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28th Annual AMS Survey 1984

First Report

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First Report

The following pages contain a first report on the 1984 AMS Survey. Included in this report are salary and other data on faculty members in four-year colleges and universities, a report on the 1984 survey of new doctorates, a report on salaries of new doctorates, and a list of names and thesis titles for members of the 1983-1984 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 1983 and June 1984, 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 March 1985 issue of the *Notices*.

This Survey is the twenty-eighth 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, Stefan A. Burr, Lisl Novak Gaal, Gerald J. Janusz, Irwin Kra, and Donald C. Rung (chairman). 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 1984 questionnaire requested information for both the years 1983-1984 and 1984-1985. The sample in this survey is thus the same for both years and is different from the sample used in the Twenty-Seventh AMS Survey in 1983. 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 675 departments in the mathematical sciences, 101 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 (or programs) 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 in the United States: Mathematical and Physical Sciences*, edited by Lyle V. Jones, Gardner Lindzey, and Porter E. Coggeshall, National Academy Press, Washington, D.C., 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 above classifications was given in the June 1983 *Notices*, pages 392–393.

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

	1983–1984				1984–1985			
	FACULTY		WOMEN		FACULTY		WOMEN	
	Total	With Tenure	Total	With Tenure	Total	With Tenure	Total	With Tenure
WITHOUT DOCTORATE								
Instructor/Lecturer	835	56	487	30	866	49	497	23
Assistant Professor	516	285	136	68	509	263	135	66
Associate Professor	341	323	41	36	336	312	41	34
Professor	94	92	7	7	92	91	9	9
	1786	756	671	141	1803	715	682	132
WITH DOCTORATE								
Instructor/Lecturer	253	20	46	3	212	21	40	3
Assistant Professor	1889	199	299	34	1967	178	316	30
Associate Professor	2459	2164	199	160	2474	2140	221	179
Professor	3929	3876	158	153	4071	4010	176	173
	8530	6259	702	350	8724	6349	753	385

TABLE 2: Percent of Doctorate Faculty with Tenure

	Fall 1983	Fall 1984
Groups I, II, III	74.0%	76.5%
Groups IV, V	63.5%	67.0%
Group VI	90.1%	90.5%
Masters and Bachelors	68.0%	69.9%

TABLE 3: Response Rates

U.S. Departments

Group	I	II	III	IV	V	M	B
% Response	77	77	71	63	30	47	33

Canadian Departments

Group	VI
% Response	43

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 74%.

