Statistical Abstract of Undergraduate Programs in the Mathematical Sciences in the United States

Fall 1995 CBMS Survey

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Contents

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The survey committee thanks the members of the Conference Board of the Mathematical Sciences for their support, with special thanks to the executive director of CBMS, Professor Ronald Rosier, for his encouragement and advice.

While this 1995 CBMS report is similar in format to the 1990 CBMS report, the scope and depth of detail of this report go well beyond that report. Hopefully, this report will be of use to the mathematics and statistics community.

Foreword

This is the seventh in a series of survey reports conducted under the auspices of the Conference Board of the Mathematical Sciences (CBMS). The first appeared in 1965, with subsequent survey reports every five years thereafter. These surveys primarily count fall enrollment in each undergraduate course offered at departments of mathematics and statistics at four-year colleges and universities and two-year mathematics programs in the United States. They also report on the number of course sections, the number of departmental and program faculty by type of appointment, gender, age, and ethnicity together with the number and gender of baccalaureate degrees awarded by these departments. In addition, policies and practices for advising departmental majors and faculty access to computers are included. Data for this 1995 CBMS report were collected in the Fall 1995, and, except in three instances, are based upon information from this academic period.

This report does not contain any information on graduate programs, except that enrollment in advanced or upper-level undergraduate courses includes all enrollment, not distinguishing between undergraduate or graduate students.

This report consists of a series of tables, each usually accompanied by some descriptive figures highlighting aspects of the data presented in the table, along with written commentary on the data.

Data were aggregated by level of department. PhD mathematics departments are all those mathematics and mathematical sciences departments which award a PhD in their department, MA mathematics departments are those which award a master's degree as the highest degree, and BA departments are those which offer either a bachelor's degree as the highest degree or offer no degree. Data on two-year college mathematics departments programs are reported both in the summary chapter and, specifically, in the last two chapters.

A statistics department is labeled a PhD or a MA department according to the classification of the companion mathematics department. However, only two of the responding PhD statistics departments reported not having a PhD degree in statistics.

A mathematics department is one in which mathematics is the primary discipline, although it may be a multi-titled department. It may also contain subunits in related disciplines. Data from other related departments, such as operations research or applied mathematics, are reported with the mathematics department at that school.

Because a large amount of the data collected continues to update previous survey data, much historical data are presented in the tables. However, there are many new features in the 1995 CBMS reports including:

- a detailed analysis on the number of course sections in four-year college and university departments of mathematics and statistics giving the percentage of enrollment taught by the four types of instructors: tenured/tenure-eligible faculty, other full-time faculty, part-time faculty, and graduate teaching assistants. These data are presented by type of department and level of course. For mathematics departments these levels are: remedial, precalculus, calculus, and advanced. For two-year mathematics programs, a similar analysis is presented;
- specifically for mainstream and non-mainstream Calculus I and II and for introductory statistics and statistics and probability, a further breakdown of enrollment by type of instructional format: large lecture, regular sections with fewer than 30 students, and those regular sections with larger enrollment. In addition, other features of these courses, such as the percentage of enrollment using a "reform" text or using graphing calculators, are presented;
- a much more detailed profile of both two-year and four-year college and university mathematics and statistics faculty, full-time and part-time, with more emphasis on separating the data by gender, age, and ethnicity;
- information on advising practices for mathematics and statistics departmental majors at four-year colleges and universities;
- information on availability of terminal/computer and Internet access for all levels of mathematics and statistics faculty;
- an analysis of various methods of evaluating teaching for two-year mathematics program faculty;
- a detailed description of the services offered by mathematics laboratories at two-year colleges.

All data in this report were obtained from a stratified random sample of four-year colleges and universities and a separate stratified random sample of two-year colleges. The sample sizes were larger than for any of the previous CBMS surveys and the response rates were good. As with any sample survey there are sampling errors which are controlled by a good sampling design and non-sampling errors such as nonresponse and reporting errors. Further information on the sampling procedures and related items for this study are found in Appendix II.

The report is organized into seven chapters. The first is a summary chapter presenting data from both four-year colleges and universities and two-year colleges when available. In addition, historical data from previous CBMS surveys are included where pertinent. The commentary accompanying the tables gives references to the tables in subsequent chapters, which give more detailed information. Chapter 2 presents detailed enrollment information for four-year colleges and universities, while chapter 3 presents faculty counts for these institutions. Chapter 4 focuses on a detailed look at six first-year courses at four-year colleges and universities: mainstream and non-mainstream Calculus I and II, elementary statistics and elementary probability and statistics. Chapter 5 concludes the four-year and university data with information on advising practices for mathematics and statistics departmental majors and computer access for mathematics and statistics faculty. Chapters 6 and 7 are devoted to two-year mathematics program data with chapter 6 concentrating on enrollment numbers and chapter 7 on faculty data.

Except for enrollment numbers, the data in this report are in good agreement with the Fall 1995 data presented by the Joint American Mathematical Society, Institute of Mathematical Statistics, and Mathematical Association of America Data Committee. The CBMS enrollment numbers are substantially lower than the numbers given in the data committee reports for the same period, Fall 1995. The data committee surveys use less precise statistical techniques than does the CBMS survey.

Separate departments of computer science were not included in this 1995 CBMS survey and report but were included in the 1990 survey and report. For the most part, detailed information on PhD computer science departments is presented annually in the "Taulbee" survey conducted by these departments.

The descriptor "mathematical sciences department", as used in CBMS reports prior to 1985, included computer science. When the National Science Foundation changed its taxonomy to no longer include computer science within the mathematical sciences, the CBMS surveys followed this change. In presenting data in this report from previous CBMS surveys, data from separate computer science departments were excised where possible; if this was not possible, then these data were not used. The only exception is data from the 1970 CBMS report; at that time the contributions from separate departments of computer science were small compared to the contributions from mathematical sciences departments.

Don O. Loftsgaarden was the vice-chair of the survey committee and the consulting statistician. Ann E. Watkins was in charge of the two-year survey and subsequent report, assisted by Stephen Rodi. Donald C. Rung was in charge of the four-year and university survey and its report and was the chair of the survey committee and director of the survey.

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 mathematic progams 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 undergraduate 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, "mathematics 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 mathematics 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

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.

	Fall enrollment (thousands)											
	Four-year College and University Mathematics and Statistics Depts					1995 by Dept		Two-year College Mathematics Programs				
Courses	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.

those institutions with 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 colleges 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.

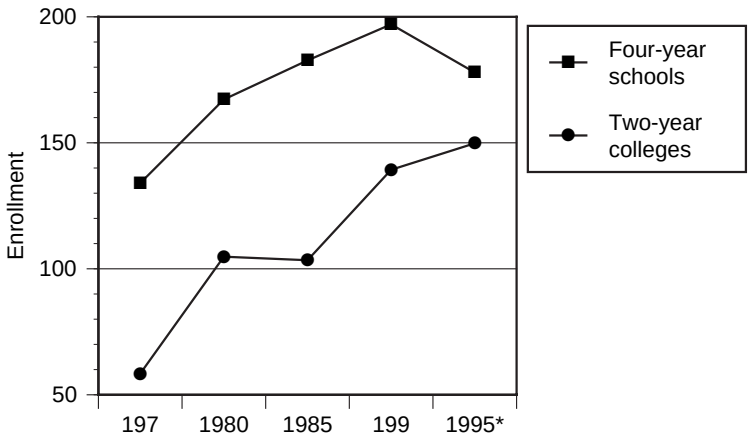

FIGURE SE.1 Combined enrollment (thousands) in undergraduate Mathematics, Statistics and Computer Science courses at four-year colleges and universities in Departments of Mathematics and Departments of Statistics and at two-year colleges in Mathematics Programs: Fall 1970, 1980*, 1985*, 1990, 1995**.

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

** Prior to 1995 two-year college enrollments included an estimate of computer science enrollments taught outside of Mathematics

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 explanations 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 Engineer-ing 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.

	Fall enrollment (thousands)												
	Four-year College and University Mathematics Depts					University Statistics Depts			Two-year College Mathematics Programs				
Course level	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.

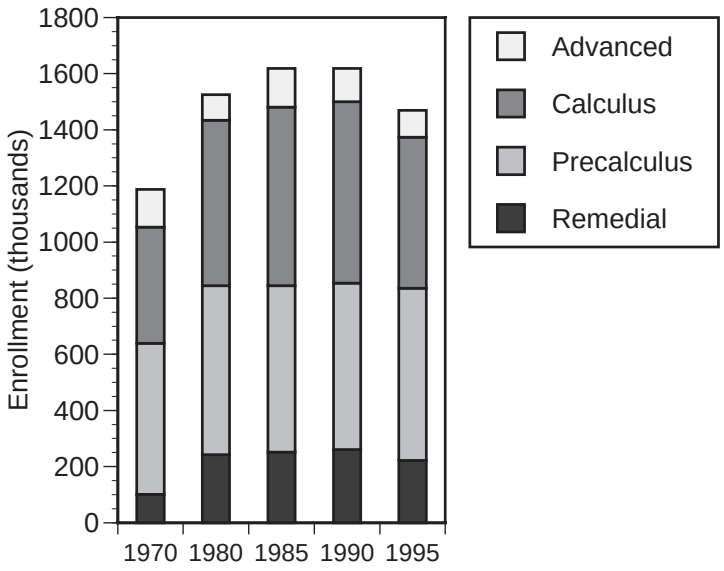

FIGURE SE.3.1 Enrollment (in thousands) in undergraduate Mathematics courses in Departments of Mathematics at four-year colleges and universities by level of course: Fall 1970, 1980, 1985, 1990, 1995.

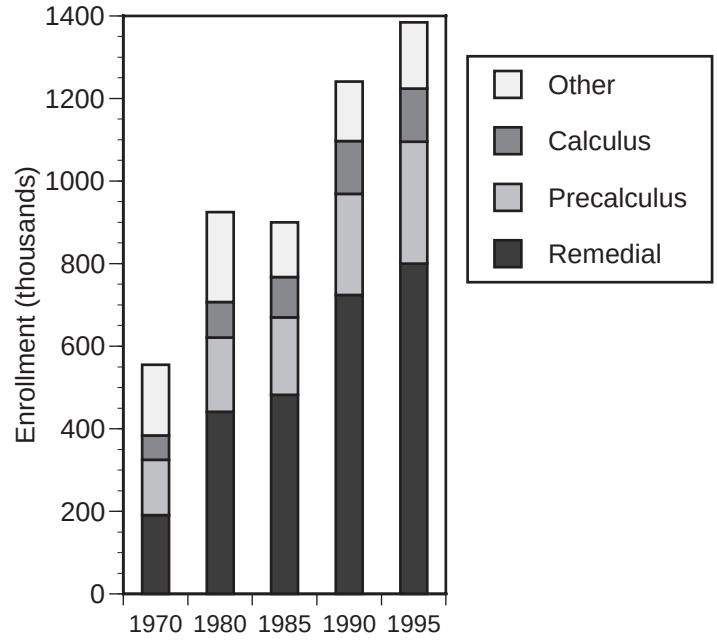

FIGURE SE.3.2 Enrollment (in thousands) in undergraduate Mathematics courses in Mathematics Programs at two-year colleges by level of course: Fall 1970, 1980, 1985, 1990, 1995.

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**

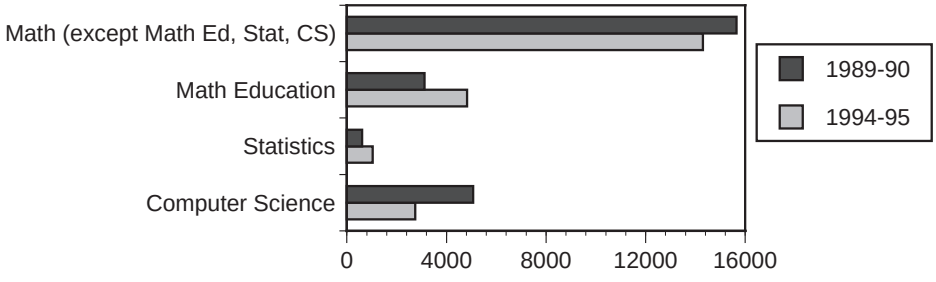

FIGURE SE.4 Number of Bachelors Degrees in Departments of Mathematics at four-year colleges and universities and in Deparments of Statistics at universities (combined) between July 1 and June 30 in 1989-90 and in 1994-95.

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					
				1995-96		
	All depts 1984-86	All depts 1989-91	All depts 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	1995 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	12497	13208	14963	15428	14491	937
	(62%)	(78%)	(74%)	(77%)	(85%)	(90%)	(44%)
Other degree	5911	3525	4641	4448	2820	1617	1203
	(38%)	(22%)	(26%)	(23%)	(15%)	(10%)	(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	718	706	880	842	38
		(96%)	(97%)	(96%)	(89%)	(91%)	(57%)
Other degree	na	23	22	29	108	79	29
		(4%)	(3%)	(4%)	(11%)	(9%)	(43%)
Total Math & Stat Depts	**16355**	**16632**	**18589**	**20146**	**19236**	**17029**	**2207**
Two-year colleges						Full-time permanent	Full-time temporary
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.

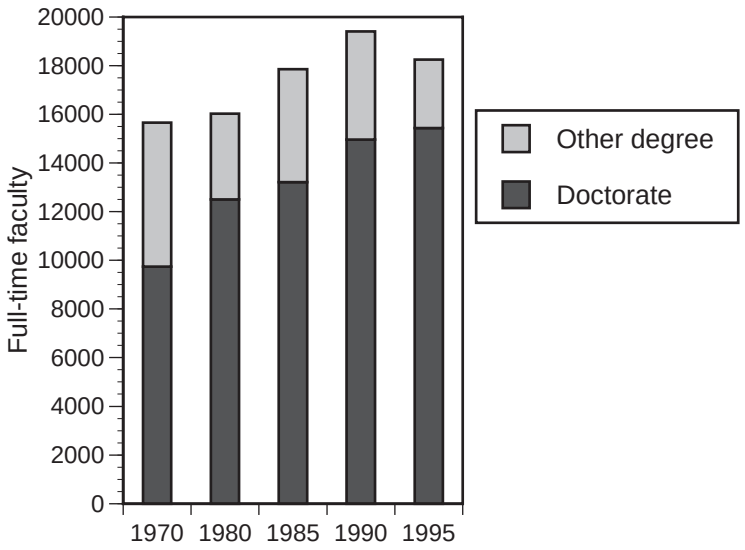

FIGURE SF.6 Number of full-time faculty by doctorate or other degree in Departments of Mathematics at four-year colleges and universities: Fall 1970, 1980, 1985, 1990, 1995.

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.

	Percentage of faculty					
Highest degree	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	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
permanent faculty	**4879**	**5944**	**5623**	**6277**	**7222**	**7578**

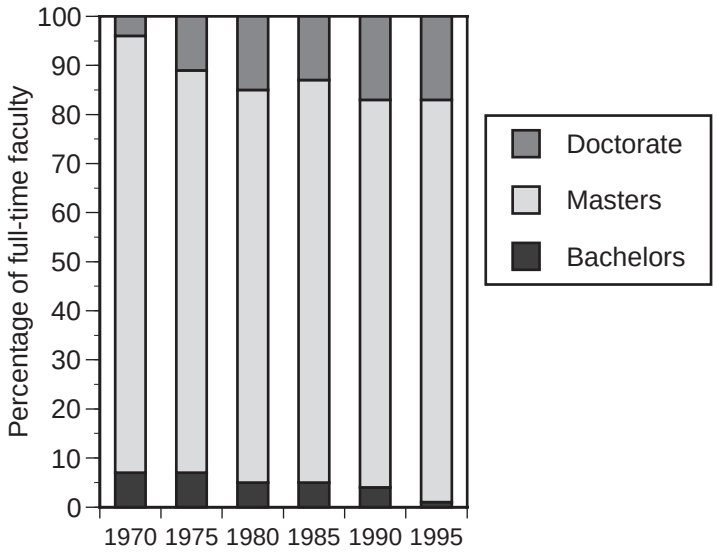

FIGURE SF.7 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by highest degree: Fall 1995.

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	1975	1980	1985	1990	**1995**	Tenured 1995	Tenure-eligible 1995	Other full-time 1995
Math Depts								
Number of full-time faculty	16863	16022	17849	19411	**18248**	12779	3329	2140
Number of women	1686	2243	2677	3843	**3880**	1830	1141	909
	(10%)	(14%)	(15%)	(20%)	**(21%)**	(14%)	(34%)	(42%)
Stat Depts								
Number of full-time faculty	na	na	740	735	**988**	730	191	67
Number of women	na	na	74	105	**107**	40	38	29
			(10%)	(14%)	**(11%)**	(5%)	(20%)	(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	1975	1980	1985	1990	Full-time age <35 1990	1995	Full-time age <35 1995
Number of full-time faculty	5944	5623	6277	7222	989	7578	938
Number of women	1248	1406	1946	2455	504	3031	431
	(21%)	(25%)	(31%)	(34%)	(51%)	(40%)	(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.

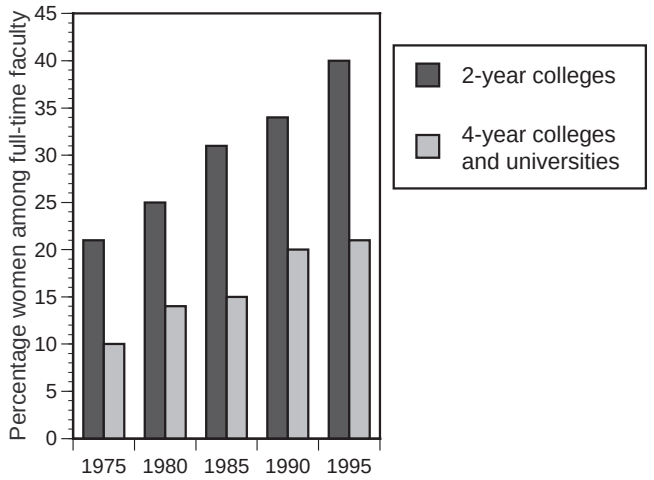

FIGURE SF.8.1 Percentage women among full-time faculty in Mathematics Departments at four-year colleges and universities and in Mathematics Programs at two-year colleges: Fall 1975, 1980, 1985, 1990, 1995.

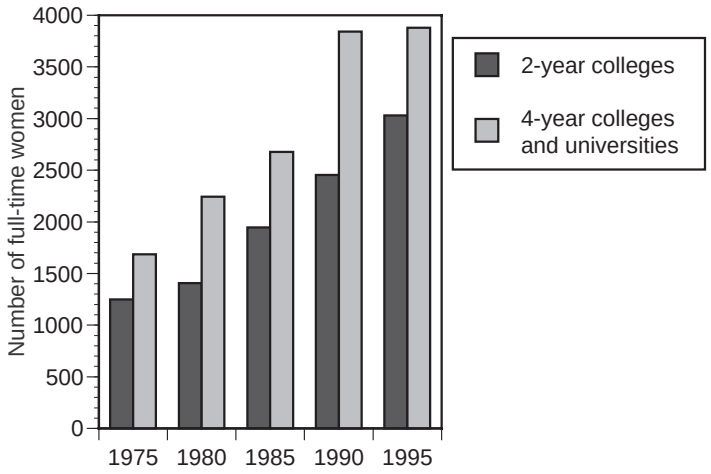

FIGURE SF.8.2 Number of women among full-time faculty in Mathematics Departments at four-year colleges and universities and in Mathematics Programs at two-year colleges: Fall 1975, 1980, 1985, 1990, 1995.

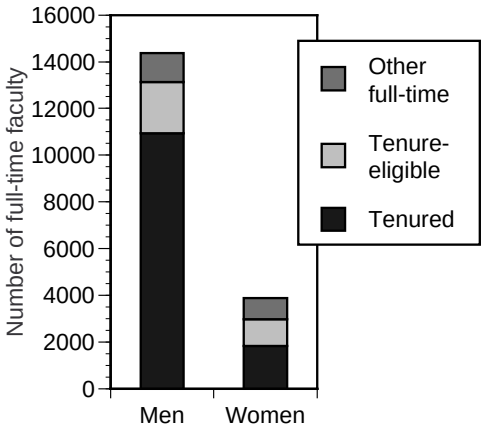

FIGURE SF.8.3 Number of tenured, tenure-eligible and other full-time faculty by gender in Departments of Mathematics at four-year colleges and universities: Fall 1995.

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		52.6
Tenured women	0	1	1	2	3	1	2	0	0	0	**100%**	47.5
Tenure-eligible men	1	4	3	2	1	1	0	0	0	0	**16108***	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									Average age			
	<30	30-34	35-39	40-44	45-49	50-54	55-59	≥ 60	**Total**	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.

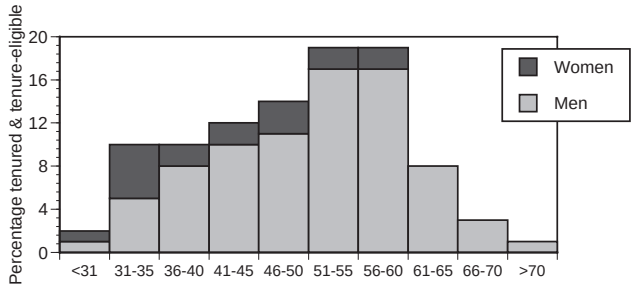

FIGURE SF.9.1 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics at four-year colleges and universities by gender. Total tenured and tenure-eligible faculty is 16108: Fall 1995.

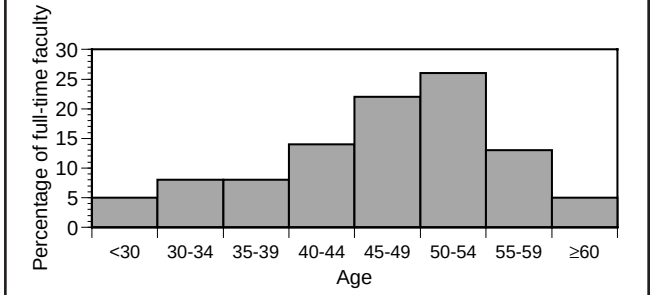

FIGURE SF.9.2 Percentage age distribution of full-time permanent faculty in Mathematics Programs at two-year colleges. Total full-time permanent faculty is 7578: Fall 1995.

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		52.4
Tenured women	0	0	1	1	1	1	0	1	0	0	**100%**	49.0
Tenure-eligible men	1	8	3	2	1	0	0	0	0	0	**921***	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.

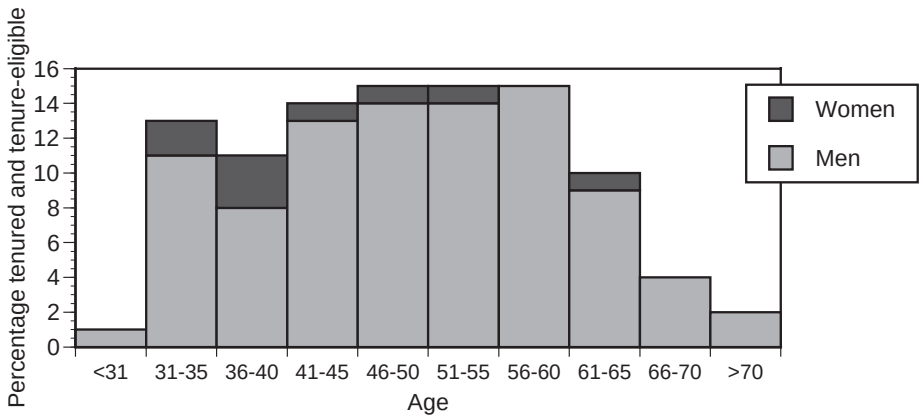

FIGURE SF.10 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Statistics at universities by gender. Total tenured and tenure-eligible faculty is 921: Fall 1995.

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						
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	**Number of full-time faculty**
All schools							
Tenured men	1	4	1	1	54	1	
Tenured women	0	1	1	0	9	0	
Tenure-eligible men	0	2	0	0	10	0	**100%**
Tenure-eligible women	0	0	0	0	5	0	**18248***
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						
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	**Number of full-time faculty**
All schools							
Tenured men	0	12	0	3	55	1	
Tenured women	0	0	0	1	4	0	
Tenure-eligible men	0	3	1	1	10	0	**100%**
Tenure-eligible women	0	1	0	0	3	0	**988***
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

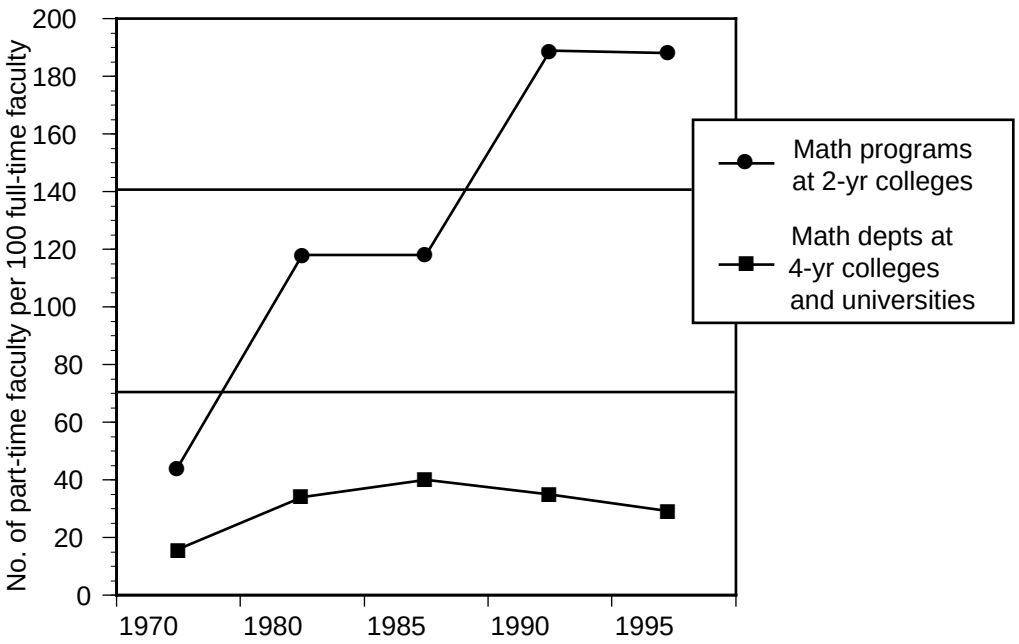

FIGURE SF.13.1 Number of part-time faculty per 100 full-time faculty in Departments of Mathematics at four-year colleges and universities and in Mathematics Programs at two-year colleges: Fall 1995.

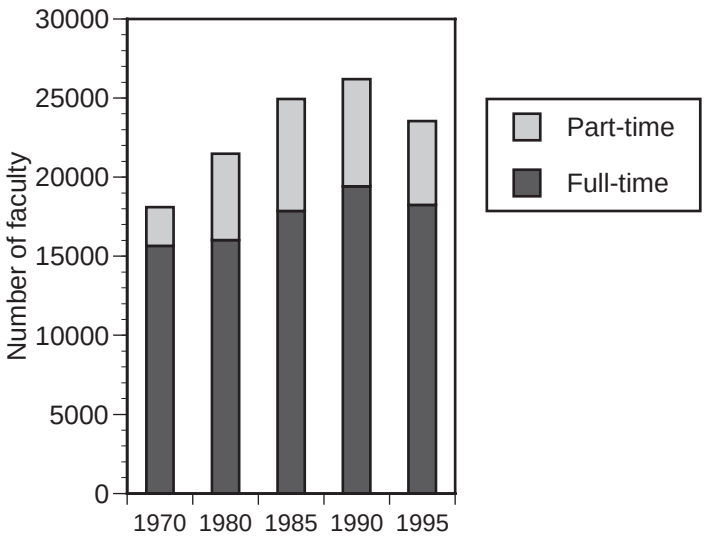

FIGURE SF.13.2 Number of full-time and part-time faculty in Departments of Mathematics at four-year colleges and universities: Fall 1970, 1980, 1985, 1990, 1995.

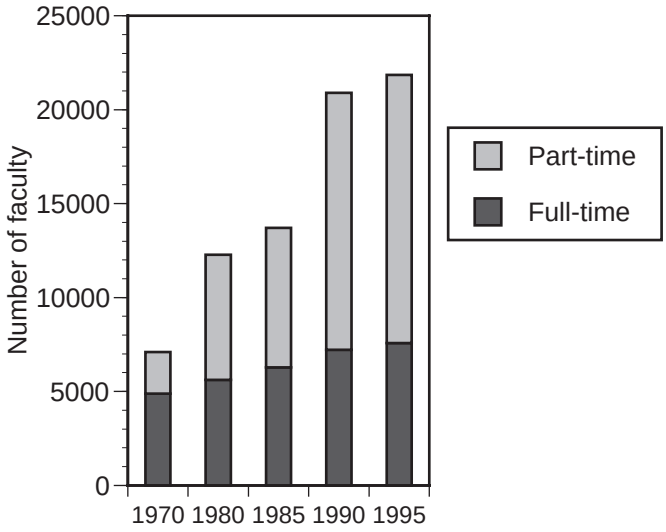

FIGURE SF.13.3 Number of full-time and part-time faculty in Mathematics Programs at two-year colleges: Fall 1970, 1980, 1985, 1990, 1995.

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 mathematics 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						
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	**Number of part-time faculty**
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**
	< 6 hrs	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**

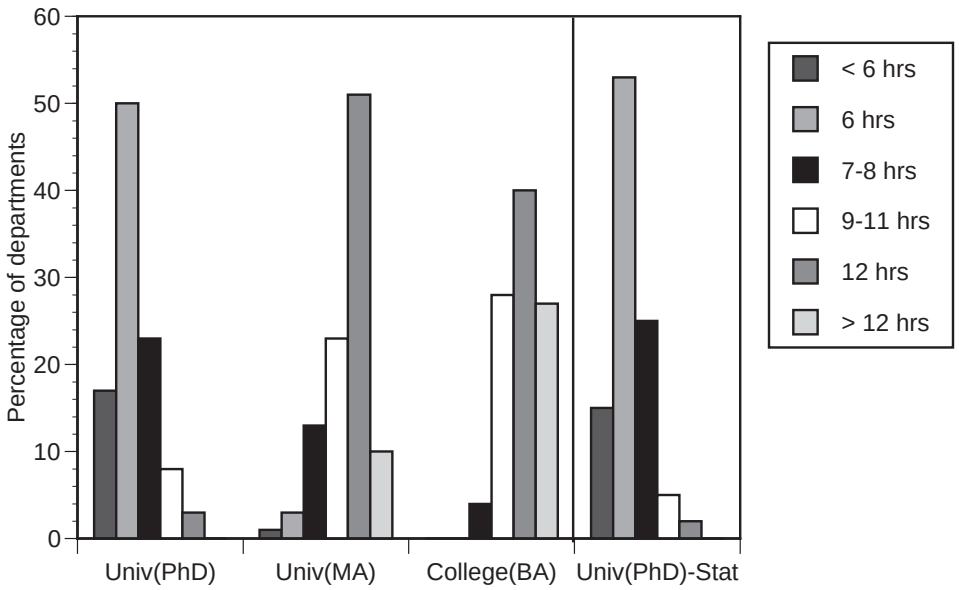

FIGURE SF.16 Percentage of Departments of Mathematics and Departments of Statistics having various weekly teaching assignments in classroom contact hours for tenured and tenure-eligible faculty by type of school: Fall 1995.

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.

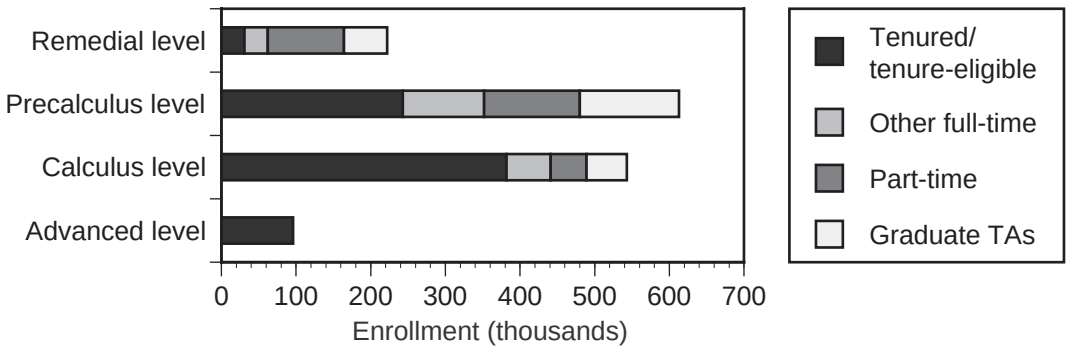

FIGURE SFY.17 Enrollment in undergraduate Mathematics courses in Departments of Mathematics at four-year colleges and universities by level of course and type of instructor: Fall 1995.

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**	**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 lecture 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.

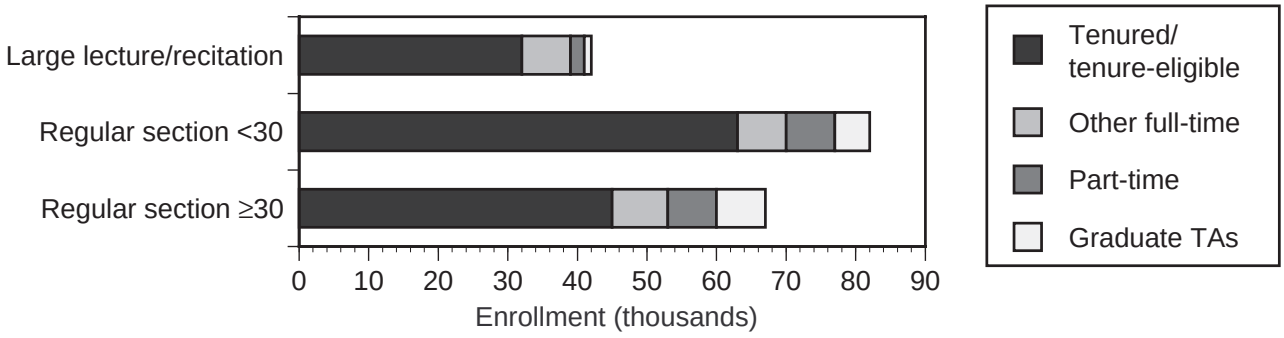

FIGURE SFY.18 Enrollment in Mainstream Calculus I taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

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.

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

Two-year colleges	Percentage of sections taught by			
	Full-time	Part-time		
Mainstream Calculus I	84	16	**100%** **58**	25
Mainstream Calculus II	81	19	**100%** **23**	23
Total Mainstream Calculus I & II	**83**	**17**	**100%** **81**	**24**

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.)

	Percentage of enrollment						
Four-year colleges and universities	taught from a "reform" text*	using graphing calculators	having writing assignments	having required computer assignments	having assigned group projects	Enrollment (thousands)	Average section size
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.

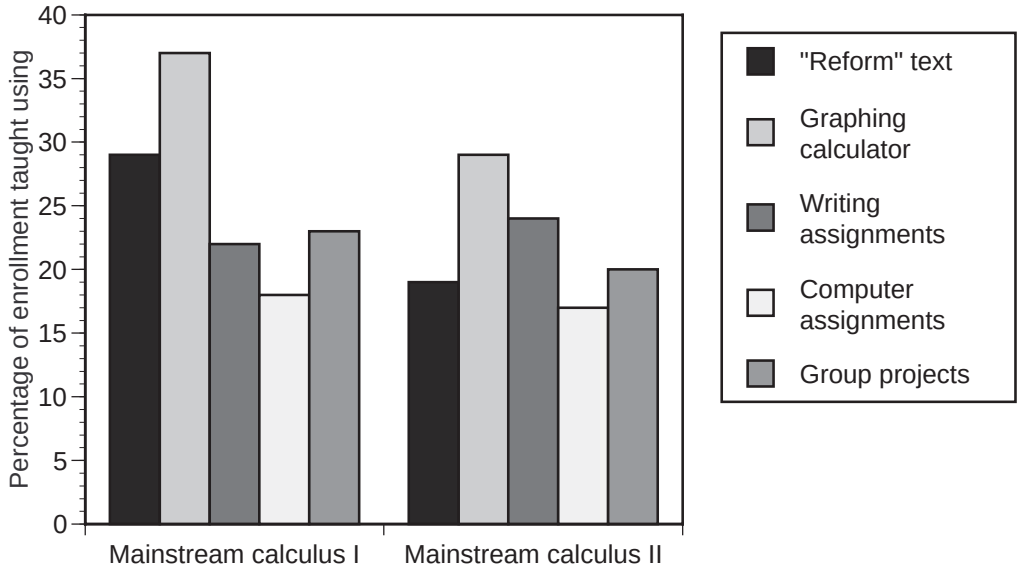

FIGURE SFY.19.1 Percentage of enrollment in Mainstream Calculus I and Mainstream Calculus II taught using various reform methods in Departments of Mathematics at four-year colleges and universities: Fall 1995.

