Chapter 5

First-Year Courses in Four-Year Colleges and Universities

Tables in this chapter further explore topics from Tables S.7 to S.13 in Chapter 1 and Tables E.2 to E.9 of Chapter 3, presenting details by type of department on certain first-year mathematics courses in four-year colleges and universities—their enrollments, their teachers, and how they were taught. Courses studied include a spectrum of introductory-level courses, several first-year calculus courses, and elementary statistics courses. Among introductory-level mathematics courses, the chapter focuses on:

a) two general education courses (with names such as Finite Mathematics and Mathematics for Liberal Arts) that are specifically designed for students fulfilling a general education requirement,
b) courses for pre-service elementary education teachers, and
c) the cluster of precalculus courses with names such as College Algebra, Trigonometry, Algebra and Trigonometry, and Elementary Functions.

First-year calculus courses are divided into "mainstream" and "non-mainstream" courses, where a calculus course is classified as "mainstream" if it typically leads to upper-division mathematical sciences courses. That definition has been used in almost all CBMS surveys, and before 2005, it was roughly true to say that mainstream calculus courses were typically designed for mathematics, engineering, and physical sciences majors. By fall 2005, that rough characterization was less and less accurate. With the increasing national emphasis on mathematical biology, there was a growing body of calculus courses specifically designed for students with biological interests that could fall into the "mainstream" classification. Whether a particular calculus course was classified as mainstream or non-mainstream was left up to responding departments, and based on calls and e-mails to the project directors in fall 2005, responding departments had few doubts about which calculus courses were mainstream and which were not. The final group of courses studied in this chapter are the elementary statistics courses, where the term "elementary" refers only to the fact that such courses do not have a calculus prerequisite. Most of these courses are also part of the curriculum of two-year colleges, and details about the courses in the two-year-college setting appear in Chapter 6.

Enrollments (Tables FY.2, FY.4, FY.6, FY.8, and FY.10 and Appendix I Tables A.1 and A.2)

- Table A.1 in Appendix I shows that combined enrollments in Finite Mathematics and Liberal Arts Mathematics, two general education courses, increased markedly between fall 1995 and fall 2005, growing from 133,000 in 1995 to 168,000 in fall 2000 and finally to 217,000 in fall 2005. That is a 63% increase over ten years, and in fall 2005 combined enrollment in these two general education courses exceeded the total enrollment in Mainstream Calculus I.
- Enrollments in first-year courses designed for pre-service elementary teachers rose between fall 1995 and fall 2000 and rose again by fall 2005. Table FY.2 shows an increase from roughly 59,000 in fall 1995 to about 72,000 in fall 2005, a 22% increase.
- Enrollments in the cluster of four precalculus courses listed in c) above were roughly 368,000 in fall 1995, grew to about 386,000 in fall 2000, and declined to 352,000 in fall 2005, ending the decade more than 9% below 1995 levels. See Table FY.2.
- Table A.2 in Appendix I shows that the combined enrollment in the Elementary Statistics course in mathematics and statistics departments (including distance-learning enrollments) grew from 132,000 in fall 1995 to 155,000 in fall 2000 and to 167,000 in fall 2005, an increase of about 27% between 1995 and 2005, with the rate of enrollment growth appearing to slow in the last five years of the decade. Mathematics departments taught almost three-quarters of the nation's Elementary Statistics. Tables FY.8 and FY.10 display the non-distance-learning enrollments in this course in fall 2005.

Who taught first-year courses? (Tables FY.1, FY.3, FY.5, FY.7, and FY.9)

CBMS1995 and CBMS2000 presented data on the type of instructors assigned to teach first-year courses in terms of *percentages of enrollments*, but those enrollment estimates relied on certain assumptions that made standard errors difficult to calculate. To allow standard error calculations in this report, CBMS2005 expresses its conclusions in terms of *percentages of sections*. Consequently, direct numerical comparisons between CBMS2005 and earlier CBMS studies are problematic. Even if one assumes that percentage of sections converts linearly into percentage of enrollments, a conservative approach to making comparisons suggests drawing only tentative conclusions.

