Notices
of the American Mathematical Society

27th Annual AMS Survey   1983
First Report

First Report

> The following pages contain a first report on the 1983 AMS Survey. Included in this report are salary and other data on faculty members in four-year colleges and universities, a report on the 1983 survey of new doctorates, a report on salaries of new doctorates, and a list of names and thesis titles for members of the 1982-1983 Ph.D. class.

> The Annual AMS Survey is conducted in two parts. Questionnaires were distributed in May to all departments in the mathematical sciences in colleges and universities in the United States and Canada, and later to the recipients of doctoral degrees granted by these departments between July 1982 and June 1983, inclusive. This report is based on the information collected from these questionnaires. A second round of questionnaires was distributed in September; these are concerned with data on fall enrollments, class size, teaching loads and faculty mobility. These data will be reported in the February or April 1984 issue of the *Notices*.

> This Survey is the twenty-seventh in an annual series begun in 1957 by the Society's Committee on the Economic Status of Teachers. The present Survey is under the direction of the Committee on Employment and Educational Policy (CEEP), whose members are Lida K. Barrett, Lisl Novak Gaal, Irwin Kra, Robert W. McKelvey, Donald C. Rung (chairman), and Barnet M. Weinstock. The questionnaires were devised by CEEP's Data Subcommittee consisting of Lida K. Barrett, Susan J. Devlin, Lincoln K. Durst, Wendell H. Fleming, Arthur P. Mattuck, and Donald C. Rung (chairman).

Faculty Salaries, Tenure, Women

The questionnaries sent to departments in the mathematical sciences asked for information on salaries and tenure. Departments submitted a minimum, median, and maximum salary figure for each of four academic ranks, for staff members both with and without doctorates. Annual salaries of full-time faculty members for the academic year of 9 or 10 months were sought. The 1983 questionnaire requested information for both the years 1982-1983 and 1983-1984. The sample in this survey is thus the same for both years and is different from the sample used in the Twenty-Sixth AMS Survey in 1982. In the salary tables on the following pages the numbers in parentheses give the range of the middle fifty percent of salaries reported. The figures outside the parentheses represent the mimimum and maximum salary listed by any reporting institution. In some categories relatively few departments reported and, because significant figures were not available, salaries are not listed.

The information reported this year on the number of faculty members is based on returns from 626 departments in the mathematical sciences, 124 of which did not contain usable salary information.

For these reports, the departments are divided into groups according to the highest degree offered in the mathematical sciences. The doctorate-granting departments are in six groups as described in the box.

> **Groups I and II** include the leading departments of mathematics in the U.S. according to the 1982 assessment of Research-Doctorate Programs conducted by the Conference Board of Associated Research Councils in which departments were rated according to the quality of their graduate faculty.[1]

> **Group I** is composed of 39 departments with scores in the 3.0–5.0 range.

> **Group II** is composed of 43 departments with scores in the 2.0–2.9 range.

> **Group III** contains the remaining U.S. departments reporting a doctoral program.

> **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 VI** contains doctorate-granting departments in the mathematical sciences in Canadian universities.

> **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.

> [1]These findings were published in *An Assessment of Research-Doctorate Programs: Mathematical and Physical Sciences*. The information on mathematics, statistics and computer science was presented in digest form in the April 1983 issue of the *Notices*, pp. 257–267, and an analysis of the above classifications was given in the June 1983 *Notices*, pp. 392–393. It should be noted that the University of Maryland has separate programs in mathematics and applied mathematics within a single department, not separate departments as reported in the above cited articles in the *Notices*.

TABLE 1: Total Faculty Reported for Four-Year Colleges and Universities

	1982–1983				1983–1984			
	FACULTY		WOMEN		FACULTY		WOMEN	
	Total	With Tenure	Total	With Tenure	Total	With Tenure	Total	With Tenure
WITHOUT DOCTORATE								
Instructor/Lecturer	672	41	356	22	686	43	377	24
Assistant Professor	469	311	134	77	474	293	124	71
Associate Professor	330	314	52	52	319	299	57	54
Professor	109	107	10	10	109	106	9	9
	1580	773	552	161	1588	741	567	158
WITH DOCTORATE								
Instructor/Lecturer	205	7	33	1	206	8	34	2
Assistant Professor	1735	187	263	30	1823	177	276	31
Associate Professor	2234	1944	173	136	2220	1935	191	151
Professor	3296	3235	146	140	3438	3361	155	149
	7470	5373	615	307	7687	5481	656	333

TABLE 2: Percent of Doctorate Faculty with Tenure

	Fall 1982	Fall 1983
Groups I, II, III	73.8%	74.0%
Groups IV, V	64.7%	63.5%
Group VI	90.2%	90.1%
Masters and Bachelors	69.4%	68.0%

TABLE 3: Response Rates

U.S. Departments

Group	I	II	III	IV	V	M	B
% Response	72	72	59	62	14	42	32

Canadian Departments

Group	VI
% Response	46

Response Rates. Response rates among the various classes of departments vary widely, thus making it difficult to draw firm conclusions about the sizes of the faculty groups studied. Because the questionnaires request data for two years in a row, however, it is possible to estimate relative changes from one year to the next with somewhat more confidence. This year's response rates are given in Table 3. As in past years, the greatest rates of response are in Groups I, II, and III, which have a combined response rate of 66%.

