

Chapter 1

Summary

Data Highlights

From Fall 1990 to Fall 1995, enrollment in undergraduate mathematics courses offered by four-year colleges and universities decreased by 150,000, a 9% decline. Specifically, remedial-level course enrollment declined 15%; precalculus enrollment increased 4%; calculus-level enrollment declined by 18%, and advanced-level enrollment declined 19%. Over this same period enrollment in mathematics courses, including statistics, in mathematics programs at two-year colleges increased by 12% and now accounts for 46% of all collegiate mathematics enrollment. The number of bachelor's degrees awarded to majors within mathematics (and mathematical sciences) departments and statistics departments in 1994-1995 was nearly the same as in 1989-1990. However, enrollment in undergraduate statistics courses increased by 39,000, a 23% increase, while enrollment in computer science courses decreased by 80,000, a 44% decline. Overall enrollment decreased by 191,000, or just under 10%.

When enrollment in mathematics courses in four-year college and university departments in Fall 1995 is added to the enrollment in mathematics courses in two-year college programs the total is 2,856,000, which is almost equal to the same total for Fall 1990. The five-year decrease in the four-year and university mathematics enrollment was matched by the increase in the two-year mathematics enrollment over this same period.

While the total number of bachelor's degrees awarded to majors in departments of mathematics and statistics during the period July 1, 1989 to June 30, 1990, declined by about 1550 from the total in 1984-1985, all of this decline, and then some, was in computer science degrees, which decreased by 2850. Mathematics education degrees (within mathematics departments) increased by 1700, while all other types of mathematics and statistics degrees decreased slightly, by about 400. Over this five-year period the number of women graduates decreased by 838. Specifically, computer science women graduates decreased by 1052, and mathematics and statistics women graduates increased by 214. The overall percentage of women graduates decreased slightly during this period.

The number of tenured and tenure-eligible faculty in four-year colleges and universities stayed at the same levels as in 1990, while the number of other full-time and part-time faculty declined. For two-year colleges the number of full-time faculty, permanent and temporary, increased by 7%. The number of full-time women faculty at four-year colleges and universities showed only a slight increase over 1990 levels; for two-year full-time faculty, the number of women increased significantly. Deaths and retirements of tenured and tenure-eligible mathematics faculty numbered 441 at four-year colleges and universities and 33 at university statistics departments. For two-year college program faculty, the number of deaths and retirements was 274.

For the first time in this series of CBMS surveys the number of women faculty, both tenured and tenure-eligible, is reported for departments of mathematics and departments of statistics at four-year colleges and universities. There are 1830 tenured women mathematics faculty among the 12,779 tenured faculty (14%) while there are 1141 tenure-eligible women out of a total of 3329 tenure-eligible faculty (34%). For statistics departments the corresponding numbers are 40 among 730 (5%) and 38 out of 191 (20%). Women comprise 40% of the full-time faculty in two-year college mathematics programs and 46% of the faculty less than 35 years of age.

The racial/ethnic composition of both mathematics and statistics faculty at four-year and university departments is little changed over the last five years. In mathematics departments white non-Hispanics account for 87% of the full-time faculty, with Asian/Pacific Islanders 8% of the total. No other racial/ethnic group is above 1%. In statistics departments white non-Hispanics are 74% of the total full-time faculty, Asian/Pacific Islanders are 18% of the total, Mexican-American, Puerto Rican, and other Hispanics account for 4% of the total, and all other groups each are 1% or less.

The number of part-time mathematics faculty at four-year colleges and universities declined from 6786 in the Fall of 1990 to 5289 in the Fall of 1995. In Fall 1995 part-time faculty taught about 20% of the under-

graduate mathematics enrollment. Within two-year mathematics programs, the number of part-time faculty in Fall 1995 was 14,266 and they taught about 38% of the mathematics enrollment.

Tenured and tenure-eligible mathematics faculty at four-year colleges and universities taught a little over half of the undergraduate enrollment, while full-time faculty at two-year colleges taught 62% of the sections offered. At four-year colleges and universities, 73% of the enrollment in mainstream Calculus I and II was taught by tenured and tenure-eligible faculty; the two-year figure was 83% of sections. For four-year colleges and universities, the percentage of enrollment in these two courses taught from a "reform" text was 29%, with 35% of the enrollment using graphing calculators, while 65% of the two-year college sections of Calculus I and II used graphing calculators.

For mainstream Calculus I, large lectures with recitation accounted for 22% of the course enrollment, regular sections with fewer than 30 students accounted for 43% of the enrollment, and sections with at least 30 students accounted for the remaining 35%. For mainstream Calculus II the corresponding percentages were: large lecture/recitation, 22%, sections with fewer than 30 students, 48%, and sections with 30 or more students, 30%. For both mainstream Calculus I and II combined the percentages were: large lecture/recitation, 22%, sections with fewer than 30 students, 45%, and sections with 30 or more students, 33%.

In non-mainstream Calculus I, large lectures with recitation accounted for 16.5% of the total course enrollment, sections with fewer than 30 students accounted for another 28.5%, with the remaining 55% in sections with 30 or more students.

In four-year colleges and universities, about 60% of the departments assigned majors an advisor each year, and the same number required at least one meeting a year with the assigned advisor, although the PhD universities had a somewhat lower percentage. Over 90% of the four-year college and university full-time mathematics faculty had a computer or terminal in their office and about the same percentage had access to the Internet. A quarter of these departments had some departmental computer systems support staff.

Explanation of the Tables

This chapter contains 27 tables. They summarize two-year college and four-year college and university Fall 1995 enrollment in all undergraduate courses taught in mathematics or statistics departments in four-year colleges and universities or in mathematics programs in two-year colleges. (In this report, "math-

ematics departments" include departments of mathematics, mathematical sciences, mathematics and statistics, applied mathematics, etc. "Statistics departments" mean separate departments of statistics.) This enrollment is reported by general level of course, except in the case of first-year courses in calculus and statistics. In these courses, enrollment totals are subdivided into enrollments in large lectures and in regular sections. The number of baccalaureate degrees awarded to majors within the mathematics and statistics departments for the previous year, 1994-1995, is given.

Some tables report percentage distribution of an overall number; in each of these tables the overall number, the 100% number, is given, and this overall number has a distinguishing "100%" symbol underneath it. Because this "100%" number is given, the reader is able to compute actual numbers from the given percentages, if needed. Some tables may contain more than one overall number, but each part of the table, and its accompanying percentage distribution, is clearly labeled.

The numbers and ages of faculty within the mathematics and statistics departments and two-year mathematics programs, including the number of minority faculty, are reported together with the number of faculty who retired or died during the previous year. Full-time faculty are classified according to whether they are tenured, tenure-eligible, or "other", which includes visitors, postdoctoral appointments, and full-time instructors. The number of part-time faculty is also given. In addition, the distribution of enrollment taught by these instructors, as well as graduate assistants, is reported both for the general level of course and the first-year calculus and statistics courses. Additionally, the percentage of calculus enrollment that is taught from a "reform" text is given along with the percentage of enrollment that (1) uses graphing calculators, (2) has writing assignments, (3) has required computer assignments, and (4) is assigned group projects.

Average class contact hours per week for tenured/tenure-eligible faculty are given for both PhD departments of mathematics and statistics and MA and BA departments of mathematics.

Information on advising practices for majors within the department is reported, as is data on computers or terminals available to full-time faculty, together with faculty access to the Internet.

For most tables in this chapter, data are aggregated by either two-year or four-year and university institutions. In later chapters data are reported according to the categories of highest degree offered by the math-

ematics departments. For example, enrollment is given for (1) those mathematics departments that offer a PhD in mathematics, (2) those departments that offer a master's degree in mathematics as the highest degree, and (3) four-year colleges.

The data in tables in the summary chapter relating to general course enrollment appear in the first five tables and are labeled "SE.1" through "SE.5". These five tables are amplified in the second chapter, *Enrollments*. (Specific references in the summary tables to tables in later chapters are found in the commentary for each table or set of related tables.)

Data on faculty in the summary chapter appear after the above tables and are labeled "SF.6" through "SF.16", and these tables are amplified in the third chapter, *Faculty*.

The next subclass of summary tables are those which report on first-year calculus and statistics courses and are labeled "SFY.17" through "SFY.23". They are disaggregated in the fourth chapter, *First-Year Courses: Calculus and Statistics*.

Finally, the last group of summary tables report on advising policies for departmental majors and faculty access to computers and are labeled "SAC.24" through "SAC.27". Further detail is given in the fifth chapter, *Advising and Computer Access*.

(Chapters 2 through 5 are devoted exclusively to four-year colleges and universities. Further data on two-year college mathematics programs can be found in in chapters 6 and 7, which are devoted solely to presenting more detailed information on these programs.)

Tables SE.1 and SE.2

A United States Office of Education survey in 1960 reported an undergraduate enrollment of 744,000 in four-year colleges and university departments of mathematics (including mathematical sciences) and statistics departments. In each of the subsequent CBMS surveys, appearing every five years, enrollment rose steadily, reaching its zenith in Fall 1990, when mathematics and statistics departments in four-year colleges and universities reported a combined undergraduate Fall enrollment of 1,970,000. The comparable 1995 Fall enrollment is 1,779,000, a decline of nearly 10%. A more detailed analysis shows that mathematics course enrollment decreased by 150,000, computer science course enrollment declined by 81,000, while statistics course enrollment increased by 39,000. The computer science course enrollment is for courses taught by mathematics departments and does not include any enrollment from separate departments of computer science which were not included in this survey—although they were included in the 1990 CBMS survey.

On the other hand, two-year college enrollment in mathematics courses taught within the mathematics programs increased 12% from 1990 to 1995 and now accounts for 46% of all collegiate enrollment. The two-year mathematics programs now account for 46% of

the combined enrollment of 3,277,000. It is reasonable to project that, by the turn of the century, mathematics enrollment in two-year colleges will equal or exceed enrollment in four-year colleges and universities. The total enrollment in mathematics courses in all institutions is virtually the same as in 1990, with the decrease in the four-year college and university enrollment matched by the increase in the two-year enrollment.

The Fall 1995 total undergraduate enrollment in two-year and four-year colleges and universities is little changed from Fall 1990. As reported in the *Digest For Education Statistics: 1995* (National Center of Educational Statistics, Office of Educational Research and Improvement, U.S. Department of Education), the 1990 Fall undergraduate enrollment was 11,959,000, while the Fall 1995 enrollment is estimated to be about 12,000,000. Overall enrollment is expected to rise over the next decade, with the 1995 enrollment a local minimum.

As demonstrated in the 1990 CBMS survey, and confirmed again by this survey, total fall enrollment in departments of mathematics and statistics at four-year colleges and universities is almost exactly half of their academic year enrollment, based upon the enrollment from the 1994-1995 academic year. The lesser Spring semester enrollment in those institutions with

TABLE SE.1 Enrollment (in thousands) in undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics at four-year colleges and universities, in Departments of Statistics at universities and in Mathematics Programs at two-year colleges: Fall 1970, 1980, 1985, 1990, 1995 and Fall 1995 by department.

Courses	Fall enrollment (thousands)											
	Four-year College and University Mathematics and Statistics Depts					1995 by Dept		Two-year College Mathematics Programs				
	1970	1980	1985	1990	1995	Math Dept	Stat Dept	1970	1980	1985	1990	1995
Math	1188	1525	1619	1621	1471	1469	2	555	925	900	1241	1384
Stat	92	147	208	169	208	143	65	16	28	36	54	72
CS	60	na	na	180	100	99	1	13	95	98	98	43**
Total	1340	1672*	1827*	1970	1779	1711	68	584	1048	1034	1393	1498

* 1980 and 1985 totals do not include Computer Science enrollments in Mathematics and Statistics Departments.

** The computer science enrollment for 1995 includes only courses taught within mathematics programs. For earlier years it includes estimates of computer science courses taught outside mathematics programs.

a two-semester calendar is precisely balanced by those institutions on the term or quarter calendar, where the Fall enrollment is substantially less than half the academic year enrollment. Thus, a good estimate for the 1995-1996 academic year enrollment in four-year colleges and universities is obtained by doubling the 1995 Fall totals. No such data were collected for the two-year institutions. Data on the academic calendars collected by this survey are given in Table SE.2.

Further elaborations of these data for four-year col-

leges and universities are found in chapter 2, *Enrollments*, especially Table E.2. For two-year colleges, further data are contained in Tables TYR.1 and TYR.2 in chapter 6.

Individual course enrollments for four-year colleges and universities are contained in Appendix I, along with historical enrollment data. Individual course enrollments for two-year colleges, with historical data, are found in Table TYR.3 in chapter 6.

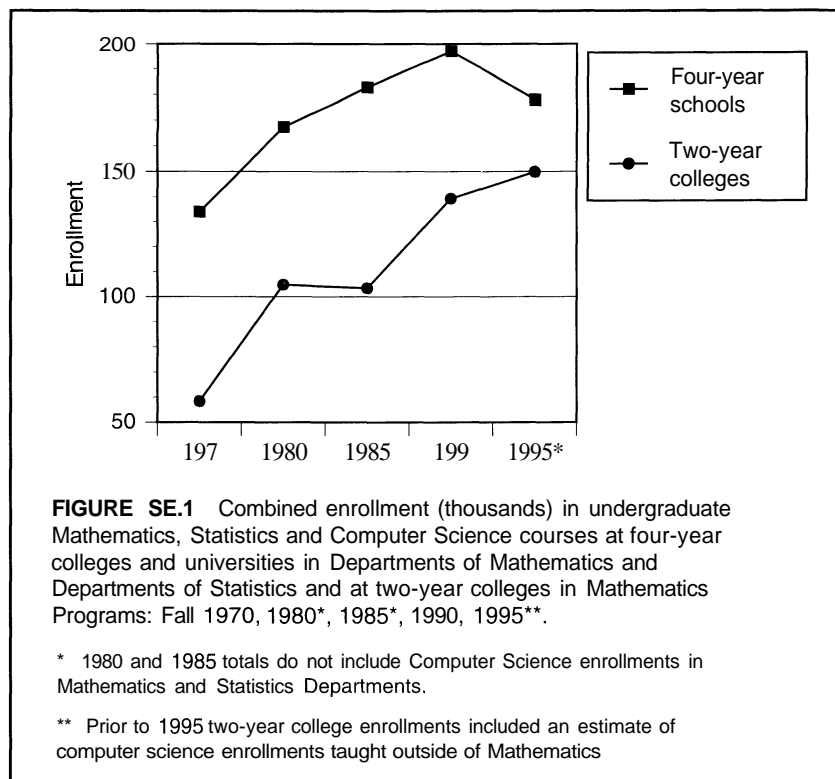


TABLE SE.2 Type of calendar for four-year colleges and universities and two-year colleges: Fall 1995.

