

2007 Annual Survey of the Mathematical Sciences

(First Report)

Preliminary Report on the 2006–2007 New Doctoral Recipients

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The preliminary report of the 2007 Annual Survey gives a broad picture of 2006–07 new doctoral recipients from U.S. departments in the mathematical sciences, including their employment status in fall 2007. This report is based on information collected from a questionnaire distributed to departments in April 2007. A follow-up questionnaire was distributed to the individual new doctoral recipients in October 2007. This questionnaire will be used to update and revise results in this report, which are based on information from the departments that produced the new doctorates. Those results will be published in the Second Report of the 2007 Annual Survey in the August 2008 issue of the *Notices* of the AMS. Another questionnaire concerned with data on fall 2007 course enrollments, graduate students, and departmental faculty was distributed to departments in September 2007. Results from this questionnaire will appear in the Third Report of the 2007 Annual Survey in the November 2008 issue of the *Notices* of the AMS.

The Faculty Salary Survey report, traditionally published as part of this report, will appear in the March issue of *Notices* of the AMS. 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.

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.

Preliminary Report on the 2006–2007 New Doctoral Recipients

This report presents a statistical profile of recipients of doctoral degrees awarded by departments in the mathematical sciences at universities in the United States during the period July 1, 2006, through June 30, 2007. It includes a preliminary analysis of the fall 2007 employment plans of 2006–07 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, sex, and racial/ethnic group.

Table 1: Number of Departments Responding to Doctorates Granted Survey

Group I (Pu)	24 of 25 including 0 with no degrees
Group I (Pr)	17 of 23 including 0 with no degrees
Group II	45 of 56 including 3 with no degrees
Group III	56 of 75 including 19 with no degrees
Group IV	55 of 87 including 1 with no degrees
Group Va	18 of 21 including 2 with no degrees

See "Definitions of the Groups" on page 263.

All information came from the departments that awarded the degrees.

Table 1 provides the departmental response rates for the 2007 Survey of New Doctoral Recipients. See page 263 for a description of the groups. No adjustments were made in this report for nonresponding departments.

This preliminary report will be updated in the Second Report of the 2007 Annual Survey using information gathered from the new doctoral

recipients. The Second Report will appear in the August 2008 issue of the *Notices* of the AMS.

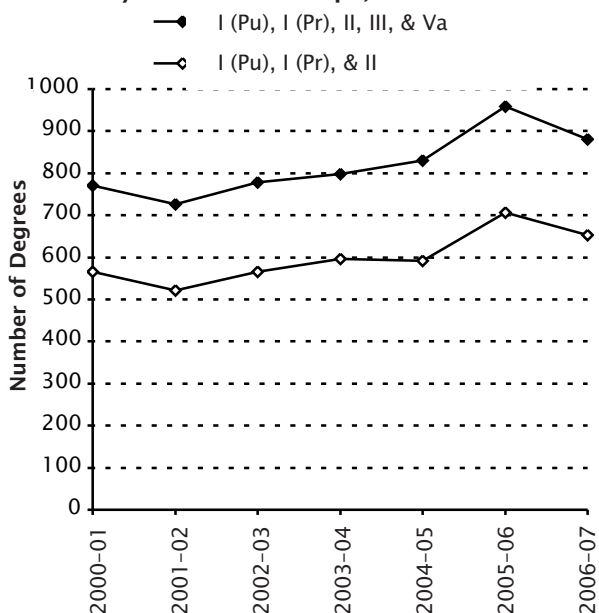
Changes in the Annual Survey occur over time, and these changes need to be considered when comparing results in this report to those in prior years. Information about changes that occurred in 1997 or later can be found in the First Report for the 2000 Annual Survey in the February 2001 issue of the *Notices*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

In this First Report's tables referring to new doctoral recipients, "Fall" refers to results based on information about new doctoral recipients received from departments granting their degrees. This information is gathered in the first fall following the academic year in which the degrees were granted. "Final" refers to results based on supplemental information received from the new doctoral recipients themselves as well as additional new

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

Group	I (Pu)	I (Pr)	II	III	IV	Va	TOTAL
1997-98	306	174	264	129	213	77	1163
1998-99	292	152	241	136	243	69	1133
1999-00	256	157	223	132	284	67	1119
2000-01	233	129	203	125	237	81	1008
2001-02	218	139	164	124	222	81	948
2002-03	258	138	170	121	239	91	1017
2003-04	195	187	215	111	243	90	1041
2004-05	243	146	203	153	285	86	1116
2005-06	307	184	216	140	287	111	1245
2006-07	300	119	234	138	279	87	1157

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



Highlights

There were 1,157 new doctoral recipients reported for 2006-07 by departments responding in time for the 2007 First Report. The drop from the 1,245 new doctoral recipients reported for fall 2006 is the result of the increase in the number of departments that did not respond in time for this year's report.

There were 500 U.S. citizens reported among this year's new doctoral recipients, 43% of the total. Last year's figure was 42%.

Based on responses from departments alone, the fall 2007 unemployment rate for the 1,028 new doctoral recipients whose employment status is known is 4%, down from 4.4% for fall 2006.

Seventy-eight new doctoral recipients hold positions at the institution that granted their degree, although not necessarily in the same department. This is 8% of the new doctoral recipients who are currently known to have jobs and 12% of those who have academic positions in the U.S. Twenty-two new doctoral recipients have part-time positions.

The number of new doctoral recipients employed in the U.S. is 864, down 20 from last year. The number of new doctoral recipients employed in academic positions in the U.S. decreased to 651 from 671 last year.