In Chapter 5, as in previous CBMS surveys, tenured and tenure-eligible (TTE) faculty were combined into a single category. All other full-time faculty were put into the class called other full-time (OFT) faculty. To get a better picture of the mathematical qualifications of teachers in first-year courses, CBMS2005 subdivided the OFT faculty into those with doctoral degrees (OFT-doctoral) and those without doctorates. This was a new feature of CBMS2005. In order to maintain some degree of comparability with CBMS1995 and CBMS2000, tables in this chapter contain a column called "OFT (total)" as well as the column called "OFT (doctoral)."

- In fall 2005, about forty percent of introductory-level courses in bachelors- and masters-level departments were taught by TTE or OFT-doctoral faculty, compared to about 17% in doctoral departments. Doctoral departments assigned about a third of introductory-level courses to graduate teaching assistants (GTAs), meaning that the GTAs were the instructors of record in those courses. See Table FY.1.
- Doctoral departments used a combination of TTE and OFT-doctoral faculty to teach about half of their Mainstream Calculus I sections. In masters-level departments, the combined percentage was closer to 75%, and in bachelors-level departments it was about 85%.
- Table FY.1 of CBMS2000 shows that doctoral mathematics departments taught 62% of their Mainstream Calculus I enrollment using TTE faculty in fall 1995, and 50% in fall 2000. Table FY.3 in CBMS2005 shows that in fall 2005, doctoral mathematics departments used TTE faculty to teach 36% of their Mainstream Calculus I sections. With the usual caveat about comparing percentages of enrollment from CBMS2000 with percentages of sections in CBMS2005, Tables FY.1 in CBMS2000 and FY.3 in CBMS2005 suggest a marked trend in doctoral mathematics departments away from using TTE faculty in Calculus I.
- The percentage of Mainstream Calculus I sections taught by graduate teaching assistants (GTAs) in fall 2005 was only slightly lower than the percentage of enrollments in Mainstream Calculus I taught by GTAs in fall 2000, and this suggests that there was not much change in the use of GTAs to teach Mainstream Calculus I between 2000 and 2005. See Table FY.1 in CBMS2000 and CBMS2005.
- There appears to be a continuing trend among mathematics departments to shift the teaching of the Elementary Statistics course from TTE faculty to OFT faculty. In mathematics departments, the percentage of Elementary Statistics sections taught by TTE faculty was below the percentage of enrollment taught by TTE faculty in 1995. At the same time, among bachelors- and masters-level mathematics departments, the percentage of Elementary Statistics sections taught by OFT faculty in fall 2005 was more than double the percentage of enrollment in the same course taught by OFT faculty in fall 1995. Among doctoral mathematics departments, the fall 2005 percentage of sections taught by OFT faculty was almost four times as large as was the percentage of enrollment taught by OFT faculty in 1995. See Table FY.6 in CBMS2000 and Table FY.7 of this chapter.

How are first-year courses taught? (Tables FY.2, FY.4, FY.6, FY.8, and FY.10)

The CBMS1995 survey asked departments about the impact of the calculus reform movement on the way that their calculus courses were taught. In fall 1995, a meaningful question was "What percentage of your calculus sections are taught using a reform text?" By fall 2000, that question was no longer meaningful, with almost every publisher claiming to have incorporated calculus reform into every calculus text. To trace the continuing impact of calculus reform in fall 2000, the CBMS2000 survey focused attention on a spectrum of pedagogical methods that had come to be thought of as "reform methods". These were of two general types—those related to technology (the use of graphing calculators and computers), and those that were sometimes described as "humanistic pedagogies," e.g., the use of writing assignments and group projects. Tables FY.2, FY.4, FY.6, FY.8, and FY.10 continue that study and suggest some conclusions about the spread of reform pedagogies during the 1995–2005 decade, once again subject to the caveat that comparing percentages of enrollment in CBMS1995 and CBMS2000 with percentages of sections in CBMS2005 leads to tentative conclusions at best.

- In fall 2005, none of the four reform pedagogies were universal in Calculus I (whether the mainstream version, or non-mainstream). Graphing calculators were the most widely used reform pedagogy in Calculus I courses and were used about twice as widely in Calculus I as computer assignments. See Table FY.4.

- The percentage of Calculus I sections taught using writing assignments and group projects was generally below 20%, and they were mostly in the single-digit range among doctoral-level departments. This is consistent with findings of CBMS2000. See Table FY.4.
- In contrast to the situation in Calculus I, a markedly larger percentage of Elementary Statistics sections used computer assignments compared to graphing calculators. In addition, while the use of writing assignments and group projects seems to have declined among Elementary Statistics sections taught in mathematics departments, it apparently increased markedly in Elementary Statistics sections taught in doctoral statistics departments. See Tables FY.8 and FY.10.

