2007 Annual Survey of the Mathematical Sciences in the United States

(Second Report)

Updated Report on the 2006–2007 Doctoral Recipients
Starting Salary Survey of the 2006–2007 Doctoral Recipients

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This Second Report of the 2007 Annual Survey gives an update of the 2006–2007 new doctoral recipients from the First Report, which appeared in the *Notices of the AMS* in February 2008, pages 253–63. The First Report contains a section on new doctoral recipients in statistics that is not updated here.

The 2007 Annual Survey represents the fifty-first in an annual series begun in 1957 by the American Mathematical Society. The 2007 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 Mathematical Association of America, and the Society of Industrial and Applied Mathematics. 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 2006–2007 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, 2006, and June 30, 2007, was collected from doctorate-granting departments beginning in late spring 2007. The "2007 Annual Survey First Report" (*Notices*, February 2008, pages 253–63) presented survey results about 1,157 new doctoral recipients based on the data provided by the departments. Here we update this information using data obtained from 547 new doctoral recipients who responded to a questionnaire, "Employment Experiences of New Doctoral Recipients" (EENDR), sent in early October 2007 to all new doctoral recipients. In addition, this report incorporates information on an additional 176 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 2006–2007 doctoral recipients reported on in the First Report were published in "Doctoral Degrees Conferred" (*Notices*, February 2008, pages 280–99). A supplemental listing of the 176 additional new doctoral recipients appears at the end of this report on pages 826–830.

Doctorates Granted Departmental Response Rates (updated April 2007)

Group I (Pu)[1]	25 of 25 including	0 with no degrees
Group I (Pr)	20 of 23 including	0 with no degrees
Group II	52 of 56 including	1 with no degrees
Group III	64 of 75 including	16 with no degrees
Group IV	70 of 88 including	8 with no degrees
Group Va	21 of 21 including	1 with no degrees

[1] For definitions of groups see page 825.

Polly Phipps is a senior research statistician with the Bureau of Labor Statistics. James W. Maxwell is AMS associate executive director for special projects. Colleen A. Rose is AMS survey analyst.

Highlights

There were 1,333 doctoral recipients from U.S. institutions for 2006–2007, up 22 (2%) from the previous year, continuing an upward trend that began in 2002–2003. This is the highest number of new Ph.D.'s ever reported, and it would have been even larger but for the increased number of nonresponding departments. Of the 242 departments that responded in both 2006 and 2007 the number of degrees awarded increased from 1,216 to 1,307, a 7.5% increase.

The final unemployment rate was 2.4% for all 2006–2007 doctoral recipients and 1.5% for females, the lowest percentages reported since the early 1990's.

The number of new doctoral recipients who are not U.S. citizens is 757, down 2 from last year's number, but up 219 (41%) from 2002–2003.

The number of new doctoral recipients who are U.S. citizens is 576, up 24 (4%) from last year's number and 77 (15%) from 2002–2003. This is the highest number of U.S. citizens reported over the past ten surveys. The percentage of U.S. citizens among all doctoral recipients is 43%, up from 42% last year.

Females totaled 446 (33%) of all new doctoral recipients, up in number and percentage from 422 (32%) last year. The highest percentage of females among the annual counts of doctoral recipients was 34%, reported for 1998–1999. Of the 576 U.S. citizen new doctoral recipients, 180 are female (31%), up in number and percent from last year.

Of the 576 U.S. citizen new doctoral recipients this year, 6% are underrepresented minorities compared to 8% last year.

Of the 1,190 new doctoral recipients whose employment status is known, 1,151 reported having employment in fall 2007, with 88% (1,012) finding employment in the U.S. compared with 87% last year. Non-U.S. citizens accounted for 52% of those employed in the U.S. (last year this percentage was 58%).

The number of new doctoral recipients hired into U.S. academic positions in fall 2007 is 756. This is the highest such number reported over the past twenty-six 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.

The number of new doctoral recipients taking positions in U.S. business/industry and government was 256 in fall 2007, a 5% increase from last year's numbers. This group constitutes 25% of all the new doctoral recipients employed in the U.S., the same percentage as last year.

There were 547 new doctoral recipients responding to the EENDR survey; of the 486 who found employment in the U.S., 53% reported obtaining a permanent position (up from 51% in fall 2006).

The percentage of temporarily employed respondents who reported taking a postdoctoral position in the U.S. decreased from 209 (76%) in fall 2006 to 172 (76%) in fall 2007.

Table 1A: Doctoral Recipients: Fall and Final Counts

Year	Fall	Final
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
2006–2007	1157	1333

Table 1B: Doctoral Recipients: Citizenship

Year	U.S.	Non-U.S.	TOTAL
2002–2003	499	538	**1037**
2003–2004	459	622	**1081**
2004–2005	496	726	**1222**
2005–2006	552	759	**1311**
2006–2007	576	757	**1333**

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

	Department Group[1]					
	I (Pu)	I (Pr)	II	III	IV	Va
Number	322	141	264	152	357	97
Percent	24%	11%	20%	11%	27%	7%

[1] For definitions of groups see page 825.

Table 1D: Doctoral Recipients: U.S. Citizens—Percent Female and Percent Underrepresented Minorities

Year	U.S.	% Female	% URM*
1997–1998	537	29%	5%
1998–1999	560	34%	5%
1999–2000	566	29%	5%
2000–2001	532	31%	7%
2001–2002	428	30%	6%
2002–2003	499	32%	6%
2003–2004	459	33%	7%
2004–2005	496	28%	7%
2005–2006	552	28%	8%
2006–2007	576	31%	6%

* Percentage of underrepresented minorities calculated using Sex, Race/Ethnicity and Citizenship data gathered from granting departments.