Of the 864 new doctoral recipients taking positions in the U.S., 187 (22%) have jobs in business and industry; increasing for the fourth consecutive year. The fall 2007 number is up 12% from fall 2006, and is up 90 (93%) from the fall 2003. The number of new doctoral recipients taking jobs in government is down 19 (43%) over fall 2006.

Among the 864 new doctoral recipients having employment in the U.S., 405 (47%) are U.S. citizens (up from 404 (46%) last year). The number of non-U.S. citizens having employment in the U.S. is 459, down from 480 last year.

Among the 320 new doctoral recipients hired by U.S. doctoral-granting departments, 48% are U.S. citizens (up from 43% last year). Among the 330 having other academic positions in the U.S., 53% are U.S. citizens (down from 54% last year).

Of the 1,157 new doctoral recipients, 32% (365) are female, the same percentage reported in fall 2006. Of the 500 U.S. citizen new doctoral recipients, 29% (145) are females, up from 27% in fall 2006.

Among the 500 U.S. citizen new doctoral recipients, 2 are American Indian or Alaska Native, 28 are Asian, 10 are Black or African American, 12 are Hispanic or Latino, 3 are Native Hawaiian or Other Pacific Islander, 428 are White, and 17 are of unknown race/ethnicity.

Group IV produced 279 new doctorates, of which 127 (46%) are females, compared to all other groups combined, where 238 (27%) are females. In Group IV, 87 (31%) of the new doctoral recipients are U.S. citizens (while in the other groups 47% are U.S. citizens).

Thirty-three percent of the new doctorates had a dissertation in statistics/biostatistics (339). The next highest percentage was in algebra and number theory with 15% (171).

The Faculty Salary Survey report, traditionally published as part of this report, will appear in the March issue of *Notices* of the AMS.

Table 3: Full-Time Graduate Students in Groups I, II, III, & Va, Fall 1996 to Fall 2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total full-time graduate students	9003	8791	8838	9637	9361	9972	10444	10707	10565	11686
Female	2691	2770	2766	3016	2899	3136	3215	3245	3111	3478
% Female	29%	32%	31%	31%	31%	31%	31%	30%	29%	30%
% U.S. citizen	57%	55%	53%	53%	49%	51%	54%	55%	56%	56%
Total first-year graduate students	2386	2458	2664	2839	2875	2996	2711	3004	2832	3161
Female	836	859	866	879	1014	1038	902	983	851	1024
% Female	35%	35%	33%	31%	35%	35%	33%	33%	30%	32%
% U.S. citizen	55%	55%	53%	54%	53%	55%	56%	60%	59%	55%

(Data Reprinted from Table 6B in Third Report, 2006 Annual Survey)

doctoral recipients not reported by departments in time for publication in the First Report. These results are published each August in the Second Report.

Doctoral Degrees Granted in 2006-07

Table 2 shows the number of new doctoral degrees granted by the different doctoral groups surveyed in the Annual Survey for the past ten years. The 1,157 new doctorates granted by these departments in 2006-07 is a decrease of 88 from the fall count for 2005-06.

The response rates were above 70% for all groups except Group IV; response rates decreased in all groups. Overall, thirty less departments responded in time for the First Report this year than responded last year. A careful review of the non-responding departments confirms that this year's drop in the reported total new doctoral recipients is the result of the increase in non-responding departments. For departments responding in both fall 2006 and fall 2007, the fall 2007 total is 1,078 compared with 1,049 reported in fall 2006. The

reader should keep this point in mind when fall 2007 figures are compared with fall 2006.

The number 1,157 of new doctoral recipients is a preliminary count. A final count will appear in the Second Report in the August 2008 issue of the *Notices* of the AMS. Efforts continue to obtain data from as many of the nonresponding departments as possible.

From Table 2 we see that all groups except Group II reported a decrease in the number of doctoral recipients from the previous year. Group I (Pr) reported the largest decrease (65), but the decrease is almost certainly the result of the five additional Group I (Pr) departments that did not respond in time for this report. Only the decrease reported for Group Va is independent of changes in the number of responding departments. Group II reported the only increase, and this increase would have been higher but for the nine departments that reported in fall 2006 but not in fall 2007.

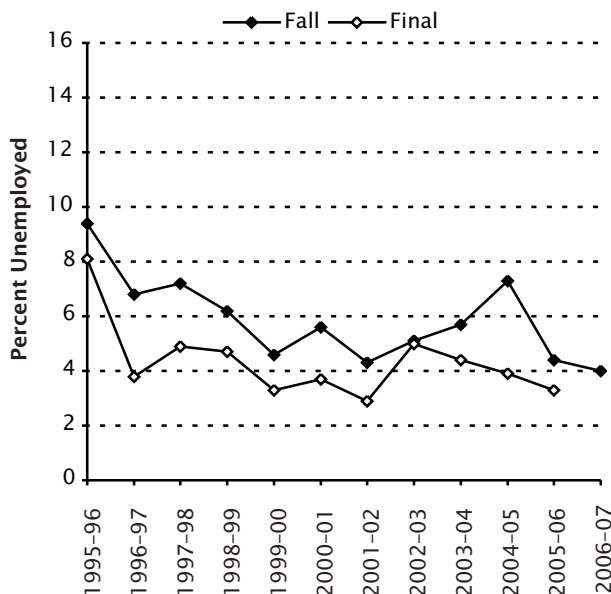
The 2006-07 numbers in Table 2 will be broken down in various ways, such as by sex, in later sections of this report. The names of the 1,157 new doctoral recipients are found on pages 280-99 of this issue of the *Notices*.

