Chapter 2

ENROLLMENT

The six tables in this chapter present data on enrollment in four-year colleges and universities according to the type of mathematics degree awarded (PhD, MA or BA) and by the disciplines: mathematics, statistics or computer science. The number of sections offered as well as average section size are presented. Also shown is the percentage of mathematics departments that offer selected advanced mathematics courses and a detailed breakdown of bachelor degrees awarded.

The tables emphasize the central role mathematics departments play in teaching statistics and computer science, especially at the MA and BA level.

In particular, mathematics departments offered almost as many sections of computer science as did computer science departments. Average section size was considerably larger in PhD universities than in their MA and BA counterparts. More detailed information on calculus I and II, introductory statistics, and computer science I is given in Chapter 4.

Bachelor degrees are reported in detail with women comprising a majority of mathematics education degrees but a minority of all other degrees.

For information on four-year college and university mathematics see
Tables E.1, E.2, E.3, E.4, E.5 and E.6.

For information on four-year college and university statistics see
Tables E.1, E.2, E.3, E.6.

For information on four-year college and university computer science see
Tables E.1, E.2, E.3, E.5.

TABLE E.1 Enrollment (thousands) for Mathematics, Statistics and Computer Science courses in four-year college and university Departments of Mathematics, Statistics and Computer Science by level of course and by type of school. Also full-time faculty: Fall 1990.

Fall 1990 enrollment (thousands)

	Math Depts			Stat Depts			CS Depts			
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	TOTAL
Number of full-time faculty	6427	5058	7926	668	53	14	2746	1408	1164	25464
Math courses										
Remedial	68	93	100							261
Precalculus	206	202	185							593
Calculus	337	122	188	1						648
Adv math	58	29	33	1					1	122
TOTAL MATH	669	446	506	2					1	1624
Stat courses										
Elem stat	14	27	46	25	4				3	119
Adv stat	18	12	8	14					2	54
TOTAL STAT	32	39	54	39	4				5	173
CS courses										
Lower CS	9	42	83				100	60	44	338
Middle CS	1	4	7				11	8	6	37
Upper CS	6	12	16				47	19	16	116
TOTAL CS	16	58	106				158	87	66	491
GRAND TOTAL	717	543	666	41	4		158	87	72	2288

TABLE E.1 This is an elaboration of Table S.2, reporting on enrollment by type of departments. While the division into PhD, MA, and BA is according to the highest **mathematics** degree awarded by the institution, an analysis of the statistics and computer science departments reporting indicates that there is a close fit with the highest degree awarded by these departments. Certainly noteworthy is the myriad of courses taught by the BA mathematics departments who taught 31% of all mathematics enrollment; 31% of all statistics enrollment, and 22% of all computer science enrollment. In PhD mathematics departments the ratio of enrollment to total full-time faculty was 112; for MA departments it was 107, and for BA departments the ratio was 84. For statistics and computer science departments this ratio was a nearly identical 60. The faculty totals are reported in Table F.1.

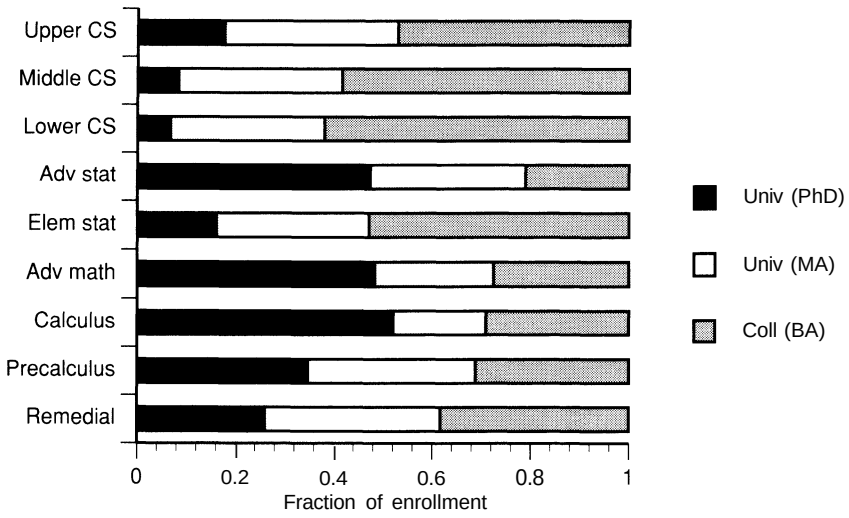

FIGURE E.1.1 Fraction of total enrollment in four-year college and university Departments of Mathematics by level of courses and by type of school: Fall 1990.