Earlier CBMS studies did not examine the pedagogical methods used in introductory-level courses (such as College Algebra and Precalculus), so it is not possible to trace the spread of reform pedagogies over time in courses of that type. However, Table FY.2 does allow some comparisons between introductory-level and other first-year courses in fall 2005.

- The cluster of precalculus courses (namely College Algebra, Trigonometry, Algebra & Trigonometry (combined course), and Precalculus) resembled Mainstream Calculus I in pedagogical pattern, with graphing calculators being twice as commonly used as computer assignments, and with writing assignments and group projects trailing far behind.
- Writing assignments and group projects were used much more extensively in Mathematics for Elementary Teachers than in any other introductory-level course, while graphing calculators were used less.

A new question in CBMS2005 asked departments about the extent to which they used online resource systems in their first-year courses. The CBMS2005 questionnaires described these systems as online packages for generating and grading homework. In four-year colleges and universities, the percentage of first-year sections (i.e., introductory-level courses, Calculus I, or Elementary Statistics) using such systems was typically in the single digits in mathematics departments. By contrast, it was closer to twenty percent in Elementary Statistics courses taught in doctoral statistics departments.

In fall 2005, reform pedagogies had been more widely adopted in two-year college courses than in the same courses at four-year colleges and universities, often by wide margins. See Table TYE.10 of Chapter 6 for details about the use of reform pedagogies and online resource systems in courses taught in two-year colleges.

Special Note on Chapter 5 Estimates: As can be seen from the Appendix on standard errors, many of the estimates in Chapter 5 had large standard error values so that the values in the entire population might be quite different from the estimates given in Chapter 5 tables.

TABLE FY.1 Percentage of sections (excluding distance-learning sections) of certain introductory-level courses taught by various types of instructors in mathematics departments in fall 2005, by type of department. Also average section sizes.

	Percentage of sections taught by																		Average section size		
	Tenured/ tenure-eligible %			Other full-time (total) %			Other full-time (doctoral) %			Part-time %			Graduate teaching assistants %			Unknown %					
Course & Department Type	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Mathematics for Liberal Arts	18	36	43	19	13	16	5	4	4	28	38	32	25	3	0	11	10	9	46	34	25
Finite Mathematics	17	49	31	32	28	14	7	4	4	12	17	55	23	0	0	16	6	0	74	34	23
Business Math (non-calculus)	14	30	36	20	23	30	9	5	11	21	41	32	43	2	0	2	3	3	47	34	26
Math for Elem Sch Teachers	19	45	59	38	24	24	10	2	3	22	24	12	14	1	0	6	6	6	29	27	22
College Algebra	4	24	34	25	36	31	3	5	3	21	26	29	44	6	0	6	7	5	46	41	27
Trigonometry	10	31	30	26	36	32	3	0	2	19	19	39	43	0	0	2	14	0	37	31	27
College Alg & Trig (combined)	6	26	61	45	8	29	10	2	8	19	36	11	29	30	0	1	0	0	57	28	25
Elem Functions, Precalculus	7	32	43	22	21	22	8	3	0	24	33	35	40	10	0	7	4	0	48	31	25
Intro to Math Modeling	25	36	11	75	14	78	38	0	22	0	50	11	0	0	0	0	0	0	81	31	20
Total All Intro Level Courses	**11**	**33**	**41**	**26**	**25**	**24**	**6**	**4**	**4**	**21**	**30**	**30**	**34**	**5**	**0**	**7**	**7**	**4**	**48**	**34**	**25**

Note: 0 means less than one half of 1%.

