number of returns for the group. Salaries are reported in actual (unadjusted) dollars. Results reported here are summaries based on the departments who responded to this portion of the Annual Survey. This is the fourth year that salary information has

Table 11: Faculty Salary Response Rates

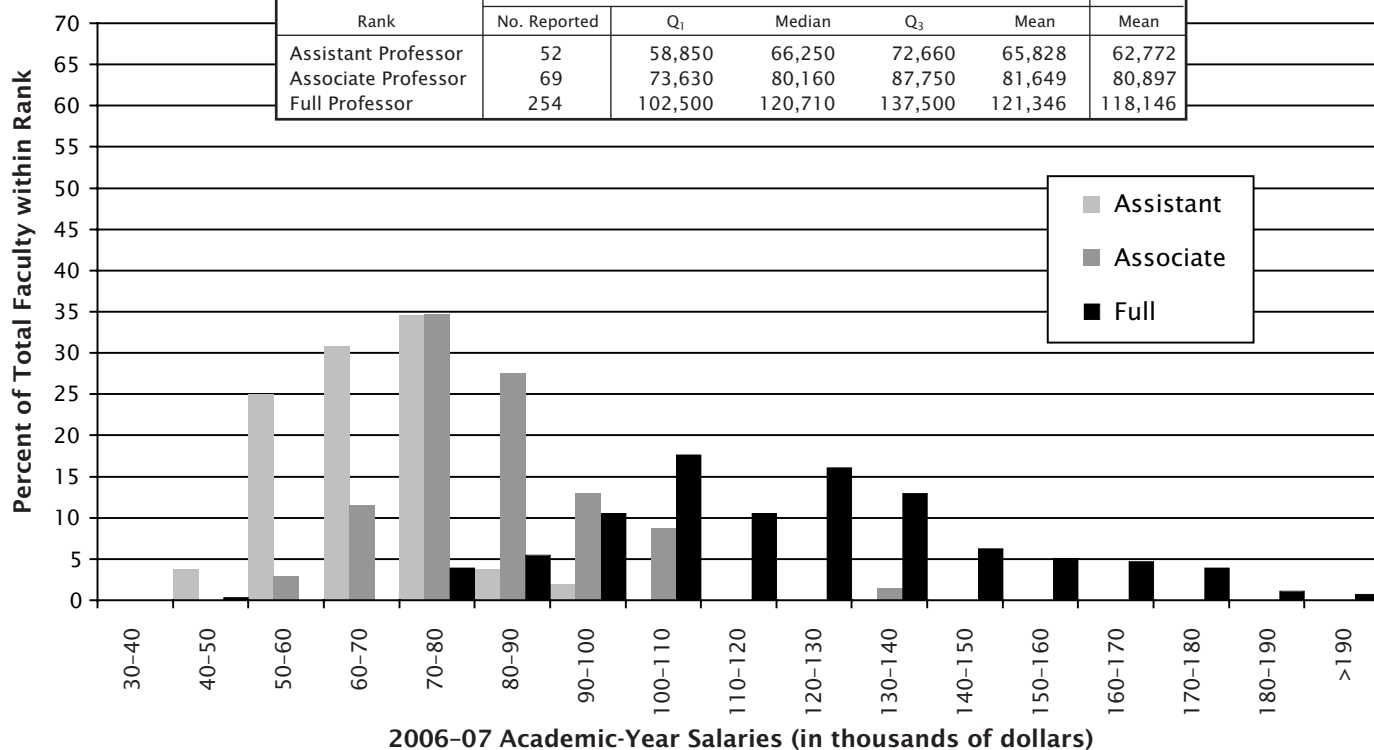
Department	Number	Percent
Group I (Public)	24 of 25	96
Group I (Private)	15 of 23	65
Group II	46 of 56	82
Group III	63 of 75	84
Group IV (Statistics)	36 of 54	62
Group IV (Biostatistics)	18 of 32	56
Group Va	10 of 19*	53
Group M	97 of 188	52
Group B	328 of 1036	32

* The population for Group Va is slightly less than for the Doctorates Granted Survey, because two programs do not formally "house" faculty and their salaries.