Faculty Salaries

SIZE OF FACULTY — **SALARIES** (in hundreds of dollars)

Rank	1982–1983 FACULTY Total	With Tenure	1982–1983 WOMEN Total	With Tenure	1983–1984 FACULTY Total	With Tenure	1983–1984 WOMEN Total	With Tenure	1982–1983 Minimum	1982–1983 Median	1982–1983 Maximum	1983–1984 Minimum	1983–1984 Median	1983–1984 Maximum
DOCTORATE GRANTING DEPARTMENTS. Group I (28 of 39 reporting)														
WITHOUT DOCTORATE														
Instructor/Lecturer	8	1	6	1	6	1	6	1						
Assistant Professor	2	2	1	1	1	1	0	0						
Associate Professor	3	3	0	0	3	3	0	0						
Professor	3	3	1	1	3	3	1	1						
	16	9	8	3	13	8	7	2						
WITH DOCTORATE														
Instructor/Lecturer	94	2	11	0	88	2	11	0	170(180–219)	(184–219)	(190–219) 302	105(200–233)	(200–236)	(200–242) 332
Assistant Professor	195	4	16	0	195	3	14	0	180(220–229)	(210–240)	(222–251) 285	108(209–245)	(223–260)	(242–275) 310
Associate Professor	168	160	9	9	152	141	9	8	216(244–285)	(276–298)	(292–320) 380	239(250–308)	(294–321)	(322–361) 410
Professor	731	731	20	20	752	752	22	22	262(290–355)	(389–460)	(538–635) 670	262(306–347)	(400–495)	(560–668) 800
	1188	897	56	29	1187	898	56	30						
DOCTORATE GRANTING DEPARTMENTS. Group II (31 of 43 reporting)														
WITHOUT DOCTORATE														
Instructor/Lecturer	90	6	39	3	82	6	36	3	120(140–180)	(147–187)	(165–215) 226	122(140–172)	(147–194)	(165–208) 230
Assistant Professor	10	7	4	2	6	5	2	1	—	—	—	—	—	—
Associate Professor	13	12	3	2	14	13	4	3	—	—	—	—	—	—
Professor	4	4	0	0	4	4	0	0	—	—	—	—	—	—
	117	29	46	7	106	28	42	7						
WITH DOCTORATE														
Instructor/Lecturer	37	0	9	0	38	0	6	0	—	—	—	—	—	—
Assistant Professor	240	17	27	4	245	18	27	5	170(185–210)	(211–233)	(236–268) 284	175(198–226)	(225–245)	(250–278) 315
Associate Professor	344	327	22	18	336	321	26	21	198(235–257)	(266–292)	(299–348) 406	204(238–274)	(274–310)	(310–363) 443
Professor	491	491	12	12	508	507	12	12	250(288–328)	(350–410)	(483–605) 715	255(289–347)	(356–433)	(522–641) 744
	1112	835	70	34	1127	846	71	38						
DOCTORATE GRANTING DEPARTMENTS. Group III (44 of 74 reporting)														
WITHOUT DOCTORATE														
Instructor/Lecturer	73	4	44	4	63	4	42	4	105(125–201)	(137–201)	(155–226) 270	105(143–208)	(148–212)	(162–237) 290
Assistant Professor	35	28	11	8	32	25	9	7	175(184–244)	(193–246)	(210–248) 263	176(194–244)	(210–256)	(216–256) 269
Associate Professor	16	16	2	2	16	16	2	2	—	—	—	—	—	—
Professor	11	11	0	0	10	10	0	0	—	—	—	—	—	—
	135	59	57	14	121	55	53	13						

WITH DOCTORATE

Rank									Salary A	Salary B
Instructor/Lecturer	19	0	1	0	23	0	4	0	156(176-230)(188-230)(199-240)261	156(160-227)(165-231)(165-240)260
Assistant Professor	259	23	28	2	263	22	29	3	142(198-215)(215-237)(230-270)295	152(202-235)(225-250)(245-285)323
Associate Professor	346	303	19	16	340	302	22	19	170(230-262)(265-293)(293-345)404	170(235-282)(270-314)(310-360)438
Professor	456	437	10	10	473	458	11	11	254(283-330)(330-392)(403-508)649	255(288-339)(344-408)(424-546)708
	1080	763	58	28	1099	782	66	33		

DOCTORATE GRANTING DEPARTMENTS. Group IV (40 of 65 reporting)

WITHOUT DOCTORATE

Rank								
Instructor/Lecturer	12	1	3	0	12	1	5	0
Assistant Professor	3	2	1	0	3	2	1	0
Associate Professor	0	0	0	0	1	1	0	0
Professor	2	2	0	0	2	2	0	0
	17	5	4	0	18	6	6	0

WITH DOCTORATE

Rank									Salary A	Salary B
Instructor/Lecturer	4	1	3	1	6	1	3	1	—	—
Assistant Professor	151	5	23	1	157	4	20	1	183(202-240)(225-260)(239-275)378	199(215-265)(230-275)(248-290)362
Associate Professor	106	75	9	5	116	84	10	5	224(263-315)(279-330)(298-350)456	212(256-321)(286-345)(305-381)430
Professor	267	261	10	10	272	258	10	10	253(302-380)(370-452)(485-590)750	266(315-402)(392-470)(507-617)800
	528	342	45	17	551	347	43	17		