Table 2A: Fall 2007 Employment Status of 2006–2007 Doctoral Recipients by Field of Thesis (updated April 2008)

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]		23	14	17	7	5	4	11	2	0	9	0	1	**93**
Group I (Private)		21	4	17	3	0	2	4	5	0	8	0	0	**64**
Group II		16	9	10	8	1	4	10	9	1	10	0	1	**79**
Group III		8	4	4	3	2	15	5	2	1	3	2	1	**50**
Group IV		1	1	0	0	2	32	3	2	0	3	0	0	**44**
Group Va		0	0	1	4	0	0	2	4	0	4	0	0	**15**
Master's		11	10	9	7	1	22	6	5	3	6	6	0	**86**
Bachelor's		32	17	18	15	4	14	16	9	1	13	4	0	**143**
Two-Year College		5	1	1	1	2	1	3	1	0	1	0	0	**16**
Other Academic Dept.[2]		6	6	3	5	0	68	18	8	0	5	2	2	**123**
Research Institute/ Other Nonprofit		3	0	3	1	1	21	8	3	1	2	0	0	**43**
Government		3	1	2	2	1	10	7	4	0	2	0	0	**32**
Business and Industry		8	2	6	19	17	130	17	11	5	7	0	2	**224**
Non-U.S. Academic		34	8	14	11	4	21	12	2	3	19	1	0	**129**
Non-U.S. Nonacademic		1	0	1	1	1	3	0	2	1	0	0	0	**10**
Not Seeking Employment		3	1	0	0	0	3	2	0	0	1	1	0	**11**
Still Seeking Employment		6	2	2	3	0	11	2	2	0	0	0	0	**28**
Unknown (U.S.)		6	9	6	4	2	18	9	3	2	2	2	1	**64**
Unknown (non-U.S.)[3]		6	5	6	6	3	31	8	4	3	6	1	0	**79**
TOTAL		**193**	**94**	**120**	**100**	**46**	**410**	**143**	**78**	**21**	**101**	**19**	**8**	**1333**
Column Subtotals	Male	145	65	94	68	34	215	111	53	14	75	8	5	**887**
	Female	48	29	26	32	12	195	32	25	7	26	11	3	**446**

[1] For definitions of groups see page 825.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2B: Fall 2007 Employment Status of 2006–2007 Doctoral Recipients by Type of Degree-Granting Department (updated April 2008)

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]		50	22	9	2	3	7	**93**	74	19
Group I (Private)		33	19	6	0	2	4	**64**	47	17
Group II		25	12	31	5	4	2	**79**	56	23
Group III		8	2	13	18	6	3	**50**	30	20
Group IV		4	1	4	1	33	1	**44**	24	20
Group Va		5	0	0	1	0	9	**15**	10	5
Master's		16	4	35	18	13	0	**86**	50	36
Bachelor's		35	9	57	35	4	3	**143**	89	54
Two-Year College		3	0	6	4	0	3	**16**	10	6
Other Academic Dept.[2]		9	13	16	11	66	8	**123**	76	47
Research Institute/ Other Nonprofit		3	9	4	0	20	7	**43**	26	17
Government		8	1	4	5	8	6	**32**	24	8
Business and Industry		42	11	16	22	115	18	**224**	142	82
Non-U.S. Academic		42	23	28	5	23	8	**129**	100	29
Non-U.S. Nonacademic		2	3	0	0	3	2	**10**	10	0
Not Seeking Employment		1	2	3	2	3	0	**11**	5	6
Still Seeking Employment		4	1	6	6	6	5	**28**	22	6
Unknown (U.S.)		15	5	16	9	18	1	**64**	42	22
Unknown (non-U.S.)[3]		17	4	10	8	30	10	**79**	50	29
TOTAL		**322**	**141**	**264**	**152**	**357**	**97**	**1333**	**887**	**446**
Column Subtotals	Male	240	106	185	99	182	75	**887**		
	Female	82	35	79	53	175	22	**446**		

[1] For definitions of groups see page 825.
[2] These are departments outside the mathematical sciences.
[3] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2C: Degree-Granting Department of 2006–2007 Doctoral Recipients by Field of Thesis (updated April 2008)

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]	89	28	41	39	12	11	38	17	5	40	0	2	**322**
Group I (Private)	42	8	36	12	9	3	12	4	1	14	0	0	**141**
Group II	50	30	38	15	14	9	46	25	5	21	8	3	**264**
Group III	9	16	3	17	5	43	17	10	4	16	11	1	**152**
Group IV	0	12	0	0	2	333	6	2	1	0	0	1	**357**
Group Va	3	0	2	17	4	11	24	20	5	10	0	1	**97**
TOTAL	**193**	**94**	**120**	**100**	**46**	**410**	**143**	**78**	**21**	**101**	**19**	**8**	**1333**

[1] For definitions of groups see page 825.

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

	Employed in U.S.		Employed outside. U.S.		NUMBER EMPLOYED
	Academic[1]	Nonacademic	Academic	Nonacademic	
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**
Fall 2007	66%	22%	11%	1%	**1151**

[1] Includes research institutes and other non-profits.

Updated Employment Status of 2006–2007 Doctoral Recipients

The updated response rates for the 2007 Survey of New Doctoral Recipients appear on page 814. The total number of departments responding in time for inclusion in this Second Report was 252, 37 more than were included in the 2007 First Report but 17 less than the total number responding for inclusion in the 2006 Second Report. No adjustments were made in this report for nonresponding departments. Definitions of the various groups surveyed in the Annual Survey can be found on page 825 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 1997 through 2007. This year the total number of new doctoral recipients is 1,333, up from the previous year by 22. A detailed review of responding and nonresponding departments indicates that the increase in doctoral recipients from 2006 to 2007

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

Year	Percentage
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
2007	2.4

[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 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
Fall 2007	191	50	91	12	181	20	95	27	151	123	47	24	756	256

[1] For definitions of groups see page 825.
[2] Includes research institutes and other non-profits.

would have been even larger but for the increased number of nonresponding departments for 2007. Of the 242 departments that responded in both 2006 and 2007 the number of degrees awarded increased from 1,216 to 1,307, a 7.5% increase.

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 576, an increase of 24 (4%) over last year. The number of non-U.S. citizen new doctoral recipients dropped by 2 to 757.