Faculty Salaries

	SIZE OF FACULTY 1983-1984				SIZE OF FACULTY 1984-1985				1983-1984			1984-1985		
	FACULTY		WOMEN		FACULTY		WOMEN							
	Total	With Tenure	Total	With Tenure	Total	With Tenure	Total	With Tenure	Minimum	Median	Maximum	Minimum	Median	Maximum
DOCTORATE GRANTING DEPARTMENTS. Group I					(30 of 39 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	7	2	5	2	7	2	5	2						
Assistant Professor	1	1	0	0	1	1	0	0						
Associate Professor	3	3	0	0	3	3	0	0						
Professor	1	1	0	0	1	1	0	0						
	12	7	5	2	12	7	5	2						
WITH DOCTORATE														
Instructor/Lecturer	63	2	10	0	39	3	5	2	105 (200–225)	(210–230)	(210–235) 332	113 (210–250)	(210–250)	(230–251) 398
Assistant Professor	184	4	18	0	182	3	17	0	180 (209–239)	(225–255)	(245–275) 310	210 (220–259)	(240–278)	(262–310) 330
Associate Professor	191	180	14	13	184	169	11	11	237 (248–303)	(278–315)	(306–347) 429	237 (266–323)	(307–350)	(331–380) 450
Professor	859	858	26	26	886	885	28	28	262 (308–362)	(405–502)	(580–662) 800	262 (318–378)	(435–554)	(641–735) 900
	1297	1044	68	39	1291	1060	61	39						
DOCTORATE GRANTING DEPARTMENTS. Group II					(33 of 43 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	89	6	57	3	87	6	52	2	123 (143–193)	(155–201)	(179–226) 331	150 (158–193)	(178–216)	(185–253) 362
Assistant Professor	6	5	1	0	4	4	0	0	—	—	—	—	—	—
Associate Professor	12	11	3	2	10	9	3	2	—	—	—	—	—	—
Professor	4	4	0	0	3	3	0	0	—	—	—	—	—	—
	111	26	61	5	104	22	55	4						
WITH DOCTORATE														
Instructor/Lecturer	56	3	7	0	55	3	8	0	175 (180–215)	(183–217)	(190–240) 320	165 (180–237)	(190–239)	(190–250) 320
Assistant Professor	256	24	29	5	249	14	33	3	175 (205–224)	(225–260)	(256–285) 315	201 (215–242)	(268–300)	(242–270) 338
Associate Professor	369	351	20	16	350	335	22	20	204 (231–273)	(273–321)	(310–360) 443	210 (250–300)	(287–326)	(330–384) 560
Professor	587	585	17	15	632	629	18	18	255 (295–340)	(355–429)	(506–641) 712	277 (310–366)	(383–465)	(545–705) 770
	1268	963	73	36	1286	981	81	41						
DOCTORATE GRANTING DEPARTMENTS. Group III					(50 of 70 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	73	4	52	4	78	3	53	3	105 (140–175)	(143–198)	(146–235) 290	117 (144–200)	(160–200)	(170–214) 310
Assistant Professor	45	33	18	10	40	32	16	11	180 (208–240)	(208–250)	(215–256) 281	193 (217–252)	(232–264)	(232–271) 294
Associate Professor	18	18	1	1	19	19	1	1	220 (251–342)	(269–342)	(269–347) 364	223 (254–377)	(280–377)	(280–377) 388
Professor	7	7	0	0	5	5	0	0	—	—	—	—	—	—
	143	62	71	15	142	59	70	15						

WITH DOCTORATE															
Instructor/Lecturer	27	0	7	0	25	0	7	0	150 (156–198)	(160–199)	(170–230) 260	168 (170–210)	(178–215)	(190–220) 275
Assistant Professor	293	27	38	3	314	28	40	5	182 (201–238)	(218–252)	(237–276) 323	194 (220–250)	(240–270)	(255–294) 354
Associate Professor	394	350	23	20	391	352	23	20	156 (228–275)	(269–310)	(309–355) 438	182 (243–294)	(285–330)	(320–377) 480
Professor	556	550	8	8	564	558	11	11	207 (287–335)	(345–418)	(431–538) 701	243 (303–358)	(360–433)	(456–587) 757
	1270	927	76	31	1294	938	81	36						
DOCTORATE GRANTING DEPARTMENTS. Group IV					(41 of 65 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	9	1	2	0	11	1	2	0						
Assistant Professor	8	2	3	0	6	2	2	0						
Associate Professor	1	1	0	0	1	1	0	0						
Professor	3	3	0	0	3	3	0	0						
	21	7	5	0	21	7	4	0						
WITH DOCTORATE														
Instructor/Lecturer	5	1	2	1	4	1	2	1	—	—	—	—	—	—
Assistant Professor	152	3	24	0	152	1	27	0	173 (220–250)	(238–266)	(256–277) 378	194 (234–260)	(248–285)	(260–310) 376
Associate Professor	119	84	13	6	126	91	12	8	212 (271–331)	(286–345)	(295–368) 456	220 (280–340)	(294–354)	(310–387) 504
Professor	286	281	11	11	296	286	13	12	266 (316–423)	(410–522)	(511–601) 800	294 (324–449)	(417–541)	(541–639) 830
	562	369	50	18	578	379	54	21						
DOCTORATE GRANTING DEPARTMENTS. Group V					(16 of 53 reporting)									
WITHOUT DOCTORATE														
Professor	1	1	0	0	1	1	0	0						
	1	1	0	0	1	1	0	0						
WITH DOCTORATE														
Instructor/Lecturer	12	0	2	0	6	0	2	0	—	—	—	—	—	—
Assistant Professor	31	0	0	0	42	0	0	0	230 (230–284)	(245–294)	(260–310) 340	248 (250–296)	(270–324)	(281–346) 380
Associate Professor	32	25	0	0	28	22	0	0	282 (295–360)	(330–375)	(343–392) 420	290 (350–410)	(360–415)	(363–430) 455
Professor	103	102	4	4	107	106	4	4	331 (354–420)	(404–510)	(564–645) 650	365 (380–480)	(434–530)	(600–668) 690
	178	127	6	4	183	128	6	4						
DOCTORATE GRANTING DEPARTMENTS. Group VI (Canadian Departments)					(12 of 28 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	1	0	0	0	0	0	0	0						
Assistant Professor	2	1	1	0	2	1	1	0						
Associate Professor	3	3	1	1	2	2	0	0						
Professor	3	3	1	1	2	2	0	0						
	9	7	3	2	6	5	1	0						
WITH DOCTORATE														
Instructor/Lecturer	1	0	0	0	0	0	0	0	—	—	—	—	—	—
Assistant Professor	33	6	6	2	33	6	3	0	185 (185–300)	(211–338)	(260–408) 408	233 (233–300)	(265–338)	(290–408) 408
Associate Professor	113	113	6	6	103	101	6	5	262 (262–410)	(310–473)	(386–514) 514	289 (289–468)	(319–509)	(407–546) 546
Professor	149	149	3	3	151	151	3	3	315 (315–557)	(388–590)	(505–784) 784	332 (332–450)	(430–614)	(508–700) 700
	296	268	15	11	287	258	12	8						