DOCTORATE GRANTING DEPARTMENTS. Group V (7 of 51 reporting)

WITHOUT DOCTORATE

Rank								
Professor	1	1	0	0	1	1	0	0
	1	1	0	0	1	1	0	0

WITH DOCTORATE

Rank									Salary A	Salary B
Instructor/Lecturer	1	0	1	0	1	0	1	0	—	—
Assistant Professor	26	0	3	0	28	0	4	0	215(215-263)(217-264)(238-296)296	230(230-260)(245-290)(265-310)319
Associate Professor	17	13	1	1	16	14	0	0	282(282-312)(303-343)(311-370)370	282(282-375)(322-377)(323-379)379
Professor	49	47	1	1	51	50	2	2	228(350-405)(387-469)(494-560)607	331(350-438)(400-510)(564-609)645
	93	60	6	2	96	64	7	2		

DOCTORATE GRANTING DEPARTMENTS. Group VI (13 of 28 reporting)
(Canadian Departments)

WITHOUT DOCTORATE

Rank								
Instructor/Lecturer	4	1	1	1	3	1	1	1
Assistant Professor	3	1	3	1	1	1	1	1
Associate Professor	4	4	1	1	4	4	1	1
Professor	3	3	0	0	3	3	0	0
	14	9	5	3	11	9	3	3

WITH DOCTORATE

Rank									Salary A	Salary B
Instructor/Lecturer	4	0	2	0	2	0	0	0	—	—
Assistant Professor	44	16	8	4	44	13	6	2	195(236-264)(263-327)(278-363)371	189(230-257)(280-291)(301-346)390
Associate Professor	138	137	5	5	134	133	7	7	273(276-347)(342-392)(410-489)507	276(293-356)(358-411)(422-512)522
Professor	150	150	1	1	164	164	1	1	313(341-403)(431-529)(503-736)775	327(341-422)(445-529)(550-773)807
	336	303	16	10	344	310	14	10		

SIZE OF FACULTY

	1982–1983 FACULTY Total	With Tenure	WOMEN Total	With Tenure	1983–1984 FACULTY Total	With Tenure	WOMEN Total	With Tenure
MASTER DEGREE GRANTING DEPARTMENTS (137 of 327 reporting)								
WITHOUT DOCTORATE								
Instructor/Lecturer	220	20	123	11	227	21	129	11
Assistant Professor	210	173	53	36	212	171	51	38
Associate Professor	129	127	24	24	122	121	24	24
Professor	32	32	4	4	35	35	4	4
	591	352	204	75	596	348	208	77
WITH DOCTORATE								
Instructor/Lecturer	27	1	4	0	31	2	8	1
Assistant Professor	439	69	81	14	476	64	79	13
Associate Professor	680	594	69	60	686	599	75	62
Professor	712	696	49	45	741	726	54	53
	1858	1360	203	119	1934	1391	216	129
BACHELOR DEGREE GRANTING DEPARTMENTS (326 of 1019 reporting)								
WITHOUT DOCTORATE								
Instructor/Lecturer	265	8	140	3	293	9	158	4
Assistant Professor	206	98	61	29	219	88	60	24
Associate Professor	165	152	22	22	159	141	26	24
Professor	53	51	5	5	51	48	4	4
	689	309	228	59	722	286	248	56
WITH DOCTORATE								
Instructor/Lecturer	19	3	2	0	17	3	1	0
Assistant Professor	381	53	77	5	415	53	97	7
Associate Professor	435	335	39	22	440	341	42	29
Professor	440	422	43	41	477	446	43	38
	1275	813	161	68	1349	843	183	74

SALARIES
(in hundreds of dollars)

	1982–1983 Minimum	Median	Maximum	1983–1984 Minimum	Median	Maximum
MASTER DEGREE GRANTING DEPARTMENTS						
WITHOUT DOCTORATE						
Instructor/Lecturer	70(135–170)	(142–175)	(147–195) 261	80(140–178)	(150–188)	(160–200) 304
Assistant Professor	151(199–233)	(208–246)	(215–260) 311	151(211–252)	(213–265)	(219–280) 330
Associate Professor	178(230–284)	(245–286)	(252–300) 370	178(234–298)	(255–303)	(264–310) 370
Professor	213(270–370)	(270–370)	(287–379) 499	213(291–370)	(291–370)	(291–370) 530
WITH DOCTORATE						
Instructor/Lecturer	160(174–219)	(190–225)	(203–225) 270	170(188–225)	(210–225)	(219–250) 282
Assistant Professor	136(190–230)	(209–246)	(221–276) 320	147(200–240)	(215–256)	(230–289) 355
Associate Professor	111(230–262)	(248–295)	(272–328) 413	192(238–279)	(259–306)	(289–347) 461
Professor	126(270–330)	(304–361)	(344–412) 504	215(286–343)	(316–375)	(352–426) 582
BACHELOR DEGREE GRANTING DEPARTMENTS						
WITHOUT DOCTORATE						
Instructor/Lecturer	110(150–175)	(153–179)	(160–193) 295	110(155–185)	(163–188)	(165–195) 295
Assistant Professor	134(170–230)	(180–235)	(180–240) 316	135(181–230)	(185–240)	(186–250) 303
Associate Professor	125(201–265)	(204–263)	(210–265) 385	151(210–277)	(211–278)	(221–280) 397
Professor	166(225–322)	(225–324)	(225–325) 570	173(238–343)	(238–343)	(238–345) 600
WITH DOCTORATE						
Instructor/Lecturer	—	—	—	—	—	—
Assistant Professor	148(180–215)	(187–223)	(190–235) 358	155(192–224)	(200–239)	(205–250) 358
Associate Professor	119(210–260)	(220–270)	(223–386) 410	155(221–273)	(230–285)	(234–300) 430
Professor	140(255–318)	(261–334)	(264–358) 536	147(257–334)	(271–352)	(276–375) 546

