

2009 Annual Survey of the Mathematical Sciences in the United States

(Third Report)

Faculty Profile
Enrollment and Degrees Awarded Profile
Graduate Student Profile

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This report presents a statistical profile of mathematical sciences departments at four-year colleges and universities in the United States. The information presented was gathered on a questionnaire called the Departmental Profile which requested data about the number of faculty in various categories, the recruitment of new faculty, undergraduate and graduate course enrollments, number of bachelor's and master's degrees awarded during the preceding year, and the number of graduate students, all as of fall 2009. The questionnaire is available at www.ams.org/annual-survey/deptprof.

The 2009 First Report, Part II, presented data collected earlier about faculty salaries (pages 410–415 of the March 2010 issue of *Notices of the AMS*).

Faculty Size

Table 1A gives the number of faculty for different categories of faculty within each survey group, Table 1B gives the same information for females only, and Table 1C gives some percentages based on the information in Tables 1A and 1B. The estimated total number of full-time faculty in the mathematics groups (Groups I, II, III, Va, M, and B combined) is 22,463. This is an increase of 328 faculty over last year. Because of the sampling and non-responses issues detailed on page 1317, the estimate of the total number of faculty has an estimated standard error of 383. Definitions of the various departmental groupings along with details

on the statistical procedures used in the Annual survey are described on page 1317. The doctoral mathematics departments (Groups I, II, III, and Va) full-time faculty has increased to 8,260 from 8,024, Group M is down 250 faculty members, and Group B is up 342. The total faculty size in the statistics and biostatistics group (Group IV) is up to 1,824 this year from 1,749 last year. For the 2009 survey cycle, eight former masters-level mathematics departments reported new doctoral programs and were therefore shifted from Group M to Group III. This shift accounts for the majority of the increase in faculty in the doctoral departments and the decline in the Group M faculty. The reader should keep the changes in Groups III and M in mind when comparing 2008 figures to 2009 figures.

The number of non-tenure-track doctoral faculty (including postdoctoral positions) for all mathematics departments combined is estimated at 2,538 this year, up 7% from 2,361 last year. The number of nondoctoral full-time faculty has remained relatively stable at 3,969. In Group IV the number of part-time faculty increased 39% from 143 last year to 199 this year, and the number of non-tenure-track doctoral faculty increased from 386 last year to 396 this year due to the increased number of postdoctoral appointments.

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Highlights

The job market for doctoral mathematicians took a decided turn for the worse during the 2008-2009 hiring season. For all mathematics departments combined, the number of full-time positions under recruitment during 2008-2009 for employment beginning in fall 2009 decreased 27%, dropping to 1,464 from 2,012 reported last year. This is smallest number of such positions reported since 1997 when it was 1,246. The number of tenured/tenure-track positions under recruitment during this period was 930, down 23% from the previous year's figure of 1,213. The number of full-time positions filled was 1,274, with 710 of these tenured/tenure-track positions. These figures are down 30% and 27%, respectively, from the figures reported for the 2007-2008 hiring season.

For all mathematics departments combined, the number of new doctoral recipients hired for positions beginning in fall 2009 was down 13% from the previous year's number, to 656. Likewise, there was a decrease in the number of new doctoral recipients obtaining tenure-track positions for fall 2009 with 301 such hirings reported compared to 378 reported for fall 2008.

Among the 187 individuals hired into tenure-track positions in the doctoral mathematics departments, 95 held a non-tenure-track position when hired and 64% (61) of these were postdoctoral positions. For the 524 individuals hired into tenure-track positions in Groups M and B combined, 32% (170) held a non-tenure-track position when hired and 21% of these were postdoctoral positions.

Changes in the numbers of faculty from 2008 to 2009 were modest. The estimated number of full-time faculty in all mathematics departments combined is 22,463, up 1% from 22,135 last year. The number of nondoctoral full-time faculty is 3,969, essentially unchanged from 3,972 last year. The number of part-time faculty is 6,570, down 2% from 6,693 last year.

For the doctoral math departments combined, the number of full-time non-tenure-track doctorate-holding faculty continued its slow but steady climb since 2002. This number reached 1,681 for 2009, up 32% over its 2002 figure of 1,274. Faculty holding a postdoctoral position have steadily increased for the last three years and now account for 70% of the non-tenure-track faculty reported by the doctoral math departments.

For the combined mathematics departments, women comprised 29% of the full-time faculty in fall 2009. For the doctoral mathematics departments combined, women comprised 13% of the doctoral-holding tenured and tenure-track faculty and 27% of the doctoral-holding non-tenure-track faculty in fall 2009. For Group M faculty these same percentages are 27 and 31 respectively, and for Group B faculty they are 29 and 28 respectively. Among the nondoctoral full-time faculty in all math departments combined, women comprise 59%. All percentages are in line with those of the past two years.

The reported number of full-time graduate students at doctoral mathematics departments increased moderately, from 10,883 in fall 2008 to 11,268 for fall 2009. The number of women among these graduate students also increased slightly to 3,248, the same percentage of women as last year. The percent of U.S. citizens among the total full-time graduate students was essentially unchanged from the prior four years at 56%. The percentage of underrepresented minorities among the U.S. citizen graduate students remained steady at 10%, in line with the figures for the previous four years.

Table 1D gives an eight-year history of tenured/tenure-track, and non-tenure-track doctorate-holding faculty, and all part-time faculty for Groups I, II, III, and Va combined, for Group M, and for Group B. For Groups I, II, III and Va combined, Table 1D shows a slow but steady increase in the number of (doctoral) non-tenure-track faculty and a drop in the number of part-time faculty. For Group M, Table 1D shows a relatively stable count of tenured and tenure-track faculty and declines in the non-tenure-track faculty in recent years. For Group B, it shows substantial growth in the number of tenured and tenure-track faculty and a decline in part-time faculty.

