2006 Annual Survey of the Mathematical Sciences in the United States

(Second Report)

Updated Report on the 2005–2006 Doctoral Recipients
Starting Salary Survey of the 2005–2006 Doctoral Recipients

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This Second Report of the 2006 Annual Survey gives an update of the 2005–2006 new doctoral recipients from the First Report, which appeared in the *Notices of the AMS* in February 2007, pages 277–97. The First Report gave salary data for faculty members in these same departments. It also had a section on new doctoral recipients in statistics that is not updated here.

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, Richard M. Dudley, John W. Hagood, Abbe H. Herzig, Donald R. King, David J. Lutzer, James W. Maxwell (ex officio), Bart Ng, Polly Phipps (chair), 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.

Update on the 2005–2006 Doctoral Recipients

Introduction

The Annual Survey of the Mathematical Sciences collects information each year about degree recipients, departments, faculties, and students in the mathematical sciences at four-year colleges and universities in the United States. Information about recipients of doctoral degrees awarded between July 1, 2005, and June 30, 2006, was collected from doctorate-granting departments beginning in late spring 2006. The "2006 Annual Survey First Report" (Notices, February 2007, pages 252–67) presented survey results about 1,245 new doctoral recipients based on the data provided by the departments. Here we update this information using data obtained from 660 new doctoral recipients who responded to a questionnaire, Employment Experiences of New Doctoral Recipients (EENDR), sent in early October 2006 to all new doctoral recipients. In addition, this report incorporates information on an additional 66 doctoral recipients from departments that responded too late to have the information included in the First Report. Finally, we present the starting salaries and other employment information from the new doctoral recipients that responded to the EENDR questionnaire.

The names and thesis titles of the 2005–2006 doctoral recipients reported on in the First Report were published in "Doctoral Degrees Conferred" (*Notices*, February 2007, pages 277–97). A supplemental listing of the 66 additional new doctoral recipients appears at the end of this report on pages 888–89.

Updated Employment Status of 2005–2006 Doctoral Recipients

The updated responses rates for the 2006 Survey of New Doctoral Recipients appear on the next page. The total number of departments responding in time for inclusion in this Second Report was 269, 24 more than were included in the 2006 First Report and 7 more than the number responding for

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Highlights

There were 1,311 doctoral recipients from U.S. institutions for 2005–2006, up 89 (7%) from the previous year. This is the highest number of new Ph.D.'s ever reported.

The final unemployment rate for 2005–2006 doctoral recipients was 3.3%, the lowest percentage reported since 2002.

The number of new doctoral recipients who are not U.S. citizens is 759, up 33 over last year's number, and up 227 (43%) from 2001–2002.

The number of new doctoral recipients who are U.S. citizens is 552, up 56 (11%) from last year's number; this is the highest number of U.S. citizens reported since 1999–2000 when it was 566. The percentage of U.S. citizens among all doctoral recipients this year is 42%, up from 41% last year.

Females totaled 422 (32%) of all new doctoral recipients, up in number and percentage from 359 (29%) last year. Of the 552 U.S. citizen new doctoral recipients, 153 are female (28%), up in number and the same percent from last year. The highest percentage of females among the annual counts of doctoral recipients was 34%, reported for 1998–1999.

The number of doctoral recipients whose employment status is unknown is 163, up 13 from last year's number of 150.

Of the 1,148 new doctoral recipients whose employment status is known, 1,099 reported having employment in fall 2006 with 87% (958) finding employment in the U.S.; last year this percentage was 86%.

The number of new doctoral recipients taking positions in U.S. business/industry and government was 243 in fall 2006, a 38% increase from last year's number. The percentage of doctoral recipients employed in the U.S. taking positions in business/industry and government has increased to 25%, from 20% in fall 2005. This is the highest number and percentage reported since 2002 when it was 179 (24%).

The number of new doctoral recipients hired into U.S. academic positions in fall 2006 is 715. This is the highest such number reported over the past twenty-five years. Indeed, each of the numbers reported for the past three falls exceeds any number reported during the period from fall 1982 through fall 2003.

Non-U.S. citizens accounted for 58% of those employed in the U.S. (last year this percentage was 59%).

There were 660 new doctoral recipients responding to the EENDR survey; of the 563 who found employment in the U.S., 51% reported obtaining a permanent position (down from 56% in fall 2005).

The percentage of temporarily employed respondents who reported taking a postdoctoral position in the U.S. increased from 172 (74%) in fall 2005 to 209 (76%) in fall 2006.

Doctorates Granted Departmental Response Rates (updated April 2007)

Group I (Pu)[1]	25 of 25 including	0 with no degrees
Group I (Pr)	22 of 23 including	0 with no degrees
Group II	54 of 56 including	0 with no degrees
Group III	74 of 75 including	15 with no degrees
Group IV	73 of 87 including	14 with no degrees
Group Va	21 of 21 including	2 with no degrees

[1] For definitions of groups see page 887.

inclusion in the 2005 Second Report. Definitions of the various groups surveyed in the Annual Survey can be found on page 887 of this report.

Table 1A shows the fall and final counts of doctoral recipients in the mathematical sciences awarded by U.S. institutions in each year from 1996 through 2006. This year the total number of new doctoral recipients is 1,311, up from the previous year by 89. A detailed review of responding and non-responding departments indicates that the increase in doctoral recipients from 2005 to 2006 is not significantly influenced by differences in department response patterns.

Table 1A: Doctoral Recipients: Fall and Final Counts

Year	Fall	Final
1996–1997	1123	1130
1997–1998	1163	1176
1998–1999	1133	1135
1999–2000	1119	1127
2000–2001	1008	1065
2001–2002	948	960
2002–2003	1017	1037
2003–2004	1041	1081
2004–2005	1116	1222
2005–2006	1245	1311

Table 1B: Doctoral Recipients: Citizenship

Year	U.S.	Non-U.S.	TOTAL
2001–2002	428	532	**960**
2002–2003	499	538	**1037**
2003–2004	459	622	**1081**
2004–2005	496	726	**1222**
2005–2006	552	759	**1311**

Table 1C: Doctoral Recipients by Type of Degree-Granting Department

	Department Group[1]					
	I (Pu)	I (Pr)	II	III	IV	Va
Number	307	184	224	150	327	119
Percent	23%	14%	17%	11%	25%	9%

[1] For definitions of groups see page 887.