	SIZE OF FACULTY 1983-1984				SIZE OF FACULTY 1984-1985				SALARIES (in hundreds of dollars) 1983-1984			SALARIES (in hundreds of dollars) 1984-1985		
	FACULTY		WOMEN		FACULTY		WOMEN							
	Total	With Tenure	Total	With Tenure	Total	With Tenure	Total	With Tenure	Minimum	Median	Maximum	Minimum	Median	Maximum
MASTER DEGREE GRANTING DEPARTMENTS					(157 of 331 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	326	34	193	18	345	31	207	15	94 (144–180)	(155–191)	(160–216) 304	120 (154–190)	(164–203)	(174–227) 425
Assistant Professor	194	146	47	38	185	135	46	37	148 (201–252)	(209–260)	(219–277) 330	172 (215–256)	(225–271)	(233–290) 361
Associate Professor	132	130	16	16	137	133	17	17	200 (241–296)	(250–302)	(263–310) 372	212 (255–308)	(263–311)	(274–332) 397
Professor	28	28	2	2	26	26	2	2	250 (315–366)	(315–366)	(315–379) 530	260 (323–389)	(323–389)	(323–389) 570
	680	338	258	74	693	325	272	71						
WITH DOCTORATE														
Instructor/Lecturer	65	11	11	2	65	12	11	2	130 (165–225)	(183–231)	(185–250) 292	130 (180–239)	(183–250)	(190–256) 302
Assistant Professor	493	76	74	14	537	67	82	12	173 (201–229)	(220–249)	(230–280) 355	179 (215–249)	(230–265)	(243–290) 370
Associate Professor	739	654	74	64	755	645	88	74	200 (240–273)	(258–301)	(280–330) 420	200 (254–290)	(277–324)	(301–353) 440
Professor	898	885	54	54	920	906	55	55	254 (286–343)	(320–370)	(358–423) 531	250 (302–350)	(336–399)	(374–450) 574
	2195	1626	213	134	2277	1630	236	143						
BACHELOR DEGREE GRANTING DEPARTMENTS					(336 of 1010 reporting)									
WITHOUT DOCTORATE														
Instructor/Lecturer	330	9	178	3	338	6	178	1	110 (151–185)	(160–190)	(160–200) 250	117 (160–197)	(168–203)	(171–213) 290
Assistant Professor	260	97	66	20	271	88	70	18	121 (180–233)	(185–244)	(188–250) 316	127 (192–241)	(200–253)	(200–265) 344
Associate Professor	172	157	20	16	164	145	20	14	160 (221–278)	(221–285)	(223–292) 406	165 (231–295)	(232–304)	(235–311) 438
Professor	47	45	4	4	51	50	7	7	205 (250–344)	(250–344)	(250–344) 486	211 (274–367)	(274–385)	(274–386) 510
	809	308	268	43	824	289	275	40						
WITH DOCTORATE														
Instructor/Lecturer	24	3	7	0	18	2	5	0	160 (168–207)	(170–221)	(170–255) 280	170 (195–240)	(195–249)	(195–258) 265
Assistant Professor	447	59	110	10	458	59	114	10	140 (194–225)	(203–240)	(210–254) 350	140 (205–239)	(216–253)	(220–272) 400
Associate Professor	502	407	49	35	537	425	59	41	160 (227–281)	(237–297)	(240–310) 417	170 (238–291)	(250–310)	(259–331) 429
Professor	491	466	35	32	515	489	44	42	182 (260–338)	(270–355)	(274–375) 556	188 (275–354)	(289–375)	(291–397) 600
	1464	935	201	77	1528	975	222	93						