Type of calendar	Number of four-year colleges and universities	Number of two-year colleges
Semester	1072	747
4-1-4	184	0
Trimester	4	0
Quarter	109	266
Other	27	10
Total	1396	1023

Table SE.3

Mathematics departments include those titled mathematical sciences, mathematics and statistics, operations research, and applied mathematics, or similar variants. Separate statistics departments have separate data and are so reported in this report. Data are also given for statistics courses taught within mathematical sciences departments under "mathematics department" enrollment but are clearly labeled as statistics course enrollment when enrollment is reported by type of course. Separate computer departments were not surveyed for the 1995 CBMS report, although they were included in the 1990 CBMS survey. However, enrollment in computer science courses taught by mathematical sciences departments is reported under "mathematics department" enrollment, as is statistics course enrollment taught within mathematical sciences departments, as well as statistics course enrollment taught by separate statistics departments.

The mathematics courses that comprise the various levels—remedial, precalculus, and calculus—differ between four-year colleges and universities and two-year colleges, making direct comparison of enrollments within these various levels not appropriate. The precise courses that form the various levels of courses for four-year colleges and universities are presented in Appendix I, and, for two-year colleges, are given in Table TYR.3 in chapter 6 in the two-year college section.

The decline in total enrollment within mathematics departments, as compared to the 1990 level, is 214,000, a decrease of 11%. If only mathematics course enrollments are compared, then the decline is 150,000, or about 9%. By way of comparison, the 1990 mathematics enrollment was the same as the 1985 mathematics enrollment.

Statistics departments, on the other hand, show an increase of 22,000, nearly a 50% increase over the 1990 enrollment, and mathematics departments show a 14% enrollment increase in their statistics enrollment.

Computer science enrollment within mathematics departments plummeted by nearly half.

For the first time, the 1995 CBMS survey collected data on the enrollment in mathematics courses taught outside the departments in four-year colleges and universities. These institutions report outside enrollment of 28,000, which might account for some of the decline in the remedial-level enrollment. The two-year colleges report an outside remedial enrollment of 105,000. Given the difficulty of ascertaining the outside enrollment, this is probably an undercount.

Total enrollment in calculus-level courses declined by 108,000 over 1990 levels, with about half of this decline in non-mainstream calculus. Possible expla-

nations include declines in enrollment in some majors that require calculus courses and demographic changes university-wide.

For example, enrollments in the first two years of traditional four-year engineering programs did decline between 1990 and 1995 from 167,000 to 154,000, an 8% drop, and this could account for a portion of the mainstream calculus enrollment decline. (These numbers are from the Engineering Workforce Commission, American Association of Engineering Society's publication, *Engineering and Technology Enrollments, Fall 1980-1995*. Of the 337 departments reporting such enrollment in 1995, 315 of them were ABET-accredited departments.)

There has been an increase in undergraduate enrollments in the biological sciences, and, typically, these students take fewer calculus courses than do majors in engineering, computer science, and the physical sciences.

The changing mix of university-wide undergraduate enrollment also deserves careful study to determine whether it might be a factor in declining calculus enrollment. For example, in 1978 total undergraduate enrollment in all collegiate institutions was 9,809,000, divided 49% male, 51% female. Fifteen years later, the 1993 total undergraduate enrollment had increased 27% to 12,483,000, and it was now 44% male, 56% female. During this same period the number of white males remained virtually constant and now are one third of the undergraduate enrollment, down from 40% in 1978. The gender mix is noteworthy in engineering where women were 18% of the enrollment in 1994, as compared to 12% in 1979. (The data in this paragraph are from the National Science Foundation, National Science Board report, "Science and Engineering Indicators 1996".)

The increase in precalculus mathematics enrollment is largely because of a 20% increase in mathematics in liberal arts course enrollment.

Individual course enrollments for four-year colleges and universities are presented in Appendix I of this report, accompanied by a history of course enrollment obtained from some of the previous CBMS surveys, beginning with 1970 enrollments. More detailed information on enrollment is contained in chapter 2, *Enrollments*, of this report, as well as in the corresponding enrollment chapter, chapter 6, in the two-year college section of this report. For two-year colleges, individual course enrollments are found in Table TYR.3 in chapter 6 in the two-year section.

Further elaborations of these data for four-year colleges and universities are found in the tables in chapter 2, *Enrollments*, especially Table E.2, and, for two-year colleges, in chapter 6.

TABLE SE.3 Enrollment (in thousands) by level in undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics at four-year colleges and universities, in Departments of Statistics at universities and in Mathematics Programs at two-year colleges: Fall 1970, 1980, 1985, 1990, 1995.

Course level	Fall enrollment (thousands)													
	Four-year College and University Mathematics Depts					University Statistics Depts			Two-year College Mathematics Programs					
	1970	1980	1985	1990	1995	1970	1990	1995	1970	1980	1985	1990	1995	
Math courses														
Remedial	101	242	251	261	222	0	0	0	191	441	482	724	800	
Precalculus	538	602	593	592	613	0	0	1	134	180	188	245	295	
Calculus	414	590	637	647	538	0	1	1	59	86	97	128	129	
Advanced	135	91	138	119	96	0	1	0	0	0	0	0	0	
Other (2-year)									171	218	133	144	160	
Total Math	1188	1525	1619	1619	1469	0	2	2	555	925	900	1241	1384	
Stat courses														
Elementary	na	na	na	87	115	na	30	49	16	28	36	54	72	
Upper	na	na	na	38	28	na	14	16	0	0	0	0	0	
Total Stat	60	na	na	125	143	32	44	65	16	28	36	54	72	
CS courses														
Lower	na	na	na	134	74	0	0	1	13	95	98	98	43*	
Middle	na	na	na	12	13	0	0	0	0	0	0	0	0	
Upper	na	na	na	34	12	0	0	0	0	0	0	0	0	
Total CS	60	na	na	180	99	0	0	1	13	95	98	98	43*	
Grand Total	1308	na	na	1924	1711	32	46	68	584	1048	1034	1393	1498	

* The computer science enrollment for 1995 includes only courses taught within mathematics programs. For earlier years it includes estimates of computer science courses taught outside mathematics programs.

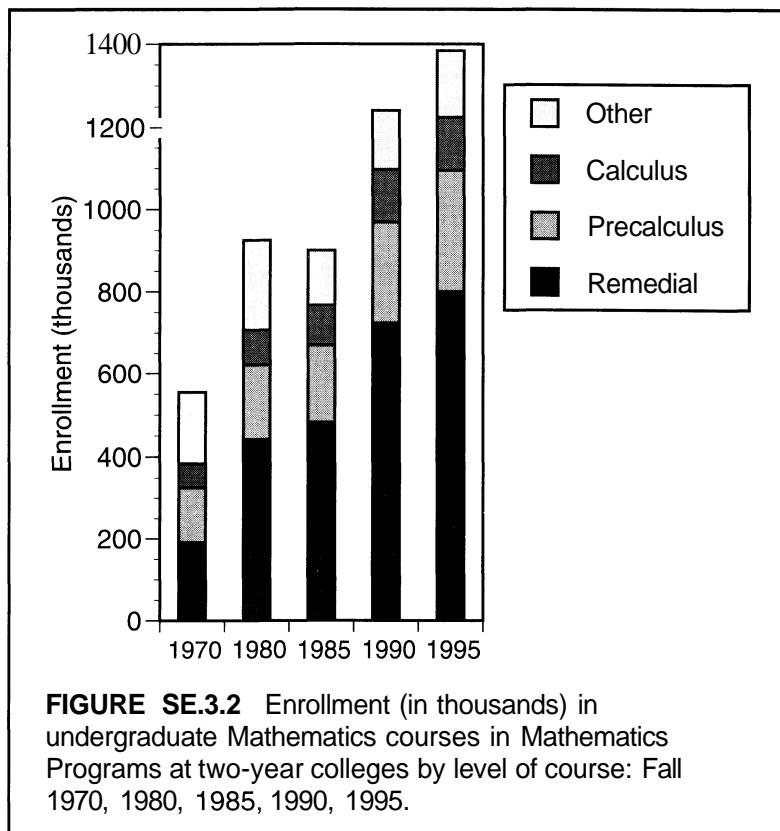
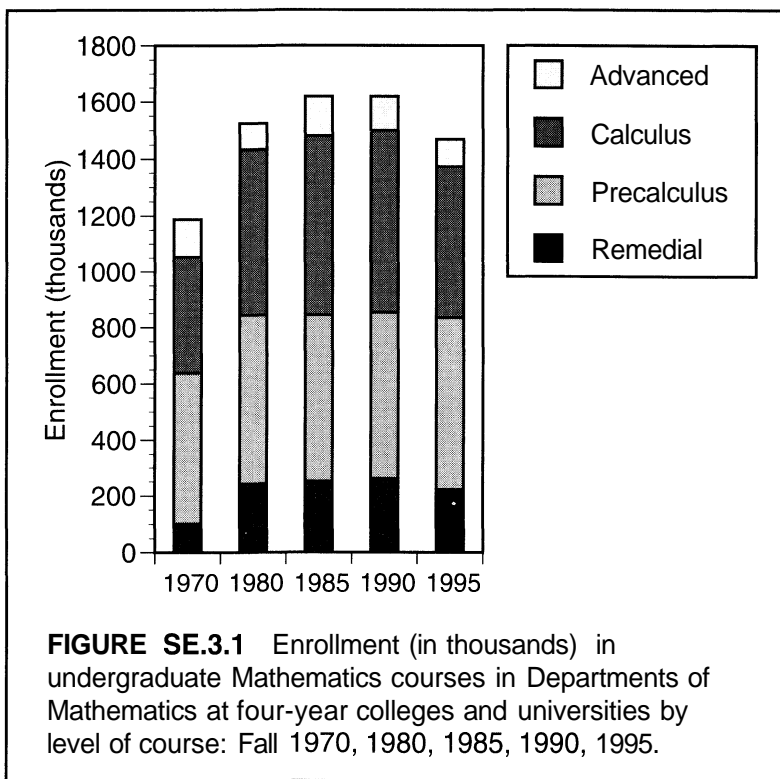


Table SE.4

The total number of bachelor's degrees in mathematics shows little change from 1989-1990 to 1994-1995. However, the number of mathematics degrees, pure and applied, declined by about 800, while the number of mathematics education degrees increased by 55%. The number of mathematics education degrees awarded by mathematics departments is at an all-time high, suggesting that there is increasing attention by mathematics departments to this area. The number of computer science bachelor's degrees awarded by mathematics departments continues a

ten-year decline and is now 28% of the 1984-1985 figure.

The percentage of women among the degree recipients is little changed from the 1989-1990 figure of 43%. Setting aside the computer science degrees awarded within mathematical sciences departments, the percentage of women in the remaining mathematical sciences degrees also shows little change, from 46% in 1989-1990 to 45% in 1994-1995.

Further elaborations of these data for four-year colleges and universities are found in the tables in chapter 2, *Enrollments*, especially Table E.1, in chapter 2.

TABLE SE.4 Number of Bachelors Degrees in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities (combined) between July 1 and June 30 in 1974-75, 1979-80, 1984-85, 1989-90, and 1994-95 by selected majors and by gender for totals in 1989-90 and 1994-95.

Major	1974-75	1979-80	1984-85	1989-90	1994-95
Math (except as reported below)	18833	11541	13171	13303	12456
Math Ed	4778	1752	2567	3116	4829
Statistics	570	467	538	618	1031
Actuarial Math	na	146	na	245	620
Operations Research	na	na	312	220	75
Joint CS & Math	na	na	2519	960	453
Joint Math & Stat	na	na	121	124	188
Other	0	0	9	794	502
Sub-total math, stat & joint degrees	24181	13906	19237	19380	20154
Number of women	na	na	na	8847	9061
Computer Science degrees	na	na	8691	5075	2741
Number of women	na	na	na	1584	532
Total degrees	na	na	27928	24455	22895
Number of women	na	na	na	10431	9593

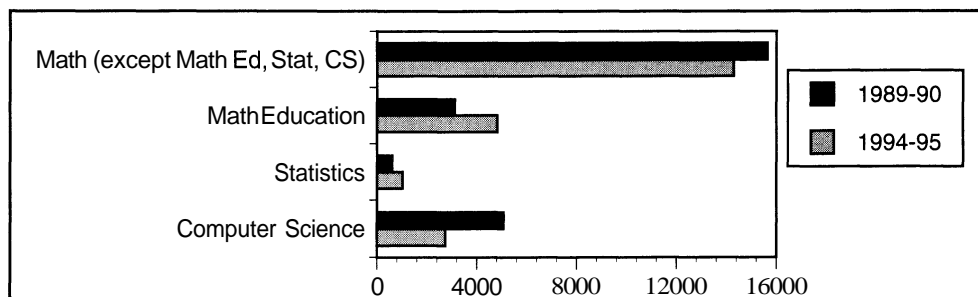


FIGURE SE.4 Number of Bachelors Degrees in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities (combined) between July 1 and June 30 in 1989-90 and in 1994-95.