Table 2A: Fall 2006 Employment Status of 2005–2006 Doctoral Recipients: Field of Thesis (updated April 2007)

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/ Approxi-mations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown	
Group I (Public)[1]		14	9	11	7	0	1	6	8	1	12	1	1	**71**
Group I (Private)		17	5	16	3	7	2	6	7	1	11	0	0	**75**
Group II		18	14	4	6	5	3	6	6	2	10	0	0	**74**
Group III		7	1	4	5	3	9	4	1	0	7	2	0	**43**
Group IV		0	0	0	0	7	63	1	1	0	0	1	0	**73**
Group Va		0	0	1	1	1	1	3	6	1	0	0	0	**14**
Master's		12	3	4	6	3	14	2	4	1	6	3	0	**58**
Bachelor's		38	12	21	12	7	11	10	7	2	15	5	0	**140**
Two-Year College		3	2	0	1	2	2	1	1	2	1	2	1	**18**
Other Academic Dept.[2]		3	5	3	7	2	52	23	4	1	9	1	3	**113**
Research Institute/ Other Nonprofit		8	0	3	3	1	12	5	1	0	3	0	0	**36**
Government		4	2	0	2	1	13	8	9	4	4	0	0	**47**
Business and Industry		8	7	5	11	19	108	17	9	5	6	0	1	**196**
Non-U.S. Academic		33	11	20	14	5	11	10	3	2	7	1	2	**119**
Non-U.S. Nonacademic		3	1	2	1	2	8	3	0	1	1	0	0	**22**
Not Seeking Employment		3	1	0	1	0	1	2	0	1	1	1	0	**11**
Still Seeking Employment		6	3	3	5	1	4	5	3	0	8	0	0	**38**
Unknown (U.S.)		7	3	5	2	3	18	17	3	1	4	1	0	**64**
Unknown (non-U.S.)[3]		6	3	6	2	1	39	21	11	1	7	0	2	**99**
TOTAL		**190**	**82**	**108**	**89**	**70**	**372**	**150**	**84**	**26**	**112**	**18**	**10**	**1311**
Column Subtotals	Male	152	64	85	62	54	200	101	61	21	79	8	2	**889**
	Female	38	18	23	27	16	172	49	23	5	33	10	8	**422**

[1] For definitions of groups see page 887.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2B: Fall 2006 Employment Status of 2005–2006 Doctoral Recipients: Type of Degree-Granting Department (updated April 2007)

TYPE OF EMPLOYER		TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT						TOTAL	Row Subtotals	
		Group I (Public)	Group I (Private)	Group II Math.	Group III Math.	Group IV Statistics	Group Va Applied Math.		Male	Female
Group I (Public)[1]		35	17	14	0	0	5	**71**	59	12
Group I (Private)		25	36	4	0	3	7	**75**	62	13
Group II		29	13	18	3	4	7	**74**	55	19
Group III		7	3	6	19	6	2	**43**	30	13
Group IV		3	0	1	2	65	2	**73**	42	31
Group Va		1	3	0	0	0	10	**14**	8	6
Master's		7	3	22	18	7	1	**58**	39	19
Bachelor's		41	14	42	30	7	6	**140**	101	39
Two-Year College		2	1	6	6	0	3	**18**	12	6
Other Academic Dept.[2]		14	11	9	15	52	12	**113**	71	42
Research Institute/ Other Nonprofit		7	8	6	0	11	4	**36**	17	19
Government		7	4	11	2	12	11	**47**	31	16
Business and Industry		34	17	21	13	92	19	**196**	120	76
Non-U.S. Academic		39	26	25	15	9	5	**119**	91	28
Non-U.S. Nonacademic		8	4	1	1	7	1	**22**	16	6
Not Seeking Employment		0	3	3	1	1	3	**11**	4	7
Still Seeking Employment		6	8	9	8	3	4	**38**	29	9
Unknown (U.S.)		19	3	12	8	17	5	**64**	46	18
Unknown (non-U.S.)[3]		23	10	14	9	31	12	**99**	56	43
TOTAL		**307**	**184**	**224**	**150**	**327**	**119**	**1311**	**889**	**422**
Column Subtotals	Male	232	147	164	99	173	74	**889**		
	Female	75	37	60	51	154	45	**422**		

[1] For definitions of groups see page 887.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2C: Field of Thesis of 2005–2006 Doctoral Recipients: by Type of Degree-Granting Department (updated April 2007)

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/ Approxi-mations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown	
Group I (Public)[1]	84	25	42	22	26	10	28	16	4	44	3	3	**307**
Group I (Private)	51	11	31	20	12	4	30	7	1	17	0	0	**184**
Group II	36	34	22	18	9	10	35	22	11	23	3	1	**224**
Group III	18	11	11	21	3	29	15	14	1	14	11	2	**150**
Group IV	0	0	0	1	10	304	9	1	0	0	0	2	**327**
Group Va	1	1	2	7	10	15	33	24	9	14	1	2	**119**
TOTAL	**190**	**82**	**108**	**89**	**70**	**372**	**150**	**84**	**26**	**112**	**18**	**10**	**1311**

[1] For definitions of groups see page 887.

Table 2D: Percentage of Employed New Doctoral Recipients by Type of Employer

	Employed in U.S.		Not Employed in U.S.		NUMBER EMPLOYED
	Academic[1]	Nonacademic	Academic	Nonacademic	
Fall 2002	67%	22%	10%	1%	**829**
Fall 2003	70%	17%	12%	2%	**792**
Fall 2004	72%	15%	12%	1%	**910**
Fall 2005	69%	17%	12%	2%	**1018**
Fall 2006	65%	22%	11%	2%	**1099**

[1] Includes Research Institutes and other non-profits.

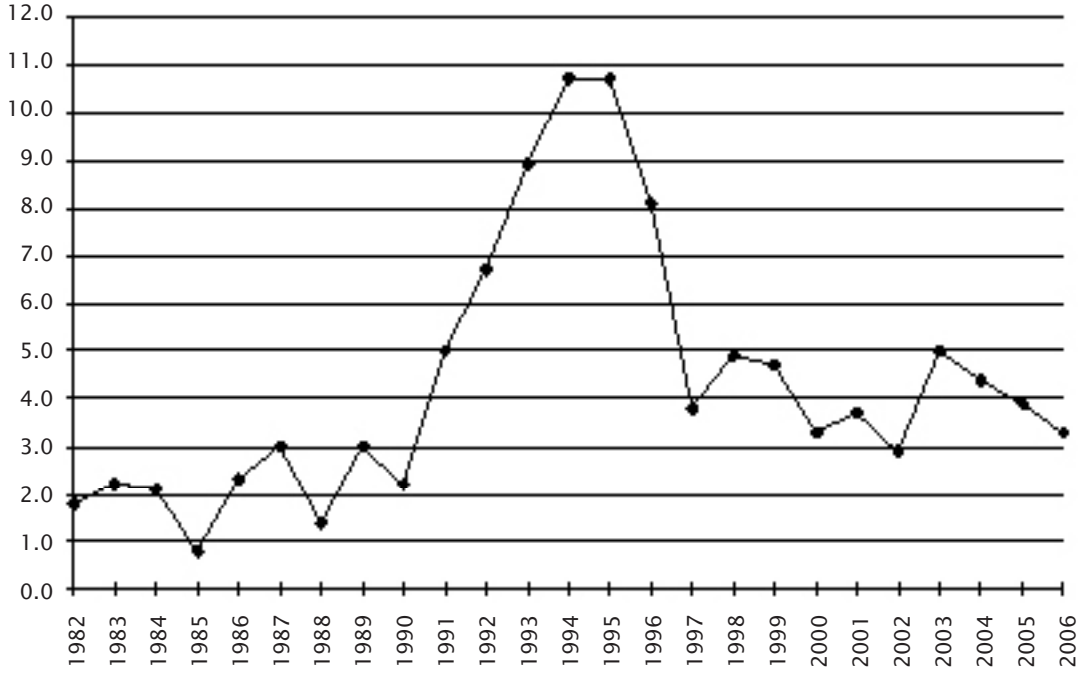
Table 1B shows trends in the number of new doctoral recipients for the past five years broken down by U.S. citizens and non-U.S. citizens. This year the number of new doctoral recipients who are U.S. citizens is 552, an increase of 56 (11%) over last year. The number of non-U.S. citizen new doctoral recipients rose to 759, a 5% increase over last year.