Salary Survey for New Recipients of Doctorates

The figures for 1984 in this article were compiled from questionnaires sent to individuals who received a doctorate in the mathematical sciences during the 1983-1984 academic year from universities in the United States and Canada.

Questionnaires requesting information on salaries and professional experience were distributed to 688 recipients of degrees using addresses provided by the departments which granted the degrees. Of these, 2 were returned by the postal service as undeliverable and could not be forwarded. There were 333 individuals who returned forms between late June and early September. The tables below are based on the responses from 284 of these individuals (230 men and 54 women). Data from 49 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 1984 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 1984 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. Because the deflator is not yet available for this year, the 1984 figures do not appear on the graphs. 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. Some of this loss was made up between 1980 and 1982. Between 1982 and 1983, academic salaries just kept up with inflation, research and industry salaries showed real increases, and government salaries showed no increase and thus a drop when adjusted for inflation. Generally, the range of salaries is increasing with time.

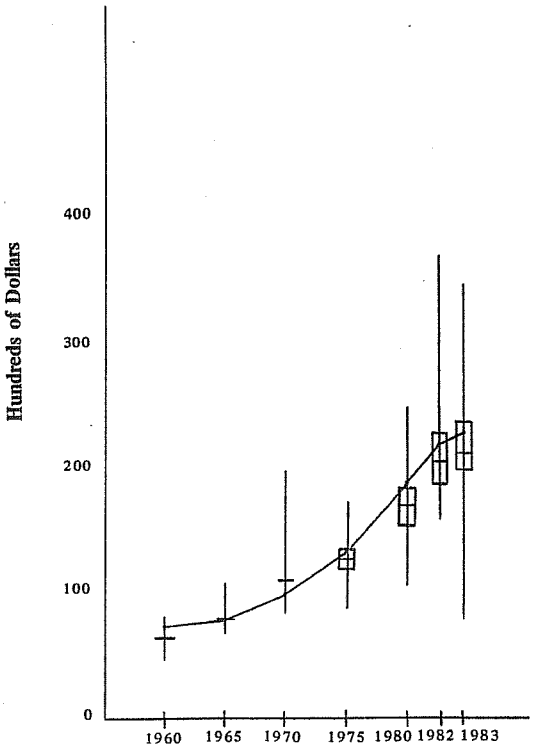
Nine-Month Salaries

Year	Min	Q_1	Median	Q_3	Max	1965 Salary Median in Current $
	TEACHING OR TEACHING AND RESEARCH (146 + 38)					
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	232
1984	140	215	230	255	380	–
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	
1984M	140	215	232	255	380	
1984F	161	215	228	251	325	
One Year Experience (127 + 30)						
1984M	140	212	230	251	340	
1984F	195	215	228	251	325	