Tables 1F and 1G give more information about two types of faculty: full-time faculty without a doctorate and part-time faculty. The majority of full-time non-doctoral faculty, 3,224 (81%), are found in Groups M and B departments. Table 1G shows the part-time faculty broken down by gender and whether they have a doctoral degree. Comparing Table 1G to last year's table, we see that overall part-time faculty has remained relatively stable among the groups with the exception of Group IV which shows an increase of 39% and 7% in part-time male and female faculty, respectively.

Female Faculty

Table 1B gives a complete breakdown of all categories of female faculty by group. For 2009-2010 the estimated total number of full-time faculty in Groups I, II, III, Va, M, and B combined is 22,463 of which 6,453 are females. Females comprise 29% of the full-time faculty, about the same as last year's 28%. In Group B the estimated number of doctoral female faculty increased from 1,825 last year to 2,192 this year, tenured female faculty increased from 1,137 to 1,342, untenured but tenure-track female faculty increased from 552 to 670, and non-tenure-track doctoral female faculty (including postdoctoral appointments) increased from 136 to 180. In Group M the doctoral full-time female faculty decreased from 961 last year to 942, and untenured but tenure-track female faculty decreased from 311 to 287 this year. These declines are due primarily to the shift of the eight former Group M departments to Group III for the 2009 survey.

Table 1C compares the number of full-time and female full-time faculty that fall into each reporting group for fall 2009. The percentage who are female in each group is given in the bottom row of Table 1C. These percentages vary considerably among the groups, from a low of 14% for Group I (Pr) to a high of 34% for Group B.

Table 1D contains information about the percentage of female faculty among the tenured/tenure-track and non-tenure-track doctoral full-time faculty and among the part-time faculty for

Table 1A: Total Faculty, Fall 2009

	GROUP									
	I Public	I Private	II	III	Va	I, II, III, & Va	M	B	I, II, III, Va, M, & B	IV
Total full-time faculty (Standard error) ¹	1802	1078	2553	2519	308	8260 (38)	4328 (78)	9875 (379)	22463 (383)	1824 (34)
Doctoral full-time faculty	1724	1074	2305	2114	298	7515	3428	7550	18493	1725
Tenured	1093	595	1528	1399	164	4779	2410	5069	12258	911
Untenured, tenure-track	177	87	299	442	50	1055	798	1844	3698	416
Postdoctoral appointments	315	297	276	56	47	991	19	59	1068	122
Other non-tenure-track	139	95	202	218	37	690	202	577	1469	275
Nondoctoral full-time faculty (Standard error) ¹	78	4	247	405	10	745 (12)	899 (36)	2325 (192)	3969 (195)	100 (7)
Total part-time faculty (Standard error)	168	25	372	566	23	1154 (19)	1802 (88)	3614 (292)	6570 (299)	199 (16)

¹ See 'Remarks on Statistical Procedures' page 1317.

the years 2002 to 2009. Table 1D shows a small increase in the percent of women among the tenured/tenure-track faculty within the doctoral departments and more substantial increases in Group M and Group B departments.

Table 1E gives the male/female breakdown by count and percentage for Groups I, II, III, and Va combined, Groups M and B combined, and Group IV for various categories of faculty. It shows that the percentage of women is generally higher in statistics (Group IV) than in the doctoral mathematics groups (Groups I, II, III, and Va combined) and that the percentage of tenured faculty who are women is highest in Groups M and B combined.

Table 1F shows that of the 3,968 nondoctoral full-time faculty in Groups I, II, III, Va, M, and B combined, 2,089 (53%) are females. From Table 1G we see that in these same groups there are 6,570 part-time faculty, of which 2,797 (43%) are females.

Faculty Recruitment

Figure 1 shows the number of full-time doctoral positions posted for all mathematics departments combined as well as the number of those that were tenured/tenure-track for the years 1997 to 2009. The number of positions posted and the number of available tenured/tenure-track positions steadily increased, reaching a maximum in 2001. Over the last eight years these numbers have shown some variability with this year's total number of tenured/tenure-track posted positions being the lowest reported since 1997.

Figure 1A shows the number of full-time doctoral positions filled for all mathematics departments combined as well as the number of tenured/tenure-track positions filled for the years 2002 to 2009. After having reached a seven-year

high last year the number of tenured/tenure-track positions plunged to an eight-year low for 2009 (dropping to 711 from 978 last year).

Table 2A contains detailed information on the number of full-time doctoral faculty positions under recruitment during 2008-2009 for employment beginning in the academic year 2009-2010. Among mathematics departments (Groups I, II, III, Va, M, and B), 1,464 positions were under recruitment, down 27% compared to those under recruitment during 2007-2008. Of those 1,464 positions, 1,297 (89%) were available to new doctoral recipients, and of those 1,297 positions, 783 (60%) were tenured/tenure-track positions. The 783 tenured/tenure-track positions open to new doctoral recipients is down 28% from the 1,081 such positions under recruitment in 2007-2008, reflecting decreases in all Groups except Group I (Pr) which increased from 9 to 14 this year. The total number of tenured/tenure-track full-time doctoral positions under recruitment in Groups I, II, III, Va, M, and B combined is 930, down 23% from last year's figure of 1,213. In Groups I, II, III, and Va combined, the total number of posted doctoral positions open at the associate/full level decreased from 96 last year to 60 this year.