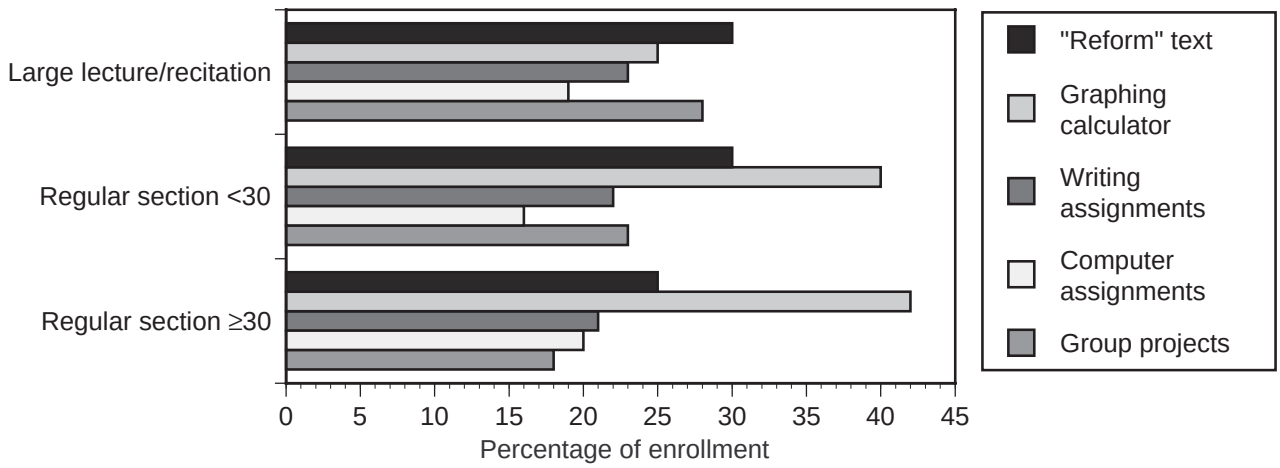

FIGURE SFY.19.2 Percentage of enrollment in Mainstream Calculus I taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

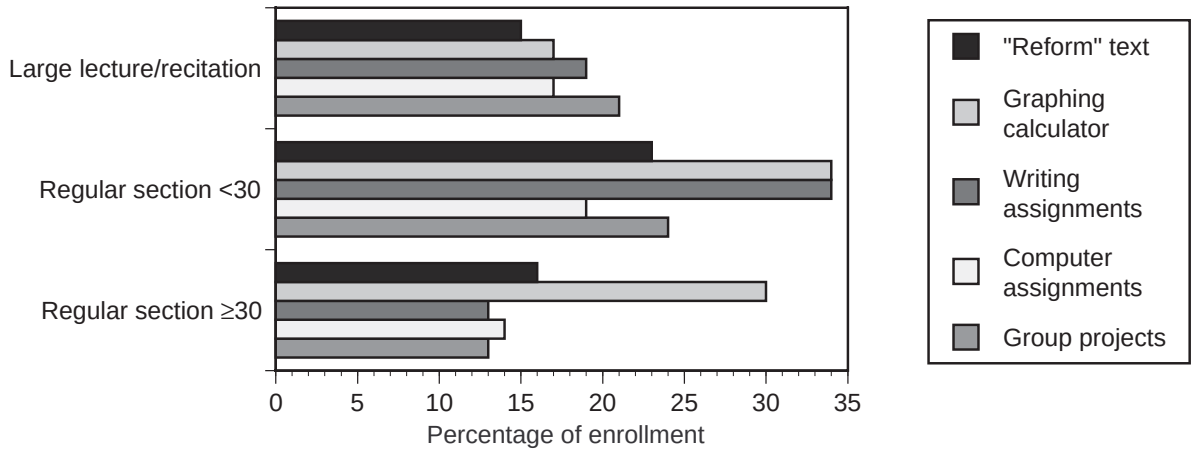

FIGURE SFY.19.3 Percentage of enrollment in Mainstream Calculus II taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

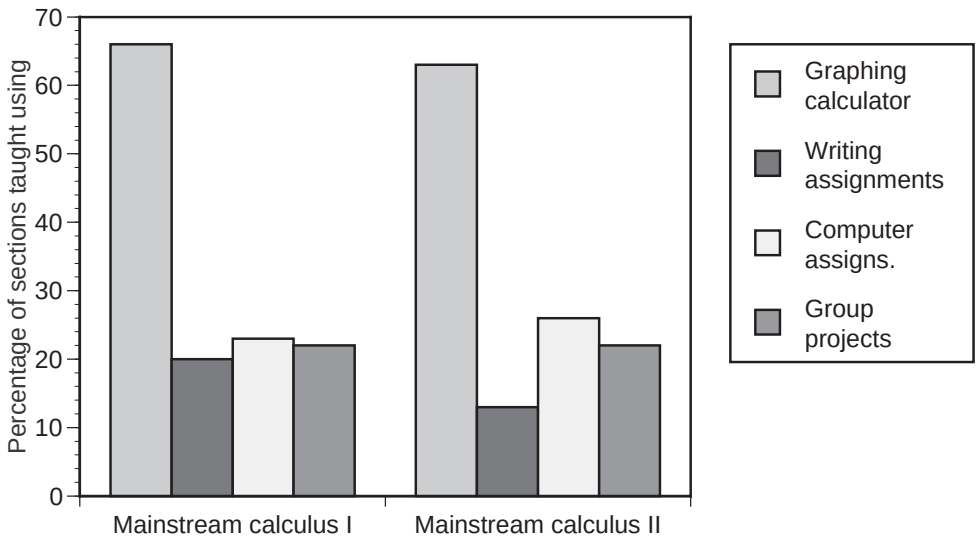

FIGURE SFY.19.4 Percentage of sections in Mainstream Calculus I and Mainstream Calculus II taught using various reform methods in Mathematics Programs at two-year colleges: Fall 1995.

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.

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

Two-year colleges	Percentage of sections taught by			
	Full-time	Part-time	Enrollment (thousands)	Average section size
Non-Mainstream Calculus I	77	23	**100%** **26**	26
Non-Mainstream Calculus II	63	37	**100%** **1**	19
Total Non-Mainstream Calculus I & II	**76**	**24**	**100%** **27**	**26**

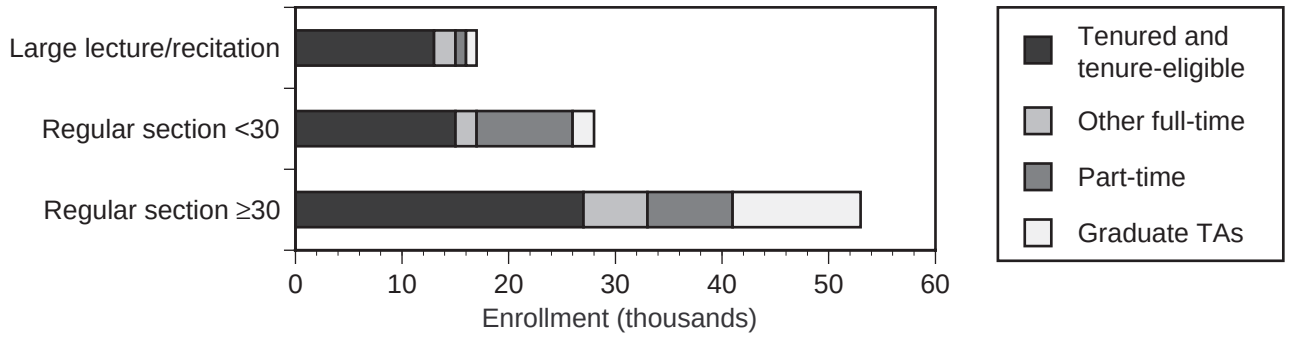

FIGURE SFY.20 Enrollment in Non-mainstream Calculus I taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

Table SFY.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.

	Percentage of enrollment						
Four-year colleges and universities	taught from a "reform" text*	using graphing calculators	having writing assignments	having required computer assignments	having assigned group projects	Enrollment (thousands)	Average section size
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.

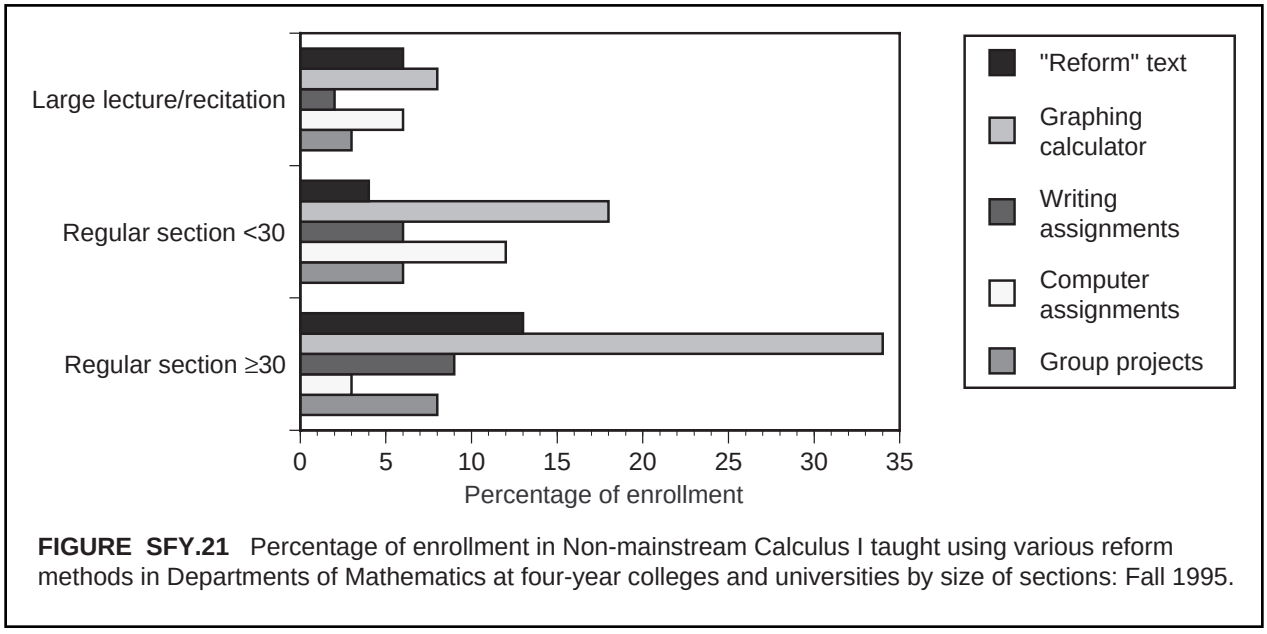

FIGURE SFY.21 Percentage of enrollment in Non-mainstream Calculus I taught using various reform methods in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

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 statistics 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 sta-

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.

	Percentage of enrollment taught by						
Four-year colleges and universities	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Enrollment (thousands)	Percent of students having required computer assigns.	Average section size
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 Full-time	Part-time	Enrollment (thousands)	Percent of sections having required computer assigns.	Average section size
Elementary Statistics (with or without probability)	**69**	**31**	**100%** **69**	**47**	**28**

tistics courses taught by tenured and tenure-eligible faculty in PhD statistics departments, 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.

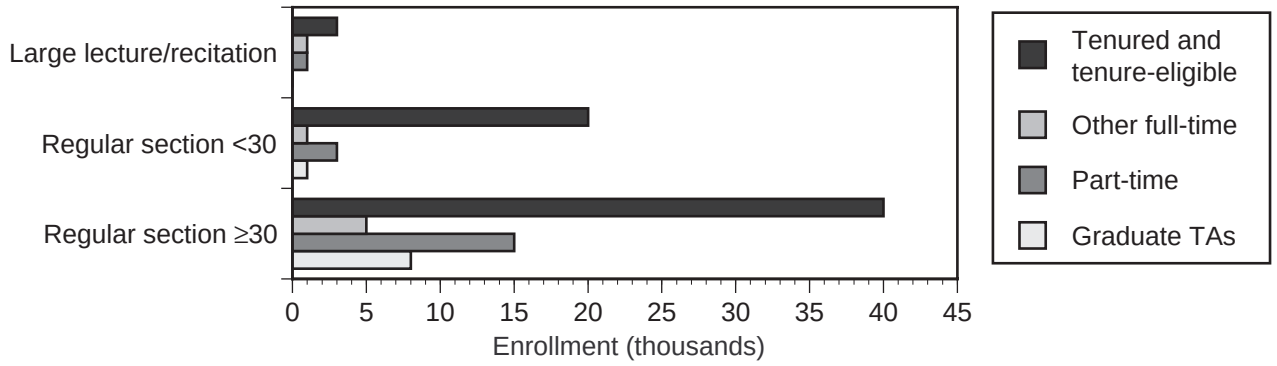

FIGURE SFY.22 Enrollment in Elementary Statistics (no calculus prerequisite) taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics at four-year colleges and universities by size of sections: Fall 1995.

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.

	Percentage of enrollment taught by						
Universities	Tenured and tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Enrollment (thousands)	Percent of students having required computer assigns.	Average section size
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**

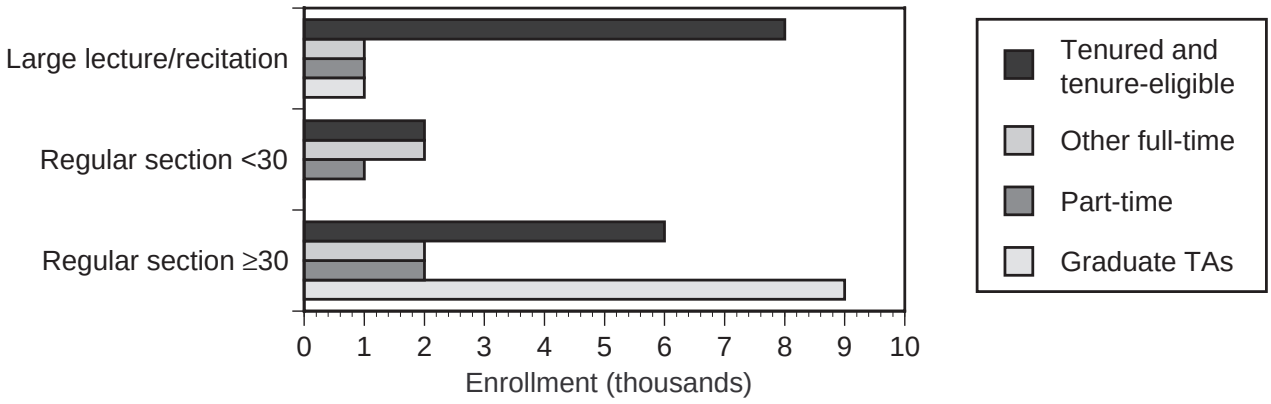

FIGURE SFY.23 Enrollment in Elementary Statistics (no calculus prerequisite) taught by tenured and tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Statistics at four-year colleges and universities by size of sections: Fall 1995.

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 percentage 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.

	Percentage of departments					
Topic	Departmental advisor	Career services office	Outside speakers	Club for majors	Other	**Total no. of departments**
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

Chapter 2

Enrollments

Data Highlights

Since 1990, enrollment in calculus-level courses declined by 32% in BA departments of mathematics and 22% in PhD departments of mathematics; MA departments of mathematics showed a slight increase. The percentage of enrollment in calculus-level courses taught by tenured and tenure-eligible faculty is 62% for PhD departments of mathematics, 76% for MA departments of mathematics, and 81% for BA departments of mathematics. Average section sizes for courses beyond remedial level declined somewhat over 1990 levels. Within mathematical sciences departments, the percentage of sections of mathematics courses taught by tenured and tenure-eligible faculty is 58%, but for statistics courses this percentage rises to 77%, and for computer science courses it is 72%. The actual number of sections taught by part-time mathematics faculty is given and, when divided by the average number of sections taught per tenured/tenure-eligible faculty, gives a full-time-equivalent (fte) estimate for part-time mathematics faculty of 3667. This analysis is presented in the commentary for Tables E.13 through E.18.

Explanation of the Tables

There are 18 tables in this chapter which present enrollment by level of course and type of department classified by the highest mathematics degree offered by the department. Those mathematics departments offering only a bachelor's degree or no mathematics degree are labeled BA departments, those offering master's degrees as the highest degree are designated MA departments, and those offering a doctor's degree in mathematics are called PhD departments. A statistics department is labeled a PhD or a MA department according to the classification of the companion mathematics department. However, only two of the responding PhD statistics departments reported not having a PhD degree in statistics.

While historical data is presented primarily in the summary chapter, Table E.2. does contain corresponding enrollment taken from the 1990 CBMS survey.

The specific courses that comprise the various levels of mathematics courses—remedial, precalculus, calculus, and advanced math, as well as the various levels of statistics and computer science courses—are found in Appendix I, which contains detailed enrollment by course and historical data from previous CBMS surveys.

Enrollment information on mainstream and non-mainstream Calculus I and II, as well as elementary statistics and probability and statistics, by instructional format and type of department, is presented in chapter 4, *First-Year Calculus Courses: Calculus and Statistics.*

Table E.1

This is an elaboration of Table SE.4 in chapter 1, *Summary*.

The percentage of women among computer science baccalaureate degrees continues to be about half of the corresponding percentage for mathematics baccalaureate degrees. Because of this and because four-year college mathematics departments award the majority (65%) of the computer science degrees awarded by mathematics departments, these departments have the lowest percentage of women graduates among mathematics departments.

Graduates in mathematics education within mathematics departments are about equally divided between males and females. In the previous 1990 CBMS survey, which reported the bachelor's degrees awarded by mathematics departments from July 1, 1989, to June 30, 1990, the percentage of women receiving mathematics education degrees (in mathematics departments) was 64%, as compared with the 1995 percentage of 49%. The number of such degrees increased dramatically, from 3116 in the 1989-1990 period to 4829 in 1994-1995.

TABLE E.1 Bachelor's Degrees in Mathematics, Mathematics Education, Statistics, and Computer Science in Departments of Mathematics and in Departments of Statistics awarded between July 1, 1994 and June 30, 1995 by gender of degree recipient and type of school.

	Math Depts				Stat Depts			
Bachelor's Degrees in Math and Stat Depts	**Univ (PhD)**	**Univ (MA)**	**Coll (BA)**	**Total Math Depts**	**Univ (PhD)**	**Univ (MA)**	**Total Stat Depts**	**Total Math & Stat Depts**
Mathematics majors (including Act Sci, Oper Res, and joint degrees)								
Men	2867	2235	2956	8058				8058
Women	1933	1833	2470	6236				6236
	(40%)	(45%)	(46%)	(44%)				(44%)
Total Math Degrees	4800	4068	5426	14294				14294
Mathematics Education majors								
Men	403	701	1346	2450				2450
Women	527	831	1021	2379				2379
	(57%)	(54%)	(43%)	(49%)				(49%)
Total Math Ed Degrees	930	1532	2367	4829				4829
Statistics majors								
Men	162	50	27	239	264	82	346	585
Women	162	47	22	231	157	58	215	446
	(50%)	(48%)	(45%)	(49%)	(37%)	(41%)	(38%)	(43%)
Total Stat Degrees	324	97	49	470	421	140	561	1031
Computer Science majors								
Men	155	522	1532	2209				2209
Women	45	245	242	532				532
	(22%)	(32%)	(14%)	(22%)				(22%)
Total CS Degrees	200	767	1774	2741				2741
Total Degrees - Men	3587	3508	5861	12956	264	82	346	13302
Total Degrees - Women	2667	2956	3755	9378	157	58	215	9593
	(43%)	(46%)	(39%)	(42%)	(37%)	(41%)	(38%)	(42%)
Total All Degrees	6254	6464	9616	22334	421	140	561	22895

The number of baccalaureate graduates who were mathematics majors remained virtually unchanged over this five-year period: 14,827 in 1989-1990 and 14,294 in 1994-1995.

Baccalaureate degrees in statistics increased substantially, from 670 in 1989-1990 to 1031 in 1994-1995, with most of the increase in statistics departments, where the number of degrees awarded went from 337 to 561.

Computer science baccalaureate degrees awarded to mathematical sciences majors continued to decline from the peak year of 1984-1985, when 8646 such degrees were awarded. In 1989-1990 there were 5075 such degrees awarded, and in 1994-1995 there were 2741 such degrees awarded.

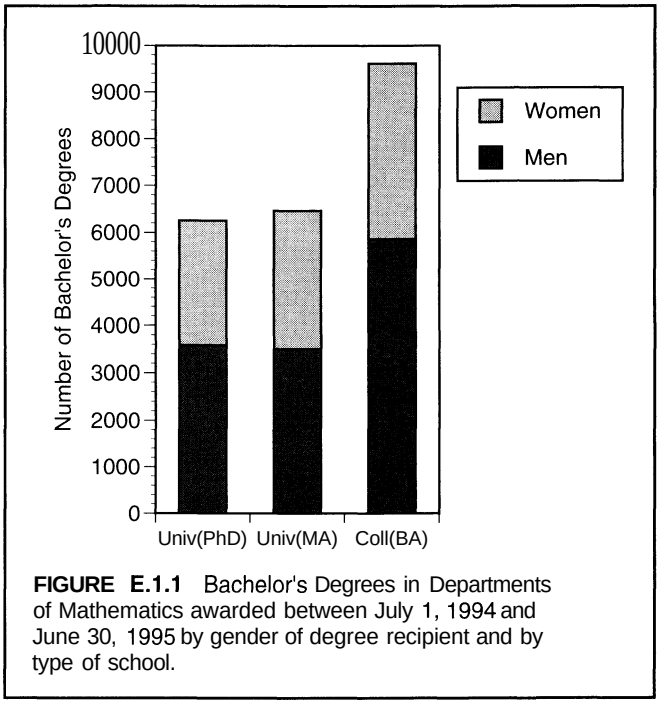

FIGURE E.1.1 Bachelor's Degrees in Departments of Mathematics awarded between July 1, 1994 and June 30, 1995 by gender of degree recipient and by type of school.

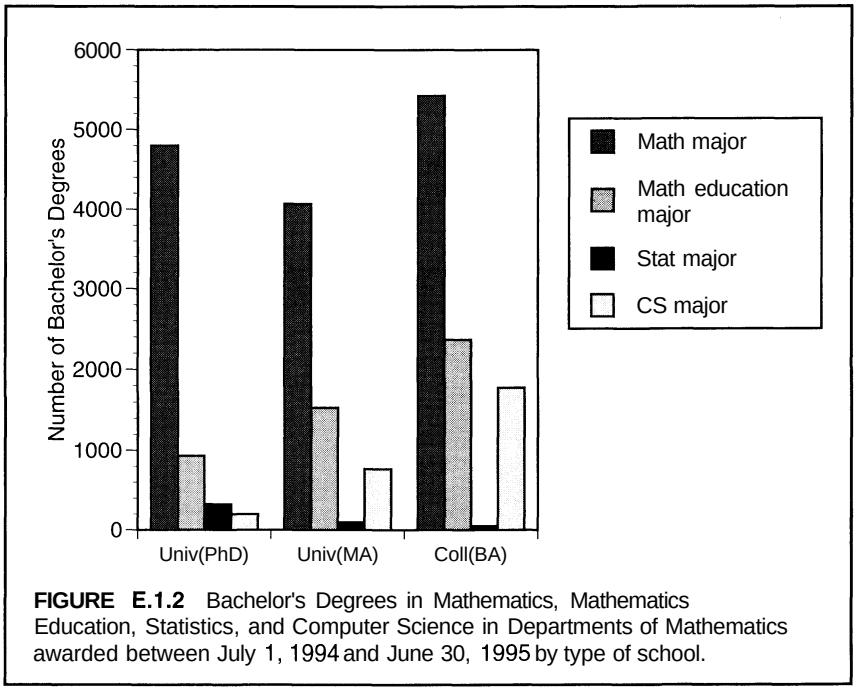

FIGURE E.1.2 Bachelor's Degrees in Mathematics, Mathematics Education, Statistics, and Computer Science in Departments of Mathematics awarded between July 1, 1994 and June 30, 1995 by type of school.

Table E.2

This is an elaboration of the 1995 enrollment data contained in Tables SE.1 and SE.3 in chapter 1, *Summary*.

Especially in four-year colleges, the spectrum of courses offered by the mathematics department is broad, encompassing a substantial enrollment in statistics and computer science courses as well as in mathematics. The enrollment in statistics courses grew substantially since 1990 to the point where the statistics enrollment in four-year college mathematics departments and the statistics enrollment in all separate statistics departments, mostly PhD departments, are now about equal in number. In turn, this number is equal to the enrollment in computer science courses taught in four-year college mathematics departments.

As in the 1990 CBMS survey, the preponderance of statistics course enrollment—almost 70%—is still within the mathematics departments, with the remaining 30% in separate statistics departments. In Fall 1990 separate statistics departments taught 25% of all statistics enrollments.

TABLE E.2 Enrollment (thousands) in undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics and in Departments of Statistics by level of course and type of school: Fall 1995. Also full-time faculty: Fall 1995. (Numbers in parentheses are 1990 enrollments.)

	Fall 1995 (1990) enrollments (thousands)						
	Math Depts				Stat Depts		
	Univ (PhD)	Univ (MA)	Coll (BA)	Total Math Depts	Univ (PhD)	Univ (MA)	Total Stat Depts
Number of full-time faculty 1995	**6221**	**4765**	**7262**	**18248**	**876**	**112**	**988**
Math courses							
Remedial	60	84	78	222			0
	(68)	(93)	(100)	(261)			(0)
Precalculus	222	193	198	613	1		1
	(205)	(202)	(185)	(592)	(0)		(0)
Calculus	264	124	150	538	1		1
	(337)	(122)	(188)	(647)	(1)		(1)
Adv math	41	25	30	96	0		0
	(58)	(29)	(32)	(119)	(1)		(1)
Total Math courses	587	426	456	1469	2		2
	(668)	(446)	(505)	(1619)	(2)		(2)
Stat courses							
Elem stat	23	35	57	115	46	3	49
	(14)	(27)	(46)	(87)	(25)	(5)	(30)
Upper level stat	10	7	11	28	16		16
	(18)	(12)	(8)	(38)	(14)		(14)
Total Stat courses	33	42	68	143	62	3	65
	(32)	(39)	(54)	(125)	(39)	(5)	(44)
CS courses							
Lower CS	4	18	52	74		1	1
	(9)	(42)	(83)	(134)		(0)	(0)
Middle CS	0	3	10	13			0
	(1)	(4)	(7)	(12)			(0)
Upper CS	2	4	6	12			0
	(6)	(12)	(16)	(34)			(0)
Total CS courses	6	25	68	99		1	1
	(16)	(58)	(106)	(180)		(0)	(0)
Total all courses	626	493	592	1711	64	4	68
	(716)	(543)	(665)	(1924)	(41)	(5)	(46)

Within mathematics departments, enrollment in computer science courses declined from an estimated 273,000 in Fall 1985 to 180,000 in Fall 1990 to the present Fall 1995 figure of 99,000, which is 36% of the 1985 number.

At the PhD institutions, enrollment in calculus-level courses fell by 73,000 over 1990 levels, a 22% decline. A detailed comparison with the 1990 enrollment shows that mainstream Calculus I enrollment declined by 17%, while enrollment in mainstream Calculus II declined by 11%. Non-mainstream calculus enrollment declined by 29%. Total enrollment in the traditional second-year courses, mainstream Calculus III and IV, Linear Algebra and Differential Equations, declined by 26%, nearly uniformly across each course.

At BA colleges, enrollment in calculus-level courses declined by 38,000 over 1990 levels, or 20%. However, total enrollment in all calculus-level courses, except for non-mainstream Calculus I, were only slightly lower than the 1990 totals, but non-mainstream Calculus I enrollment declined by 30,000.

While the CBMS surveys contain no enrollment in graduate-level courses, the enrollment count in advanced and upper-level undergraduate courses does not distinguish between undergraduate or graduate enrollees. Consequently, some of the decline in enrollment in these courses at PhD departments of mathematics may be attributed to the already observed decline in graduate enrollment at these schools. For a recent report on this decline, see James W. Maxwell and Don O. Loftsgaarden, *Recent Trends in Graduate Admissions in Mathematics Departments* (Notices Amer. Math. Soc., vol. 44, no. 2, pp. 213-216).

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

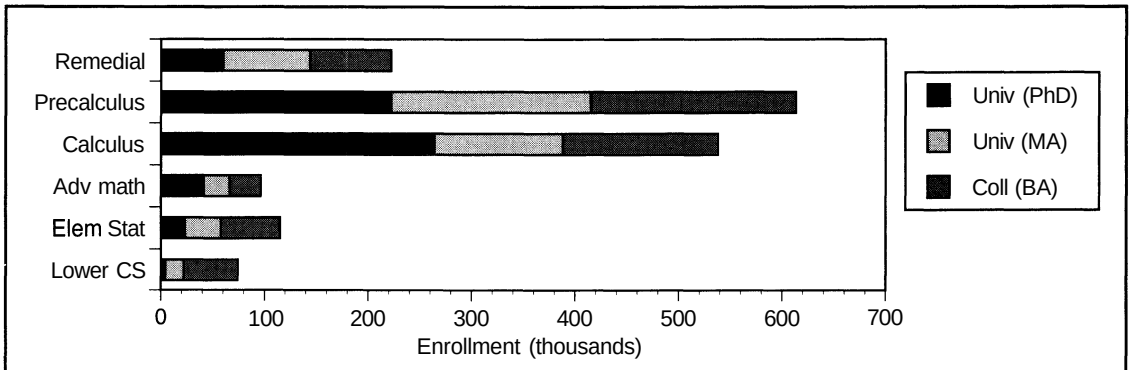

FIGURE **E.2.1** Enrollment (thousands) in undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics by level of course and type of school: Fall 1995.

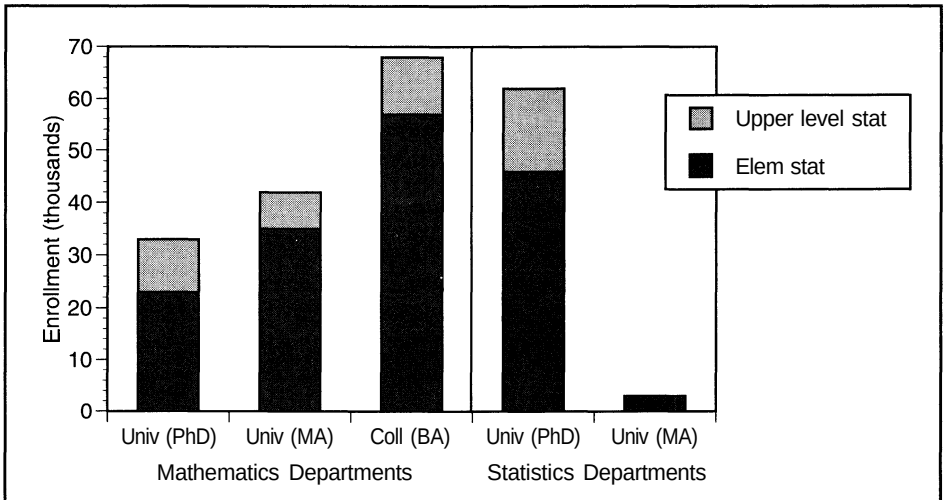

FIGURE E.2.2 Enrollment (thousands) in undergraduate Statistics courses in Departments of Mathematics and Departments of Statistics by level of course and type of school: Fall 1995.

Table E.3

This is an elaboration of Table SFY.17 in chapter 1, *Summary*.

This is the first CBMS survey to collect data on the type of instructors who taught each undergraduate course listed in the survey form, except for advanced and upper-level courses. Instructors were grouped according to the following categories: tenured/tenure-eligible faculty, other full-time faculty, part-time faculty, and graduate teaching assistants. Part-time faculty included those who were full-time in the institution but part-time within the department, as well as those who were part-time faculty at the institution. For summary purposes it was assumed that all upper- and advanced-level courses were taught by tenured/tenure-eligible faculty. (Again, percentages in each row within a box total 100%, except for rounding errors.) A more detailed breakdown by level of course and type of institution is found in the next six tables.

TABLE E.3 Percentage of enrollment in undergraduate Mathematics, Statistics and Computer Science courses taught by tenured and tenure-eligible, other full-time, part-time and graduate teaching assistants in Departments of Mathematics and in Departments of Statistics by type of school: Fall 1995.

	Percent of enrollment in math courses taught by					Percent of enrollment in stat courses taught by					Percent of enrollment in CS courses taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	Math enroll. (1000s)	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	Stat enroll. (1000s)	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	CS enroll. (1000s)
Math Depts															
Univ (PhD)	39	14	13	33	100% 587	52	6	10	33	100% 33	82	6	12	0	**100%** 6
Univ (MA)	49	16	22	12	100% 426	75	9	12	4	100% 42	63	17	19	1	100% 25
Coll (BA)	65	10	24	0	100% 456	77	5	19	0	100% 68	68	14	19	0	100% 68
Stat Depts															
Univ (PhD)	Number of math courses taught is too small for reliable estimates.				100% 2	55	8	6	30	100% 62	Number of CS courses taught is too small for reliable estimates.				100% 0
Univ (MA)					100% 0	63	21	15	0	100% 3					100% 1

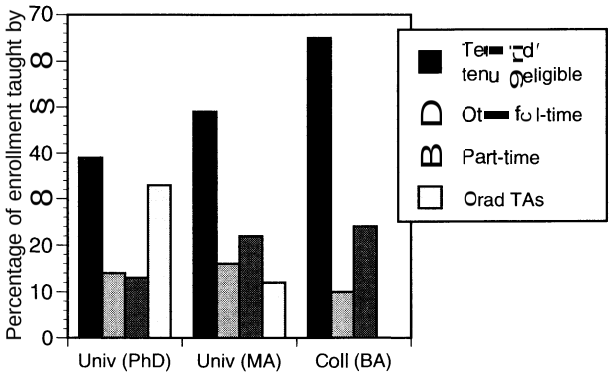

FIGURE E.3.1 Percentage of enrollment in undergraduate Mathematics courses taught by tenured and tenure-eligible, other full-time, part-time and graduate teaching assistants in Departments of Mathematics by type of school: Fall 1995.

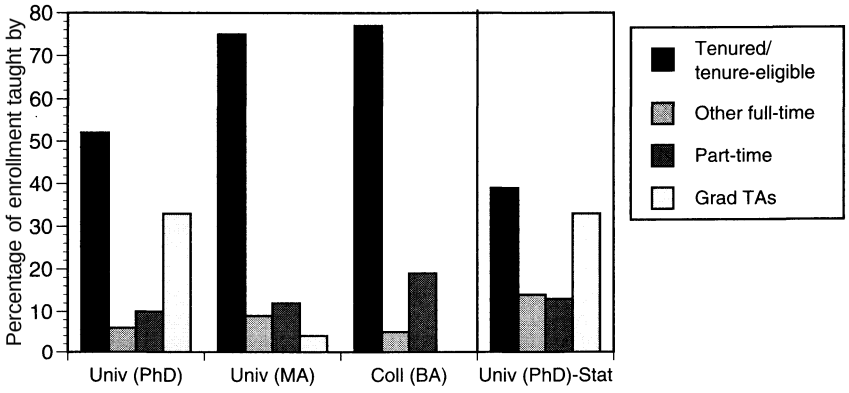

FIGURE E.3.2 Percentage of enrollment in undergraduate Statistics courses taught by tenured and tenure-eligible, other full-time, part-time and graduate teaching assistants in Departments of Mathematics and Departments of Statistics by type of school: Fall 1995.

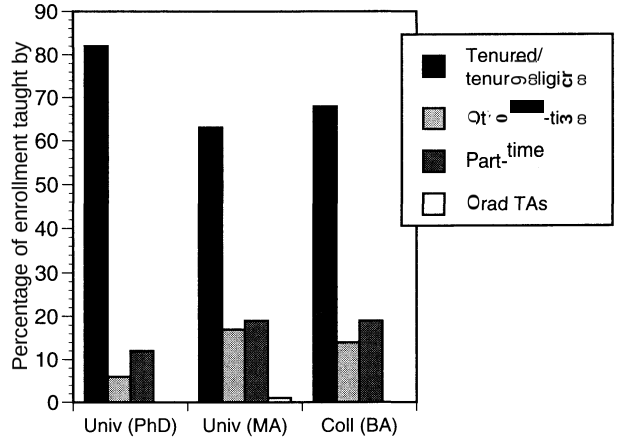

FIGURE E.3.3 Percentage of enrollment in undergraduate Computer Science courses taught by tenured and tenure-eligible, other full-time, part-time and graduate teaching assistants in Departments of Mathematics by type of school: Fall 1995.

Tables E.4-E.9

These tables are an elaboration of Tables SFY.17, SFY.18 and SFY.19 in chapter 1, *Summary*.

This series of tables gives the percentage of enrollment taught by type of institution and type of instructor, with each table devoted to a specific level of courses in mathematics, statistics, and computer science. Perhaps the most contrasting data occur in the precalculus courses where tenured and tenure-eligible faculty at PhD universities teach 18% of the enrollment and the corresponding number for master's-granting universities is 42%, while at four-year colleges 63% of the enrollment is taught by tenured and tenure-eligible faculty. A similar disparity occurs in the elementary-level statistics courses.

The percentage of calculus-level enrollment taught by such faculty does not differ nearly as much as the precalculus percentages. In the calculus-level courses, tenured and tenure-eligible faculty teach 62% of enrollment in PhD universities, 76% of the enrollment in master's-granting universities, and 81% of the enrollment in four-year colleges. In chapter 4, *First-Year Courses: Calculus and Statistics*, similar data are presented for the first two mainstream and non-mainstream calculus courses, as well as the elementary-level statistics courses.

Each row in the main box in these tables totals 100%, except for rounding errors.