Table SE.5

It should be noted that the 1990 CBMS report incorrectly labeled the Real Analysis course as Advanced Calculus/Real Analysis, when it should have been labeled Real Analysis only. According to unpublished data from the 1990 CBMS survey, Advanced Calculus was offered by 49% of mathematics departments and Real Analysis by 43% of the departments. Because of uncertainty as to whether these separately labeled courses are, in fact, different courses, it is not possible to add these two numbers to obtain the number

of departments that offered Advanced Calculus/Real Analysis in 1990. However, it seems likely that the 1995 figures for the jointly labeled course do not represent any substantial change from 1990.

There is an increase in the use of senior seminars and independent study and an increase in the availability of mathematics for secondary education majors.

This is the only table displaying these data on availability of advanced courses. However, there is similar data on availability of selected courses in two-year colleges in Table TYR.6 in chapter 6.

TABLE SE.5 Percentage of Departments of Mathematics offering selected mathematics courses during academic year 1995-96* by type of school and for all schools combined. The same information is given for two consecutive academic years for all departments 1984-86* and 1989-91*.

	Percentage of departments					
	All depts 1984-86	All depts 1989-91	All depts 1995-96	1995-96		
				Univ (PhD)	Univ (MA)	Coll (BA)
Number of departments	1423	1421	1396	169	242	985
Modern Algebra	na	79	77	97	88	71
Adv Calc/ Real Analysis	na	na	70	94	79	64
Geometry	60	72	69	86	90	62
Topology	na	35	50	63	35	52
Theory of Numbers	37	39	27	61	50	16
Combinatorics	17	17	24	54	33	17
Appl Math/ Modeling	32	33	35	53	48	29
Intro Operations Res	na	19	24	35	35	20
Foundations of math	22	22	24	38	30	19
Math for Sec Teachers	45	34	53	51	59	52
Senior sem/ Ind study	na	42	77	73	60	81

* Note the time span is two years for 1984-86 and 1989-91 but only one year for 1995-96.

Table SF.6

While enrollment in mathematics courses taught within mathematics departments declined by 11% during the period 1990-1995, in the same period the full-time faculty in mathematics decreased by about half that amount, 6%. Previous CBMS surveys did not separate full-time faculty into tenured/tenure-eligible and other full-time faculty as this survey does. Doctorate-holding faculty, as a percentage of full-time faculty, made a substantial increase over previous levels. It is plausible to assume that the increased availability of doctorate-holding applicants enabled institutions to replace retiring non-doctoral faculty with doctoral faculty.

Although the number of full-time faculty in statistics shows a 34% increase over 1990, the number of

statistics departments in the survey population increased by 25%. Thus, some of this increase may be due to a more comprehensive list of statistics departments than was available for past CBMS surveys.

Of the 16,108 tenured/tenure-eligible mathematics faculty, 1138 were on leave for Fall 1995, or about 7%; for statistics departments 56 faculty were on leave, or 6% of the tenured/tenure-eligible faculty. These data are from the 1995 CBMS survey but are not reported in any table in this report.

Further elaborations of these data are found in the tables in chapter 3, *Faculty*, especially Tables F.1-F.3, and the ensuing commentary.

TABLE SF.6 Number of tenured, tenure-eligible and other full-time faculty in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities by highest degree and in 1995 by tenured and tenure-eligible and other full-time. Also full-time permanent and full-time temporary faculty in two-year college Mathematics Programs: Fall 1970, 1980, 1985, 1990, 1995*.

Faculty	1970	1980	1985	1990	1995	1995	
						Tenured and tenure-eligible	Other full-time
Math Depts							
Total full-time faculty	15655	16022	17849	19411	18248	16108	2140
	100%	100%	100%	100%	100%	100%	100%
Doctoral degree	9744 (62%)	12497 (78%)	13208 (74%)	14963 (77%)	15428 (85%)	14491 (90%)	937 (44%)
Other degree	5911 (38%)	3525 (22%)	4641 (26%)	4448 (23%)	2820 (15%)	1617 (10%)	1203 (56%)
Stat Depts							
Total full-time faculty	700	610	740	735	988	921	67
	100%	100%	100%	100%	100%	100%	100%
Doctoral degree	na	587 (96%)	718 (97%)	706 (96%)	880 (89%)	842 (91%)	38 (57%)
Other degree	na	23 (4%)	22 (3%)	29 (4%)	108 (11%)	79 (9%)	29 (43%)
Total Math & Stat Depts	16355	16632	18589	20146	19236	17029	2207
Two-year colleges							
Total full-time faculty	4879	5623	6277	7222	7742	7578	164
Grand total	21234	22255	24866	27368	26978	24607	2371

* Prior to 1995 tenured, tenure-eligible and other full-time were aggregated at four-year colleges and universities.

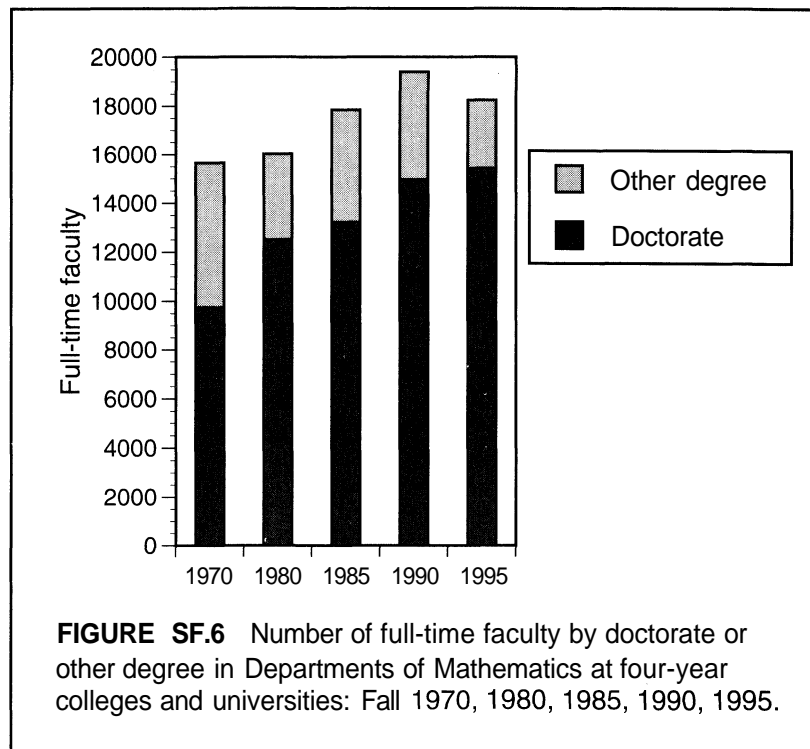


Table SF.7

The number of faculty in 1995 in this table is full-time permanent faculty, whereas the numbers for the earlier years are full-time permanent and full-time temporary faculty. From Table SF.6, it is seen that the number of full-time faculty, permanent and temporary, increased by 7% from 1990 to 1995. During this same period, enrollment in mathematics courses at two-year colleges increased by 12%. The percentage of doctorate-holding faculty is 17%, the same percentage as

in 1990, although the number of such faculty increased.

This table illustrates the use of "100%". It indicates that the percentages listed with this symbol add up to "100%", except for rounding errors. Usually, the "100%" is found alongside the number that represents the actual total.

Further elaborations of these data are found in Tables TYR.20 and TYR.21 in chapter 7.

TABLE SF.7 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by highest degree: Fall 1970, 1975, 1980, 1985, 1990, 1995.

Highest degree	Percentage of faculty					
	1970	1975	1980	1985	1990	1995
Doctorate	4	11	15	13	17	17
Masters	89	82	80	82	79	82
Bachelors	7	7	5	5	4	1
Number of full-time permanent faculty	100% 4879	100% 5944	100% 5623	100% 6277	100% 7222	100% 7578

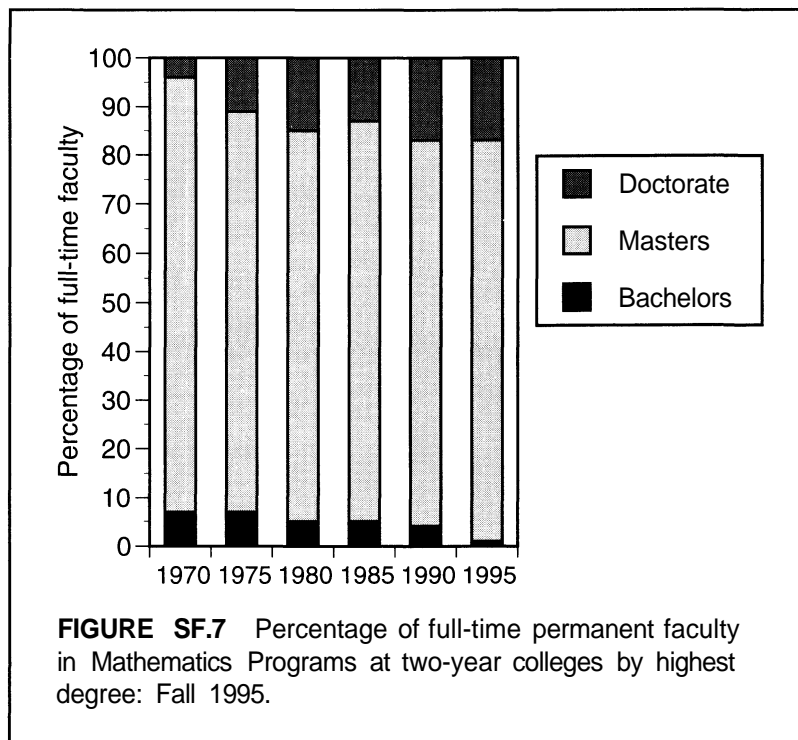


Table SF.8

This is the first survey to report the number (or percentage) of women faculty by various types of appointment. The number of doctorates granted is taken from the annual reports of the Joint AMS-IMS-MAA Data Committee, while the data on master's degrees are

from the *Digest of Educational Statistics*.

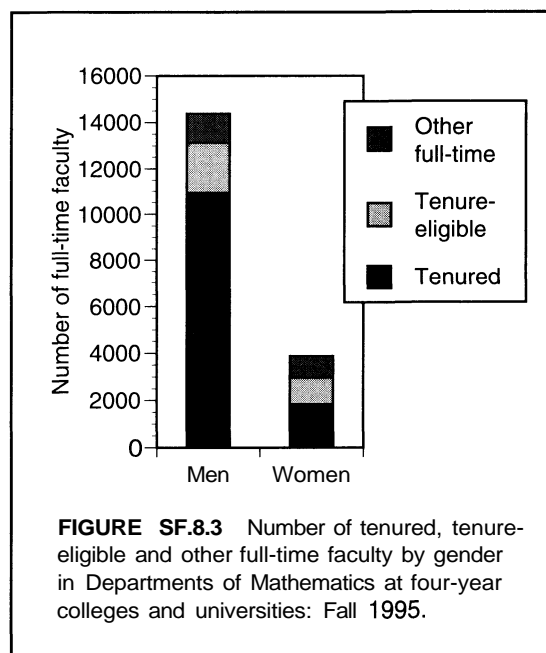
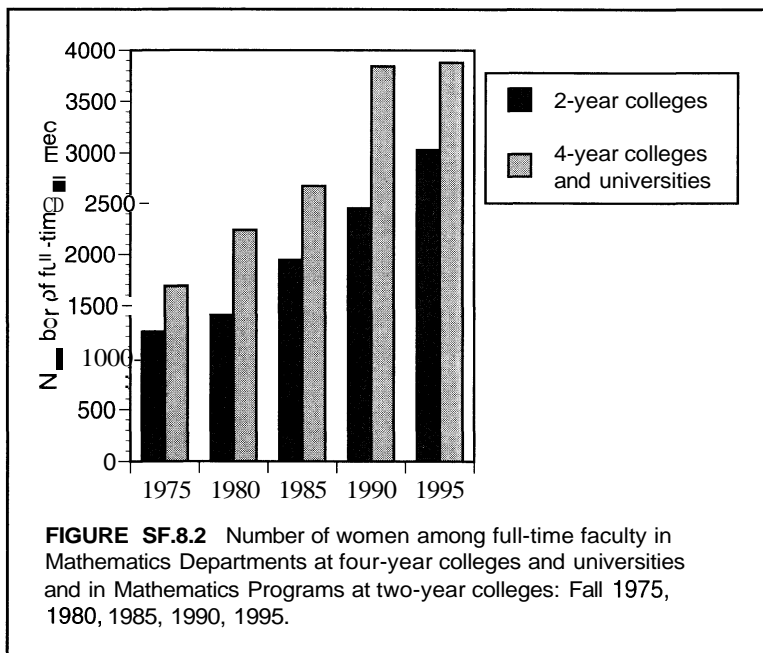
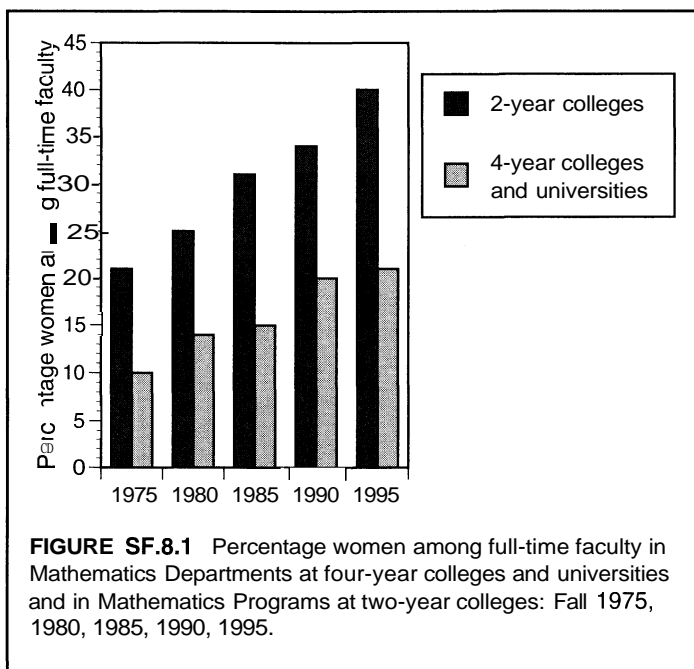
Further elaborations of these data are found in the tables in chapter 3, *Faculty*, especially Tables F.2 and F.3, and in chapter 7, *Two-year College Faculty*, in the special two-year section of this report.

