

2000 Annual Survey of the Mathematical Sciences

(Second Report)

Updated Report on the 2000 Survey of New Doctoral Recipients
Starting Salary Survey of New Doctoral Recipients

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Update on the 2000 New Doctoral Recipients

Introduction

The Annual Survey of the Mathematical Sciences collects information each year about departments, faculties, and students in the mathematical sciences at four-year colleges and universities in the United States. Definitions of the various groups surveyed in the Annual Survey can be found in the box on page 719 of this report. For the second year, departments in Group Vb (operations research and management science) are no longer being surveyed. More discussion of this can be found in the 2000 First Report in the February 2001 *Notices of the AMS*, pp. 195-208.

This Second Report includes data from two parts of the 2000 Annual Survey. First, we update information about new doctoral recipients reported earlier in the February 2001 issue. Second, we present the starting salaries of the new doctoral recipients who responded to a follow-up survey. In past years this report would contain a third part presenting information about the faculties and instructional programs at the undergraduate and graduate levels in these departments for the 2000-2001 academic year. Starting with the 2000 survey, we have chosen

This Second Report of the 2000 Survey gives an update of the 1999-2000 new doctoral recipients from the First Report, which appeared in the *Notices of the AMS* in February 2001, pages 195-208. In prior years, this report included information about faculty size, departmental enrollments, majors, and graduate students for departments of mathematical sciences in four-year colleges and universities in the United States. This information will now be part of a third report to be published in the September 2001 *Notices of the AMS*. The First Report gave salary data for faculty members in these same departments. It also had a section on new doctoral recipients in statistics that is not updated here.

The 2000 Annual Survey represents the forty-fourth in an annual series begun in 1957 by the American Mathematical Society. The 2000 Survey is under the direction of the Annual Survey Data Committee, a joint committee of the American Mathematical Society, the American Statistical Association, the Institute of Mathematical Statistics, and the Mathematical Association of America. The current members of this committee are Lorraine Denby, J. Douglas Faires, Mary W. Gray, Alfred W. Hales, Peter E. Haskell, Ellen E. Kirkman, James M. Kister, James Lewis, Don O. Loftsgaarden (chair), James W. Maxwell (ex officio), and Yashaswini Mittal. The committee is assisted by AMS survey analyst Kinda Remick Priestley and survey coordinator Colleen Rose. Comments or suggestions regarding this Survey Report may be directed to the committee.

to present this data in a separate report which is expected to be published in the September issue of the *Notices of the AMS*.

The names of the 1999-2000 doctoral recipients and their thesis titles were published in "Doctoral Degrees Conferred" (*Notices of the AMS*, February 2001, pages 219-237).

Information about recipients of doctoral degrees awarded between July 1, 1999, and June 30, 2000, was collected from doctorate-granting departments beginning in late spring 2000 and from a follow-up census of individual degree recipients beginning in October. The "2000

Highlights

There were 1,127 new doctoral recipients from U.S. institutions for 1999–2000, down 8 from the previous year.

The final 1999–2000 unemployment rate for new doctoral recipients was 3.3%, down from 3.8% last year and the lowest rate in the past ten years.

Females totaled 304 of the new doctoral recipients, down from 318 last year, but still the second highest number ever recorded. The number of males was 823, up six from last year.

There were 566 U.S. citizen new doctoral recipients, which was 50.2% of the total and the highest percentage since 1986–87. There were 164 female U.S. citizen doctoral recipients, down from a record high of 188 last year, but again the second-highest number ever recorded. The number of male U.S. citizen new doctoral recipients was 402, an increase of 30 from last year.

Of the 957 new doctoral recipients known to have employment in October 2000, 89.4% found jobs in the U.S. Among the 856 new doctoral recipients taking employment in the U.S., 31.1% took nonacademic positions (government or business and industry), compared to 26.9% last year. Thirty-eight more new doctoral recipients accepted jobs in business and industry than last year.

The number of new doctoral recipients finding academic employment (including research institutes and other nonprofits) in the U.S. was 590, a drop of 20 from last year.

Median salaries for new doctoral recipients taking 9–10-month positions in U.S. academic institutions increased from \$39,000 to \$41,300 for females, while males increased from \$40,000 to \$41,500 over last year.

The median age for new doctoral recipients is 30.0, and the average age is 31.7. These are nearly identical to last year’s figures.

Annual Survey First Report” (*Notices of the AMS*, February 2001, pages 195–208) presents the survey results obtained about new doctoral recipients from the departments. Here we update information for new doctoral recipients since the First Report, using data gathered from a questionnaire, Employment Experiences of New Doctoral Recipients (EENDR), which was sent in early October 2000 to all new doctoral recipients whose address was known. When a new doctoral recipient did not respond or no address was known, information supplied by the department was used. This questionnaire has a number of questions on it that are the same as those on a questionnaire used by several other scientific disciplines, so that results from this questionnaire can be compared with those in other fields.

Updated Employment Status of U.S. New Doctoral Recipients, 1999–2000

Table 1A shows the fall and final counts of new doctoral recipients in the mathematical sciences awarded by U.S. institutions from 1992 through 2000. Final counts include those new doctoral recipients reported from departments who missed the deadline for inclusion in the First Report. Numbers in this table have been

revised from previous reports to exclude new doctorates data from Group Vb departments, which are no longer surveyed.

Table 1A: U.S. New Doctoral Recipients, Fall and Final Counts, 1992 to 2000

Year	Fall	Final
1992–93	1104	1116
1993–94	1025	1034
1994–95	1148	1157
1995–96	1098	1099
1996–97	1123	1130
1997–98	1163	1176
1998–99	1133	1135
1999–00	1119	1127

Table 1B gives a breakdown of the 1,127 doctoral degrees awarded in the mathematical sciences between July 1, 1999, and June 30, 2000, by type of degree-granting department.

Table 1B: U.S. New Doctoral Recipients by Type of Degree-Granting Department, 1999–2000

	I (Pu)	I (Pr)	II	III	IV	Va
Number	257	157	222	134	290	67
%	22.8	13.9	19.7	11.9	25.7	5.9

Tables 2A, 2B, and 2C display updates of employment data, found in these same tables in the First Report, for the fall count of 1999–2000 doctoral recipients plus eight additional doctoral recipients reported late. These tables are partitioned by field of thesis research and by the survey group of their degree department. At the time of this Second Report, the fall 2000 employment status of 1,000 of the 1,127 doctoral recipients was known.