Table 2B condenses the information in Table 2A. It also reorganizes the doctoral hires into one section for new doctoral hires and another for other doctoral hires (so excludes posted doctoral positions that were temporarily filled with a person without a doctorate).

From Table 2B we find that the total number of full-time doctoral positions filled in mathematics departments (Groups I, II, III, Va, M, and B combined) is 1,239, down from 1,688 last year (a decrease of 27%); it is down 29% in Groups I, II, III, and Va combined and down 25% in Groups M

Table 1B: Female Faculty, Fall 2009

	GROUP									
	I Public	I Private	II	III	Va	I, II, III, & Va	M	B	I, II, III, Va, M, & B	IV
Female full-time faculty <i>(Standard error)</i>	271	151	547	649	55	1672 <i>(13)</i>	1439 <i>(31)</i>	3341 <i>(151)</i>	6453 <i>(153)</i>	553 <i>(15)</i>
Doctoral full-time faculty	231	150	385	416	49	1230	942	2192	4364	504
Tenured	85	43	158	200	18	504	587	1342	2432	184
Untenured, tenure-track	40	19	81	131	6	278	287	670	1235	162
Postdoctoral appointments	58	55	58	11	13	195	3	40	238	42
Other non-tenure-track	48	32	88	74	12	254	65	140	458	117
Nondoctoral full-time faculty	40	1	162	234	6	442	497	1149	2089	48
Female part-time faculty	61	3	150	229	4	447	793	1558	2797	58

Table 1C: Full-Time Faculty, Fall 2009

	GROUP								
	I Public	I Private	II	III	Va	M	B	IV	TOTAL
Full-time faculty	1802	1078	2553	2519	308	4328	9875	1824	24287
<i>Percentage of total full-time faculty</i>	7%	4%	11%	10%	1%	18%	41%	8%	100%
Female full-time faculty	271	151	547	649	55	1439	3341	553	7006
<i>Percentage of total female full-time faculty</i>	4%	2%	8%	9%	1%	21%	48%	8%	100%
<i>As percent of female full-time faculty within group</i>	15%	14%	21%	26%	18%	33%	34%	30%	29%

Table 1D: Mathematics Faculty Counts and Percentage Female, Fall 2002-2009

	2002	2003	2004	2005	2006	2007	2008	2009
Groups I, II, III, & Va								
Doctoral full-time faculty								
Tenured/tenure-track	5616	5559	5604	5686	5668	5709	5666	5834
<i>Percentage female</i>	10%	10%	11%	11%	12%	12%	13%	13%
Non-tenure-track	1274	1343	1314	1401	1461	1576	1598	1681
<i>Percentage female</i>	23%	25%	25%	24%	25%	25%	25%	27%
Part-time faculty	1504	1389	1355	1054	1128	1143	1165	1154
<i>Percentage female</i>	35%	35%	37%	37%	40%	37%	37%	39%
Group M								
Doctoral full-time faculty								
Tenured/tenure-track	3188	3005	3113	3351	3400	3325	3403	3208
<i>Percentage female</i>	22%	22%	23%	24%	25%	25%	26%	27%
Non-tenure-track	276	230	277	263	283	232	231	220
<i>Percentage female</i>	39%	33%	48%	36%	28%	38%	32%	31%
Part-time faculty	2393	1952	1888	1842	1493	1868	1824	1802
<i>Percentage female</i>	37%	37%	37%	37%	41%	39%	42%	44%
Group B								
Doctoral full-time faculty								
Tenured/tenure-track	5569	6172	5770	6875	6623	6427	6733	6914
<i>Percentage female</i>	23%	26%	25%	25%	27%	27%	25%	29%
Non-tenure-track	507	460	472	516	545	363	532	636
<i>Percentage female</i>	36%	20%	29%	32%	25%	33%	26%	28%
Part-time faculty	4117	3997	4846	3630	3922	4053	3703	3614
<i>Percentage female</i>	45%	42%	44%	41%	40%	43%	46%	43%

Table 1E: Summary of Full-Time and Part-Time Faculty, Fall 2009

	GROUP					
	I, II, III, & Va		M & B		IV	
	Male	Female	Male	Female	Male	Female
Full-time faculty	6588	1672	9422	4780	1272	553
<i>Percentage</i>	80%	20%	66%	34%	70%	30%
Doctoral full-time faculty	6285	1230	7844	3134	1220	504
<i>Percentage</i>	84%	16%	71%	29%	71%	29%
Tenured	4276	504	5551	1929	727	184
<i>Percentage</i>	89%	11%	74%	26%	80%	20%
Untenured, tenure-track	777	278	1685	958	254	162
<i>Percentage</i>	74%	26%	64%	36%	61%	39%
Postdoctoral appointments	796	195	34	43	81	42
<i>Percentage</i>	80%	20%	44%	56%	66%	34%
Other non-tenure-track	437	254	574	205	158	117
<i>Percentage</i>	63%	37%	74%	26%	58%	42%
Nondoctoral full-time faculty	302	442	1579	1646	52	48
<i>Percentage</i>	41%	59%	49%	51%	52%	48%
Part-time faculty	707	447	3066	2350	140	58
<i>Percentage</i>	61%	39%	57%	43%	71%	29%

Table 1F: Nondoctoral Full-Time Faculty, Fall 2009

Full-time Faculty	GROUP							
	I, II, III, & Va		M		B		IV	
	Male	Female	Male	Female	Male	Female	Male	Female
Without a Doctorate	302	442	402	497	1176	1149	52	48
Tenured	12	15	58	32	422	260	2	1
Untenured, tenure-track	2	0	8	17	123	76	1	0
Postdoctoral appointments	3	2	0	0	0	0	6	1
Other non-tenure-track	284	426	336	448	631	813	43	46