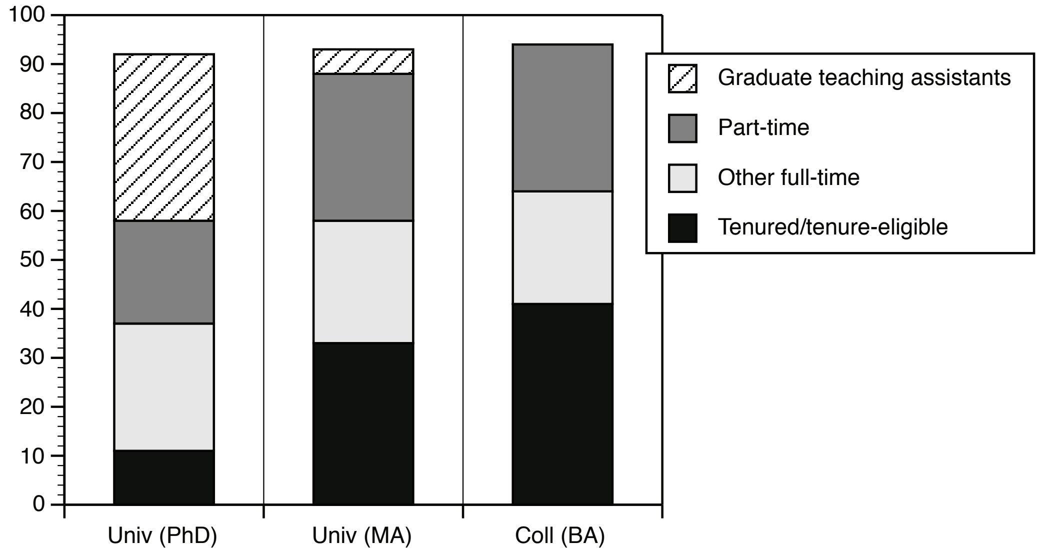

FIGURE FY.1.1 Percentage of sections (excluding distance-learning sections) in introductory-level mathematics courses (including College Algebra and Precalculus) taught in mathematics departments by various kinds of instructors in fall 2005, by type of department. (Deficits from 100% represent unknown instructors.)

TABLE FY.2 Percentage of sections (excluding distance-learning sections) in certain introductory-level courses taught using various reform methods in mathematics departments in fall 2005, by type of department. Also total enrollments (in 1000s) and average section size.

	Percentage of sections in certain Introductory Level courses taught using																				
	Graphing calculators %			Writing assignments %			Computer assignments %			On-line resource systems %			Group projects %			Enrollment in 1000s			Average section size		
Course & Department Type	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Mathematics for Elem School Teachers	14	38	14	36	58	55	10	13	20	3	2	2	25	31	43	15	20	37	29	27	22
College Algebra	47	41	47	4	13	3	18	3	5	18	6	7	4	3	3	71	63	62	46	41	27
Trigonometry	31	51	70	1	18	5	12	0	5	15	0	5	1	7	5	17	6	7	37	31	27
College Algebra & Trig (combined)	32	57	19	4	4	0	2	0	0	12	0	0	0	4	0	18	7	9	57	28	25
Elementary Functions, Precalculus	47	50	77	2	6	13	6	2	11	17	2	4	2	7	9	47	20	25	48	31	25
Intro to Mathematical Modeling	25	59	48	25	59	44	0	0	59	0	0	4	13	0	56	1	4	3	81	31	20
All courses in FY.2	39	44	42	7	23	21	12	4	12	10	3	4	6	10	17	169	120	143	44	34	25

Note: 0 means less than one half of 1% in columns 1-15, and less than 500 in the Enrollment columns.

TABLE FY.3 Percentage of sections (excluding distance-learning sections) in Mainstream Calculus I and Mainstream Calculus II taught by various types of instructors in four-year mathematics departments in fall 2005, by size of sections and type of department. Also average section sizes.

	Percentage of sections taught by																		Average section size		
	Tenured/ tenure-eligible %			Other full-time (total) %			Other full-time (doctoral) %			Part-time %			Graduate teaching assistants %			Unknown %					
Course & Department Type	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Mainstream Calculus I																					
Lecture/ recitation	42	72	62	31	16	24	19	3	17	6	2	14	9	0	0	11	11	0	65	29	23
Regular section <31	42	78	83	19	5	9	10	1	5	5	5	5	32	4	0	2	7	2	25	24	21
Regular section >30	28	71	94	21	16	0	14	6	0	12	8	6	29	0	0	11	5	0	37	34	33
Total Mainstream Calculus I	**36**	**73**	**79**	**25**	**12**	**12**	**15**	**4**	**7**	**8**	**6**	**7**	**22**	**1**	**0**	**9**	**7**	**2**	**46**	**29**	**22**
Mainstream Calculus II																					
Lecture/ recitation	51	63	79	29	0	18	20	0	4	4	21	0	7	0	0	8	16	4	64	23	19
Regular section <31	38	70	96	20	7	4	14	4	4	6	13	0	36	0	0	1	9	0	26	22	20
Regular section >30	34	78	100	25	12	0	13	12	0	14	4	0	18	0	0	9	6	0	38	31	35
Total Mainstream Calculus II	**42**	**73**	**94**	**26**	**8**	**6**	**16**	**7**	**3**	**8**	**10**	**0**	**17**	**0**	**0**	**7**	**9**	**1**	**47**	**25**	**20**
Total Mainstream Calculus I & II	**38**	**73**	**83**	**25**	**11**	**10**	**15**	**5**	**6**	**8**	**7**	**5**	**20**	**1**	**0**	**9**	**7**	**1**	**46**	**28**	**22**