The fall 2000 unemployment rate for new doctoral recipients, based on information gathered by the time of the Second Report, was 3.3%. The unemployment rate rose steadily in the early 1990s and reached its all-time high of 10.7% in 1994 and held that rate through 1995. It began to decrease in 1996, reaching 3.3% for 2000, the lowest it has been in the past ten years. Figure 3 presents the fall 1978 through fall 2000 trend in the final unemployment rate of new doctoral recipients. The counts on which these rates are

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**Table 2A: Fall 2000 Employment Status of 1999–2000 U.S. Doctoral Recipients
in the Mathematical Sciences, Updated April 2001**

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	Applied Math.	Numerical Analysis/ Approx- imations	Linear Nonlinear Optim./ Control	Differential, Integral, & Difference Equations	Math. Education	Other/ Unknown		
Group I (Public)	16	13	12	12	1	1	6	5	0	9	0	0	75	
Group I (Private)	14	6	18	4	4	0	3	3	0	5	0	0	57	
Group II	9	12	7	5	2	2	2	2	2	7	0	0	50	
Group III	9	3	2	1	2	9	1	1	1	3	2	0	34	
Group IV	0	0	0	0	0	49	0	2	0	0	0	0	51	
Group Va	0	0	0	1	2	0	5	0	3	0	0	0	11	
Master's	17	6	10	7	0	4	3	2	1	7	3	0	60	
Bachelor's	35	16	11	10	1	9	9	5	1	16	6	1	120	
Two-Year College	3	1	2	2	0	2	2	1	0	0	0	1	14	
Other Academic Dept.	2	4	1	3	0	45	11	2	3	5	2	1	79	
Research Institute/ Other Nonprofit	12	2	1	3	1	15	0	3	0	2	0	0	39	
Government	2	0	0	3	1	22	8	3	1	3	0	0	43	
Business and Industry	22	10	8	14	15	94	27	16	5	12	0	0	223	
Non-U.S. Academic	15	9	17	10	5	19	7	1	1	8	0	0	92	
Non-U.S. Nonacademic	1	1	2	1	0	1	1	2	0	0	0	0	9	
Not Seeking Employment	2	0	1	1	1	0	5	0	0	0	0	0	10	
Still Seeking Employment	5	1	5	2	2	6	2	4	2	4	0	0	33	
Unknown (U.S.)	6	7	7	8	2	22	7	3	2	5	0	0	69	
Unknown (non-U.S.) ¹	8	4	6	0	3	11	6	4	5	8	3	0	58	
COLUMN TOTAL	178	95	110	87	42	311	105	59	27	94	16	3	1127	
COLUMN	Male	139	81	89	68	35	187	78	42	22	72	8	2	823
SUBTOTALS	Female	39	14	21	19	7	124	27	17	5	22	8	1	304

¹ Includes those whose status is reported as "unknown" or "still seeking employment".

**Table 2B: Fall 2000 Employment Status of 1999–2000 U.S. Doctoral Recipients
by Type of Degree-Granting Department, Updated April 2001**

TYPE OF EMPLOYER	TYPE OF DOCTORAL DEGREE-GRANTING DEPARTMENT							ROW TOTAL	ROW SUBTOTAL	
	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)	38	21	11	4	1	0	75	65	10	
Group I (Private)	24	27	3	0	1	2	57	48	9	
Group II	21	9	15	2	1	2	50	41	9	
Group III	8	1	8	8	8	1	34	25	9	
Group IV	0	0	0	0	50	1	51	23	28	
Group Va	0	1	0	1	1	8	11	9	2	
Master's	9	2	29	15	3	2	60	40	20	
Bachelor's	26	9	44	32	7	2	120	76	44	
Two-Year College	5	0	2	5	2	0	14	10	4	
Other Academic Dept.	5	3	8	10	45	8	79	53	26	
Research Institute/ Other Nonprofit	8	9	6	2	12	2	39	23	16	
Government	4	7	6	2	22	2	43	29	14	
Business and Industry	33	28	37	24	83	18	223	180	43	
Non-U.S. Academic	35	16	16	4	18	3	92	73	19	
Non-U.S. Nonacademic	1	1	4	1	1	1	9	6	3	
Not Seeking Employment	1	1	5	1	1	1	10	5	5	
Still Seeking Employment	12	6	4	2	6	3	33	23	10	
Unknown (U.S.)	14	6	13	14	16	6	69	48	21	
Unknown (non-U.S.) ¹	13	10	11	7	12	5	58	46	12	
COLUMN TOTAL	257	157	222	134	290	67	1127	823	304	
COLUMN	Male	197	139	156	102	178	51	823		
SUBTOTALS	Female	60	18	66	32	112	16	304		

¹ Includes those whose status is reported as "unknown" or "still seeking employment".

Table 2C: 1999–2000 New Doctoral Recipients: Field of Thesis by Type of Degree-Granting Department, Updated April 2001

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	Applied Math.	Numerical Analysis/Approximations	Linear Nonlinear Optim./Control	Differential, Integral, & Difference Equations	Math. Education	Other/Unknown	
Group I (Public)	74	32	46	26	9	4	18	16	5	25	0	2	257
Group I (Private)	42	18	33	16	9	2	14	9	0	14	0	0	157
Group II	48	32	20	20	7	4	31	18	7	31	4	0	222
Group III	13	12	10	17	4	24	11	10	1	19	12	1	134
Group IV	1	0	0	0	9	272	6	1	1	0	0	0	290
Group Va	0	1	1	8	4	5	25	5	13	5	0	0	67
Total	178	95	110	87	42	311	105	59	27	94	16	3	1127

determined do not include those new doctoral recipients whose fall employment status was unknown at the time of the Second Report. Note that prior to 1999 the new doctoral recipients from Group Vb are included in the total unemployment rate for each year.

Of the 1,000 new doctoral recipients whose employment is known, 856 were employed in the U.S., 101 were employed outside the U.S., 33 were still seeking employment, and 10 were not seeking employment.