Report on the 1983 Survey of New Doctorates

by Donald C. Rung

This report presents a statistical profile of new doctorates in mathematics and statistics from both United States and Canadian universities. It includes the employment status of recipients of 1982-1983 doctorates in mathematics and statistics, and an analysis of the data by the sex, racial/ethnic group, and citizenship of the new doctorates. In addition, trends in the number of doctoral degrees are reported for each group of departments as defined by the 1982 Conference Board of Associated Research Councils (described on the first page of this 1983 Survey).

Doctorates conferred by Computer Science Departments are *not* included in this report although they have been included in previous reports. The response rate from this group has been low. The number of doctorates in computer science reported in the 1982 survey was 105, while the actual number probably was more than twice this figure. By way of contrast, very few degrees in mathematics or statistics go unreported.

The number of new doctorates reported for 1982-1983 was 792. This is an increase over the comparable 1981-1982 figure of 755. The comparable figure for 1980-1981 was 812 and for 1979-1980 was 768. These figures are taken from the surveys reported each year in the November *Notices* with the computer science doctorates subtracted. A second updated report is planned for the February or April 1984 *Notices*.

It is interesting to analyze the 750 doctorates reported from U.S. universities (there were 42 doctorates from Canadian universities). The citizenship is known for 744 of these doctorates and 61%, or 455, of new doctorates are U.S. citizens. The percentage of doctorates who are U.S. citizens has declined dramatically over the last four years, from 73% in 1979-1980 to the present 61% figure. It is apparent that we are now producing annually less than 500 doctorates who are U.S. citizens. Of course, it is assumed that many of the non-U.S. citizens do stay in this country and eventually obtain permanent residency. Table 4 gives this analysis from 1972-1973 to 1982-1983.

For U.S. citizens, it is instructive to compare the ratio of men to women among the new doctorates. Because so many of the non-U.S. citizens are male, the overall percentage of doctorates who are women has been fairly steady. This year it is 16%, as compared to the 1981-1982 figure of 15% and the 1980-1981 figure of 16%. Yet when U.S. citizens are analyzed, the percentage of women has increased, doubling in 11 years from 10% in

1972-1973 to 20% in 1982-1983. Table 5 gives these figures.

There was an increase in those still seeking employment from 32 last year to 38 this year, with the percentage rising from 4% last year to 5% this year. If past experience holds, most will find employment later this year.

The number of those employed by government, business and industry, fell from 155 to 115 but some of this decline may have been caused by omitting the number of doctorates in computer science where opportunities for employment in this area are plentiful.

Employment Status of New Doctorates, 1982-1983. Table 1 shows the employment status, by type of employer and field of degree, of 792 recipients of doctoral degrees conferred by mathematical sciences departments in the U.S. and Canada between July 1, 1982 and June 30, 1983. These 792 individuals are listed, with their thesis titles, later in this report.

In rows 1 through 5, the numbers who accepted appointments in U.S. doctorate-granting mathematics and statistics departments (Groups I—V) are given. In the next two rows, the figures represent those accepting appointments in U.S. mathematical sciences departments granting masters and bachelors degrees only. The information was obtained both from the departments granting the degrees and from questionnaires subsequently completed by the recipients themselves.

Among those 1982-1983 new doctorates employed in the U.S., about 66% took positions in university or college mathematical sciences departments. About 21% took positions in government, business, and industry, while the remaining 13% are in two-year colleges, high schools, other academic departments, or research institutes. These figures reflect an increase in those taking academic positions, perhaps because of the omission of computer science doctorates.

Table 1 shows as "not yet employed" about 5% of the 1982-1983 new doctorates (this excludes those whose employment status is unknown, and those not seeking employment). The data in Table 1 were in many instances obtained early in the summer of 1983 and do not reflect subsequent hiring during the summer; an update of Table 1 is planned for the February or April 1984 *Notices*. A similar update last year revealed that nearly all new 1981-1982 doctorates not yet employed by early summer subsequently found positions by fall 1982. (See the *Notices*, November 1982, page 635 and February 1983, page 161.) Only thirteen