Table 1C gives a breakdown of the 1,333 doctoral degrees awarded in the mathematical sciences between July 1, 2006, and June 30, 2007, by type of degree-granting department.

Table 1D shows the number of U.S. citizens, receiving degrees for the years 1997–1998 through 2006–2007. New this year is the addition of columns showing the percentage of U.S. citizen females and the percentage of U.S. citizen underrepresented minorities. This includes any person having origins in the categories American Indian or Alaska Native, Black or African American, Hispanic or Latino, and Native Hawaiian or Other Pacific Islander.

Tables 2A, 2B, and 2C display updates of these same numbered tables in the First Report to include the 176 additional doctoral recipients reported too late for inclusion in the First Report. 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 2007 employment status of 1,190 of the 1,333 doctoral recipients was known.

The fall 2007 unemployment rate for new doctoral recipients, based on information gathered by the time of the Second Report, was 2.4%. Figure 1 presents the fall 1983 through fall 2007 trend in the final unemployment rate of new doctoral recipients. New for this year is the addition of the unemployment rate of female new doctoral recipients for the fall 1992 through 2007. The counts on which these rates are determined do not include those new doctoral recipients whose fall employment status was still unknown at the time of the Second Report. This year the number of recipients whose employment status was reported as unknown decreased to 143 from 163 last year.

Of the 1,190 new doctoral recipients whose employment is known, 1,012 were employed in the U.S., 139 were employed outside the U.S., 28 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 percentages reported for fall 2007 are essentially unchanged from those reported for fall 2006. Among new doctoral recipients who are employed in the U.S.,

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

	Hiring Department Group[1]					
	I–III	IV	Va	M&B	Other	**TOTAL**
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**
Fall 2007	286	44	15	229	182	**756**

[1] For definitions of groups see page 825.

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

	Department Group[1]							
	I (Pu)	I(Pr)	II	III	IV	Va	M&B	**TOTAL**
% Female								
Produced	25%	25%	30%	35%	49%	23%	-	**33%**
Hired	20%	27%	29%	40%	45%	33%	39%	**34%**

[1] For definitions of groups see page 825.

Table 3D: Citizenship of 2006–2007 Male Doctoral Recipients by Fall 2007 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	335	46	268	9	**658**
U.S. Academic	266	34	185	7	**492**
Groups[1] I, II, III, and Va	111	8	95	3	**217**
Group IV	13	2	8	1	**24**
Non-Ph.D. Department	134	22	66	3	**225**
Research Institute/Other Nonprofit	8	2	16	0	**26**
U.S. Nonacademic	69	12	83	2	**166**
Non-U.S. Employer	19	1	87	3	**110**
Non-U.S. Academic	18	1	78	3	**100**
Non-U.S. Nonacademic	1	0	9	0	**10**
Not Seeking Employment	4	0	1	0	**5**
Still Seeking Employment	11	2	9	0	**22**
Subtotal	369	49	365	12	**795**
Unknown (U.S.)	27	1	13	1	**42**
Unknown (non-U.S.)[2]	0	0	47	3	**50**
TOTAL	**396**	**50**	**425**	**16**	**887**

[1] For definitions of groups see page 825.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

Table 3E: Citizenship of 2006–2007 Female Doctoral Recipients by Fall 2007 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	151	36	160	7	**354**
U.S. Academic	128	24	106	6	**264**
Groups[1] I, II, III, and Va	37	8	37	2	**84**
Group IV	7	2	10	1	**20**
Non-Ph.D. Department	79	14	48	2	**143**
Research Institute/Other Nonprofit	5	0	11	1	**17**
U.S. Nonacademic	23	12	54	1	**90**
Non-U.S. Employer	8	1	19	1	**29**
Non-U.S. Academic	8	1	19	1	**29**
Non-U.S. Nonacademic	0	0	0	0	**0**
Not Seeking Employment	5	1	0	0	**6**
Still Seeking Employment	3	0	3	0	**6**
Subtotal	167	38	182	8	**395**
Unknown (U.S.)	13	5	4	0	**22**
Unknown (non-U.S.)[2]	0	0	28	1	**29**
TOTAL	**180**	**43**	**214**	**9**	**446**

[1] For definitions of groups see page 825.
[2] Includes those whose status is reported as "unknown" or "still seeking employment".

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 7% (down from 10% last year), while the percentage for those with theses in probability or statistics is the highest at 44% (up from 40% last year).

Table 3A shows that the fall 2007 total number of doctoral recipients taking positions in business/industry and government is 256. This number reflects an increase of 5% over last year. Groups I, II, and III combined are unchanged from their total for fall 2006. Group IV alone accounts for the increase.

Table 3B shows that the number of new doctoral recipients taking U.S. academic positions has increased to 756, from 715 in 2006. Doctoral hires

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	168	177	**345**
Academic: M&B, Other	226	185	**411**
Nonacademic	92	164	**256**
TOTAL	**486**	**526**	**1012**

into U.S. academic positions are up in all groups except Groups IV (down to 44 from 73 last year) and Group I (Pr) (down to 64 from 75 last year). The biggest percentage increase is in Group I (Pu) (31%). Doctoral hires into non-U.S. academic positions increased by 8% to 129 from 119 last year.

Table 3C gives information about the production of female new doctoral recipients in the doctoral-granting departments and the hiring of females by all department groups. From Table 3C we see that the percentage of females hired ranges from a high of 45% in Group IV, followed by Group III at 40% to a low of 20% in Group I (Pu). The percentage of female new doctoral recipients produced is highest in Group IV (49%).

Updated Information about 2006–2007 Doctoral Recipients by Sex and Citizenship

Tables 3D and 3E show the sex and citizenship of the 1,333 new doctoral recipients and the fact that 1,012 new doctoral recipients found jobs in the U.S. this year. This is 85% of the 1,190 new doctoral recipients whose employment status was known and 88% of the 1,151 known to have jobs in fall 2007. Last year these percentages were 83% and 87%, respectively.