TABLE SF.8 Gender among full-time faculty in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities by type of appointment Fall 1995, among full-time faculty in two-year college Mathematics Programs Fall 1995 and among new PhDs from U.S. Departments of Mathematics and Departments of Statistics 1980-1995. Historical data is also presented for Fall 1975, 1980, 1985, 1990.

Four-year College and University					1995	Tenured	Tenure-eligible	Other full-time
	1975	1980	1985	1990		1995	1995	1995
Math Depts								
Number of full-time faculty	16863	16022	17849	19411	18248	12779	3329	2140
Number of women	1686 (10%)	2243 (14%)	2677 (15%)	3843 (20%)	3880 (21%)	1830 (14%)	1141 (34%)	909 (42%)
Stat Depts								
Number of full-time faculty	na	na	740	735	988	730	191	67
Number of women	na	na	74 (10%)	105 (14%)	107 (11%)	40 (5%)	38 (20%)	29 (43%)
July 1, 1980-June 30, 1995					July 1, 1990-June 30, 1995			
Number of PhDs from U.S. Math and Stat Depts*				13875	5674			
Number of women among new PhDs*				2642 (19%)	1248 (22%)			
Two-year College Mathematics Programs					Full-time age <35	Full-time age <35		
	1975	1980	1985	1990	1990	1995	1995	
Number of full-time faculty	5944	5623	6277	7222	989	7578	938	
Number of women	1248 (21%)	1406 (25%)	1946 (31%)	2455 (34%)	504 (51%)	3031 (40%)	431 (46%)	
Master's Degrees in Mathematics granted in the U.S. in 1992-93 to U.S. residents**						2924		
Number of women among new Masters**						1224 (42%)		

* Annual reports of the AMS-IMS-MAA Data committee, AMS Notices 1980-1995.

** 1995 Digest of Education Statistics. Table 260. National Center for Education Statistics.



Tables SF.9 and SF.10

These data are not directly comparable with previous CBMS data where the age distribution was given for full-time faculty as opposed to tenured and tenure-eligible faculty of this report. About 50% of the faculty are 50 years of age or older. In statistics departments tenured and

tenure-eligible faculty are just a bit younger, on average.

Further elaborations of these data for four-year colleges and universities are found in the tables in chapter 3, *Faculty*, especially Tables F.4 and F.5. For two-year colleges further data is available in Tables TYR.32 and TYR.34 in chapter 7.

TABLE SF.9 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics at four-year colleges and universities by gender. Percentage full-time permanent faculty in Mathematics Programs at two-year colleges. Also some average ages are given: Fall 1995.

Four-year colleges and universities	Percentage of faculty										Total tenured and tenure-eligible faculty	Average age 1995
	<31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70		
Tenured men	0	1	5	8	10	16	17	8	3	0	100% 16108*	52.6
Tenured women	0	1	1	2	3	1	2	0	0	0		47.5
Tenure-eligible men	1	4	3	2	1	1	0	0	0	0		38.5
Tenure-eligible women	1	4	1	0	0	1	0	0	0	0		36.0
All tenured & tenure-eligible faculty	2	10	10	12	14	19	19	8	3	1	100% 16108	49.4

Two-year colleges	Percentage of faculty							Total	Average age				
	<30	30-34	35-39	40-44	45-49	50-54	55-59		> 60	1975	1985	1990	1995
Full-time permanent faculty	5	8	8	14	22	26	13	5	100% 7578	41.8	43.3	45.4	47.2

0 means less than half of 1%.

* Total for all 4 rows in this block.

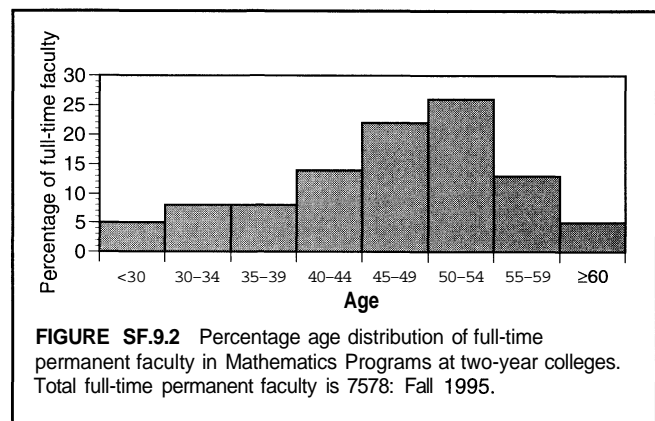
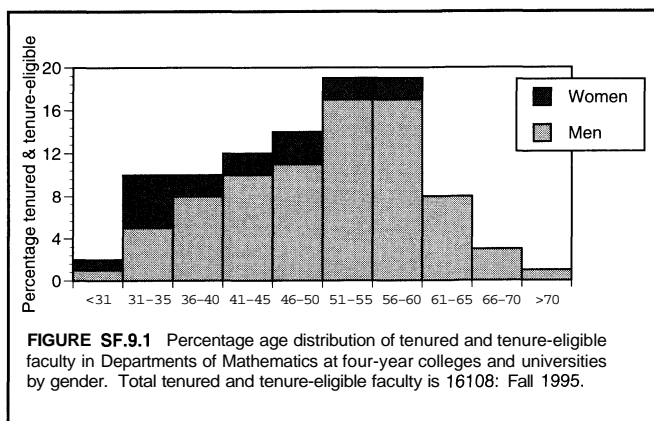
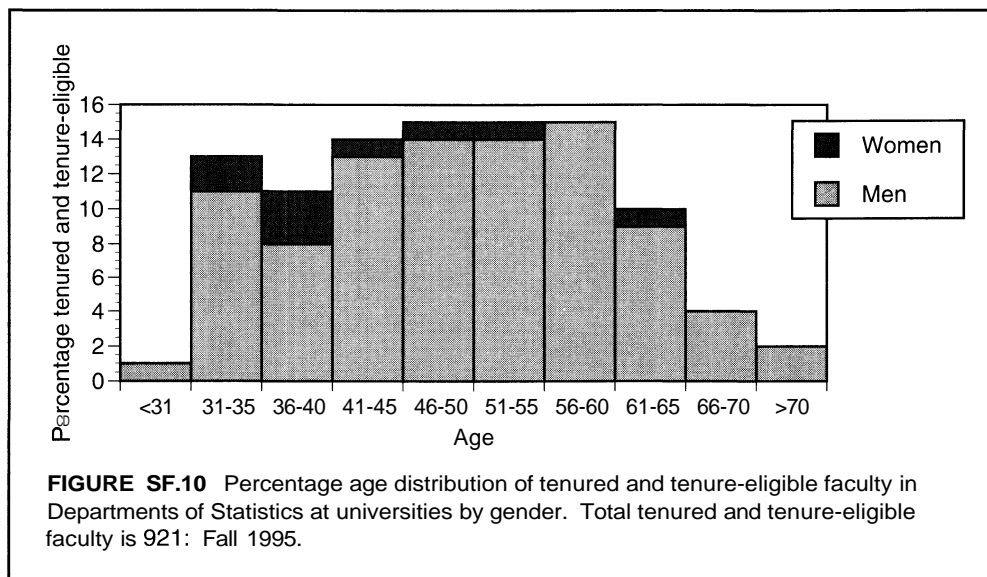


TABLE SF.10 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Statistics at universities by gender. Also average ages. : Fall 1995.

	Percentage of faculty										Total tenured and tenure-eligible faculty	Average age
	<31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70		
Tenured men	0	3	5	11	13	14	15	9	4	2	100% 921*	52.4
Tenured women	0	0	1	1	1	1	0	1	0	0		49.0
Tenure-eligible men	1	8	3	2	1	0	0	0	0	0		36.1
Tenure-eligible women	0	2	2	0	0	0	0	0	0	0		35.5
Total tenured and tenure-eligible faculty	2	13	11	14	15	15	15	9	4	2	100% 921	48.8

0 means less than half of 1%.

* Total for all 4 rows in this block.



Tables SF.11 and SF.12

These percentages are little changed over the last five years. For example, the percentage of full-time women faculty was just under 20% in 1990 and is 20% in 1995. Asian/Pacific Islanders were 7.9% of the full-time faculty in 1990 and are 8.2% in 1995. Within statistics departments the percentage of women among full-time faculty is just over 11%, while Asian/Pacific Islanders are nearly 18% of full-time faculty. Again, the

statistics departments are almost exclusively PhD-granting departments.

Further elaborations of these data for four-year colleges and universities are found in the tables in chapter 3, "Faculty", especially Tables F.6 and F.7. The corresponding data on faculty for two-year colleges, including age, gender, and ethnic distributions, are found in a series of tables, TYR.26 through TYR.34, in chapter 7.

TABLE SF.11 Percentage of gender and of racial/ethnic groups among tenured, tenure-eligible, and other full-time faculty in Departments of Mathematics at four-year colleges and universities: Fall 1995.

	Percentage of faculty						Number of full-time faculty
	American Indian/Alaskan	Asian/Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	
All schools							
Tenured men	1	4	1	1	54	1	100% 18248*
Tenured women	0	1	1	0	9	0	
Tenure-eligible men	0	2	0	0	10	0	
Tenure-eligible women	0	0	0	0	5	0	
Other full-time men	0	1	0	0	5	0	
Other full-time women	0	0	0	0	4	0	
Total full-time men	1	7	1	1	69	1	100%
Total full-time women	0	1	1	0	18	0	18248**

0 means less than half of 1 %.

* Total for all 6 rows in this block.

** Total for both rows in this block.

TABLE SF.12 Percentage of gender and of racial/ethnic groups among tenured, tenure-eligible and other full-time faculty in Departments of Statistics at universities: Fall 1995.

	Percentage of faculty						Number of full-time faculty
	American Indian/Alaskan	Asian/Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	
All schools							
Tenured men	0	12	0	3	55	1	100% 988*
Tenured women	0	0	0	1	4	0	
Tenure-eligible men	0	3	1	1	10	0	
Tenure-eligible women	0	1	0	0	3	0	
Other full-time men	0	1	0	0	2	0	
Other full-time women	0	1	0	0	2	0	
Total full-time men	0	16	1	4	66	1	100%
Total full-time women	0	2	0	1	8	0	988**

0 means less than half of 1 %.

* Total for all 6 rows in this block.

** Total for both rows in this block.

Table SF.13

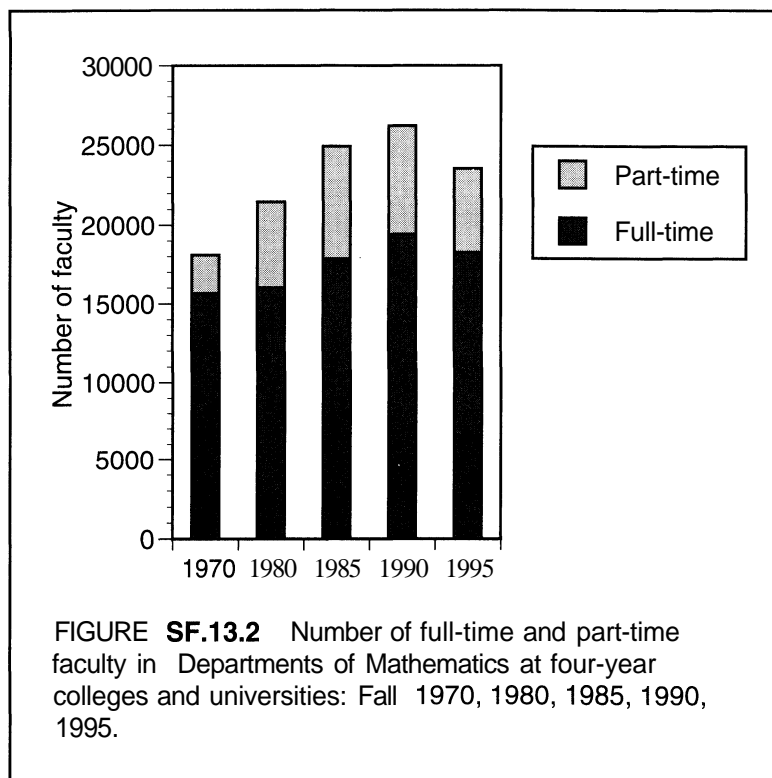
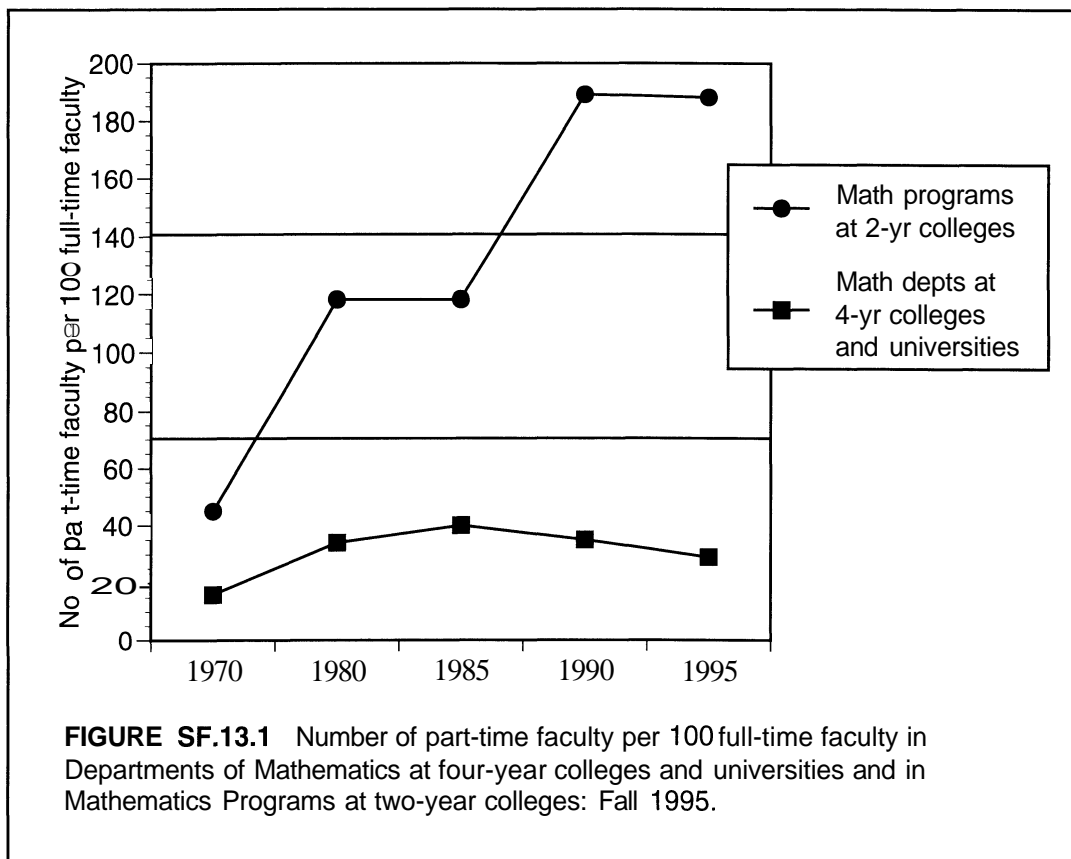
The number of part-time faculty continues at a high level. In the *Enrollments* and *First-Year Courses: Calculus and Statistics* chapters, the number of sections and percentage of enrollment taught by part-time faculty are given, along with an estimate of the full-time-