Note: 0 means less than one half of 1% in columns 1 through 18.

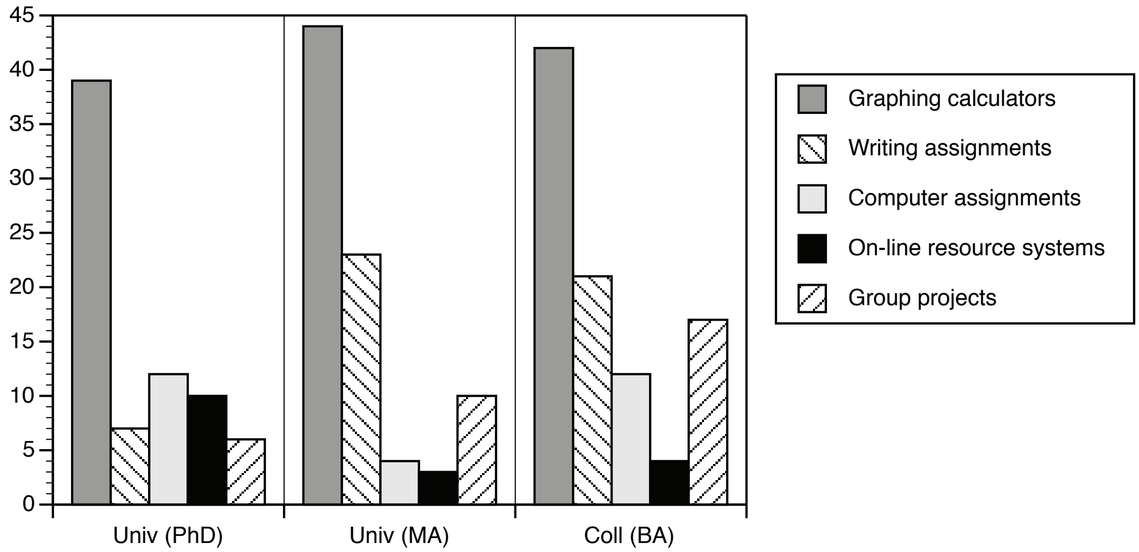

FIGURE FY.2.1 Percentage of sections (excluding distance enrollment) in introductory-level mathematics courses in Table FY.2 (including College Algebra and Precalculus) taught in mathematics departments using various reform methods in fall 2005, by type of department.