Table 1G: Part-Time Faculty, Fall 2009

Part-time Faculty	GROUP							
	I, II, III, & Va		M		B		IV	
	Male	Female	Male	Female	Male	Female	Male	Female
Doctoral	278	85	235	95	421	235	118	37
Nondoctoral	429	362	775	697	1636	1322	22	21
Total	707	447	1010	793	2057	1558	140	58

and B combined. This year Groups I, II, III, and Va combined filled 454 doctoral positions, of which 187 (41%) were tenured/tenure-track positions. Last year these same groups filled 635 doctoral positions, of which 253 (40%) were tenured/tenure-track. Groups M and B combined filled 785 doctoral positions this year, and 524 (67%) of these were tenured/tenure-track positions. Last year these two groups filled 1,053 doctoral positions, of which 725 (69%) were tenured/tenure-track.

This year the estimated total number of new doctoral hires in mathematics departments is down 13% (to 656 from 758) from last year; it is down 13% (to 245 from 280) in Groups I, II, III, and Va combined, and down 14% (to 410 from 478) in Groups M and B combined. The number of new doctoral tenure-track hires in the mathematics groups combined is down 20% (to 301 from 378). Among the new doctoral hires in Groups I, II, III, and Va combined, only about 12% of the jobs (12% for males, 11% for females) were tenure-track positions. This is down from 21% last year.

Departments were asked to report the number of doctoral hires into tenured/tenure-track positions filled by individuals who held a non-tenure-track position the previous year and of those, how many were in postdoctoral appointments. For Groups I, II, III, and Va combined, 95 individuals reported having held a non-tenure-track position the previous year (51% of the 187 tenure-track hires), with 61 (33%) having held a postdoctoral appointment the previous year. This compares with last year's figure of 86 (34%) positions filled by individuals who held a postdoctoral appointment the previous year. For Groups M and B combined, 170 individuals (32% of the 524 tenure-track hires) reported having held a non-tenure-track position the previous year, with 36 (7%) having held a postdoctoral appointment the previous year. This compares with last year's figure of 45 (6%) positions filled by individuals who held a postdoctoral appointment the previous year.

The estimated number of not-new doctoral hires in mathematics departments is 584, down

from 930 last year. The total of not-new doctoral hires (one-plus years since degree) into tenured/tenure-track positions in all the mathematics groups combined is 409, down 41% from last year. It is down 19% in Groups I, II, III, and Va combined (to 158 from 195 last year), and down 50% in Groups M and B combined (to 251 from 499).

Faculty Attrition

Table 3 displays losses of full-time mathematical sciences faculty due to retirements and deaths between 1 September 2008 and 31 August 2009 for each departmental grouping. The fall 2009 faculty attrition rate for Groups I, II, III, Va, M, and

Figure 1: Number of Full-Time Doctoral Positions under Recruitment
Groups I, II, III, Va, M, & B Combined, Fall 1997 to Fall 2009

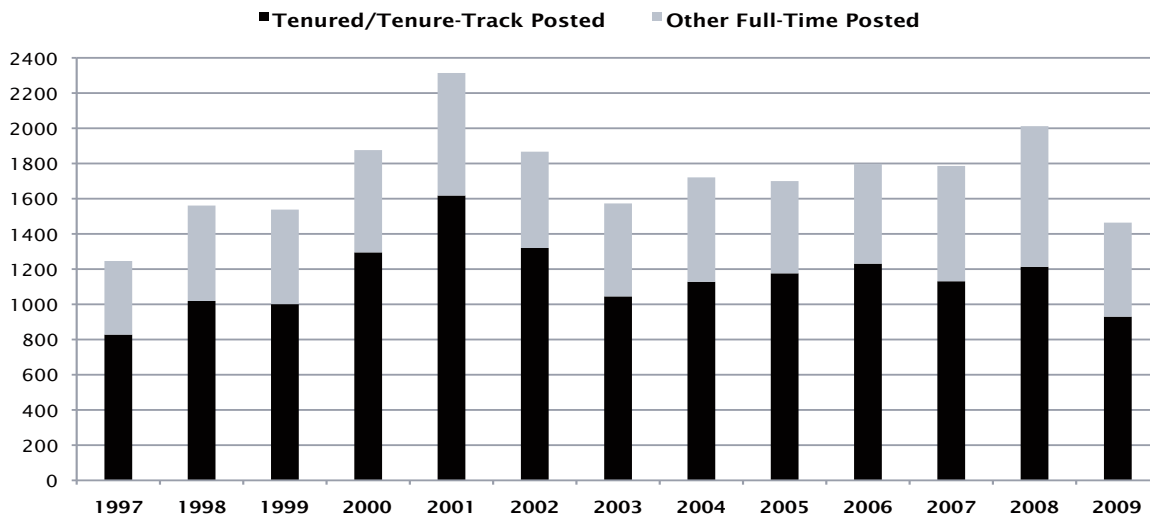
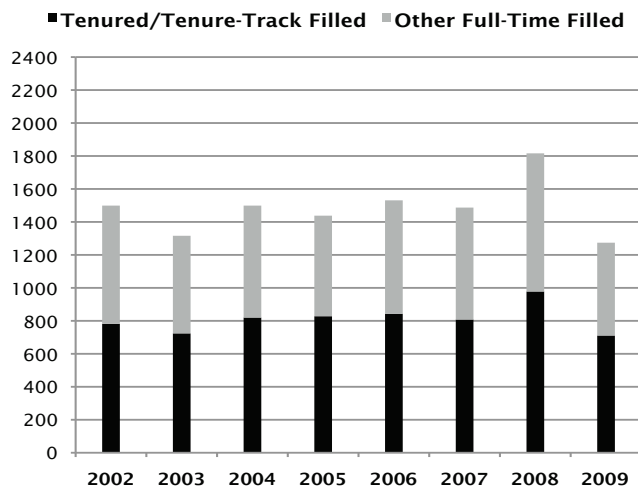