Further elaborations of Table E.6 by type of institution, type of calculus course, and method of instruction appear in Tables FY.1 and FY.3 in chapter 4, *First-Year Courses: Mathematics and Statistics.*

Further elaborations of Table E.7 by type of institution, type of statistics course, and method of instruction appear in Tables FY.5 and FY.6 in chapter 4, *First-Year Courses: Calculus and Statistics.*

TABLE E.4 Percentage of enrollment in Remedial level courses taught in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)	1	12	33	54	100% 60
Univ(MA)	12	16	41	30	100% 84
College(BA)	26	12	61	1	100% 78
Total	14	14	46	26	100% 222

TABLE E.5 Percentage of enrollment in Precalculus level courses taught in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)	18	17	16	49	100% 222
Univ(MA)	42	22	24	12	100% 193
College(BA)	63	14	23	0	100% 198
Total	40	18	21	22	100% 613

TABLE E.6 Percentage of enrollment in Calculus level courses taught in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)	62	13	7	19	100% 264
Univ(MA)	76	11	11	2	100% 124
College(BA)	81	7	12	0	100% 150
Total	71	11	9	10	100% 538

TABLE E.7 Percentage of enrollment in Elementary Level Statistics courses taught in Departments of Mathematics and in Departments of Statistics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)	31	8	15	47	100% 23
Univ(MA)	70	11	14	5	**100%** 35
College(BA)	72	4	23	0	100% 57
Total Math Depts	63	7	19	11	100% 115
Stat Depts					
Univ(PhD)	40	11	9	41	100% 46
Univ(MA)	63	21	15	0	100% 3
Total Stat Depts	41	12	9	38	100% 49

TABLE E.8 Percentage of enrollment in Lower Level Computer Science courses taught in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)	73	9	18	0	100% 4
Univ(MA)	54	20	24	2	100% 18
College(BA)	61	15	25	0	100% 52
Total	60	16	24	0	**100%** 74

TABLE E.9 Percentage of enrollment in Middle Level Computer Science courses taught in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Percentage of enrollment taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total enrollment (thousands)
Math Depts					
Univ(PhD)					0
Univ(MA)	68	20	13	0	100% 3
College(BA)	82	17	1	0	100% 10
Total	79	18	4	0	100% 13

Tables E.10, E.11, and E.12

These three tables have no precursors in the *Summary* chapter.

Also: These data have not been collected in prior CBMS surveys. Table E.10 gives the number of sections offered, and Table E.11 gives the corresponding section sizes. Percentages of sections taught by various types of instructors and by type of institution are presented in Table E.12. Tables E.13 through E.18 elaborate on the data presented in Table E.12.

As seen in Table E.10, advanced and upper-level sections in mathematics, statistics, and computer science courses are 18% of the total sections offered for PhD mathematics departments, 15% for MA mathematics departments, 19% for four-year colleges, and 42% in PhD statistics departments.

Both MA and BA mathematics departments devote considerable effort to teaching statistics and computer science courses. Sections of statistics and computer science courses for these two types of institutions account for 21% of all their sections.

In Table E.10, there are several entries for number of sections, mostly in MA departments of statistics, for which the corresponding enrollment has been reported as 0 in previous enrollment tables. This arises when the enrollment is less than 500, which is then rounded to 0. For the sake of completeness, Table E.10 includes the number of sections for these low-enrollment courses.

With enrollment levels below those in 1990, average section sizes have declined somewhat, especially in upper-level and advanced courses.

For the purposes of this survey, it is assumed that all upper- and advanced-level mathematics, statistics, and computer science courses were taught by tenured and tenure-eligible faculty. No data were collected on the type of faculty who taught advanced or upper-level courses.

TABLE E.10 Number of sections of undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics and in Departments of Statistics by level of course and type of school: Fall 1995.

	Number of sections: Fall 1995						
	Math Depts				Stat Depts		
	Univ (PhD)	Univ (MA)	Coll (BA)	Total Math Depts	Univ (PhD)	Univ (MA)	Total Stat Depts
Math courses							
Remedial	1663	2670	2913	7246			0
Precalculus	5258	5673	7036	17967	26		26
Calculus	6061	4280	6932	17273	23		23
Adv math	2531	1886	3640	8057	11	4	15
Total Math courses	15513	14509	20521	50543	60	4	64
Stat courses							
Elem stat	551	1028	1951	3530	748	72	810
Upper level stat	446	482	768	1696	576	48	624
Total Stat courses	997	1511	2719	5227	1324	120	1444
CS courses							
Lower CS	137	796	2431	3364	7	30	37
Middle CS	48	245	651	944		4	4
Upper CS	89	230	652	971		10	10
Total CS courses	274	1271	3734	5279	7	44	51
Total all courses	16784	17291	26974	61049	1391	168	1559

In Ph.D mathematics departments, tenured/tenure-eligible faculty taught a total of 7811 sections of undergraduate mathematical sciences courses. The second report of the AMS-IMS-MAA Data Committee (Notices Amer. Math. Soc., vol. 43, no. 8, pp. 848-858), gives the enrollment in graduate-level courses for Fall 1995 as 28,000. A previous report of this data committee in 1991 gave the average graduate section enrollment at both PhD (and MA) departments of mathematics as 10, giving an estimate of 2800 sections of graduate-level courses. (The CBMS survey does not survey graduate enrollment.) Thus, graduate-level courses account for a little over a quarter of the faculty teaching assignments in Ph.D mathematics departments. The total number of sections taught in PhD mathematics departments, 10,611, when divided by the number of tenured/tenure-eligible faculty not on leave of 4989, gives an average teaching assignment of 2.13 sections per faculty.

(Information on the number of tenured/tenure-eligible faculty by type of department is given in Table E.2 and, in more detail, in Tables F.1-F.3 in chapter 3. The number of tenured/tenure-eligible faculty on leave by type of department is given in the commentary accompanying Tables F.1-F.3 in chapter 3.)

According to the aforementioned AMS-IMS-MAA Data Committee report, MA departments of mathematics had a Fall 1995 graduate enrollment of 18,000, and the number of graduate sections totaled 1800. The CBMS survey shows that there were 9973 undergraduate sections taught by tenured/tenure-eligible faculty, which gives a total of 11,773 sections. The number of tenured/tenure-eligible faculty not on leave for Fall 1995 is 3822, and dividing these two numbers gives an average of 3.08 sections per tenured/tenure-eligible faculty.

A similar computation for BA departments of mathematics, using only undergraduate course enrollment, gives an average number of sections taught by tenured/tenure-eligible faculty as 3.14.

The CBMS survey count of tenured/tenure-eligible faculty does not distinguish among faculty with administrative or other duties who might have reduced teaching duties.

TABLE E.11 Average section size for undergraduate Mathematics, Statistics and Computer Science courses in Departments of Mathematics and in Departments of Statistics by level of course and type of school: Fall 1995. Also all departments' average section sizes for 1985,1990, 1995.

	Average size of sections Fall 1995							
	Math Depts			Stat Depts				
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	All Depts 1985	All Depts 1990	AM Depts 1995
Math courses								
Remedial	36	32	27			32	31	31
Precalculus	42	34	28			35	35	34
Calculus	44	29	22			34	35	31
Adv math	16	14	8			19	16	12
Stat courses								
Elem stat	42	34	29	50	42	37	37	38
Upper level stat	22	15	14	27	23	30	24	19
CS courses								
Lower CS	29	23	21			na	24	22
Middle CS	(1)	12	15			na	15	14
Upper CS	22	17	9			na	14	12

(1) Enrollment in these classes was less than 500.

TABLE E.12 Percentage of sections of undergraduate Mathematics, Statistics and Computer Science courses taught by tenured and tenure-eligible, other full-time, part-time and graduate teaching assistants in Departments of Mathematics and Departments of Statistics by type of school: Fall 1995.

	Percentage of sections of math courses taught by					Percentage of sections of stat courses taught by					Percentage of sections of CS courses taught by				
	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	No. of math sections	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	No. of stat sections	Tenured/ tenure-eligible	Other full-time	Part-time	Grad TAs	No. of CS sections
Math Depts															
Univ (PhD)	45	11	12	31	100% 15513	61	3	8	28	100% 997	81	7	12	0	100% 274
Univ (MA)	54	15	20	10	100% 14509	79	8	10	3	100% 1511	67	15	17	1	100% 1271
Coll (BA)	70	9	21	0	100% 20521	82	3	16	0	100% 2719	73	10	17	0	100% 3734
Total	58	11	18	12	100% 50543	77	4	13	6	100% 5227	72	11	17	0	100% 5279
Stat Depts															
Univ (PhD)	Too few cases in the sample to make reliable estimates.				100% 60	64	10	5	21	100% 1324	Too few cases in the sample to make reliable estimates.				100% 7
Univ (MA)					100% 4	79	13	8	0	100% 120					100% 44
Total						65	10	5	19	100% 1444					

Tables E.13–E.18

These tables further elaborate on the number of sections taught by various types of instructors, by type of institution, and by level of course.

Table E.13 shows quite clearly that in Fall 1995 regular faculty in BA mathematics departments were much more involved in teaching remedial mathematics than regular faculty in PhD mathematics departments. In the former, 25% of remedial sections were taught by tenured and tenure-eligible faculty, while the comparable figure for PhD mathematics departments is 1%. In Table E.14 a similar difference is seen in the precalculus courses with 63% of precalculus sections taught by tenured and tenure-eligible faculty at four-year colleges versus 17% for PhD mathematics departments. In these departments, graduate assistants taught the majority of precalculus sections, 51%. Overall, 43% of precalculus sections were taught by tenured or tenure-eligible faculty.

For calculus-level courses in mathematics departments, 72% of the sections (and 71% of the enrollment) are taught by tenured and tenure-eligible faculty.

An exception to this pattern is seen in the lower-level computer science courses, where tenured and tenure-eligible mathematics faculty teach 61% of the sections offered in mathematics departments.

These tables can be used to estimate the teaching contributions of the part-time mathematics faculty in terms of full-time equivalent (fte) faculty, using the average teaching assignment for tenured/tenure-eligible faculty just computed in the previous commentary.

For the initial computation, remedial-level mathematics courses will not be included in this part-time faculty fte computation.

Beginning this analysis with the PhD mathematics departments and first applying it to calculus-level courses, Table E.15 shows that there were 451 sections of calculus-level courses taught by part-time faculty. Dividing this by 2.13 sections per tenured/tenure-eligible faculty member ratio obtained above, gives a figure of 212 fte faculty. Applying this formula to the the precalculus-level courses, the lower-level statistics courses and, finally, the lower- and middle-level computer science courses makes the part-time mathematics faculty contributions in these courses equal to 444 fte faculty. Adding the two numbers, we obtain a part-time mathematics faculty teaching fte number of 656 for PhD mathematics departments.

The same analysis applied to master's mathematics departments, using the ratio of 3.08 sections per tenured/tenure-eligible faculty obtained above, gives a part-time mathematics faculty fte total of 153 for calculus-level courses and 563 fte for the other four levels of courses, for a total part-time fte total of 716 mathematics faculty.

At the four-year mathematics departments, the ratio of sections per tenured/tenure-eligible faculty member is 3.14, which gives a faculty fte of 260 for calculus-level courses and 855 for the other non-remedial courses. This is a total fte of 1115.

The total part-time fte mathematics faculty for all four-year colleges and universities and for all departmental courses beyond the remedial level is 2487. For just the calculus-level courses, the fte number is 625.

Applying the same analysis to the remedial-level mathematics courses gives an additional part-time fte faculty of 263 for PhD mathematics departments, 359 for MA mathematics departments, and 576 for BA mathematics departments. Thus, the total part-time mathematics faculty has an equivalent fte count of 3685, which is 23% of the tenured and tenure-eligible mathematics faculty.

Using the data found in Tables E.13 to E.18, part-time mathematics faculty taught 16% of the non-remedial enrollment of 1,353,000, and 19% if remedial enrollment is included. While the 1990 CBMS report does not have this level of detail, it did report that 16% of the sections offered in Fall 1990 by four-year and university departments of mathematics were taught by part-time mathematics faculty, while the corresponding number for Fall 1995 is 17%, indicating that the percentage use of part-time faculty has remained about the same.

However, the actual number of part-time faculty declined from 6786 part-time mathematics faculty in Fall 1990 to 5289 part-time mathematics faculty in Fall 1995, a decrease of 22%. While this is twice the percentage decline in enrollment within mathematics departments over this five-year period, the figures in the preceding paragraphs suggest that the percent of part-time teaching is little changed from 1990 to 1995. The number of part-time faculty is difficult to interpret because of the diverse teaching assignments for part-time faculty. Dividing the fte part-time faculty count of 3616 by the actual part-time faculty head count of 5289 (given in Table SF.13 in chapter 1, *Summary)* gives a ratio of about .7, suggesting that .7, not 1/2, is the proper multiplier in converting the number of part-time faculty to their fte equivalent, absent the type of data available in this report.

For summary purposes it was assumed that all upper- and advanced-level courses were taught by tenured/tenure eligible faculty. (The percentages in these tables account for 100% of the teaching, but the numbers may not total 100% because of rounding.)

The use of part-time faculty is quite a bit less in PhD statistics departments. There were 122 part-time faculty reported for Fall 1995.

TABLE E.13 Number of sections of Remedial level courses in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	20	191	561	891	1663
Univ(MA)	327	439	1107	797	2670
College(BA)	728	344	1808	33	2913
Total	1075	974	3476	1721	7246

TABLE E.14 Number of sections of Precalculus level courses in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	886	878	834	2660	5258
Univ(MA)	2415	1250	1367	641	5673
College(BA)	4458	956	1613	9	7036
Total	7759	3084	3814	3310	17967

TABLE E.15 Number of sections of Calculus level courses in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	3576	702	451	1332	6061
Univ(MA)	3301	450	472	57	4280
College(BA)	5594	520	818	0	6932
Total	12471	1672	1741	1389	17273

TABLE E.16 Number of sections of Elementary Level Statistics courses in Departments of Mathematics and in Departments of Statistics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	167	27	76	281	551
Univ(MA)	713	114	151	50	1028
College(BA)	1451	77	423	0	1951
Total Math Depts	2331	218	650	331	3530
Stat Depts					
Univ(PhD)	274	130	70	274	748
Univ(MA)	47	15	10	0	72
Total Stat Depts	321	145	80	274	820

TABLE E.17 Number of sections of Lower Level Computer Science courses in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	94	15	28	0	137
Univ(MA)	453	144	183	16	796
College(BA)	1503	290	638	0	2431
Total	2050	449	849	16	3364

TABLE E.18 Number of sections of Middle Level Computer Science courses in Departments of Mathematics by type of instructor and type of school: Fall 1995.

	Number of sections				
	Tenured/ tenure-eligible	Other full-time	Part-time	Graduate teaching assistants	Total sections
Math Depts					
Univ(PhD)	39	3	6	0	48
Univ(MA)	166	48	31	0	245
College(BA)	567	75	9	0	651
Total	772	126	46	0	944

Chapter 3
Faculty

Data Highlights

The number of full-time mathematics faculty declined by 1163 over 1990 levels, a 6% decline. However, the number of tenured faculty increased slightly. Because tenure-eligible and other full-time faculty were aggregated in the 1990 CBMS survey, it is not possible to discern how the decline is distributed between tenure-eligible and other full-time positions. The largest decline occurred in the BA departments of mathematics, where there were 705 fewer tenure-eligible and other full-time faculty than were reported in 1990. The number of tenured faculty increased by 40 at these departments.

The number of faculty in statistics departments, mostly PhD departments, increased substantially over 1990 levels. However, the number of statistics departments included in the population for the 1995 CBMS survey was significantly larger than for the 1990CBMS survey, which might account for some of the increase. However, there is no doubt that statistics enrollment, and faculty, have enjoyed a nice increase over the last five years.

Both Tables F.2 and F.3 contain relevant data from the 1990 CBMS survey. For mathematics departments, the percentage of women among tenured faculty is smallest for PhD departments, just over 7%, and highest at BA departments, just over 20%, with MA departments in the middle with nearly 16% tenured women faculty. The corresponding percentages of women among tenure-eligible faculty is: PhD departments 20%, BA departments 43%, and MA departments 29%.

There is little difference among the average ages of faculty in the three types of mathematics departments, each hovering around 49 years. The statistics department faculty have about the same average age as well.

Minority representation among mathematics faculty is low, except for Asian/Pacific islanders. White, non-Hispanic faculty comprise between 82% and 93% of mathematics faculty at each of the three types of departments. Statistics faculty at PhD departments are 75% white, non-Hispanic, 18% Asian/Pacific islanders, and 6% Mexican-American, Puerto Rican, and other Hispanics.

Explanation of the Tables

This chapter contains eight tables presenting data on four-year college and university faculty in mathematics and statistics departments, broken down by type of department.

Respondents to this CBMS survey were asked to partition their faculty into four non-overlapping groups: tenured, tenure-eligible, other full-time, and part-time. An instructor was part-time or full-time according to his or her budget designation within the department only, notwithstanding any other institutional position. The group "other full-time" includes all those full-time faculty not specifically tenured or tenure-eligible, i.e., on the tenure track. It includes, then, such appointments as continuing instructor, one-semester full-time appointment, and any postdoctoral position.

The number and percentage of women among the various classifications of faculty and among the ethnic and age categories are mostly new with this survey. Thus, there are not many historical comparisons available. As in previous chapters, if a table primarily presents percentages the 100% number is given and it is accompanied by the 100% symbol.

Tables F.1-F.3

These tables are an elaboration of Tables SF.6, SF.7, and SF.8 in chapter 1, *Summary.*

While the total full-time mathematics faculty decreased by 6% from 1990 levels, this table gives an indication that this decrease is mostly in other than tenured/tenure-eligible faculty. In 1990, the number of tenured mathematics faculty was 12,688, as compared to the 1995 number of 12,779. While previous CBMS surveys did not count the number of tenure-eligible faculty, the 1995 figure of 3329 tenure-eligible faculty is 26% of the tenured faculty, which seems a reasonable percentage. It is probable, then, that the decrease in full-time faculty is mostly in the "other full-time" category, which includes postdoctoral appointments, full-time visitors, full-time non-tenure eligible faculty, etc.

As mentioned previously, the 1990 CBMS surveys did not separate full-time faculty into the three groups, tenured, tenure-eligible, and other full-time, as does this survey. This report makes comparisons with the 1990 CBMS survey where possible.

Previous CBMS reports contain data on the percentage of women faculty. Surveys prior to 1990 did not divide the departments by highest mathematics degree, which makes detailed comparisons with the 1995 survey not possible. However, overall comparisons are still possible. The 1985 survey reported that women were 14% of the full-time mathematics department faculty and 10% of the statistics department faculty. The 1980 CBMS survey reported that 14% of the mathematical sciences faculty were women, up from 10%, as reported in the 1975 CBMS survey. However, in both of these latter two surveys the mathematical sciences faculty was the aggregate mathematics, statistics, and computer science faculty, and neither survey reported data for the separate discipline faculty.

The number of statistics department faculty for Fall 1995 is considerably higher than the 1990 figure, but, again, the list of statistics departments was improved over previous CBMS surveys, so it is difficult to assess the increased statistics numbers.

The number of tenured/tenure-eligible mathematics faculty on leave for Fall 1995 is 474 (9% of the tenured/tenure-eligible faculty) for PhD departments, 210 (5%) for MA departments, and 454 (7%) for BA departments. For PhD statistics departments the number is 45 (5%). These data are from the 1995 CBMS survey and do not appear in any of the tables.

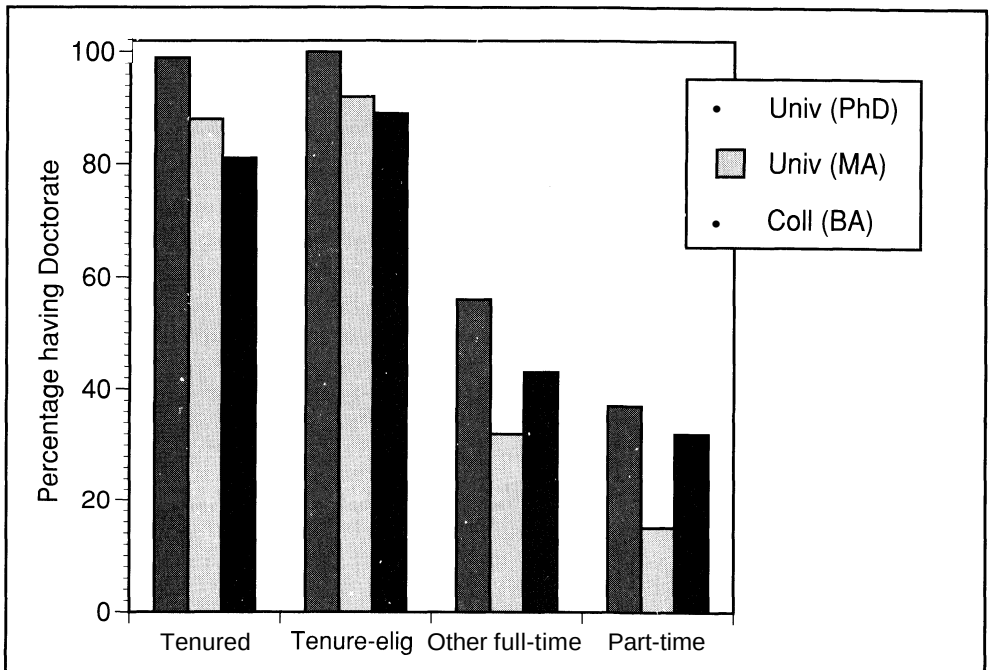

FIGURE F.1 Percentage having Doctorate among tenured, tenure-eligible, other full-time and part-time faculty in Departments of Mathematics by type of school: Fall 1995.

TABLE F.1 Number of tenured, tenure-eligible, other full-time and part-time faculty in Departments of Mathematics and Departments of Statistics by highest degree and type of school: Fall 1995. (Number of women in parentheses)

	Univ (PhD)				Univ (MA)				College (BA)				
	Tenured	Tenure-eligible	Other full-time	Part-time	Tenured	Tenure-eligible	Other full-time	Part-time	Tenured	Tenure-eligible	Other full-time	Part-time	Total
Math Depts													
Doctoral degree	4637 (317)	770 (158)	423 (66)	396 (91)	2821 (397)	750 (199)	235 (60)	222 (56)	3961 (539)	1552 (651)	279 (48)	873 (134)	16919 (2716)
Without doctoral degree	54 (18)	2 (0)	335 (201)	669 (301)	399 (104)	62 (36)	498 (321)	1234 (634)	907 (455)	193 (97)	370 (213)	1895 (913)	6618 (3293)
Total Math Depts	4691 (335)	772 (158)	758 (267)	1065 (392)	3220 (501)	812 (235)	733 (381)	1456 (690)	4868 (994)	1745 (748)	649 (261)	2768 (1047)	23537 (6009)
Stat Depts													
Doctoral degree	647 (32)	171 (36)	33 (8)	90 (16)	79 (8)	20 (2)	3 (2)	6 (2)					1049 (106)
Without doctoral degree	2 (0)	0 (0)	23 (17)	32 (9)	2 (0)	0 (0)	8 (2)	8 (3)					75 (31)
Total Stat Depts	649 (32)	171 (36)	56 (25)	122 (25)	81 (8)	20 (2)	11 (4)	14 (5)					1124 (137)

TABLE F.2 Number of tenured, tenure-eligible, other full-time and part-time faculty in Departments of Mathematics by gender and type of school: Fall 1995. Also some 1990 data.

	Univ (PhD)				Univ (MA)				College (BA)				Totals				
	Tenured	Tenure elig	Other full-time	Part-time	Tenured	Tenure elig	Other full-time	Part-time	Tenured	Tenure elig	Other full-time	Part-time	Tenured	Tenure elig	Other full-time	Part-time	Total
Men	4356	614	491	673	2719	577	352	766	3874	997	388	1721	10949	2188	1231	3160	17528
Women	335	158	267	392	501	235	381	690	994	748	261	1047	1830	1141	909	2129	6009
Total 1995	4691	772	758	1065	3220	812	733	1456	4868	1745	649	2768	12779	3329	2140	5289	23537
Total 1990	4781	1646*		1129	3079	1979*		2052	4828	3098*		3605	12688	6723*		6786	26197
Women 1990		662**		na		1148**		na		2045**		na		3855**		na	

* This number is the total of tenure-eligible and other full-time.

** This number is the total of tenured, tenure-eligible and other full-time.

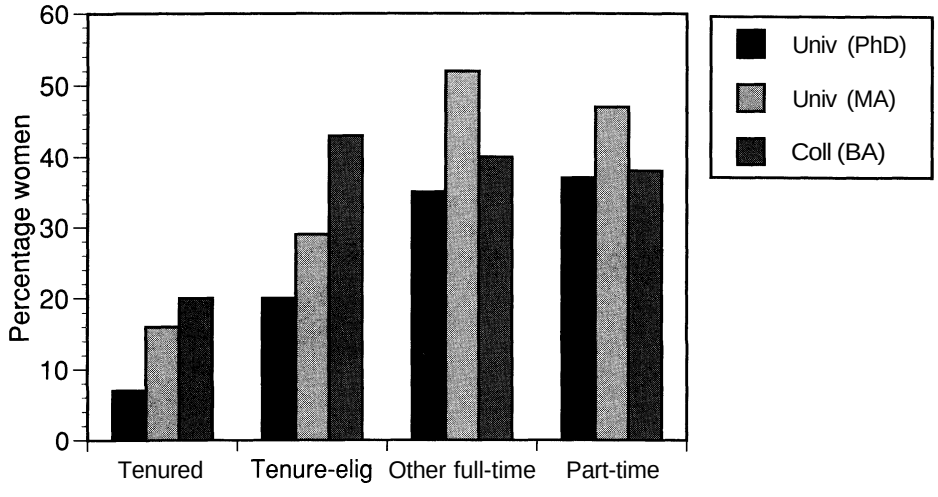

FIGURE F.2 Percentage women among tenured, tenure-eligible, other full-time and part-time faculty in Departments of Mathematics by type of school: Fall 1995.

TABLE F.3 Number of tenured, tenure-eligible, other full-time and part-time faculty in Departments of Statistics by gender and type of school: Fall 1995. Also some 1990 data.

	Univ (PhD)				Univ (MA)				Totals				
	Tenured	Tenure-eligible	Other full-time	Part-time	Tenured	Tenure-eligible	Other full-time	Part-time	Tenured	Tenure-eligible	Other full-time	Part-time	Total
Men	617	135	31	97	73	18	7	9	690	153	38	106	987
Women	32	36	25	25	8	2	4	5	40	38	29	30	137
Total 1995	649	171	56	122	81	20	11	14	730	191	67	136	1124
Total 1990	484	184*		67	40	13*		23	524	197*		90	811
Women 1990		91**		na		12**		na		103**		na	

* This number is the total of tenure-eligible and other full-time.

** This number is the total of tenured, tenure-eligible and other full-time.

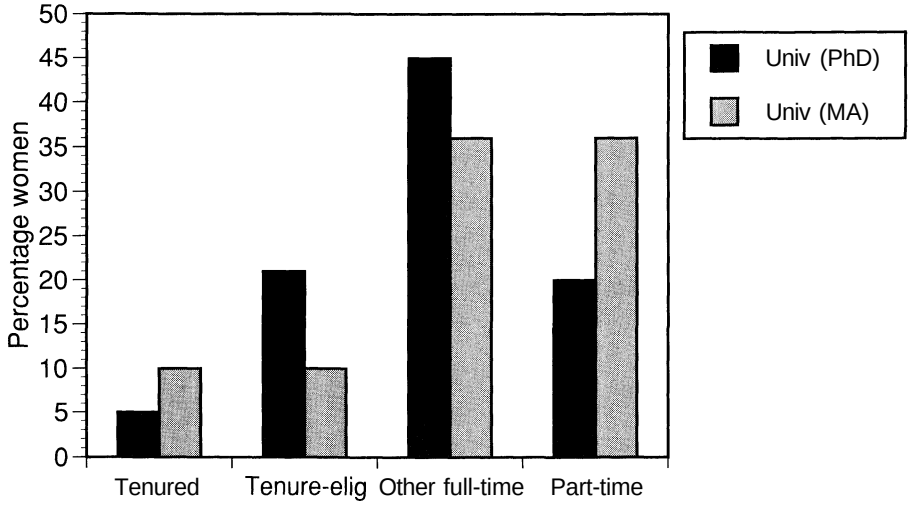

FIGURE F.3 Percentage women among tenured, tenure-eligible, other full-time and part-time faculty in Departments of Statistics by type of school: Fall 1995.

Tables F.4 and F.5

These tables are an elaboration of tables SF.9 and SF.10 in chapter 1, *Summary*.

Within each of the three types of mathematics departments (PhD, MA, and BA) used to present data, the individual percentages—and the "total" row percentages—total 100%, except for rounding errors. For example, in PhD mathematics departments Table F.4 shows that 3% of the tenured male faculty are between the ages of 31 and 35 inclusive. This is 3% of the total PhD department mathematics faculty of 5463, or 164 such faculty.

These two tables cannot be directly compared to previous CBMS age data because of a change in faculty categories used in this survey. Previously, tenured, tenure-eligible, and other full-time faculty were collectively reported as a single group for the age data. For this survey only tenured and tenure-eligible were included in this age data. Thus, the overall median age of 50 for mathematics faculty in Fall 1995 compares to the median age of 46 for the full-time mathematics faculty reported in the 1990 CBMS survey. It is hoped that this new age data will give a more accurate picture of the need for new faculty over the next decade as the average age of tenured faculty increases.

TABLE F.4 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics by type of school and gender: Fall 1995.

	Percentage of faculty										Total tenured/ tenure-eligible faculty	Average age
	<31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70		
Univ(PhD)												
Tenured men	0	3	8	11	11	15	17	10	5	1		52.1
Tenured women	0	0	1	1	1	1	1	0	0	0	100%	48.0
Tenure-eligible men	0	6	3	1	0	0	0	0	0	0	5463*	35.5
Tenure-eligible women	0	1	1	0	0	0	0	0	0	0		35.5
Total Univ(PhD)	1	10	13	13	13	16	18	10	5	1	100% 5463	49.7
Univ (MA)												
Tenured men	0	1	5	9	11	14	16	8	2	0		52.2
Tenured women	0	0	1	2	3	3	2	1	0	0	100%	50.5
Tenure-eligible men	1	4	4	3	1	1	0	0	0	0	4032*	38.8
Tenure-eligible women	1	2	2	1	1	0	0	0	0	0		37.4
Total Univ(MA)	2	7	12	15	16	18	18	9	2	0	100% 4032	49.1
Coll(BA)												
Tenured men	0	1	2	6	8	1	7	1	7	6	2 0	53.4
Tenured women	0	1	2	2	4	1	3	0	0	0	100%	47.2
Tenure-eligible men	2	3	2	2	2	2	0	0	0	0	6613*	40.1
Tenure-eligible women	1	7	1	0	0	2	0	0	0	0		36.7
Total Coll(BA)	4	12	7	10	15	23	21	6	2	0	100% 6613	48.8

0 means less than half of 1%.

* Total for all 4 rows in this block.

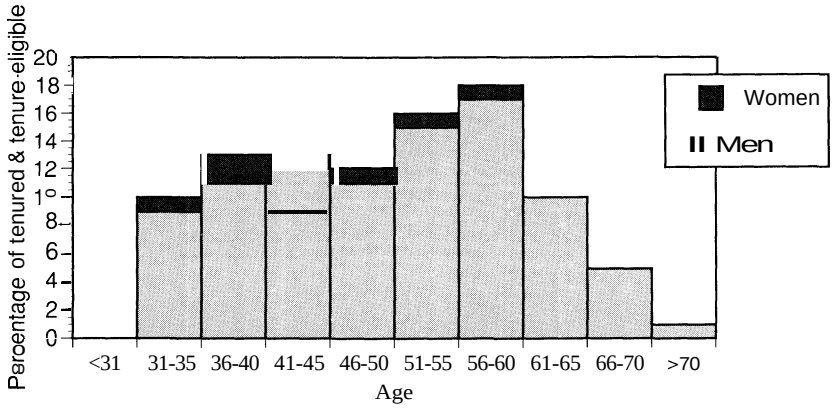

FIGURE F.4.1 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics with PhD programs by gender. Total tenured and tenure-eligible faculty is 5463: Fall 1995.

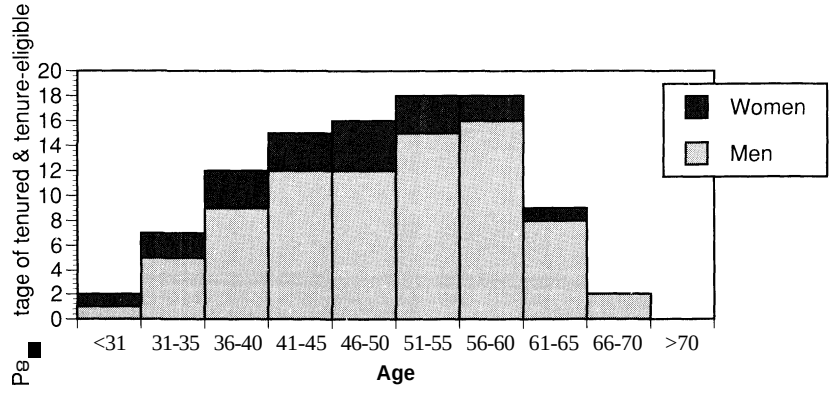

FIGURE F.4.2 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics with MA programs by gender. Total tenured and tenure-eligible faculty is 4032: Fall 1995.

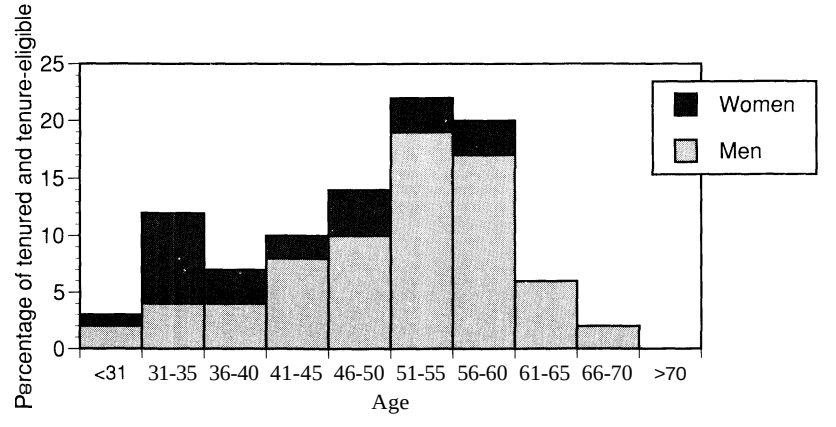

FIGURE F.4.3 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics with BA programs by gender. Total tenured and tenure-eligible faculty is 6613: Fall 1995

TABLE F.5 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Statistics by type of school and gender: Fall 1995.

	Percentage of faculty										Total tenured/ tenure-eligible faculty	Average age
	<31	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	>70		
Univ(PhD)												
Tenured men	0	3	5	11	14	13	16	8	4	2		52.3
Tenured women	0	0	1	1	1	1	0	1	0	0	100%	49.0
Tenure-eligible men	2	9	2	2	1	0	0	0	0	0	820*	35.3
Tenure-eligible women	0	2	2	0	0	0	0	0	0	0		35.5
Total Univ(PhD)	2	14	11	14	16	13	16	8	4	2	100% 820	48.5
Univ (MA)												
Tenured men	0	0	8	(1)	8	32	11	18	0	0		53.6
Tenured women	0	0	(1)	(1)	(1)	0	0	0	0	0	100%	43.0
Tenure-eligible men	0	5	(1)	5	0	0	0	0	0	0	101*	38.0
Tenure-eligible women	0	0	0	0	0	0	0	0	0	0		-
Total Unlv(MA)	0	5	13	11	11	32	11	18	0	0	100% 101	50.8

0 means less than half of 1%.

* Total for all 4 rows in this block.

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

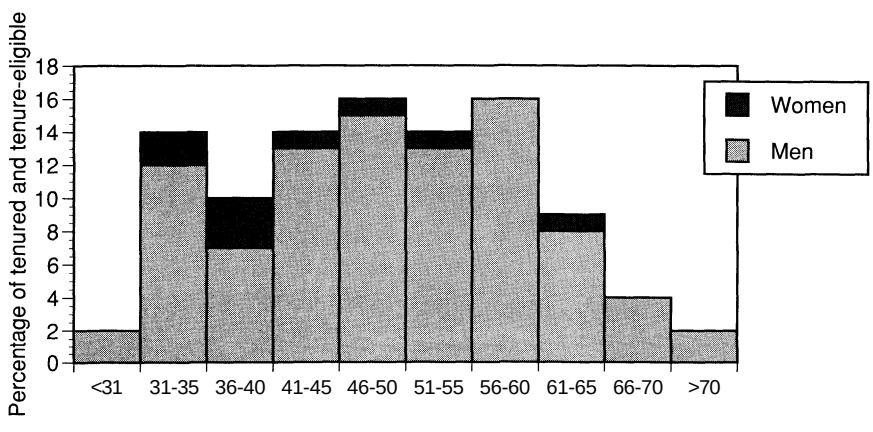

FIGURE F.5 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Statistics with PhD programs by gender. Total tenured and tenure-eligible faculty is 820: Fall 1995.

Tables F.6 and F.7

These tables are an elaboration of Tables SF.11 and SF.12 in chapter 1, *Summary*.

The percentage of women in PhD mathematics departments continues to be less than the percentages in the other two types of mathematics departments. Tenured and tenure-eligible women are 7% of the full-time faculty in PhD mathematics departments as compared to 15% for MA mathematics departments and 21% for BA mathematics departments.

For PhD statistics departments the number of Asian/Pacific Islanders is 18%, with white, non-Hispanic accounting for 73% of full-time faculty. For these same departments tenured and tenure-eligible women are 9% of the full-time faculty.