TABLE 1: 1982-1983 Employment Status of New Doctorates in the Mathematical Sciences

| | PURE MATHEMATICS | | | | | | | | | | | |
	Algebra and Number Theory	Analysis and Functional Analysis	Geometry and Topology	Logic	Probability	Statistics	Computer Science	Operations Research	Applied Mathematics	Mathematics Education	Other	Total
Group I	10	23	22	4	4	2			5		3	73
Group II	9	14	4	1	0	4		1	7		2	42
Group III	3	12	4	1	2	11	1	1	9		2	46
Group IV						30			1			31
Group V		4				4	3	4	1		2	18
Masters	11	14	14	1	5	12	1	3	12		10	83
Bachelors	16	12	12	2	1	9	1	2	4		8	67
Two-year College or High School	1		2								2	5
Other Academic Departments	3	4				23	1	12	3		4	50
Research Institutes	4	4	2						3			13
Government		1				11	1	2	6		2	23
Business and Industry	3	7	2		3	30	6	18	16		7	92
Canada, Academic	2	4	3		1	5		1	2		2	20
Canada, Nonacademic						2			3			5
Foreign, Academic	10	19	14	1	4	20	1	5	9		7	90
Foreign, Nonacademic	6	2	3			13	1	8	7		2	42
Not seeking employ.	1	2	1		1	1			3			9
Not yet employed	7	9	4	1		5	1	4	3		4	38
Unknown	6	6	5	5	1	6	1	2	9		4	45
Total	92	137	92	16	22	188	18	63	103	0	61	792

TABLE 2: Sex, Minority Group, and Citizenship of New Doctorates
July 1, 1982—June 30, 1983

| U.S. DEGREES | MEN | | | | | WOMEN | | | | | TOTAL |
| | CITIZENSHIP | | | | | CITIZENSHIP | | | | | |
RACIAL/ETHNIC GROUP	U.S.	Canada	Other	Not Known	Total Men	U.S.	Canada	Other	Not Known	Total Women	
Asian, Pacific Islander	14	1	104	3	122	4		13	1	18	140
Black	1		2		3	5				5	8
American Indian, Eskimo, Aleut						1				1	1
Mexican American, Chicano, Puerto Rican	2		4		6			1		1	7
None of those above	318	13	120	2	453	73	2	17		92	545
Unknown	31		11		42	6		1		7	49
Total Number	366	14	241	5	626	89	2	32	1	124	750

| CANADIAN DEGREES | MEN | | | | | WOMEN | | | | | TOTAL |
| | CITIZENSHIP | | | | | CITIZENSHIP | | | | | |
RACIAL/ETHNIC GROUP	U.S.	Canada	Other	Not Known	Total Men	U.S.	Canada	Other	Not Known	Total Women	
Asian, Pacific Islander			4		4						4
Black											
American Indian, Eskimo, Aleut											
Mexican American, Chicano, Puerto Rican											
None of those above		13	10		23				1	1	24
Unknown	1	7	5		13		1			1	14
Total Number	1	20	19		40		1		1	2	42

Doctorates in Mathematics and Related Areas, NRC Reports: July 1967–June 1982

	1967-1968	1968-1969	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976	1976-1977	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982
Mathematics	970	1,063	1,218	1,236	1,281	1,222	1,196	1,149	1,003	959	838	768	745	728	720
A. Algebra	145	181	190	200	167	141	124	126	115	88	87	87	78	54	60
B. Analysis	246	266	244	262	241	244	213	180	141	152	118	111	91	105	98
C. Geometry	31	25	39	35	35	32	38	26	23	26	22	25	35	29	32
D. Logic	30	28	37	31	39	33	21	38	34	17	24	21	24	18	17
E. Number Theory	20	24	27	33	36	31	23	27	26	32	18	17	28	24	28
F. Probability, Mathematical Statistics	132	49	83	91	151	156	150	174	165	159	168	165	152	163	165
G. Topology	105	108	143	120	130	111	112	94	72	70	56	60	57	55	45
H. Computing Theory and Practice	51	79	118	139	163	221	194	167	147	101	55	25	13	16	11
I. Operations Research						3	24	55	36	42	43	43	41	35	36
J. Applied Mathematics	131	127	147	122	119	119	138	101	104	113	108	111	102	118	107
K. Mathematics, General	51	86	94	108	112	90	111	115	97	89	92	81	83	80	85
L. Mathematics, Other	28	90	96	95	88	41	48	46	43	70	47	22	41	31	36
Total Pure (A, B, C, D, E, G, K)	628	718	774	789	760	682	642	606	508	474	417	402	396	365	365
Total Other (F, H, I, J, L)	342	345	444	447	521	540	554	543	495	485	421	366	349	363	355
Computer Science											121	209	218	232	220
Engineering															
Computer Engineering								101	119	122	76	79	62	71	72
Electrical Engineering	602	688	706	748	690	673	601	536	512	461	410	451	405	411	469
Engineering Mechanics	227	238	235	215	209	176	161	162	113	102	95	85	91	78	103
Operations Research					62	104	125	90	82	76	84	66	63	80	58
Systems Design & Systems Science								79	68	71	62	75	62	68	49
Life Sciences															
Biometrics and Biostatistics	23	18	37	42	30	34	35	37	46	52	45	44	42	48	58
Social Sciences															
Econometrics	30	20	27	27	32	31	20	27	30	29	23	22	22	17	24
Statistics	19	96	121	133	85	62	36	43	35	36	46	23	33	39	43
Education															
Mathematics Education	95	111	128	131	152	134	110	108	96	98	57	85	74	62	50

individuals included in Table 1 were reported as having taken part-time employment.