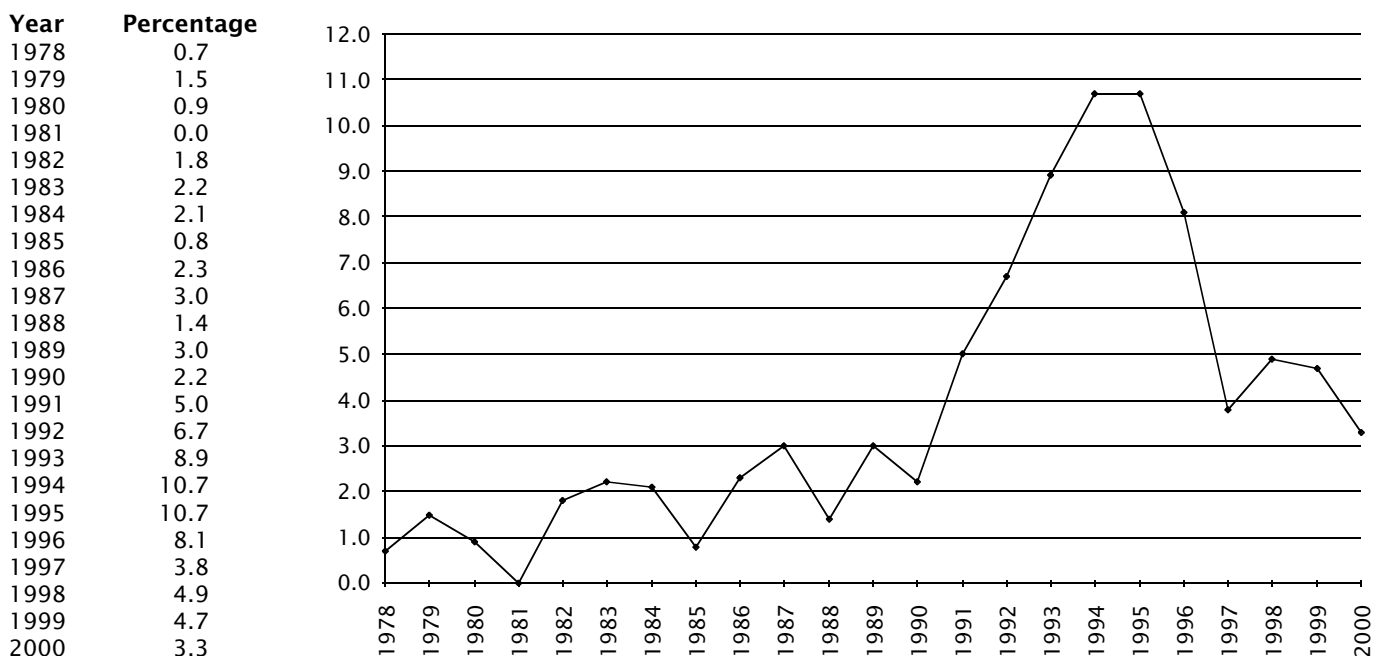
Table 2D presents the trend in the percentage of employed new doctoral recipients by general employment sector for the last three years. Academic employment includes those employed by research institutes and other nonprofits. The total number of new doctoral recipients known to be employed at the time of the Second Report was 965, 955, and 957, for 1998, 1999, and 2000 respectively.

Table 2D: Percentage of Total Employed New Doctoral Recipients by General Employment Sector, Fall 1998 to Fall 2000

%	U.S.		Non-U.S.	
	Academic	Nonacademic	Academic	Nonacademic
Fall 1998	56.7	29.3	11.9	2.1
Fall 1999	63.9	23.5	10.7	2.0
Fall 2000	61.7	27.8	9.6	0.9

Among new doctoral recipients who are employed, the percentage taking nonacademic employment (U.S. government, U.S. business and industry, and non-U.S. nonacademic) 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 13.9%, while the percentage for those with theses in probability or statistics is the highest at 43.5%.

Figure 3: Percentage of New Doctoral Recipients Unemployed, As Reported in the Respective Annual Survey Second Reports, 1978–2000



Tables 4A through 4E first appeared in the First Report for 1999–2000, although they do not have the same table numbers in that report. They have all been updated with information obtained from the individual new doctoral recipients who responded to a follow-up questionnaire. The next few paragraphs give a few things we can glean from these tables.

Table 4A shows that 38 more new doctoral recipients accepted jobs in business and industry compared to last year, an increase of 20.5%.

Table 4A: Number of New Doctoral Recipients Taking Positions in U.S. Business and Industry by Type of Degree-Granting Department, Fall 1998 to Fall 2000

Group	I (Pu)	I (Pr)	II	III	IV	Va	Total
Fall 1998	37	27	44	25	75	26	234
Fall 1999	32	24	28	21	66	14	185
Fall 2000	33	28	37	24	83	18	223

From Table 4B we see that 20 fewer new doctoral recipients were hired in U.S. academic institutions than last year, a decrease of 3.3%.

Table 4B: Number of New Doctoral Recipients Taking U.S. Academic Positions by Type of Degree-Granting Department, Fall 1998 to Fall 2000

Group	I (Pu)	I (Pr)	II	III	IV	Va	Total
Fall 1998	133	100	138	61	85	30	547
Fall 1999	166	91	146	82	86	39	610
Fall 2000	144	82	126	79	131	28	590

Table 4C shows that Group I, II, and III departments combined hired 17 fewer new doctoral recipients this year than they did last year, a decrease of 7.3%, while the number of new doctoral recipients hired by Group M and B departments is down by 13 (6.7%) compared to last year.

Table 4C: U.S. Academic Positions Filled by New Doctoral Recipients by Type of Hiring Department, Fall 1998 to Fall 2000

Group	I-III	IV	Va	M&B	Other	Total
Fall 1998	187	36	5	203	116	547
Fall 1999	233	47	19	193	118	610
Fall 2000	216	51	11	180	132	590

Table 4D gives information about the production and hiring of female new doctoral recipients in the doctoral-granting departments of this survey.