TABLE F.6 Percentage of gender and of racial/ethnic groups among tenured, tenure-eligible, and other full-time faculty in Departments of Mathematics by type of school: Fall 1995.

	Percentage of faculty						Number of tenured/ tenure-eligible and other full-time faculty
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	
Univ(PhD)							
Tenured men	0	7	1	1	61	1	
Tenured women	0	1	0	0	4	0	
Tenure-eligible men	0	3	0	0	6	0	100%
Tenure-eligible women	0	0	0	0	2	0	6221*
Other full-time men	0	1	0	0	6	0	
Other full-time women	0	1	0	0	4	0	
Total full-time men	0	11	1	2	73	1	100%
Total full-time women	0	1	0	0	10	0	**6221****
Univ(MA)							
Tenured men	0	6	1	1	48	1	
Tenured women	0	1	0	0	9	0	
Tenure-eligible men	0	3	1	1	9	0	100%
Tenure-eligible women	0	1	0	0	4	0	4765*
Other full-time men	0	0	1	0	6	0	
Other full-time women	0	0	1	0	7	0	
Total full-time men	0	9	2	1	62	2	100%
Total full-time women	0	2	1	0	20	1	**4765****
Coll(BA)							
Tenured men	0	1	0	0	52	1	
Tenured women	0	0	2	0	12	0	
Tenure-eligible men	0	1	0	0	14	0	100%
Tenure-eligible women	0	0	0	0	7	0	7262*
Other full-time men	0	0	0	0	5	0	
Other full-time women	0	0	0	0	3	0	
Total full-time men	0	3	1	0	70	1	100%
Total full-time women	0	1	2	0	23	1	**7262****

0 means less than half of 1%.

* Total for all 6 rows in this block.

** Total for both rows in this block.

TABLE F.7 Percentage of gender and of racial/ethnic groups among tenured, tenure-eligible, and other full-time faculty in Departments of Statistics by type of school: Fall 1995.

	Percentage of faculty						Number of tenured/ tenure-eligible and other full-time faculty
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	
Univ(PhD)							
Tenured men	0	12	0	3	55	0	
Tenured women	0	0	0	1	3	0	
Tenure-eligible men	0	3	1	1	11	0	100%
Tenure-eligible women	0	1	0	0	4	0	876*
Other full-time men	0	1	0	0	2	0	
Other full-time women	0	1	0	0	1	0	
Total full-time men	0	16	1	5	67	0	100%
Total full-time women	0	2	0	1	8	0	**876****
Univ(MA)							
Tenured men	0	13	0	(1)	58	(1)	
Tenured women	0	0	0	0	10	0	
Tenure-eligible men	0	8	(1)	0	0	0	100%
Tenure-eligible women	0	0	0	0	0	0	112*
Other full-time men	0	0	0	0	(1)	0	
Other full-time women	0	0	0	0	(1)	0	
Total full-time men	0	20	(1)	(1)	60	(1)	100%
Total full-time women	0	0	0	0	13	0	**112****

0 means less than half of 1%.

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

* Total for all 6 rows in this block.

** Total for both rows in this block.

Table F.8

This table is an elaboration of Tables SF.13 and SF.14 in chapter 1, *Summary.*

The percentages within each of the large boxes total 100%, except for possible rounding errors. These data were not collected in previous CBMS surveys.

TABLE F.8 Percentage of gender and of racial/ethnic groups among part-time faculty in Departments of Mathematics and in Departments of Statistics by type of school: Fall 1995.

	Percentage of part-time faculty						
	American Indian/ Alaskan	Asian/ Pacific Islander	Black, not Hispanic	Mexican American, Puerto Rican, other Hispanic	White, not Hispanic	Not known	Number of part-time faculty
Math Depts							
Univ(PhD)							
Part-time men	0	5	0	1	42	12	100%
Part-time women	0	4	0	0	29	5	1065*
Univ(MA)							
Part-time men	0	3	3	1	47	1	100%
Part-time women	1	3	2	0	36	2	1456*
Coll(BA)							
Part-time men	0	1	1	1	58	2	100%
Part-time women	0	1	1	1	33	2	2768*
Total part-time men	0	2	2	1	51	4	100%
Total part-time women	0	2	1	1	33	3	5289*
Stat Depts							
Univ(PhD)							
Part-time men	0	19	9	(1)	52	0	100%
Part-time women	0	(1)	0	(1)	16	0	122*
Univ(MA)							
Part-time men	Too few sample cases for reliable estimates						100%
Part-time women							**14***
Total part-time men	0	19	7	(1)	51	0	100%
Total part-time women	0	(1)	0	(1)	18	0	136*

0 means less than half of 1%.

* Total for both rows in this block.

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

Chapter 4

First-Year Courses: Calculus and Statistics

Data Highlights

By and large, this chapter contains data not previously collected in CBMS surveys. It shows that, in PhD departments, just under half, 48%, of mainstream Calculus I enrollment was taught in the large lecture/recitation format. Considering only the enrollment in the regular section format of mainstream Calculus I, tenured/tenure-eligible faculty taught just under 50% of the enrollment in these sections at PhD departments, as compared to 77% of the enrollment at MA departments and 84% of the enrollment at BA departments.

On the other hand, there is little difference among departments in the percent of enrollment in mainstream Calculus I that were taught from a "reform" text: 27% for PhD departments, 31% for MA departments, and 29% for BA departments. However, MA departments have the largest percentage of mainstream Calculus I enrollment using graphing calculators, 44%, followed by BA departments at 39%, and PhD departments at 33%. All of these numbers represent substantial increases over the 1990 percentages. For example, in 1990 graphing calculators were used by no more than 3% of the sections of mainstream Calculus I, no matter the type of department.

All of the percentages in the above paragraph are somewhat lower for mainstream Calculus II and quite a bit lower for non-mainstream Calculus I.

Among the various types of departments there is a marked difference in the way that the two statistics courses, elementary statistics and probability and statistics (no calculus prerequisite), were taught. For example, just over a fifth of the students enrolled in elementary statistics at PhD mathematics departments were in a large lecture/recitation format, while at PhD statistics departments this percentage was 33%. On the other hand, 29% of the enrollment of this course is taught by tenured/tenure-eligible faculty at PhD mathematics departments, and at PhD statistics departments the corresponding percentage is 46%. Finally, 42% of the students enrolled in this course in PhD mathematics departments have required computer assignments, while this figure rises to 61% for PhD statistics departments.

Explanation of the Tables

This chapter contains six tables, all in a landscape format, that present data on mainstream and non-mainstream Calculus I and II, elementary statistics, and probability and statistics with no calculus prerequisite.

These tables present data by the different types of departments: PhD, MA, and BA. Whenever one of these tables gives data on the percentage of enrollment taught by various kinds of faculty, the percentages for each type of department total 100%. For example, in Table FY.1, in the first row of data titled "Large lecture with recitation", the percentages given for PhD universities: 76, 17, 5, and 2, total 100% (except for rounding errors). The 100% enrollment for this large lecture course at PhD mathematics departments is 40,500. The actual enrollment, not percentage of enrollment, taught by tenured/tenure-eligible faculty is computed by multiplying 76% (expressed in decimal form .76) and 40,500, which gives an actual enrollment of 30,780. Tables FY.l, FY.3, FY.5, and FY.6 have similar presentations.

In contrast, Tables FY.2 and FY.4 give percentages which do not total 100%. Instead they report on categories of enrollment which may overlap. For example, the same student may be taught from a "reform" text, use a graphing calculator, and be assigned writing assignments, and, so, would be counted in each category.

Only Table FY.2 contains data from the 1990 CBMS survey on the percent of sections of mainstream Calculus I and II that use graphing calculators, have writing assignments, have required computer assignments, and have assigned group projects.

TABLE FY.1 Percentage of enrollment in Mainstream Calculus I and Mainstream Calculus II taught by tenured/tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics by size of sections and type of school: Fall 1995. Also total enrollments (in thousands) and average section sizes.

Course	Percentage of enrollment taught by												Enrollment (thousands)			Ave. section size		
	Tenured/ tenure-eligible			Other full-time			Part-time			Graduate teaching assistants								
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)
Mainstream calculus I																		
Large lecture with recitation	76	100	0	17	0	0	5	0	0	2	0	0	100%	100%	100%	100	84	-
													40.5	2	0			
Regular section <30	42	83	83	14	10	7	9	6	10	35	1	0	100%	100%	100%	24	26	23
													15.5	20	48			
Regular section ≥30	53	70	88	16	16	2	10	12	9	22	3	0	100%	100%	100%	38	35	35
													28	20	18			
Course total	62	77	84	16	12	6	7	9	10	15	2	0	100%	100%	100%	47	30	25
													84	42	66			
Mainstream calculus II																		
Large lecture with recitation	68	0	0	15	0	0	5	0	0	12	0	0	100%	100%	100%	84	-	-
													18	0	0			
Regular section <30	58	84	88	7	11	11	9	6	1	26	0	0	100%	100%	100%	25	24	18
													10	10	20			
Regular section ≥30	50	83	88	16	11	6	7	5	6	27	0	0	100%	100%	100%	39	35	34
													14	16	5			
Course total	59	84	88	13	11	10	7	5	2	20	0	0	100%	100%	100%	43	28	20
													42	16	25			
Total mainstream calculus I & II	61	79	85	15	12	7	7	8	8	17	0	0	100%	100%	100%	46	29	23
													126	58	91			

Tables FY.1 and FY.2

These tables are an elaboration of Tables SFY.18 and SFY.19 in chapter 1, *Summary*.

These tables give detailed information on the different kinds of instructors who teach mainstream Calculus I and II and what instructional format is used to teach these courses at the various types of institutions. While there are striking differences in some of the percentages according to the type of institution and format of the course, the number of students for each percentage should be considered when making comparisons. When the actual number of students is considered, instead of percentages, some of the differences are moderated. For example, Table FY.2 shows that in BA departments of mathematics the percentage of students enrolled in regular sections of mainstream Calculus I using graphing calculators was 29% for those regular sections with fewer than 30

students, but 63% for those regular sections with 30 or more students. The total enrollment was 48,000 for the smaller enrollment sections and 18,000 for the larger enrollment sections. This means that nearly 14,000 students enrolled in the smaller enrollment sections used graphing calculators, as compared to a little over 11,000 students in the larger enrollment sections who used graphing calculators.

A second example is, again, in the use of graphing calculators in mainstream Calculus I, this time in PhD universities. The percentage of students varies greatly according to the instructional format, but the actual number of students in each format who use graphing calculators varies little, ranging between 8400 and 10,100.

TABLE FY.2 Percentage of enrollment in Mainstream Calculus I and Mainstream Calculus II taught using various reform methods in Departments of Mathematics by size of sections and type of school: Fall 1995. Also total enrollments (thousands) and average section sizes.

Course	Percentage of enrollment															Enrollment (thousands)			Ave. section size		
	taught from a "reform" text*			using graphing calculators			having writing assignments			having required computer assignments			having assigned group projects								
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)
Mainstream calculus I																					
Large lecture with recitation	30	20	0	25	20	0	23	20	0	18	20	0	28	20	0	40.5	2	0	100	84	-
Regular section <30	44	39	23	60	52	29	37	16	19	17	23	13	25	21	23	15.5	20	48	24	26	23
Regular section ≥30	13	24	44	30	37	63	8	14	45	8	19	38	9	10	40	28	20	18	38	35	35
Course total	27	31	29	33	44	39	21	16	27	15	21	20	21	16	28	84	42	66	47	30	25
1990 percent. of sections	na	na	na	3	3	2	2	2	21	5	8	14	1	2	5						
Mainstream calculus II																					
Large lecture with recitation	15	0	0	18	0	0	14	0	0	18	0	0	21	0	0	18	0	0	84	-	-
Regular section <30	18	22	25	30	33	36	20	16	46	14	19	21	7	14	34	10	10	20	25	24	18
Regular section ≥30	18	18	8	37	31	12	12	4	25	11	18	17	12	10	20	14	16	5	39	35	34
Course total	17	20	22	27	32	32	17	11	42	15	18	20	15	12	31	42	16	25	43	28	20
1990 percent. of sections	na	na	na	3	1	2	2	1	23	3	7	10	1	1	3						
Total mainstream calculus I & II	24	28	27	31	41	37	20	15	31	15	20	20	19	15	29	126	58	91	46	29	23

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

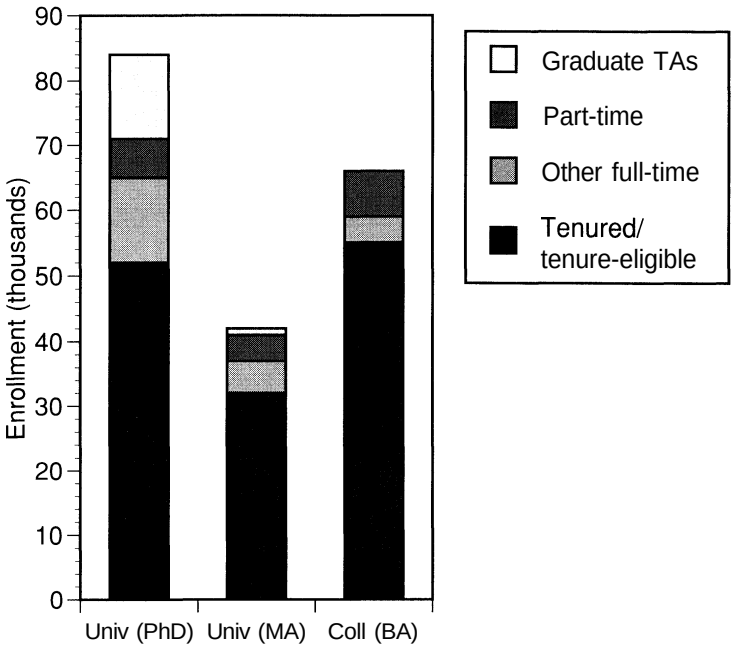

FIGURE FY.1.1 Enrollment in Mainstream Calculus I in Departments of Mathematics by type of instructor and type of school: Fall 1995.

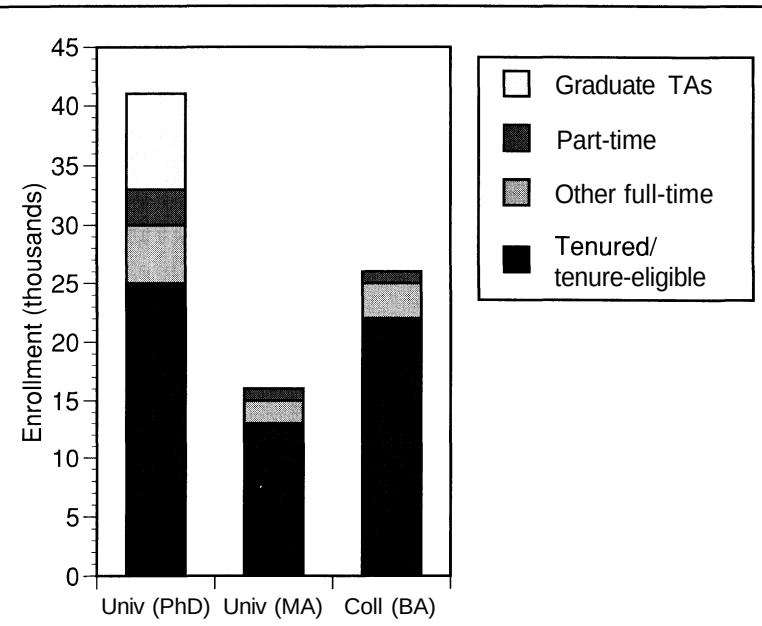

FIGURE FY.1.2 Enrollment in Mainstream Calculus II in Departments of Mathematics by type of instructor and type of school: Fall 1995.

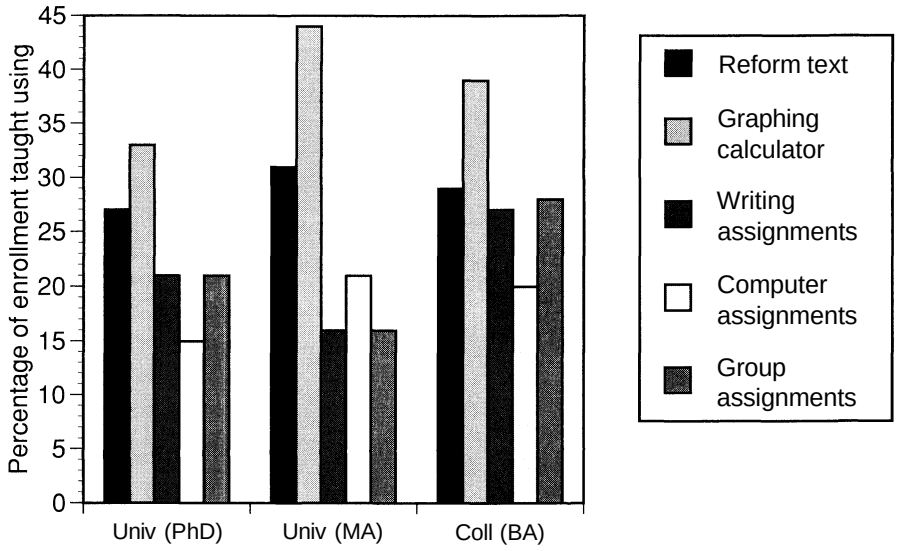

FIGURE FY.2.1 Percentage of enrollment in Mainstream Calculus I taught using various reform methods in Departments of Mathematics by type of school: Fall 1995.

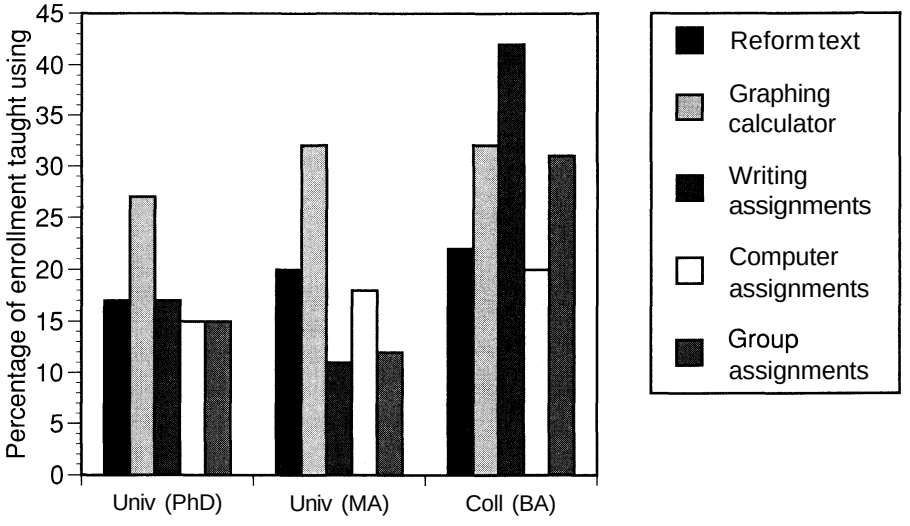

FIGURE FY.2.2 Percentage of enrollment in Mainstream Calculus II taught using various reform methods in Departments of Mathematics by type of school: Fall 1995.

Tables FY.3 and FY.4

These tables are an elaboration of Tables SFY.20 and SFY.21 in chapter 1, *Summary*.

In PhD mathematics departments, graduate teaching assistants teach 32% of the students enrolled in the non-mainstream calculus, while at the MA and BA mathematics departments part-time faculty teach about the same percentage of students enrolled in these same courses.

There seems to be some use of "reform" material in small sections of non-mainstream Calculus I taught at PhD universities, but little use of such material elsewhere in the non-mainstream calculus courses.

TABLE FY.3 Percentage of enrollment in Non-mainstream Calculus I and Non-mainstream Calculus II taught by tenured/tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics by size of sections and type of school: Fall 1995. Also total enrollments (in thousands) and average section sizes.

Course	Percentage of enrollment taught by												Enrollment (thousands)			Ave. section size		
	Tenured/ tenure-eligible			Other full-time			Part-time			Graduate teaching assistants								
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)
Non-mainstream calculus I																		
Large lecture with recitation	84	0	0	10	0	0	2	0	0	4	0	0	100% 16.0	100% 0	100% 0	108	-	-
Regular section <30	45	53	60	11	11	4	7	36	36	36	0	0	100% 4.5	100% 10.5	100% 12.5	24	26	22
Regular section ≥30	36	52	83	9	20	2	11	21	15	44	7	0	100% 29.5	100% 16.5	100% 7.5	51	38	36
Course total	52	53	69	10	16	3	8	26	29	30	5	0	100% 50	100% 27	100% 20	54	33	26
Non-mainstream calculus II																		
All sections	39	53	52	8	23	12	10	24	36	44	0	0	100% 10	100% 2	100% 2	42	25	21
Course total	39	53	52	8	23	12	10	24	36	44	0	0	100% 10	100% 2	100% 2	42	25	21
Total Non-mainstream calculus I & II	50	53	67	10	16	4	8	26	30	32	5	0	100% 60	100% 29	100% 22	52	32	25

TABLE FY.4 Percentage of enrollment in Non-mainstream Calculus I taught using various reform methods in Departments of Mathematics by size of Sections and type of School: Fall 1995. Also total enrollments (thousands) and average section size

Course	Percentage of Enrollment																				
	taught from a "reform" text*			using graphing calculators			writing assignments			having required computer assignments			having assigned group projects			Enrollment (thousands)			Ave. section size		
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)
Non-mainstream calculus I																					
Large lecture with recitation	60	0	0	4	0	0	10	0	0	01	0	0	60	0	0	16.0	1.0	0.6	108	-	-
Regular section <30	5	0	0	1	14	10	0	10	11	7	6	15	0	1	11	4.5	10.01	12.5	24	26	10
Regular section ≥30	24	10	6	9	11	01	6	5	6	10	01	3	6	01	10	6.01	16.01	7.0	51	38	30
Course total	16	8	**6**	15	**20**	**34**	6	**4**	**14**	8	**7**	**11**	01	8	11	9	**27**	**20**	**54**	38	10

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

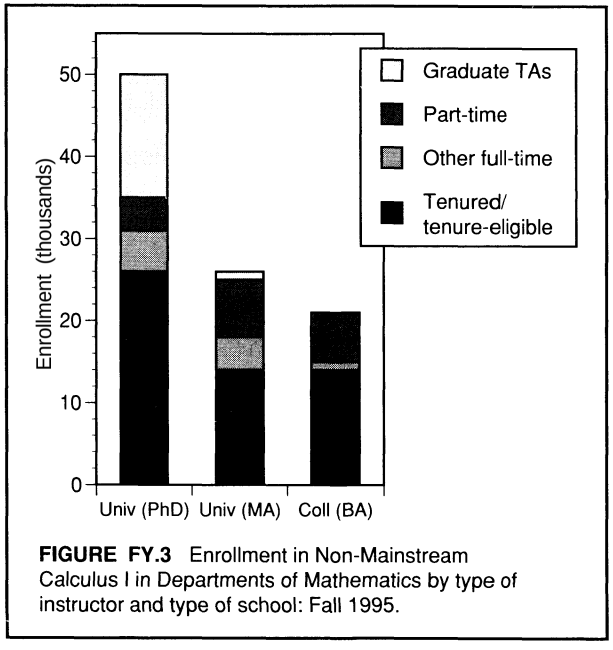

FIGURE FY.3 Enrollment in Non-Mainstream Calculus I in Departments of Mathematics by type of instructor and type of school: Fall 1995.

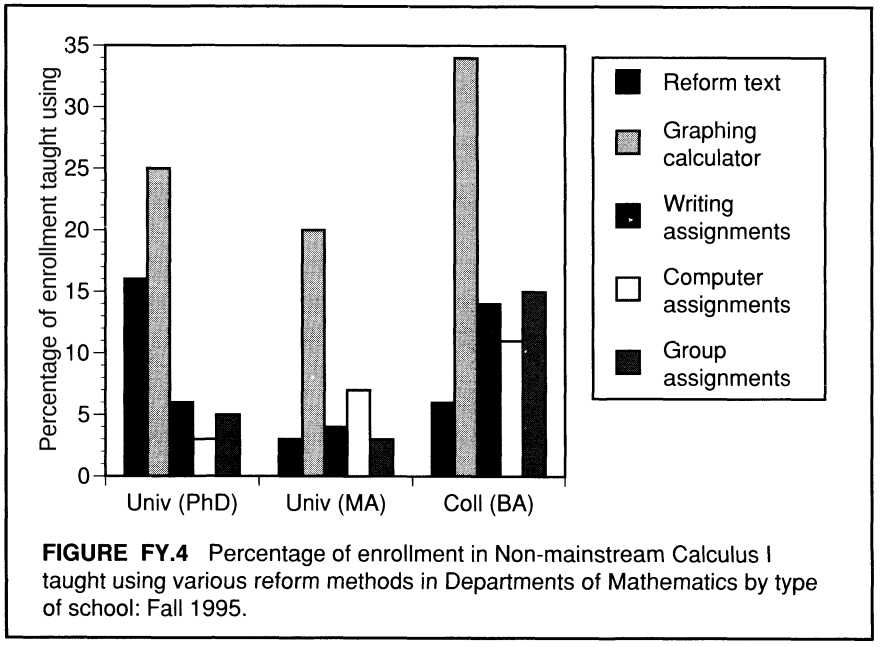

FIGURE FY.4 Percentage of enrollment in Non-mainstream Calculus I taught using various reform methods in Departments of Mathematics by type of school: Fall 1995.

Tables FY.5 and FY.6

These tables are an elaboration of Tables SFY.22 and SFY.23 in chapter 1, *Summary.*

While there are some differences in the way these two courses are offered between PhD statistics departments and the three types of mathematics departments, the one large difference is the percentage of students who have required computer assignments. In PhD statistics departments, 60% of the students in these two courses have required computer assignments, compared to 39% of students enrolled in these courses in PhD mathematics departments. Perhaps this disparity has to do with the type of faculty offering the courses. In PhD mathematics departments, 31% percent of students enrolled in these two courses are taught by tenured or tenure-eligible faculty, while the comparable figure for statistics PhD departments is 41%. On the other hand, it could be the result of different approaches to the course by the two departments.

TABLE FY.5 Percentage of enrollment in Elementary Statistics (no calculus) and Probability and Statistics (no calculus) taught by tenured/tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Mathematics by size of sections and type of school: Fall 1995. Also percentage of students in classes requiring computer assignments, total enrollments (in thousands) and average section sizes.

Course	Percentage of enrollment taught by												Enrollment (thousands)			% of students having required computer assigns.			Ave. section size		
	Tenured/ tenure-eligible			Other full-time			Part-time			Graduate teaching assistants											
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)
Elementary Statistics (no calculus)																					
Lecture with recitation	41	100	0	35	0	0	24	0	0	0	0	0	100% 3.5	100% 1	100% 0	26	0	0	175	130	-
Regular section <30	0	69	88	0	10	2	0	17	10	0	4	0	100% 0.0	100% 8	100% 17	0	26	65	-	25	23
Regular section ≥30	26	67	65	4	12	7	14	14	28	56	7	0	100% 13.5	100% 20	100% 34	46	33	63	40	41	35
Course total	29	69	73	10	11	5	16	15	22	46	6	0	100% 17	100% 29	100% 51	42	30	64	45	35	30
Probability and Statistics (no calculus)																					
All sections	36	75	69	1	12	0	12	10	31	51	3	0	100% 6	100% 6	100% 6	31	53	34	34	31	27
Course total	36	75	69	1	12	0	12	10	31	51	3	0	100% 6	100% 6	100% 6	31	53	34	34	31	27
Total both courses	31	70	72	8	11	5	15	14	23	47	5	0	100% 23	100% 35	100% 57	39	34	61	41	34	30

TABLE FY.6 Percentage of enrollment in Elementary Statistics (no calculus) and Probability and Statistics (no calculus) taught by tenured/tenure-eligible, other full-time, part-time, and graduate teaching assistants in Departments of Statistics by size of sections and type of school: Fall 1995. Also percentage of students in classes requiring computer assignments, total enrollments (in thousands) and average section sizes.

Course	Percentage of enrollment taught by								Enrollment (thousands)		% of students having required computer assigns.		Ave. section size	
	Tenured/ tenure-eligible		Other full-time		Part-time		Graduate teaching assistants							
	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)	Univ (PhD)	Univ (MA)
Elementary Statistics (no calculus)														
Lecture with recitation	74	0	10	0	7	0	9	0	100% 11	100% 0	71	0	175	-
Regular section <30	49	0	44	0	7	0	0	0	100% 5	100% 0	97	0	22	-
Regular section ≥30	27	50	8	25	11	25	54	0	100% 17	100% 2	44	25	48	45
Course total	46	50	14	25	9	25	31	0	100% 33	100% 2	61	25	52	45
Probability and Statistics (no calculus)														
All sections	19	86	2	14	4	0	75	0	100% 7	100% 1	58	43	52	30
Course total	19	86	2	14	4	0	75	0	100% 7	100% 1	58	43	52	30
Total both courses	41	63	12	21	8	17	39	0	100% 40	100% 3	60	39	52	39

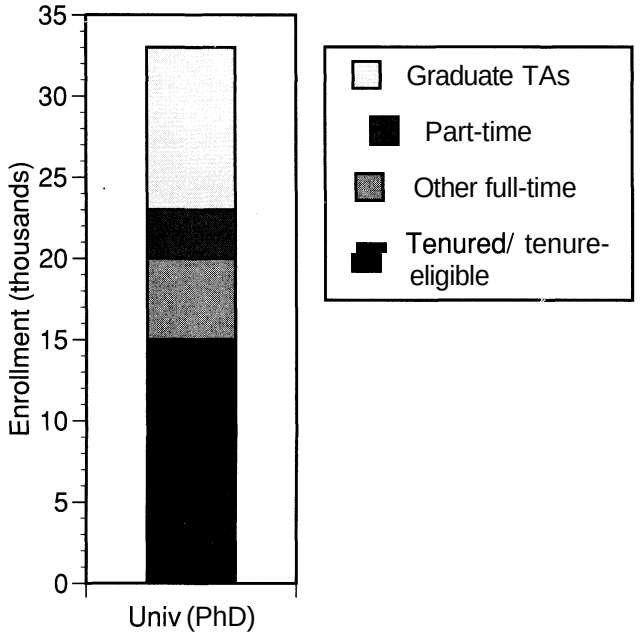

FIGURE FY.6 Enrollment in Elementary Statistics (no calculus) in Departments of Statistics with PhD programs by type of instructor: Fall 1995.

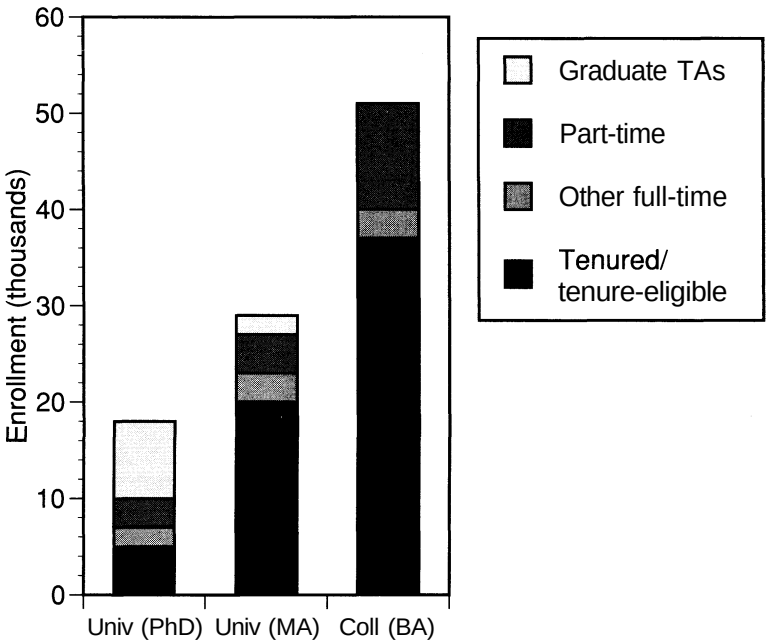

FIGURE FY.5 Enrollment in Elementary Statistics (no calculus) in Departments of Mathematics by type of instructor and type of school: Fall 1995.

Chapter 5
Advising and Computer Access

Data Highlights

This chapter presents a general overview of advising practices for undergraduate departmental majors. In just over half of BA departments undergraduate mathematics majors are assigned an advisor each year. This percentage is 75% for MA departments, and 67% for PhD departments. Again, in about half of all mathematics departments, departmental majors are required to have at least one meeting per year with a department advisor. At PhD mathematics departments, tenured/tenure-eligible faculty are not likely to be involved with undergraduate advising, with only 27% of such faculty having such duties. This is in contrast to MA and BA departments, where 67% and 68% of the tenured/tenure-eligible faculty have advising duties.

Most full-time faculty have a computer or terminal in their office, with a low of 91% at MA schools to a high of 98% at PhD departments of statistics. Most of the remaining faculty have access to a computer or terminal elsewhere on campus. At BA schools, 88% of the mathematics faculty have access to the Internet, and this percentage increases to 90% for MA schools and 94% at PhD schools. PhD statistics departments have 97% of faculty with Internet access.

About half of the PhD mathematics departments have one fte computer systems support staff on the departmental budget, although 12% of PhD departments have at least three such fte staff on their budget.

Explanation of Tables

This chapter contains five tables which present data on advising practices for departmental majors and faculty computer access.

In Tables AC.1 and AC.2, the percentages in each column within each box total 100%. Each of the row descriptors are meant to be mutually exclusive.

In some institutions, departmental majors are formally identified during the second year and, so, may not be assigned a mathematics department advisor prior to this. "Other" methods of advising majors were not recorded.

In MA and Ph.D departments, the faculty participation in the advising of graduate students was not included in these tables, and, so, the percentage of faculty involved in advising undergraduate majors understates the actual advising duties of faculty.

Tables AC.1 and AC.2

These tables are an elaboration of Table SAC.25 in chapter 1, *Summary*.

For each type of department, the choices listed in each table within each data box are mutually exclusive, so that the column percentages within each data box add up to 100%, aside from possible rounding errors. Because these are the first such data collected by the CBMS survey on advising practices, it is difficult to assess the implications of these data. The director of the CBMS survey is not aware of any comparable data from other surveys, either in the mathematical sciences or, for that matter, in any other academic discipline. This survey asked about advising practices for departmental majors only; some faculty may advise undergraduates before they declare a formal major or advise graduate students, but these duties were not included in this survey.

TABLE AC.1 Percentage of Departments of Mathematics assigning departmental advisors by level of departmental majors, frequency of meetings and type of school. Also percentage of tenured and tenure-eligible faculty assigned to advise departmental majors: Fall 1995.

Departments	Univ (PhD)	Univ (MA)	Coll (BA)
	Percentage of departments where	Percentage of departments where	Percentage of departments where
Departmental majors are assigned a departmental advisor each year	67	75	53
Departmental majors are assigned a departmental advisor in their 1st and 2nd years only	5	5	8
Departmental majors are assigned a departmental advisor in their 3rd and 4th years only	16	11	35
Other methods are used to advise departmental majors	12	9	5
Number of departments	100% 169	100% 242	100% 985
Meetings with departmental advisor:			
No meetings are required	36	45	45
There is at least one required	49	48	48
There is at least one required meeting in students' 3rd and 4th years only	16	8	8
Number of departments	100% 169	100% 242	100% 985
Number of tenured and tenure-eligible faculty	5463	4032	6613
Percentage of tenured and tenure-eligible faculty assigned to advise undergraduate departmental majors in Fall 1995	27	67	68

TABLE AC.2 Percentage of Departments of Statistics assigning departmental advisors by level of departmental majors, frequency of meetings and type of school. Also percentage of tenured and tenure-eligible faculty assigned to advise departmental majors: Fall 1995.

Departments	Univ (PhD)	Univ (MA)
	Percentage of departments where	Percentage of departments where
Departmental majors are assigned a departmental advisor each year	61	75
Departmental majors are assigned a departmental advisor in their 1st and 2nd years only	17	25
Departmental majors are assigned a departmental advisor in their 3rd and 4th years only	10	0
Other methods are used to advise departmental majors	13	0
Number of departments	100% 67	100% 8
Meetings with departmental advisor:		
No meetings are required	41	38
There is at least one required	59	63
There is at least one required meeting in students' 3rd and 4th years only	0	0
Number of departments	100% 67	100% 8
Number of tenured and tenure-eligible faculty	820	101
Percentage of tenured and tenure-eligible faculty assigned to advise undergraduate departmental majors in Fall 1995	13	100

Table AC.3

This table is an elaboration of Table SAC.25 in chapter 1, *Summary*.

Because this is a report on the primary source of advising information, each row total 100%, aside from rounding errors. In advising on K-12 teaching, it is not surprising that a large percentage of departmental majors are advised by "other" parts of the institution, mostly, it is presumed, in the School of Education.

TABLE AC.3 Percentage of Departments of Mathematics and Departments of Statistics having various primary sources of advising information for departmental majors by type of school: Fall 95.