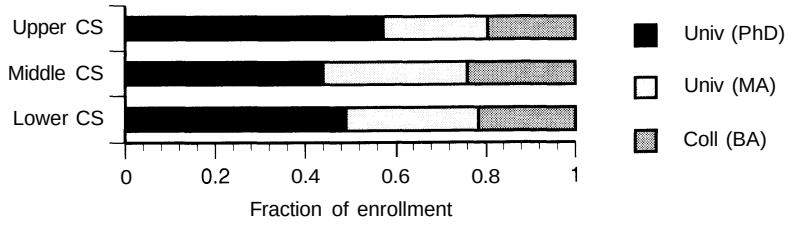

FIGURE E.1.2 Fraction of total enrollment in four-year college and university Departments of Computer Science by level of the courses and by type of school: Fall 1990.

TABLE E.2 Number of sections of Mathematics, Statistics and Computer Science courses in four-year college and university Departments of Mathematics, Statistics and Computer Science by level of the course and by type of school: Fall 1990.

Number of sections: Fall 1990.

	Math Depts			Stat Depts			CS Depts			
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	TOTAL
Math courses										
Remedial	1775	2854	3835							8464
Precalculus	4669	5872	6628	6			2			17177
Calculus	8343	4188	8044	11			3		3	20592
Adv math	2723	1803	3124	31			6	2		7689
TOTAL MATH	17510	14717	21631	48			11	2	3	53922
Stat courses										
Elem Stat	286	818	1497	382	105	7			78	3173
Adv stat	601	592	537	382	19	35	3		82	2251
TOTAL STAT	887	1410	2034	764	124	42	3		160	5424
CS courses										
Lower CS	262	1650	3731				1971	1597	1546	10757
Middle CS	46	214	565				317	286	321	1749
Upper CS	307	811	1323				1619	903	794	5757
TOTAL CS	615	2675	5619				3907	2786	2661	18263
GRAND TOTAL	19012	18802	29284	812	124	42	3921	2788	2824	77609

TABLE E.2 While mathematics departments have 37% of all computer science enrollment, they taught just under 50% of all computer science sections. The largest effort was at the calculus level with 20,592 sections offered. However the definition of a section in calculus courses is complicated by the variety of ways institutions count recitation and lecture sections.

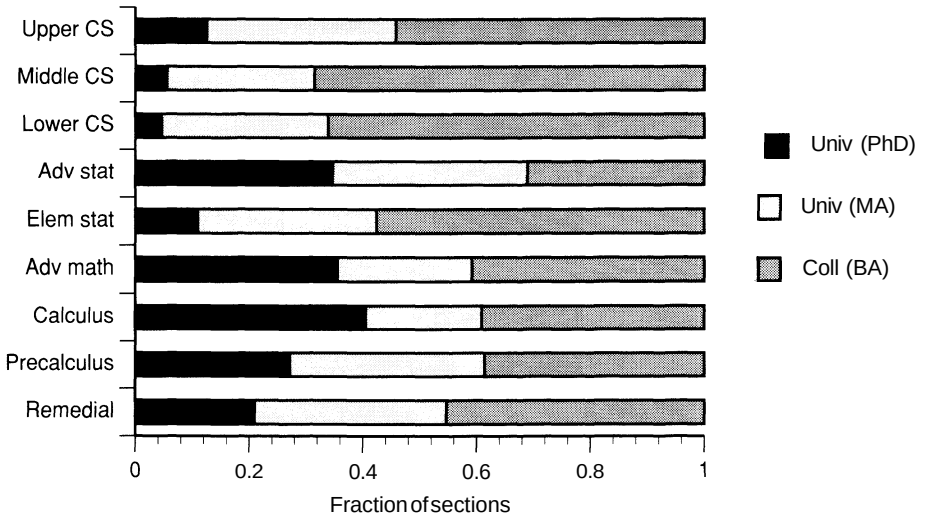

FIGURE E.2.1 Fraction of total sections in four-year college and university Departments of Mathematics by level of the courses and by type of school: Fall 1990.

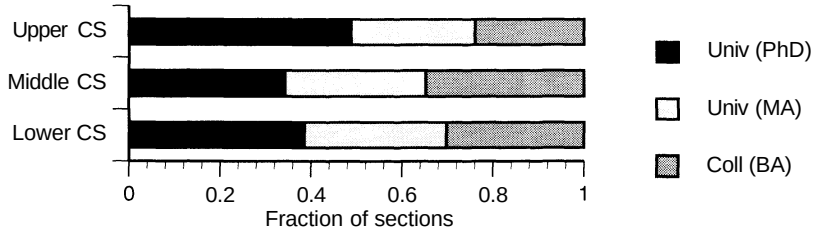

FIGURE E.2.2 Fraction of total sections in four-year college and university Departments of Computer Science by level of the courses and by type of school: Fall 1990.