equivalence of part-time faculty.

Further elaborations of these data are found in the tables in chapter 3, *Faculty*, especially Tables F.2 and F.3. For the two-year colleges, Tables TYR.17, TYR.19, and TYR.25 in chapter 7 contain further elaborations.

TABLE SF.13 Number of full-time and part-time faculty in Departments of Mathematics at four-year colleges and universities, in Departments of Statistics at universities and in Mathematics Programs at two-year colleges. Number of part-time faculty per 100 full-time faculty is also given: Fall 1970, 1980, 1985, 1990, 1995.

	1970	1980	1985	1990	1995
Four-year college and university					
Math Depts					
Full-time faculty	15655	16022	17849	19411	18248
Part-time faculty	2436	5456	7087	6786	5289
No. of part-time per 100 full-time faculty	16	34	40	35	29
Stat Depts					
Full-time faculty	700	610	740	735	988
Part-time faculty	93	132	118	90	136
No. of part-time per 100 full-time faculty	13	22	16	12	14
Two-year college Math Programs					
Full-time faculty	4879	5623	6277	7222	7578
Part-time faculty	2213	6661	7433	13680	14266
No. of part-time per 100 full-time faculty	45	118	118	189	188



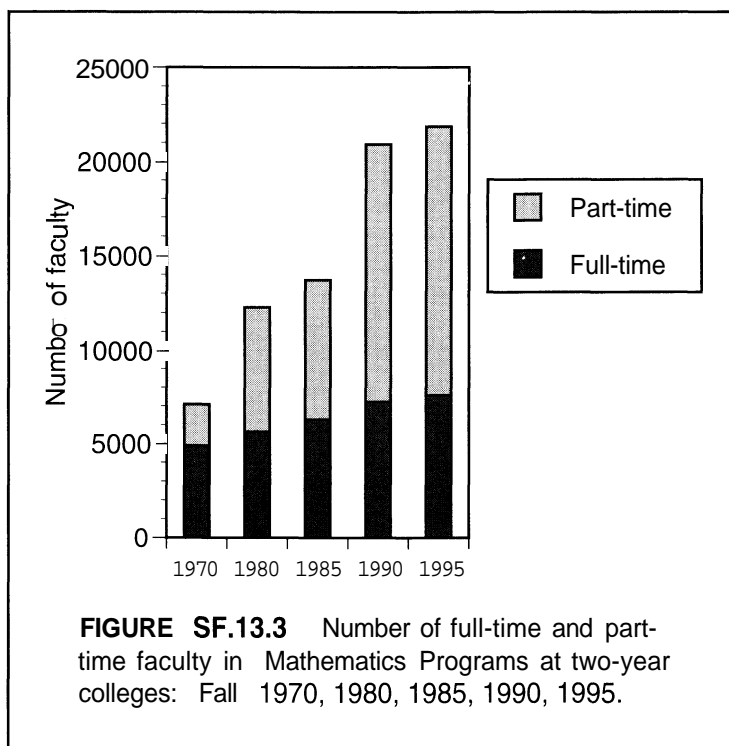


Table SF.14

This is the first CBMS survey to collect these data. The Asian/Pacific Islander category includes a variety of nationalities, including Indian, and this category is a significant percentage of both the full-time and part-time faculty in statistics departments.

The percentage of women among part-time mathe-

matics faculty, 40%, is nearly double the percentage of women among full-time mathematics faculty, 21%. The comparable numbers for statistics department faculty show that women are 18% of the part-time faculty as compared to 11% of the full-time faculty.

Further elaborations of these data are found in the tables in chapter 3, *Faculty*, especially Table F.8.

TABLE SF.14 Percentage of gender and of racial/ethnic groups among part-time faculty in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities: Fall 1995.

	Percentage of part-time faculty						Number of part-time faculty
	American Indian/Alaskan	Asian/Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, Hispanic	White, not Hispanic	Not known	
Math depts							
Part-time men	0	2	2	1	51	4	100%
Part-time women	0	2	1	1	33	3	5289
Stat depts							
Part-time men	0	19	7	(1)	51	0	100%
Part-time women	0	(1)	0	(1)	18	0	136

0 means less than half of 1%.

(1) Too few sample cases for a reliable estimate.

Table SF.15

The retirement numbers continue to climb. For four-year colleges and universities, this survey asked for retirements and deaths among tenured and tenure-eligible faculty, whereas previous CBMS surveys asked for these data for all full-time faculty, both tenured/tenure-eligible and "other full-time". The age of "other full-time faculty", which includes post-doctoral and other temporary faculty as well as permanent instructors, probably is younger, on the average, than the tenured and tenure-eligible faculty, and so this category of faculty should not contribute

significantly to the overall death and retirement rate. It is hoped that the death and retirement rate for tenured and tenure-eligible faculty gives a better estimate of available tenure-track positions for these institutions.

This is the first table to display the number of tenured/tenure-eligible faculty for PhD, MA, and BA departments of mathematics separately.

This is the only table displaying these data on deaths and retirement for four-year colleges and universities. For two-year colleges, Table TYR.39 contains more detailed information.

TABLE SF.15 Number of deaths and retirements of tenured and tenure-eligible faculty from Departments of Mathematics and from Departments of Statistics by type of school and of full-time permanent faculty from Mathematics Programs at two-year colleges from Sept. 1, 1994 to Aug. 31, 1995. Historical data is included when available.

	1979-80	1984-85	1989-90	1994-95	Number of tenured and tenure-eligible faculty 1995
Math Depts					
Univ(PhD)	na	na	135	172	5463
Univ(MA)	na	na	68	132	4032
Univ(BA)	na	na	119	137	6613
Total deaths and retirements in math depts	156	220	322	441	16108
Total deaths and retirements in stat depts	na	na	17	33	921
Two-year colleges					Number of full-time permanent faculty
Total deaths and retirements in math programs at two-year colleges				274	7578

Table SF.16

This table presents data by type of department with aggregate totals where appropriate. Tables in the following four-year college and university chapters will be so organized.

In PhD and BA mathematics departments, the average number of weekly contact hours expected of tenured and tenure-eligible faculty is little changed from 1990 levels. However, in MA mathematics departments, 61% of these departments report weekly teaching assignments of 12 hours or more, as compared to the 1990 figure of 52%.

Among PhD statistics departments, 32% report teaching assignments exceeding six hours per week, whereas the 1990 CBMS report reported no such PhD statistics departments with more than six hours per week teaching assignments. Again, this may be partially because of the increased coverage of statistics departments in this survey.

This is the only table displaying data on teaching assignments for four-year colleges and universities; for two-year colleges, this information is presented in TYR.18 in chapter 7.

While Table SF.16 gives the "expected or typical" teaching assignment for tenured/tenure-eligible faculty, the actual average teaching assignments might be less if teaching duties are reduced because of other duties. Using the data from the CBMS survey, supplemented by other data, it is possible to calculate the average number of sections actually taught by tenured/tenure-eligible faculty in Fall 1995 by the various types of departments. Such a calculation is done in the commentary to Table E.12 in chapter 2. For completeness the summary numbers are repeated here. In Fall 1995 PhD departments of mathematics had an average number of 2.30 sections taught per tenured/tenure-eligible faculty; for MA departments of mathematics it was 3.08, and for BA departments of mathematics it was 3.14. These averages include both undergraduate and graduate courses, with estimates for the later sections obtained from the annual surveys conducted by the AMS-IMS-MAA Data Committee. The number of tenured/tenure-eligible faculty used to compute these averages excludes those faculty on leave in Fall 1995.

TABLE SF.16 Percentage of departments having various weekly teaching assignments in classroom contact hours for tenured and tenure-eligible faculty in Departments of Mathematics and Departments of Statistics by type of school: Fall 1995.

	Percentage of departments having various contact hours						Number of schools
	< 6hrs	6 hrs	7-8 hrs	9-11 hrs	12 hrs	>12 hrs	
Math depts							
Univ(PhD)	17	50	23	8	3	0	100% 169
Univ(MA)	1	3	13	23	51	10	100% 242
College(BA)	0	0	4	28	40	27	100% 985
Stat depts							
Univ(PhD)	15	53	25	5	2	0	100% 67

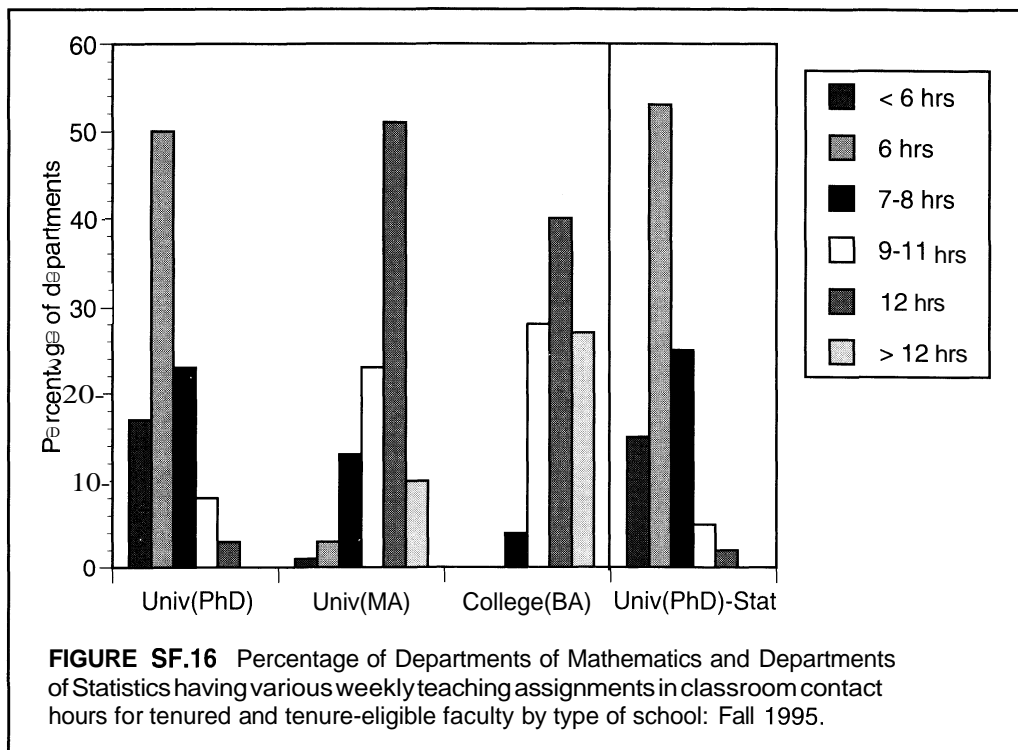


Table SFY.17

As might be expected, tenured and tenure-eligible mathematics faculty teach less of the remedial enrollment, do teach more precalculus enrollment, and teach over 70% of the calculus enrollment. However, in the lower-level statistics and computer science courses, tenured and tenure-eligible faculty teach at least 60% of the enrollment in each of the two disciplines. A word of caution should be given. The CBMS surveys do not collect data on graduate programs. Especially in PhD-granting departments, substantial faculty activity is within the graduate program and is not reflected in the CBMS data. In the *Enrollments* and *First Year Courses: Calculus and Statistics* chapters, further elaborations

of this table are presented by type of institution and level of calculus course.

Further elaborations of these data are found in the tables in chapter 2, *Enrollments*, especially Tables E.3 through E.9.