		Percentage of departments				
Topic	Total no. / percentage of departments	Departmental advisor	Career services office	Outside speakers	Club for majors	Other
Math Depts						
Univ (PhD)	169					
Non-teaching careers	100%	51	46	0	0	4
K-12 teaching	100%	62	15	0	0	23
Graduate school	100%	86	1	0	1	12
Univ (MA)	242					
Non-teaching careers	100%	67	23	4	5	1
K-12 teaching	100%	71	10	0	0	19
Graduate school	100%	90	2	0	0	8
College (BA)	985					
Non-teaching careers	100%	46	51	0	3	1
K-12 teaching	100%	80	5	0	1	14
Graduate school	100%	97	1	1	1	1
Stat Depts						
Univ (PhD)	67					
Non-teaching careers	100%	75	21	0	0	4
K-12 teaching	100%	41	41	0	0	18
Graduate school	100%	100	0	0	0	0
Univ (MA)	8					
Non-teaching careers	100%	50	50	0	0	0
K-12 teaching	100%	50	50	0	0	0
Graduate school	100%	100	0	0	0	0

Table AC.4

This table is an elaboration of Table SAC.26 in chapter 1, *Summary*.

The first two figures within each box give the percentage of faculty with access to a computer in their office, or if not there, then somewhere on campus and are mutually exclusive. For example, 92% of the mathematics faculty in PhD mathematics departments have a computer or terminal in their office (and possibly have access elsewhere as well) and of the remaining 8% of the faculty, half (4%) have access not in their office but elsewhere on campus. The figures show that almost all faculty have some kind of access, and that a lesser, but still large, percentage of faculty have access to the Internet. There is little difference in availability of computers or access to the Internet across the different types of departments. Again, this material was not collected in past CBMS surveys.

TABLE AC.4 Percentage of Departments of Mathematics and Departments of Statistics having computers or terminals available to and access to Internet for full-time faculty by type of school: Fall 1995.

	Number of full-time faculty	Percentage of full-time faculty
Math Depts		
Univ (PhD)	6221	100%
Have a computer or terminal in office		92
Have access to a computer or terminal elsewhere on campus		4
Have access to Internet		94
Univ (MA)	4765	100%
Have a computer or terminal in office		91
Have access to a computer or terminal elsewhere on campus		8
Have access to Internet		90
Coll (BA)	7262	100%
Have a computer or terminal in office		93
Have access to a computer or terminal elsewhere on campus		6
Have access to Internet		88
Stat Depts		
Univ (PhD)	876	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
Univ (MA)	112	100%
Have a computer or terminal in office		94
Have access to a computer or terminal elsewhere on campus		0
Have access to Internet		94

Table AC. 5

This table is an elaboration of Table SAC.27 in chapter 1, *Summary*.

These figures are for departmental computer support staff and are fte figures. Departments may well have support staff for their computer systems that are based outside the department. This survey did not collect information on such support staff, only those staff who were departmental support staff, that is, funded from the departmental budget.

TABLE AC.5 Percentage of Departments of Mathematics and Departments of Statistics having departmental computer systems support staff by type of school: Fall 1995.

	Univ (PhD)		Univ (MA)		Coll (BA)	
Number of FTE computer systems support staff	Number of departments	Percentage of departments	Number of departments	Percentage of departments	Number of departments	Percentage of departments
Math Depts	169	100%	242	100%	985	100%
0		34		70		85
1		48		22		14
2		7		1		1
3 or more		12		6		0
Stat Depts	67	100%	8	100%		
0		19		50		
1		60		50		
2		13		0		
3 or more		8		0		

Chapter 6

Enrollment, Course Offerings, and Instructional Practices in Two-Year College Mathematics Programs

This chapter reports estimated enrollment and instructional practices in courses offered in Fall 1995 in the approximately 1023 two-year college mathematics programs in the United States. Total enrollment in two-year colleges, average class size, trends in availability of mathematics courses, enrollment in mathematics courses offered outside of mathematics programs, and services available to mathematics students are also included in this chapter. The data are compared with the results of the 1966, 1970, 1975, 1980, 1985, and 1990 CBMS surveys.

This survey did not include the approximately 600 (mostly small) two-year colleges that operate for profit, many of which do not have mathematics programs.

Unlike previous surveys, computer science courses taught outside the mathematics program and the faculty who taught them were not considered part of the "mathematics program" in the 1995 survey. So except for Tables TYR.15 and TYR.16, this report does not include computer science courses taught, for example, by a separate computer science department.

The numbers given for two-year colleges in this report were projected from a stratified random sample of 250 non-profit two-year colleges with mathematics programs. Survey forms were returned by 163 colleges (65% of the sample), 156 public and 7 private. For more information on the sampling procedure used in this survey, see Appendix II. A copy of the two-year college questionnaire may be found in Appendix V.

Highlights

- Although the number of students enrolled in two-year colleges dropped *8%* between 1990 and 1994, enrollment in courses taught in two-year college mathematics programs continued to climb.
- Two-year colleges accounted for 46% of all collegiate mathematics enrollment.
- Enrollment in remedial classes accounted for over half of mathematics program enrollment. However, courses at the remedial level accounted for less than half of the overall increase in enrollment in mathematics courses from 1990 to 1995.
- Mathematics courses that showed big percentage increases were pre-algebra, elementary algebra, college algebra, precalculus, mathematics for elementary school teachers, and elementary statistics. Large percentage drops in enrollment occurred in arithmetic, non-mainstream calculus, finite mathematics, and mathematics for liberal arts.
- Courses such as linear algebra, mathematics for liberal arts, and mathematics for elementary school teachers were offered at fewer than half of the two-year colleges with mathematics programs.
- The average section size in all mathematics courses was 25.5 and the average section size of individual courses did not vary much from that. Fewer than 1% of sections had an enrollment above 60.
- Part-time faculty members were 65% of the total faculty and taught 38% of the sections. This percentage varied by type of course, with part-time faculty members teaching 47% of remedial courses and 17% of mainstream calculus courses.
- The predominant instructional method continued to be the standard lecture method in all except some computer science courses. The graphing calculator was widely used in precalculus and calculus courses. Group projects were a part of about one in five calculus courses, as was a writing component.
- Virtually all two-year colleges with mathematics programs had diagnostic or placement testing. Ninety-three percent had a math lab or tutorial center.

Enrollment, Class Size, and Course Offerings

Trends in the number of two-year college students, 1966-1994

About 5,400,000 students were enrolled in two-year colleges in Fall 1994. Between 1990 and 1994, the number of students enrolled in two-year colleges in the United States fell *8%* (see Table TYR.1). Enrollment in two-year colleges in Fall 1994 constituted 38% of the total enrollment in postsecondary institutions [National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), available on the NCES web page]. The IPEDS survey found that the vast majority of two-year college students (94%) were enrolled in public colleges rather than in private or for-profit colleges.

TABLE TYR.1 Total enrollment and percentage part-time in two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1994.

	1966	1970	1975	1980	1985	1990	1994
Number of students	1,464,099	2,499,837	4,069,279	4,825,931	4,730,235	5,850,803	5,396,636
Percentage part-time	46	48	54	63	65	65	64

Source 1966-1990: Community, Junior, and Technical College Directory, 1967, 1972, 1976, 1981, 1986, and 1991, AACJC, One Dupont Circle, NW, Washington, DC 20036.

Source 1994: American Association of Community Colleges, 1994 Fall Survey.

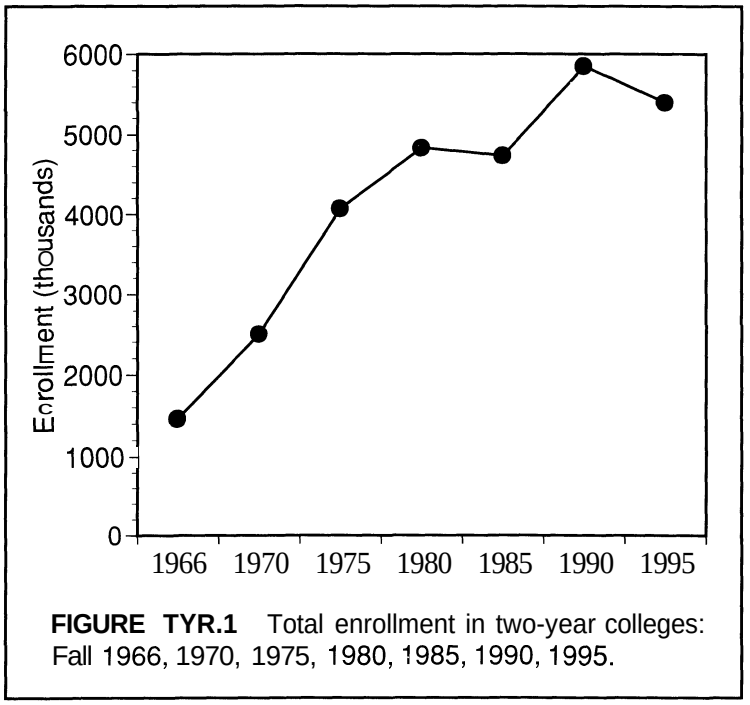

FIGURE TYR.1 Total enrollment in two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

Trends in enrollment in two-year college mathematics programs, 1966-1995

While overall two-year college enrollment dropped, enrollment in mathematics courses, including statistics, in mathematics programs continued to climb, increasing by 12% in five years.

Table TYR.2 includes enrollment only in mathematics courses and does not include computer science courses even if taught within the mathematics program. Thus, the enrollments in Table TYR.2 for the years 1966-1990 are less than those in similar tables in previous reports that included computer science enrollments inside and outside the mathematics program. For this report those enrollments were subtracted from the total so that the data from 1966-1990 are comparable to 1995, when the survey didn't collect information on computer science enrollments outside the mathematics program.

The survey found that the average two-year college with a mathematics program had 12 students who were mathematics majors and intended to transfer to a four-year college or university. This was less than a quarter of one percent of all two-year college students.

TABLE TYR.2 Enrollments in mathematics courses in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

	1966	1970	1975	1980	1985	1990	1995
Enrollment	343,000	571,000	864,000	953,000	936,000	1,295,000	1,456,000

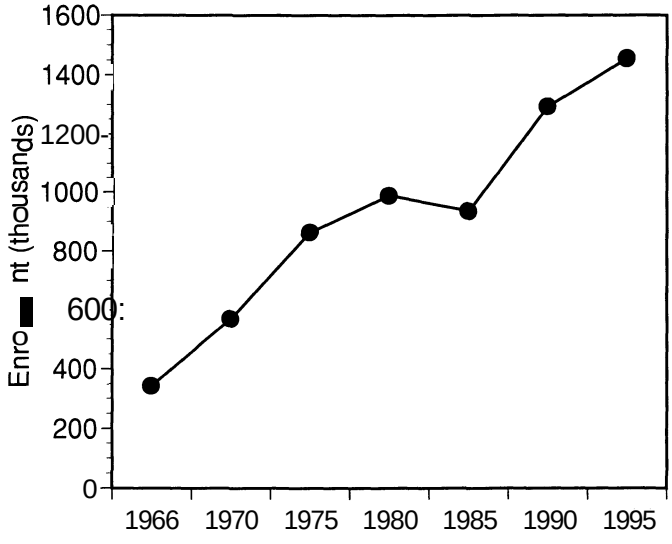

FIGURE TYR.2 Enrollments in mathematics courses in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

TABLE TYR.3 Enrollment (in thousands) in mathematics and computer science courses in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

Course number	Course	1966	1970	1975	1980	1985	1990	1995
	Remedial level							
1	Arithmetic/Basic mathematics	32	57	100	146	142	147	134
2	Pre-algebra	na	na	na	na	na	45	91
3	Elementary algebra (high school level)	35	65	132	161	181	262	304
4	Intermediate algebra (high school level)	37	60	105	122	151	261	263
5	Geometry (high school level)	5	9	9	12	8	9	7
	Precalculus level							
6	College algebra (level is above Int. algebra)	52	52	73	87	90	153	186
7	Trigonometry	18	25	30	33	33	39	43
8	College algebra & trigonometry (combined)	15	36	30	41	46	18	17
9	Precalculus/elementary functions	7	11	16	14	13	33	48
10	Analytic geometry	4	10	3	5	6	2	2
	Calculus level							
11	Mainstream calculus I						53	58
12	Mainstream calculus II	40	58	62	73	80	23	23
13	Mainstream calculus III						14	14
14	Non-mainstream calculus I	na	na				31	26
15	Non-mainstream calculus II	na	na	8	9	13	3	1
16	Differential equations	2	1	3	4	4	4	6
	Other math courses							
17	Linear algebra	1	1	2	1	3	3	5
18	Discrete mathematics	na	na	na	na	0)	1	3
19	Finite mathematics	3	12	12	19	21	29	24
20	Mathematics for liberal arts/math apprec	22	57	72	19	11	35	38
21	Mathematics for elementary school teachers	16	25	12	8	9	9	16
22 &23	Business math	17	28	70	57	33	26	25
24	Technical mathematics (non-calculus based)	19	26	46	66	31	17	17
25	Technical mathematics (calculus based)	1	3	7	14	4	1	2
	Statistics							
26	Elementary statistics (with or without prob.)	4	11	23	20	29	47	69
27	Probability (with or without statistics)	1	5	4	8	7	7	3
	Computing							
28	Data processing	na	na	na	na	36	21	2*
29	Computers and society	na	na	na	na	na	10	10
30	Introduction to software packages	na	na	na	na	na	na	21
31	Issues in computer science	na	na	na	na	na	na	(1)
32	Computer programming I	3	10	6	58	37	32	6
33	Computer programming II	na	na	na	na	5	8	1
34	Advanced programming and data structures	na	na	na	na	6	3	1
35	Database management systems	na	na	na	na	na	4	1
	Other math and computer science courses							
36	Miscellaneous courses	10	17	36	64	28	43	30
	Total	348	584	874	1048	1034	1393	1498

(1) means fewer than 500 and na means not available.
Mainstream calc is for math, physics, sci & engr; non-mainstream for bio, soc & mgmt sci.

* The computing enrollments for 1995 include only courses taught within Mathematics Programs. For earlier years they include estimates of enrollment in computer science courses taught outside Mathematics Programs.

Trends in enrollment in specific courses, 1966-1995

Remediation still comprises over half of mathematics program enrollment. However, Tables TYR.3 and TYR.4 show that courses at the remedial level accounted for less than half of the overall increase in enrollment in mathematics courses from 1990 to 1995. Enrollment in remedial-level courses increased 10%, but enrollment in precalculus-level courses increased by 20%.

Mathematics courses that showed big percentage increases were pre-algebra, elementary algebra, college algebra, precalculus, mathematics for elementary school teachers, and elementary statistics. Enrollment in pre-algebra more than doubled in five years. Enrollment in elementary statistics continued its rapid growth, having gone from only 4,000 students in Fall 1966 to 69,000 students in Fall 1995. For the first time this made it larger than enrollment in the first semester of mainstream calculus. For every 100 two-year college students who began a calculus sequence (mainstream, non-mainstream, or outside mathematics programs) in Fall 1995, there were 95 who enrolled in introductory statistics or probability (inside or outside mathematics programs).

TABLE TYR.4 Enrollment (in thousands) in mathematics and computer science courses by type of course in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

Course numbers	Type of course	1966	1970	1975	1980	1985	1990	1995
1-5	Remedial	109	191	346	441	482	724	800
		(32%)	(33%)	(40%)	(42%)	(47%)	(52%)	(53%)
6-10	Precalculus	96	134	152	180	188	245	295
		(28%)	(23%)	(17%)	(17%)	(18%)	(18%)	(20%)
11-16	Calculus	42	59	73	86	97	128	129
		(12%)	(10%)	(8%)	(8%)	(9%)	(9%)	(9%)
28-35	Computing	5	13	10	95	98	98	43*
		(1%)	(2%)	(1%)	(9%)	(10%)	(7%)	(3%)
26-27	Statistics	5	16	27	28	36	54	72
		(1%)	(3%)	(3%)	(3%)	(3%)	(4%)	(5%)
17-25,36	Other	91	171	266	218	133	144	160
		(26%)	(29%)	(31%)	(21%)	(13%)	(10%)	(11%)
1-36	Total all courses	348	584	874	1048	1034	1393	1498
		(100%)	(100%)	(100%)	(100%)	(100%)	(100%)	(100%)

Note: This table was constructed using TABLE TYR.3. Notice that the breakdown into type of course is different from that in Table SE.3 and Appendix I for four-year colleges and universities.

* The computing enrollment for 1995 includes only courses taught within Mathematics Programs. For earlier years it includes estimates of enrollments in computer science courses taught outside Mathematics Programs.

Large percentage drops in enrollment occurred in arithmetic, non-mainstream calculus, finite mathematics, and mathematics for liberal arts.

The most common courses listed by mathematics program heads in the "other" category were specific computer courses such as a course in APL, mathematics for health careers, and a second semester of technical mathematics. A few two-year colleges offered courses in the use of computer software that can be helpful in studying and using mathematics.

Mainstream calculus includes the calculus courses taught to mathematics, physics, and engineering majors. Non-mainstream calculus includes the "soft" calculus courses most often taught to biology, behavioral sciences, and business majors.

Computer science enrollments in 1995 cannot be compared with those of previous surveys, because those surveys included courses taught outside the mathematics program.

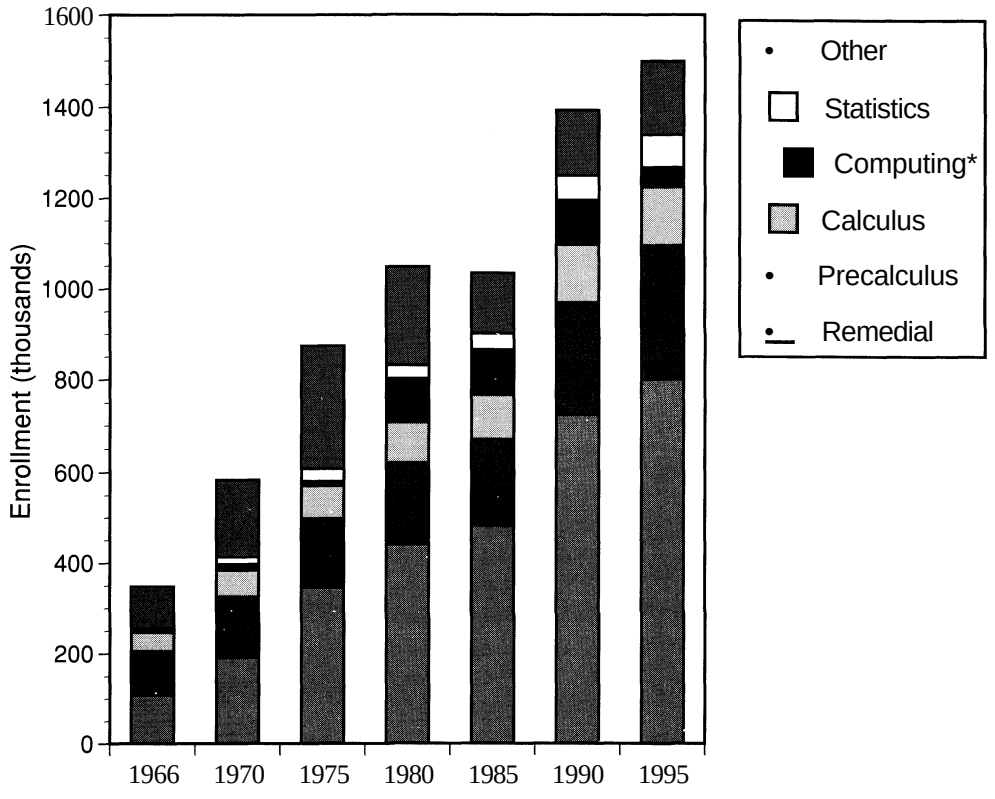

FIGURE TYR.4 Enrollment (in thousands) in mathematics and computer science courses by type of course in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

* The computing enrollment for 1995 includes only courses taught within Mathematics Programs. For earlier years it includes estimates of enrollments in computer science courses taught outside Mathematics Programs.

Trends in availability of mathematics courses

Tables TYR.5 and TYR.6 show that students in many two-year colleges will not be able to complete the lower division mathematics requirements of certain majors. Courses such as linear algebra, mathematics for liberal arts, and mathematics for elementary school teachers were offered at fewer than half of the two-year colleges with mathematics programs.

Just 17% of two-year college mathematics programs offered a high school-level geometry course in Fall 1995. The enrollment in this course was extremely small compared to the two courses—elementary algebra and intermediate algebra—that traditionally flank it in the high school curriculum.

TABLE TYR.5 Percentage of the 1023 two-year college Mathematics Programs teaching selected mathematics courses at least once in 1994-1995 or 1995-1996.

Course number	Course	Percentage of two-year colleges teaching course
1	Arithmetic/Basic math	70
2	Pre-algebra	46
3	Elem. algebra	85
4	Intermediate algebra	84
5	Geometry	17
6	College algebra	79
7	Trigonometry	71
8	College algebra & trig	17
9	Precalculus/elem. fns.	39
10	Analytic geometry	7
11	Mainstream calculus I	83
12	Mainstream calculus II	79
13	Mainstream calculus III	65
14	Non-mainstream calculus I	52
15	Non-mainstream calculus II	10
16	Differential eqs.	53
17	Linear algebra	30
18	Discrete math	12
19	Finite math	31
20	Math. for lib arts/math apprec	46
21	Math for elem. school teachers	43
22	Business math (not transferable for credit towards bachelor's)	28
23	Business math (transferable for credit towards bachelor's)	11
24	Technical math (not calculus based)	33
25	Technical math (calculus based)	11
26	Elem. statistics	80
27	Probability	5

TABLE TYR.6 Percentage of the 1023 two-year college Mathematics Programs teaching selected mathematics courses: Fall 1970, 1985, 1990, 1995.

Course number	Course	Percentage of two-year colleges teaching course			
		1970	1985	1990	1995
11	Mainstream calculus I	na	na	na	83
16	Differential equations	49	40	53	53
17	Linear algebra	17	24	34	30
18	Discrete mathematics	na	3	21	12
19	Finite mathematics	19	27	46	31
20	Math for liberal arts/ math apprec	na	25	35	46
21	Math for elem school teachers	48	31	32	43
24	Technical math (non-calculus based)	41	42	36	33
25	Technical math (calculus based)	19	18	6	11
26	Elementary statistics	41	61	69	80

Average number of students per section

Tables TYR.7 and TYR.8 show that in Fall 1995 the average section size in all mathematics courses was 25.5, and the average section size of individual courses did not vary much from that. Fewer than 1% of sections had an enrollment above 60. In 1990, the average section size was 27.8. The decrease in average section size can be attributed largely to remedial-level sections, which dropped from an average of 29 in 1990 to 25.7 in 1995.

TABLE TYR.7 Average section size by type of course in Mathematics Programs at two-year colleges and percentage of sections with enrollment above 60: Fall 1995.

Course numbers	Type of course	Average section size	Percentage of sections with enrollment above 60
1-5	Remedial	25.7	1.3
6-10	Precalculus	28.0	0.2
11-16	Calculus	23.5	0.1
28-35	Computer	22.9	1.4
26-27	Statistics	27.9	0.7
1-36	All courses	25.5	0.8

For names of specific courses see TABLE TYR.3

TABLE TYR.8 Average section size for selected two-year college mathematics courses: Fall 1995.

Course number	Course	Average section size
	Remedial	
1	Arithmetic/basic math	21.7
2	Pre-algebra	22.9
3	Elementary algebra	26.4
4	Intermediate algebra	28.8
	Precalculus Level	
6	College algebra	28.5
9	Precalculus/elem. functions	29.1
	Other Courses	
11	Mainstream calculus I	25.0
12	Mainstream calculus II	23.2
13	Mainstream calculus III	19.0
14	Non-mainstream calculus I	25.6
17	Linear algebra	18.7
20	Math for lib. arts/math apprec	25.1
21	Math for elem. school teachers	23.8
26	Elementary statistics	27.9

Courses taught by part-time faculty members

Part-time faculty members were 65% of the total faculty (see Table TYR.17) and taught 38% of the sections. This percentage varied by type of course, as shown in Table TYR.9, with part-time faculty members teaching 47% of remedial courses and 17% of mainstream calculus courses. In 1990, part-time faculty members taught 42% of the sections. In 1985, the percentage was 28%.

TABLE TYR.9 Number of sections and number and percentage of sections taught by part-time faculty in Mathematics Programs at two-year colleges by type of course: Fall 1995.

Course numbers	Type of course	Number of sections	Number of sections taught by part-time faculty	Percentage of sections taught by part-time faculty
1-5	Remedial	31155	14768	47
6-10	Precalculus	10540	3109	29
11-13	Mainstream calculus	4066	698	17
14-15	Non-main calculus	1085	257	24
16-18	Advanced math	707	113	16
19-23	Service courses	4214	1284	30
24-25	Technical math	1024	414	40
26-27	Statistics	2566	809	32
28-35	Computer science	1864	623	33
1-36	All courses combined	58749	22569	38

For names of specific courses see TABLE TYR.3.

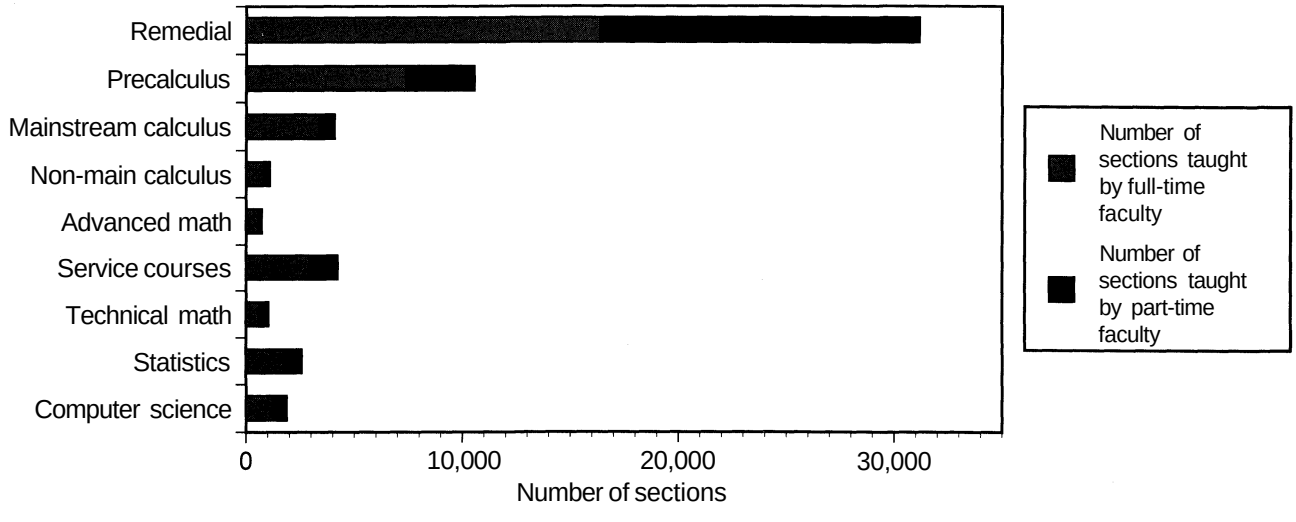

FIGURE TYR.9.1 Number of sections of mathematics and computer science courses taught by full-time and part-time faculty in Mathematics Programs at two-year colleges by type of course: Fall 1995.

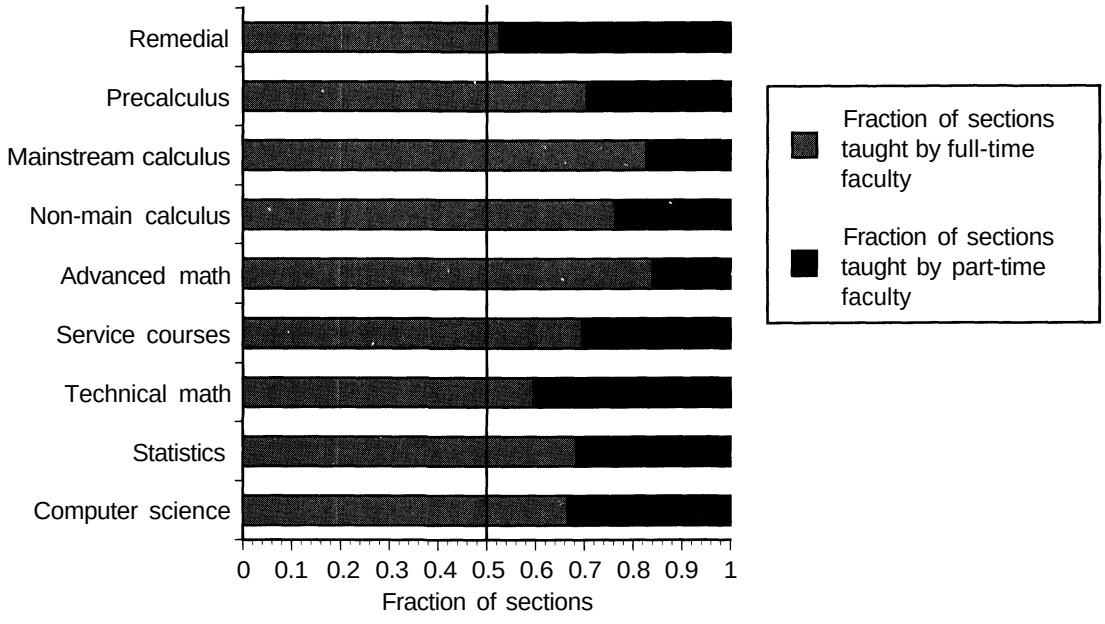

FIGURE TYR.9.2 Fraction of sections of mathematics and computer science courses taught by full-time and part-time faculty in Mathematics Programs at two-year colleges by type of course: Fall 1995.

TABLE TYR.10 Percentage of sections using various instructional methods by course in Mathematics Programs at two-year colleges: Fall 1995.

Course number	Course	Percentage of sections that use graphing calculators	include a writing component such as reports or projects	require computer assignments	assign group projects	meet at least once a week in a classroom equipped with computers for students	are taught mostly by the standard lecture method	are taught mostly by computer-aided instruction	are taught by television	Number of sections
1	Arithmetic/Basic math	(1)	5	12	9	17	67	3	0)	6166
2	Pre-algebra	1	2	5	7	13	76	2	(1)	3980
3	Elem. algebra	4	4	7	7	10	75	1	(1)	**11553**
4	Intermediate algebra	17	7	3	11	7	81	(1)	(D	9148
5	Geometry	13	9	9	15	5	73	7	(1)	307
6	College algebra	38	10	8	13	4	88	1	(1)	6523
7	Trigonometry	49	11	9	14	2	89	(1)	(1)	1700
8	College algebra & trig	51	11	25	17	15	66	1	(1)	596
9	Precalculus/elem fns.	55	9	10	15	8	82	0)	(1)	1633
10	Analytic geometry	65	0	18	12	12	65	0)	0)	88
11	Mainstream calculus I	65	20	23	22	15	82	3	(1)	2325
12	Mainstream calculus II	63	13	16	18	12	84	3	(1)	1008
13	Mainstream calculus III	63	16	26	22	18	86	4	1	733
14	Non-mainstream calculus I	44	17	8	20	5	88	(1)	(1)	1010
15	Non-mainstream calculus II	52	16	22	22	13	79	(1)	(1)	75
16	Differential eqs.	41	23	22	23	13	78	3	(1)	337
17	Linear algebra	43	21	27	28	13	88	(1)	(1)	247
18	Discrete math	25	42	44	39	42	61	3	(1)	123
19	Finite math	26	5	20	9	3	89	0)	(1)	863
20	Math for lib arts/math apprec	7	24	16	17	6	81	1	(1)	1531
21	Math for elem. schl teachers	22	48	17	54	10	79	(1)	(D	654
22	Business math (not trans.)	3	9	5	14	9	66	(1)	2	903
23	Business math (trans.)	30	11	16	18	11	83	8	(1)	263
24	Tech math (not calc. based)	27	7	3	13	5	71	(1)	(1)	901
25	Tech Math (calculus based)	25	18	4	4	(1)	65	(1)	(1)	123
26	Elem. statistics	29	39	46	29	21	94	8	1	2477
27	Probability	50	51	45	31	34	75	2	(1)	89
28	Data processing	(1)	(1)	43	(1)	43	43	8	(1)	84
29	Computers and society	(1)	73	92	24	74	58	7	(1)	427
30	Intro to software packages	(1)	5	86	2	95	15	29	(1)	916
31	Issues in computer science	(1)	100	100	100	100	100	(1)	(1)	3
32	Computer programming I	(1)	37	89	20	68	63	16	(1)	271
33	Computer programming II	(1)	33	88	24	92	43	37	(1)	69
34	Adv. prog. & data structures	(1)	23	83	13	83	70	13	(1)	39
35	Database manag. systems.	(1)	(1)	22	19	19	22	(1)	(1)	55
36	Other courses	9	23	35	17	29	69	5	(1)	1528
1-36	All courses combined	20	11	14	13	13	77	2	(1)	58749

(1) less than half of 1%

Instructional Practices

Table TYR.10 gives the percentage of sections that used various instructional practices in the different courses. The predominant method was the standard lecture method in all except some computer science courses. Computer science courses tended to meet in a room equipped with computers for students and computer assignments were required. The graphing calculator was used widely in precalculus and calculus courses. Very few sections of any course were taught by television and very few were taught by computer-aided instruction, except for some computer science courses.

Table TYR.11 gives the percentage of calculus sections that assigned group projects and that had a writing component. There was a large increase in both categories between 1990 and 1995.

TABLE TYR.11 Percentage of calculus sections in Mathematics Programs at two-year colleges that assign group projects and that have a writing component: Fall 1990, 1995.

		Percentage of sections that assign group projects		Percentage of sections that have a writing component		Number of sections	
Course number	Course	1990	1995	1990	1995	1990	1995
11	Main. Calculus I	4	22	5	20	2062	2325
12	Main. Calculus II	3	18	4	13	1004	1008
13	Main. Calculus III	0	22	4	16	782	733
14	Non-Main. Calc. I	5	20	4	17	1148	1010
15	Non-Main. Calc. II	2	22	2	16	na	75

Services Available to Students

Table TYR.12 gives the percentage of two-year colleges with mathematics programs that offered various services to students. Other services mentioned by mathematics program heads included e-mail for students, review sessions, and peer study groups.

TABLE TYR.12 Percentage of the 1023 two-year colleges offering various services to students: Fall 1995.

Service	Percentage of two-year colleges offering service
Diagnostic or placement testing	98
Math lab or tutorial center	93
Advising by a member of the mathematics faculty	65
Opportunities to compete in math contests	29
Honors sections	17
Mathematics club	14
Special mathematics programs to encourage minorities	11
Lectures/colloquia for students, not part of math club	9
Special mathematics programs to encourage women	8
Other	2

Math labs

Ninety-three percent of two-year colleges with mathematics programs had a math lab or tutorial center.

Table TYR.13 gives the services available within the math labs. More than half of math labs offered tutoring by students, media such as videotapes, computer-aided instruction, and computer software. (The 1990 CBMS survey found that computer facilities were more common in the larger two-year colleges.) The math labs increasingly are staffed by students and paraprofessionals (see Table TYR.14).

TABLE **TYR.13** Percentage of the 950 two-year colleges with math lab or tutorial center that offer various services to students in the math lab or tutorial center: Fall 1995.

Service offered in math lab/ tutorial center	Percentage of two-year colleges with math labs/tutorial centers that offer the service
Computer-aided instruction	69
Computer software such as computer algebra systems or statistical packages	65
Media such as videotapes	70
Tutoring by students	84
Tutoring by paraprofessionals	58
Tutoring by part-time mathematics faculty	39
Tutoring by full-time mathematics faculty	38
Other	4

TABLE TYR.14 Percentage of two-year colleges using various sources of personnel for math labs: Fall 1985,1990, 1995.

	Percentage of two-year colleges using source		
Source	1985	1990	1995
Students	48	73	84
Full-time members of mathematics staff	38	46	38
Paraprofessionals	34	51	58
Part-time members of mathematics staff	30	32	39

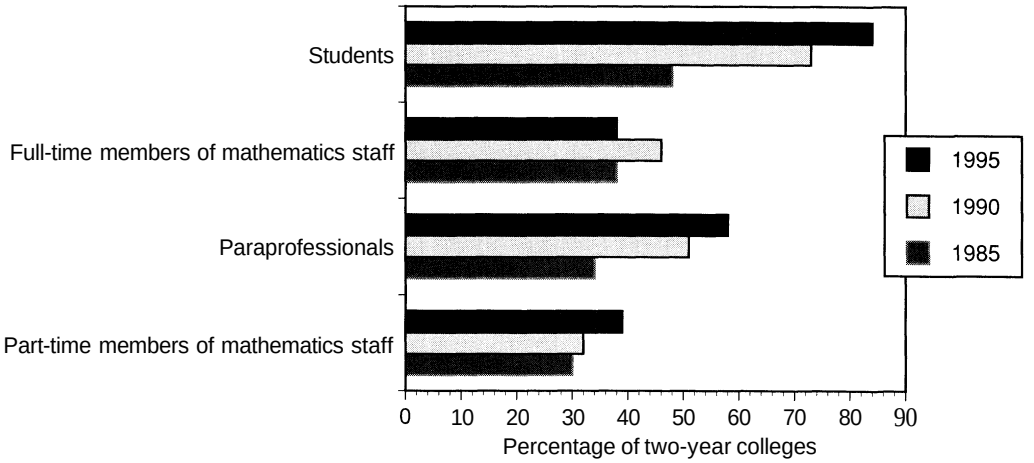

FIGURE TYR.14 Percentage of two-year colleges using various sources of personnel for math labs: Fall 1985,1990, 1995.

Placement into courses

In 70% of the colleges, a student must speak with an advisor before registering for his or her first mathematics course. In another 10% of the colleges, whether advisement was mandatory depends on the course in which the student wanted to register.

Virtually all (98%) two-year colleges with mathematics programs had diagnostic or placement testing to help students decide which course to take. In 76% of those colleges, the exams were used for mandatory placement into mathematics courses. In the others, placement was advisory.