Table 3 gives historical information about various

types of full-time graduate students in Groups I, II, III, and Va combined. These data, gathered in the 2006 Departmental Profile survey, are reprinted from Table 6B of the Third Report of the 2006 Annual Survey (*Notices* of the AMS, November 2007). From these data we can see that total number of full-time graduate students in the doctoral mathematics groups has been generally increasing since 1999, with this year's enrollment the largest reported. Similarly, the number of full-time graduate students who are U.S. citizens has been increasing since 2002 and remains stable this year at

Figure 2: Percentage of New Doctoral Recipients Unemployed (as reported in the respective Annual Survey Reports 1995-2007)

Report	Fall	Final
1995-96	9.4%	8.1%
1996-97	6.8%	3.8%
1997-98	7.2%	4.9%
1998-99	6.2%	4.7%
1999-00	4.6%	3.3%
2000-01	5.6%	3.7%
2001-02	4.3%	2.9%
2002-03	5.1%	5.0%
2003-04	5.7%	4.4%
2004-05	7.3%	3.9%
2005-06	4.4%	3.3%
2006-07	4.0%	*



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

Table 4A: Employment Status of 2006–07 New Doctoral Recipients in the Mathematical Sciences by Field of Thesis

TYPE OF EMPLOYER	FIELD OF THESIS												TOTAL	
	Algebra/ Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/ Topology	Discr. Math./ Combin./ Logic/ Comp. Sci.	Probability	Statistics/ Biostat.	Applied Math.	Numerical Analysis/ Approximations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/ Unknown		
Group I (Public)	18	12	17	7	3	3	7	5	0	10	0	1	83	
Group I (Private)	20	4	17	4	0	2	2	6	0	5	0	0	60	
Group II	17	7	10	5	1	4	8	5	0	14	0	0	71	
Group III	7	4	3	3	1	15	8	1	2	2	3	1	50	
Group IV	1	0	0	0	2	31	2	0	0	3	0	0	39	
Group Va	0	2	0	4	0	0	6	3	0	2	0	0	17	
Master's	5	7	6	5	2	19	5	4	1	5	5	0	64	
Bachelor's	29	13	15	13	4	12	12	8	1	11	3	1	122	
Two-Year College	3	0	1	0	0	1	0	1	0	1	0	0	7	
Other Academic Dept.	5	4	5	3	2	54	15	8	3	4	3	1	107	
Research Institute/ Other Nonprofit	2	1	3	0	1	12	7	2	0	2	0	0	30	
Government	2	0	2	0	0	10	8	3	0	2	0	0	27	
Business and Industry	8	0	6	15	15	101	14	12	6	8	0	2	187	
Non-U.S. Academic	30	9	11	9	2	19	7	1	4	17	1	0	110	
Non-U.S. Nonacademic	0	0	1	0	2	4	0	1	0	0	0	0	8	
Not Seeking Employment	2	0	0	0	0	1	2	0	0	0	0	0	5	
Still Seeking Employment	9	2	4	4	1	12	5	3	0	1	0	0	41	
Unknown (U.S.)	9	4	11	5	2	20	10	4	2	3	3	1	74	
Unknown (non-U.S.)*	4	3	5	6	3	19	4	5	2	3	1	0	55	
TOTAL	171	72	117	83	41	339	122	72	21	93	19	7	1157	
Column	Male	128	52	91	62	30	187	93	49	17	68	8	7	792
Subtotals	Female	43	20	26	21	11	152	29	23	4	25	11	0	365

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

Table 4B: Employment Status of 2006–07 New Doctoral Recipients in the Mathematical Sciences by Type of Degree-Granting Department

TYPE OF EMPLOYER	TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT							TOTAL	Row Subtotals	
	Group I (Public) Math.	Group I (Private) Math.	Group II Math.	Group III Math.	Group IV Statistics	Group Va Applied Math.	Male		Female	
Group I (Public)	47	19	5	2	2	8	83	65	18	
Group I (Private)	31	19	4	0	2	4	60	44	16	
Group II	24	8	29	4	4	2	71	48	23	
Group III	7	2	11	21	6	3	50	29	21	
Group IV	3	1	4	2	29	0	39	24	15	
Group Va	7	0	0	1	0	9	17	12	5	
Master's	11	2	24	15	12	0	64	39	25	
Bachelor's	32	9	45	31	4	1	122	77	45	
Two-Year College	2	0	2	1	0	2	7	3	4	
Other Academic Dept.	11	10	19	10	50	7	107	71	36	
Research Institute/ Other Nonprofit	3	6	3	0	11	7	30	17	13	
Government	6	0	3	4	8	6	27	21	6	
Business and Industry	39	10	16	19	88	15	187	127	60	
Non-U.S. Academic	40	16	25	4	17	8	110	87	23	
Non-U.S. Nonacademic	1	2	0	0	4	1	8	7	1	
Not Seeking Employment	1	1	2	0	1	0	5	2	3	
Still Seeking Employment	8	3	7	10	7	6	41	32	9	
Unknown (U.S.)	16	8	25	7	16	2	74	51	23	
Unknown (non-U.S.)*	11	3	10	7	18	6	55	36	19	
TOTAL	300	119	234	138	279	87	1157	792	365	
Column	Male	224	88	165	93	152	70	792		
Subtotals	Female	76	31	69	45	127	17	365		