Sex, Minority Group, and Citizenship of New Doctorates, 1982-1983. Table 2 represents a breakdown according to sex, racial/ethnic group, and citizenship of these 792 new doctorates. The information summarized in Table 2 was obtained from department heads and in some cases from recipients themselves.

Analysis of the 1982-1983 employment forms for the new U.S. doctorates indicates that 11% of those employed by Groups I, II, and III departments are women, the same figure as last year. Of the new doctorates employed by bachelors and masters degree-granting departments 21% are women, while of those employed by government, business, and industry, 23% are women.

Trends in the Number of New Doctorates. Table 3 gives the number of doctorates granted during 1980-1981, 1981-1982, and 1982-1983 by those departments in Groups I—VI, which reported in all three years (as of August 10, 1983). The number of such departments is indicated in parentheses. This table does not include computer science doctorates. The Groups are derived from the 1982 rating.

TABLE 3: Number of New Mathematics and Statistics Doctorates Reported by Selected Departments

	80-81	81-82	82-83
Group I (29 depts.)	262	283	278
Group II (37 depts.)	126	91	114
Group III (50 depts.)	113	105	89
Subtotal	501	479	481
Group IV (33 depts.)	161	168	154
Group V (17 depts.)	120	119	115
Group VI (16 depts.)	51	43	42
Subtotal	332	330	311
TOTAL	833	809	792

Citizenship and Gender of U.S. Doctorates, 1972-1983. In response to several inquiries, information is presented on the annual number of doctorates receiving their degrees from U.S. universities who are U.S. citizens (Table 4). This number is divided into male and female doctorates (Table 5). This is presented for the period 1972-1983 using the CEEP reports on new doctorates published annually in the October or November *Notices.*

In Table 4 the first column is the number of doctorates, *whose citizenship is known,* who received degrees between July 1 and June 30 of the indicated years. In Column 2, we give the number who were U.S. citizens and in Column 3 the percentage this represents. In Table 5 the number in Column 2 of Table 4 is further divided into men and women. Note that in both tables *all years but 1982-1983 contain computer science doctorates.*

TABLE 4: U.S. Citizen Doctorates

	Adjusted Total of Doctorates granted by U.S. universities	Total of Doctorates who are U.S. citizens	%
1972-1973	986	774	78%
1973-1974	938	677	72%
1974-1975	999	741	74%
1975-1976	965	722	75%
1976-1977	901	689	76%
1977-1978	868	634	73%
1978-1979	806	596	74%
1979-1980	791	578	73%
1980-1981	839	567	68%
1981-1982	798	519	65%
1982-1983	744	455	61%

TABLE 5: U.S. Citizen Doctorates

	Total	Male	Female	% Female
1972-1973	774	696	78	10%
1973-1974	677	618	59	9%
1974-1975	741	658	83	11%
1975-1976	722	636	86	12%
1976-1977	689	602	87	13%
1977-1978	634	545	89	14%
1978-1979	596	503	93	16%
1979-1980	578	491	87	15%
1980-1981	567	465	102	18%
1981-1982	519	431	88	17%
1982-1983	455	366	89	20%

It is apparent there has been a precipitous decline over the last four years in the number of new doctorates who are U.S. citizens. On the other hand, the percentage of women receiving doctorates who are U.S. citizens has increased, doubling over the eleven-year period.

The table entitled **Doctorates in Mathematics and Related Areas, NRC Reports: July 1967– June 1982,** extends the table published in 1982 to cover the years 1967-1968 through 1981-1982. It depicts the rise and fall in the number of doctoral degrees in "mathematics" awarded each year in this interval. The reports of corresponding numbers for statistics, computing and operations research are subject to variations in classification, as an examination of some of the lower lines in the printed table will reveal. The figures given are extracted from a series of NRC reports entitled *Doctorate Recipients from United States Universities.* (These reports are published annually and may be obtained from the Office of Scientific and Engineering Personnel, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.)

Salary Survey for New Recipients of Doctorates

The figures for 1983 in this article were compiled from questionnaires sent to individuals who received a doctorate in the mathematical sciences during the 1982-1983 academic year from universities in the United States and Canada.

Questionnaires requesting information on salaries and professional experience were distributed to 619 recipients of degrees using addresses provided by the departments which granted the degrees. Of these, 9 were returned by the postal service as undeliverable and could not be forwarded. There were 355 individuals who returned forms between late June and early September. The tables below are based on the responses from 307 of these individuals (254 men and 53 women). Data from 48 responses were not used in the compilation of the tables below; forms with insufficient data, or from individuals who had indicated they had part-time employment, were not yet employed, or were not seeking employment were considered unusable.

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. More comprehensive information on the number, the sex—minority group status—citizenship, and the employment status of the recipients of new doctorates granted last year in the mathematical sciences in the U.S. and Canada may be found in the previous article of this report on the 1983 Survey.

Key to Tables. *Salaries* are listed in hundreds of dollars. *Years* listed refer to the academic year ending in the listed year. *M* and *F* are Male and Female respectively. *One year experience* means that the persons had experience limited to one year or less in the same position or a position similar to the one reported; some persons receiving a doctorate had been employed in their present position for several years. $(X + Y)$ means there are *X men and Y women* in the 1983 sample. Quartile figures are given only in cases where the number of responses is large enough to make them meaningful.