In 22% of the colleges, a student may enroll in a mathematics course without completely satisfying the recommendations/prerequisites for the course (such as having a certain placement test score or passing a prerequisite course). In another 12% of the colleges, bypassing some of the prerequisites is possible for some courses, but not for others.

Mathematics Courses Taught Outside Mathematics Programs

It has long been the case in two-year colleges that a significant number of mathematics courses are taught by other departments. From 1970 to 1995, enrollment in mathematics courses outside mathematics programs increased by 115% while enrollment in mathematics courses inside mathematics programs increased by 155%. In 1970, the outside enrollments were 12% of those within mathematics programs. In 1995 these enrollments were 11% of those within mathematics programs.

Previous reports had higher percentages because many computer science courses were included in the outside enrollments. The estimates in Tables TYR.15 and TYR.16 do not include computer science and data processing courses.

Just over half of the outside enrollments were in remedial courses taught in a developmental studies division or learning center. Much of the rest of the outside enrollment was in business math taught in a business division. Tables TYR.15 and TYR.16 give the enrollments in mathematics courses that were offered outside mathematics programs. These enrollments were estimated by mathematics program heads. Thus, they are not as accurate as the numbers given for enrollment within mathematics programs.

TABLE TYR.15 Estimated enrollment (in thousands) in mathematics courses taught outside of Mathematics Programs at two-year colleges: Fall 1970, 1975, 1980, 1985, 1990, 1995.

Course	1970	1975	1980	1985	1990	1995
Arithmetic/Pre-algebra	14	27	18	18	42	54
Elem algebra (high school)	na	na	na	na	38	41
Int algebra (high school)	na	na	na	na	27	10
College algebra	na	na	na	na	6	2
Trig or precalc (college)	6	17	29	3	3	1
Calculus or Diff eqs	(1)	4	8	(1)	4	1
Business math	36	53	70	50	32	26
Statistics & probability	6	14	12	7	15	9
Technical math	na	na	25	23	10	8
Other	9	12	10	4	4	1
Total	71	127	172	105	181	153

(1) less than 500

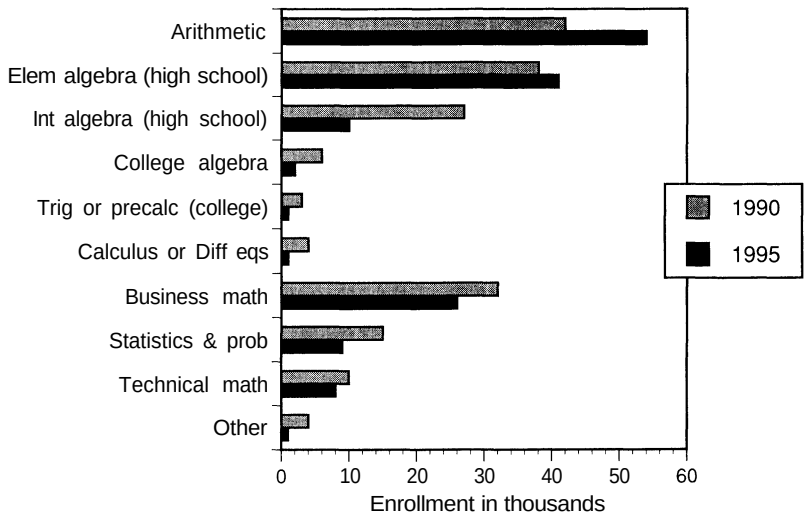

FIGURE TYR.15 Estimated enrollment (in thousands) in mathematics courses taught outside of Mathematics Programs at two-year colleges: Fall 1990, 1995.

TABLE TYR.16 Estimated enrollment (in thousands) in mathematics courses taught outside of Mathematics Programs at two-year colleges by division where taught: Fall 1995.

Course	Natural Sciences	Occupational Programs	Business	Social Sciences	Developmental Studies/ Learning Center	Other	Total
Arithmetic/Pre-algebra	9	1	2	0	40	2	54
Elem algebra (high sch)	7	0)	0	0	33	1	41
Int algebra (high sch)	5	0	0	0	5	(1)	10
College algebra	2	0	0	0	0	0	2
Trig or Precalc (college)	(1)	(1)	0	0	0	0	1
Calculus or Diff eqs	1	0	0)	0	0	0	1
Business math	2	1	23	0	0	0	26
Statistics & probability	(1)	0	6	3	0	1	9
Technical math	1	5	0	0	0	2	8
Other	0	(1)	1	0	0	(1)	1
Total	27	7	32	3	78	6	153

(1) less than 500

Chapter 7

Faculty and Administration in Two-Year College Mathematics Programs

This chapter reports the number, teaching conditions, education, professional activities, and age, gender, and ethnicity of the faculty in two-year college mathematics programs in Fall 1995. Information on mobility into, within, and out of two-year college mathematics program teaching positions is also included.

The data are compared with those from the 1966, 1970, 1975, 1980, 1985, and 1990 CBMS surveys.

Unlike previous surveys, the mathematics faculty surveyed in 1995 does not include those who teach in a computer science program that is separate from the mathematics program.

For more information on the sampling procedure used in this survey, see Appendix II. A copy of the two-year college questionnaire may be found in Appendix V.

Highlights

- About 7600 people taught full-time in two-year college mathematics programs in the United States in Fall 1996. The number of part-time faculty members was almost double that.
- Part-time faculty members taught 38% of all sections. In addition, 48% of full-time permanent two-year college mathematics faculty members taught extra hours for extra pay at their own two-year college.
- A master's degree was the terminal degree of 82% of the full-time permanent two-year college mathematics faculty.
- Forty percent of full-time permanent faculty members in mathematics programs at two-year colleges were women and 13% were ethnic minorities.
- Sixty-one percent of full-time faculty members had a private fully enclosed office and 76% had a computer in their office. Only 14% of part-time faculty members had their own desk.
- The need for remediation was classified as a major problem by 63% of mathematics program heads, a larger percentage than for any other problem. Low student motivation and low success rate in developmental/remedial courses were second and third.
- A traditional mathematics or mathematics/computer science department was found in fewer than half of the two-year colleges with mathematics programs. More common was a division structure, where mathematics is combined with science or other disciplines.
- In 30% of two-year colleges, remedial/developmental mathematics courses were administered separately from the mathematics department/program.

The Number and Teaching Assignments of Full-time and Part-time Mathematics Program Faculty

Trends in the number of full-time permanent and part-time mathematics program faculty members

Table TYR.17 shows that the number of full-time permanent faculty members in two-year college mathematics programs was 7578 in 1995 and the number of part-time faculty members was 14,266. The faculty increased by 356 full-timers and 586 part-timers from 1990 to 1995.

Part-time faculty members made up 65% of the two-year college mathematics program faculty. This is the same percentage as in 1990. However, the percentage was 54% in 1980 and 31% in 1970.

Part-time faculty members taught 38% of all sections (see Table TYR.9). Not surprisingly, 79% of mathematics programs heads classified "need to use part-time faculty for too many courses" as somewhat of a problem or a major problem (see Table TYR.46).

In Fall 1995, there were 164 full-time temporary faculty members such as sabbatical replacements.

TABLE TYR.17 Number of full-time permanent and part-time faculty in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

	1966	1970	1975	1980	1985	1990	1995
Full-time permanent faculty	2677	4879	5944	5623	6277	7222	7578
Part-time faculty	1318	2213	3411	6661	7433	13680	14266

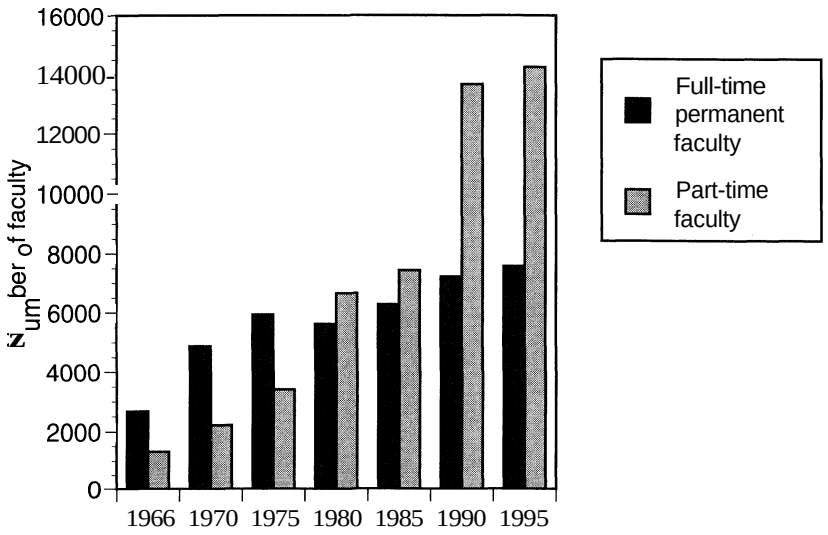

FIGURE TYR.17 Number of full-time permanent and part-time faculty in Mathematics Programs at two-year colleges: Fall 1966, 1970, 1975, 1980, 1985, 1990, 1995.

Teaching assignment of full-time permanent and part-time faculty

The average required teaching assignment for a full-time permanent two-year college mathematics faculty member in 1995 was 15.8 hours a week (Table TYR.18). In 1990, it was 14.7 hours and in 1985, 16.1 hours. (Previous CBMS surveys have found regional differences, with average teaching assignment highest in the west and lowest in the New England/mid-Atlantic states.)

About 6990 (49%) of the 14,266 part-time faculty members taught six units or more at that college. In 39% of the colleges, office hours were required of part-time faculty. Of these, 11% gave extra pay for the office hours. In 60% of the colleges, part-time faculty were paid on the same pay scale as full-time faculty members who teach extra hours for extra pay, in 5% of the colleges part-timers were paid more, and in 35% of the colleges they were paid less.

TABLE TYR.18 Teaching assignment for full-time permanent faculty in Mathematics Programs at two-year colleges: Fall 1995.

Teaching assignment in contact hours	≤9	10-12	13-15	16-18	19-21	≥22
Percentage of two-year colleges	2	2	68	14	14	0)

- Average contact hours for full-time permanent faculty: 15.8
- Percentage of the full-time permanent faculty who teach extra hours for extra pay at their two-year college: 48%
- Average number of extra hours for extra pay: 4.4

(1) less than half of 1%

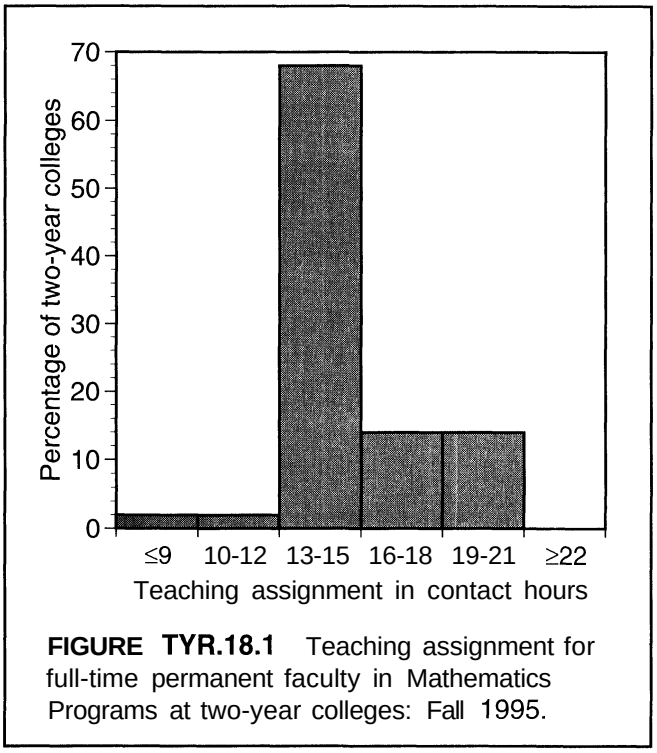

FIGURE TYR.18.1 Teaching assignment for full-time permanent faculty in Mathematics Programs at two-year colleges: Fall 1995.

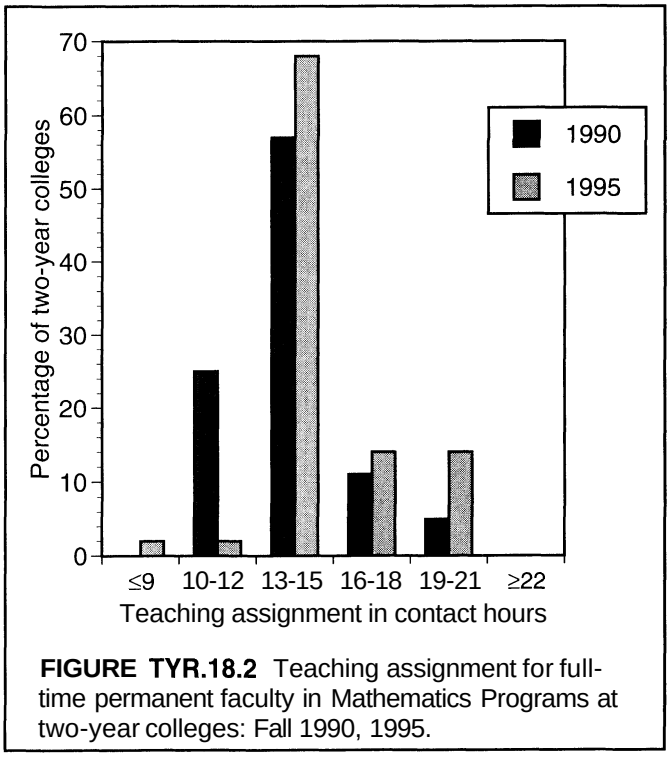

FIGURE TYR.18.2 Teaching assignment for full-time permanent faculty in Mathematics Programs at two-year colleges: Fall 1990, 1995.

Extra teaching by full-time faculty and other occupations of part-time faculty

Table TYR.18 also shows that 48% of all full-time permanent two-year college mathematics faculty members taught extra hours for extra pay at their own two-year college. (In addition, 7% taught at other schools.) A slight majority of them taught three units or fewer. The average number of extra hours for extra pay for faculty members who taught at their own college was 4.4. In 1990, the percentage was 44% and the average number of hours was 4.7.

Thirty-five percent of part-time two-year college facultymembers were not employed full time elsewhere and were not graduate students (Table TYR.19). In 1990, the percentage was 27% and in 1985 it was 21%. The percentage who were employed full time in a high school continued to drop from 37% in 1985 to 30% in 1990to 28% in 1995. Mathematics program heads estimated that 3052 (21%) of the 14,266 part-time faculty members were seeking full-time permanent employment in a two-year college.

TABLE TYR.19 Percentage of part-time faculty in Mathematics Programs at two-year colleges having various other occupations: Fall 1995.

Other occupations of part-time faculty	Percentage of part-time faculty
Employed full-time in:	
a high school	28
another department at the same college	6
another two-year college	2
a four-year college	3
industry or other	20
Graduate student	5
No full-time employment and not a graduate student	35
Number of part-time faculty	100% 14266

Education of Two-Year College Mathematics Program Faculty

Highest degree of full-time permanent faculty

A master's degree was the terminal degree of 82% of the full-time permanent two-year college mathematics faculty. As shown in Table TYR.20, the percentage of faculty with a doctorate remained at 17%. The percentage whose terminal degree is a bachelor's degree continued to approach zero.

Nineteen percent of new hires for 1995-1996 had a doctorate (see Table TYR.36). Thus, the percentage of new hires with doctorates was about the same as the percentage of full-time permanent faculty with doctorates. However, there is some indication that two-year colleges are hiring more new full-time facultymembers with doctorates than they did previously. Previous CBMS surveys have found that two-year colleges hire very few people with doctorates and that people earn their doctorates while on the job. The 1990 survey found, for example, that *2%* of new hires had doctorates.

Table TYR.21 gives the field of highest degree of full-time permanent two-year college mathematics faculty. Sixty-six percent of the master's degrees were in mathematics. Thirty-five percent of the doctorates were in mathematics.

TABLE TYR.20 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 full-time permanent 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

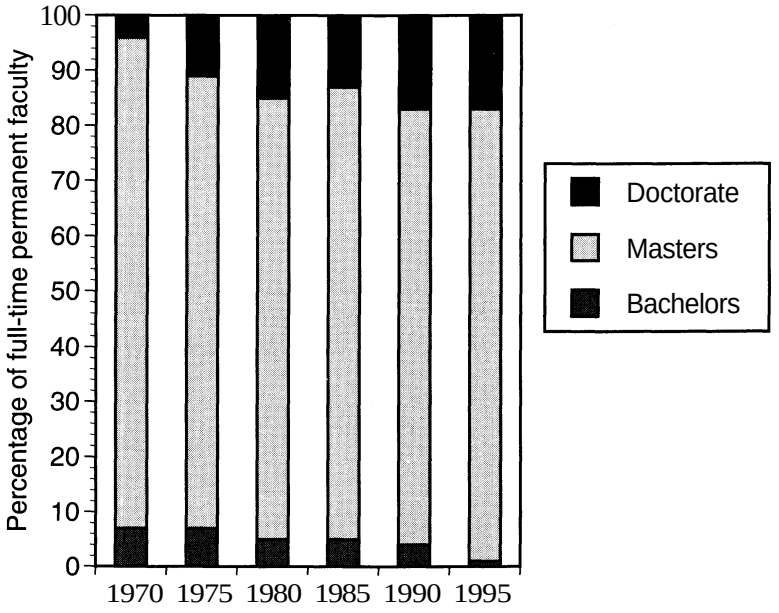

FIGURE TYR.20 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by highest degree: Fall 1970, 1975, 1980, 1985, 1990, 1995.

TABLE TYR.21 Percentage of 7578 full-time permanent faculty in Mathematics Programs at two-year colleges by field and highest degree: Fall 1995.

Field	Percentage having as highest degree			
	Doctorate	Masters	Bachelors	Total
Mathematics	6	54	1	61
Mathematics Education	7	17	0	24
Statistics	(1)	2	0	2
Computer Science	(1)	3	0	3
Other fields	3	6	(1)	9
Total	17	82	1	100%

(1) less than half of 1%.

Highest degree of full-time temporary and part-time faculty

As shown in Table TYR.22, the percentage of full-time temporary and part-time two-year college faculty with a doctorate remained steady at 7%. The percentage with a bachelor's degree as their terminal degree was 18%.

Table TYR.23 gives the field of highest degree of full-time temporary and part-time two-year college mathematics faculty. Fifty-seven percent of the master's degrees were in mathematics. Forty-three percent of the doctorates were in mathematics.

TABLE TYR.22 Percentage of part-time faculty in Mathematics Programs at two-year colleges by highest degree: Fall 1970, 1975, 1980, 1985, 1990, 1995.

	Percentage of part-time faculty					
Highest degree	1970	1975	1980	1985	1990	1995
Doctorate	9	4	7	7	8	7
Masters	77	79	76	65	65	76
Bachelors	14	17	17	28	27	18
Number of part-time faculty	100% 2213	100% **3411**	100% 6661	100% 7433	100% 13680	100% 14266

TABLE TYR.23 Percentage of 14430 full-time temporary and part-time faculty in Mathematics Programs at two-year colleges by field and highest degree: Fall 1995.

	Percentage having as highest degree			
Field	Doctorate	Masters	Bachelors	Total
Mathematics	3	43	12	58
Mathematics Education	1	19	3	23
Statistics	(1)	1	0)	1
Computer Science	(1)	2	0)	2
Other fields	3	11	3	17
Total	7	76	18	100%

(1) less than half of 1%.

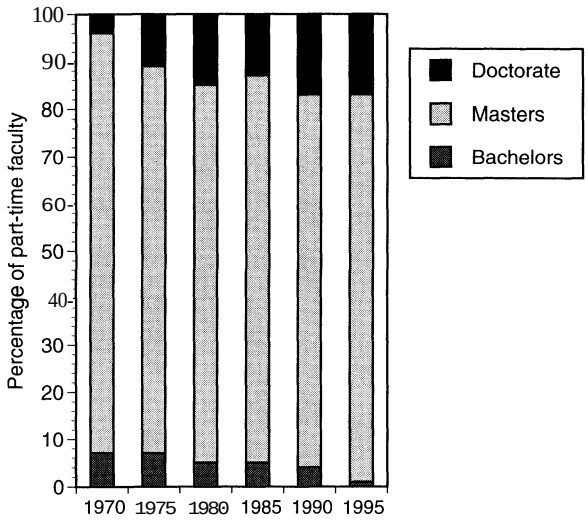

FIGURE TYR.22 Percentage of part-time faculty in two-year college Mathematics Programs by highest degree: Fall 1970, 1975, 1980, 1985, 1990, 1995.

Gender, Ethnic Composition, and Age of Full-Time Permanent Two-Year College Mathematics Program Faculty

Gender of full-time permanent two-year college mathematics program faculty

Forty percent of full-time permanent faculty members in mathematics programs at two-year colleges were women (Table TYR.24). Twenty years ago the percentage was 21%. While the total faculty size grew by 1634 during the years 1975 to 1995, the number of women increased by 1751 and the number of men decreased by 117. For 1995–1996, 44% of the new hires were women (see Table TYR.37).

The percentage of the 2924 master's degrees in mathematics granted in the United States to U.S. residents who are women rose to 42% in 1992–1993 (see Table TYR.25). In each year from 1970 to 1985, the percentage was 35% or less (National Center for Education Statistics).

TABLE TYR.24 Number and percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by gender: Fall 1975, 1980, 1985, 1990, 1995.

	1975	1980	1985	1990	1995
Men	4696	4217	4831	4767	4576
	(79%)	(75%)	(69%)	(66%)	(60%)
Women	1248	1406	1846	2455	3089
	(21%)	(25%)	(31%)	(34%)	(40%)
Total	**5944**	**5623**	**6677**	**7222**	**7665**
	(100%)	**(100%)**	**(100%)**	**(100%)**	**(100%)**

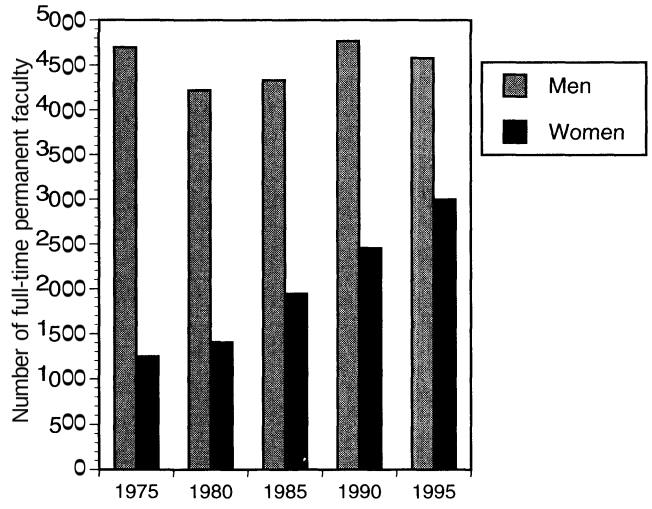

FIGURE TYR.24.1 Number of full-time permanent faculty in Mathematics Programs at two-year colleges by gender: Fall 1975, 1980, 1985, 1990, 1995.

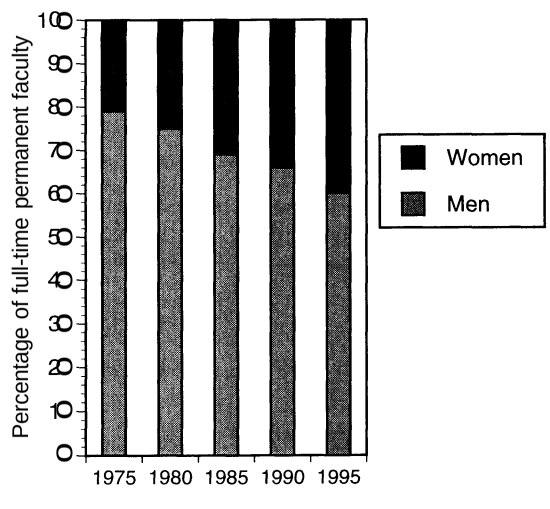

FIGURE TYR.24.2 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by gender: Fall 1975, 1980, 1985, 1990, 1995.

TABLE TYR.25 Percentage of full-time permanent faculty and full-time temporary and part-time faculty in Mathematics Programs at two-year colleges by gender: Fall 1995. Also U.S. master's degrees in mathematics granted to U.S. residents by gender: 1992-93.

	Percentage of		
	full-time permanent faculty	full-time temporary and part-time faculty	Master's degrees in mathematics granted in the U.S. in 1992-93 to U.S. residents*
Men	60	59	58
Women	40	41	42
	100%	100%	100%
Total	7578	14430	2924

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

Ethnicity and gender of full-time permanent two-year college mathematics program faculty

Thirteen percent of full-time permanent faculty were members of ethnic minorities (Table TYR.26). African-Americans made up the largest group, comprising 5% of the total full-time permanent faculty (Table TYR.27). The percentage of women among ethnic group minorities didn't vary much from the 40% overall percentage except that 34% of Asian/Pacific Islanders are women (Table TYR.28). Every ethnic group except non-Hispanic white was proportionally larger among the full-time permanent faculty who were under age 40 than among the entire full-time permanent faculty. Similarly, every ethnic group except non-Hispanic white was proportionally larger among the full-time permanent faculty who were under age 40 than among those to whom master's degrees in mathematics were granted in 1992-1993 (Table TYR.29).

For 1995-1996, 17% of the new hires were ethnic minorities (see Table TYR.37).

TABLE TYR.26 Percentage and number of ethnic minority full-time permanent faculty in Mathematics Programs at two-year colleges: Fall 1975, 1980, 1985, 1990, 1995.

	1975	1980	1985	1990	1995
Percentage of ethnic minorities among full-time permanent faculty	7	8	12	16	13
Number of full-time permanent ethnic minority faculty	416	450	753	1155	948
Number of full-time permanent faculty	5944	5623	6277	7222	7578

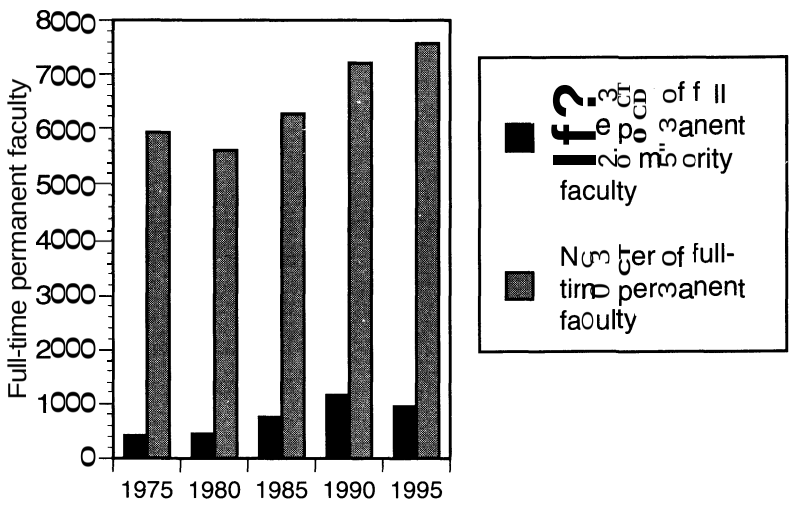

FIGURE TYR.26 Number of ethnic minority full-time permanent faculty and full-time permanent faculty in Mathematics Programs at two-year colleges: Fall 1980, 1985, 1990, 1995.

TABLE TYR.27 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by ethnicity: Fall 1980, 1985, 1990, 1995

	Percentage of full-time permanent faculty			
Ethnic group	1980	1985	1990	1995
Asian, Pacific Islander	3	3	4	4
Black (non-Hispanic)	3	4	4	5
American Indian, Eskimo, Aleut	1	1	1	(1)
Mexican American, Puerto Rican or other Hispanic	1	4	7	8
White (non-Hispanic)	92	88	84	87
Status unknown	na	na	na	1
Number of full-time permanent faculty	**100% 5623**	**100% 6277**	[redacted]	**100% 7578**

(1) less than half of 1%

TABLE TYR.28 Number and percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by ethnic group and number and percentage women by ethnic group: Fall 1995.

Ethnic group	Number of full-time permanent faculty	Percentage of full-time permanent faculty	Number of full-time permanent women	Percentage women by ethnic group
Asian, Pacific Islander	326	4%	110	34%
Black (non-Hispanic)	362	5%	152	42%
American Indian, Eskimo, Aleut	19	(1)	6	32%
Mexican American, Puerto Rican or other Hispanic	230	3%	97	42%
White (non-Hispanic)	6566	87%	2619	40%
Status not known	74	1%	16	12%
Total	7578	100%	2999	40%

(1) less than half of 1%

TABLE TYR.29 Percentage of full-time faculty and of full-time faculty under age 40 in Mathematics Programs at two-year colleges by ethnic group: Fall 1995. Also U.S. master's degrees in mathematics granted to U.S. residents by ethnic group in 1992-1993.

	Percentage of		
Ethnic Group	full-time permanent faculty	full-time permanent faculty under age 40	Master's degrees in mathematics granted in the U.S. in 1992-93 to U.S. residents*
Asian, Pacific Islander	4	8	7
Black (non-Hispanic)	5	6	4
American Indian, Eskimo, Aleut	(1)	0)	(1)
Mexican American, Puerto Rican or other Hispanic	3	6	2
White (non-Hispanic)	87	80	87
Status not known	1	0)	0
Total	100% 7578	100% 1570	100% 2924

(1) less than half of 1%

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

Ethnicity and gender of full-time temporary and part-time two-year college mathematics program faculty

Fourteen percent of full-time temporary and part-time faculty were members of ethnic minorities (Table TYR.30). African-Americans made up the largest group, comprising *5%* of the total full-time temporary and part-time faculty (Table TYR.31).

TABLE TYR.30 Percentage of ethnic minority full-time temporary and part-time faculty in Mathematics Programs at two-year colleges: Fall 1995.

Percentage of ethnic minorities among full-time temporary and part-time faculty	14%
Number of full-time temporary and part-time faculty	14430

TABLE TYR.31 Number and percentage of full-time temporary and part-time faculty in Mathematics Programs at two-year colleges by ethnic group and number and percentage women by ethnic group: Fall 1995.

Ethnic group	Number of full-time temporary and part-time faculty	Percentage of full-time temporary and part-time faculty	Number of full-time temporary and part-time women	Percentage women by ethnic group
Asian, Pacific Islander	619	4%	248	40%
Black (non-Hispanic)	763	5%	298	39%
American Indian, Eskimo, Aleut	14	0)	8	57%
Mexican American, Puerto Rican or other Hispanic	458	3%	163	36%
White (non-Hispanic)	11792	82%	4949	42%
Status not known	785	5%	257	37%
Total	14430	100%	5923	41%

(1) less than half of 1%

Age distribution of full-time permanent two-year college mathematics program faculty

The average age of full-time two-year college mathematics program faculty continued to climb and in Fall 1995 was 47.2 years. In 1990, it was 45.4 years. As shown in Table TYR.32, the percentage under age 40 slid gradually from 47% in 1975 to 21% in 1995.

Women were more heavily represented in the younger age groups (Table TYR.33) and were a majority in the 35-44 year old group. Ethnic minorities also tended to be younger than the faculty as a whole (Table TYR.34).

TABLE TYR.32 Percentage and number of full-time permanent faculty in Mathematics Programs at two-year colleges by age: Fall 1975, 1980, 1985, 1990, 1995.

	Percentage of full-time permanent faculty					Number of full-time permanent faculty				
Age	1975	1980	1985	1990	1995	1975	1980	1985	1990	1995
<30	9	5	5	5	5	535	281	314	361	358
30-34	18	15	11	8	8	1070	843	690	578	580
35-39	20	24	18	10	8	1188	1350	1130	722	633
40-44	15	18	24	21	14	892	1012	1506	1517	1044
45-49	13	16	18	22	22	773	900	1130	1589	1672
50-54	13	10	13	21	26	773	562	816	1517	1933
55-59	8	7	7	8	13	475	394	439	578	966
>59	4	5	4	5	5	238	281	252	360	391
Total	100%	100%	100%	100%	100%	5944	5623	6277	7222	7578

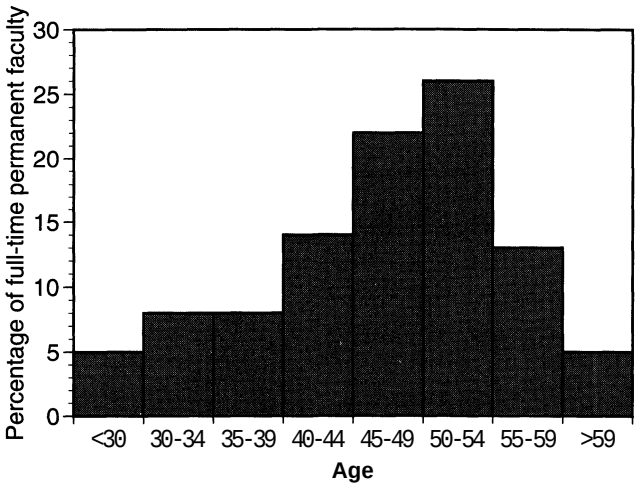

FIGURE TYR.32 Percentage distribution of full-time permanent faculty in Mathematics Programs at two-year colleges by age: Fall 1995.

TABLE TYR.33 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by age and by gender; also percentage women by age: Fall 1995.

Age	Percentage of full-time permanent faculty		Percentage women by age
	Women	Men	
< 35	6	7	46
35-44	12	11	53
45-54	18	29	38
> 54	4	14	23
Overall	40%	60%	40%

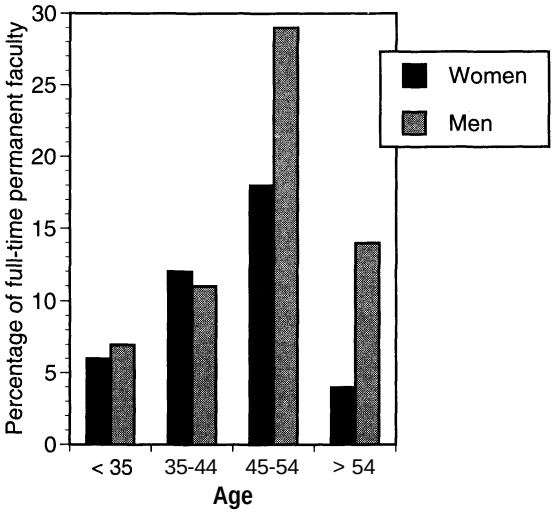

FIGURE TYR.33 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by gender and age: Fall 1995.

TABLE TYR.34 Percentage of ethnic minority full-time permanent faculty in Mathematics Programs at two-year colleges by age: Fall 1980, 1985, 1990, 1995.

Age	Percentage of ethnic minority full-time permanent faculty			
	1980	1985	1990	1995
<35	28	27	24	18
35-44	38	46	43	26
45-54	30	20	29	35
>54	4	7	4	21
Number of ethnic minority full-time permanent faculty	100% 450	100% 753	100% 1155	100% 948

Demographics of Full-Time Permanent Faculty Newly Hired for 1995-1996

An estimated 350 people were newly hired as full-time permanent faculty members in mathematics programs at two-year colleges for the academic year 1995-1996 (Table TYR.35). In 1990, the corresponding number of full-time permanent hires was almost 600. In 1995, 30% were hired directly out of graduate school—about the same percentage as in 1990. However in 1995, 62% of the new full-time permanent hires had previously taught in that program either full time or part time. This percentage is up from 47% in 1990.

New faculty rarely come from secondary schools. This was not the case 20 years ago. A 1979 survey found that more than 60% of all mathematics faculty in two-year colleges had previously taught in secondary schools. (Robert McKelvey, Donald J. Albers, Shlomo Liebeskind, and Don O. Loftsgaarden, *An Inquiry into the Graduate Training Needs of Two-Year*

TABLE TYR.35 Number and percentage of full-time permanent faculty newly hired for Mathematics Programs at two-year colleges for 1995-1996 by source.

Source	Number of hires	Percentage of hires
Graduate school	106	30
Part-time or full-time temporary employment at your college	68	19
Teaching in a four-year college or university	63	18
Teaching in another two-year college	48	14
Unemployed	33	9
Nonacademic employment	19	5
Teaching in a secondary school	12	4
Total	350	100%

TABLE TYR.36 Number and percentage of full-time permanent faculty newly hired for Mathematics Programs at two-year colleges for 1995-96 by highest degree.

Highest degree	Number of hires	Percentage of hires
Doctorate	67	19
Masters	280	80
Bachelors	2	1
Total	350	100%

College Teachers of Mathematics, Rocky Mountain Mathematics Consortium, 1979.)

Nineteen percent of the new hires had a doctorate, up from 2% in 1990 (Table TYR.36). As mentioned previously, this increase may reflect the relatively high unemployment rate for new PhDs in mathematics during 1990-1995. For 1995-1996, 44% of the new hires were women.

Table TYR.37 shows that non-Hispanic whites made up 82% of new hires for 1995-1996. Thirteen percent were Asian/Pacific Islander. African-Americans were 1% and Hispanics 3%. Table TYR.38 gives the ages of new hires. The average age was about 35.

Note that the 1990 percentages include full-time temporary hires, but the 1995 percentages do not include this group. Information about gender, ethnicity, and age of new hires was not collected in previous surveys.

TABLE TYR.37 Number and percentage of full-time permanent faculty newly hired for Mathematics Programs at two-year colleges for 1995-96 by ethnic group.