Sex and citizenship are known for all of the 1,333 new doctoral recipients. The final count of new doctoral recipients who are U.S. citizens is 576 (43%) (up from 42% last year). Pages 258–61 of the First Report present further information related to the citizenship of the 2006–2007 new doctoral recipients.

Of the 576 U.S. citizen new doctoral recipients reported for 2006–2007, 180 are female and 396 are male. Females accounted for 31% of the U.S. citizen total (up from 28% last year). The number of female U.S. citizens has increased by 27 from last year's count of 153, and the number of male U.S. citizens decreased by 3 from last year's count of 399.

Table 3F shows that U.S. citizens accounted for 48% of those employed in the U.S. (up from 46% last year). Groups I through Va hired 49% U.S. citizens, while groups M, B, and all other academic departments hired 55% U.S. citizens (last year these percentages were 42% and 54%, respectively). U.S. citizens represented 36% of those hired into nonacademic positions (last year 39%). Among all the 1,012 new 2006–2007 doctoral recipients employed in the U.S., 25% took nonacademic employment (government or business and industry.) This is the same percentage as last year.

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

	Employed in U.S.					
			Temporary			Unknown
	Permanent Total	Temporary Total	Permanent not available	Postdoctoral		
				Total	Permanent not available	
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%)	--
Fall 2007	259(53%)	227(47%)	88(39%)	172(76%)	57(33%)	--

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

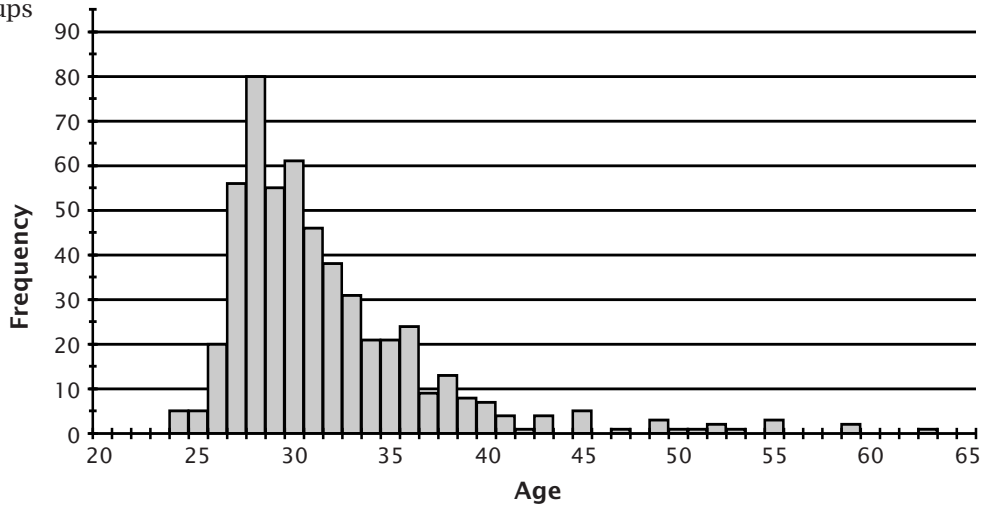
	Employed in U.S.					
	Permanent			Temporary		
	Academic[1]	Government	Business/ Industry	Academic	Government	Business/ Industry
Fall 2003	76%	4%	20%	94%	3%	3%
Fall 2004	72%	5%	23%	97%	3%	--
Fall 2005	68%	5%	27%	96%	4%	--
Fall 2006	66%	4%	30%	93%	5%	2%
Fall 2007	68%	3%	29%	93%	4%	3%

[1] Includes research institutes and other non-profits.

New Information from the EENDR Survey

Of the 1,157 new doctoral recipients reported in the First Report, the 1,028 whose addresses were known were sent the "Employment Experiences of New Doctoral Recipients" (EENDR) survey in October 2007, and 547 (47%) responded. The response rates varied considerably among the various subgroups of new doctoral recipients

Figure 2: Age Distribution of 2006–2007 EENDR Respondents



defined by their employment status as reported by departments. Among those who were employed the highest response rate, 54%, was from those employed in the U.S. academic, while the lowest, 38%, 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 2006–2007 doctoral recipients.

Table 4A gives the numbers and percentages of EENDR respondents taking permanent and temporary positions in the U.S for fall 2003 through fall 2007.

This year we see that among the 486 employed in the U.S., 259 reported obtaining a permanent position and 227 a temporary position. While these numbers both reflect a decrease, the percentage of individuals taking permanent positions in 2007 has increased to 53% from 51% in 2006, and the percentage of those taking temporary positions has decreased to 47% from 49%. Of the 227 in temporary positions, 88 (39%) reported taking temporary employment because a suitable permanent position was not available. Most respondents classified their temporary position as postdoctoral (76%). Of the 172 respondents taking postdoctal positions, 57 (33%) 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. Among the 259 who reported obtaining a permanent position in the U.S. in fall 2007, 68% were employed in academia (including 1% in research institutes and other nonprofits), 3% in government, and 29% in business or industry. Women held 34% of the permanent positions.

Among the 227 individuals with temporary employment in the U.S. this year, 93% were employed in academia (including 8% in research institutes and other nonprofits), 4% in government, and 3% in business or industry.

Figure 2 gives the age distribution of the 529 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. This distribution is consistent with those of the recent past.

Previous Annual Survey Reports

The 2007 First Report was published in the *Notices* in the February 2008 issue. For the last full year of reports, the 2006 First, Second, and Third Reports were published in the *Notices* in the February, August, and December 2007 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 2006–2007 Doctoral Recipients

The starting salary figures for 2007 were compiled from information gathered on the EENDR questionnaires sent to individuals who received doctoral degrees in the mathematical sciences during the 2006–2007 academic year from universities in the United States (see previous section for more details).

The questionnaires were distributed to 1,157 recipients of degrees using addresses provided by the departments granting the degrees; 547 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.