Graphs. For each category and year, the median starting salary is denoted by a horizontal bar; a vertical bar extends to the extremes. When the quartiles have also been recorded, they are denoted by the range of the box around the median, thus for those cases, the middle 50% of starting salaries lie within the range of the box. The salary information in the graphs is in hundreds of dollars. This graphical technique is based on a proposal by McGill, Tukey and Larsen in *Variations of box plots*, The American Statistician (February 1978).

The connected line segments equate value of the dollar from one year to the next, using 1965 median starting salary as a benchmark and adjusting that to current dollars by the implicit price deflators prepared annually by the Bureau of Economic Analysis, U.S. Department of Commerce. If the rate of change in the actual starting salaries is less than the slope of the corresponding line segment, median starting salaries did not keep up with inflation.

Note that starting salaries for all categories fall behind the cost of living change in 1975 as compared to 1970. In most cases the *rate* of increase in median starting salary from 1975 to 1980 kept up with inflation, as the line connecting the medians is parallel with the line segment. Starting salaries in 1982 showed a greater increase over 1980 than one would anticipate merely by the change in the value of the dollar; however, the median starting salary has not yet made up for the loss in the early seventies. Generally, the range of salaries is increasing with time.

Nine-Month Salaries

TEACHING OR TEACHING AND RESEARCH (168 + 35)

Year	Min	Q1	Median	Q3	Max	1965 Salary Median in Current $
1960	49		65		80	74
1965	70		80		105	80
1970	85		110		195	98
1975	90	120	128	135	173	135
1980	105	155	171	185	250	192
1981	130	175	190	210	320	210
1982	160	190	206	229	370	223
1983	80	200	217	240	350	–
1980M	120	155	171	185	250	
1980F	105	151	164	198	210	
1981M	130	175	190	210	320	
1981F	146	177	195	216	300	
1982M	160	192	210	229	370	
1982F	160	175	198	225	285	
1983M	95	204	220	240	350	
1983F	80	198	210	227	330	
One Year Experience (149 + 30)						
1983M	95	200	215	235	350	
1983F	80	200	213	240	330	

Nine-Month Salaries

RESEARCH (5 + 1)

Year	Min	Median	Max	1965 Salary Median in Current $
1960	52	65	80	75
1965	71	81	90	81
1970	78	105	160	100
1975	100	–	110	137
1980	125	137	180	195
1981	143	–	145	213
1982	180	190	235	226
1983	100	200	230	–
1980M	125	137	180	
1980F	–	–	–	
1981M	143	–	145	
1981F	–	145	–	
1982M	180	190	190	
1982F	–	235	–	
1983M	100	200	230	
1983F	205	205	205	
One Year Experience (5 + 1)				
1983M	100	200	230	
1983F	205	205	205	

Nine-month
Teaching
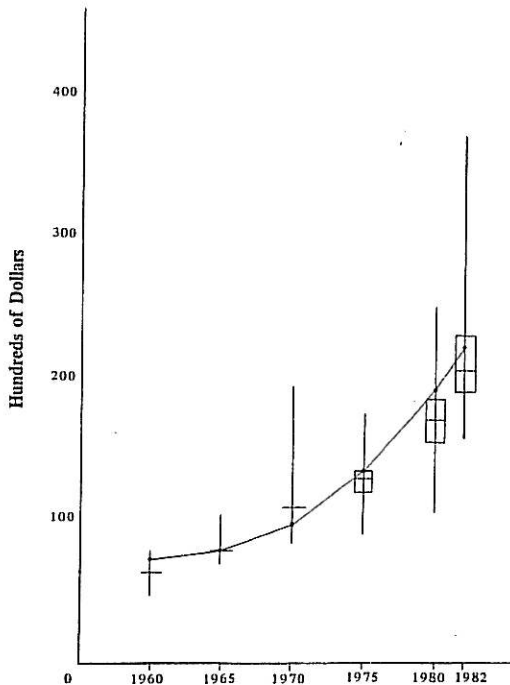
Graph omitted because sample size too small

Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
TEACHING OR TEACHING AND RESEARCH (16 + 3)				
1960	.........NO DATA			
1965	78	104	121	104
1970	95	128	200	128
1975	87	145	204	176
1980	143	195	350	250
1981	156	203	400	274
1982	100	250	500	290
1983	160	260	320	−
1980M	143	190	350	
1980F	147	200	220	
1981M	156	200	400	
1981F	165	213	290	
1982M	180	250	500	
1982F	100	266	367	
1983M	160	255	320	
1983F	240	265	270	
One Year Experience (12 + 3)				
1983M	160	243	320	
1983F	240	265	270	

Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
RESEARCH (15 + 2)				
1960	97	105	140	86
1965	81	93	107	93
1970	90	120	205	114
1975	90	119	180	157
1980	120	180	321	224
1981	140	200	280	245
1982	130	245	364	259
1983	155	262	450	−
1980M	120	180	321	
1980F	178	200	264	
1981M	140	200	280	
1981F	150	168	200	
1982M	144	230	336	
1982F	130	265	364	
1983M	195	262	450	
1983F	155	260	364	
One Year Experience (13 + 1)				
1983M	195	250	450	
1983F	155	155	155	