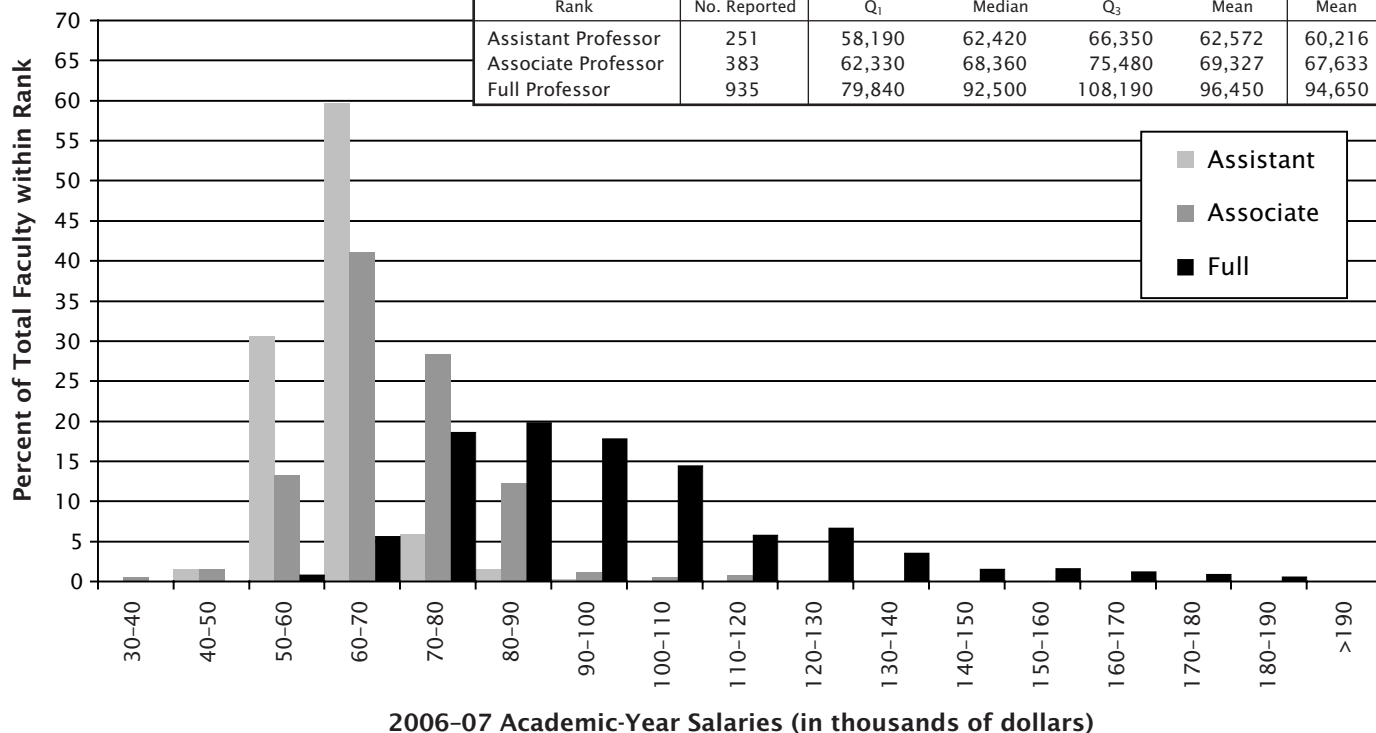
Group I (Public) Faculty Salaries						
Doctoral degree-granting departments of mathematics						
24 responses out of 25 departments (96%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	152	65,850	68,770	72,550	69,256	63,468
Associate Professor	178	70,270	75,160	83,570	75,751	72,031
Full Professor	822	93,010	107,800	131,290	114,224	109,440