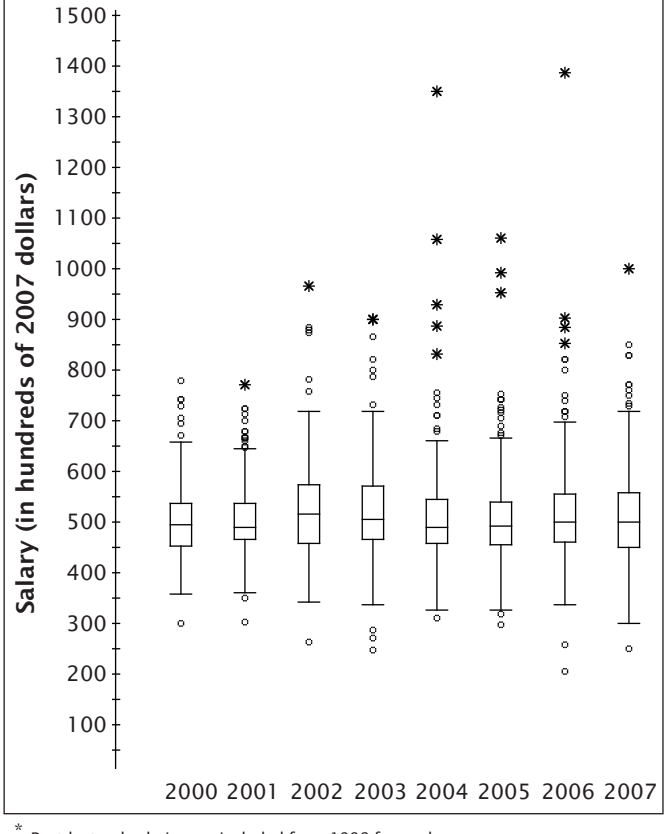
Key to Tables and Graphs. Salaries are those reported for the fall immediately following the survey cycle. Years listed denote the survey cycle in which the doctorate was received—for example, survey cycle July 1, 2006–June 30, 2007, is designated as 2007. Salaries reported as 9–10 months exclude stipends 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 2000 through 2007. Values plotted for 2000 through 2006 are converted to 2007 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

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

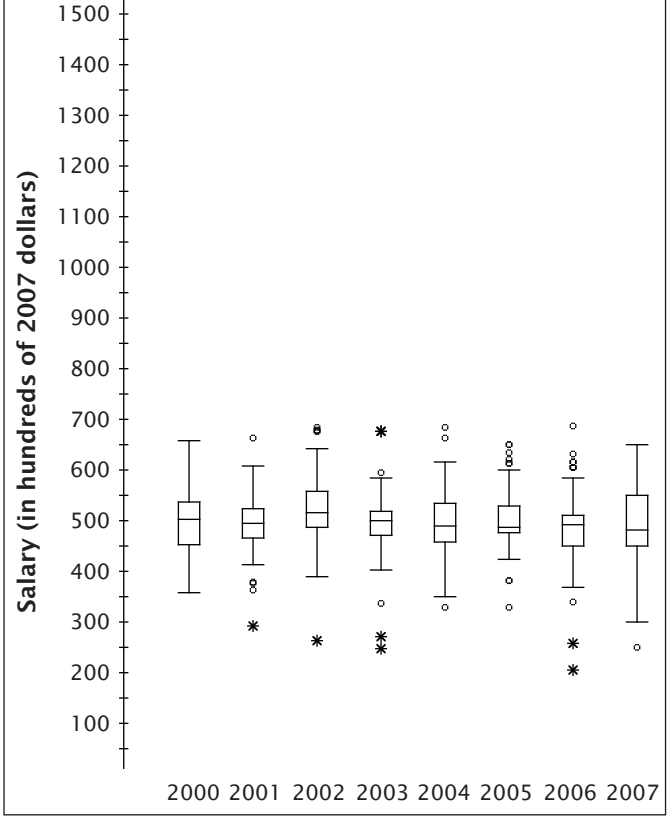
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2007 $
1980	105	155	171	185	250	379
1985	170	230	250	270	380	429
1990	230	305	320	350	710	469
1995	220	320	350	382	640	455
1998*	140	340	370	410	700	459
2000	250	380	415	450	650	497
2001	259	400	420	461	660	491
2002	230	400	450	500	840	517
2003	220	415	450	510	920	506
2004	285	420	450	500	1234	492
2005	280	430	465	506	1002	492
2006	200	450	490	550	1350	503
2007	250	450	500	560	1000	500
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	
2006 M	200	450	499	550	880	
2006 F	270	450	480	520	1350	
Total (180 male/86 female)						
2007 M	320	450	500	558	1000	
2007 F	250	438	490	560	830	
One year or less experience (140 male/69 female)						
2007 M	320	450	500	558	850	
2007 F	250	430	470	545	830	



* Postdoctoral salaries are included from 1998 forward.