The summary chapter does not contain any data on number of sections offered. For four-year colleges and universities, however, there is a summary table for these data, Table E.10, and a table, E.11, on section size, both of which appear in chapter 2, *Enrollments*. Further elaborations of these data on sections appear in a series of tables, E.12 through E.18, in this same *Enrollments* chapter. For two-year colleges Table TYR.9 in chapter 6 contains further detail.

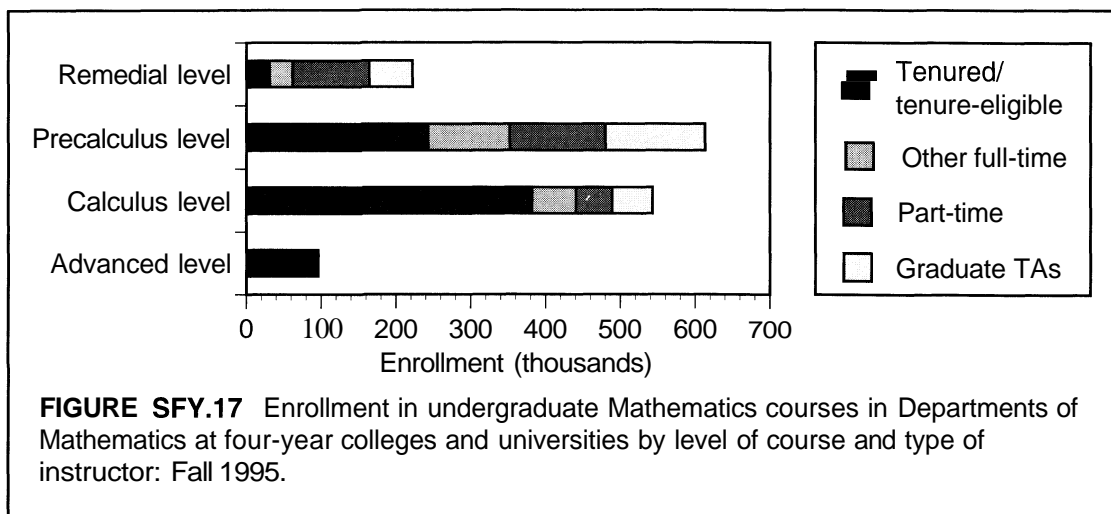


TABLE SFY.17 Percentage of enrollment in undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics at four-year colleges and universities, in Departments of Statistics at universities and percentage of sections in Mathematics Programs at two-year colleges by type of instructor and level of course: Fall 1995.

	Mathematics Departments					Statistics Departments				
	Tenured/ tenure- eligible	Other full- time	Part- time	Graduate TAs	Total Math dept enrollment (thousands)	Tenured/ tenure- eligible	Other full- time	Part- time	Graduate TAs	Total Stat dept enrollment (thousands)
Math courses										
Remedial level	14	14	46	26	100% 222					0
Precalculus level	40	18	21	22	100% 613					1
Calculus level	71	11	9	10	100% 538					1
Advanced level	100*	0	0	0	100% 96					0
All Math Courses	51	14	19	17	100% 1469					2
Stat courses										
Elem. level	63	7	19	11	100% 115	41	12	9	38	100% 49
Upper level	100*	0	0	0	100% 28	100*	0	0	0	100% 16
All Stat Courses	70	6	15	7	100% 143	56	9	7	29	100% 65
Computer Science courses										
Lower level	60	16	24	1	100% 74					1
Middle level	79	18	4	0	100% 13					0
Upper level	100*	0	0	0	100% 12					0
All Computer Science Courses	67	14	18	0	100% 99					1
All courses	54	13	15	13	100% 1711	56	9	7	29	100% 68
Two-year colleges All courses	62**	38***	0	0	100% 1498					

* This survey assumed all advanced and upper level courses were taught by tenured or tenure-eligible faculty.

** 62 is percentage of sections taught by full-time permanent and full-time temporary faculty.

*** 38 is percentage of sections taught by part-time faculty.

0 means less than half of 1%.

Table SFY.18

While the 1990 CBMS data on mainstream calculus were not as precise as the information obtained in this survey, it is possible to make some comparisons. Assuming that the average enrollment of the large lecture with recitation in mainstream Calculus I was the same in 1990 as reported in 1995, the number of students enrolled in Calculus I in large lectures with recitation declined from 81,000 (80% of total Calculus I enrollment) in 1990 to 42,500 (48% of total Calculus I enrollment) in 1995. It should be noted that mainstream Calculus I and II are offered in the large lec-

ture with recitation format almost exclusively in the PhD-granting universities.

The data from the 1995 survey show that almost all of the regular section enrollment in mainstream Calculus I and II is in sections of 60 or fewer students. Regular sections in these two courses with enrollment greater than 60 account for only 1.5% of the total enrollment in regular sections of these two courses. A further elaboration of this table for four-year colleges and universities is found in Table FY.1 in chapter 4, *First-Year Courses: Calculus and Statistics*. For two-year colleges, Table TYR.9 contains more detail.

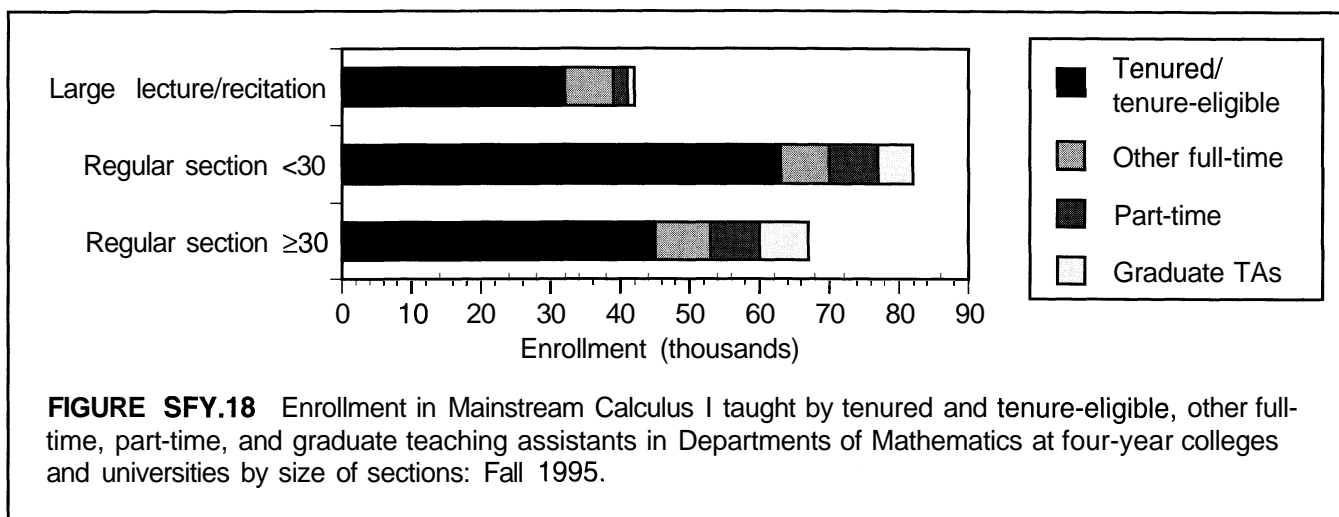


TABLE SFY.18 Percentage of enrollment in Mainstream Calculus I and Mainstream Calculus II taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections and percentage of sections taught by full-time and part-time in Mathematics Programs at two-year colleges: Fall 1995. Also total enrollments and average section sizes.

Four-year colleges and universities	Percentage of enrollment taught by				Enrollment (thousands)	Average section size
	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants		
Mainstream Calculus I						
Large lecture/recitation	76	16	5	2	100%	99
					42	
Regular section <30	76	9	9	6	100%	24
					83	
Regular section ≥30	67	12	10	11	100%	36
					67	
Course total	73	12	8	7	100%	33
					192	
Mainstream Calculus II						
Large lecture/recitation	69	14	5	12	100%	85
					18	
Regular section <30	82	10	3	5	100%	21
					40	
Regular section ≥30	65	13	6	16	100%	37
					25	
Course total	74	12	5	10	100%	30
					83	
Total Mainstream Calculus I & II	73	12	7	8	100%	32
					275	
Two-year colleges	Percentage of sections taught by					
	Full-time	Part-time				
Mainstream Calculus I	84	16			100%	25
					58	
Mainstream Calculus II	81	19			100%	23
					23	
Total Mainstream Calculus I & II	83	17			100%	24
					81	

Table SFY.19

The large lecture with recitation format is not much different than the regular section format in the use of the various pedagogical techniques, except for use of graphing calculators. Both for mainstream Calculus I and II graphing calculators are used significantly less in large lectures than in small sections.

While the use of a "reform" material as the primary text in mainstream Calculus II is half that of mainstream Calculus I, it should be observed that this is the fall (off-semester) course and probably uses the same text as the previous year's Calculus I course. If a "reform" text were newly adopted for Calculus I,

then this might account for some of the difference.

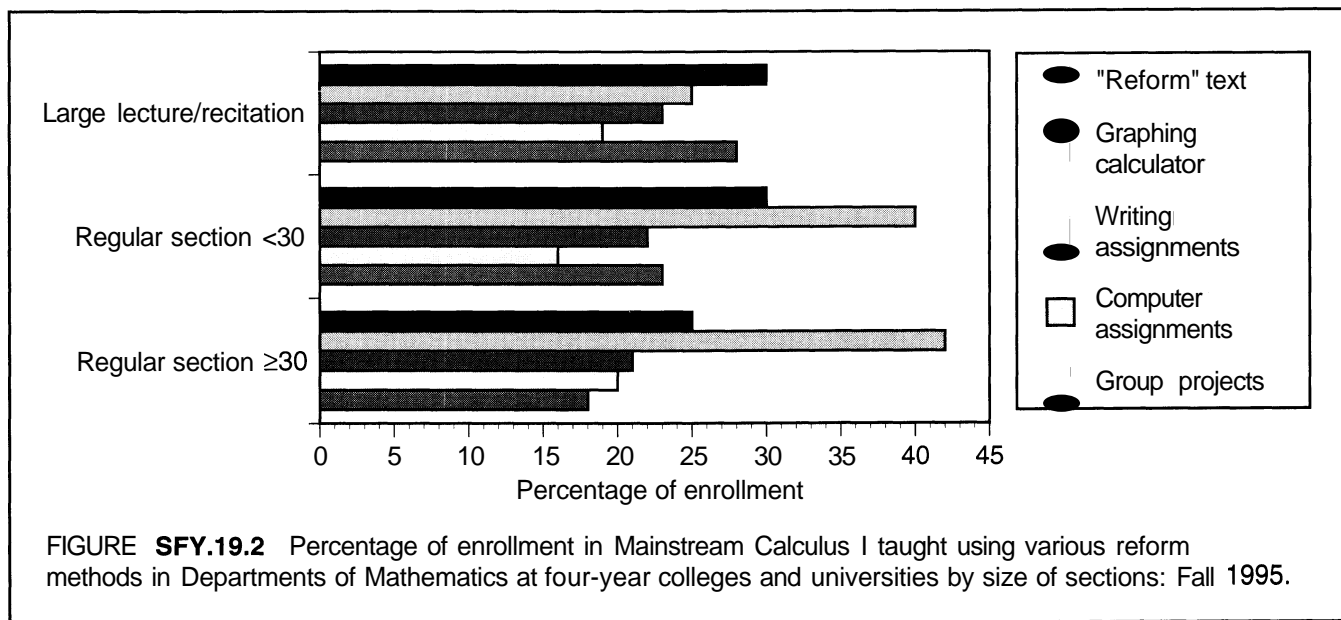
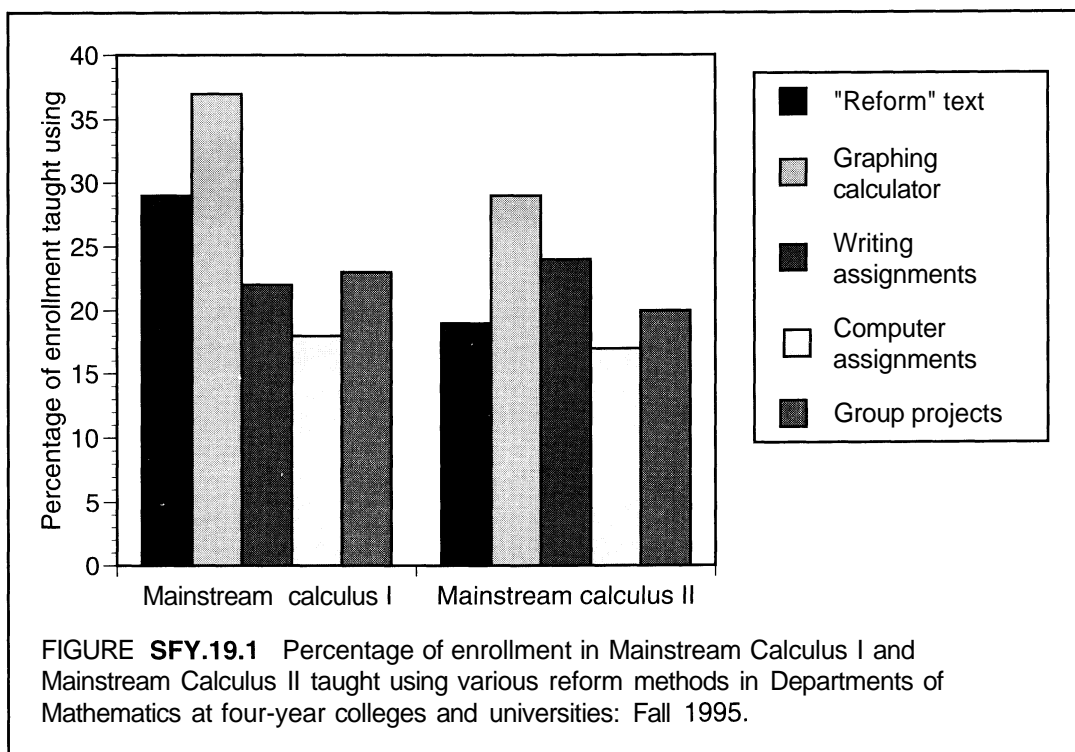
From 1990 to 1995, there has been a dramatic increase in the number of students using graphing calculators, from 3% to 37% in mainstream Calculus I, and an almost equally large increase in assigning group projects with more modest, but still substantial, increases in the other two categories.