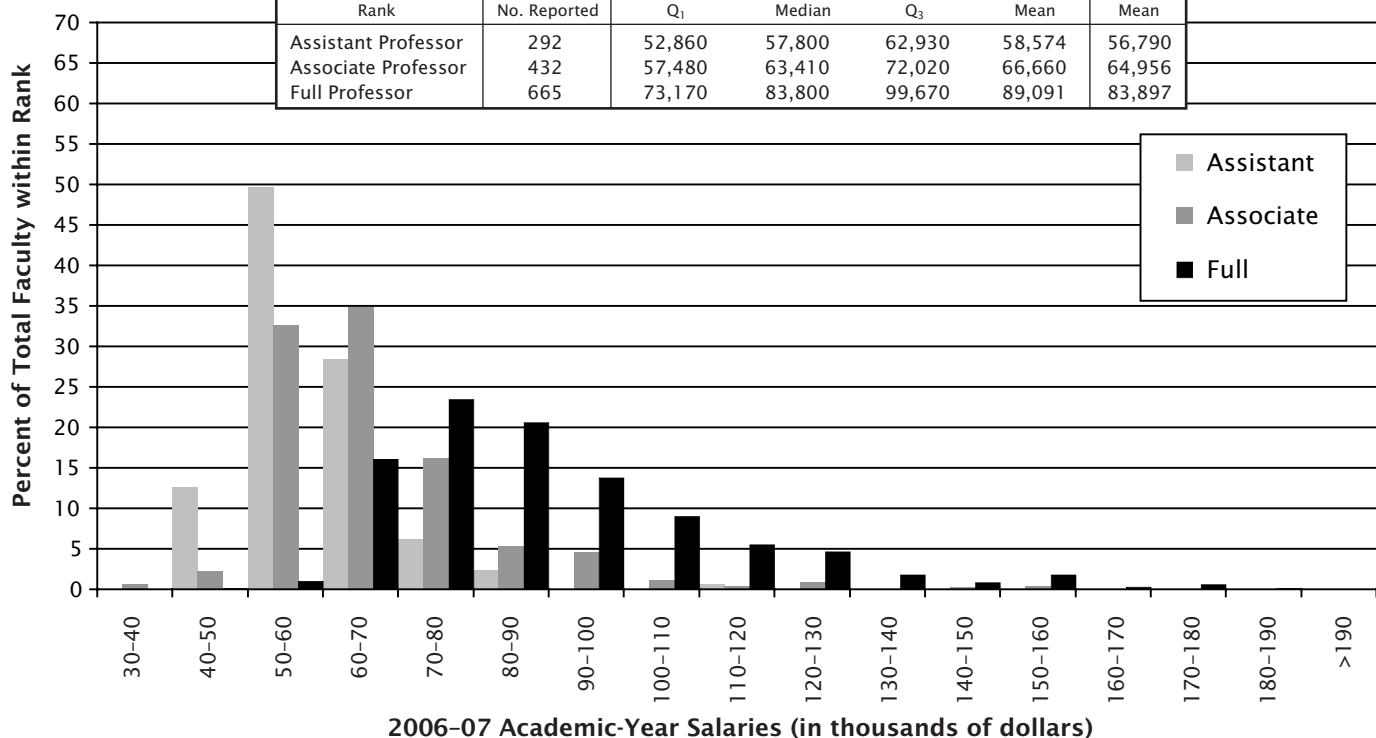
Group I (Private) Faculty Salaries						
Doctoral degree-granting departments of mathematics						
15 responses out of 23 departments (65%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	52	58,850	66,250	72,660	65,828	62,772
Associate Professor	69	73,630	80,160	87,750	81,649	80,897
Full Professor	254	102,500	120,710	137,500	121,346	118,146