Nine-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
	RESEARCH (1 + 0)			
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	235
1984	205	205	205	–
1981M	143	–	145	
1981F	–	145	–	
1982M	180	190	190	
1982F	–	235	–	
1983M	100	200	230	
1983F	205	205	205	
1984M	205	205	205	
1984F	–	–	–	
One Year Experience (1 + 0)				
1984M	205	205	205	
1984F	–	–	–	

Nine-month Teaching

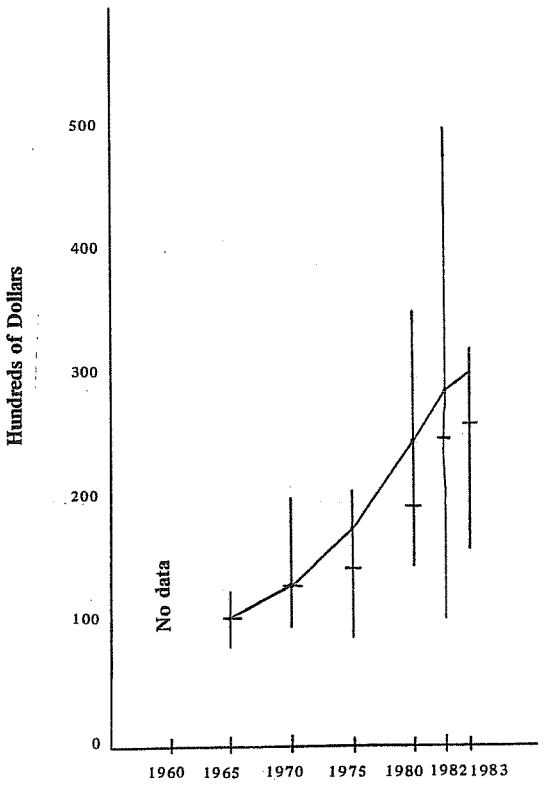


Graph omitted because sample size too small

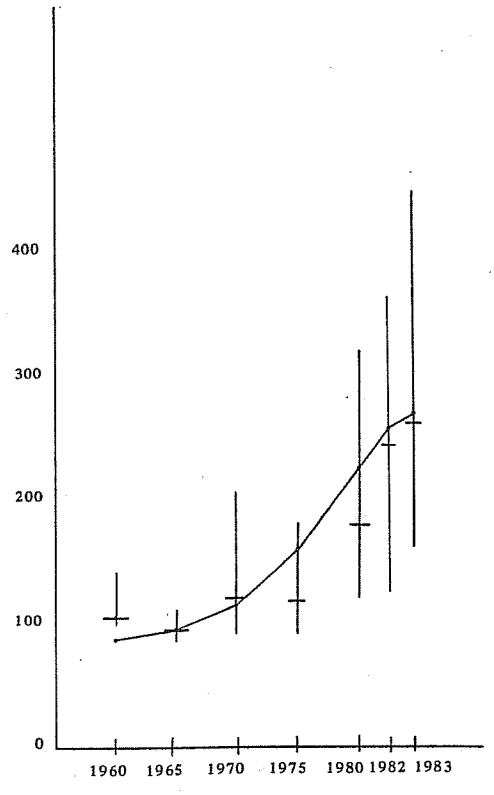
Year	Min	Median	Max	1965 Salary Median in Current $
TEACHING OR TEACHING AND RESEARCH (25 + 4)				
1960	.....NO DATA			
1965	78	104	121	104
1970	95	128	200	128
1975	87	145	204	176
1980	143	195	350	250
1981	156	203	400	274
1982	100	250	500	290
1983	160	260	320	301
1984	134	260	450	-
1981M	156	200	400	
1981F	165	213	290	
1982M	180	250	500	
1982F	100	266	367	
1983M	160	255	320	
1983F	240	265	270	
1984M	134	260	450	
1984F	240	275	330	
One Year Experience (20 + 4)				
1984M	134	248	340	
1984F	240	275	330	