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

Table 4C: Field of Thesis of 2006–07 New Doctoral Recipients by Type of Degree-Granting Department

TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT	FIELD OF THESIS												TOTAL
	Algebra/Number Theory	Real, Comp., Funct., & Harmonic Analysis	Geometry/Topology	Discr. Math./Combin./Logic/Comp. Sci.	Probability	Statistics/Biostat.	Applied Math.	Numerical Analysis/Approximations	Linear Nonlinear Optim./Control	Differential, Integral, & Difference Equations	Math. Educ.	Other/Unknown	
Group I (Public)	84	29	43	37	12	8	29	13	6	35	0	4	300
Group I (Private)	32	3	34	8	8	3	14	4	0	13	0	0	119
Group II	42	27	36	10	11	7	40	25	5	22	8	1	234
Group III	11	12	3	15	5	34	18	10	5	13	11	1	138
Group IV	0	0	0	0	0	279	0	0	0	0	0	0	279
Group Va	2	1	1	13	5	8	21	20	5	10	0	1	87
Column Total	171	72	117	83	41	339	122	72	21	93	19	7	1157

Table 5A: 2006–07 New Doctoral Recipients Employed in the U.S. by Type of Degree-Granting Department

Type of Employer in U.S.	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Groups I, II, III, IV, and Va	119	49	53	30	43	26	320
Master's, Bachelor's, and 2-Year Colleges	45	11	71	47	16	3	193
Other Academic and Research Institutes	14	16	22	10	61	14	137
Government	6	0	3	4	8	6	27
Business and Industry	39	10	16	19	88	15	187
TOTAL	223	86	165	110	216	64	864

Table 5B: Number of New Doctoral Recipients Taking Positions in Business and Industry in the U.S. by Type of Degree-Granting Department, Fall 2003 to Fall 2007

Year	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Fall 2003	19	13	5	8	45	7	97
Fall 2004	9	13	9	9	50	9	99
Fall 2005	5	9	14	15	64	8	115
Fall 2006	27	14	19	9	80	18	167
Fall 2007	39	10	16	19	88	15	187

56%. The number of first-year full-time graduate students who are U.S. citizens had been increasing until 2004 when it reached 60%, dropping slightly last year and then again this year to 55%. The percentage of females among full-time graduate students in the combined mathematics groups has remained relatively stable over the 10-year period shown.

Employment Plans of 2006–07 New Doctoral Recipients

Tables 4A, 4B, and 4C each provide a different cross-tabulation of the 1,157 new doctoral recipients in the mathematical sciences. These tables contain a wealth of information about these new doctoral recipients, some of which will be discussed in this report. Note that these tables give a breakdown by sex for type of employer, type of degree-granting department, and field of thesis. Keep in mind that the results in this report come from the departments giving the degrees and not from the degree recipients themselves. These tables will be updated using information from the doctoral recipients themselves and will appear in the 2007 Second Report in the August 2008 issue of the *Notices* of the AMS.

The last column (Total) in Table 4A can be used to find the overall unemployment rate. In this and other unemployment calculations in this report, the individuals whose employment status is not known (Unknown (U.S.) and Unknown (non-U.S.))

Table 5C: Number of New Doctoral Recipients Taking U.S. Academic Positions by Type of Degree-Granting Department, Fall 2003 to Fall 2007

Year	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Fall 2003	123	76	117	60	118	40	534
Fall 2004	110	113	130	70	142	49	614
Fall 2005	131	88	130	83	131	39	602
Fall 2006	167	108	123	86	137	50	671
Fall 2007	178	76	146	87	120	43	650

Table 5D: Academic Positions in U.S. Filled by New Doctoral Recipients by Type of Hiring Department, Fall 2003 to Fall 2007

Year	Group					TOTAL
	I-III	IV	Va	M&B	Other*	
Fall 2003	203	39	9	156	127	534
Fall 2004	222	63	17	154	158	614
Fall 2005	231	45	12	188	126	602
Fall 2006	262	69	12	185	143	671
Fall 2007	264	39	17	186	144	650

*Includes other academic and research institutes/nonprofit.

are first removed, and the unemployment fraction is the number still seeking employment divided by the total number of individuals left after the

“Unknowns” are removed. The overall unemployment rate for these data is 4.0%. This figure will be updated later with information gathered from the individual new doctoral recipients. The figure for fall 2006 was 4.4%. Figure 2 shows how this unemployment rate compares with other years over the past decade. The unemployment rates, calculated using Table 4B, vary from group to group, with a high of 8.1% for Group III and lows of 2.8% for Group 1 (Pr) and 2.9% for both Groups I (Pu) and IV.

There are 864 new doctoral recipients employed in the U.S. Table 5A gives a breakdown of type of employer by type of degree-granting department for these 864 new doctoral recipients. Of these, 650 (75%) hold academic positions, 27 (3%) are employed

Table 5E: Females as a Percentage of 2006–07 New Doctoral Recipients Produced by and Hired by Doctoral-Granting Groups

Percent	Group						TOTAL
	I (Pu)	I (Pr)	II	III	IV	Va	
Produced	25%	26%	29%	33%	46%	20%	32%
Hired	22%	27%	32%	42%	38%	29%	31%

Table 5G: 2006–07 New Doctoral Recipients Having Employment in the U.S. by Type of Employer and Citizenship

U.S. EMPLOYER	CITIZENSHIP		TOTAL
	U.S.	Non-U.S.	
Academic	330	320	650
Groups I–Va	154	166	320
M, B, & 2-Year	117	76	193
Other Acad. & Research Inst.	59	78	137
Government, Business & Industry	75	139	214
TOTAL	405	459	864