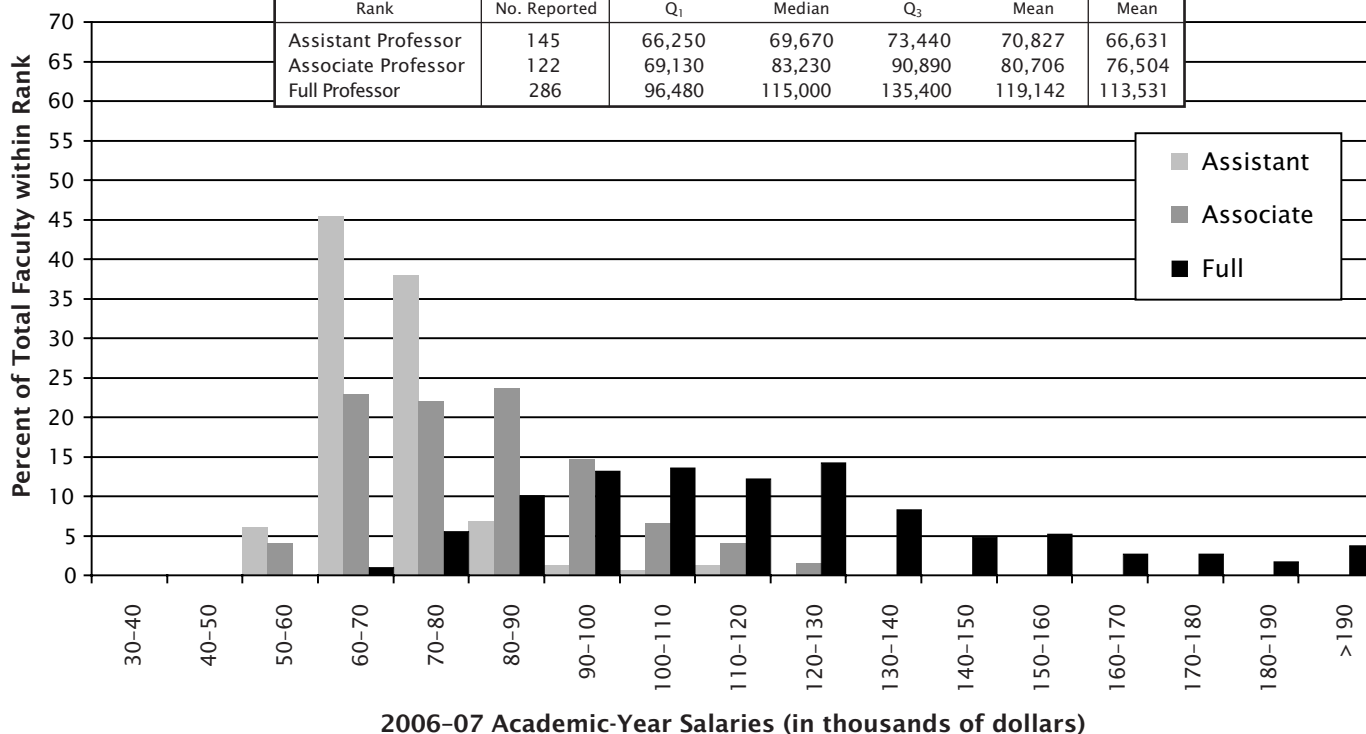
Group II Faculty Salaries						
Doctoral degree-granting departments of mathematics						
46 responses out of 56 departments (82%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	251	58,190	62,420	66,350	62,572	60,216
Associate Professor	383	62,330	68,360	75,480	69,327	67,633
Full Professor	935	79,840	92,500	108,190	96,450	94,650