Year	Min	Median	Max	1965 Salary Median in Current $
RESEARCH (12 + 4)				
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	269
1984	145	261	415	-
1981M	140	200	280	
1981F	150	168	200	
1982M	144	230	336	
1982F	130	265	364	
1983M	195	262	450	
1983F	155	260	364	
1984M	170	283	415	
1984F	145	200	253	
One Year Experience (11 + 3)				
1984M	170	276	415	
1984F	145	210	253	

Twelve- Month Teaching



Twelve-Month Research



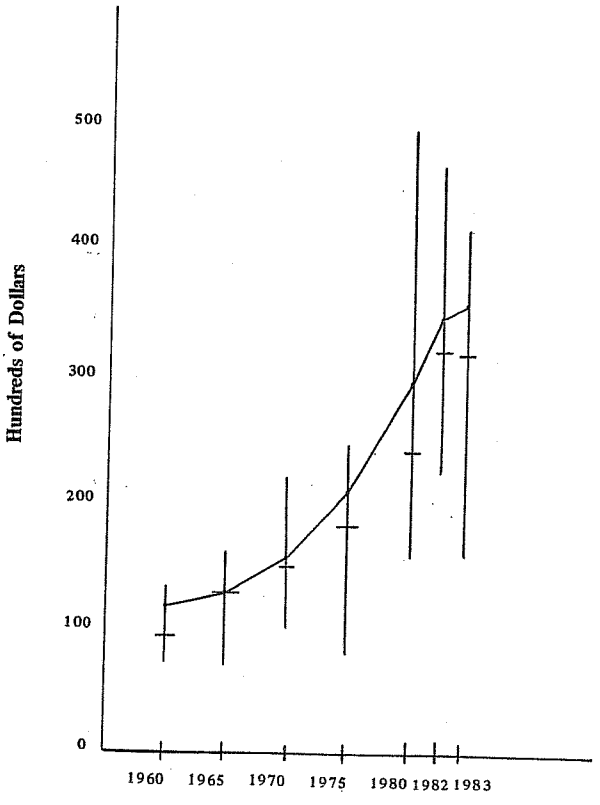
Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
		GOVERNMENT (12 + 2)		
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	365
1984	140	315	490	–
1981M	220	294	400	
1981F	252	269	460	
1982M	228	331	470	
1982F	282	326	369	
1983M	160	313	422	
1983F	293	320	350	
1984M	288	326	490	
1984F	140	202	263	
One Year Experience (8 + 1)				
1984M	288	305	390	
1984F	140	140	140	

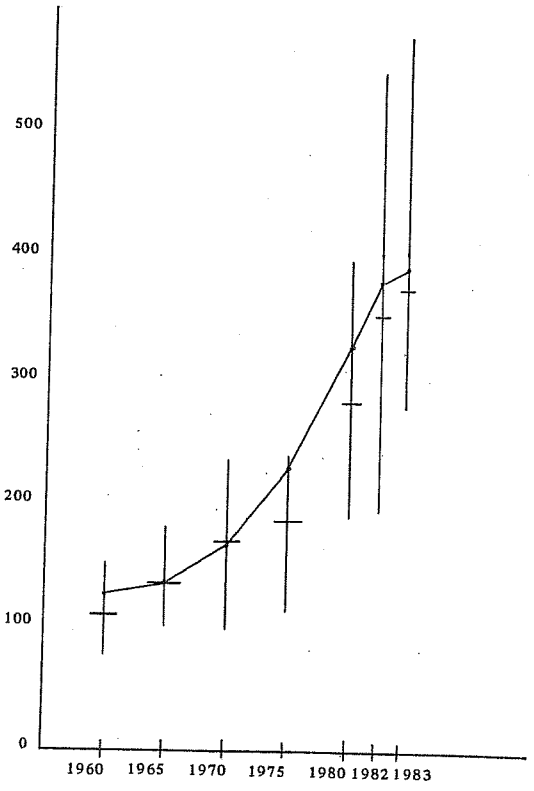
Twelve-Month Salaries

Year	Min	Median	Max	1965 Salary Median in Current $
		BUSINESS AND INDUSTRY (34 + 6)		
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	394
1984	180	378	660	–
1981M	195	319	500	
1981F	226	290	358	
1982M	196	366	550	
1982F	230	350	430	
1983M	300	370	580	
1983F	276	375	413	
1984M	180	383	660	
1984F	200	342	416	
One Year Experience (21 + 5)				
1984M	180	359	460	
1984F	200	336	390	

Twelve-month Government



Twelve-Month Business and Industry



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Report on the 1984 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 1983-1984 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 Jones-Lindzey Survey (described on the first page of this 1983-1984 Survey).