Table 1C gives a breakdown of the 1,311 doctoral degrees awarded in the mathematical sciences between July 1, 2005, and June 30, 2006, by type of degree-granting department.

Tables 2A, 2B, and 2C display updates of employment data, found in these same tables in the First Report, for the fall count of 2005–2006 doctoral recipients plus 66 additional doctoral recipients reported late. These tables are partitioned by field of thesis research, by the survey group of their degree-granting department, and by type of employer. New doctoral recipients are grouped by field of thesis using the *Mathematical Reviews* 2000 Mathematics Subject Classification list. A complete list of these groups is available on the AMS website at `www.ams.org/employment/Thesis_groupings.pdf`. At the time of this Second Report, the fall 2006

Figure 1: Percentage of New Doctoral Recipients Unemployed[1]

Year	Percentage
1982	1.8
1983	2.2
1984	2.1
1985	0.8
1986	2.3
1987	3.0
1988	1.4
1989	3.0
1990	2.2
1991	5.0
1992	6.7
1993	8.9
1994	10.7
1995	10.7
1996	8.1
1997	3.8
1998	4.9
1999	4.7
2000	3.3
2001	3.7
2002	2.9
2003	5.0
2004	4.4
2005	3.9
2006	3.3



[1] As reported in the respective Annual Survey Second Reports.

Table 3A: New Doctoral Recipients Employed in the U.S.

	Degree-Granting Department Group[1]													
	I (Pu)		I (Pr)		II		III		IV		Va		TOTAL	
	Academic[2]	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government	Academic	Business/ Industry & Government
Fall 2002	133	25	86	20	107	27	91	11	102	72	34	24	553	179
Fall 2003	123	24	90	16	118	13	61	10	119	54	40	14	551	131
Fall 2004	118	18	118	18	144	17	73	11	150	61	52	11	655	137
Fall 2005	152	21	104	17	152	23	97	18	149	79	45	18	699	176
Fall 2006	171	41	109	21	128	32	93	15	155	104	59	30	715	243

[1] For definitions of groups see page 887.
[2] Includes Research Institutes and other non-profits.

employment status of 1,148 of the 1,311 doctoral recipients was known.

The fall 2006 unemployment rate for new doctoral recipients, based on information gathered by the time of the Second Report, was 3.3%. Figure 1 presents the fall 1982 through fall 2006 trend in the final unemployment rate of new doctoral recipients. The counts on which these rates are determined do not include those new doctoral recipients whose fall employment status was unknown at the time of the Second Report. This year the number of recipients whose employment status was reported as unknown increased to 163 from 150 last year.

Of the 1,148 new doctoral recipients whose employment is known, 958 were employed in the U.S., 141 were employed outside the U.S., 38 were still seeking employment, and 11 were not seeking employment.

Table 2D presents the trend in the percentage of employed new doctoral recipients by type of employer for the last five years. Academic employment includes those employed by research institutes and other nonprofits. The percentage of the total employed new doctoral recipients that are in U.S. academic positions has dropped for the second consecutive year and concomitantly the percentage of the total employed in U.S. nonacademic positions (U.S. government, U.S. business and industry) has increased for the second consecutive year.

Among new doctoral recipients who are employed in the U.S., the percentage taking nonacademic employment varied significantly by field of thesis. For those whose field of thesis is in the first three columns in Table 2A, this percentage is the lowest at 10% (up from 7% last year), while the percentage for those with theses in probability or statistics is the highest at 40% (up from 36% last year).

Table 3A shows that the fall 2006 total number of doctoral recipients taking positions in business/industry and government is 243. This number reflects an increase of 38% over last year. All groups have shown an increase in the number of graduates finding employment in business/industry and government except Group III.

Table 3B: New Doctoral Recipients Employed in U.S. Academic Positions

	Hiring Department Group[1]					
	I–III	IV	Va	M&B	Other	**TOTAL**
Fall 2002	222	45	10	148	128	**553**
Fall 2003	216	39	9	158	129	**551**
Fall 2004	220	66	19	172	178	**655**
Fall 2005	249	53	12	212	173	**699**
Fall 2006	263	73	14	198	167	**715**

[1] For definitions of groups see page 887.

Table 3C: Females as a Percentage of New Doctoral Recipients

	Department Group[1]						
	I (Pu)	I(Pr)	II	III	IV	Va	**TOTAL**
% Female							
Produced	24%	20%	27%	34%	47%	38%	**32%**
Hired	17%	17%	26%	30%	42%	43%	**27%**

[1] For definitions of groups see page 887.

Table 3B shows that the number of new doctoral recipients taking U.S. academic positions has increased to 715, from 699 in 2005. Doctoral hires into U.S. academic positions are up in all groups except Groups M&B (down to 198 from 212 last year) and Other (down to 167 from 173 last year). The biggest percentage increase is in Group IV (38%). Doctoral hires into non-U.S. academic positions decreased by 6% to 119 from 127 last year.

Table 3C gives information about the production and hiring of female new doctoral recipients in the doctoral-granting departments of this survey. From Table 3C we see that the percentage of females hired ranges from a high of 43% in Group Va, followed by Group IV at 42% to a low of 17% in both Groups I (Pu) and 1 (Pr). The percentage of

Table 3D: Citizenship of 2005–2006 Male Doctoral Recipients by Fall 2006 Employment Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL MALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	313	40	283	11	**647**
U.S. Academic	250	29	211	6	**496**
Groups[1] I, II, III, and Va	96	15	100	3	**214**
Group IV	17	6	19	0	**42**
Non-Ph.D. Department	128	7	85	3	**223**
Research Institute/Other Nonprofit	9	1	7	0	**17**
U.S. Nonacademic	63	11	72	5	**151**
Non-U.S. Employer	28	7	72	0	**107**
Non-U.S. Academic	28	6	57	0	**91**
Non-U.S. Nonacademic	0	1	15	0	**16**
Not Seeking Employment	3	0	1	0	**4**
Still Seeking Employment	18	1	10	0	**29**
Subtotal	362	48	366	11	**787**
Unknown (U.S.)	34	5	7	0	**46**
Unknown (non-U.S.)[2]	3	0	51	2	**56**
TOTAL	**399**	**53**	**424**	**13**	**889**

[1] For definitions of groups see page 887.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 3E: Citizenship of 2005–2006 Female Doctoral Recipients by Fall 2006 Employment Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL FEMALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	124	33	145	9	**311**
U.S. Academic	93	24	97	5	**219**
Groups[1] I, II, III, and Va	23	9	31	0	**63**
Group IV	11	4	13	3	**31**
Non-Ph.D. Department	53	9	42	1	**106**
Research Institute/Other Nonprofit	6	2	10	1	**19**
U.S. Nonacademic	31	9	48	**4**	**92**
Non-U.S. Employer	8	3	22	0	**34**
Non-U.S. Academic	8	1	19	0	**28**
Non-U.S. Nonacademic	0	2	3	0	**6**
Not Seeking Employment	3	1	3	0	**7**
Still Seeking Employment	5	1	3	0	**9**
Subtotal	140	38	173	10	**361**
Unknown (U.S.)	13	2	3	0	**18**
Unknown (non-U.S.)[2]	0	0	42	1	**43**
TOTAL	**153**	**40**	**218**	**11**	**422**

[1] For definitions of groups see page 887.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

female new doctoral recipients produced is highest in Group IV (47%). The total percentage of females produced and hired has increased from last year's percentages of 29% and 26%, respectively, to this year's 32% and 27%.