TABLE E.3 Average section size for Mathematics, Statistics and Computer Science courses in four-year college and university Departments of Mathematics, Statistics and Computer Science by level of the courses and by type of school: Fall 1990.

Average size of sections

	Math Depts			Stat Depts			CS Depts				
	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	Univ (PhD)	Univ (MA)	Coll (BA)	All Depts 1990	All Depts 1985
Math courses											
Remedial	38	33	26							31	32
Precalculus	44	34	28							35	35
Calculus	41	29	23							35	34
Adv math	22	16	11							16	19
Stat courses											
Elem stat	48	33	31	65	39	20				37	37
Adv stat	29	21	15	37	23	10				24	30
CS courses											
Lower CS	33	25	22				51	38	29	29	31
Middle CS	29	18	12				35	29	19	21	26
Upper CS	20	15	12				29	20	20	20	22

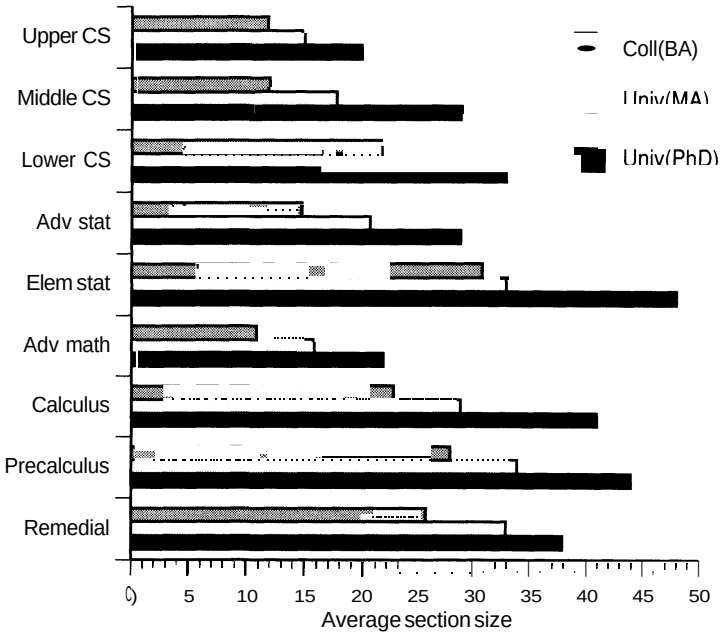

FIGURE E.3.1 Average section size for Mathematics, Statistics and Computer Science courses in four-year college and university Departments of Mathematics by level of the courses and by type of school: Fall 1990.

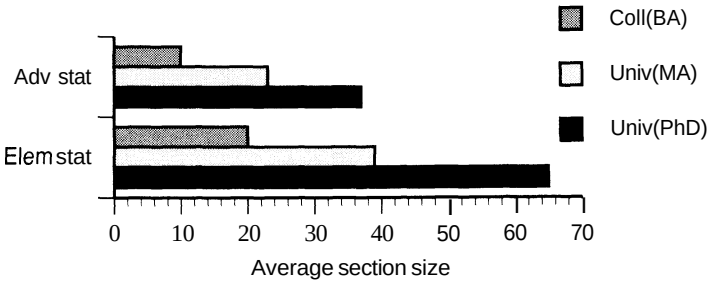

FIGURE E.3.2 Average section size for Statistics courses in four-year college and university Departments of Statistics by level of the courses and by type of school: Fall 1990.

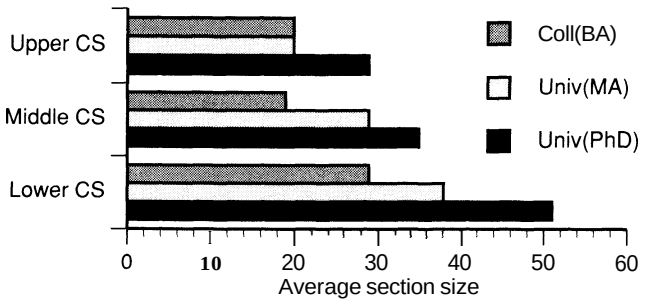

FIGURE E.3.3 Average section size for Computer Science courses in four-year college and university Departments of Computer Science by level of the courses and by type of school: Fall 1990.