Table 5F: Employment Status of 2006–07 New Doctoral Recipients by Citizenship Status

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	405	72	368	19	864
U.S. Academic	330	56	247	17	650
Groups I, II, III, and Va	136	19	119	7	281
Group IV	18	4	15	2	39
Non-Ph.D. Department	166	30	96	8	300
Research Institute/Other Nonprofit	10	3	17	0	30
U.S. Nonacademic	75	16	121	2	214
Non-U.S. Employer	22	1	92	3	118
Non-U.S. Academic	22	1	85	2	110
Non-U.S. Nonacademic	0	0	7	1	8
Not Seeking Employment	5	0	0	0	5
Still Seeking Employment	23	3	15	0	41
SUBTOTAL	455	76	475	22	1028
Unknown (U.S.)	45	7	21	1	74
Unknown (non-U.S.)*	0	0	51	4	55
TOTAL	500	83	547	27	1157

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

by government, and 187 (22%) hold positions in business and industry.

In the First Report for 2005–06, there were 884 new doctoral recipients employed in the U.S., of which 671 (76%) held academic positions, 46 (5%) were in government, and 167 (19%) were in business and industry. The number of new doctoral recipients employed in the U.S. decreased in all categories except “Business and Industry” and “Other Academic and Research Institutes” which increased 12% and 4%, respectively. “Government” showed the largest decrease at 41%, and “Master’s, Bachelor’s and Two-Year Colleges” showed the smallest increase at 1.5%.

Table 5B shows the number of new doctoral recipients who took positions in business and industry by the type of department granting their degree for fall 2003 to fall 2007. The number of new doctoral recipients taking jobs in business and industry has been steadily increasing since 2003. The fall 2007 number is up 12% from fall 2006, and the fall 2007 number is up 90 from fall 2003 number (97).

Among the 864 new doctoral recipients known to have employment in the U.S. in fall 2007, Group II has the smallest percentage taking jobs in business and industry at 10% and Group IV the highest at 41%.

Table 5C shows the number of new doctoral recipients who took academic positions in the U.S. by type of department granting their degree for fall 2003 to fall 2007. The number of new doctoral recipients taking academic employment in fall 2007 has decreased 3%. Among the 864 new doctoral recipients employed in the U.S. in fall 2007, 75% have academic positions. This percentage is highest

Table 6: Sex, Race/Ethnicity, and Citizenship of 2006–07 New Doctoral Recipients

RACIAL/ETHNIC GROUP	MALE					FEMALE					TOTAL
	U.S. CITIZENS	NON-U.S. CITIZENS			Total Male	U.S. CITIZENS	NON-U.S. CITIZENS			Total Female	
		Permanent Visa	Temporary Visa	Unknown Visa			Permanent Visa	Temporary Visa	Unknown Visa		
American Indian or Alaska Native	0	0	0	0	0	2	1	1	0	4	4
Asian	19	16	229	5	269	9	23	113	5	150	419
Black or African American	9	3	15	0	27	1	1	2	0	4	31
Hispanic or Latino	9	3	17	0	29	3	1	4	0	8	37
Native Hawaiian or Other Pacific Islander	2	0	1	0	3	1	0	0	0	1	4
White	301	15	103	5	424	127	11	46	1	185	609
Unknown	15	7	11	7	40	2	2	5	4	13	53
TOTAL	355	44	376	17	792	145	39	171	10	365	1157

for Group I (Pr) and Group II at 88% and lowest for Groups IV at 56%.

Table 5D shows the number of positions filled with new doctoral recipients for each type of academic employer. Increases in positions filled by new doctoral recipients were realized by all groups except Group IV. The biggest increase in hires of new doctorates into academic positions was in Group Va (42%). Hires of new doctorates into positions at research institutes decreased 14%, from 35 in 2006 to 30 in 2007.

In fall 2007, 78 new doctoral recipients held positions in the institution that granted their degree, although not necessarily in the same department. This represents 8% of new doctoral recipients who are currently employed in the U.S. and 12% of the U.S. academic positions held by new doctoral recipients. In fall 2006 there were 60 such individuals making up 6.8% of the new doctoral recipients who were employed at the time of the First Report. Twenty-two new doctoral recipients have taken part-time positions in fall 2007 compared with 14 in fall 2006.

Information about 2006–07 Female New Doctoral Recipients

Tables 4A and 4B give male and female breakdowns of the new doctoral recipients in 2006–07 by Field of Thesis, by Type of Degree-Granting Department, and by Type of Employer.

Overall, 365 (32%) of the 1,157 new doctoral recipients in 2006–07 are female. In 2005–06, 394 (32%) of the new doctoral recipients were female. This percentage varies over the different groups, and these percentages are given in the first row of Table 5E. This year the percentage of females produced is highest again for Group IV at 46%, compared with 47% last year. While Group Va produced the lowest percentage this year (20%), it is down from last year's percentage of 38%.

The second row of Table 5E gives the percentage of the new doctoral recipients hired who are female for each of the Groups I, II, III, IV, and Va. In addition, 39% of the new doctoral recipients hired in Group M, master's departments, are female; 37% of the new doctoral recipients hired in Group B, bachelor's departments, are female, up from 27% last year. This year, Group III hired the highest percentage of women with 42%.

The unemployment rate for female new doctoral recipients is 2.8%, compared to 4.5% for males and 4.0% overall.