Updated Information about 2005–2006 Doctoral Recipients by Sex and Citizenship

Tables 3D and 3E show the sex and citizenship of the 1,311 new doctoral recipients and the fact that 958 new doctoral recipients found jobs in the U.S. this year. This is 83% of the 1,148 new doctoral recipients whose employment status was known and 87% of the 1,099 known to have jobs in fall 2006. respectively.

Sex and citizenship are known for all of the 1,311 new doctoral recipients. The final count of new doctoral recipients who are U.S. citizens is 552

Table 3F: Number of New Doctoral Recipients Employed in the U.S. by Citizenship and Type of Employer

U.S. EMPLOYER	CITIZENSHIP		TOTAL
	U.S.	Non-U.S.	
Academic: Groups I–Va	147	203	**350**
Academic: M&B, Other	196	169	**365**
Nonacademic	94	149	**243**
TOTAL	**437**	**521**	**958**

(42%) (up from 41% last year). Pages 235–8 of the First Report present further information related to the citizenship of the 2005–2006 new doctoral recipients.

Of the 552 U.S. citizen new doctoral recipients reported for 2005–2006, 153 are female and 399 are male. Females accounted for 27% of the U.S. citizen total (down from 28% last year). The number of female U.S. citizens has increased by 12 from last year's count of 141, and the number of male U.S. citizens increased by 44 over last year's count of 355.

Table 3F shows that U.S. citizens accounted for 46% of those employed in the U.S. (up from 42% last year). U.S. academic doctoral departments, Groups I through Va, hired 42% U.S. citizens, while groups M, B, and all other academic departments hired 54% U.S. citizens (last year these percentages were 40% and 53%, respectively). U.S. citizens represented 39% of those hired into nonacademic positions (last year 41%). Among all the 958 new 2005–2006 doctoral recipients employed in the U.S., 25% took nonacademic employment (government or business and industry.) This percentage is up from 20% in 2004–2005 and from 17% in 2003–2004.

New Information from the EENDR Survey

Of the 1,245 new doctoral recipients reported in the First Report, the 1,209 whose addresses were known were sent the Employment Experiences of New Doctoral Recipients (EENDR) survey in October 2006, and 660 (55%) responded. The response rates varied considerably among the various subgroups of new doctoral recipients defined by their employment status as reported by departments. Among those who were employed the highest response rate, 63%, was from those employed in the U.S. academic, while the lowest, 45%, was from those in non-U.S. academic.

The EENDR gathered details on employment experiences not available through departments. The remainder of this section presents additional information available on this subset of the 2005–2006 doctoral recipients.

Table 4A gives the numbers and percentages of EENDR respondents taking permanent and temporary positions in the U.S for fall 2002 through fall 2006.

This year we see that among the 563 employed in the U.S., 289 reported obtaining a permanent position and 274 a temporary position. While these numbers both reflect an increase, the percentage of individuals taking permanent positions in 2006 has decreased to 51% from 56% in 2005, and the percentage of those taking temporary positions has increased to 49% from 44% (the highest reported since 51% in 2004). Of the 274 in temporary positions, 98 (36%) reported taking temporary employment because a suitable permanent position was not available, and 209 (76%) classified their

Table 4A: Number (and Percentage) of Annual EENDR Respondents Employed in the U.S. by Job Status

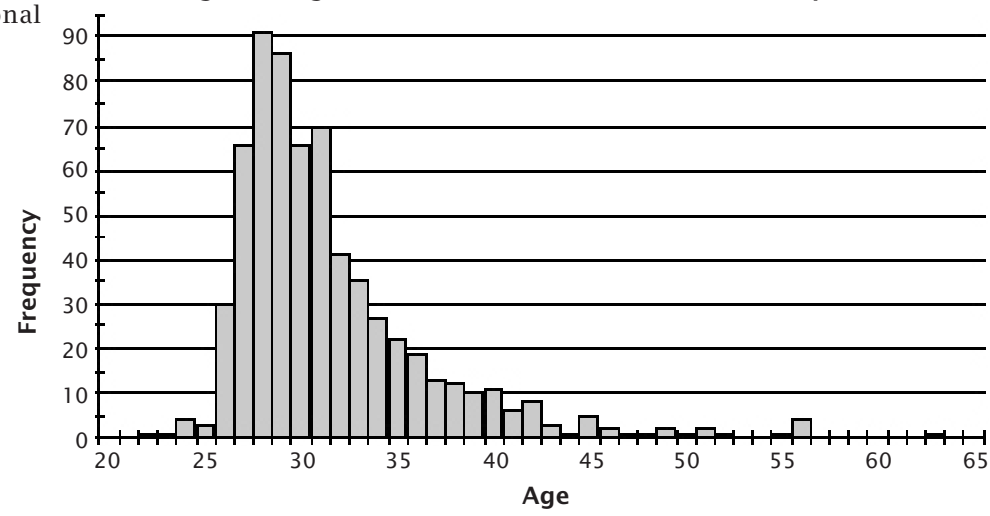
	Employed in U.S.					
	Permanent Total	Temporary Total	Temporary			Unknown
			Permanent not available	Postdoctoral		
				Total	Permanent not available	
Fall 2002	264(52%)	245(48%)	90(37%)	203(83%)	69(34%)	1
Fall 2003	253(54%)	216(46%)	87(40%)	164(76%)	53(32%)	--
Fall 2004	220(49%)	229(51%)	81(35%)	176(77%)	49(28%)	--
Fall 2005	291(56%)	232(44%)	92(40%)	172(74%)	55(32%)	--
Fall 2006	289(51%)	274(49%)	98(36%)	209(76%)	57(27%)	--

Table 4B: Percentage of Annual EENDR Respondents Employed in the U.S. by Employment Sector within Job Status

	Employed in U.S.					
	Permanent			Temporary		
	Academic[1]	Government	Business/ Industry	Academic	Government	Business/ Industry
Fall 2002	70%	6%	23%	93%	6%	1%
Fall 2003	76%	4%	20%	94%	3%	3%
Fall 2004	72%	5%	23%	97%	3%	--
Fall 2005	68%	5%	27%	96%	4%	--
Fall 2006	66%	4%	30%	93%	5%	2%

[1] Includes Research Institutes and other non-profits.

Figure 2: Age Distribution of 2005–2006 EENDR Respondents



position as postdoctoral. Of the 209 respondents taking positions they classified as postdoctoral, 57 (27%) reported that a suitable permanent position was not available.

Table 4B shows the employment trends of permanent and temporary positions broken down by sector for the last five years. Following last year's pattern the percentage of permanently employed EENDR respondents taking employment in academia and government has declined this year, and there was an offsetting increase in the proportion of permanently employed EENDR respondents taking positions in business and industry.

Among the 289 who reported obtaining a permanent position in the U.S. in fall 2006, 66% were employed in academia (including 1% in research institutes and other nonprofits), 4% in government, and 30% in business or industry. Women held 39% of the permanent positions.