Continuing the policy adopted in the 1983 report, doctorates in Computer Science are *not* included in this report. This corresponds to the current taxonomy describing the mathematical sciences.

The number of new doctorates reported for 1983-1984 was 789, which is almost identical to last year's figure of 792. The comparable figure for 1981-1982 was 755 and for 1980-1981 was 812. The figures for the past three years are taken from the survey reported each year in the November *Notices* with the computer science doctorates subtracted (prior to 1982-1983). As is customary, a second updated report is planned for the March 1985 *Notices*. Table 1 contrasts the number of new doctorates reported in the November reports with the more complete total reported in the following spring reports for the period 1979-1980 to 1982-1983.

TABLE 1: New Doctorates, Fall and Spring Counts

	79-80	80-81	81-82	82-83
Fall	858	904	860	792
Spring	898	927	914	840

The data for 1983-1984 is markedly similar to the 1982-1983 data except for one area. Of the 743 doctorates reported from U.S. universities (there were 46 doctorates from Canadian universities), the citizenship is known for 738 of these doctorates, with U.S. citizens accounting for 59% (433) of this total. The 1982-1983 figures were 61% and 455. The percentage of doctorates who are U.S. citizens has declined dramatically over the last five years: from 73% in 1979-1980 to the present 59% figure. It is apparent that we are now producing annually less than 450 doctorates who are U.S. citizens. (A more detailed analysis is available from the National Science Foundation: *Science and Engineering Doctorates 1960-1982, detailed tables and charts*, NSF 83-328.) Table 5 gives this analysis from 1972-1973 to 1983-1984.

For U.S. citizens, it is instructive to compare the ratio of men to women among the new doctorates. The percentage of women remained at the same 20% level as last year. Table 6 gives these figures for the period 1972-1975 to 1983-1984. The employment matrix, Figure 2, is quite identical to last year's. The number of those seeking employment was 39 as compared to last year's 38.

Employment Status of New Doctorates, 1983-1984. Table 2 shows the employment status, by type of employer and field of degree, of the 789 recipients of doctoral degrees conferred by mathematical sciences departments in the U.S. and Canada between July 1, 1983 and June 30, 1984. These 789 individuals are listed, with their theses 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 1983-1984 new doctorates employed in the U.S., about 61% took positions in university or four-year college mathematical sciences departments; about 22% took positions in government, business, and industry, while the remaining 17% are in two-year colleges, high schools, other academic departments, or research institutes. These figures are about the same as in 1982-1983.

Table 2 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 2 were in many instances obtained early in the summer of 1983 and do not reflect subsequent hiring during the summer; an update of Table 2 is planned for the March 1985 *Notices*. A similar update last year revealed that all but 16 new 1982-1983 doctorates found positions by fall 1983. (See the *Notices*, November 1983, page 727 and February 1984, page 147.) Nine persons included in Table 2 reported taking part-time employment.

Sex, Race, and Citizenship of New Doctorates, 1983-1984. Table 3 below represents a breakdown according to sex, racial/ethnic group, and citizenship of these 789 new doctorates. The information summarized in Table 3 was obtained from department heads and in some cases from recipients themselves.