The percentage of female new doctoral recipients within fields of thesis ranged from 19% in linear, non-linear optimization/control, to 45% in statistics, and 58% in mathematics education.

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

Employment Information about 2006–07 New Doctoral Recipients by Citizenship and Type of Employer

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

The unemployment rate for the 455 U.S. citizens is 5.1% compared to 6.4% in fall 2006. The unemployment rate for non-U.S. citizens is 3.1%. This varies by type of visa. The unemployment rate for non-U.S. citizens with a permanent visa is 4%, while that for non-U.S. citizens with a temporary visa is 3.2%. Among U.S. citizens whose employment status is known, 89% are employed in the U.S. Among non-U.S. citizens with a permanent visa whose employment status is known, 95% have jobs in the U.S. (last year this percentage was 89%), while the similar percentage for non-U.S. citizens with a temporary visa is 77% (last year the percentage was 79%). The number of non-U.S. citizens having

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

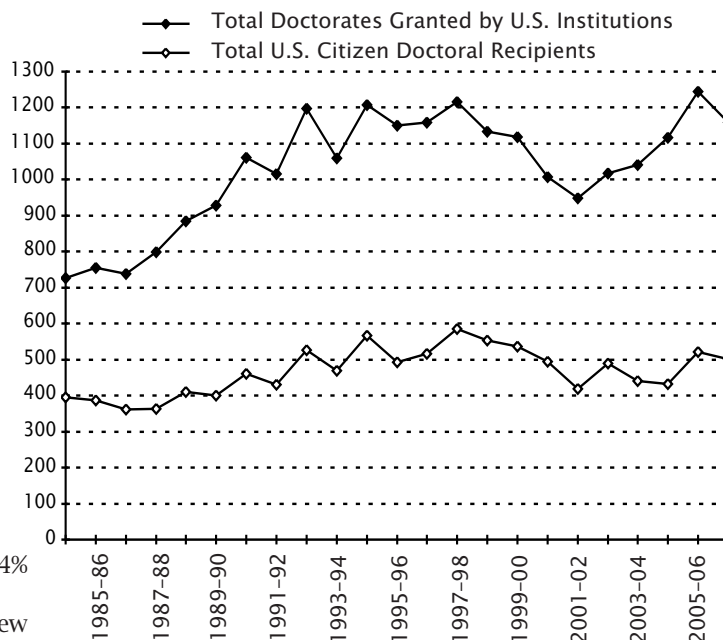
Year	Total Doctorates Granted by U.S. Institutions	Total U.S. Citizen Doctoral Total	%
1980-81	839	567	68%
1985-86	755	386	51%
1990-91	1061	461	43%
1995-96*	1150	493	43%
2000-01	1008	494	49%
2001-02	948	418	44%
2002-03	1017	489	48%
2003-04	1041	441	42%
2004-05	1116	433	39%
2005-06	1245	522	42%
2006-07	1157	500	43%

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

employment in the U.S. is 459, down 4.4% from 480 last year.

Table 5G is a cross-tabulation of the 864 new doctoral recipients who have employment in the U.S. by citizenship and broad employment categories, using numbers from Table 5F. Of the 864 new doctoral recipients having jobs in the U.S., 47% are U.S. citizens (up from 46% last year). Of the 320 new doctoral recipients who took jobs in U.S. doctoral-granting departments, 48% are U.S. citizens (up from 43% last year). Of the 330 who took other academic positions, 53% are U.S. citizens (down from 54% last year). Of the 214 who took nonacademic positions, 35% are U.S. citizens. Of the 405 U.S. citizens employed in the U.S., 38% have jobs in a doctoral-granting department,

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



43% are in other academic positions, and 19% are in nonacademic positions. For the 459 non-U.S. citizens employed in the U.S., the analogous percentages are 36%, 34%, and 30% respectively.

Sex, Race/Ethnicity, and Citizenship Status of 2006-07 New Doctoral Recipients

Table 6 presents a breakdown of new doctoral recipients according to sex, racial/ethnic group, and citizenship status. The information reported in

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

Year	Total U.S. Citizen Doctoral Recipients	Male	Female	% Female
1980-81	567	465	102	18%
1985-86	386	304	82	21%
1990-91	461	349	112	24%
1995-96*	493	377	116	24%
2000-01	494	343	151	31%
2001-02	418	291	127	30%
2002-03	489	332	157	32%
2003-04	441	297	144	33%
2004-05	433	313	120	28%
2005-06	522	379	143	27%
2006-07	500	355	145	29%

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

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

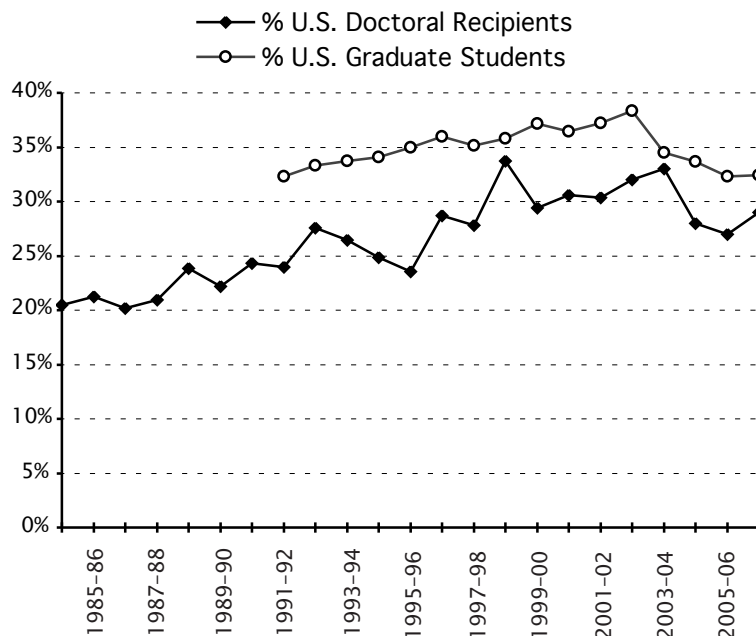


Table 9: Sex and Citizenship of 2006–07 New Doctoral Recipients by Type of Degree Granting Department