Figure 1A: Number of Full-Time Doctoral Positions Filled

Groups I, II, III, Va, M, & B Combined, Fall 2002 to Fall 2009



B combined is 2.1%, and it is 0.7% for Group IV. For fall 2009, Group I (Pr) had the lowest attrition rate at 0.7%, while Group B had the highest at 2.5%.

Figure 2 shows the trends in these attrition rates between 1996 and 2009. While the rates vary from group to group and from year to year within each group, for most of the 1990s the dominant trend was one of increasing attrition for all groups combined. In the late 1990s attrition leveled off, then began dropping in 2003, reaching the smallest rate of attrition this year.

Enrollment Profile and Degrees Awarded Profile

This section summarizes information about course enrollments and numbers of undergraduate degrees awarded in mathematical sciences departments. Tables 4A and 4B give the total undergraduate and total graduate enrollments in mathematics courses in fall 2009 for each group. The estimated total undergraduate enrollment in fall 2009 for all groups combined is 2,275,000. Table 4A gives these totals for fall 2004 to fall 2009. Total undergraduate enrollments for all groups combined is relatively unchanged from last year; Groups II and IV show slight declines while Group III shows the largest increase (14%). The increase in Group III is partly due to the eight former Group M departments that were shifted to Group III for the 2009 survey.

The historical data on enrollment numbers presented in Tables 4A and 4B for fall 2004 to fall 2009 show a trend of relatively flat undergraduate enrollments and gradually increasing graduate enrollments.

Table 4C gives the undergraduate enrollments per faculty member and the graduate enrollments per faculty member for each group. Table 4D gives the undergraduate enrollments per faculty member in each group for fall 2004 to fall 2009. With fall 2009 we see a slight increase in all groups except Groups II, Va, and IV. For a comprehensive survey of undergraduate courses, please refer to the report of the 2005 CBMS survey. This publication is available from the AMS website at www.ams.org/cbms/.

Table 2A: Recruitment of Faculty with a Doctorate, Fall 2009

	GROUP									
	I Public	I Private	II	III	Va	I, II, III, & Va	M	B	I, II, III, Va, M, & B	IV
Posted Doctoral Positions										
Total number¹ (Standard error)	139	100	150	129	17	535	173	756	1464	140
Tenured/tenure-track	75	25	57	98	11	267	142	521	930	84
Open to new doctoral recipients	80	85	139	102	15	421	162	715	1297	112
Tenured/tenure-track	19	14	45	75	9	161	127	495	783	64
Open at assoc/full level	21	9	8	19	2	60	25	29	114	38
Reported Hires for Above										
Total number	114	93	133	108	10	458	151	665	1274	113
Male doctoral hires	89	68	106	76	8	347	95	424	866	80
Tenured/tenure-track	33	13	31	58	3	138	75	270	483	41
Female doctoral hires	25	25	26	28	2	107	45	221	373	31
Tenured/tenure-track	15	3	8	21	1	49	35	143	227	15
Male temporary hires	0	0	0	1	0	1	2	13	16	3
Female temporary hires	0	0	0	3	0	3	10	7	19	0
Total new doctoral hires	51	68	85	36	6	245	58	352	656	55
Male new doctoral hires	45	51	64	27	5	191	31	217	439	39
Tenured/tenure-track	0	1	6	15	0	22	26	149	197	17
Female new doctoral hires	6	17	21	9	1	54	28	135	216	15
Tenured/tenure-track	0	0	3	3	0	6	22	77	105	4
Unfilled positions	25	7	17	17	7	73	22	91	186	27

¹ Number of full-time doctoral positions under recruitment in 2008-2009 to be filled for 2009-2010.

Undergraduate and Master's Degrees

Tables 5A and 5C display the (estimated) number of undergraduate and master's degrees reported for 2008-2009 for each departmental group. Table 5B shows the total undergraduate degrees awarded for the period 2004-2005 through 2008-2009. The number of undergraduate degrees awarded has decreased from 26,602 in 2008 to 24,573 in 2009. Table 5D shows the total number of master's degrees awarded for the period 2004-2005 through 2008-2009. The number of master's degrees awarded in mathematics decreased from 4,265 reported in 2008 to 4,060 reported in 2009.

The reader should be aware that at least 39 of the 182 departments in the 2009 Group M population and at least 265 of the 1,037 departments in the 2009 Group B population also offer a computer science program in addition to their offerings in mathematics. In some instances, these computer programs account for a significant fraction of the department's undergraduate degrees. This year's estimated 24,573 undergraduate degrees awarded includes 747 in statistics and 2,070 in computer science. (The report of the 2005 CBMS survey provides a more comprehensive study of departmental bachelor's degrees.) Of the 4,109 master's degrees awarded, 424 were in statistics, and 301 were in computer science.