TABLE E.3 Average section sizes for advanced courses in all three disciplines declined from 1985 levels. All levels in computer science courses showed a smaller size than in 1985, no doubt reflecting the decline in computer science enrollment.

TABLE E.4 Percent of four-year college and university Departments of Mathematics offering selected advanced level mathematics courses within two consecutive academic years, 1989-91 by type of school and also for all departments 1984-86.

	All depts 1984-86	All depts 1989-91	1989-91 Univ (PhD)	1989-91 Univ (MA)	1989-91 Coll (BA)
Number of schools	1423	1421	165	236	1020
Modern Algebra	-	79%	98%	94%	73%
Adv Calc/ Real Analysis	-	43%	72%	56%	36%
Geometry	60%	72%	82%	85%	67%
Topology	-	35%	67%	51%	26%
Theory of Numbers	37%	39%	79%	64%	26%
Combinatorics	17%	17%	43%	21%	11%
Appl Math/ Modeling	32%	33%	57%	50%	25%
Intro Operations Res	-	19%	26%	30%	14%
Foundations of math	22%	22%	31%	27%	19%
Math for Sec Teachers	45%	34%	36%	57%	28%
Senior sem/ Ind study	-	42%	64%	51%	36%

TABLE E.4 The increase in geometry course offerings nearly matches the decline in mathematics for secondary school teachers offerings. Perhaps some institutions used the geometry course in place of a special mathematics education course.

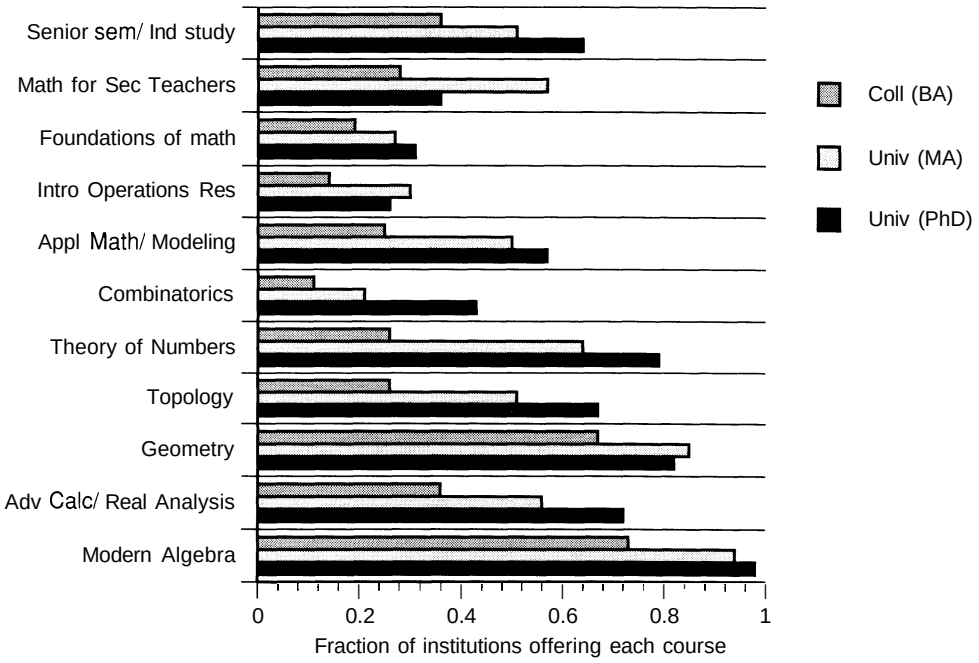

FIGURE E.4.1 Fraction of four-year college and university Departments of Mathematics offering selected advanced level mathematics courses within two consecutive academic years 1989-1991 by type of school.

TABLE E.5 Bachelors Degrees in Computer Science awarded by four-year college and university Departments of Mathematics and Computer Science between July 1, 1989 and June 30, 1990 by type of school and gender of the degree recipient.

	Math Depts				CS Depts				
	Univ (PhD)	Univ (MA)	Univ (BA)	TOTAL MATH DEPTS	Univ (PhD)	Univ (MA)	Univ (BA)	TOTAL CS DEPTS	TOTAL
CS Degrees (including joint majors)									
Male	**449**	1181	**1860**	**3490 (69%)**	5314	**3894**	**2549**	**11757 (70%)**	**15247 (70%)**
Female	**84**	**632**	**869**	**1585 (31%)**	**1887**	**1830**	1155	**4872 (30%)**	**6457 (30%)**