Twelve-Month Teaching
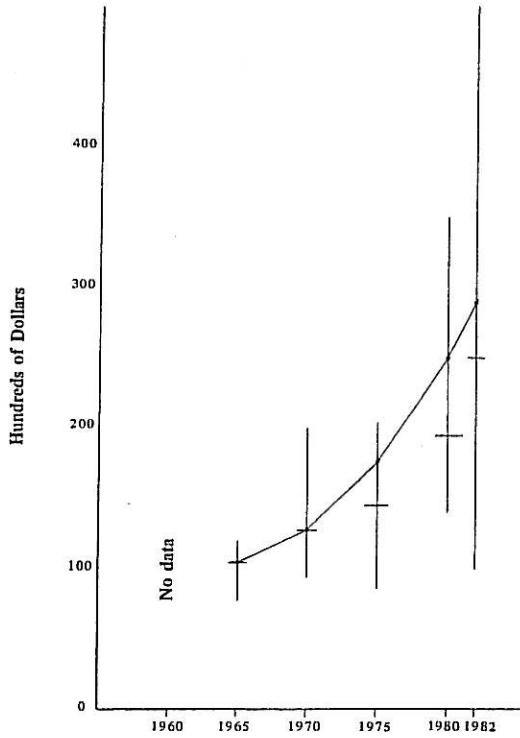
Twelve-Month Research
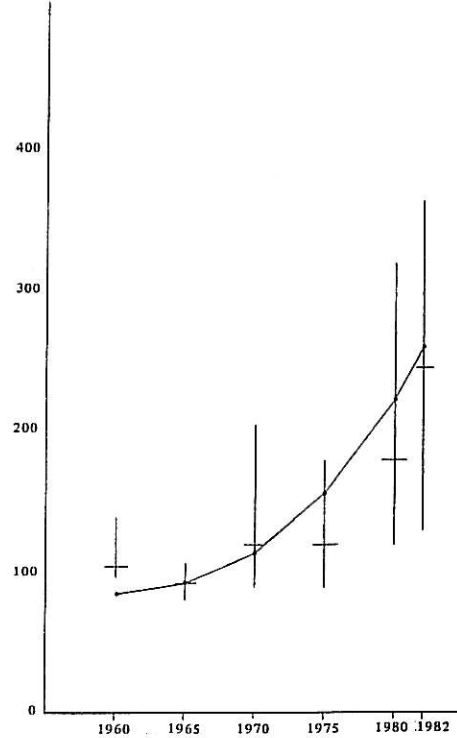
Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
		GOVERNMENT (11 + 3)		
1960	72	93	130	117
1965	70	126	160	126
1970	100	150	223	155
1975	78	182	247	213
1980	156	244	501	303
1981	220	290	460	332
1982	228	325	470	351
1983	160	322	422	—
1980M	156	230	501	
1980F	205	247	280	
1981M	220	294	400	
1981F	252	269	460	
1982M	228	331	470	
1982F	282	326	369	
1983M	160	313	422	
1983F	293	320	350	
One Year Experience (6 + 1)				
1983M	160	245	330	
1983F	293	293	293	

Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
		BUSINESS AND INDUSTRY (39 + 9)		
1960	78	110	150	126
1965	100	136	180	136
1970	96	170	235	167
1975	114	187	240	230
1980	190	284	400	327
1981	195	308	500	358
1982	196	354	550	379
1983	276	375	580	—
1980M	190	284	400	
1980F	218	283	345	
1981M	195	319	500	
1981F	226	290	358	
1982M	196	366	550	
1982F	230	350	430	
1983M	300	370	580	
1983F	276	375	413	
One Year Experience (25 + 6)				
1983M	302	370	420	
1983F	276	375	413	

Twelve-Month Government
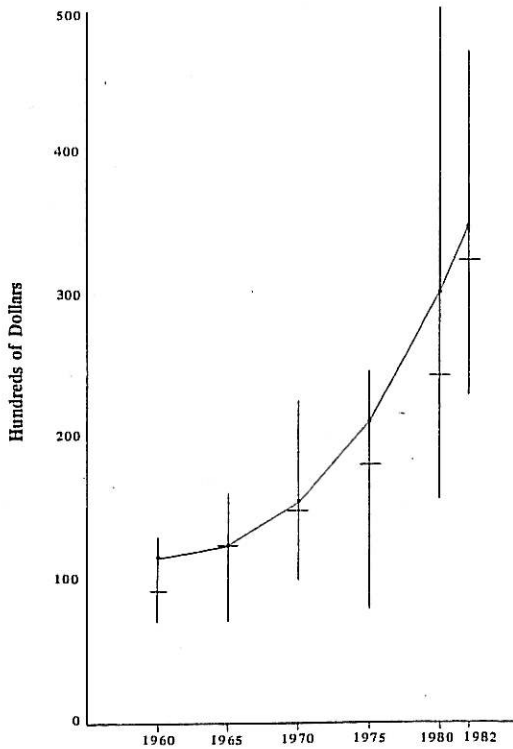
Twelve-Month Business and Industry