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

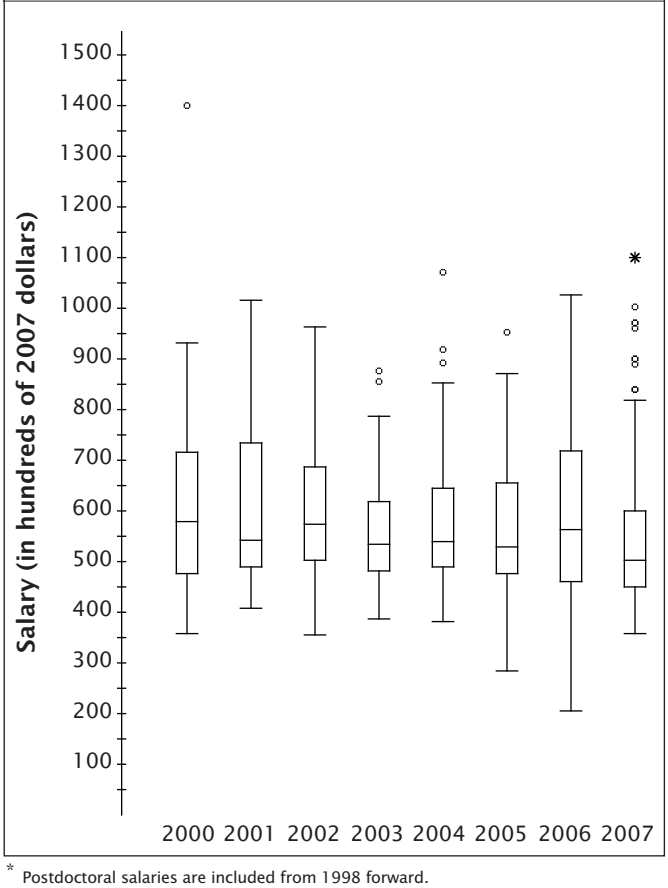
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2007 $
1997	180	350	385	410	450	483
1998	290	350	390	420	500	484
1999	130	365	400	418	540	489
2000	300	385	420	450	550	503
2001	250	400	425	450	566	497
2002	230	425	450	487	595	517
2003	240	420	450	480	600	506
2004	300	420	450	490	625	492
2005	310	450	460	500	615	487
2006	200	441	480	500	670	493
2007	250	450	483	550	650	483
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	
2006 M	200	450	483	523	670	
2006 F	330	413	464	500	590	
Total (59 male/24 female)						
2007 M	360	450	490	575	650	
2007 F	250	425	470	515	650	
One year or less experience (47 male/23 female)						
2007 M	360	450	500	580	650	
2007 F	250	423	465	523	650	



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

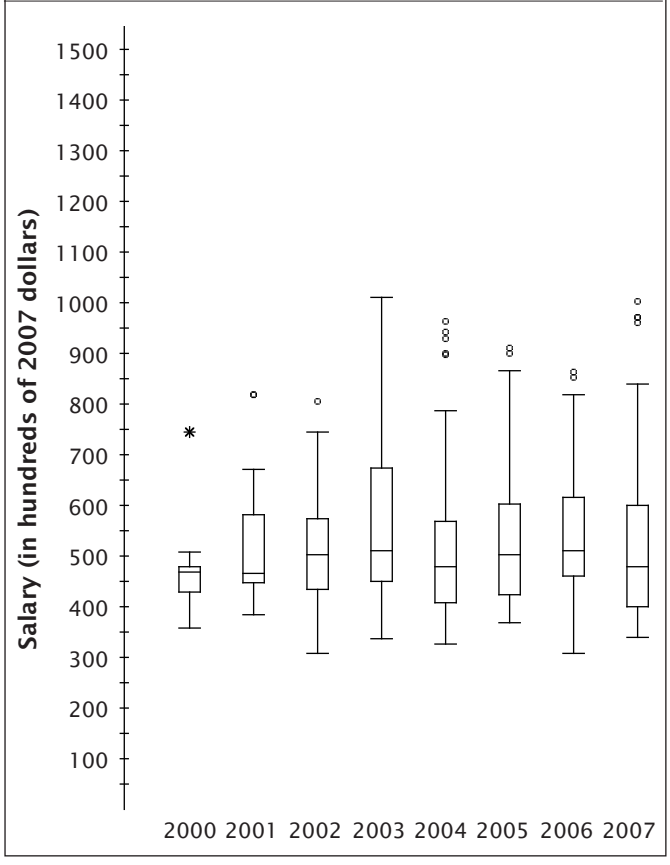
Academic Teaching/Teaching and Research 11–12-Month Starting Salaries* (in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2007 $
1985	220	230	273	300	470	469
1990	225	318	365	404	670	535
1995	300	354	410	478	600	533
1998*	275	405	480	575	700	595
2000	300	400	485	600	1170	580
2001	350	420	465	615	870	543
2002	310	439	500	597	840	574
2003	345	438	475	550	780	534
2004	350	450	495	583	980	541
2005	270	450	500	615	900	530
2006	200	450	550	700	1000	565
2007	340	450	504	600	1100	504
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	
2006 M	300	450	535	685	900	
2006 F	200	520	600	850	1000	
Total (56 male/26 female)						
2007 M	360	440	500	600	1100	
2007 F	340	480	529	703	1003	
One year or less experience (44 male/22 female)						
2007 M	360	424	500	600	970	
2007 F	340	458	500	690	1003	



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

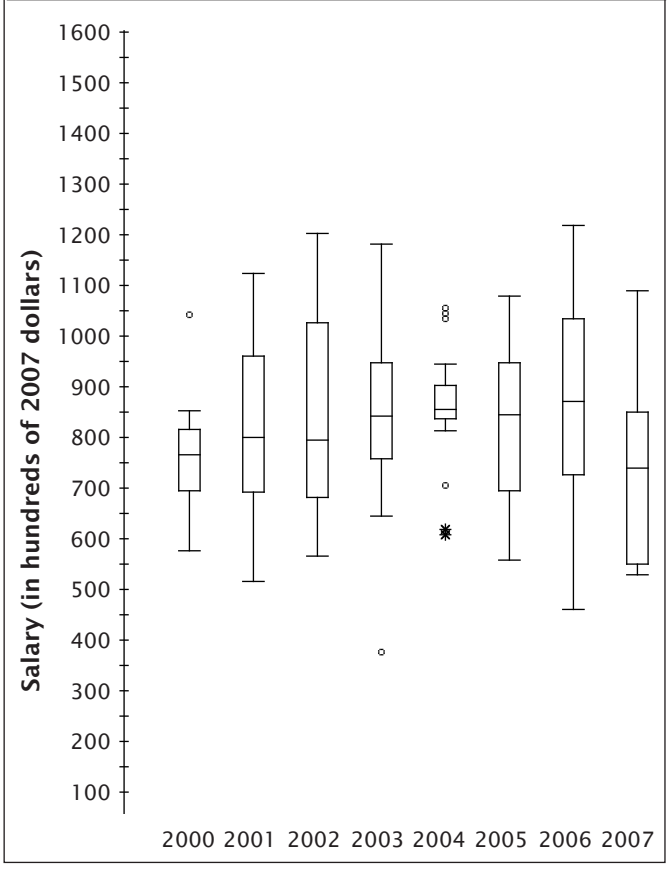
Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2007 $
1997	190	300	350	400	600	439
1998	200	333	360	428	617	447
1999	270	380	400	480	720	489
2000	300	365	400	529	1000	479
2001	300	350	400	575	796	468
2002	270	380	440	500	700	505
2003	300	405	455	600	900	512
2004	300	378	440	510	880	481
2005	350	400	475	570	860	503
2006	300	450	500	600	840	513
2007	340	415	480	540	1003	480
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	
2006 M	350	450	500	600	830	
2006 F	300	455	540	680	840	
Total (25 male/11 female)						
2007 M	360	400	470	600	970	
2007 F	340	465	480	504	1003	
One year or less experience (21 male/11 female)						
2007 M	360	400	440	600	970	
2007 F	340	465	480	504	1003	