Table 4D: Females as a Percentage of New Doctoral Recipients Produced and Hired by Doctoral-Granting Departments, Fall 2000

%	I (Pu)	I (Pr)	II	III	IV	Va	Total
Produced	23.3	11.5	29.7	23.9	38.6	23.9	27.0
Hired	13.3	15.8	18.0	26.5	54.9	18.2	24.1

Table 4E shows that the new doctoral recipients from Group Va departments have the highest unemployment rate this year at 5.5%, while those from Group III departments have the lowest unemployment rate at 1.8%.

Table 4E: Percentage of Unemployed New Doctoral Recipients by Type of Degree-Granting Department, Fall 1998 to Fall 2000

%	I (Pu)	I (Pr)	II	III	IV	Va	Total
Fall 1998	5.4	3.7	7.0	8.9	3.1	1.4	4.9
Fall 1999	5.7	2.8	5.5	4.2	4.3	4.5	4.7
Fall 2000	5.2	4.3	2.1	1.8	2.3	5.5	3.3

Updated Information about New Doctoral Recipients by Sex and Citizenship

Tables 4F and 4G show the sex and citizenship of the 1,127 new doctoral recipients and the fact that 856 new doctoral recipients found jobs in the U.S. this year. This is 89.4% of the 957 new doctoral recipients known to have jobs in October 2000.

Sex and citizenship is known for all of the 1,127 new doctoral recipients. The final count of new doctoral recipients who are U.S. citizens is 566. At 50.2%, up slightly from 49.3% last year, this is the largest percentage reported by the Annual Survey since 1986–87. The final count of new doctoral recipients who are non-U.S. citizens decreased from 575 last year to 561 this year and remains well below the record high of 679 reported in the final count for 1992–93. Pages 200–202 of the First Report present further information related to the citizenship of the 1999–2000 new doctoral recipients.

Of the 566 U.S. citizen new doctoral recipients, 164 are female and 402 are male. The 164 female new doctoral recipients comprise 29.0% of the U.S. citizen total for 1999–2000, a decrease from last year's count of 188, which was 33.6% of the U.S. citizen new doctoral recipients. The number of U.S. citizen males, 402, increased by 30 (8.1%) from 372 last year.

Table 4H shows that while U.S. academic doctoral departments, Groups I through Va, hired 51.1% U.S. citizens, U.S. academic positions other than in the doctoral departments hired 69.2% U.S.

Table 4F: Employment Status of 1999–2000 Male U.S. New Doctoral Recipients by Type of Citizenship

TYPE OF EMPLOYER	CITIZENSHIP				MALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	344	48	210	20	622
U.S. Academic	247	29	123	15	414
Groups I, II, III, and Va	95	16	68	9	188
Group IV	17	1	5	1	24
Non-Ph.D. Department	125	11	39	4	179
Research Institute/Other Nonprofit	10	1	11	1	23
U.S. Nonacademic	97	19	87	5	208
Non-U.S. Employer	21	1	47	10	79
Non-U.S. Academic	20	1	44	8	73
Non-U.S. Nonacademic	1	0	3	2	6
Not Seeking Employment	2	1	2	0	5
Still Seeking Employment	8	3	11	1	23
SUBTOTAL	375	53	270	31	729
Unknown (U.S.)	27	8	11	2	48
Unknown (non-U.S.)¹	0	2	35	9	46
TOTAL	402	63	316	42	823

¹ Includes those whose status is reported as "unknown" or "still seeking employment".

Table 4G: Employment Status of 1999–2000 Female U.S. New Doctoral Recipients by Type of Citizenship

TYPE OF EMPLOYER	CITIZENSHIP				FEMALE DOCTORAL RECIPIENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	137	24	65	8	234
U.S. Academic	111	13	47	5	176
Groups I, II, III, and Va	19	3	16	1	39
Group IV	11	3	11	2	27
Non-Ph.D. Department	71	6	15	2	94
Research Institute/Other Nonprofit	10	1	5	0	16
U.S. Nonacademic	26	11	18	3	58
Non-U.S. Employer	4	1	15	2	22
Non-U.S. Academic	4	1	12	2	19
Non-U.S. Nonacademic	0	0	3	0	3
Not Seeking Employment	3	1	1	0	5
Still Seeking Employment	5	0	5	0	10
SUBTOTAL	149	26	86	10	271
Unknown (U.S.)	14	4	3	0	21
Unknown (non-U.S.)¹	1	1	8	2	12
TOTAL	164	31	97	12	304

¹ Includes those whose status is reported as "unknown" or "still seeking employment".

citizens. The percentage of U.S. citizens hired for nonacademic positions in the U.S. was 46.2%. Among those 856 1999–2000 doctoral recipients taking employment in the U.S., 31.1% took nonacademic employment (government or business and industry). This is up from 26.9% in 1998–99.

Table 4H: New Doctoral Recipients Having Employment in the U.S by Type of Employer and Citizenship, Fall 2000

Employer	U.S.	Non-U.S.	Total
U.S. Academic, Groups I–Va	142	136	278
U.S. Academic, Other	216	96	312
U.S. Nonacademic	123	143	266
Total	481	375	856

New Information from the EENDR Survey

Of the 1,127 new doctoral recipients reported in the First Report, the 1,046 whose addresses were known were sent the Employment Experiences of New Doctoral Recipients (EENDR) survey in October 2000, and 603 (57.6%) 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, 69.0%, was from those in academia in the U.S., while the lowest, 50.0%, was from those in foreign academia.

The EENDR gathered details on employment experiences not available through departments. The rest of this section presents the additional

information available on this subset of the 1999–2000 doctoral recipients.

Table 5 shows the citizenship of the 603 new doctoral recipients who responded to the EENDR.