Graduate Student Profile

Table 6A summarizes information gathered by the 2009 Departmental Profile survey about graduate students enrolled in fall 2009. This table gives the

Table 2B: A Summary of Recruitment of Faculty with a Doctorate, Fall 2009

	GROUP		
	I, II, III, & Va	M & B	IV
Posted Doctoral Positions			
Total number	535	929	140
Tenured/tenure-track	267	663	84
Open to new doctoral recipients	421	876	112
Tenured/tenure-track	161	622	64
Reported Hires for Above, excluding temporary hires			
Total doctoral hires	454	785	111
Tenured/tenure-track	187	524	56
Previously in non-tenure-track	95	170	14
Previously in postdoc	61	36	6
Total new doctoral hires¹	245	410	55
Tenured/tenure-track	28	273	21
Male	191	248	39
Tenured/tenure-track	22	174	17
Female	54	162	15
Tenured/tenure-track	6	99	4
Total not-new doctoral hires	209	375	56
Tenured/tenure-track	158	251	35
Male	156	271	41
Tenured/tenure-track	116	171	24
Female	53	104	15
Tenured/tenure-track	43	80	11

¹ New doctoral hires are individuals who have held a doctorate for less than one year at the time of hiring.

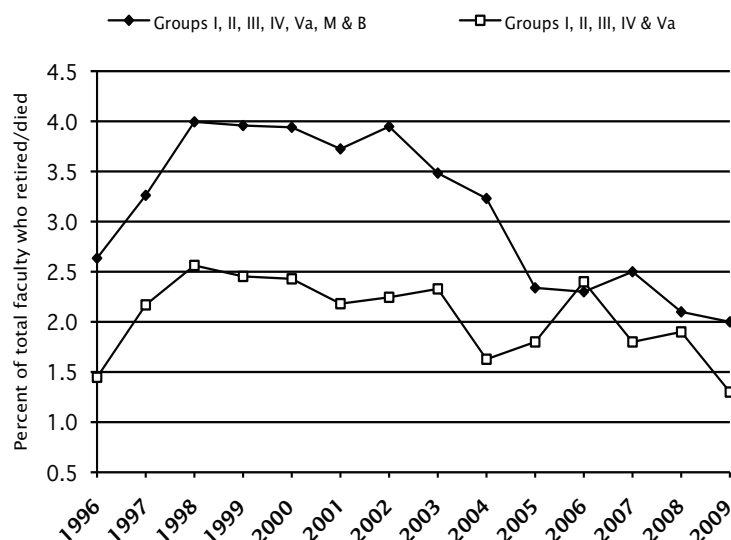
number of full-time, full-time first-year, and part-time graduate students for each group of graduate departments. These same numbers are also given

Table 2C: Positions Posted and Filled, Fall 2009

Positions	GROUP		
	I, II, III, & Va	M & B	IV
Posted positions opened to new doctoral recipients	421	876	112
% tenured/tenure-track	38%	71%	58%
Positions filled by new doctoral recipients	245	410	55
% tenured/tenure-track	12%	67%	38%
Positions filled by not-new doctoral recipients ¹	209	375	56
% tenured/tenure-track	76%	67%	63%

¹ Not-new doctoral recipients are individuals who have held their doctorate for more than one year.

Figure 2: Faculty Retired/Died



for female graduate students and for U.S. citizen graduate students.

The estimated total number of graduate students in all mathematics groups combined decreased from 14,279 in 2008 to 13,954 in 2009, while the total number of full-time graduate students in Groups I, II, III, and Va combined increased from 10,883 in 2008 to 11,286 in 2009. The number of U.S. citizen full-time graduate students in Groups I, II, III, and Va combined

increased 5% to 6,326. The number of first-year full-time students in Groups I, II, III, and Va combined increased from 2,924 last year to 3,040 this year. The number of female full-time graduate students in Groups I, II, III, and Va combined increased from 3,193 to 3,248.

In Group IV the number of full-time graduate students increased by 9% to 4,892 and the number of U.S. citizen full-time graduate students increased by 11% to 2,063. The first-year full-time graduate students in Group IV increased by 130 to 1,545 and the number of first-year full-time U.S. citizens increased slightly to 634. The number of female full-time graduate students in Group IV increased from 2,113 to 2,152, a 2% increase.

The percentage of full-time graduate students who are U.S. citizens in the mathematics groups combined is 59% while the percentage of full-time graduate students who are U.S. citizens in Group IV is 42%. The percentage of women is 31% in mathematics groups combined and 44% in Group IV. The number of full-time graduate students in Group M decreased from 3,407 to 2,667. A portion of this decrease is the result of the shift of eight former Group M departments to Group III for 2009.

The (estimated) number of part-time graduate students in Groups I, II, III, and Va increased 2% to 1,752 this year, and in Group IV decreased 4% to 1,041. Group III has 860 (49%) of the part-time graduate students in the doctoral mathematics groups. In the doctoral mathematics groups, 38% of the part-time graduate students are females and 80% are U.S. citizens. In Group IV 50% of the part-time graduate students are females and 66% are U.S. citizens. The number of Group M part-time graduate students decreased from 2,271 to 2,136. For Group M, 50% of the part-time graduate students are females and 93% are U.S. citizens.

Table 6B gives the total number of full-time and full-time first-year graduate students in Groups I, II, III, and Va combined, and the percentages of women and of U.S. citizens for fall 2000 through fall 2009 and the percentage of underrepresented minorities in each category for fall 2003 through fall 2009. From these data we can see that the total number of full-time graduate students in the doctoral mathematics groups after reaching a high in 2006 decreased slightly the next couple years and has now reached a 10-year high of 11,286. The

Table 3: Faculty Deaths & Retirements,¹ Fall 2009

	GROUP									
	I Public	I Private	II	III	Va	I, II, III, & Va	M	B	I, II, III, Va, M, & B	IV
Full-time faculty who retired or died										
Total number	31	8	34	40	6	118	105	249	472	13
(Standard error)						(6)	(11)	(41)	(43)	(2)
Percentage	1.7%	0.7%	1.3%	1.6%	1.9%	1.4%	2.4%	2.5%	2.1%	0.7%

¹ Number and percentage of full-time faculty who were in the department in fall 2007 but were reported to have retired or died by fall 2008.