* Postdoctoral salaries are included from 1998 forward.

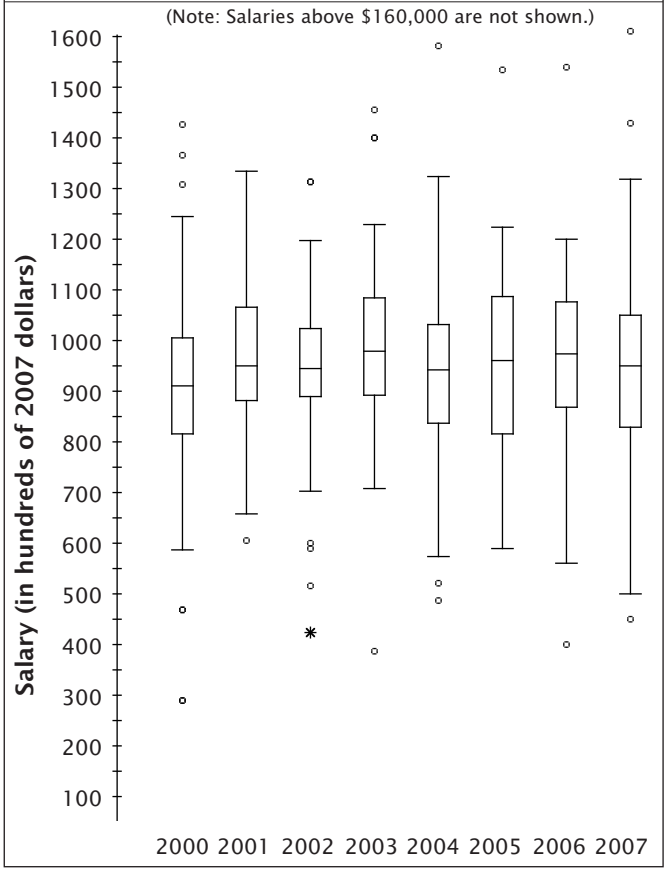
Government
11–12-Month Starting Salaries
(in hundreds of dollars)

Ph.D. Year	Min	Q_1	Median	Q_3	Max	Reported Median in 2007 $
1985	263	294	325	381	440	558
1990	320	345	378	430	587	554
1995	370	440	494	507	650	642
1999	400	495	550	651	720	673
2000	440	540	600	640	830	718
2001	400	580	644	758	920	753
2002	450	551	650	775	1005	747
2003	290	668	705	763	1008	793
2004	510	720	738	780	920	807
2005	480	610	752	848	972	796
2006	400	678	800	961	1140	821
2007	480	500	690	800	1040	690
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	
2006 M	500	660	800	960	1000	
2006 F	400	775	790	1043	1140	
Total (12 male/1 female)						
2007 M	480	500	695	813	1040	
2007 F	To few women to report separately.					
One year or less experience (10 male/1 female)						
2007 M	480	500	655	747	990	
2007 F	To few women to report separately.					



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 2007 $
1985	260	360	400	420	493	687
1990	320	438	495	533	700	726
1995	288	480	568	690	1250	738
1999	360	600	680	761	2450	832
2000	200	640	720	800	1500	862
2001	475	716	770	865	1850	900
2002	325	734	780	850	1400	896
2003	300	700	800	900	1250	900
2004	400	728	817	900	1800	893
2005	510	755	870	978	2000	921
2006	340	800	900	1000	1550	924
2007	400	780	900	1000	2500	900
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	
2006 M	340	750	890	1000	1450	
2006 F	500	850	900	960	1550	
Total (45 male/24 female)						
2007 M	400	760	920	1000	2500	
2007 F	710	800	855	950	1270	
One year or less experience (35 male/17 female)						
2007 M	400	780	855	975	2500	
2007 F	710	715	720	725	730	



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 Masters contains U.S. departments granting a master's degree as the highest graduate degree.

Group B or Bachelors 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.*

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 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, Financial *Inequality in Higher Education: The Annual Report on the Economic Status of the Profession 2006–2007*, Academe: Bull. AAUP (March/April 2007), Washington, DC.

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Doctoral Degrees Conferred 2006–2007

Supplementary List

The following list supplements the list of thesis titles published in the February 2008 *Notices*, pages 280–99.

CALIFORNIA

California Institute of Techology (4)

CONTROL AND DYNAMICAL SYSTEMS

Chen, Lijun, Wireless network design and control.

Lui, Xin, Robustness, complexity, validation and risk.

Mysore, Shreesh, Structural plasticity in neuronal networks.

Martinez, Alfredo, A treatise on econometric forecasting.

Naval Postgraduate School (1)

MATHEMATICS

Johnson, Anthony, A time dependent finite element approach to optimizing seismic sonar arrays.

University of California, Berkeley

(14)

STATISTICS

Bourgon, Richard, Chromatin-immune precipitation and high density tiling microarrays: A generative model, methods for analysis and methodology assessment in the absence of a "gold standard".