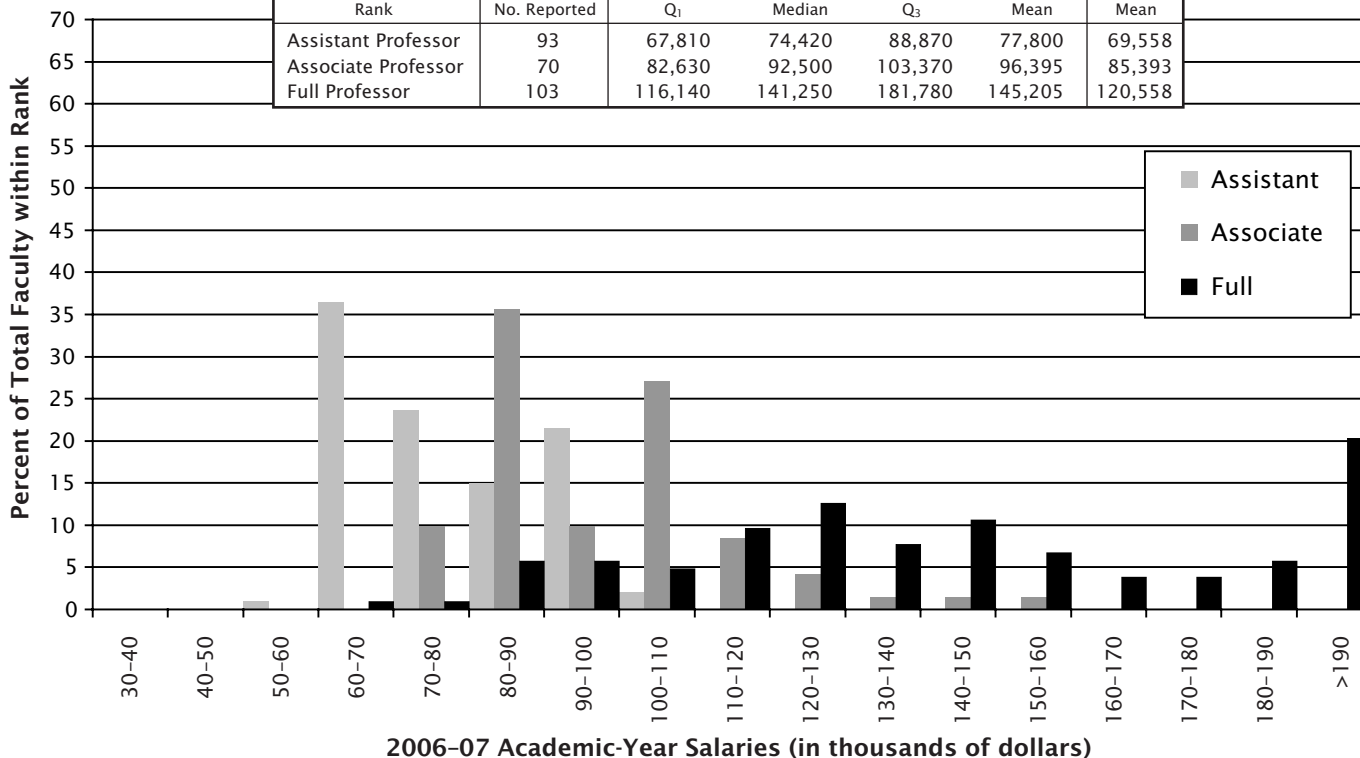
Group III Faculty Salaries						
Doctoral degree-granting departments of mathematics						
63 responses out of 75 departments (84%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	292	52,860	57,800	62,930	58,574	56,790
Associate Professor	432	57,480	63,410	72,020	66,660	64,956
Full Professor	665	73,170	83,800	99,670	89,091	83,897