Among the 274 individuals with temporary employment in the U.S. this year, 93% were employed in academia (including 9% in research institutes and other nonprofits), 5% in government, and 2% in business or industry.

Figure 2 gives the age distribution of the 647 new doctoral recipients who responded to this question. The median age of new doctoral recipients was 30 years, while the mean age was 32 years. The first and third quartiles were 28 and 33 years, respectively.

Previous Annual Survey Reports

The 2006 First Annual Survey Report was published in the *Notices* in the February 2007 issue. For the last full year of reports, the 2005 First, Second, and Third Annual Survey Reports were published in the *Notices* in the February, August, and December 2006 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`.

Starting Salary Survey of the 2005–2006 Doctoral Recipients

The starting salary figures for 2006 were compiled from information gathered on the EENDR questionnaires sent to individuals who received doctoral degrees in the mathematical sciences during the 2005–2006 academic year from universities in the United States (see previous section for more details).

The questionnaires were distributed to 1,209 recipients of degrees using addresses provided by the departments granting the degrees; 660 individuals responded between late October and April. Responses with insufficient data or from individuals who indicated they had part-time or non-U.S. employment were excluded. 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 and Graphs. Salaries are those reported for the fall immediately following the survey cycle. Years listed denote the survey cycle in which the doctorate was received: for example: survey cycle July 1, 2005–June 30, 2006, is designated as 2006. Salaries reported as 9–10 months exclude stipends for summer grants or summer teaching or the equivalent. M and F are male and female respectively. Male and female figures are not provided when the number of salaries available for analysis in a particular category was five or fewer. All categories of "Teaching/Teaching and Research" and "Research Only" contain those recipients employed at academic institutions only.

Graphs. The graphs show standard boxplots summarizing salary distribution information for the years 1999 through 2006. Values plotted for 1999 through 2005 are converted to 2006 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce. These categories are based on work activities reported in EENDR. Salaries of postdoctorates are shown separately. They are also included in other academic categories with matching work activities.

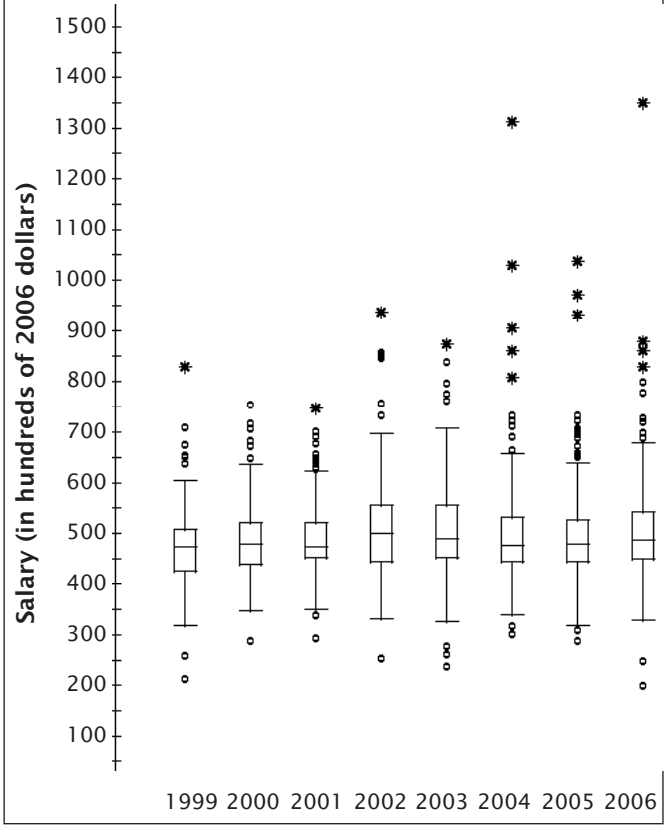
For each boxplot the box shows the first quartile (Q1), the median (M), and the third quartile (Q3). The interquartile range (IQR) is defined as Q3 – Q1. Think of constructing invisible fences 1.5×IQR below Q1 and 1.5×IQR above Q3. Whiskers are drawn from Q3 to the largest observation that falls below the upper invisible fence and from Q1 to the smallest observation that falls above the lower invisible fence. Think of constructing two more invisible fences, each falling 1.5×IQR above or below the existing invisible fences. Any observation that falls between the fences on each end of the boxplots is called an outlier and is plotted as ∘ in the boxplots. Any observation that falls outside of both fences either above or below the box in the boxplot is called an extreme outlier and is marked as ∗ in the boxplot.

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

Academic Teaching/Teaching and Research 9–10-Month Starting Salaries* (in hundreds of dollars)

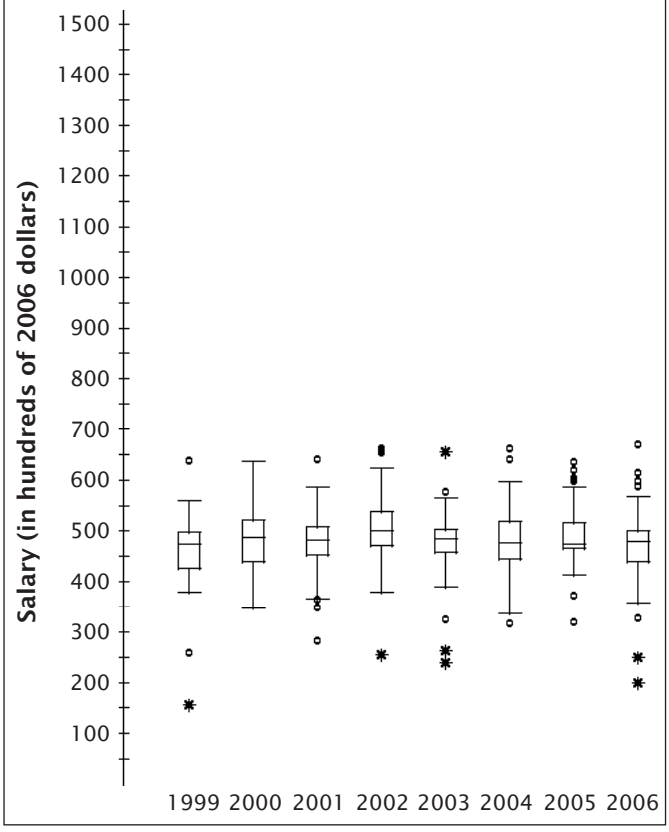
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1980	105	155	171	185	250	367
1985	170	230	250	270	380	416
1990	230	305	320	350	710	455
1995	220	320	350	382	640	441
1998*	140	340	370	410	700	445
1999	180	360	400	430	700	474
2000	250	380	415	450	650	482
2001	259	400	420	461	660	476
2002	230	400	450	500	840	501
2003	220	415	450	510	920	491
2004	285	420	450	500	1234	477
2005	280	430	465	506	1002	479
2006	200	450	490	550	1350	490
2002 M	230	420	450	500	840	
2002 F	300	400	441	498	610	
2003 M	220	420	450	509	855	
2003 F	359	414	444	512	920	
2004 M	285	420	450	490	850	
2004 F	300	421	450	500	1234	
2005 M	300	430	465	510	710	
2005 F	280	430	467	501	1002	
Total (193 male/78 female)						
2006 M	200	450	499	550	880	
2006 F	270	450	480	520	1350	
One year or less experience (167 male/64 female)						
2006 M	200	450	495	550	880	
2006 F	330	449	480	525	1350	



* Postdoctoral salaries are included from 1998 forward.

