Contents

Acknowledgments ........................................................................................................... xv

Foreword ............................................................................................................................ xvii

Chapter 1. Summary ........................................................................................................ 1

Data Highlights ................................................................................................................. 1

Explanation of the Tables ................................................................................................. 2

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. ................................................................................ 4

TABLE SE.2 Type of calendar for four-year colleges and universities and two-year colleges: Fall 1995. ................................................................. 5


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. .................................................. 9

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. ......................................................................................................................... 10

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. .............................................................................. 11

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 1980–95. Historical data is also presented for Fall 1975, 1980, 1985, 1990. ................................. 14

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. .......................................................... 16

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. .......................................................... 17

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. .......................................................... 18

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. .......................................................... 18

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. .......................................................... 19

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. .......................................................... 21

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. ....................................................... 22

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. ....................................................... 23

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. ....................................................... 25

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. ....................................................... 27
| 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. | 42 |
| 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.) | 44 |
| 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. | 46 |
| 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. | 48 |
| 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. | 49 |
| 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. | 49 |
| 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. | 50 |
| 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. | 50 |
| 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. | 51 |
| 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. | 52 |
| 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. | 53 |
| 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. | 54 |
| TABLE E.13 | Number of sections of Remedial level courses in Departments of Mathematics by type of instructor and type of school: Fall 1995. | 56 |
| TABLE E.14 | Number of sections of Precalculus level courses in Departments of Mathematics by type of instructor and type of school: Fall 1995. | 56 |
Chapter 3. Faculty ........................................................................................................... 59

Data Highlights ............................................................................................................ 59

Explanation of the Tables ............................................................................................. 59

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) ........................................................................ 61

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. ................................................................. 62

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. ................................................................. 63

TABLE F.4 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Mathematics by type of school and gender: Fall 1995. ........................................................................ 64

TABLE F.5 Percentage age distribution of tenured and tenure-eligible faculty in Departments of Statistics by type of school and gender: Fall 1995. ........................................................................ 66

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. ........................................................................ 67

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. ........................................................................ 68

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. ........................................................................ 69

Chapter 4. First-Year Courses: Calculus and Statistics .................................................... 71

Data Highlights ............................................................................................................ 71

Explanation of the Tables ............................................................................................. 71
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. ..................................................... 72

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. ...................... 73

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. ........................................ 76

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 sizes. .......................................................... 77

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. ...................................................... 78

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. ...................................................... 79

Chapter 5. Advising and Computer Access ................................................................. 81

Data Highlights ......................................................... 81

Explanation of the Tables .......................................................... 81

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. ....................... 82

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. .............. 83

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 1995. .................................................................................................................. 84

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. .................................................................................................................. 85

TABLE AC.5 Percentage of Departments of Mathematics and Departments of Statistics having 
departmental computer systems support staff by type of school: Fall 1995. .............................. 86
Chapter 6. Enrollment, Course Offerings, and Instructional Practices in Two-Year College Mathematics Programs ................. 87

Highlights ................................................. 87

Enrollment, Class Size, and Course Offerings ...................... 88


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. ..................... 93


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. ..................... 95

TABLE TYR.8 Average section size for selected two-year college mathematics courses: Fall 1995. ..................... 95

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 1990, 1995. ..................... 96

Instructional Practices ............................................ 99

TABLE TYR.10 Percentage of sections using various instructional methods by course in Mathematics Programs at two-year colleges: Fall 1995. ..................... 98

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. ..................... 99

Services Available to Students ........................................ 100

TABLE TYR.12 Percentage of the 1023 two-year colleges offering various services to students: Fall 1995. ..................... 100

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. ..................... 101

Chapter 7. Faculty and Administration in Two-Year College Mathematics Programs

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

Education of Two-Year College Mathematics Program Faculty

Gender, Ethnic Composition, and Age of Full-Time Permanent Two-Year College Mathematics Program Faculty
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. .......................................................... 114

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 1992–93. ........................................ 114

TABLE TYR.30  Percentage of ethnic minority full-time temporary and part-time faculty in Mathematics Programs at two-year colleges: Fall 1995. .......................................................... 115

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. .......................................................... 115


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. .......................................................... 117

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. .......................................................... 117

Demographics of Full-Time Permanent Faculty Newly Hired for 1995–1996 ........................................ 118

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. .......................................................... 118

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. .......................................................... 118

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. .......................................................... 119

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. .......................................................... 119

Outflow of Full-Time Permanent Faculty .......................................................... 120

TABLE TYR.39  Outflow of full-time permanent faculty from Mathematics Programs at two-year colleges for 1994–1995. .......................................................... 120

Services Available to Mathematics Program Faculty .......................................................... 121

TABLE TYR.40  Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by type of office: Fall 1995. .......................................................... 121

TABLE TYR.41  Percentage of part-time faculty in Mathematics Programs at two-year colleges by desk availability: Fall 1995. .......................................................... 121

TABLE TYR.42  Percentage of full-time permanent faculty in Mathematics Programs at two-year colleges by computer facilities available: Fall 1995. .......................................................... 122
TABLE TYR.43  Percentage of the 1023 Mathematics Programs at two-year colleges using various methods of evaluating teaching: Fall 1995. ................................................................. 122

Professional Activities of Full-Time Permanent Two-Year College Mathematics Program Faculty .......... 123


Problems in Two-Year College Mathematics Programs ................................................................. 124

TABLE TYR.45  Percentage of program heads classifying various problems as “major” in Mathematics Programs at two-year colleges: Fall 1985, 1990, 1995. ................................................................. 124

TABLE TYR.46  Percentage of program heads of Mathematics Programs at two-year colleges classifying various problems by severity: Fall 1995. ................................................................. 125

Administration of Mathematics Programs in Two-Year Colleges .................................................. 126

TABLE TYR.47  Percentage of Mathematics Programs at two-year colleges by type of academic calendar: Fall 1995. ........................................................................................................... 126

TABLE TYR.48  Percentage of Mathematics Programs at two-year colleges by type of administrative structure: Fall 1995. ........................................................................................................... 126


Appendix II. Sampling and Estimation Procedures ............................................................................. 135

Appendix III. List of Responders to the Survey ................................................................................ 139

Appendix IV. Four-Year College Survey .......................................................................................... 149

Appendix V. Two-Year College Survey .......................................................................................... 161
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.