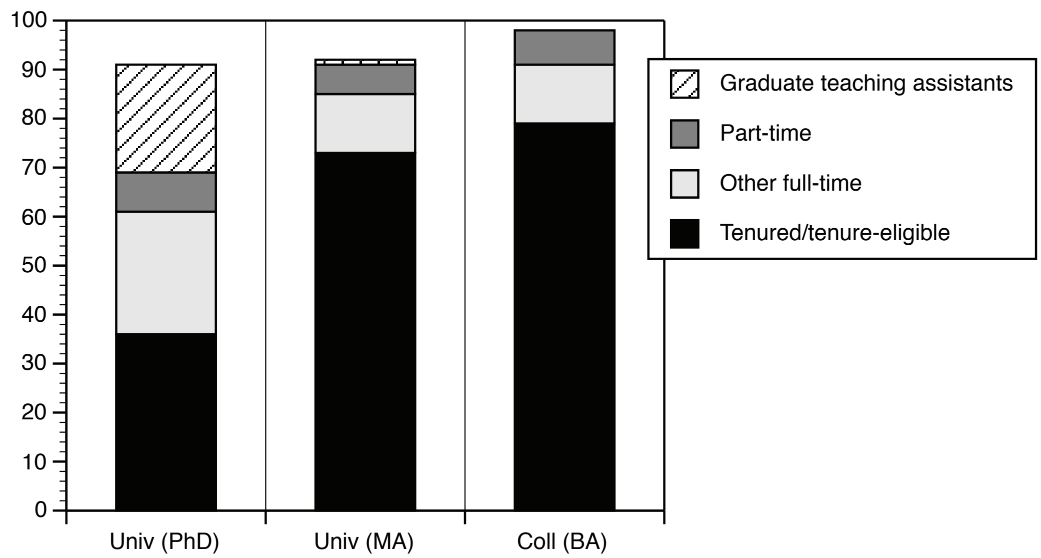

FIGURE FY.3.1 Percentage of sections (excluding distance learning) in Mainstream Calculus I in four-year mathematics departments by type of instructor and type of department in fall 2005. (Deficits from 100% represent unknown instructors.)

TABLE FY.4 Percentage of sections (excluding distance-learning sections) in Mainstream Calculus I & II taught using various reform methods in mathematics departments by type of section and type of department in fall 2005. Also total enrollments (in 1000s) and average section size.

	Percentage of Mainstream Calculus I & II sections taught using																				
	Graphing calculators %			Writing assignments %			Computer assignments %			On-line resource systems %			Group projects %			Enrollment in 1000s			Average section size		
Course & Department Type	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Mainstream Calculus I																					
Lecture/recitation	37	69	57	5	9	25	14	39	33	10	6	0	4	0	27	60	5	14	65	29	23
Regular section <31	44	66	59	2	27	16	9	10	25	4	1	2	5	19	6	11	8	44	25	24	21
Regular section >30	42	36	65	5	18	14	26	4	32	11	0	0	11	10	32	34	17	7	37	34	33
Total Mainstream Calculus I	**40**	**52**	**59**	**5**	**20**	**18**	**18**	**12**	**27**	**9**	**2**	**2**	**7**	**11**	**12**	**105**	**30**	**65**	**46**	**29**	**22**
Mainstream Calculus II																					
Lecture/recitation	23	75	64	4	0	25	8	46	43	6	0	0	1	0	28	31	2	3	64	23	19
Regular section <31	42	54	47	6	12	15	17	6	31	3	0	2	3	12	4	6	4	15	26	22	20
Regular section >30	37	44	86	1	8	28	15	16	57	8	0	0	2	8	28	16	6	1	38	31	35
Total Mainstream Calculus II	**32**	**53**	**52**	**3**	**8**	**17**	**13**	**16**	**34**	**6**	**0**	**2**	**2**	**8**	**9**	**54**	**12**	**19**	**47**	**25**	**20**
Total Mainstream Calculus I&II	**38**	**52**	**57**	**4**	**16**	**18**	**16**	**14**	**29**	**8**	**1**	**2**	**5**	**10**	**11**	**159**	**42**	**84**	**46**	**28**	**22**

Note: 0 means less than one half of 1% in columns 1 through 15, and less than 500 in the Enrollment columns.