Cho, Young, Estimating velocity fields on a freeway from low resolution video.

Lasiecki, Pawel, Assessment of stochastic differential equation and Markov chain models in time series.

Li, Bo, On goodness-of-fit tests of semiparametric models.

Panaretos, Victor, Inverse problems, stochastic geometry, structural biology.

Roch, Sebastien, Markov models on trees: Reconstruction and applications.

Yi, Jing, Absolute and relative quantification of fluorescently labelled DNA.

GROUP IN BIOSTATISTICS

Bein, Edward, Topics in causal inference: Analyzing psychotherapy outcome studies, convex-combination estimators, and *G*-computations model selection.

Petersen, Maya, Applications of causal inference methods to improve the treatment of antiretroviral-resistant HIV infection.

Tang, Hui, Finding DNA cis-regulatory elements using regression methods.

Teng, Siew-Leng, Statistical methods in integrative analysis of gene expression data with applications to biological pathways.

Young, Jessica, Statistical methods for complicated current status and high-dimensional data structures with applications in environmental epidemiology.

Zhou, Yun, Statistical issues in a case-control study of gene expression in postmortem human brains.

Wang, Yue, Data-adaptive estimation in causal inference for point treatment study.

University of California, Los Angeles

(9)

BIOSTATISTICS

Alber, Susan, A partition model for treatment effects and treatment-covariate interactions.

Chiang, Lu-May, A Bayesian adaptive design for 2-drug combination phase I clinical trials with ordinal toxicity outcomes.

Gadallah, May, Combining aggregated and individual level data to estimate individual level parameters: Variance, covariance, and slope coefficient.

Kim, Hyun Jung, Classification in Thoracic computated tomagraphy image data.

Lemus, Hector, Bayesian state space modeling of heterogeneous multivariate longitudinal data.

Park, Grace Song-Ye, Modeling longitudinal radiographic progression patterns in rheumatoid arthritis.

Wu, Tongtong, A partial linear semiparametric additive risk model for two-stage design survival studies.

Zhao, Yu, Additive risks regression for survival data from two-stage designs.

Zhou, Kefei, A unified approach to nonparametric comparisons of receiver operating characteristic curves for longitudinal and clustered data.

Stanford University (9)

STATISTICS

Guo, Yaqian, High dimensional classification with application in microarray analysis.

Jin, Wei, A Bayesian approach for additive-multiplicative hazard models.

Kapp, Amy, Cluster analysis with the in-group proportion.

Mathis, Charles, A statistic for measuring the value of side information in investment.

Park, Mee Young, Generalized linear models with regularization.

Purdom, Elizabeth, Multivariate kernel methods in the analysis of graphical structures.

Shi, Jianxin, Quantitative trait mapping using large pedigrees and model selection.

Stodden, Victoria, Model selection when the number of variables exceeds the number of observations.

Tribble, Seth, Markov chain Monte Carlo algorithms using complexly uniformly distributed sequences.

CONNECTICUT

Wesleyan University (2)

MATHEMATICS AND COMPUTER SCIENCE

Gochev, Vasil, Compact-open-like topologies on C(K) and applications.

Lu, Yun, Reducts of countably categorical graphs.

FLORIDA

University of Florida (16)

MATHEMATICS

Gray, Peter, The predictable projection and the predictable dual projection of a two parameter stochastic process.

Guo, Weihong, Medical Image segmentation and diffusion weighted magnetic resonance image analysis.

Keeran, Willard, Coexistence in a feedback-mediated chemostat.

Liu, Juan, Information theoretic content and probability.

Nenciu, Andriana, Characters of finite groups.

Smith, Justin, Discrete groups from a course perspective.

Turygin, Yuri, Borsuk-Ulam property of finite group actions on manifolds and applications.

Zahnen, Jeffrey, Penalized maximum likelihood methods for emission tomography.

Zhang, Hongchao, Gradient methods for large-scale nonlinear optimization.

STATISTICS

Kim, Bong-Rae, Statistical models for clustering dynamic gene expression profiles.

Liu, Xuefeng, Bayesian methodology for models with multivariate (longitudinal) outcomes.

Mergel, Victor, Divergence loss for shrinkage estimation, prediction and prior selection.

Mukhopadhyay, Siuli, Multiresponse, GLM, and other recent approaches in response surface methodology.

Yang, Jie, Nonparametric functional mapping for quantitative trait loci.

Zhang, Li, Bayesian methods in case-control studies with application in genetic epidemiology.

Zhu, Yun, Application of asymmetric Laplace Law in financial risk measures and time series analysis.

ILLINOIS

University of Illinois at Chicago (1)

DIVISION OF EPIDEMIOLOGY AND BIOSTATISTICS

Chosy, Erin, Correlates and health consequences of victimization in a sample of chemically-dependent detainees.

IOWA

University of Iowa (2)

APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCE

Coskun, Huseyin, Mathematical models for amoeboid cell mutility and model based inverse problems.

Shimanovich, Victoria, Optimization of large scale sparse nonlinear systems for flexible protein conformation.

KANSAS

Kansas State University (3)

MATHEMATICS

Koshkin, Sergiy, Homogeneous spaces & Faddeev-Skyrme.

Pasko, Brian, The cohomology of a matrix subgroup.

Randriampiry, Njinasoa, On *A*-quasiconvex functions and weak lower semicontinuity.

Maryland

John Hopkins University (5)

APPLIED MATHEMATICS AND STATISTICS

Aksakalli, Vural, Protocols for stochastic shortest path problems with dynamic learning.

Feng, Jian, Some probability and statistics problems in protemics research.

Hu, Jiang, Sequential designing and terminal analysis of multinomial data.

Nickel, Christine, Random dot product graphs: A model for social networks.

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Missouri University of Science & Technology (1)

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Stevens Institute of Technology (2)

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University of Pittsburgh (9)

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Clemson University (4)

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Virginia Commonwealth University (2)

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