Academic Postdoctorates Only* 9–10-Month Starting Salaries (in hundreds of dollars)

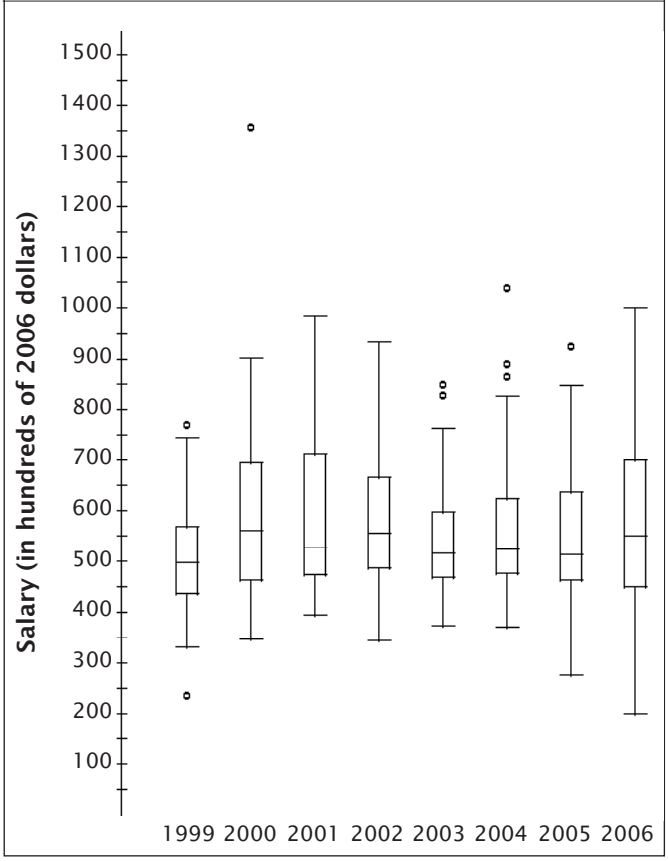
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1997	180	350	385	410	450	468
1998	290	350	390	420	500	469
1999	130	365	400	418	540	474
2000	300	385	420	450	550	487
2001	250	400	425	450	566	482
2002	230	425	450	487	595	501
2003	240	420	450	480	600	491
2004	300	420	450	490	625	477
2005	310	450	460	500	615	473
2006	200	441	480	500	670	480
2002 M	230	425	450	488	595	
2002 F	380	430	450	485	589	
2003 M	240	420	450	485	600	
2003 F	359	408	449	459	510	
2004 M	300	420	450	480	625	
2004 F	400	440	470	500	606	
2005 M	310	450	470	500	615	
2005 F	400	437	450	471	500	
Total (71 male/22 female)						
2006 M	200	450	483	523	670	
2006 F	330	413	464	500	590	
One year or less experience (67 male/20 female)						
2006 M	200	448	472	520	670	
2006 F	330	418	479	500	590	



* A postdoctoral appointment is a temporary position primarily intended to provide an opportunity to extend graduate training or to further research experience.

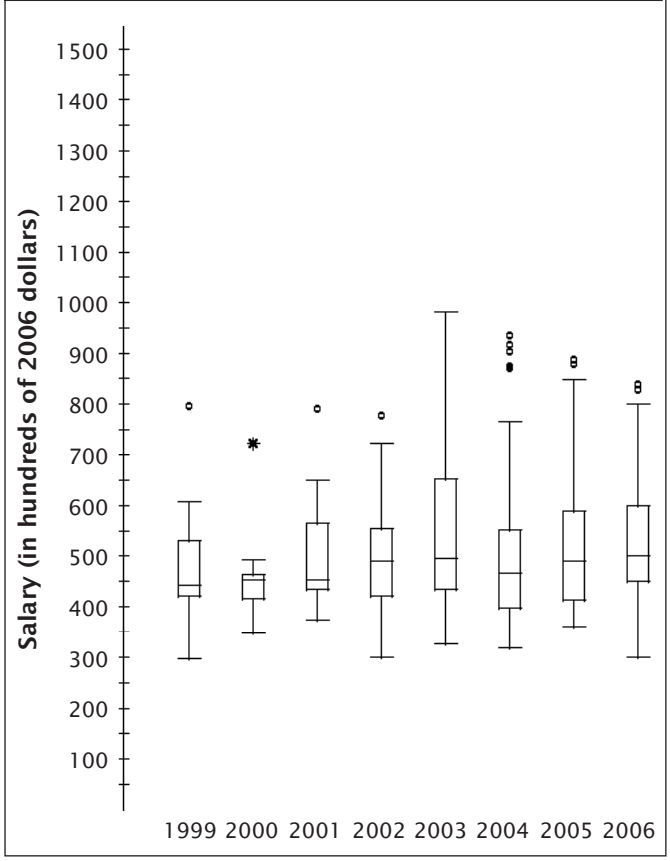
Academic Teaching/Teaching and Research 11–12-Month Starting Salaries* (in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1985	220	230	273	300	470	454
1990	225	318	365	404	670	519
1995	300	354	410	478	600	517
1998*	275	405	480	575	700	577
1999	200	374	420	469	650	498
2000	300	400	485	600	1170	563
2001	350	420	465	615	870	527
2002	310	439	500	597	840	557
2003	345	438	475	550	780	518
2004	350	450	495	583	980	525
2005	270	450	500	615	900	515
2006	200	450	550	700	1000	550
2002 M	310	420	485	595	840	
2002 F	400	453	500	558	700	
2003 M	397	440	490	555	780	
2003 F	345	400	440	513	620	
2004 M	350	448	487	533	980	
2004 F	380	465	545	605	650	
2005 M	270	455	490	549	900	
2005 F	420	450	570	753	824	
Total (44 male/13 female)						
2006 M	300	450	535	685	900	
2006 F	200	520	600	850	1000	
One year or less experience (39 male/12 female)						
2006 M	300	450	530	655	900	
2006 F	400	535	650	850	1000	



Academic Research Only 11–12-Month Starting Salaries (in hundreds of dollars)