CITIZENSHIP	GROUP												TOTAL	
	I (Pu)		I (Pr)		II		III		IV		Va			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
U.S.	121	34	43	20	76	30	35	17	50	37	30	7	355	145
Non-U.S.	103	42	45	11	89	39	58	28	102	90	40	10	437	220
TOTAL	224	76	88	31	165	69	93	45	152	127	70	17	792	365

this table was obtained in summary form from the departments granting the degrees.

There were 500 (43%) U.S. citizens among the 1,157 new doctoral recipients in 2006–07. Among U.S. citizens, 2 are American Indian or Alaska Native (female), 28 are Asian (19 males and 9 females), 10 are Black or African American (9 males and 1 female), 12 are Hispanic or Latino (9 males and 3 females), 3 are Native Hawaiian or Other Pacific Islander (2 males and 1 female), 428 are White (301 males and 127 females), and 17 are of unknown race/ethnicity (15 males and 2 females). Among non-U.S. citizens, there are 2 American Indian or Alaska Native (female), 391 Asians, 21 Blacks or African Americans, 25 Hispanics or Latinos, 1 Native Hawaiian or Other Pacific Islander, 181 Whites, and 36 are of unknown race/ethnicity.

Table 7 (and Figure 3) gives the number of new U.S. doctoral recipients and the number of U.S. citizens back to 1980–81. The 500 U.S. citizen new doctoral recipients is down by 37 (7%) from 1999–00. The percentage of U.S. citizen new doctoral recipients has increased this year to 43% from 42% in fall 2006, although this year the total number of doctorates granted decreased.

Females make up 29% of the 500 U.S. citizens receiving doctoral degrees in the mathematical sciences in 2006–07. Last year this percentage was 27%. Among the 657 non-U.S. citizen new doctoral

recipients, 33% (220) are female, down from last year's 35%.

Table 8 (and Figure 4) gives the historical record of U.S. citizen new doctoral recipients, broken down by male and female for past years, going back to 1980–81. The number of female U.S. citizen new doctoral recipients is down 13 (8%) from 158 in 1999–00 and down 22% from an all-time high of 187 in 1998–99. Figure 4 also displays the percentage of females among U.S. citizen (full-time) graduate students beginning in fall 1993.

Table 9 gives a sex and citizenship breakdown of the new doctorates within each of the six groups of doctoral-granting departments. Among all 1,157 new doctoral recipients, 45% of the males and 40% of the females are U.S. citizens. Within the groups the percentage of the new doctoral recipients who are U.S. citizens is lowest in Group IV at 31% and highest in Groups I (Pr) at 53%. The number of U.S. citizen new doctoral recipients is lower than the number of non-U.S. citizen new doctoral recipients in all doctoral granting groups for 2006–07, with the exception of males in Group I (Pu) and females in Group I (Pr).

2006–07 New Doctoral Recipients with Dissertations in Statistics/Biostatistics and Probability

Group IV contains U.S. departments (or programs) of statistics, biostatistics, and biometrics

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

Year	Group IV Depts Surveyed	Group VI Depts Responding (percent)	New Doctoral Recipients in Group IV only				New Doctoral Recipients in Statistics/Biostatistics and Probability, Group IV and Other* Groups				New Doctoral Recipients Hired by Group IV	
			Total	Female (percent)	Jobs in Bus & Ind	Percentage Unemployed	Total	Group IV	Other Groups	Percentage Unemployed	Male	Female
1997–98	82	59 (72%)	213	73 (34%)	70	3.2%	294	199	95	3.7%	25	10
1998–99	91	72 (79%)	243	87 (36%)	57	4.9%	320	240	80	5.8%	29	20
1999–00	89	75 (84%)	284	110 (39%)	79	2.4%	351	278	73	2.0%	24	22
2000–01	86	70 (81%)	237	98 (41%)	59	5.1%	289	221	68	5.3%	27	14
2001–02	86	72 (84%)	222	92 (41%)	56	6.0%	288	221	67	5.4%	31	15
2002–03	86	74 (86%)	239	98 (41%)	45	2.1%	302	234	68	3.3%	20	19
2003–04	87	65 (75%)	243	97 (40%)	50	3.0%	318	241	77	4.0%	48	15
2004–05	87	63 (72%)	285	126 (44%)	64	4.5%	374	283	91	5.4%	26	19
2005–06	88	60 (68%)	287	134 (47%)	80	1.6%	396	278	118	2.0%	41	28
2006–07	86	50 (58%)	279	127 (46%)	88	2.9%	380	279**	101***	3.9%	24	15
Statistics	55	34 (62%)	215	95 (44%)	71	3.2%					15	9
Biostatistics	31	16 (52%)	64	32 (50%)	18	2.3%					9	6

* Includes other academic departments and research institutes/other nonprofits.