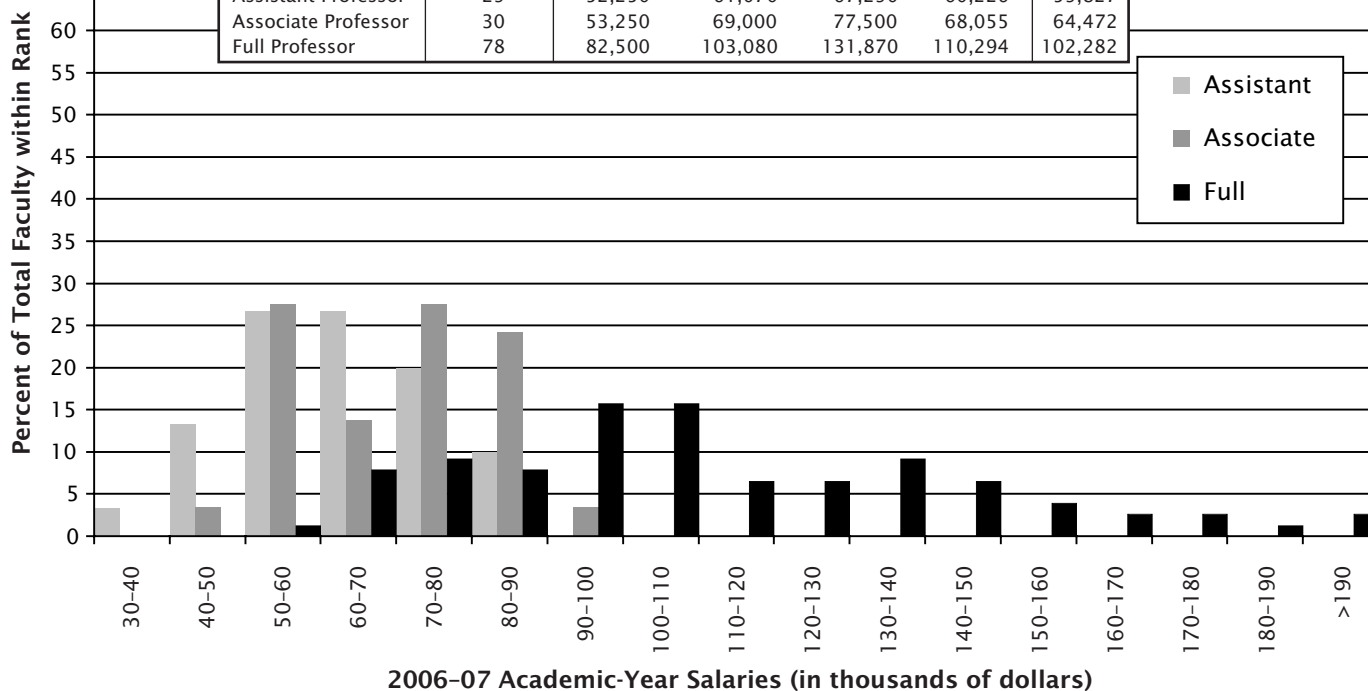
Group IV (Statistics) Faculty Salaries						
Doctoral degree-granting departments of statistics						
36 responses out of 54 departments (62%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	145	66,250	69,670	73,440	70,827	66,631
Associate Professor	122	69,130	83,230	90,890	80,706	76,504
Full Professor	286	96,480	115,000	135,400	119,142	113,531