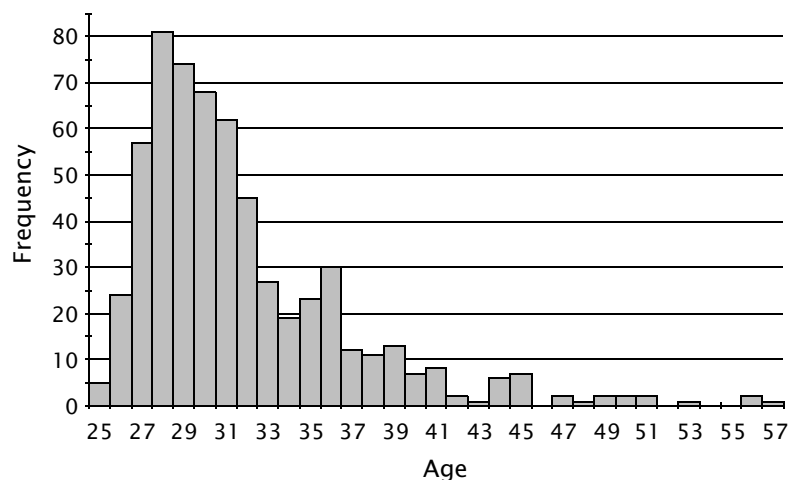
Of the 603 total respondents to the EENDR, 536 were employed in the U.S., 49 were employed outside the U.S., 9 were still seeking employment, 5 were not seeking employment, and 4 were unknown (non-U.S.) as of the week of October 10, 2000. The unemployment rate for those responding to the EENDR is 1.5%. Among those employed in the U.S., 519 were employed full-time and 16 were employed part-time (one individual did not answer this question). Of the 16 reporting part-time employment, 6 reported that they were working part-time because a suitable full-time job was not available, while 9 also reported they were working part-time while they pursued additional education.

Among the 536 employed in the U.S., 317 reported obtaining a permanent position and 218 a temporary position (one individual did not answer this question). Of the 218 in temporary positions, 92 (42.2%) reported taking temporary employment because a suitable permanent position was not available and 157 (72.0%) classified their position as postdoctoral. Furthermore, among those in postdoctoral positions, 35.0% responded that they took the position because a suitable permanent position was not available.

Among the 317 who reported obtaining a permanent position in the U.S., 59.3% were employed in academia (including 2.2% in research institutes and other nonprofits), 36.3% in business or industry, and 4.4% in government. Women held 31.5% of the permanent positions.

Among the 218 individuals with temporary employment in the U.S., 95.4% were employed in

Figure 6: Age Distribution of 1999–2000 New Doctoral Recipients



academia (including 8.3% in research institutes and other nonprofits), 2.3% in business or industry, and 2.3% in government.

Among the 49 individuals employed outside the U.S., 87.8% were employed in academia (including 12.2% in research institutes and other nonprofits) and the other 12.2% were in business or industry. None were employed in government. Twenty-one of those employed outside the U.S. were U.S. citizens, 15 of which were in temporary positions, while none were U.S. permanent residents.

Figure 6 gives the age distribution of the 595 new doctoral recipients who responded to this question. The median age of new doctoral recipients was 30.0, while the mean age was 31.7. The first and third quartiles were 28 and 34 respectively. These figures are almost identical to those reported last year.

Table 5: Employment Status of 1999–2000 EENDR Respondents by Type of Citizenship

TYPE OF EMPLOYER	CITIZENSHIP				TOTAL EENDR RESPONDENTS
	U.S. CITIZENS	NON-U.S. CITIZENS			
		Permanent Visa	Temporary Visa	Unknown Visa	
U.S. Employer	337	37	155	7	536
U.S. Academic	267	22	103	5	397
Groups I, II, III, and Va	80	7	58	3	148
Group IV	24	2	4	0	30
Non-Ph.D. Department	148	12	32	2	194
Research Institute/Other Nonprofit	15	1	9	0	25
U.S. Nonacademic	70	15	52	2	139
Non-U.S. Employer	21	0	21	7	49
Non-U.S. Academic	20	0	18	5	43
Non-U.S. Nonacademic	1	0	3	2	6
Not Seeking Employment	2	2	1	0	5
Still Seeking Employment	4	0	5	0	9
SUBTOTAL	364	39	182	14	599
Unknown (U.S.)	0	0	0	0	0
Unknown (non-U.S.) ¹	1	0	3	0	4
TOTAL	365	39	185	14	603

¹ Includes those whose status is reported as "unknown" or "still seeking employment".

Acknowledgments

The Annual Survey of the Mathematical Sciences 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.

Starting Salary Survey of New Doctoral Recipients

The starting salary figures for 2000 were compiled from information gathered on the EENDR questionnaires sent to individuals who received doctoral degrees in the mathematical sciences during the 1999–2000 academic year from universities in the United States (see previous section for more details).

The questionnaires were distributed to 1,046 recipients of degrees using addresses provided by the departments granting the degrees; 603 individuals responded between late October and

April. Responses with insufficient data or from individuals who indicated they had part-time employment were considered unusable. Numbers of usable responses for each salary category are reported in the following tables.

Readers should be warned that the data in this report are obtained from a self-selected sample, and inferences from them may not be representative of the population.

Key to Tables. Salaries are listed in hundreds of dollars. Nine-month salaries are based on 9–10 months' teaching and/or research, not adding extra stipends for summer grants or summer teaching or the equivalent. Years listed are the academic year in which the doctorate was received. M and F are male and female respectively. Some persons receiving a doctoral degree had been employed in their present position for several years. Quartile figures are given only in cases where the number of responses is large enough to make them meaningful. All categories of "Teaching or Teaching and Research" and "Research" contain only those recipients employed at academic institutions. The "Research, 9–10-Month Salaries" table was dropped as of 1998 because so few recipients respond in this category that the data was not considered meaningful. Starting salaries for those reporting a postdoctoral position are available for a fourth year. These salaries are also included within the academic tables and box plots on pages 717–718.

Graphs. The graphs show standard box plots summarizing salary distribution information for the years 1994 through 2000. Values plotted for 1994 through 1999 are converted to 2000 dollars using the implicit price deflator prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce.