Table 4A: Total Undergraduate Course Enrollments (thousands)

Fall	GROUP								Total
	I Public	I Private	II	III	Va	M	B	IV	
2004	159	42	277	261	16	492	782	72	2101
2005	177	43	273	249	12	509	872	70	2205
2006	172	43	290	251	15	496	826	77	2170
2007	172	43	297	253	17	474	896	78	2228
2008	175	45	313	268	17	499	823	91	2231
2009 (Standard error) ¹	176 (0)	46 (1)	301 (3)	301 (5)	17 (0)	498 (9)	852 (41)	85 (3)	2275 (50)

¹ Standard errors reported as zero reflect rounding of values that are less than 500.

Table 4B: Total Graduate Course Enrollments (thousands)

Fall	GROUP							Total
	I Public	I Private	II	III	Va	M	IV	
2004	9	4	12	10	2	12	31	81
2005	10	4	13	9	2	16	29	84
2006	9	4	13	10	2	15	29	82
2007	10	4	13	12	3	14	32	89
2008	11	5	13	13	3	15	31	90
2009 (Standard error) ¹	11 (0)	5 (0)	14 (0)	12 (0)	3 (0)	16 (1)	36 (1)	97 (2)

¹ Standard errors reported as zero reflect rounding of values that are less than 500.

Table 4C: Undergraduate and Graduate Enrollments per Full-Time Faculty Member, Fall 2009

	GROUP							
	I Public	I Private	II	III	Va	M	B	IV
Undergraduate Course Enrollments Number per full-time faculty member	98	42	118	119	54	115	86	46
Graduate Course Enrollments Number per full-time faculty member	6	5	5	5	9	4	—	20

Table 4D: Undergraduate Enrollments per Full-Time Faculty Member

Fall	GROUP							
	I Public	I Private	II	III	Va	M	B	IV
2004	90	44	113	126	49	120	89	49
2005	96	44	108	116	43	113	91	43
2006	98	43	105	113	56	106	82	45
2007	96	42	109	114	56	105	100	46
2008	97	43	119	117	60	109	86	52
2009	98	42	118	119	54	115	86	46

Table 5A: Undergraduate Degrees Awarded
(between July 1, 2008 and June 30, 2009)

	GROUP								
	I Public	I Private	II	III	Va	M	B	I, II, III, Va, M, & B	IV
Total Undergraduate Degrees Awarded	2316	1079	2277	2338	365	4046	11908	24328	747
<i>(Standard error)</i>	<i>(72)</i>	<i>(22)</i>	<i>(23)</i>	<i>(53)</i>	<i>(33)</i>	<i>(137)</i>	<i>(749)</i>	<i>(768)</i>	<i>(43)</i>
Statistics only	36	1	27	74	0	188	421	747	468
Computer science only	20	15	6	176	0	377	1476	2070	1
Female Undergraduate Degrees Awarded	793	289	879	865	109	1849	5310	10093	242
Statistics only	13	0	11	19	0	83	150	276	156
Computer science only	3	6	0	28	0	89	264	391	0

Table 5B: Undergraduate Degrees Awarded
Groups I, II, III, Va, M & B Combined

Fall	2005	2006	2007	2008	2009
Total Undergraduate Degrees Awarded	23432	24638	23930	26602	24573
Female Undergraduate Degrees Awarded	9264	9964	9310	10868	10093
<i>Percentage female</i>	40%	40%	39%	41%	41%

percent of full-time graduate students who are U.S. citizens increased this year to 56%. The percentage of females among full-time graduate students in the combined mathematics groups has remained relatively stable over the 10-year period shown.

Previous Annual Survey Reports

The 2009 Annual Survey First Preliminary, First Report, Part II, and Second Reports were published in the *Notices of the AMS* in the February, March, and August 2010 issues respectively. The previous version of this report, the 2008 Annual Survey Third Report was published in the *Notices of the*

Table 5C: Master's Degrees Awarded, Fall 2009

	GROUP							
	I Public	I Private	II	III	Va	M	I, II, III, Va & M	IV
Total Master's Degrees Awarded	440	346	687	815	206	1566	4060	1422
<i>(Standard error)</i>	<i>(0)</i>	<i>(26)</i>	<i>(9)</i>	<i>(15)</i>	<i>(0)</i>	<i>(94)</i>	<i>(99)</i>	<i>(56)</i>
Statistics only	22	7	57	148	5	185	424	1084
Computer science only	2	0	1	52	0	246	301	0
Female Master's Degrees Awarded	115	93	264	315	54	792	1633	697
Statistics only	9	5	30	65	1	107	217	508
Computer science only	0	0	1	14	0	137	152	0

Table 5D: Master's Degrees Awarded
Groups I, II, III, Va, M Combined

Fall	2005	2006	2007	2008	2009
Total Master's Degrees Awarded	4254	4267	4291	4265	4060
Female Master's Degrees Awarded	1699	1808	1717	1731	1610
<i>Percentage female</i>	40%	42%	40%	41%	40%

AMS in the November 2009 issue. 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/annual-survey/survey-reports.

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.