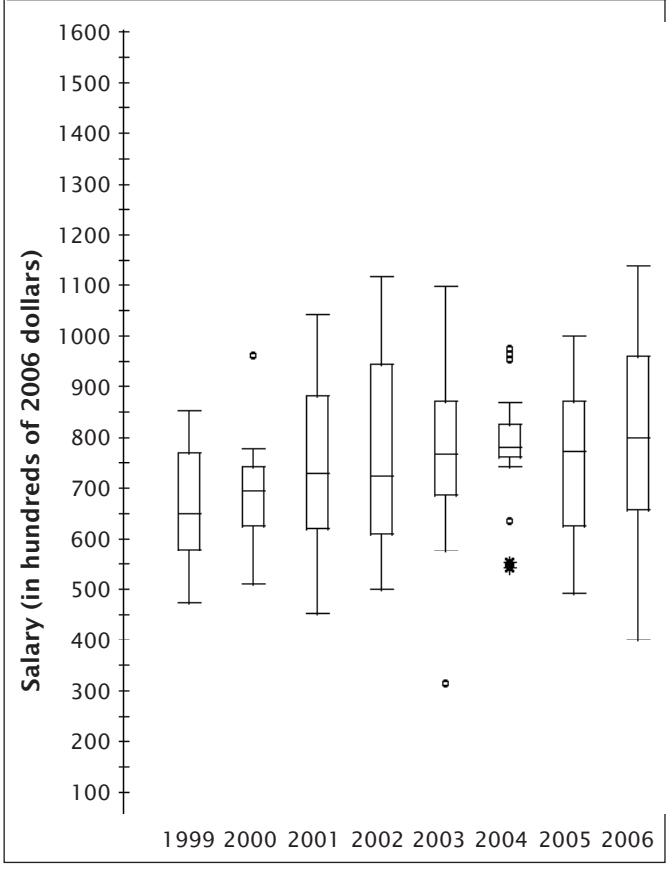
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1997	190	300	350	400	600	426
1998	200	333	360	428	617	433
1999	270	380	400	480	720	474
2000	300	365	400	529	1000	464
2001	300	350	400	575	796	453
2002	270	380	440	500	700	490
2003	300	405	455	600	900	496
2004	300	378	440	510	880	467
2005	350	400	475	570	860	489
2006	300	450	500	600	840	500
2002 M	270	384	440	495	650	
2002 F	310	350	440	505	700	
2003 M	300	410	440	505	820	
2003 F	310	390	480	650	900	
2004 M	300	380	440	560	880	
2004 F	350	378	430	493	820	
2005 M	350	420	480	580	860	
2005 F	350	400	475	529	850	
Total (30 male/15 female)						
2006 M	350	450	500	600	830	
2006 F	300	455	540	680	840	
One year or less experience (24 male/13 female)						
2006 M	360	465	500	575	830	
2006 F	300	445	510	600	840	



* Postdoctoral salaries are included from 1998 forward.

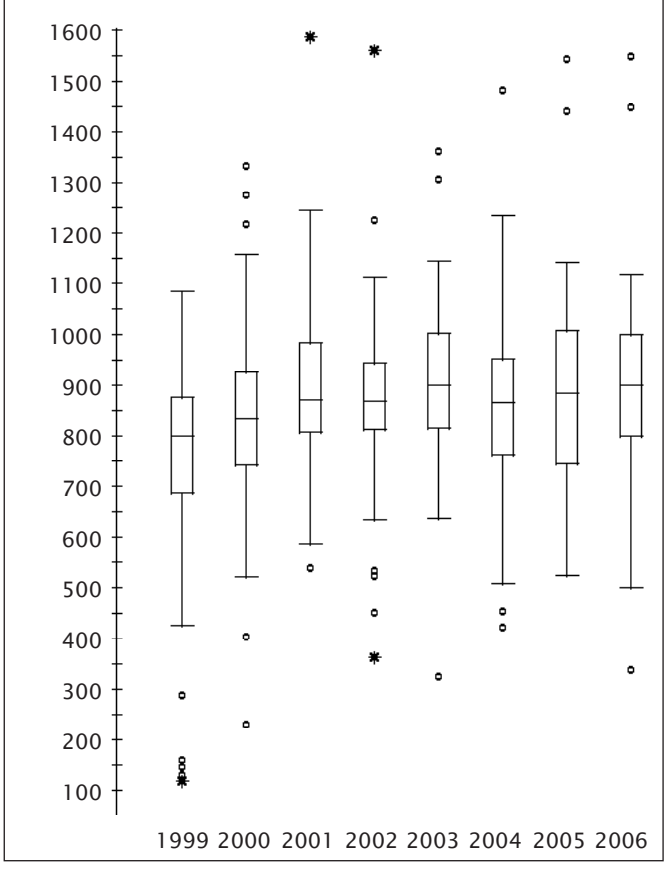
Government
11–12-Month Starting Salaries
(in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1985	263	294	325	381	440	541
1990	320	345	378	430	587	538
1995	370	440	494	507	650	622
1998	320	475	540	736	1250	650
1999	400	495	550	651	720	652
2000	440	540	600	640	830	696
2001	400	580	644	758	920	730
2002	450	551	650	775	1005	724
2003	290	668	705	763	1008	769
2004	510	720	738	780	920	783
2005	480	610	752	848	972	774
2006	400	678	800	961	1140	800
2002 M	450	551	642	725	1005	
2002 F	540	600	700	850	880	
2003 M	290	648	710	788	830	
2003 F	600	683	695	723	1008	
2004 M	520	700	730	740	910	
2004 F	510	733	749	790	920	
2005 M	500	668	790	902	955	
2005 F	480	540	750	770	972	
Total (18 male/8 female)						
2006 M	500	660	800	960	1000	
2006 F	400	775	790	1043	1140	
One year or less experience (16 male/8 female)						
2006 M	500	638	790	960	1000	
2006 F	400	775	790	1043	1140	



Business and Industry
11–12-Month Starting Salaries
(in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2006 $
1985	260	360	400	420	493	666
1990	320	438	495	533	700	704
1995	288	480	568	690	1250	716
1998	240	550	650	750	2250	782
1999	360	600	680	761	2450	806
2000	200	640	720	800	1500	835
2001	475	716	770	865	1850	873
2002	325	734	780	850	1400	869
2003	300	700	800	900	1250	872
2004	400	728	817	900	1800	866
2005	510	755	870	978	2000	895
2006	340	800	900	1000	1550	900
2002 M	325	378	782	858	1100	
2002 F	600	713	768	838	1400	
2003 M	550	725	840	920	1250	
2003 F	300	628	780	816	900	
2004 M	400	710	813	900	1800	
2004 F	480	789	850	900	1100	
2005 M	510	760	930	1005	2000	
2005 F	600	745	860	890	1100	
Total (52 male/33 female)						
2006 M	340	750	890	1000	1450	
2006 F	500	850	900	960	1550	
One year or less experience (43 male/26 female)						
2006 M	340	775	880	1000	1450	
2006 F	500	828	900	948	1550	



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 comprise Groups I, II, and III differ significantly from those used prior to the 1996 survey.

The subdivision of the Group I institutions into Group I Public and Group I Private was new for the 1996 survey. With the increase in number of the Group I departments from 39 to 48, the 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 doctoral-granting departments with scores in the 3.00–5.00 range. Group I Public and Group I Private are Group I doctoral-granting departments at public institutions and private institutions respectively.

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

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

Group IV contains U.S. doctoral-granting departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program.

Group V contains U.S. doctoral-granting departments (or programs) of applied mathematics/applied science, operations research, and management science .

Group Va is applied mathematics/applied science doctoral-granting departments; Group Vb, which is no longer surveyed as of 1998–99, was operations research and management science.

Group M or Master's contains U.S. departments granting a master's degree as the highest graduate degree.

Group B or Bachelor's contains U.S. departments granting a baccalaureate degree only.

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

[1]Research-Doctorate Programs in the United States: Continuity and Change, *edited by Marvin L. Goldberger, Brendan A. Maher, and Pamela Ebert Flattau, National Academy Press, Washington, DC, 1995.*

[2]*These findings were published in* An Assessment of Research-Doctorate Programs in the United States: Mathematical and Physical Sciences, *edited by Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall, National Academy Press, Washington, DC, 1982. The information on mathematics, statistics, and computer science was presented in digest form in the April 1983 issue of the* Notices, *pages 257–67, and an analysis of the classifications was given in the June 1983* Notices, *pages 392–3.*

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 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.

