

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.

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

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.

**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

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 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

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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 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

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.

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., 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 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%).

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/Approximations	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/Approximations	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

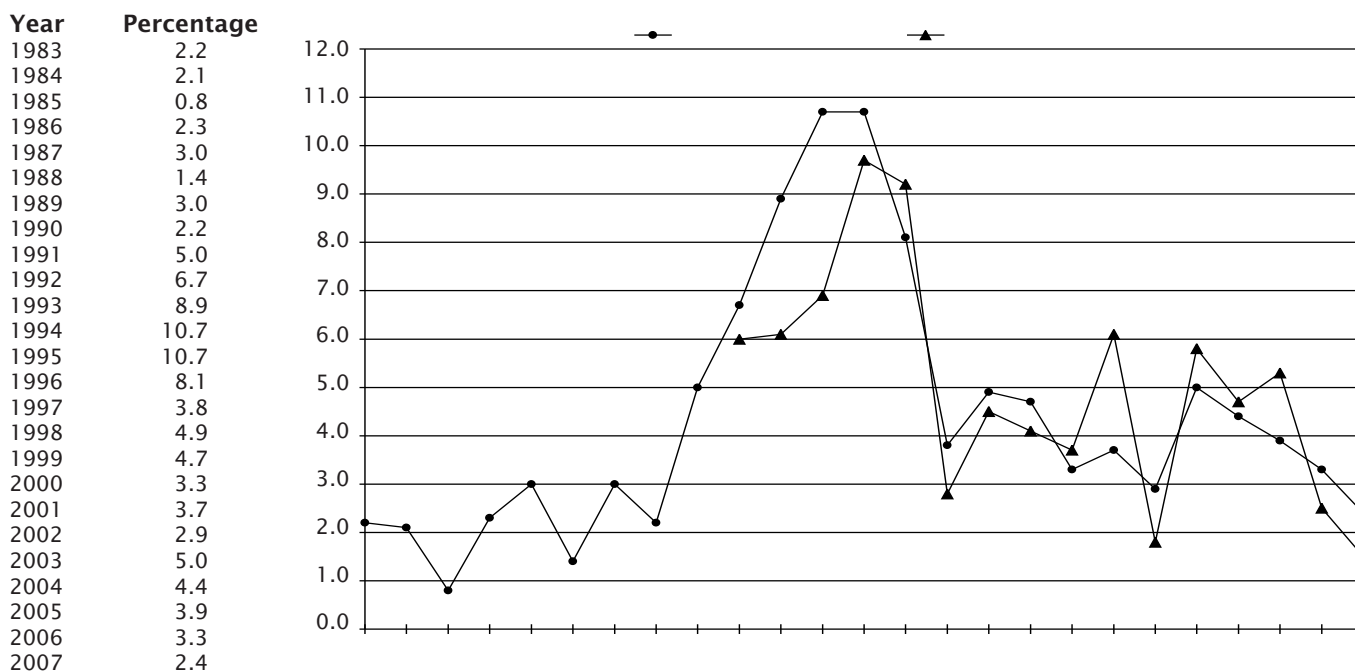
¹ Includes research institutes and other non-profits.

Updated 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

Figure 1: Percentage of New Doctoral Recipients Unemployed¹



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												TOTAL	
	I (Pu)		I (Pr)		II		III		IV		Va			
	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.

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.

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

	Hiring Department Group ¹					TOTAL
	I-III	IV	Va	M&B	Other	
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							TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	M&B	
% 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 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 postdoctoral positions, 57 (33%) reported that a suitable permanent position was not available.

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".**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

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.

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 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.

Figure 2: Age Distribution of 2006–2007 EENDR Respondents