Ethnic group	Number of hires	Percentage of hires
Asian, Pacific Islander	43	13
Black(non-Hispanic)	6	1
Mexican American, Puerto Rican or other Hispanic	6	3
White (non-Hispanic)	288	81
Other	7	2
Total	350	100%

Percentage of hires who were women: 44%

TABLE TYR.38 Number and percentage of full-time permanent faculty newly hired for Mathematics Programs at two-year colleges for 1995-96 by age.

Source	Number of hires	Percentage of hires
Under 30	104	30
30-34	127	36
35-39	29	8
40-44	47	13
45-49	17	5
50-54	14	4
55-59	9	3
60 and over	3	1
Total	350	100%

Outflow of Full-Time Permanent Faculty

During the academic year 1994-1995, 402 people left their full-time permanent two-year college mathematics teaching positions. For 1989-1990, the number who left was 317 and for 1984-1985 it was 449. In 1994-1995, about 68% left due to death or retirement (Table TYR.39). The "other" category includes reasons for leaving that varied from disability to immigration problems to termination for poor performance. From Tables TYR.32 and TYR.38, we can infer that people begin to leave in fairly large numbers after age 50.

TABLE TYR.39 Outflow of full-time permanent faculty from Mathematics Programs at two-year colleges for 1994-1995.

Status	Number
Died or retired	274
Teaching in a four-year college or university	5
Teaching in another two-year college	27
Teaching in a secondary school	0
Left for a nonacademic position	34
Returned to graduate school	9
Other	30
Unknown	23
Total	402

Services Available to Mathematics Program Faculty

For the first time, the 1995 CBMS survey collected information on office and computer facilities available to faculty members. Table TYR.40 gives the office facilities available to full-time permanent faculty members. Sixty-one percent had a private fully enclosed office. Table TYR.41 gives the availability of desks to part-time faculty members. Only 14% had their own desk.

TABLE TYR.40 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by type of office: Fall 1995.

Office	Percentage of full-time permanent faculty
Private, fully enclosed office	61
Two-person, fully enclosed office	27
Other office facilities, including cubicles	12
No desk or office	(1)
	100%

(1) less than half of 1%

TABLE TYR.41 Percentage of part-time faculty in Mathematics Programs at two-year colleges by desk availability: Fall 1995.

Desk availability	Percentage of part-time faculty
Have their own desk	14
Share a desk with one other person	9
Share a desk with two or more other people.	43
Have no desk	35
	100%

Seventy-six percent of the full-time permanent faculty had a computer or terminal in their office (Table TYR.42), and 55% used e-mail.

The teaching of permanent full-time mathematics faculty members is periodically evaluated in 100% of two-year colleges. The most common method of evaluating teaching is evaluation forms completed by students, which were used by 97% of two-year college mathematics programs. Observation of classes by faculty or administrators, self-evaluation, and evaluation of written course materials were also common (Table TYR.43).

TABLE TYR.42 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by computer facilities available: Fall 1995.

Computer facilities	Percentage of full-time permanent faculty
Computer or terminal in office	76
No computer or terminal in office, but shared computers or terminals nearby	21
No convenient access or no access at all to computers or terminals	3
	100%

Note: 55% of full-time permanent faculty use email.

TABLE TYR.43 Percentage of the 1023 Mathematics Programs at two-year colleges using various methods of evaluating teaching: Fall 1995.

Method of evaluating teaching	Percentage of Mathematics Programs at two-year colleges using the method
Evaluation forms completed by students	97
Observation of classes by other faculty members or department chair	55
Self-evaluation such as teaching portfolios	44
Observation of classes by division head (if different from chair) or other administrator	43
Evaluation of written course material such as lesson plans, syllabus, or exams	39
Other methods	10

Professional Activities of Full-Time Permanent Two-Year College Mathematics Program Faculty

Some form of continuing education is required of full-time permanent faculty members in 20% of two-year college mathematics programs. Typically, this continuing education consists of in-house activities. A few two-year colleges require six college credits within a five- to seven-year period.

Full-time permanent two-year college mathematics teachers were generally active in professional activities (Table TYR.44). Seventy-three percent attended at least one professional meeting during the 1994-1995 academic year. Another 64% regularly read articles in professional journals. One out of five gave a talk at a professional meeting.

Activities that have increased in the last twenty years include attending at least one professional meeting and giving a talk at a professional meeting. (The American Mathematical Association of Two-Year Colleges (AMATYC) was founded in 1975 and in 1996 had about 2200 members—not all of them two-year college teachers.) Activities that have declined in the last twenty years include taking an upper division or graduate mathematics class and publishing a textbook.

TABLE TYR.44 Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges who participated in various professional activities during academic year 1994-1995. Historical data for 1975, 1980, 1985, 1990, 1995.

	Percentage of full-time permanent faculty				
Activity	1975	1980	1985	1990	1995
Attended at least one professional meeting	47	59	70	67	73
Took an upper division or graduate mathematics class	21	22	31	15	12
Attended a mini-course or short course	na	na	31	27	34
Gave a talk at a professional meeting	9	15	16	15	20
Regularly read articles in professional journals	47	57	72	57	64
Had an expository article published	5	6	6	5	4
Had a research article published	na	na	3	4	2
Had a textbook published	15	10	4	6	3
Received a new grant from outside their college	na	na	na	na	5
Received a new grant from their college	na	na	na	na	6

Problems in Two-Year College Mathematics Programs

As was the case in 1985 and 1990, the need for remediation was classified as a major problem by more program heads than was any other problem (Table TYR.45). Low student motivation and low success rate in developmental/remedial courses were second and third. Table TYR.46 gives the percentage of program heads who rated each category as a major problem, somewhat of a problem, or minor/no problem in 1995. Problems not in the table that were mentioned by several mathematics program heads include inadequate pay for part-time faculty members, lack of office space for part-time faculty members, and a nonsupportive administration.

TABLE TYR.45 Percentage of program heads classifying various problems as "major" in Mathematics Programs at two-year colleges: Fall 1985, 1990, 1995.

	Percentage of program heads classifying problem as major		
Problem	1985	1990	1995
Too many students needing remediation	60	65	63
Low student motivation	na	38	51
Low success rate in developmental/remedial courses	na	na	34
Faculty salaries too low	na	na	31
Need to use part-time faculty for too many courses	na	na	30
Inadequate computer facilities for student services	na	na	23
Inadequate computer facilities for faculty use	27	7	22
Inadequate travel funds for faculty	41	26	21
Inadequate departmental support services (secretary, etc.)	41	26	15
Low success rate in transfer-level courses	na	na	15
Inadequate classroom space	21	18	14
Inadequate office space	19	16	14
Class sizes too large	27	10	11
Maintaining vitality of faculty	39	22	11
Staffing computer science courses	34	8	8
Coordinating mathematics courses with high schools	19	9	8
Too few students who intend to transfer actually do	na	na	7
Lack of curricular flexibility because of transfer requirements	na	10	6
Staffing statistics courses	na	na	4

TABLE TYR.46 Percentage of program heads of Mathematics Programs at two-year colleges classifying various problems by severity: Fall 1995.

Problem	Percentage of program heads classifying problems as		
	minor or no problem	somewhat of a problem	major problem
Too many students needing remediation	7	30	63
Low student motivation	9	40	51
Low success rate in developmental/remedial courses	23	44	34
Faculty salaries too low	27	42	31
Need to use part-time faculty for too many courses	21	49	30
Inadequate computer facilities for student services	38	39	23
Inadequate computer facilities for faculty use	51	27	22
Inadequate travel funds for faculty	40	40	21
Inadequate departmental support services (secretary, etc.)	57	29	15
Low success rate in transfer-level courses	43	43	15
Inadequate classroom space	54	32	14
Inadequate office space	62	25	14
Class sizes too large	56	33	11
Maintaining vitality of faculty	55	35	11
Staffing computer science courses	73	19	8
Coordinating mathematics courses with high schools	67	25	8
Too few students who intend to transfer actually do	67	26	7
Lack of curricular flexibility because of transfer requirements	70	25	6
Staffing statistics courses	71	26	4

Administration of Mathematics Programs in Two-Year Colleges

Seventy-three percent of two-year colleges operate under the semester system with almost all of the rest on the quarter system (Table TYR.47). Forty-three percent of mathematics programs were administered as "departments." A division structure, where mathematics is combined with science or other disciplines, was found in over half of two-year colleges with mathematics programs (Table TYR.48). As a result, the person who filled out the survey form, who was supposed to be "the person who is directly in charge of the mathematics program or department" varied from a regular mathematics faculty member to a mathematics department chair to a person from the humanities in charge of an arts and sciences division. On average, the person who filled out the form had been in charge of the mathematics program for six years. Forty-two percent had been in charge for three years or less.

In 30% of two-year colleges, remedial/developmental mathematics courses were administered separately from the mathematics department/program.

TABLE TYR.47 Percentage of Mathematics Programs at two-year colleges by type of academic calendar: Fall 1995.

Academic calendar	Percentage of Mathematics Programs at two-year colleges
Semester	73
Trimester	0
Quarter	26
Other	1
	100%

TABLE TYR.48 Percentage of Mathematics Programs at two-year colleges by type of administrative structure: Fall 1995.

Administrative structure	Percentage of Mathematics Programs at two-year colleges
Mathematics department	31
Mathematics and computer science department	12
Mathematics and science department or division	34
No department or division structure	1
Other (mostly department or division with mathematics and other disciplines)	22
	100%

Appendix I

Enrollment in Department Courses in Four-Year Colleges, Universities: Fall 1970, 1980, 1985, 1990, 1995

FALL 1995 TABLE A-1

Enrollment in Mathematics Courses (thousands)

						1995 Enrollment							
						Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990	1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Stat Dept.
Remedial													
1. Arithmetic	4	14	15	6	7	3	2	3	7				
2. Gen. Math (Basic Skills)	19	49	31	17	13	6	3	4	13				
3. High School Elem. Alg.	25	74	75	68	56	14	25	17	56				
4. High School Int. Alg.	50	104	130	170	131	35	54	42	131				
5. Other Remedial	N/A	N/A	N/A	N/A	15	2	1	12	15				
Subtotal Remedial	98	241	251	261	222	60	84	78	222				
Precalculus													
6. Coll. Alg.	92	160	150	202	195	70	68	56	194	1			
7. Trigonometry	31	38	37	37	42	22	12	8	42				
8. Comb. Coll. Alg. & Trig.	113	61	78	35	45	13	12	20	45				
9. Elem. Function Pre Calc	38	72	74	72	83	36	18	29	83				
10. Anal. Geo.	10	8	3	6	3	2	1		3				
11. Math for Lib. Arts	74	63	59	53	74	18	24	32	74				
12. Finite Math	47	95	88	80	59	24	18	17	59				
13. Bus. Math	18	48	37	37	40	18	15	7	40				
14. Math for Ele. Sch. Teachers	89	44	54	62	59	14	21	24	59				
15. Other Precal	30	14	13	8	14	5	4	5	14				
Subtotal Precalculus	542	603	593	592	614	222	193	198	613	1			

NOTE: Read numbers in braces from top to bottom. For example, $\{^{2}_{0}$ is 20 (in thousands). The numbers represent total enrollment for all courses included within the upper and lower horizontal lines.

FALL 1995 TABLE A-1

Enrollment in Mathematics Courses (thousands)

							1995 Enrollment							
							Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990 Ma Sc Dept.	1990 Stat Dept.	1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Sub total Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Sub total Stat Dept.
Calculus														
16. Mainstream Calc I				201		192	84	42	66	192				
17. Mainstream Calc II	335	40	402	88		83	42	16	25	83				
18. Mainstream Calc III,IV., etc.				84		62	34	14	14	62				
19. Non-Mainstream Calc I	N/A	10	129	148		98	50	27	20	97	1			
20. Non-Mainstream Calc II				15		14	10	2	2	14				
21. Differential Equations	31	44	45	41		33	20	8	5	33				
22. Discrete Mathematics	N/A	N/A	14	17		16	4	6	6	16				
23. Linear/ Matrix Alg.	47	37	47	43	1	32	15	7	10	32				
24. Other Calc.	N/A	N/A	N/A	10		9	5	2	2	9				
Subtotal Calculus	413	590	637	647	1	539	264	124	150	538	1			
Adv. Level														
25. Trans. (Int.) to Proofs	N/A	N/A	N/A	5		7	2	2	3	7				
26. Mod. Algebra (I,II)	23	10	13	12		13	4	3	6	13				
27. Num. Theory	4	1	3	4		2	1		1	2				

FALL 1995 TABLE A-1

Enrollment in Mathematics Courses (thousands)

							1995 Enrollment							
							Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990		1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Stat Dept.
				Ma Sc Dept.	Stat Dept.									
28. Combinatorics	0	1	4	2	1	2	1	1		2				
29. Actuarial Math.	N/A	N/A	N/A	2		1	1			1				
30. Logic/Foundation of Math.	14	4	6	2		3	1	1	1	3				
31. Discrete Structures	N/A	N/A	7	3		3	1	1	1	3				
32. History of Mathematics	4	2	2	2		3		1	2	3				
33. Geometry	13	4	7	8		6	2	2	2	6				
34. Math. for Sec. Sch. Teachers	7	1	5	4		5	1	3	1	5				
35. Adv. Calc. I, II, Real Analysis	31	15	19	16		11	5	3	3	11				
36. Adv. Math. for Engr. & Physics	12	14	10	10		8	5	2	1	8				
37. Adv. Linear Alg.	5	8	14	9		4	3	1		4				
38. Vector Anal.						3	2	1		3				
39. Adv. Diff. Equations	N/A	1	4	2		3	3			3				
40. Partial Diff. Equations	2	2	5	2		1	1			1				
41. Numerical Analysis	N/A	10	13	8		6	3	1	2	6				
42. App. Math. (Math. Modeling)	1	2	4	2		2	1		1	2				
43. Complex Variables	7	3	5	4		2	1		1	2				
44. Topology	5	1	2	1		1	1			1				
45. Senior Sem./Ind. Study in Math.	N/A	4	2	2		3		1	2	3				
46. Other Adv. Level Courses	7	6	7	11		5	2	2	1	5				

FALL 1995 TABLE A-1

Enrollment in Mathematics Courses (thousands)

							1995 Enrollment							
							Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990 Ma Sc Dept.	1990 Stat Dept.	1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Stat Dept.
Adv. Level														
58. Int. to Oper. Research	N/A	2	(!)	4		1			1	1				
59. Int. to Lin. Programming				3		1			1	1				
60. Other Oper. Research				1										
Subtotal Advanced Math	135	91	138	119	1	96	41	25	30	96				
Mathematics Total	1188	1525	1619	1619	2	1471	587	426	456	1469	2			

FALL 1995 TABLEA-2

Enrollment in Statistics Courses (thousands)

							1995 Enrollment							
							Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990		1995	Univ. (PhD)	Univ. (MA)	Coll, (BA)	Sub total Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Sub total Stat Dept.
				Ma Sc Dept.	Stat Dept.									
Statistics Courses														
Elem. Level														
47. Ele. Stat. (no Calc. Prereq.	36	87	115	61	23	132	17	29	51	97	33	2		35
48. Prob. & Stat. (no Cal. Prereq.)	21	17	29	26	7	26	6	6	6	18	7	1		8
49. Other Elem. Level	N/A	N/A	N/A	N/A	N/A	6					6			6
Subtotal Elem. Level	57	104	144	87	30	164	23	35	57	115	46	3		49
Upper Level														
50. Math. Stat. (Calc. Prereq.)	16	16	24	13	4	16	5	3	4	12	4			4
51. Probability (Calc. Prereq.)	11	13	15	11	2	10	3	2	3	8	2			2
52. Stochastic Processes	0	N/A	0	1	0									
53. Appl. Stat. Analysis	7	8	11	5	5	9	1	1	4	6	3			3
54. Design & Anal. of Experiments	1	2	1	1	0	1					1			1
55. Regression (and Correlation)	N/A	1	1	1	1	1					1			1
56. Sen. Seminar/ Ind. Studies in Stat.	N/A	0	0	0	0									
57. Other Up. Lev. Statistics	1	3	1	6	2	7	1	1		2	5			5
Subtotal Upper Level	36	43	63	38	14	44	10	7	11	28	16			16
Statistics Total	93	147	207	125	44	208	33	42	68	143	62	3		65

FALL 1995 TABLE A-3

Enrollment in Computer Science Courses[a] (thousands)

						1995 Enrollment							
						Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990	1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Stat Dept.
Computer Science Courses													
Lower Level													
61. Computers & Society	N/A	N/A	69	34	14	1	4	9	14				
62. Intro. to Software Packages	N/A	N/A	N/A	28	18	2	3	12	17		1		
63. Issues in Comp. Sci.	N/A	N/A	N/A	1	6			6	6				
64. Com. Prog. I (C101 '91)[b]	38	154	129	33	17	1	5	11	17				
65. Com. Prog. II (C102 '91)[b]	N/A	32	28	8	5		2	3	5				
66. Adv. Prog. & Data Str.	N/A	N/A	15	5	4		1	3	4				
67. Database Man. Systems	N/A	N/A	7	3	2		1	1	2				
68. Discrete Mathematics	N/A	N/A	12	3	2		1	1	2				
69. Other lower level service courses	N/A	N/A	90	19	7		1	6	7				
Subtotal Lower Level	38	186	350	134	75	4	18	52	74		1		1
Middle Level													
70. Intro. to Comp. Systems	26	16	18	2	6		1	5	6				
71. Assembly Lang. Prog.	N/A	N/A	24	6	2		1	1	2				
72. Intro. to Comp. Organization	3	12	14	2	1			1	1				
73. Intro. to File Processing (CS5)	N/A	7	10	2									
74. Other Mid. Level Courses	N/A	N/A	N/A	N/A	4		1	3	4				
Subtotal Middle Level	29	35	66	12	13		3	10	13				

(a) 1970, 1980 and 1985 enrollments are combined from both departments of Mathematical Sciences and separate departments of Computer Science; 1990 and 1995 enrollments are from Mathematical Sciences Departments only.

(b) Refers to courses described in Computing Curriculum 1991, Report of the ACM/IEEE-CS Joint Curriculum Task Force, ACM 1991 Survey.

FALL 1995 TABLE A-3

Enrollment in Computer Science Courses[a] (thousands)

						1995 Enrollment							
						Math Dept.				Stat. Dept.			
COURSES	1970	1980	1985	1990	1995	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Math Dept.	Univ. (PhD)	Univ. (MA)	Coll. (BA)	Subtotal Stat Dept.
75. All Upper Level Courses Combined	39	100	142	34	12	2	4	6	12				
Total Computer Science	106	321	558	180	100	6	25	68	99		1		

(a) 1970, 1980 and 1985 enrollments are combined from both departments of Mathematical Sciences and separate departments of Computer Science; 1990 and 1995 enrollments are from Mathematical Sciences Departments only.

Appendix II
Sampling and Estimation Procedures

Sampling Procedures

The sampling frame for the 1995 CBMS survey consisted of those two-year and four-year colleges and universities in the U.S. that teach undergraduate mathematics classes. There are 2419 such institutions. Sources used in constructing the sampling frame included (1) the sampling frame for the 1990 CBMS survey; (2) the 1995 *Mathematical Sciences Professional Directory* published by the American Mathematical Society; (3) the HEP 95 *Higher Education Directory]* (4) Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics, U.S. Department of Education; (5) *A Classification of Institutions of Higher Education*, 1994 edition, The Carnegie Foundation for the Advancement of Teaching; (6) *Schools Offering Degrees in Statistics in the United States and Canada*, 1995 edition, American Statistical Association; and (7) personal contacts. Two-year private-for-profit schools were not included in this study.

Institutions were classified according to the highest degree, doctoral (PhD), master's (MA), or bachelor's (BA), offeredby the main mathematics department or as a two-year college. The abbreviations in parentheses are generic and stand for any form of doctorate, master's, or bachelor's in mathematics, respectively. This is true throughout the report. This is the same classification used for the 1990 CBMS survey. It is also the same classification used by the AMS-IMS-MAA Data Committee (except for the addition of the two-year colleges) in conducting its annual surveys of departments of mathematics and departments of statistics which are published in the *Notices of the American Mathematical Society*. This classification is quite appropriate for surveying mathematics departments, and it also enables comparisons between the annual surveys and the CBMS survey.

Four-year colleges and universities were divided into 20 strata according to control (public or private), the classification mentioned above (PhD, MA, and BA), and institutional enrollment. Two-year colleges were handled separately from four-year colleges and universities. Two-year colleges were divided into 10 strata based on control (public or private) and institutional enrollment. Standard statistical procedures were used to draw a stratified random sample of 350 four-year colleges and universities and 250 two-year colleges.

To divide the sample size of 350 among the 20 strata in the four-year college and university population, the variable "institutional enrollment" was used. For an optimal allocation, sample sizes for each stratum must be proportional to $N_i * \sigma_i$ where N_i is the number of schools in stratum i and σ_i is the standard deviation of enrollments in stratum i. Since institutional enrollment was also used in forming the strata, schools of similar size are found in each stratum. Strata that contain large schools have more variability in enrollments (larger σ_i's) than those containing small schools and hence receive a larger portion of the sample. Thus schools with larger enrollments were more likely to be in the sample than schools with smaller enrollments, and this is seen in Table A2.2. Similar remarks can be made for the two-year colleges.

TABLE A2.1 Number of strata, number of schools and sample sizes by type of school: Fall 1995.

	Number of strata	Population (number of schools)	Sample (number of schools)
Universities (PhD)	7	169	112
Universities (MA)	5	242	120
Four-year colleges (BA)	8	985	117
Two-year colleges	10	1023	250
Total	30	2419	599

Four-year colleges and universities are classified according to the highest degree offered by the main Mathematics Department. The four-year college (BA) group contains all 4-year schools that offer BA Degrees in Mathematics or offer no degree in Mathematics.

Two separate questionnaires were used, one for four-year colleges and universities and one for two-year colleges. Copies of these two questionnaires are found in Appendices IV and V. Questionnaires were mailed to the main mathematics department or mathematics program at each school in the sample. A statistics department or an additional mathematics department were included in the sample only if the main mathematics department was in the sample. Summary information for the statistics departments is found in Table A2.2.

TABLE A2.2 Population and sample sizes for Statistics Departments at universities by type of school*: Fall 1995.

	Population (number of departments)	Sample size
Universities (PhD)	63	44
Universities (MA)	8	6
Total	71	50

* Schools are classified according to the highest degree of the main Mathematics Department.

Table A2.3 contains a further breakdown of the sampling frame giving population sizes, sample sizes, number of respondents, and response rates. After comparing results in this survey with comparable results from various other surveys and censuses and generally finding good agreement, there is good reason to believe that the departments that responded to this survey are very representative of the population.

TABLE A2.3 Population sizes, sample sizes, respondents and response rates by type of school and department: Fall 1995

Departments	Number of departments	Number in the sample	Respondents	Response rates
University (PhD)				
Mathematics	**169**	**112**	**77**	**69%**
Statistics	**63**	**44**	**30**	**68%**
University (MA)				
Mathematics	**242**	**120**	**87**	**73%**
Statistics	**8**	**6**	**5**	**83%**
Four-year colleges (BA)				
Mathematics	**985**	**117**	**67**	**57%**
Total Mathematics Departments	**1396**	**349**	**231**	**66%**
Total Statistics Departments	**71**	**50**	**35**	**70%**
Two-year colleges				
Mathematics Programs	**1023**	**250**	**163**	**65%**

Estimation Procedures

Course enrollments and other information found in this report were projected from the sample to totals for all institutions in the sampling frame. In nearly all cases, the results are for Fall 1995. All projected enrollments in courses in four-year colleges and universities are based on the enrollments in courses taught in the departments sampled in this survey. No attempt was made to collect data on enrollments in mathematics courses that were taught by other departments at the institutions. A limited attempt was made at two-year colleges to estimate such enrollments, and these enrollments are reported separately in this report.

Projections were made using standard procedures for stratified random samples. For example, if stratum i contains N_i schools of which n_i schools respond with a total enrollment of E_i for Course A, then the projected total enrollment in Course A in stratum i is given by:

$$(N_i / n_i)^* \ E_i.$$

Totals of interest are then computed by adding estimates for appropriate strata.

Data from any additional mathematics departments at a sampled school were combined with data from the main mathematics department before any projections were made. The data and projections for statistics departments were kept apart from mathematics departments and are reported separately in this report.