For four-year colleges and universities, a further elaboration of this table appears in Table FY.2 in chapter 4, *First-Year Courses: Calculus and Statistics*. For two-year colleges, an elaboration is found in Tables TYR.10 and TYR.11 in chapter 6.

TABLE SFY.19 Percentage of enrollment in Mainstream Calculus I and Mainstream Calculus II taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections and percentage of sections taught using various reform methods in Mathematics Programs at two-year colleges. Also total enrollments and average section sizes: Fall 1995. (1990 percentages are of sections whereas 1995 percentages are of enrollment.)

Four-year colleges and universities	Percentage of enrollment					Enrollment (thousands)	Average section size	
	taught from a "reform" text*	using graphing calculators	having writing assignments	having required computer assignments	having assigned group projects			
Mainstream Calculus I								
Large lecture with recitation	30	25	23	19	28	42	99	
Regular section <30	30	40	22	16	23	83	24	
Regular section ≥30	25	42	21	20	18	67	36	
Course total	29	37	22	18	23	192	33	
1990 percentage of sections	na	3	10	9	3			
Mainstream Calculus II								
Large lecture with recitation	15	17	19	17	21	18	85	
Regular section <30	23	34	34	19	24	40	21	
Regular section ≥30	16	30	13	14	13	25	37	
Course total	19	29	24	17	20	83	30	
1990 percentage of sections	na	2	9	7	2			
Total Mainstream Calculus I & II	26	35	23	18	22	275	32	
Two-year colleges								
		Percentage of sections						
Mainstream Calculus I	na	66	20	23	22	58	25	
Mainstream Calculus II	na	63	13	26	22	23	23	
Total Mainstream Calculus I & II	na	65	18	24	22	81	24	

* The primary text (or set of notes etc.) generally reflects the pedagogical principles of the reform calculus movement.



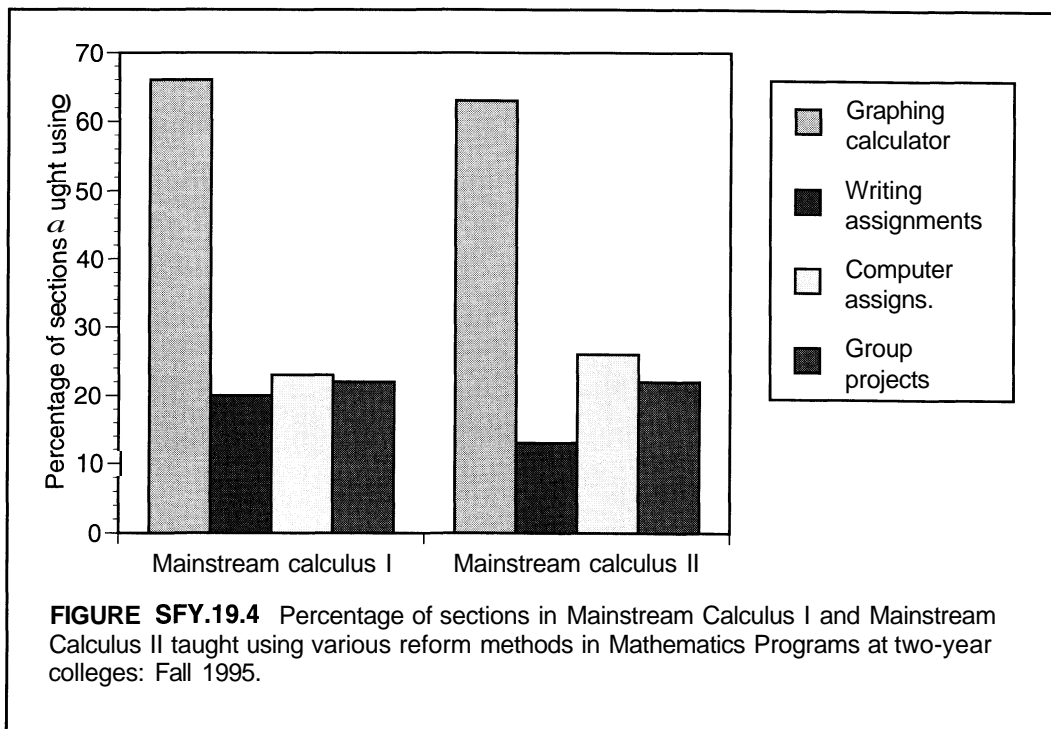
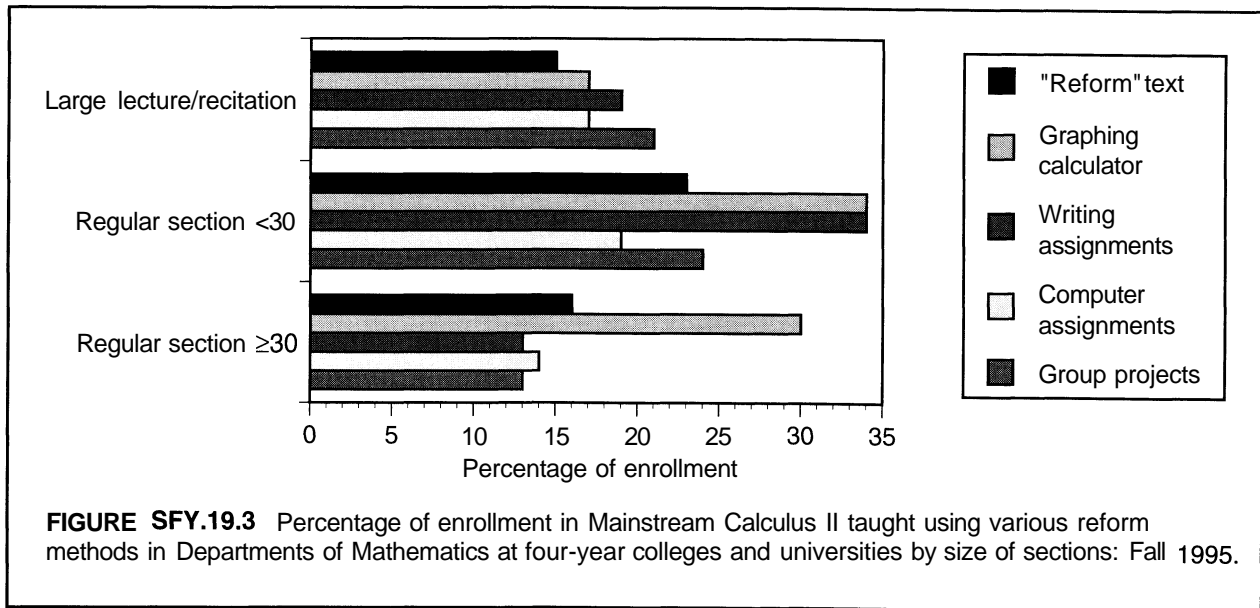


Table SFY.20

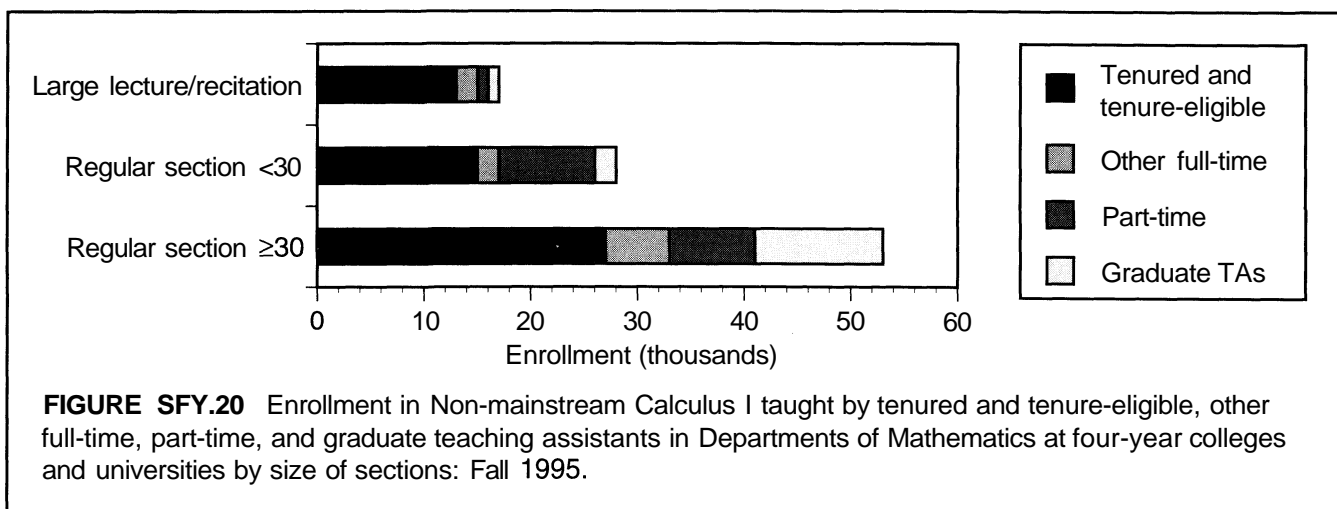
In contrast with the pattern of enrollment in mainstream calculus, the comparable figures for non-mainstream Calculus I are quite different. For this course, the large lecture with recitation format accounted for 36% of the enrollment in 1990 and accounts for 32% of the enrollment in 1995. Part-time faculty and graduate assistants teach about a third of the enrollment

in non-mainstream calculus, about double that for mainstream calculus.

A further elaboration of this table for four-year colleges and universities appears in Table FY.3 in chapter 4, *First-Year Courses: Calculus and Statistics*. Table TYR.9 gives more detail for two-year college mathematics programs.

TABLE SFY.20 Percentage of enrollment in Non-Mainstream Calculus I and Non-Mainstream Calculus II taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections and percentage of sections taught by full-time and part-time in Mathematics Programs at two-year colleges: Fall 1995. Also total enrollment and average section sizes.

Four-year colleges and universities	Percentage of enrollment taught by				Enrollment (thousands)	Average section size
	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants		
Non-Mainstream Calculus I						
Large lecture/recitation	83	10	3	4	100%	106
Regular section <30	55	7	32	6	16.0	24
Regular section ≥30	50	12	15	23	27.5	44
Course total	57	10	18	15	53.5	39
					97.0	
Non-Mainstream Calculus II						
All sections	44	11	18	26	100%	35
					14.0	
Total Non-Mainstream Calculus I & II	55	10	18	16	100%	38
					111.0	
Two-year colleges	Percentage of sections taught by					
	Full-time		Part-time		Enrollment (thousands)	Average section size
Non-Mainstream Calculus I	77		23			
Non-Mainstream Calculus II	63		37		26	19
Total Non-Mainstream Calculus I & II	76		24		100%	26
					27	



TableSFY.21

In mainstream calculus courses, "reform" material, writing, or group projects, or computer assignments are used more frequently as teaching tools than they are in non-mainstream calculus courses. Only in the use of graphing calculators are the two calculus sequences comparable.

A more detailed presentation of these four-year colleges and university data appears in Tables FY.4 in chapter 4, *First-Year Courses: Calculus and Statistics*. For two-year colleges, more detail is presented in TYR.10 and TYR.11 in chapter 6.

TABLE SFY.21 Percentage of enrollment in Non-Mainstream Calculus I taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections and percentage of sections taught using various reform methods in Mathematics Programs at two-year colleges: Fall 1995. Also total enrollments and average section sizes.

Four-year colleges and universities	Percentage of enrollment					Enrollment (thousands)	Average section size
	taught from a "reform" text*	using graphing calculators	having writing assignments	having required computer assignments	having assigned group projects		
Non-Mainstream Calculus I							
Large lecture/recitation	6	8	2	6	3	16.0	106
Regular section <30	4	18	6	12	6	27.5	24
Regular section ≥30	13	34	9	3	8	53.5	44
Course total	10	26	7	6	7	97.0	39
Two-year colleges	Percentage of sections						
Non-Mainstream Calculus I	na	44	17	8	20	26	26

* The primary text (or set of notes etc.) generally reflects the pedagogical principles of the reform calculus movement.