Other Sources of Data

Visit the AMS website at www.ams.org/annual-survey/other-sources for a listing of additional sources of data on the Mathematical Sciences.

This Third Report of the 2009 Annual Survey gives information about faculty size, departmental enrollments, and graduate students for departments of mathematical sciences in four-year colleges and universities in the United States.

The Annual Survey series begun in 1957 by the American Mathematical Society is currently 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 Pam Arroway, Richard Cleary (chair), Steven R. Dunbar, Susan Geller, Abbe H. Herzig, Ellen Kirkman, Joanna Mitro, James W. Maxwell (ex officio), Bart S. Ng, Douglas Raveland, and Marie Vitulli. The committee is assisted by AMS survey analyst Colleen A. Rose. In addition, the Annual Survey is sponsored by the Institute of Mathematical Statistics. Comments or suggestions regarding this Survey Report may be directed to the committee.

Table 6A: Graduate Students, Fall 2009

	GROUP								
	I Public	I Private	II	III	Va	I, II, III, & Va	M	I, II, III, Va, & M	IV
Total Graduate Students									
Full-time	2859	1636	3472	2551	768	11286	2667	13954	4892
<i>(Standard error)</i>						(89)	(182)	(251)	(149)
First-year full-time	644	453	869	818	257	3040	1209	4248	1545
<i>(Standard error)</i>						(35)	(92)	(118)	(65)
Part-time	147	209	454	860	82	1752	2136	3888	1041
<i>(Standard error)</i>						(50)	(165)	(196)	(93)
Female Graduate Students									
Full-time	669	397	1056	892	234	3248	1043	4291	2152
First-year full-time	146	96	272	303	87	904	466	1369	660
Part-time	66	41	191	338	21	657	1071	1728	517
U.S. Citizen Graduate Students									
Full-time	1595	795	2128	1418	391	6326	1919	8245	2063
<i>(Standard error)</i>						(52)	(141)	(165)	(68)
First-year full-time	338	215	549	479	125	1705	885	2590	634
Part-time	121	138	399	686	61	1405	1986	3391	689
<i>(Standard error)</i>						(40)	(157)	(176)	(69)

Table 6B: Full-Time Graduate Students in Groups I, II, III, & Va by Sex and Citizenship, Fall 2000–2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total full-time graduate students	9637	9361	9972	10444	10707	10565	10984	10937	10883	11286
Female	3016	2899	3136	3215	3245	3111	3279	3249	3193	3248
% Female	31%	31%	31%	31%	30%	29%	30%	30%	29%	29%
% U.S. citizen	53%	49%	51%	54%	55%	56%	56%	56%	55%	56%
% Underrepresented minorities ¹				10.0%	9.0%	10.0%	9.0%	9.0%	9.0%	9.0%
Total first-year graduate students	2839	2875	2996	2711	3004	2832	2960	2964	2924	3040
Female	879	1014	1038	902	983	851	961	950	870	904
% Female	31%	35%	35%	33%	33%	30%	32%	32%	30%	30%
% U.S. citizen	54%	53%	55%	56%	60%	59%	55%	56%	56%	55%
% Underrepresented minorities				12.0%	9.0%	10.0%	10.0%	10.0%	10.0%	10.0%

¹ Underrepresented minorities includes any person having origins within the categories *American Indian or Alaska Native, Black or African American, Hispanic or Latino, and Native Hawaiian or Other Pacific Islander.*

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 the number of Group I departments from 39 to 48, the Data Committee judged that a further subdivision of public and private would provide more meaningful reporting of the data for these departments.

Brief descriptions of the groupings are as follows:

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

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

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

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

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

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

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

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

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

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, pages 257–67, and an analysis of the classifications was given in the June 1983 Notices, pages 392–3.

Remarks on Statistical Procedures

The questionnaire on which this report is based, “*Departmental Profile*”, is sent to every doctoral department and starting with 2006 to every master's department. It is sent to a stratified random sample of Group B departments, the stratifying variable being the undergraduate enrollment at the institution.

The response rates vary substantially across the different department groups. For the doctoral departments it ranges between 60 and 90 percent. For Group M it ranges between 60 and 70 percent. For Group B, the response from the approximately 333 sampled departments drawn from the 1,037 total bachelor's departments typically ranges between 50 and 60 percent. For most of the data collected on the Departmental Profile form, the year-to-year changes in a given department's data are very small when compared to the variations among the departments within a given group. As a result of this, the most recent prior year's response is used for a nonresponding department, provided the response is within three years of the current survey. After the inclusion of prior responses, standard adjustments for the remaining nonresponse are then made to arrive at the estimates reported for the entire groups.

Beginning with the 2007 Annual Survey, standard errors were calculated for some of the key estimates for Groups I, II, III, and Va combined, for Groups M and B, and for Group IV. Standard errors are calculated using the variability in the data and can be used to measure how close our estimate is to the true value for the population. As an example, the number of full-time faculty in Group M is estimated at 4,328, with a standard error of 78. This means the actual number of full-time faculty in Group M is most likely between 4,328 plus or minus two standard errors, or between 4,172 and 4,484. This is much more informative than simply giving the estimate of 4,328.

Estimates are also given for parameters that are totals from all groups, such as the total number of full-time faculty. For example, an estimate of the total number of full-time faculty in all groups but group IV is 22,463, with a standard error of 383. Standard errors, when calculated for an estimate, appear in the tables in parentheses underneath the estimate.

The careful reader will note that a row or column total may differ slightly from the sum of the individual entries. All the table entries are the rounded values of the individual projections associated with each entry, and the differences are the result of this rounding (as the sum of rounded numbers is not always the same as the rounded sum).