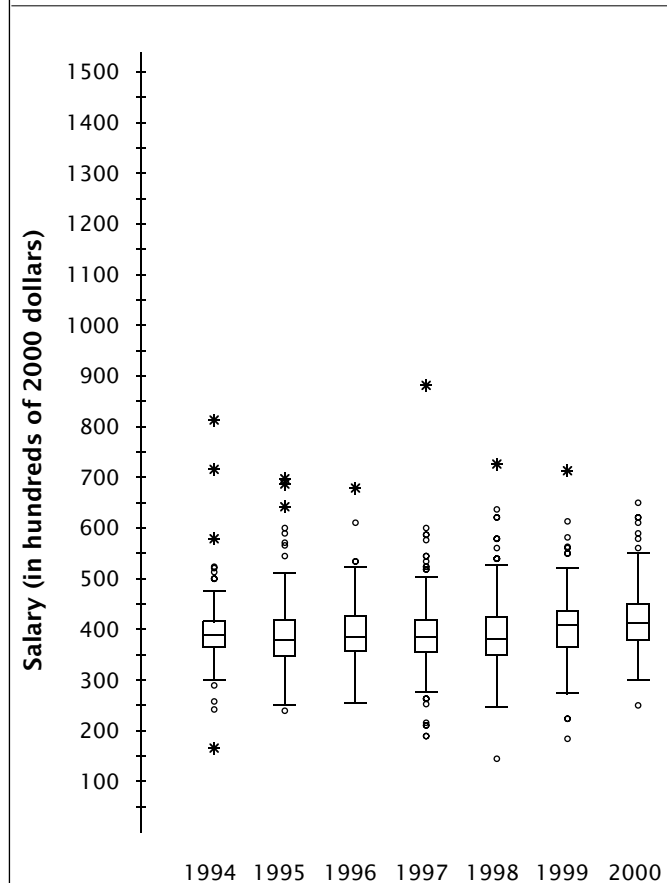
For each boxplot the box shows the first quartile (Q1), the median (M), and the third quartile (Q3). The interquartile range (IQR) is defined as Q3–Q1. Think of constructing invisible fences 1.5xIQR below Q1 and 1.5xIQR above Q3. Whiskers are drawn from Q3 to the largest observation that falls below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

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

Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1997	180	350	385	410	450	404
1998	290	350	390	420	500	404
1999	130	365	400	418	540	408
2000	300	385	420	450	550	420
1997M	250	350	380	405	446	-----
1997F	180	350	385	408	450	-----
1998M	290	340	390	430	500	-----
1998F	310	361	375	390	436	-----
1999M	220	373	400	428	540	-----
1999F	130	350	390	410	475	-----
Total (61 male/14 female)						
2000M	300	390	420	450	550	
2000F	360	389	448	458	544	

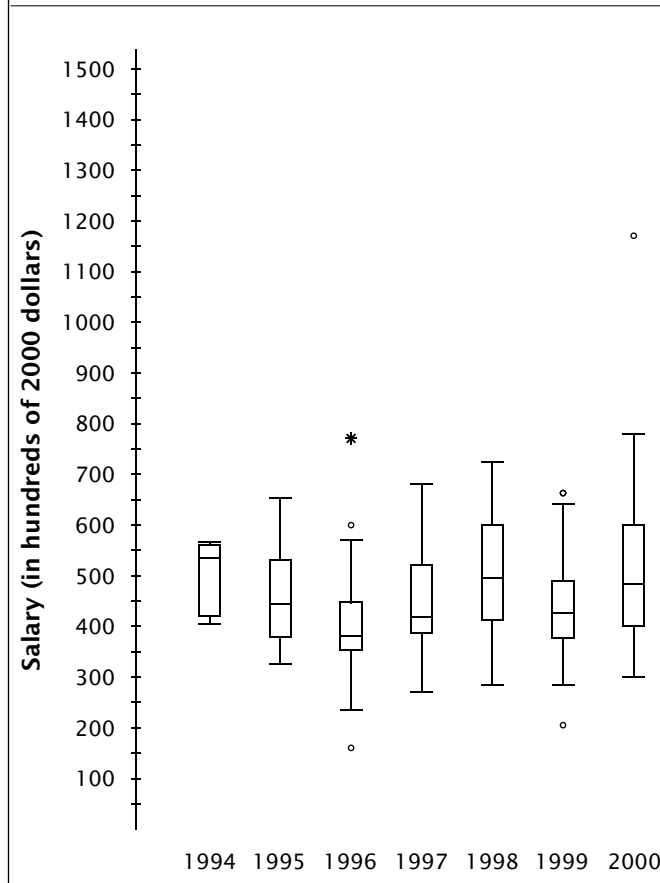
**Academic Teaching/Teaching and Research
9-10-Month Salaries
(in hundreds of dollars)**

Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1965	70		80		105	360
1970	85		110		195	405
1975	90	120	128	135	173	342
1980	105	155	171	185	250	321
1985	170	230	250	270	380	363
1990	230	305	320	350	710	396
1994	150	330	350	375	730	390
1995	220	320	350	382	640	381
1996	240	333	360	400	636	385
1997	180	340	366	400	840	384
1998	140	340	370	410	700	383
1999	180	360	400	430	700	408
2000	250	380	415	450	650	415
1996M	240	330	360	400	636	----
1996F	270	345	365	399	500	----
1997M	180	340	367	400	571	----
1997F	180	340	366	396	840	----
1998M	140	340	370	411	700	----
1998F	250	350	377	409	600	----
1999M	220	370	400	430	700	----
1999F	180	350	390	420	540	----
Total (183 male/72 female)						
2000M	250	380	415	450	650	
2000F	321	380	413	450	620	
One year or less experience (149 male/57 female)						
2000M	250	380	415	450	650	
2000F	321	380	418	450	620	



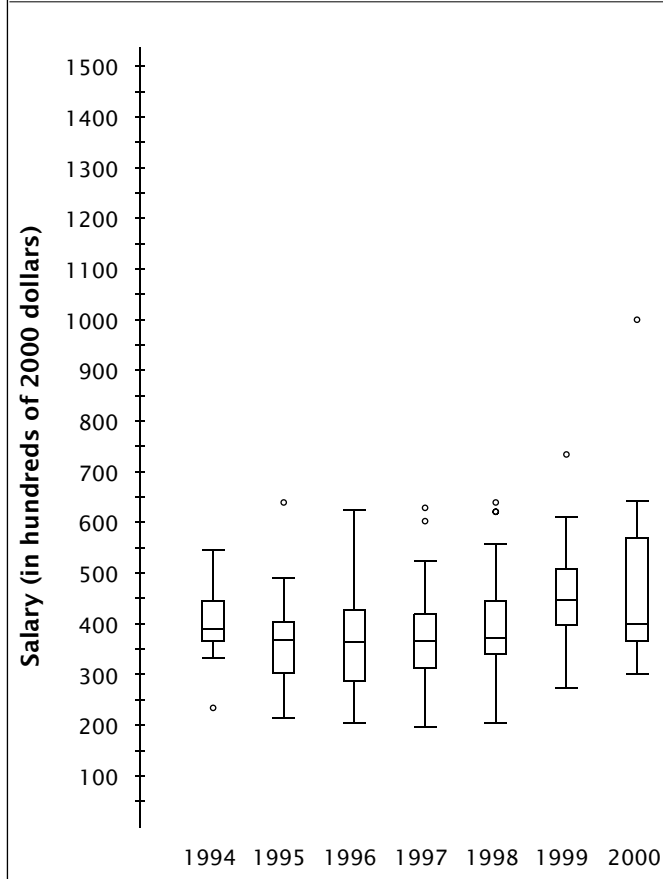
**Academic Teaching/Teaching and Research
11-12-Month Salaries
(in hundreds of dollars)**

Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1965	78		104		121	468
1970	95		128		200	471
1975	87		145		204	387
1980	143		195		350	366
1985	220	230	273	300	470	396
1990	225	318	365	404	670	451
1994	365	391	480	503	510	535
1995	300	354	410	478	600	447
1996	150	302	340	390	720	364
1997	260	370	400	497	650	420
1998	275	403	480	578	700	497
1999	200	374	420	469	650	429
2000	300	400	485	600	1170	485
1996M	150	280	330	460	720	----
1996F	330	340	358	368	400	----
1997M	260	360	400	420	635	----
1997F	260	393	447	505	650	----
1998M	275	410	495	573	700	----
1998F	300	395	464	575	630	----
1999M	280	370	420	458	650	----
1999F	200	393	435	590	630	----
Total (45 male/13 female)						
2000 M	300	390	460	650	1170	
2000 F	395	465	500	570	750	
One year or less experience (34 male/10 female)						
2000 M	300	390	443	536	780	
2000 F	395	474	510	560	750	



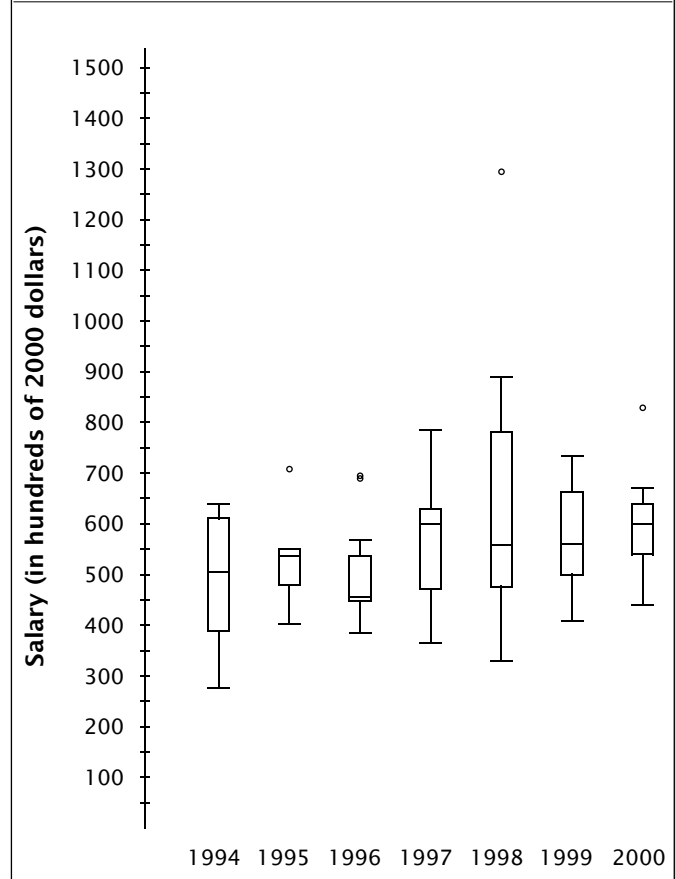
**Academic Research Only
11-12-Month Salaries
(in hundreds of dollars)**

Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1965	81		93		107	418
1970	90		120		205	442
1975	90		119		180	318
1980	120		180		321	337
1985	190	295	342	400	520	496
1990	180	280	300	365	546	371
1994	210	330	350	400	490	390
1995	196	280	340	370	587	371
1996	192	270	330	400	585	353
1997	190	300	350	400	600	367
1998	200	333	360	428	617	373
1999	270	390	440	500	720	449
2000	300	384	400	555	1000	400
1996M	210	273	330	360	585	----
1996F	192	265	390	455	500	----
1997M	210	300	350	406	500	----
1997F	190	313	350	386	600	----
1998M	200	340	360	400	600	----
1998F	285	330	360	540	617	----
1999M	270	383	400	493	600	----
1999F	340	468	530	581	720	----
Total (23 male/17 female)						
2000M	300	390	400	486	1000	
2000F	300	360	410	580	630	
One year or less experience (23 male/14 female)						
2000M	300	390	400	486	644	
2000F	300	360	400	533	600	