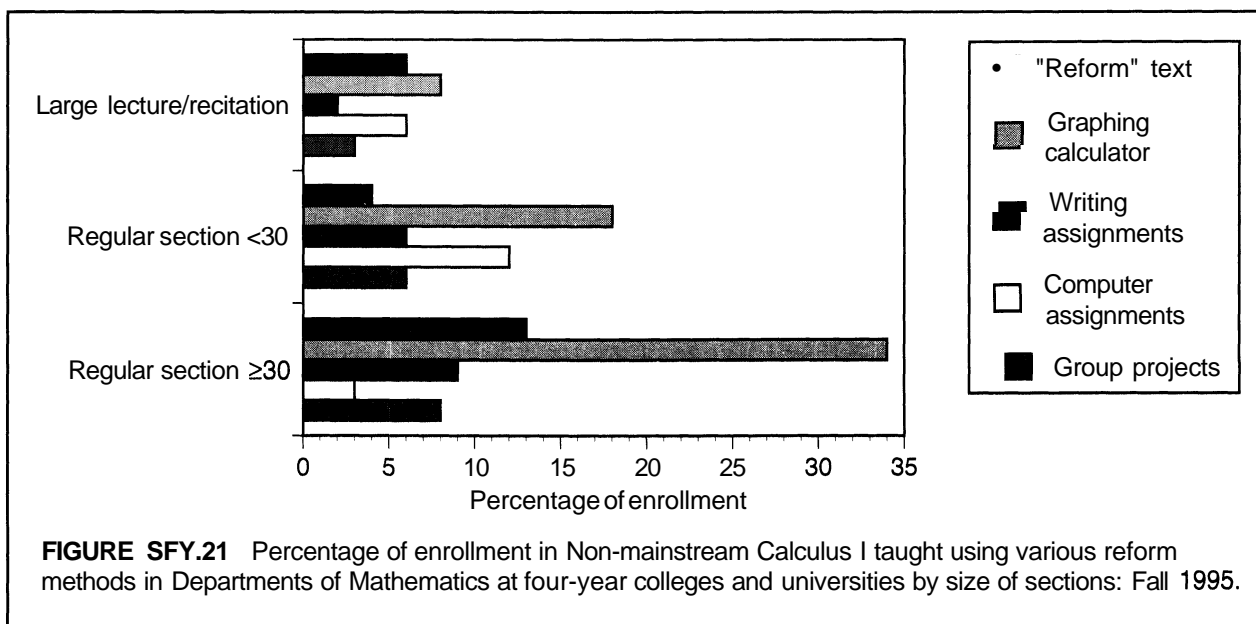


FIGURE SFY.21 Percentage of enrollment in Non-mainstream Calculus I taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

Tables SFY.22 and SFY.23

These two tables give enrollment information on the two first-year statistics courses, with Table SFY.22 presenting data on mathematics departments and Table SFY.23 on statistics departments.

It should be noted that 95% of the statistics enrollment within statistics departments is in PhD-granting departments. On the other hand, almost 70% of the total statistics enrollment in both mathematics and sta-

istics departments is in mathematics departments, a majority within mathematics departments at four-year colleges. Thus, it is difficult to make comparisons between summary data for statistics departments and summary data for mathematics departments. A better comparison is between PhD departments in the two disciplines. For example, the percentage of students in elementary statistics courses taught by tenured and tenure-eligible faculty in PhD statistics departments,

TABLE SFY.22 Percentage of enrollment in Elementary Statistics (no calculus prerequisite) and Probability and Statistics (no calculus prerequisite) taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995. Percentage of sections in Elementary Statistics (with or without probability) in Mathematics Programs at two-year colleges: Fall 1995. Also percentage of students (or sections for two-year colleges) having required computer assignments, total enrollments, and average section sizes.

Four-year colleges and universities	Percentage of enrollment taught by				Enrollment (thousands)	Percent of students having required computer assigns.	Average section size
	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants			
Elementary Statistics (no calculus prereq.)							
Large lecture/recitation	56	26	18	0	100% 4.5	20	165
Regular section <30	81	4	13	1	100% 25.0	53	24
Regular section ≥30	59	8	22	12	100% 67.5	51	38
Course total	65	7	19	8	100% 92.0	51	33
Probability & Statistics (no calculus prereq.)							
All sections	61	6	15	19	100% 18.0	40	31
Total Elem. Prob. & Stat. courses	64	7	18	10	100% 115.0	49	33
Two-year colleges	Percentage of sections taught by				Enrollment (thousands)	Percent of sections having required computer assigns.	Average section size
	Full-time	Part-time					
Elementary Statistics (with or without probability)	69	31			100% 69	47	28

46%, should be compared with the percentage of students in courses taught by tenured and tenure-eligible faculty in PhD mathematics departments, 29%. These numbers appear in subsequent tables.

There is a large percentage of students in statistics courses—over half—who have required computer assignments. This is the first CBMS survey to collect these data.

Further four-year and university elaborations of these tables appear in Tables FY.5 and FY.6 in chapter 4, *First-Year Courses: Calculus and Statistics*, and additional information for two-year mathematics programs is found in Tables TYR.9 and TYR.10 in chapter 6.

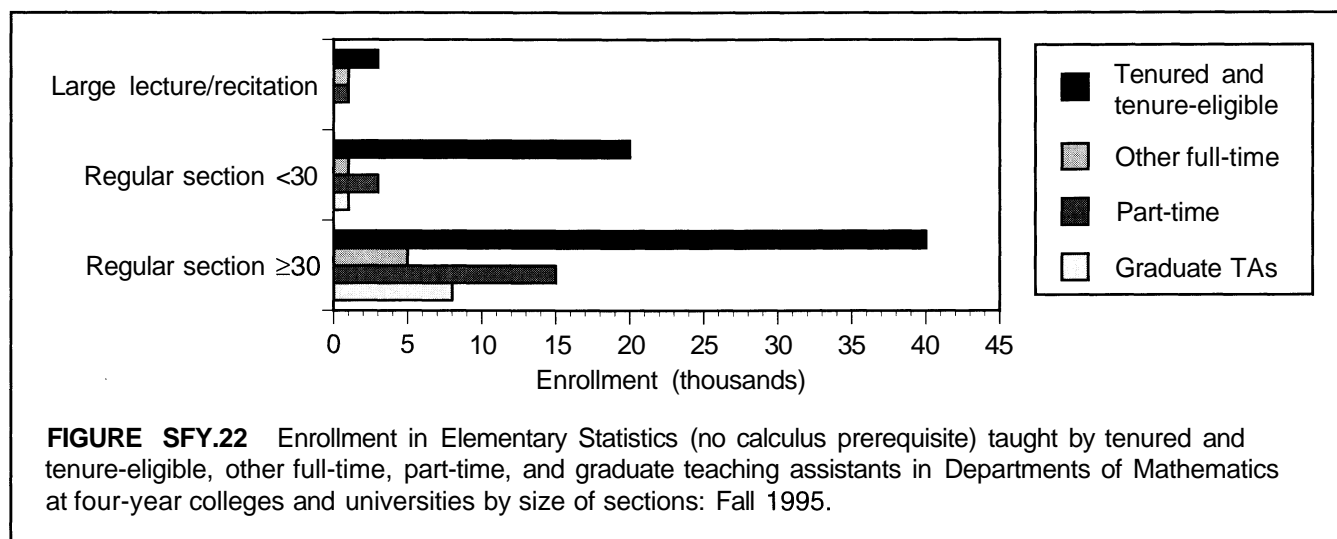
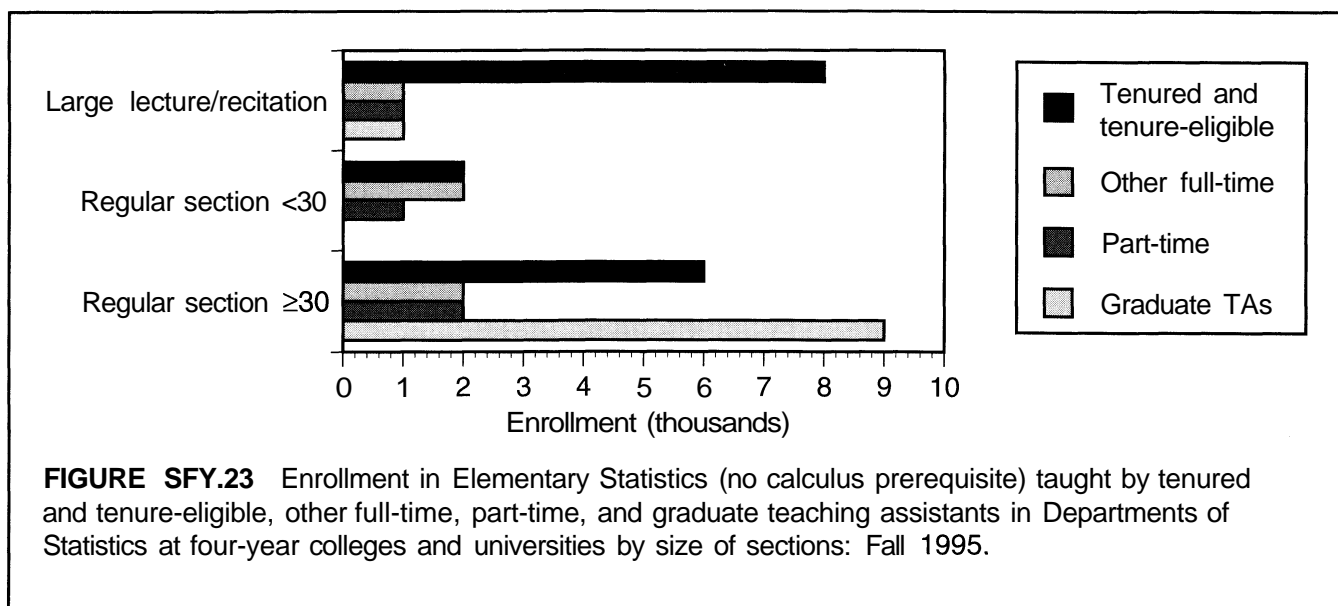


TABLE SFY.23 Percentage of enrollment in Elementary Statistics (no calculus prerequisite) and Probability and Statistics (no calculus prerequisite) taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Statistics at universities by size of sections. Also percentage of students having required computer assignments, total enrollments, and average section sizes: Fall 1995.

Universities	Percentage of enrollment taught by				Enrollment (thousands)	Percent of students having required computer assigns.	Average section size
	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants			
Elementary Statistics (no calculus prereq.)							
Large lecture/recitation	74	10	7	9	100% 11	71	175
Regular section <30	49	44	8	0	100% 5	97	23
Regular section ≥30	29	10	12	49	100% 19	42	48
Course total	47	15	10	29	100% 35	59	51
Probability & Statistics (no calculus prereq.)							
All sections	32	4	3	61	100% 8	56	48
Total Elem. Prob. & Stat. courses	44	13	9	35	100% 43	58	50



Tables SAC.24 and SAC.25

Because this is the first CBMS survey to collect data on advising practices for mathematics and statistics departmental majors, there are no comparative data from previous CBMS surveys. In Table SAC.24 the four advising options listed are mutually exclusive, so that the various percents total 100%, except for rounding errors. Likewise, the second part of the table giving the frequency of meeting with a department advisor also has mutually exclusive categories. In addition, the per-

centage of tenured or tenure-eligible faculty who were assigned advising duties for Fall 1995 is also given. In Table SAC.25 the primary source of advising information for each of the three areas, non-teaching careers, K-12 teaching and graduate school are, again, mutually exclusive, as they are defined as the primary advising source. Hence, each row adds to 100%.

More four-year colleges and university data on these topics are presented in Tables AC.1, AC.2, and AC.3 in chapter 5, *Advising and Computer Access*.

TABLE SAC.24 Percentage of Departments of Mathematics and of Departments of Statistics assigning departmental advisors by level of departmental majors and frequency of meetings. Also percentage of tenured and tenure-eligible faculty assigned to advise departmental majors: Fall 1995.

Departments	Mathematics	Statistics
	Percentage of departments where	Percentage of departments where
Departmental majors are assigned a departmental advisor each year	59	63
Departmental majors are assigned a departmental advisor in their 1st and 2nd years only	7	18
Departmental majors are assigned a departmental advisor in their 3rd and 4th years only	28	9
Other methods are used to advise departmental majors	5	11
Number of departments	100% 1396	100% 75
Meetings with departmental advisor:		
No meetings are required	29	41
There is at least one required	60	59
There is at least one required meeting in students' 3rd and 4th years only	11	0
Number of departments	100% 1396	100% 75
Number of tenured and tenure-eligible faculty	16108	921
Percentage of faculty assigned to advise undergraduate departmental majors in Fall 1995	54	22

TABLE SAC.25 Primary source of various advising information for departmental majors in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities: Fall 95.

Topic	Percentage of departments					Total no. of departments
	Departmental advisor	Career services office	Outside speakers	Club for majors	Other	
Math Depts						
Non-teaching careers	50	46	1	3	1	100% 1396
K-12 teaching	76	7	0	1	16	100% 1396
Graduate school	94	1	1	1	4	100% 1396
Stat Depts						
Non-teaching careers	73	24	0	0	4	100% 75
K-12 teaching	37	42	0	0	21	100% 75
Graduate school	100	0	0	0	0	100% 75

Table SAC.26

These data have not been collected in previous CBMS surveys.

It is clear that almost all four-year college and university mathematics and statistics faculty have full access to computers or terminals in their office and, equally, have access to the Internet. Any such institution without these features would be far from the norm. The percentage of two-year college faculty with

access to a computer or terminal in their office is smaller, with about three fourths of the faculty having such access.

A further elaboration of these data by type of four-year and university institution is contained in Table AC.4 in chapter 5, *Advising and Computer Access*. For further information on two-year college mathematics programs, see Table TYR.42.

TABLE SAC.26 Computers or terminals available to and access to Internet for full-time faculty in Departments of Mathematics at four-year colleges and universities, in Departments of Statistics at universities and in Mathematics Programs at two-year colleges: Fall 1995.

	Number of faculty	Percentage of faculty
Math Depts	18248	100%
Have a computer or terminal in office		92
Have access to a computer or terminal elsewhere on campus		5
Have access to Internet		91
Stat Depts	988	100%
Have a computer or terminal in office		98
Have access to a computer or terminal elsewhere on campus		0
Have access to Internet		97
Two-year college Mathematics Programs	7578	100%
Have a computer or terminal in office		76
Have access to a computer or terminal elsewhere on campus		21
Have access to Internet		62

Table SAC.27

These data have not been collected in previous CBMS surveys.

A further elaboration of these data by type of four-year institution is contained in Table AC.5 in chapter 5, *Advising and Computer Access*.

TABLE SAC.27 Availability of departmental computer systems support staff in Departments of Mathematics at four-year colleges and universities and in Departments of Statistics at universities: Fall 1995.

	Number of departments	Percentage of departments
Number of FTE computer systems support staff		
Math Depts	1396	100%
0		76
1		19
2		2
3 or more		3
Stat Depts	75	100%
0		22
1		59
2		12
3 or more		7