Other Data Sources

American Association of University Professors, *Inequities Persist for Women and Non-Tenure-Track Faculty: The Annual Report on the Economic Status of the Profession 2004–2005*, Academe: Bull. AAUP (March/April 2005), Washington, DC.

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_____, *Science and Engineering Doctorate Awards: 2004* (NSF 06–308), Detailed Statistical Tables, Arlington, VA, 2006.

_____, *Women, Minorities, and Persons with Disabilities in Science and Engineering Data Update* (March 2006). [http://www.nsf.gov/statistics/wmpd/pdf/march2006updates.pdf]

Doctoral Degrees Conferred 2005–2006

Supplementary List

The following list supplements the list of thesis titles published in the February 2007 *Notices*, pages 277–97.

CALIFORNIA

University of California, Davis (4)

STATISTICS

Kerr, Joshua, Signal extraction for seismic array data via partially linear least-squares.

Wu, Ping-Shi, Time-dynamic density estimation and functional discrimination for high-dimensional data.

Zhang, Ying, Time-varying functional regression models for time-to-event.

University of California, Irvine (4)

MATHEMATICS

Akhmedov, Anar, Smooth Structures on 4-manifolds with small Euler characteristics.

Beyaz, Ahmet, A new construction of spin smooth 6-manifolds.

Haessig, Douglas, On the symmetric power of the P-adic D-airy family.

Zhao, Rui, Computational studies of morphogen gradients.

University of California, Riverside (2)

STATISTICS

Kwon, Soonil, Spatial discrete choice models for multinomial respones.

Zainal, Mohammad, Skew-normal distribution with a cauchy skewing function.

IOWA

Iowa State University (4)

MATHEMATICS

Alm, Jeremy, Weak representation theory in the calculus of relations.

Kim, Joohyung, Classification of small class association schemes coming from certain combinatorial objects.

Meyer, Kristen, A new message authentication code based on the non-associativity of quasigroups.

Rajaram, Rajeev, Exact boundary controllability results for sandwich beam systems.

KENTUCKY

University of Kentucky (4)

STATISTICS

Bush, Heather, Khatri-Rao products and conditions for the uniqueness of PARAFAC solutions for 1xJxK arrays.

Chen, Min, Some contributions to the empirical likelihood method.

Tarima, Sergey, Consistency and generalization error bound of feed-forward neutral network trained with smoothing regularizer.

Liu, Chengan, Some sequential and two-stage procedures for selecting the best of treatments in clincial trials.

MARYLAND

University of Maryland, Baltimore County (6)

MATHEMATICS AND STATISTICS

Bebu, Ionut, Some statistical and probabilistic problems in Markov chains.

Gavrea, Bogdan, Simulation of rigid body system with joints, contact and friction.

Li, Cao, The assessment of multivariate bioequivalence.

Liu, Guohui, Sequential designs for logistic phase-I clinical trials.

Wu, Yanping, Topics in univariate bioequivalence testing.

Zhang, Lanju, Response-adaptive randomization in clinical trials with continuous and survival time outcomes.

MASSACHUSETTS

Tufts University (1)

MATHEMATICS

Finn, Lucas, A variational approach to vortex core identification.

MICHIGAN

Western Michigan University (2)

STATISTICS

Ratanaruamkarn, Sauwanit, New estimates of a circular median.

Scherzer, Rebecca, Testing procedures for group sequential clinical trials with multiple survial endpoints.

NEW JERSEY

Princeton University (8)

PROGRAM IN APPLIED COMPUTATIONAL MATHEMATICS

Anthoine, Sandrine, Different wavelet-based approaches for the separation of noisy and blurred mixtures of components. Application to Astrophyical data.

Frierson, Dargan, Studies of the moist general circulation with a simplified moist GCM.

Gerber, Edwin, A dynamical and statistical understanding of the North Atlantic oscillation and annual modes.

Golden, Cliona, Spatio-temporal methods in the analysis of fMRI data in neuroscience.

Leslie, Nandi, Spatial stochastic models for landscape degrading and deforestation in Bolivia and Brazil.

Rustamov, Raif, On Heegard Floer homology of three-manifolds.

Sharp, Richard, Computational methods inspired by chemistry: multiscale modeling and mechanics of control.

Zou, Jing, Sublinear algorithms for the Fourier transform of signals with very few Fourier modes: theory, implementations, and applications.

NEW York

Cornell University (2)

BIOMETRICS UNIT

Denogean, Lisa Renee, Improved approximations of the density functions of estimators in population genetics.

Long, Yu, Bayesian Analysis of Levy processes with financial applications.

OHIO

Case Western Reserve University (6)

EPIDEMIOLOGY AND BIOSTATISTICS

Campbell, Robert, Burden of disease amongst Carolina lupis patients: economic, humanistic, and clinical factors.

Davidson, Carrie, Efficiency, quality and costs in Ohio nursing homes.

Diggs, Jessica, The impact of medicaid outreach initiatives on the health and healthcare access of children in Ohio.

Mascha, Edward, Assessing individual treatment effect heterogeneity for binary outcomes.

Schumacher, Fredrick Ray, Relation between selenoprotein gene, selenium, and prostate cancer.

Wang, Tao, Extensions of Haseman-Elstron regression for linkage analysis.

SOUTH CAROLINA

University of South Carolina (3)

STATISTICS

Han, Jun, Parametric latent class joint model for longitudinal markers and recurrent events.

Parody, Robert, Simultaneous inference on the improvement in response surfaces.

Vera, Francisco, General convex stochastic orderings and related martingale-type structures.

VIRGINA

Virgina Tech (8)

STATISTICS

Chen, Younan, Bayesian hierarchical modeling on dual response surfaces.

Duan, Yuyan, A modified Bayesian power prior approach with applications in water quality evaluation.

Eisenbies, Penelop, Bayesian hierarchical methods and use of ecological thresholds and changepoints for habitat selection models.

Jensen, Willis, Profile monitoring for mixed model data.

Modarres-Mousavi, Shabnam, Monitoring Markov dependent binary observations with a log-likelihood ratio base CUSUM control chart.

Sego, Landon, Applications of control charts in medicine and epidemiology.

Yan, Mingjin, Methods of determining the number of clusters in a data set and a new clustering criterion.

Zhong, Xin, Efficient sampling plans for control charts when monitoring an autocorelated process.

WISCONSIN

University of Wisconsin, Madison (9)

STATISTICS

Monuz, Alendro, On approximate p-values for time series outlier detection.

Peng, Limin, Contributions to semi-completing risks data.

Song, Qinghua, Contributions to regression and classification tree methods.

Wang, Lin, Imputation methods for non-monotone non-ignorable missing data in logitudinal studies.

Xie, Xianhong, Smoothing in magnetic resource image analysis and a hybrid loss for support vector machine.

Yang, Hyuna, Model-based clustering of genomic observiations: generalizing the instability selection network model.

Yan, Ping, Bayesian cluster modeling for space-time disease counts.

Yue, Wei, Multi-resolution tree-structured spatial models.

Lu, Yuefeng, Contributions to functional data analysis with biological applications.

University of Wisconsin, Milwaukee (3)

MATHEMATICAL SCIENCES

Liu, Zhiyuan, Vortices in deformation background flow-A sensitivity source of the atmosphere.

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