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

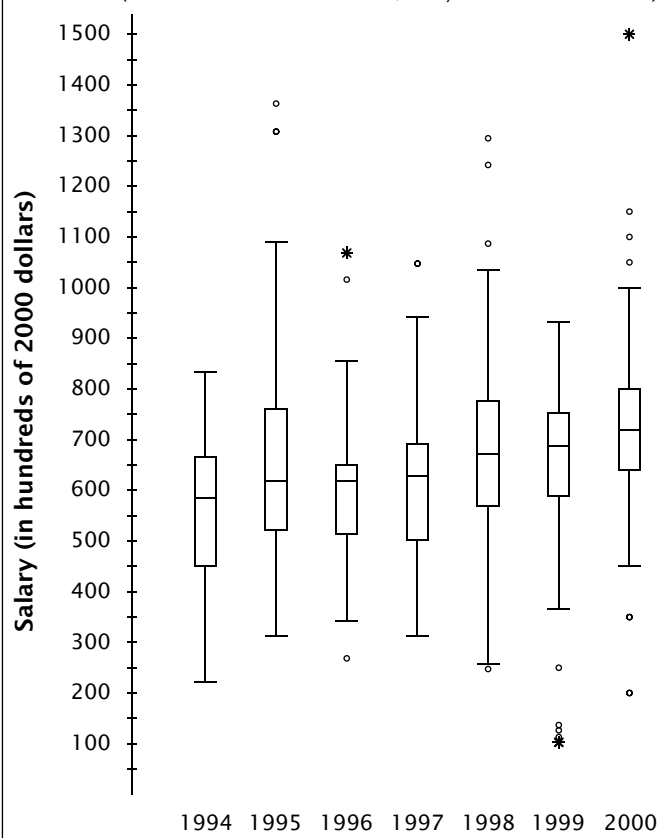
Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1965	70		126		160	567
1970	100		150		223	552
1975	78		182		247	486
1980	156		244		501	457
1985	263	294	325	381	440	472
1990	320	345	378	430	587	467
1994	250	355	455	530	576	507
1995	370	440	494	507	650	538
1996	360	420	427	504	650	457
1997	350	454	573	600	750	601
1998	320	475	540	736	1250	559
1999	400	495	550	651	720	561
2000	440	540	600	640	830	600
1996M	360	405	427	500	650	----
1996F	----	----	----	----	----	----
1997M	370	476	573	608	750	----
1997F	350	465	560	586	680	----
1998M	320	500	568	756	1250	----
1998F	----	----	----	----	----	----
1999M	400	495	540	587	720	----
1999F	----	----	----	----	----	----
Total (11 male/6 female)						
2000M	440	563	620	649	830	
2000F	530	545	566	593	650	
One year or less experience (9 male/4 female)						
2000M	440	525	620	658	830	
2000F	----	----	----	----	----	



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

Ph.D. Year	Min	Q ₁	Median	Q ₃	Max	Reported Median in 2000 \$
1965	100		136		180	612
1970	96		170		235	626
1975	114		187		240	499
1980	190		284		400	532
1985	260	360	400	420	493	580
1990	320	438	495	533	700	612
1994	200	418	525	600	750	585
1995	288	480	568	690	1250	619
1996	250	510	580	610	1000	620
1997	300	483	600	658	1000	629
1998	240	550	650	750	2250	673
1999	360	600	680	761	2450	694
2000	200	640	720	800	1500	720
1996M	250	480	580	610	1000	-----
1996F	520	-----	590	-----	650	-----
1997M	300	490	600	670	1000	-----
1997F	400	460	540	620	900	-----
1998M	240	550	650	750	1250	-----
1998F	305	565	662	765	2250	-----
1999M	360	626	700	763	2450	-----
1999F	440	580	644	676	1100	-----
Total (83 male/26 female)						
2000M	200	640	730	800	1500	
2000F	200	645	690	788	980	
One year or less experience (60 male/20 female)						
2000M	350	648	750	800	1100	
12000F	200	655	680	750	950	

(Note: Two salaries above \$150,000 are not shown.)



Definitions of the Groups

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

The subdivision of the Group I institutions into Group I Public and Group I Private was new for the 1996 survey. With the increase in number of the Group I departments from 39 to 48, the 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 is 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 comprise 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, pages 257-267, and an analysis of the classifications was given in the June 1983 Notices, pages 392-393.

Other Data Sources

American Association of University Professors, *The Annual Report on the Economic Status of the Profession 1999–2000*, Academe: Bull. AAUP (March/April 2000), Washington, DC.

W. G. Bowen and N. L. Rudenstine, *In pursuit of the Ph.D.*, Princeton Univ. Press, Princeton, NJ, 1992.

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—, *Employment of Recent Doctoral Graduates in S&E: Results of Professional Society Surveys*, CPST, Washington, DC, 1998.

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D. O. Loftsgaarden, D. C. Rung, and A. E. Watkins, *Statistical abstract of undergraduate programs in the mathematical sciences in the U.S.*, Fall 1995 CBMS Survey, MAA Reports No. 2, 1997.

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—, *U.S. Research Institutes in the Mathematical Sciences: Assessment and Perspectives*, National Academy Press, Washington, DC, 1999.

—, *Summary Report 1996, Doctorate Recipients from United States Universities*, National Academy Press, Washington, DC, 1998.

—, *Research-Doctorate Programs in the United States: Continuity and Change*, National Academy Press, Washington, DC, 1995.

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National Science Foundation, *Science and Engineering Degrees: 1966–97* (NSF 00-310), Detailed Statistical Tables, Arlington, VA, 2000.

—, *Graduate Students and Postdoctorates in Science and Engineering: Fall 1998* (NSF 00-322), Arlington, VA, 2000.

—, *Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1989–97* (NSF 00-311), Detailed Statistical Tables, Arlington, VA, 2000.

—, *Science and Engineering Doctorate Awards: 1998* (NSF 00-304), Detailed Statistical Tables, Arlington, VA, 2000.

—, *Characteristics of Doctoral Scientists and Engineers in the United States: 1997* (NSF 00-308), Detailed Statistical Tables, Arlington, VA, 1999.

—, *Women, Minorities, and Persons with Disabilities in Science and Engineering: 1998* (NSF 99-338), Arlington, VA, 1999.

—, *Statistical Profiles of Foreign Doctoral Recipients in Science and Engineering: Plans to Stay in the United States* (NSF 99-304), Arlington, VA, 1998.

—, *Who Is Unemployed? Factors Affecting Unemployment among Individuals with Degrees in Science and Engineering*, Higher Education Surveys Report (NSF 97-336), Arlington, VA, 1997.

Supplemental Listing of New Doctoral Recipients, 1999–2000

CALIFORNIA

University of California, Los Angeles (6)

STATISTICS

Bentow, Stanley, A Markov chain Monte Carlo method for approximating 2-way contingency tables with applications in the stability analysis of ecological ordination.

Brauerman, Amy, A rate-disorientation approach to massive data set analysis.

Bond, Jason, A robust approach to SIR estimation.

Hu, Ming-Yi, Model checking for incomplete high dimensional categorical data.

Piersol, Laura, Fitting nonlinear mixed effect models by Laplace approximation.

Xie, Jun, Entropy filtering method and insertion/deletion robust algorithm for multiple local sequence alignment.

NEW HAMPSHIRE

University of New Hampshire (2)

MATHEMATICS

Parker, Andy, Topics in chaotic secure communication.

Pendharkar, Hemant, Central sequences and C*-algebras.