** Of 279, there were 279 in statistics/biostatistics and none in probability. For complete details, see Table 4C.

*** Of 101, there were 60 in statistics/biostatistics and 41 in probability. For complete details, see Table 4C.

reporting a doctoral program. In the Annual Survey Reports, Group IV is referred to as the Statistics Group. In addition, other groups in the Annual Survey produce new doctoral recipients with dissertations in statistics/biostatistics or probability. The other groups produced 101 new doctoral recipients with dissertations in statistics/biostatistics or probability in 2006–07 and have averaged 83.8 per year over the ten-year period reported in Table 10. Information about these 101 new doctoral recipients and the 279 new doctoral recipients in Group IV is found in this section of the report.

Table 10 contains information about new doctoral recipients in Group IV as well as those with dissertations in statistics/biostatistics and probability in other groups for this year as well as for the past nine years. The last two rows of Table 10 give a split of the 2006–07 results between the 55 statistics departments and the 31 biostatistics and biometrics departments in Group IV. This year 380 new doctorates had a dissertation in statistics/biostatistics (339) or probability (41), a 4% decrease from last year's number. Those with dissertations in statistics/biostatistics and probability accounted for 33% of new doctorates in 2006–07. Quite a bit of the variation in numbers from year to year in Table 10 is due to the changes made in the departments in Group IV over the ten years and to the relatively low response rate for this group. At the time of the Second Report last year, 73 of 88 (83%) of Group IV departments had responded.

Group IV has 87 departments for 2006–07, 13 more than the next largest doctoral group. It contains 30% of all doctoral departments surveyed, and the 55 Group IV departments responding to the Annual Survey reported 279 new doctoral recipients, 24% of all new doctoral recipients in 2006–07. This is the lowest percentage of responding Group IV departments since 1995–96 when it was 68%. The number of new doctoral recipients in Group IV is down 8 from the number reported at this time last year, while the number of departments responding is down 10 from the number responding by this time last year.

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

Group IV is producing a larger percentage of female doctorates than the other doctoral groups. Table 9 shows that for the Group IV new doctoral recipients, 127 of 279 (46%) are female, while 238 of 878 (27%) are female in the other doctoral groups. Among U.S. citizens, females accounted for 37 of the 87 (43%) Group IV new doctoral recipients, while for the other groups 108 of 413 (26%) were female. Overall, 146 of 500 (29%) U.S. citizen new doctoral recipients were female.

Group IV is producing a smaller percentage of U.S. citizen new doctorates than the other doctoral groups.

In Group IV, 87 of 279 (31%) new doctoral recipients are U.S. citizens, while in other groups 413 of 878 (47%) are U.S. citizens. In Group IV, 90 (71%) of the 127 females were not U.S. citizens.

Group IV doctorates are more likely to take jobs in business and industry than those in other doctoral groups. Of the 216 new doctoral recipients from Group IV who found employment in the U.S., 88 (41%) took jobs in business or industry. From the other groups, 648 new doctoral recipients found employment in the U.S., of which 99 (15%) took jobs in business or industry.

Group IV doctorates have a lower unemployment rate than the other doctoral groups. The employment status for 245 Group IV new doctoral recipients is known, and 7 (2.9%) are unemployed. For the other groups, the employment status of 783 is known, and 34 (4.3%) are unemployed. Group IV is hiring a bigger percentage of females than the other doctoral groups. Fifteen of 39 (38%) new doctoral recipients hired by Group IV departments were female, down from last year's 41%, the lowest percentage of female hires reported since 1998–1999. The other doctoral groups reported that 83 of 281 (30%) new doctoral recipients hired were female, up from last year's 24%.

Group IV had 279 new doctoral recipients with fields of thesis in statistics/biostatistics (279) and the other doctoral departments had 101 with fields of thesis in statistics/biostatistics (60) and probability (41) (last year the other doctoral departments had 59 new doctorates in statistics and 59 in probability). The distribution of these degrees among the various groups can be found in Table 4C. The number of new doctoral recipients with theses in statistics/biostatistics and probability (380) is substantially larger than any other field, with algebra and number theory next with 171.

Previous Annual Survey Reports

The 2006 First, Second, and Third Annual Survey Reports were published in the *Notices* of the AMS in the February, August, and November 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.

Acknowledgments

The Annual Survey attempts to provide an accurate appraisal and analysis of various aspects of the academic mathematical sciences scene for the use and benefit of the community and for filling the information needs of the professional organizations. Every year, college and university departments in the United States are invited to respond. The Annual Survey relies heavily on the conscientious efforts of the dedicated staff members of these departments for the quality of its information.

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

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Definitions of the Groups

As has been the case for a number of years, much of the data in these reports is presented for departments divided into groups according to several characteristics, the principal one being the highest degree offered in the mathematical sciences. Doctoral-granting departments of mathematics are further subdivided according to their ranking of “scholarly quality of program faculty” as reported in the 1995 publication *Research-Doctorate Programs in the United States: Continuity and Change*.¹ These rankings update those reported in a previous study published in 1982.² Consequently, the departments which now compose Groups I, II, and III differ significantly from those used prior to the 1996 survey.

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

Brief descriptions of the groupings are as follows:

Group I is composed of 48 departments with scores in the 3.00–5.00 range. Group I Public and Group I Private are Group I departments at public institutions and private institutions respectively.

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

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

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

Group V contains U.S. departments (or programs) in applied mathematics/applied science, operations research, and management science which report a doctoral program.

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

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

Group B contains U.S. departments granting a baccalaureate degree only.

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

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

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