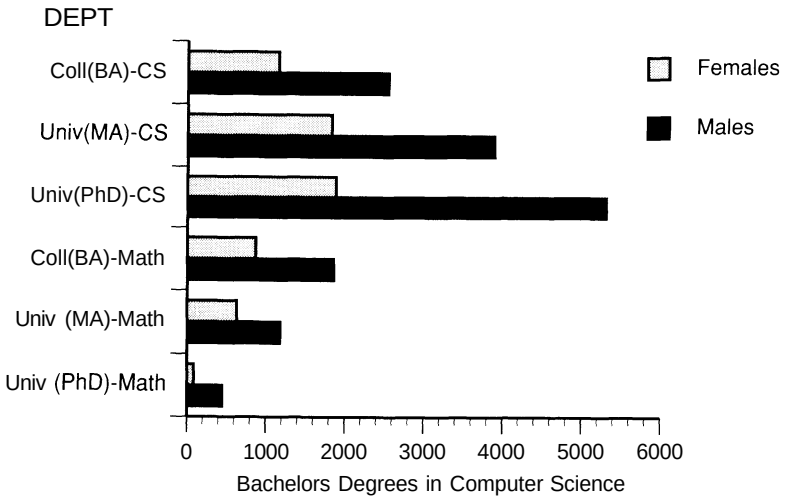

FIGURE E.5.1 Bachelors Degrees in Computer Science awarded by four-year college and university Departments of Mathematics and Computer Science between July 1, 1989 and June 30, 1990 by type of school and department and gender of the degree recipient.

TABLE E.5 This table includes joint computer science-mathematics degrees awarded by computer science departments only. Joint degrees awarded by mathematics departments are included in Tables E.6 and S.3. The gender breakdown was not asked in previous CBMS surveys.

TABLE E.6 Bachelors Degrees in Mathematics, Statistics and Mathematics Education awarded by four-year college and university Departments of Mathematics and Statistics between July 1, 1989 and June 30, 1990 by gender of degree recipient and type of school.

	Math Depts				Stat Depts			
	Univ (PhD)	Univ (MA)	Coll (BA)	TOTAL MATH	Univ (PhD)	Univ (MA)	TOTAL STAT	GRAND TOTAL
Math Degrees (including Act Sci. OR and joint degrees)								
Male	3696	1933	2893	8522	0	0	0	8522 (57%)
Female	1970	1672	2663	6305	0	0	0	6305 (43%)
Stat Degrees (including joint degrees)								
Male	124	79	25	228	201	8	209	437 (65%)
Female	41	37	27	105	125	3	128	233 (35%)
Mathematics education								
Male	190	602	343	1135	0	0	0	1135 (36%)
Female	310	862	809	1981	0	0	0	1981 (64%)
TOTAL								
Male	4010 (63%)	2614 (50%)	3261 (48%)	9885 (54%)	201 (62%)	8 (73%)	209 (62%)	10094 (54%)
Female	2321 (37%)	2571 (50%)	3499 (52%)	8391 (46%)	125 (38%)	3 (27%)	128 (38%)	8519 (46%)

TABLE E.6 This table includes joint degrees in statistics and/or computer science awarded by mathematics and statistics departments. It does not contain any degrees classified as "other." These are reported only in Table S.3. The gender of graduates was not asked in previous CBMS surveys.

FIGURE E.6.1 Bachelors Degrees in four-year college and university Departments of Mathematics by type of degree and gender of the degree recipient between July 1, 1989 and June 30, 1990.

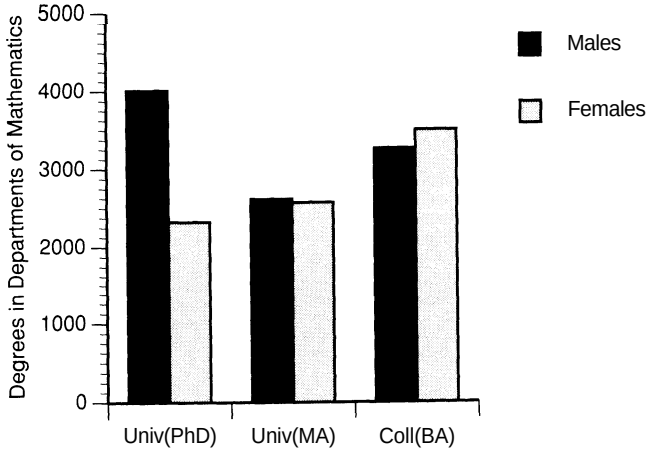

FIGURE E.6.2 Bachelors Degrees in four-year college and university Departments of Mathematics by type of school and gender of the degree recipient between July 1, 1989 and June 30, 1990.