TABLE 2: 1983-1984 Employment Status of New Doctorates in the Mathematical Sciences

Type of Employer	PURE MATHEMATICS											Total
	Algebra and Number Theory	Analysis and Functional Analysis	Geometry and Topology	Logic	Probability	Statistics	Computer Science	Operations Research	Applied Mathematics	Mathematics Education	Other	
Group I	23	22	14	3	1	2		1	4		2	72
Group II	7	10	6	2		3	1		9		1	39
Group III	3	5	6		4	7		2	3	1	4	35
Group IV		1				19					1	21
Group V			1	1		2		6	7			17
Masters	15	12	8	3	3	18	3	6	13		7	88
Bachelors	18	9	14	2		7		1	7		8	66
Two-year College or High School		2				2			1	1		6
Other Academic Departments	1	2	1	1	1	19	2	23	5	1	16	72
Research Institutes		2	4	1		2	1	1	8		2	21
Government	1				1	11		3	3		1	20
Business and Industry	8	5	4	1	3	31	6	10	13		19	100
Canada, Academic	4	1	4	2		8	1	4	2			26
Canada, Nonacademic									1			1
Foreign, Academic	13	15	6		1	19		4	13		10	81
Foreign, Nonacademic	5	1	1	2	1	10		2	6		4	32
Not seeking employ.		1							3		1	5
Not yet employed	9	8	2		1	7	1	1	6		4	39
Unknown	4	6	9	3	2	6	4	2	7		5	48
Total	111	102	80	21	18	173	19	66	111	3	85	789

TABLE 3: Sex, Minority Group, and Citizenship of New Doctorates

July 1, 1983--June 30, 1984

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	15	1	118	3	137	10		14		24	161
Black	3		3		6						6
American Indian, Eskimo, Aleut											
Mexican American, Chicano, Puerto Rican	5		3		8						8
None of those above	313	7	135	1	456	71		20		91	547
Unknown	10		6	1	17	4				4	21
Total Number	346	8	265	5	624	85		34		119	743

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			1		1						1
None of those above	1	22	5		28						28
Unknown		6	3		9		2	1	1	4	13
Total Number	1	28	13		42		2	1	1	4	46

Analysis of the 1983-1984 employment forms for the new U.S. doctorates indicates that 10% of those employed by Groups I, II, and III departments are women, the same figure as for the last two years. Of the new doctorates employed by bachelors and masters degree-granting departments, 24% are women, while of those employed by government, business, and industry, 13% are women.

Trends in the Number of New Doctorates. Table 4 gives the number of doctorates granted during 1981-1982, 1982-1983, and 1983-1984 by those departments in Groups I—VI, *which reported in all three years* (as of August 31, 1984). The number of such departments out of the total is indicated in parentheses. This table does not include computer science doctorates. The groups are derived from the 1982 rating.

TABLE 4: Number of New Mathematics and Statistics Doctorates Reported by Selected Departments

	81-82	82-83	83-84
Group I (36 out of 39 depts.)	234	~~283~~ 250	232
Group II (36 out of 43 depts.)	80	114	107
Group III (50 out of 72 depts.)	88	81	79
Subtotal	402	478	418
Group IV (40 out of 66 depts.)	124	120	106
Group V (23 out of 54 depts.)	100	98	103
Group VI (18 out of 35 programs)	32	39	38
Subtotal	256	257	241
TOTAL	658	735	659

Citizenship and Gender of U.S. Doctorates, 1972–1984. Again this year information is presented on the annual number of doctorates receiving their degrees from U.S. universities who are U.S. citizens (Table 5). This number is divided into male and female doctorates (Table 6). This is presented for the period 1972–1984 using the CEEP reports on new doctorates published annually in the October or November *Notices*.

In Table 5 the first column is the number of doctorates, *whose citizenship is known*, produced between July 1 and June 30 of the indicated years. Column 2 gives the number that were U.S. citizens and in Column 3 the percentage this represents. In Table 6 the number in Column 2 of Table 5 is further divided into men and women. Note that in both tables *all years but 1982-1983 and 1983-1984 contain computer science doctorates.*

TABLE 5: U.S. Citizen Doctorates

	Adjusted Total of Doctorates given 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%
1983-1984	738	433	59%

TABLE 6: U.S. Citizen Doctorates, Male and Female

	Doctorates who are U.S. Citizens	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%
1983-1984	433	346	87	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. Until 1982-1983 the percentage of women receiving doctorates who are U.S. citizens has increased steadily, and has remained at the 20% level over the last two years.