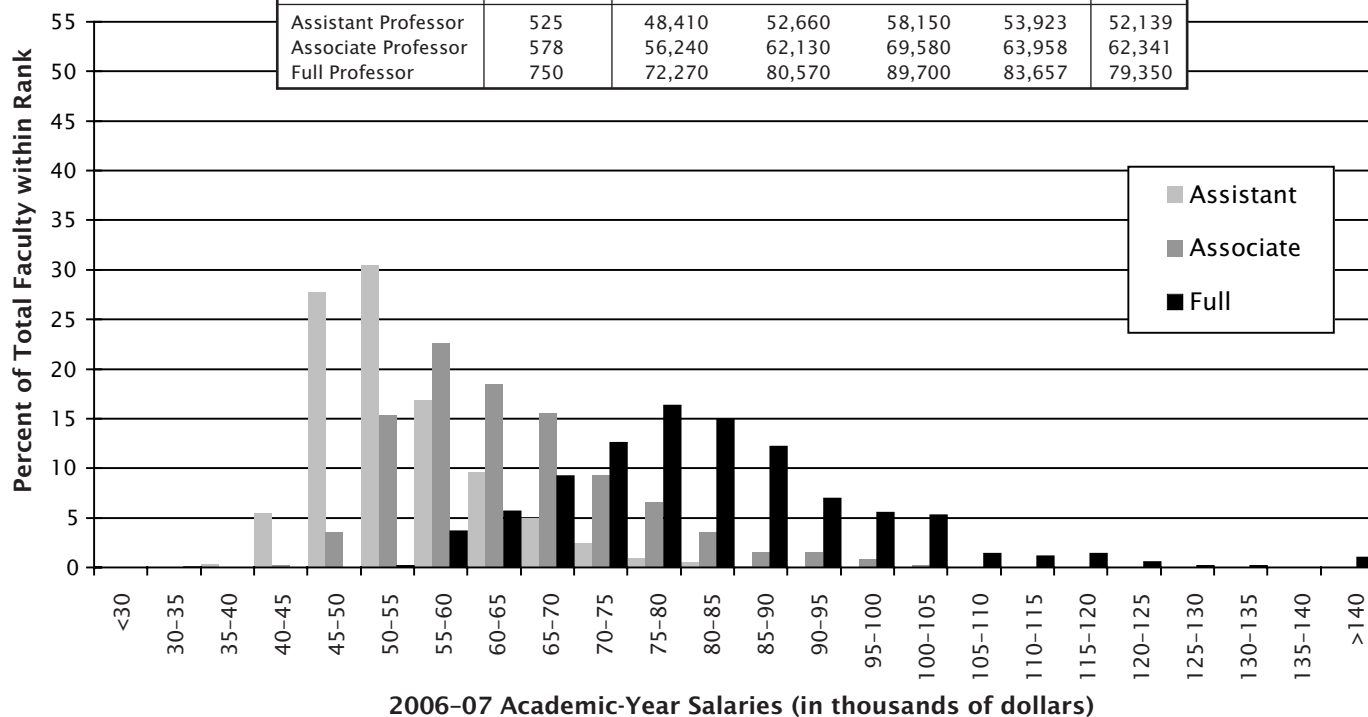
Group IV (Biostatistics) Faculty Salaries						
Doctoral degree-granting departments of biostatistics and biometrics						
18 responses out of 32 departments (56%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	93	67,810	74,420	88,870	77,800	69,558
Associate Professor	70	82,630	92,500	103,370	96,395	85,393
Full Professor	103	116,140	141,250	181,780	145,205	120,558