Appendix III
List of Responders to the Survey

Universities with PhD Programs in Mathematics

Adelphi University
Mathematics & Computer Science

American University
Mathematics & Statistics

Boston University
Mathematics

Bowling Green State University
Mathematics & Statistics

Brigham Young University
Mathematics

Brigham Young University
Statistics

Brown University
Mathematics

Brown University
Division of Applied Mathematics

Bryn Mawr College
Mathematics

California Institute of Technology
Mathematics

California Institute of Technology
Control & Dynamical Systems

Catholic University of America
Mathematics

Clarkson University
Mathematics & Computer Science

Clemson University
Mathematical Sciences

Colorado School of Mines
Mathematics & Computer Science

Colorado State University
Mathematics

Colorado State University
Statistics

Columbia University
Statistics

Cornell University
Operations Research & Industrial Engineering School

Cornell University
Biometrics

Duke University
Mathematics

Emory University
Mathematics & Computer Science

Florida State University
Mathematics

Florida State University
Statistics

George Washington University
Mathematics

George Washington University
Statistics

Georgia Institute of Technology
School of Mathematics

Harvard University
Statistics

Illinois State University
Mathematics

Indiana University-Bloomington
Mathematics

Indiana University-Purdue University at Indianapolis
Mathematical Sciences

Iowa State University
Mathematics

Iowa State University
Statistics

Kansas State University
Statistics

Louisiana State University-Baton Rouge
Mathematics

Michigan State University
Mathematics

Michigan State University
Statistics & Probability

Montana State University
Mathematical Sciences

New Mexico State University
Mathematical Sciences

New York University-Courant Institute
Courant Institute of Mathematical Sciences

North Dakota State University
Mathematics

North Dakota State University
Computer Science & Operations Research

Northern Illinois University
Mathematical Sciences

Ohio State University
Mathematics

Ohio State University
Statistics

Ohio University-Athens
Mathematics

Old Dominion University
Mathematics & Statistics

Oregon State University
Mathematics

Pennsylvania State University-University Park
Mathematics

Pennsylvania State University-University Park
Statistics

Polytechnic University
Mathematics & Physics

Portland State University
Mathematical Sciences

Purdue University-West Lafayette
Mathematics

Rice University
Computational & Applied Mathematics

Rice University
Statistics

Southern Illinois University-Carbondale
Mathematics

Southern Methodist University
Mathematics

Southern Methodist University
Statistical Science

SUNY **at Buffalo**
Mathematics

Syracuse University
Mathematics

Temple University
Statistics

Texas A&M University-College Station
Statistics

Texas Tech University
Mathematics

University of Alabama in Birmingham
Mathematics

University of Alabama in Huntsville
Mathematical Sciences

University of California-Davis
Mathematics

University of California-Irvine
Mathematics

University of California-Los Angeles
Mathematics

University of California-Riverside
Mathematics

University of California-Riverside
Statistics

University of California-Santa Cruz
Mathematics

University of Denver
Statistics & Operations Research

University of Florida
Statistics

University of Georgia
Statistics

University of Illinois at Chicago
Mathematics, Statistics & Computer Science

University of Illinois at Urbana-Champaign
Mathematics

University of Illinois at Urbana-Champaign
Statistics

University of Kansas
Mathematics

University of Maryland-College Park
Mathematics

University of Massachusetts at Amherst
Mathematics & Statistics

University of Memphis
Mathematical Sciences

University of Michigan-Ann Arbor
Mathematics

University of Minnesota-Minneapolis
School of Mathematics

University of Minnesota-Minneapolis
School of Statistics

University of Mississippi
Mathematics

University of Missouri at Columbia
Mathematics

University of Missouri at Columbia
Statistics

University of Missouri at Kansas City
Mathematics & Statistics

University of Montana
Mathematical Sciences

University of Nebraska-Lincoln
Mathematics & Statistics

University of New Hampshire
Mathematics

University of New Mexico
Mathematics & Statistics

University of North Carolina-Chapel Hill
Mathematics

University of North Carolina-Chapel Hill
Statistics

University of North Carolina-Chapel Hill
Operations Research

University of Northern Colorado
Mathematical Sciences

University of Notre Dame
Mathematics

University of Pennsylvania
Mathematics

University of Pennsylvania
Statistics

University of Rochester
Statistics

University of South Carolina-Columbia
Statistics

University of Southwestern Louisiana
Mathematics

University of Southwestern Louisiana
Statistics

University of Texas at Arlington
Mathematics

University of Toledo
Mathematics

University of Utah
Mathematics

University of Virginia
Mathematics

University of Virginia
Institute of Applied Mathematics & Mechanics

University of Virginia
Division of Statistics

University of Washington
Mathematics

University of Wisconsin-Madison
Mathematics

University of Wisconsin-Madison
Statistics

University of Wyoming
Statistics

Washington University
Mathematics

Western Michigan University
Mathematics & Statistics

Universities with Master's Programs in Mathematics

Appalachian State University
Mathematical Sciences

Arkansas State University
Mathematics & Computer Science

Ball State University
Mathematical Sciences

Baylor University
Mathematics

Bucknell University
Mathematics

California Polytechnic State University-San Luis Obispo
Mathematics

California Polytechnic State University-San Luis Obispo
Statistics

California State Polytechnic University-Pomona
Mathematics

California State University-Fresno
Mathematics

California State University-Fullerton
Mathematics

California State University-Long Beach
Mathematics

California State University-Los Angeles
Economics & Statistics

California State University-Northridge
Mathematics

California State University-Sacramento
Mathematics & Statistics

Central Missouri State University
Mathematics & Computer Science

Central Washington University
Mathematics

Chadron State College
Mathematical Sciences

Cleveland State University
Mathematics

College of the Atlantic
Mathematics

College of William & Mary
Mathematics

Creighton University
Mathematics & Computer Science

CUNY-Herbert H Lehman College
Mathematics & Computer Science

CUNY-Queens CoUege
Mathematics

East Carolina University
Mathematics

Eastern Michigan University
Mathematics

Fairleigh Dickinson University-Teaneck
Mathematics & Computer Science

Fordham University
Mathematics

Fort Hays State University
Mathematics & Computer Science

George Mason University
Applied & Engineering Statistics

George Mason University
Operations Research & Engineering

Indiana State University
Mathematics & Computer Science

Indiana University-Purdue University at Fort Wayne
Mathematical Sciences

Iona College
Mathematics

Jacksonville University
Mathematics

James Madison University
Mathematics

Kutztown University of Pennsylvania
Mathematics & Computer Science

Loyola University of Chicago
Mathematical Sciences

Marist College
Computer Science & Mathematics Division

Miami University
Mathematics & Statistics

Millersville University of Pennsylvania
Mathematics

Mills College
Mathematics & Computer Science

Mississippi College
Mathematics & Computer Science

National-Louis University
Mathematics

Norfolk State University
Mathematics

North Carolina A & T State University
Mathematics

Northern Arizona University
Mathematics

Pacific Lutheran University
Mathematics

Rivier College
Mathematics & Computer Science

Roosevelt University
School of Science & Mathematics

Saint Cloud State University
Mathematics

Saint Cloud State University
Statistics

San Francisco State University
Mathematics

San Jose State University
Mathematics & Computer Science

Santa Clara University
Mathematics

South Dakota State University
Mathematics & Statistics

Southeast Missouri State University
Mathematics

Southern Illinois University-Edwardsville
Mathematics & Statistics

Southwest Missouri State University
Mathematics

Southwest Texas State University
Mathematics

Stephen F Austin State University
Mathematics & Statistics

SUNY-College at Potsdam
Mathematics

Tennessee Technological University
Mathematics

Texas A&M University-Corpus Christi
Computing & Mathematical Science

Texas Woman's University
Mathematics & Computer Science

Trenton State College
Mathematics & Statistics

Trinity College
Mathematics

Troy State University-Dothan
Mathematics & Science

University of Akron
Mathematical Sciences

University of Arkansas at Little Rock
Mathematics & Statistics

University of Central Florida
Mathematics

University of Louisville
Mathematics

University of Maryland-Eastern Shore
Mathematics & Computer Science

University of Massachusetts at Dartmouth
Mathematics

University of Massachusetts at Lowell
Mathematical Sciences

University of Minnesota-Duluth
Mathematics & Statistics

University of Missouri at St Louis
Mathematics & Computer Science

University of Nebraska-Omaha
Mathematics

University of Nevada-Las Vegas
Mathematical Sciences

University of Nevada-Reno
Mathematics

University of New Orleans
Mathematics

University of North Carolina-Charlotte
Mathematics

University of Northern Iowa
Mathematics

University of Southern Mississippi
Mathematics

University of Southern Mississippi
Computer Science & Statistics

University of Texas-Pan American
Mathematics & Computer Science

University of Vermont
Mathematics & Statistics

University of West Alabama
Mathematics

University of Wisconsin-Oshkosh
Mathematics

Virginia Commonwealth University
Mathematical Sciences

Webster University
Mathematics & Computer Science

Worcester Polytechnic Institute
Mathematical Sciences

Wright State University
Mathematics & Statistics

Youngstown State University
Mathematics

Colleges with No Graduate Programs in Mathematics

Alverno College
Mathematics

Arkansas Technical University
Mathematics

Augsburg College
Mathematics

Barry University
Mathematics & Computer Science

Bentley College
Mathematical Sciences

Berea College
Mathematics

California State University-Dominguez
Mathematics

Castleton State College
Mathematics

Concord College
Mathematical Sciences

Concordia University
Mathematics

Concordia University-Wisconsin
Division of Sciences

CUNY-College of Staten Island
Mathematics

East Stroudsburg University of Pennsylvania
Mathematics

Eastern Connecticut State University
Mathematics & Computer Science

Eastern Oregon State College
Mathematics & Computer Science

Florida A & M University
Mathematics

Furman University
Mathematics

Georgetown University
Mathematics

GMI Engineering & Management Institute
Science & Mathematics

Hollins College
Mathematics & Statistics

Kentucky Wesleyan College
Mathematics, Physics & Computer Science

Lander College
Division of Mathematics & Computer Science

Linfield College
Mathematics

Longwood College
Mathematics & Computer Science

Loyola Marymount University
Mathematics

Macalester College
Mathematics & Computer Science

Marian College
Mathematics & Natural Science

Mayville State University
Mathematics

Montana State University-Northern
Science & Mathematics

Nebraska Wesleyan University
Mathematics & Computer Science

New York Institute of Technology-Main Campus
Mathematics

Norwich University
Mathematics

Olivet Nazarene University
Mathematics

Ottawa University
Mathematics & Physics

Otterbein College
Mathematical Sciences

Pennsylvania State University-Capital
Mathematical Sciences & Computer Science

Pepperdine University
Division of Natural Sciences

Rockhurst College
Mathematics, Computer Science & Physics

Sacred Heart University
Mathematics & Science

Saint Olaf College
Mathematics

Siena College
Mathematics

Slippery Rock University of Pennsylvania
Mathematics

Southeastern Louisiana University
Mathematics

Southern Oregon State College
Mathematics

Southern Utah University
Mathematical Sciences

Suffolk University
Mathematics & Computer Science

SUNY-College of Technology
Mathematics

SUNY-College at Purchase
Mathematics

The Citadel
Mathematics & Computer Science

University of Alaska-Anchorage
Mathematical Sciences

University of Houston-Downtown
Computing & Mathematical Sciences

University of Indianapolis
Mathematics

University of Maine-Machias
Division of Sciences

University of Maryland-University College
Computer & Mathematical Sciences

University of Michigan-Dearborn
Mathematics & Statistics

University of North Alabama
Mathematics & Computer Science

University of San Francisco
Mathematics

University of Scranton
Mathematics

University of Tennessee-Chattanooga
Mathematics

University of the South
Mathematics & Computer Science

University of Wisconsin-Green Bay
Mathematics

University of Wisconsin-La Crosse
Mathematics

University of Wisconsin-River Falls
Mathematics & Computer Systems

Washburn University of Topeka
Mathematics & Statistics

Wayne State College
Division of Mathematics & Science

West Georgia College
Mathematics & Computer Science

West Liberty State College
Mathematics, Physics & Physical Science

Two-Year Respondents

American River College
Mathematics, Engineering & Drafting

Ancilla College
Division of Science & Mathematics

Andrew College
Mathematics

Angelina College
Science & Mathematics Division

Anne Arundel Community College
Mathematics Division

Antelope Valley College
Mathematics & Science Division

Arkansas State University-Beebe
Mathematics & Science Division

Baltimore City Community College
Mathematics

Beaufort County Community College
Mathematics

Bee County College
Mathematics & Physics Division

Belleville Area College
Mathematics

Bladen Community College
Mathematics

Blue Mountain Community College
Mathematics

Brookhaven College
Mathematics Program

Broward Community College
Mathematics

Bucks County Community College
Mathematics & Computer Science

Cabrillo College
Mathematics, Science & Engineering Division

Cayuga Community College
Mathematics, Engineering, Drafting & Design

Community College of Chicago-Wilbur Wright CoUege
Mathematics

Central Florida Community College
Mathematics & Science Division

Chaffey CoUege
Mathematics

Charles Stewart Mott Community College
Division of Science & Mathematics

Cincinnati State Technical & Community College
Mathematics

City College of San Francisco
Mathematics

Clackamas Community College
Mathematics

College of Lake County
Engineering, Mathematics & Physical Science

Collin County Community College
Mathematics

Community College of Allegheny County-South Campus
Mathematics

Copiah/Lincoln Junior College
Mathematics

Cosumnes River College
Mathematics Program

Cumberland County College
Mathematics, Physical Science, Technology

CUNY-Borough of Manhattan Community College
Mathematics Program

CUNY-Bronx Community College
Mathematics & Computer Science

CUNY-Kingsborough Community College
Mathematics & Computer Science

CUNY-New **York City Technical College**
Mathematics

CUNY-Queensborough Community College
Mathematics & Computer Science

Darton College
Science & Mathematics

Des Moines Area Community College
Mathematics

Diablo Valley College
Mathematics & Computer Science

Dixie College
Mathematics

Eastern Arizona College
Mathematics

Eastfield College
Business & Mathematics Division

Edison State Community College
Mathematics Program

Edmonds Community College
Mathematics

El Camino College
Mathematics & Physical Science Division

El Paso Community College
Arts & Sciences Division

Essex Community College
Mathematics & Computer Science

Frederick Community College
Mathematics, Computer Science & Engineering

Genesee Community College
Mathematics & Science Division

Georgia Military College
Natural Science & Mathematics

Gloucester County College
Mathematics, Science, & Technologies

Golden West College
Mathematics

Grand Rapids Community College
Mathematics Division

Grayson County College
Mathematics

Green River Community College
Division of Mathematics

Harrisburg Area Community College
Mathematics, Engineering & Technology Division

Hartnell College
Mathematics & Science

Haywood Community College
Mathematics Program

Houston Community College-Northwest Campus
Mathematics

Houston Community College-Southeast Campus
Mathematics

Jamestown Community College
Mathematics & Computer Science

Jefferson Community College
Natural Science & Mathematics Division

Jefferson Davis State Junior College
Mathematics

Johnson County Community College
Mathematics

Kansas City Kansas Community College
Mathematics & Sciences

Kellogg Community College
Science & Mathematics

Kishwaukee College
Mathematics

LaGuardia Community College
Mathematics

Lake Michigan College
Mathematics & Science

Lakeland Community College
Mathematics Program

Lakewood Community College
Mathematics

Lane Community College
Mathematics

Laney College
Mathematics

Laredo Community College
Mathematics

Las Positas College
Mathematics Program

Leeward Community College
Mathematics & Natural Science

Lorain County Community College
Division of Science & Mathematics

Lord Fairfax Community College
Instructional Services Division

Los Angeles City College
Mathematics

Los Angeles Trade Technical College
Mathematics & Science

Los Medanos College
Mathematics

Louisiana State University-Eunice
Mathematics Program

Macomb Community College
Mathematics

Massasoit Community College
Mathematics

Mayland Community College
Mathematics

Metropolitan Community College
Mathematics Program

Miami Dade Community College North
Mathematics & Physics

Middlesex County College
Mathematics

Milwaukee Area Technical College
Mathematics

Mineral Area College
Mathematics

Montgomery College-Rockville Campus
Mathematics

Montgomery County Community College
Mathematics, Science & Technology Division

Moraine Park Technical College
Mathematics Program

Mount Aloysius College
Microcomputer, Science & Mathematics

Mount Hood Community College
Mathematics Division

Mount San Antonio College
Mathematics, Astronomy & Computer Science

Napa Valley College
Mathematics

Navarro College
Mathematics Program

New Hampshire Technical College at Laconia
Mathematics Program

Newbury College
Arts, Sciences & Communication

North Harris College
Mathematics

North Lake College
Mathematics Program

Northern Oklahoma College
Mathematics Program

Northern Virginia Community College
Mathematics, Science & Engineering Division

Northwest College
Mathematics

Northwest Shoals Community College
Mathematics Program

Odessa College
Mathematics & Engineering

Oklahoma City Community College
Mathematics

Oklahoma State Univiversity-Oklahoma City
Mathematics

Orange Coast College
Mathematics

Palm Beach Community College
Business & Mathematics Division

Palomar College
Mathematics

Parkland College
Mathematics & Computer Science

Patrick Henry Community College
Mathematics

Pennsylvania State University-Berks
Academic Affairs

Pennsylvania State University-Ogontz
Mathematics

Pensacola Junior College
Mathematics

Phoenix College
Mathematics

Pima Community College/West Campus
Mathematics

Portland Community College
Mathematics

Prince George's Community College
Mathematics & Engineering

Rancho Santiago College
Mathematics

Richard Bland College
Mathematics

Ricks College
Mathematics & Computer Science

Roanoke/Chowan Community College
Mathematics Program

Rose State College
Engineering & Science Division

San Antonio College
Mathematics

San Joaquin Delta College
Science & Mathematics Division

San Juan College
Mathematics, Science & Allied Health

Santa Barbara City College
Mathematics

Santa Fe Community College
Mathematics

Schenectady County Community College
Mathematics & Natural Science

Schoolcraft College
Mathematics

Shoreline Community College
Mathematics

Sinclair Community College
Mathematics

Southeast Community College-Lincoln Campus
Mathematics Program

Southwestern Michigan College
Mathematics & Science

Spartanburg Technical College
Mathematics Program

Spokane Falls Community College
Mathematics

Saint Petersburg Junior College
Mathematics

Saint Philip's College
Mathematics

Standing Rock Community College
Mathematics Program

Suffolk Community College-Ammerman Campus
Mathematics

Suomi College
Mathematics & Science

Tarrant County Junior College
Mathematics

Temple Junior College
Mathematics

Thomas Nelson Community College
Mathematics Program

Tidewater Community College
Mathematics & Science

Tulsa Junior College
Science & Mathematics

Umpqua Community College
Mathematics

Union County College
Mathematics

Victoria College
Mathematics

Vincennes University
Mathematics

Virginia Western Community College
Mathematics & Natural Science Division

Vista College
Mathematics Program

Wallace Community College-Hanceville
Mathematics Program

Walters State Community College
Mathematics Division

Waubonsee Community College
Mathematics & Science

Westark Community College
Division of Mathematics, Science & Engineering

Western Oklahoma State College
Mathematics & Science

Westmoreland County Community College
Mathematics

William Rainey Harper College
Mathematics & Science

Wilson County Technical Institute
General Education

Yuba College
Division of Mathematics & Science

Appendix IV

Four-Year College Survey

Conference Board of the Mathematical Sciences

SURVEY OF UNDERGRADUATE PROGRAMS in the MATHEMATICAL SCIENCES 1995

GENERAL INSTRUCTIONS

You are asked to report on undergraduate programs in the mathematical sciences (including applied mathematics, statistics, operations research) and computer science under the direction of your department. This questionnaire is being sent to each department in the mathematical sciences on your campus. Do not include data for branches or campuses of your institution that are budgetarily separate from your department.

Because departments vary in course offerings and faculty composition, some questions (or parts of questions) may not be applicable to your department. Please read the instructions carefully and complete all pertinent questions.

If you have any questions, please contact Don Rung, Survey Director, by phone at 814-865-3611 or by email at rung@math.psu.edu.

Please return your completed questionnaire by November 1, 1995, to:

CBMS Survey
Attn: Michael Neuschatz
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3834

1. Name of your institution: _____

Name of your department: _____

2. A. Your department offers programs leading to the following degrees (check all boxes that apply):

	None	Baccalaureate	Master's	Doctoral
Mathematics	☐	☐	☐	☐
Statistics	☐	☐	☐	☐
Computer Science	☐	☐	☐	☐

B. Your academic calendar is:

☐ Semester ☐ Trimester ☐ Quarter ☐ 4-1-4 ☐ Other (specify)

3. Regular Undergraduate Program Courses, Fall 1995

The following instructions apply throughout Question 3. Please read them carefully before you begin filling out the tables.

- The undergraduate courses in the following tables are listed in approximate catalogue order in four groups corresponding to mathematics, statistics, operations research, and computer science. The format for reporting information about courses differs somewhat from section to section, with more information asked about calculus coiurses, less for the advanced courses.
- Throughout Question 3. count each lecture offering with separately scheduled recitiation/problem sessions as one section. For certain courses, primarily for the mainstream calculus series, a row is provided in which to list, for the same course, all lecture sections with recitation/problem sessions separately from all sections without recitation/problem sessions.
- Faculty holding joint appointments with another department should be counted in column *#4* if they are tenured or tenure-eligible within your department; otherwise, report them in column #5 or #6 according to their budget level within your department.
- Report a section of a course as taught by a *Graduate Teaching Assistant* (TA) only when that course is taught independently by the TA; that is, the course is the TA's "own" course.

			Of the number in Column #3, how many sections are taught by: (note: column *#3* = #4+#5+#6+#7)			
Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Tenured or Tenure-eligible Faculty (4)	Other Full-time Faculty (5)	Part-time Faculty (6)	Graduate Teaching Assist. (7)
3.A. MATHEMATICS						
Remedial Level						
1. Arithmetic/Basic Math						
2. Pre-algebra						
3. Elementary Algebra (high school)						
4. Intermediate Algebra (high school)						
5. Other remedial level courses (* Also see Question 3E, page 7)						
Introductory **Level, including pre-calculus**						
6. College Algebra						
7. Trigonometry						
8. College Algebra & Trig. (combined)						
9. Elementary Functions,Precalculus Mathematics						
10. Analytic Geometry						
11. Mathematics for Liberal Arts						
12. Finite Mathematics						
13. Business Mathematics						
14. Mathematics for Elementary School Teachers						
15. Other introductory level courses						

3. Regular Undergraduate Program Courses, Fall 1995 (continued)

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Of the number in Col. 3, how many sections are taught by: Tenured or Tenure-eligible Faculty (4)	Other Full-time Faculty (5)	Part-time Faculty (6)	Graduate Teaching Assist. (7)	Of the number in Col. 3, how many sections: use a "reform" text[b] (8)	use graphing calculators (9)	include writing components such as reports or projects (10)	require computer assignments (11)	assign group projects (12)
3.A. MATHEMATICS **(cont.)**											
16. Mainstream[a] Calculus I:											
16.1. Lecture with separately scheduled recit./problem sessions[c]											
16.2. Regular sections with enrollments of 60 or less											
16.3. Regular sections with enrollments above 60											
17. Mainstream Calculus II:											
17.1. Lecture with separately scheduled recit./problem sessions[c]											
17.2. Regular sections with enrollments of 60 or less											
17.3. Regular sections with enrollments above 60											
18. Mainstream Calculus III (and IV, etc):											
18.1. Lecture with separately scheduled recit./problem sessions[c]											
18.2. Regular sections with enrollments of 60 or less											
18.3. Regular sections with enrollments above 60											
19. Non-Mainstream Calculus I:											
19.1. Lecture with separately scheduled recit./problem sessions[c]											
19.2. Regular sections with enrollments of 60 or less											
19.3. Regular sections with enrollments above 60											

[a] A calculus course is mainstream if it leads to the usual upper division mathematical sciences courses.

[b] Include all sections for which the primary text (or set of notes, etc.) generally reflect the pedagogical principals of the reform calculus movement

[c] Remember: A calculus class along with its recitation/problem sessions is to be counted as one section.

3. Regular Undergraduate Program Courses, Fall 1995 (Continued)

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Of the number in Col. 3, how many sections are taught by: Tenured or Tenure-eligible Faculty (4)	Other Full-time Faculty (5)	Part-time Faculty (6)	Graduate Teaching Assist. (7)
3.A. MATHEMATICS **(cont.)**						
Calculus Level						
20. Non-mainstream Calculus II (and III, etc.)						
21. Differential Equations						
22. Discrete Mathematics						
23. Linear Algebra or Matrix Theory						
24. Other calculus level courses						
Advanced **Level**			If not offered in Fall 95, is it scheduled in Winter/Spring 96? Y(es)/N(o) (4)			
25. Introduction to Proofs						
26. Modern Algebra I (and II)						
27. Number Theory						
28. Combinatorics						
29. Actuarial Mathematics						
30. Logic/Foundations of Mathematics						
31. Discrete Structures						
32. History of Mathematics						
33. Geometry						
34. Mathematics for Secondary School Teachers (methods, etc.)						
35. Advanced Calculus I (and II) and/or Real Analysis						
36. Advanced Mathematics for Engineering and Physics						
37. Advanced Linear Algebra						
38. Vector Analysis						
39. Advanced Differential Equations						
40. Partial Differential Equations						

3. Regular Undergraduate Program Courses, Fall 1995 (Continued)

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	If not offered in Fall 95, is it scheduled in Winter/Spring 96? Y(es)/N(o) (4)
3.A. MATHEMATICS (cont.)			
Advanced Level (cont.)			
41. Numerical Analysis			
42. Applied Mathematics (Mathematical Modeling)			
43. Complex Variables			
44. Topology			
45. Senior Seminar/Independent Study in Mathematics			
46. Other advanced level courses			

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Of the number in Col. 3, how many sections require computer assignments (4)	Of the number in Col. 3, how many sections are taught by: Tenured or Tenure-eligible Faculty (5)	Other Full-time Faculty (6)	Part-time Faculty (7)	Graduate Teaching Assist. (8)
3.B. STATISTICS							
Elementary Level							
47. Elementary Statistics: (no calculus prerequisite)							
47.1. Lecture with separately scheduled recit./problem sessions[a]							
47.2. Regular sections with enrollments of 60 or less							
47.3. Regular sections with enrollments above 60							
48. Probability and Statistics (no calculus prerequisite)							
49. Other elementary level courses							

[a] Remember: An elementary statistics class along with its recitation/problem sessions is to be counted as one section.

3. Regular Undergraduate Program Courses, Fall 1995 (Continued)

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	If not offered in Fall 95, is it scheduled in Winter/Spring 96? Y(es)/N(o) (4)
3.B. STATISTICS (cont.)			
Upper **Level**			
50. Mathematical Statistics (calculus prerequisite)			
51. Probability (calculus prerequisite)			
52. Stochastic Processes			
53. Applied Statistical Analysis			
54. Design and Analysis of Experiments			
55. Regression (and Correlation)			
56. Senior Seminar/Independent Studies in Statistics			
57. Other upper level courses			
3.C. OPERATIONS RESEARCH			
58. Intro. to Operations Research			
59. Intro. to Linear Programming			
60. Other O.R. courses			

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Of the number in Col. 3, how many sections are taught by: Tenured or Tenure-eligible Faculty (4)	Other Full-time Faculty (5)	Part-time Faculty (6)	Graduate Teaching Assist. (7)
3.D. COMPUTER SCIENCE						
Lower **Level**						
61. Computers and Society						
62. Introduction to Software Packages						
63. Issues in Computer Science						
64. Computer Programming I (C 101 '91)[a]						
65. Computer Programming II (C 102 '91)[a]						
66. Advanced Programming & Data Structures						

[a] Refers to courses described in Computing Curriculum 1991, Report of the ACM/IEEE-CS Joint Curriculum Task Force, ACM 1991

3. Regular Undergraduate Program Courses, Fall 1995 (Continued)

Name of Course (or equivalent) (1)	Total Enrollment Fall 95 (2)	Total Number of Sections (3)	Of the number in Col. 3, how many sections are taught by: Tenured or Tenure-eligible Faculty (4)	Other Full-time Faculty (5)	Part-time Faculty (6)	Graduate Teaching Assist. (7)
3.D. COMPUTER SCIENCE **(cont.)**						
Lower **Level (cont.)**						
67. Database Management Systems						
68. Discrete Mathematics						
69. Other lower level courses						
Middle Level						
70. Intro. to Computer Systems						
71. Assembly Language Programming						
72. Intro. to Computer Organization						
73. Intro. to File Processing						
74. Other middle level courses						
Upper **Level**						
75. All upper level courses combined						

3.E. Outside Remedial Enrollment

If any of the remedial level courses (Numbers 1-5, Question #3A, page 2) are taught outside of your department (but within your institution) and have not been reported in Question #3A, report the total of all such outside enrollments for Fall 1995. _____

4. Previous Year's Enrollment Figures:

Responses to this question will be used to project total enrollment for the current academic year, 1995–96, by the pattern of enrollment for the previous academic year. 1994–95.

The total student enrollment in your undergraduate courses was _____ for fall 1994 and was _____ for the entire academic year 1994–95.

5. Mathematical Sciences Faculty Profile, Fall 1995

5.A. Faculty Counts, Fall 1995

In each of tables 5.A.1 and 5.A.2 report the number of faculty that belong in each box. Include all departmental faculty according to tenure or tenure-eligible status, distinguishing between such faculty on leave and not on leave. For faculty members with joint appointments, report them as *Tenured or Tenure-eligible* if that describes their status within your department; otherwise, report them as *Other Full-time* or *Part-time* according to their budget level within your department for fall 1995. Do not report any TA's in any of the Tables for Question 5.

If your institution does not recognize tenure, please check here ☐ then report full-time faculty who are "permanent" in the *Tenured* column, otherwise use the *Other full-time* column.

Note: Tables 5.A.1 and 5.A.2 count the same population of faculty, and should have the same total when summed.

5.A.1 By Highest Degree and Gender		Type of Appointment: Tenured		Tenure-eligible		Other full-time	Part-time (not TAs)
		Not on leave	On leave	Not on leave	On leave		
With doctorate	Male						
	Female						
Without doctorate	Male						
	Female						

5.A.2 By Ethnic/racial Status and Gender		Type of Appointment: Tenured	Tenure-eligible	Other full-time	Part-time (not TAs)
American Indian, Eskimo, Aleut	Male				
	Female				
Asian, Pacific Islander	Male				
	Female				
Black (non-Hispanic)	Male				
	Female				
Mexican American, Puerto Rican, or other Hispanic	Male				
	Female				
White (non-Hispanic)	Male				
	Female				
Status not known	Male				
	Female				

5.B Faculty Age Profile

For the tenured and tenure-eligible faculty reported in 5.A, report the number that belong in each of the boxes below. If your institution does not recognize tenure, please use the *Tenured faculty* line to report on your "permanent" full-time faculty.

Faculty Category		Year of Birth									
		Before 1926	1926-1930	1931-1935	1936-1940	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	After 1965
Tenured faculty	Male										
	Female										
Tenure-eligible faculty	Male										
	Female										

5.C Retirements and Deaths

For the period from 1 September 1994 through 31 August 1995, report the number of your tenured or tenure-eligible faculty [if your institution does not recognize tenure, report on those who are "permanent" full-time] who:

retired from full-time service _____ died while in full-time service _____ .

6. Departmental Information

6.A Teaching Load

For fall 1995, the expected (or typical) teaching load for the tenured or tenure-eligible faculty reported in Question 5.A above is _____ classroom contact hours per week.

6.B Office Facilities

For the tenured or tenure-eligible faculty reported in Question 5.A, how many have:

a private, fully enclosed office? _____

a two-person, fully enclosed office? _____

other office facilities? _____

6.C Departmental Baccalaureate Degrees

6.C.1 Report the number of your departmental majors awarded a baccalaureate degree by your institution, between July 1, 1994 and June 30, 1995 (include double majors): _____

6.C.2 Of the number in 6.C.1, report the number who majored in:
(enter each major only once. Use the "Other" category for any major that does not fit the existing categories)

Area of Major	Male	Female
Mathematics (including applied)		
Mathematics Education		
Statistics		
Computer Science		
Actuarial Mathematics		
Operations Research		
Joint Computer Science and Mathematics		
Joint Mathematics and Statistics		
Other tracks in your department		

6.D Undergraduate Advising within the department.

6.D.1 Which intended or declared departmental majors are assigned a department advisor? Mark (X) all that apply.

☐ All first and second year intended or declared departmental majors.

☐ All third and fourth year departmental majors.

If none of the above apply, then check one of the following:

☐ A. Departmental majors primarily are advised by an advising office.

☐ B. Departmental majors are advised in a variety of ways not covered in the above categories.

IF YOU CHECKED EITHER A. OR B. ABOVE, PLEASE SKIP TO QUESTION 6D.3

6.D.2 How often are department majors required to meet with their departmental advisor in formally scheduled meetings? Mark (X) all that apply.

☐ There are no such required meetings.

☐ There is at least one required, formally scheduled meeting per year.

☐ There is at least one required, formally scheduled meeting during the student's third and fourth years.

6.D.3 How many of your tenured and tenure-eligible faculty are assigned to advise undergraduate departmental majors this fall? _____

6.D.4 Which of the following groups have primary responsibility for informing your departmental majors about the following topics? Mark (X) only one column in each row.

	Primary Source of Information				
Topic	Department advisor	Career services office	Outside speakers	Math club	Other
Non-teaching careers					
K-12 teaching					
Graduate school					

6.E Departmental Computer Facilities

6.E.1 Of the total full-time faculty reported in Q 5.A.1, how many have a computer, or terminal to a computer, in their office?_____Of this number, how many have access from their offices to the Internet? _____

6.E.2 Among the full-time faculty in your department not counted above, how many have access to a computer or terminal only at other locations on campus? _____
Of this number, how many have access to the Internet through such shared machines? _____

6.E.3 Does your department have any departmental staff for computer systems support ? ___ Yes ___ No
If yes, what is the total full-time-equivalent (FTE) of this staff?_____FTE

7. The approximate number of hours required to complete this questionnaire was: _____

If you have found some question(s) difficult to interpret or answer, please let us know. We welcome comments or suggestions for future surveys.

_____

_____

_____

Information supplied by: _____

Title and Department: _____

Institution and Campus: _____

_____
Street City State Zip

Telephone: _____ Date: _____

Please return completed questionnaire by November 1, 1995, to:
CBMS Survey, ATTN: Michael Neuschatz
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3834

Thanks to all who helped in completing this survey; I appreciate the time spent.

Donald C. Rung

Appendix V
Two-Year College Survey

Conference Board of the Mathematical Sciences

SURVEY OF MATHEMATICS PROGRAMS
in
TWO-YEAR COLLEGES
1995

GENERAL INSTRUCTIONS

This questionnaire should be completed by the person who is directly in charge of the mathematics program or department on your campus. Do not include data for branches or campuses of your institution that are geographically or budgetarily separate.

Report on all of the courses and instructors in your college that fall under the general heading of the mathematics program or department. Include all mathematics, statistics, and computer science courses taught within the mathematics program or department. Except in Question 3, do not include courses taught in other departments, learning centers, or remedial/developmental programs separate from the mathematics program or department. If your college does not have a departmental or divisional structure, consider the group of all mathematics instructors to be the "mathematics department" for the purpose of this survey.

If you have any questions, please contact Ann Watkins, Associate Director for Two-Year Colleges, by phone at 818-885-2781 or by email at awatkins@csun.edu.

Please return your completed questionnaire in the enclosed *postage-paid* envelope by November 1, 1995, to:

CBMS Survey
Attn: Michael Neuschatz
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3834

1. A. Name of your two-year college: _____

   If your two-year college is part of a larger organization, identify this organization (or its main campus): _____

   B. Your academic calendar is: ☐ Semester ☐ Trimester ☐ Quarter ☐ Other (specify): _____

   C. How is the mathematics program administered at your two-year college?

   ☐ mathematics department
   ☐ mathematics and computer science department
   ☐ mathematics and science department or division
   ☐ no department or division structure
   ☐ other (specify): _____

   D. Are remedial/developmental mathematics courses administered separately from the mathematics department/program? ☐ Yes ☐ No

   E. How many mathematics majors are there at your college who intend to transfer to a four-year college or university?_____

2. **Courses Offered By Your Mathematics Department/Program in Fall 1995**
If the titles of courses listed below do not coincide exactly with those at your college, use your best judgement about where to list your courses. Use the additional spaces at the end of the table to write in the names of courses that do not fit reasonably under a listed title.

Name of Course (or equivalent)	Total number of students enrolled Fall 1995	Total number of sections Fall 1995	List the number of sections: with enrollment above 60	taught by part-time faculty[a]	using graphing calculators	that include a writing component such as reports or projects	that require computer assignments	that assign group projects	that meet at least once a week in a classroom equipped with computers for students	that are taught mostly by the standard lecture method	that are taught mostly by computer-aided instruction	that are taught by television[b]	If not offered in Fall 1995, was this course offered in 1994-1995 or is it scheduled for Spring 1996?
1. Arithmetic/Basic Math													
2. Pre-Algebra													
3. Elementary Algebra (high school level)													
4. Intermediate Algebra (high school level)													
5. Geometry (high school level)													
6. College Algebra (level is beyond Intermediate Algebra)													
7. Trigonometry													
8. College Algebra and Trigonometry, combined													
9. Precalculus/Elementary Functions													
10. Analytic Geometry													
11. Calculus I (typically for math, physics, engineering majors)													
12. Calculus II													
13. Calculus III													

[a] Do not include full-time faculty teaching overload

[b] or another "distance" method where the instructor is not present

2. Courses Offered by Your Mathematics Department/Program in Fall 1995 (continued)

Name of Course (or equivalent)	Total number of students enrolled Fall 1995	Total number of sections Fall 1995	List the number of sections: with enrollment above 60	taught by part-time faculty[a]	using graphing calculators	that include a writing component such as reports or projects	that require computer assignments	that assign group projects	that meet at least once a week in a classroom equipped with computers for students	that are taught mostly by the standard lecture method	that are taught mostly by computer-aided instruction	that are taught by television[b]	If not offered in Fall 1995, was this course offered in 1994-1995 or is it scheduled for Spring 1996?
14. Non-Mainstream Calculus I[c]													
15. Non-Mainstream Calculus II													
16. Differential Equations													
17. Linear Algebra													
18. Discrete Mathematics													
19. Finite Mathematics													
20. Mathematics for Liberal Arts/ Math Appreciation													
21. Mathematics for Elementary School Teachers													
22. Business Math (not a transfer course to four-year colleges)													
23. Business Math (transfer course)													
24. Non-Calculus-Based Technical Math (not a transfer course)													
25. Calculus-Based Technical Math (transfer course)													

[a] Do not include full-time faculty teaching overload.

[b] Or another "distance" method where the instructor is not present.

[c] Typically for business, biology, social science majors.

2. Courses Offered by Your Mathematics Department/Program in Fall 1995 (continued)

Name of Course (or equivalent)	Total number of students enrolled Fall 1995	Total number of sections Fall 1995	List the number of sections: with enrollment above 60	taught by part-time faculty[a]	using graphing calculators	that include a writing component such as reports or projects	that require computer assignments	that assign group projects	that meet at least once a week in a classroom equipped with computers for students	that are taught mostly by the standard lecture method	that are taught mostly by computer-aided instruction	that are taught by television[b]	If not offered in Fall 1995, was this course offered in 1994-1995 or is it scheduled for Spring 1996?
26. Elementary Statistics (with or without probability)													
27. Probability (with or without statistics)													
[illegible]													
28. Data Processing													
29. Computers and Society													
30. Intro to Software Packages													
31. Issues in Computer Science													
32. Computer Programming I													
33. Computer Programming II													
34. Advanced Programming and Data Structures													
35. Database Management Systems													
36. Other courses:													

[a] Do not include full-time faculty teaching overload.

[b] Or another "distance" method where the instructor is not present.

3. Enrollments Outside Your Mathematics Department/Program in Fall 1995

List all mathematics/statistics/computer science enrollments at your college that are not taught in the mathematics department/program and so not listed in *#2.* If no courses are offered, enter "0". Please consult appropriate sources outside the math program such as schedules or heads of these programs to get good estimates of enrollments.

	Enrollment in courses given by department or division						
Course	Natural Sciences	Occupational Programs	Business	Social Sciences	Computer Science	Developmental Studies/ Learning Center	Other
1. Arithmetic/Pre-Algebra							
2. Elementary Algebra (high school level)							
3. Intermediate Algebra (high school level)							
4. College Algebra (level is beyond intermediate algebra)							
5. Trigonometry or Precalculus							
6. Calculus or Differential Equations							
7. Business Mathematics							
8. Statistics/Probability							
9. Computer Science and Programming							
10. Data Processing							
11. Technical Mathematics							
12. Other:							

4. Mathematics Faculty in the Mathematics Department or Program

A. Number of full-time permanent faculty members (faculty tenured or tenure-track or on the permanent staffing table), including those on leave: _____

1. What is the expected weekly teaching load in classroom contact hours for members of your full-time permanent faculty? _____

2. How many of these full-time permanent faculty members teach extra hours for extra pay at your college? _____ at other schools? _____

Number of these who teach at your college 1-3 hours extra weekly _____
4-6 hours extra weekly _____
7 or more hours extra weekly _____

B. Number of full-time temporary faculty members (such as sabbatical replacements): _____

4. Mathematics Faculty in the Mathematics Department or Program(continued)

C. Number of part-time faculty members: _____

Number of part-time faculty members who teach six or more hours a week: _____

D. Of your part-time faculty, how many are:

Employed Full-time in							
High School	Another Two-year College	Another Department of your College	Four-year College	Industry or Other	Graduate Students	Not Graduate Students and Not Employed Full-time Anywhere	Total Number of Part-time Faculty

E. Are office hours required of part-time faculty?

☐ Yes, with extra pay ☐ Yes, without extra pay ☐ No

F. Are part-time faculty typically paid on the same pay scale as full-time faculty members who teach extra hours for extra pay?

☐ Yes ☐ No, part-timers paid more ☐ No, part-timers paid less

G. Of your full-time temporary and part-time faculty,
how many are seeking full-time permanent employment in a two-year college? _____

5. Faculty Educational Level, by Subject Field

In each of the following tables, write the number of faculty members in each box.
Please be sure the totals match those given earlier.

A. Full-time Permanent Faculty (including those on leave) Total: _____

	Major Field of Graduate Degree				
Highest Degree	Mathematics	Statistics	Computer Science	Mathematics Education	Other
Doctorate					
Master's					
Bachelor's					
Less than Bachelor's					

B. Full-time Temporary and Part-time Faculty Total: _____

	Major Field of Graduate Degree				
Highest Degree	Mathematics	Statistics	Computer Science	Mathematics Education	Other
Doctorate					
Master's					
Bachelor's					
Less than Bachelor's					

7. Faculty by Gender and Ethnicity/Race

In each of the following tables, write the number of faculty members in each box.
Please be sure the totals match those given earlier.

A. Full-time Permanent Faculty (including those on leave) **Total:** _____

Ethnic/Racial Status											
Asian, Pacific Islander		Black (non-Hispanic)		American Indian, Eskimo, Aleut		Mexican American, Puerto Rican or other Hispanic		White (non-Hispanic)		Status not known	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female

B. Full-time Temporary and Part-time Faculty Total: _____

Ethnic/Racial Status											
Asian, Pacific Islander		Black (non-Hispanic)		American Indian, Eskimo, Aleut		Mexican American, Puerto Rican or other Hispanic		White (non-Hispanic)		Status not known	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female

8. Faculty Age Profile

Include **only full-time permanent faculty** (including those on leave) Total: _____

	Age							
	Under 30	30-34	35-39	40-44	45-49	50-54	55-59	60 and over
Men								
Women								
Asian, Pacific Islander								
Black (non-Hispanic)								
American Indian, Eskimo, Aleut								
Mexican American, Puerto Rican or other Hispanic								
White (non-Hispanic)								
Status not known								

9. Faculty Employment and Mobility

A. How many of your full-time permanent faculty members were newly appointed on a full-time permanent basis this year (1995-1996)? _____

B. What was the main activity of these newly appointed full-time permanent faculty members during the **previous** year, 1994-1995? (Select one.)

attending graduate school _____

teaching in a four-year college or university _____

teaching in another two-year college _____

teaching in a secondary school _____

part-time or full-time temporary employment by your college _____

nonacademic employment _____

unemployed _____

status unknown _____

C. How many of your new full-time permanent appointments had previously taught in your department either part-time or full-time? _____

D. Please give the following for each of your new full-time permanent appointments for 1995-1996. Add more lines if necessary.

	Age	Gender	Ethnicity/ Race	Highest Educational Level
New Hire #1				
New Hire #2				
New Hire #3				

E. How many of your faculty who were full-time permanent in the previous year (1994-1995) are no longer part of your full-time permanent faculty? _____

List the number who:

died or retired _____

are teaching in a four-year college or university _____

are teaching in another two-year college _____

are teaching in a secondary school _____

left for a nonacademic position _____

returned to graduate school _____

other (specify) _____

unknown _____

10. Professional Activities of Permanent Full-Time Faculty

A. Estimate the number of full-time permanent members of your mathematics department or program who **in the past year:**

attended at least one professional meeting _____

took an upper division or graduate mathematics course _____

attended a minicourse or short course _____

gave a talk at a professional meeting _____

regularly read articles in professional journals _____

had an expository article published _____

had a research article published _____

had a textbook published _____

received a new grant from outside your college _____

received a new grant from your college _____

B. Is some form of continuing education required of your full-time permanent faculty members?_____

if so, what? _____

11. Services Available to Mathematics Faculty

A. Of your permanent full-time faculty members, list the number who have

a private, fully enclosed office _____

a two-person, fully enclosed office _____

other office facilities, including cubicles _____

no desk or ofiice _____

B. How many of your part-time faculty members have

their own desk? _____

a desk shared with one other person? _____

a desk shared with more than one other person?_____

no desk? _____

C. How many of your permanent full-time faculty members have

a computer or terminal in their office? _____

no computer or terminal in their office, but shared computers or terminals nearby? _____

no convenient access or no access at all to computers or terminals? _____

D. How many of your permanent full-time faculty members have internet access available to them at the college?_____How many use e-mail? _____

E. Is the teaching of permanent full-time mathematics faculty members periodically evaluated? [ ] Yes [ ] No

If yes, check all that apply:

[ ] observation of classes by other faculty members or department chair

[ ] observation of classes by division head (if different from chair) or other administrator

[ ] evaluation forms completed by students

[ ] evaluation of written course material such as lesson plans, syllabus, or exams

[ ] self-evaluation such as teaching portfolios

[ ] other (specify): _____

12. Services Available to Students

A. Math Lab/Tutorial Center

Does your college operate a math lab or tutorial center? ☐ Yes ☐ No

If so, check the services that are available to students in your math lab or tutorial center:

- ☐ computer-aided instruction
- ☐ computer software such as computer algebra systems or statistical packages
- ☐ media such as videotapes
- ☐ tutoring by students
- ☐ tutoring by paraprofessionals
- ☐ tutoring by part-time mathematics faculty
- ☐ tutoring by full-time mathematics faculty
- ☐ other (specify): _____

B. Placement

Must every student speak with an advisor before registering for his or her first mathematics course at your college?

☐ Yes ☐ No ☐ Depends on the course

May a student enroll in a math course he or she wants to take, even if he or she has not completely satisfied the recommendations/prerequisites for the course (such as having a certain placement test score or passing a prerequisite course)? ☐ Yes ☐ No ☐ Depends on the course

Does your college offer diagnostic or placement testing to students? ☐ Yes ☐ No

If so, are these exams used for mandatory placement into mathematics courses?

☐ Yes ☐ No

C. Other Services to Mathematics Students

Please check the services that are available to your mathematics students.

- ☐ honors sections
- ☐ mathematics club
- ☐ special mathematics programs to encourage women
- ☐ special mathematics programs to encourage minorities
- ☐ opportunities to compete in math contests
- ☐ special mathematics lectures/colloquia, not part of a math club
- ☐ advising by a member of the mathematics faculty
- ☐ other (specify): _____

9. Problems of the 90's

Below are some concerns cited by departments. Please rate each by placing a check in the box appropriate for your math program.

	Minor or no problem	Somewhat of a problem	Major Problem
Maintaining vitality of faculty			
Staffing computer science courses			
Staffing statistics courses			
Need to use part-time faculty for too many courses			
Faculty salaries too low			
Class sizes too large			
Low student motivation			
Too many students needing remediation			
Low success rate in developmental/remedial courses			
Low success rate in transfer-level courses			
Too few students who intend to transfer actually do			
Inadequate departmental support services (secretary, etc.)			
Inadequate travel funds for faculty			
Inadequate computer facilities for faculty use			
Inadequate computer facilities for student use			
Inadequate office space			
Inadequate classroom space			
Coordinating mathematics courses with high schools			
Lack of curricular flexibility because of transfer requirements			
Other (specify):			

Your name: _____

Title: _____ Academic Field: _____

Telephone: _____ e-mail: _____

How long have you been in charge of the mathematics department or program?_____

If you have found any of the above questions difficult to interpret or to answer, let us know. We welcome comments or suggestions for future surveys.

Please return the completed questionnaire by November 1, 1995 to:
CBMS Survey
American Institute of Physics
One Physics Ellipse
College Park, MD 20740-3834

Thank you for taking the time to complete this (long) survey.

Ann E Watkins
Stephen B. Rodi

This report presents data collected in a statistically designed survey of four-year college and university departments of mathematics (and mathematical sciences), university departments of statistics and mathematics programs at two-year colleges for Fall 1995. The data are presented by departments classified by the highest mathematics degree offered. There is a separate section on two-year college mathematics programs. The report presents detailed information on course enrollments and departmental and program faculty with a special emphasis on gender and ethnic status. A special feature is a detailed profile of first-year calculus and statistics courses. For these courses, extensive enrollment data are given for the various instructional formats—large lecture and small- and medium-size regular sections. Additional enrollment information on the use of "reform" texts, graphing calculators, group projects, etc., is presented. These data are unique to this survey.

The data are presented in a series of easy-to-read tables, with each of the tables entirely self contained, with general data in the first chapter followed by more specific information in succeeding chapters. Most of the tables have illustrative figures and an accompanying text giving background information to better place in context the data presented in the table.

Two chapters are devoted specifically to data on two-year college mathematics programs with detailed information on enrollment and faculty not available from any other source.

This report presents a careful and well-presented analysis of the state of undergraduate mathematics and statistics courses, as well as the faculty who teach these courses. It is a valuable guide for assessing today's activities and tomorrow's trends.

Survey Sponsor

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