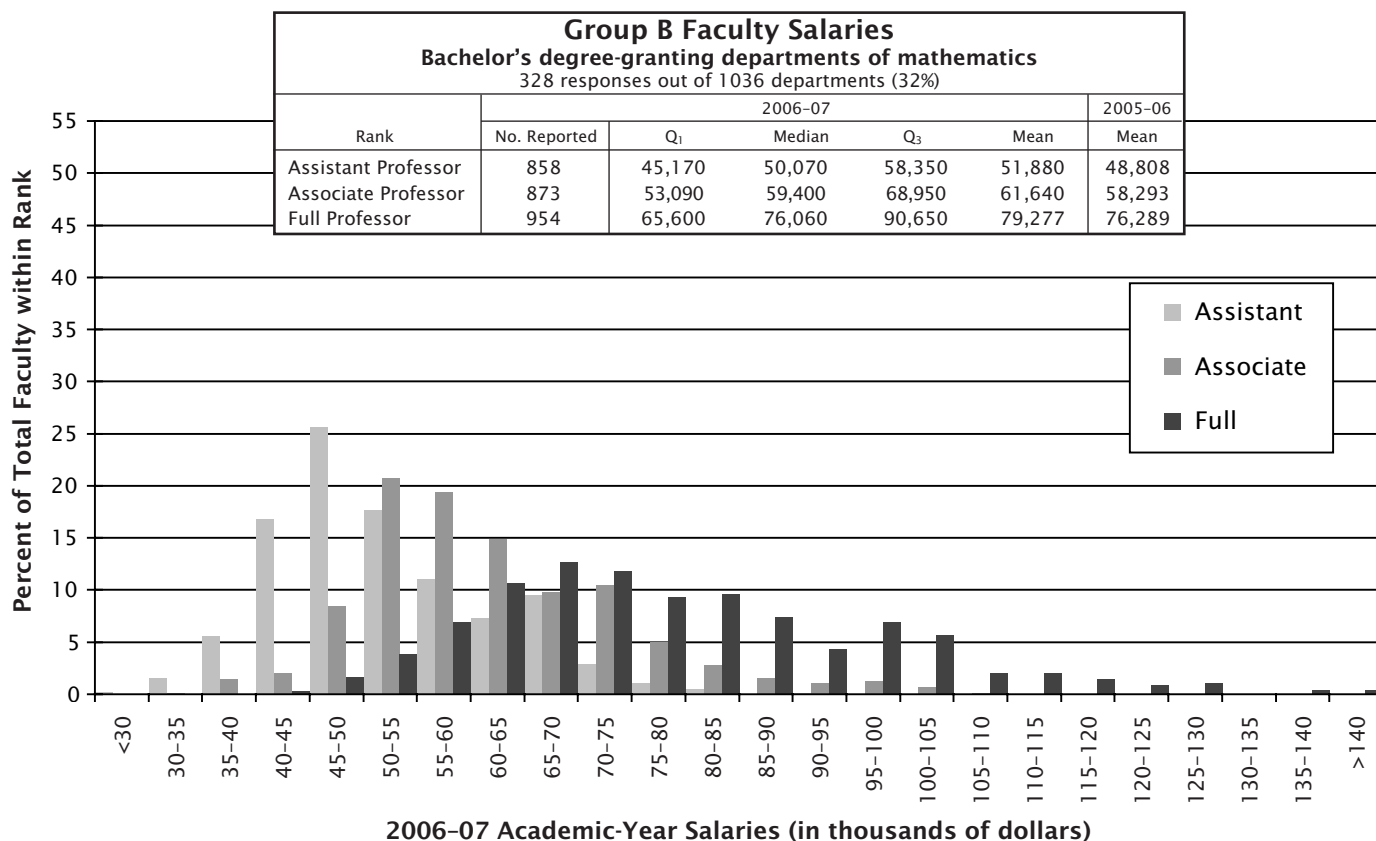


Group Va Faculty Salaries						
Doctoral degree-granting departments of applied mathematics						
10 responses out of 19 departments (53%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	29	52,250	61,070	67,290	60,226	59,827
Associate Professor	30	53,250	69,000	77,500	68,055	64,472
Full Professor	78	82,500	103,080	131,870	110,294	102,282



Group M Faculty Salaries						
Master's degree-granting departments of mathematics						
97 responses out of 188 departments (52%)						
Rank	2006-07					2005-06
	No. Reported	Q ₁	Median	Q ₃	Mean	Mean
Assistant Professor	525	48,410	52,660	58,150	53,923	52,139
Associate Professor	578	56,240	62,130	69,580	63,958	62,341
Full Professor	750	72,270	80,570	89,700	83,657	79,350





been reported separately for statistics departments and biostatistics and biometrics departments in Group IV.

Table 11 provides the departmental response rates for the 2005 Faculty Salary Survey. Departments were asked to report for each rank the number of tenured and tenure-track faculty whose 2005-06 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. Although the actual quartiles cannot be determined from the data gathered, these quartiles have been estimated assuming that the density over each interval is uniform.

Since departments in Groups I, II, and III were changed in 1995-96 (see definitions of the groups on page 245), comparisons are possible only to the last ten years' data. In addition, prior to the 1998 survey Groups Va and Vb were reported together as Group V. When comparing current and prior year figures, one should keep in mind that differences in the set of responding departments may be a significant factor in the change in the reported mean salaries.

Previous Annual Survey Reports

The 2004 First, Second, and Third Annual Survey Reports were published in the *Notices of the AMS* in the February, August, and September 2005 issues

respectively. These reports and earlier reports, as well as a wealth of other information from these surveys, are available on the AMS website at www.ams.org/employment/surveyreports.html.

Acknowledgments

The Annual 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 Annual Survey Data Committee and the Annual Survey Staff, we thank the many secretarial and administrative staff members in the mathematical sciences departments for their cooperation and assistance in responding to the survey questionnaires.

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Definitions of the Groups

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. Doctoral-granting departments of mathematics are further subdivided according to their ranking of “scholarly quality of program faculty” as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change*.¹ These rankings update those reported in a previous study published in 1982.² Consequently, the departments which now compose Groups I, II, and III differ significantly from those used prior to the 1996 survey.

The subdivision of the Group I institutions into Group I Public and Group I Private was new for the 1996 survey. With the increase in number of the Group I departments from 39 to 48, the Annual Survey Data Committee judged that a further subdivision of public and private would provide more meaningful reporting of the data for these departments.

Brief descriptions of the groupings 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 of 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, which was no longer surveyed as of 1998–99, was 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.

Listings of the actual departments which compose these groups are available on the AMS website at www.ams.org/employment/.

¹Research-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, DC, 1995.

²These 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, DC, 1982. The information on mathematics, statistics, and computer science was presented in digest form in the April 1983 issue of the Notices of the AMS, pages 257–67, and an analysis of the classifications was given in the June 1983 Notices of the AMS, pages 392–3.