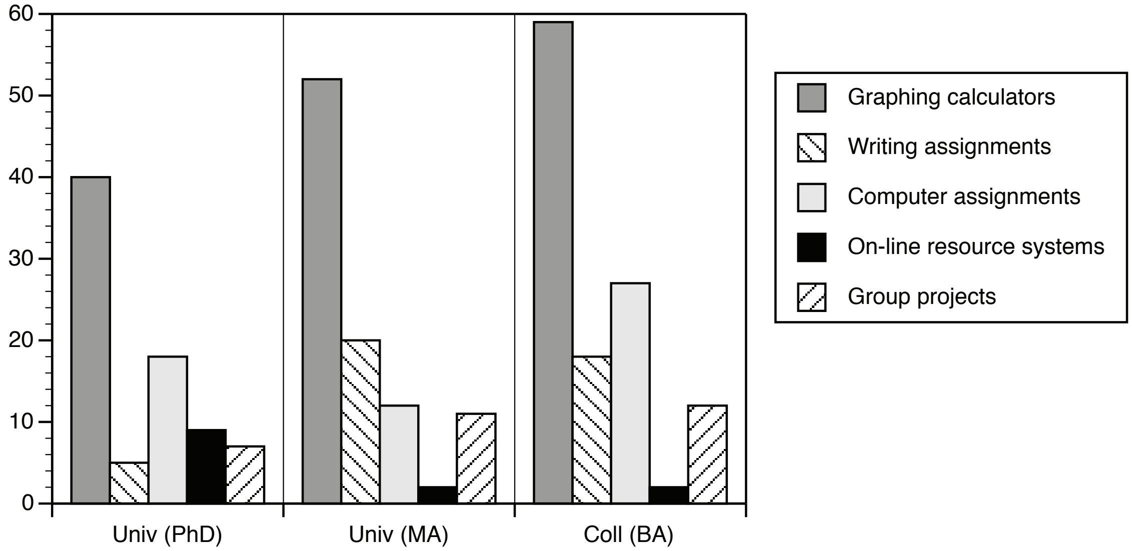

FIGURE FY.4.1 Percentage of sections (excluding distance-learning sections) in Mainstream Calculus I taught using various reform methods in four-year mathematics departments by type of department in fall 2005.

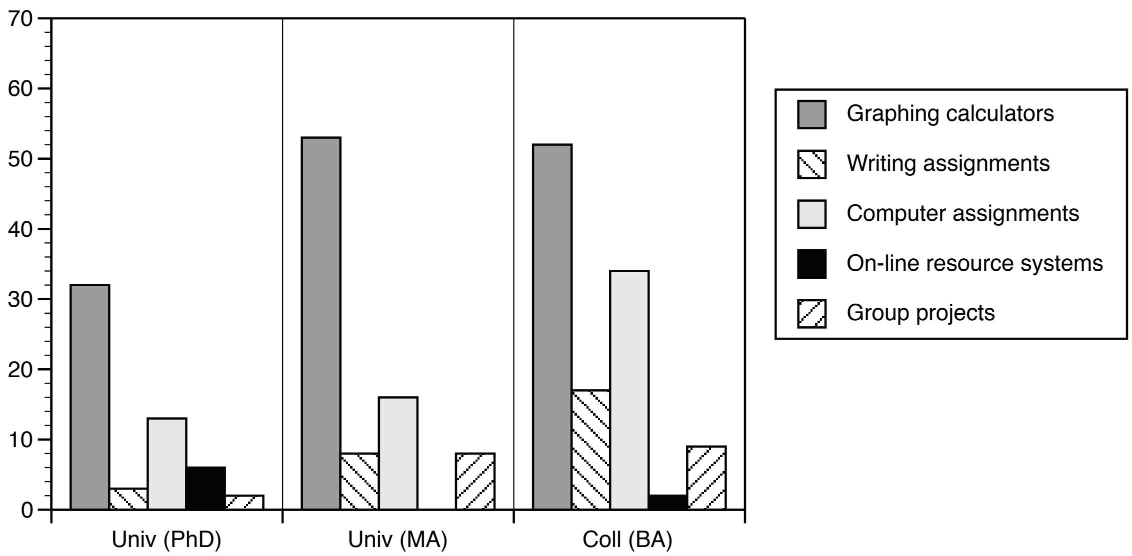

FIGURE FY.4.2 Percentage of sections (excluding distance-learning sections) in Mainstream Calculus II taught using various reform methods in four-year mathematics departments by type of department in fall 2005.

TABLE FY.5 Percentage of sections (excluding distance-learning sections) in Non-Mainstream Calculus I and II taught by various types of instructors in mathematics departments in fall 2005, by size of sections and type of department. Also average section size.

Course & Department Type	Tenured/ tenure-eligible % PhD	MA	BA	Other full-time (total) % PhD	MA	BA	Other full-time (doctoral) % PhD	MA	BA	Part-time % PhD	MA	BA	Graduate teaching assistants % PhD	MA	BA	Unknown % PhD	MA	BA	Average section size PhD	MA	BA
Non-Mainstream Calculus I																					
Lecture/ recitation	16	27[2]	40	33	9[2]	60	13	9[2]	0	11	0[2]	0	11	0[2]	0	29	64[2]	0	72	28[2]	22
Reg. section <31	7	46	47	24	7	20	4	1	5	12	27	20	36	0	13[1]	20	20	0	26	23	24
Reg. section >30	21	40	75	27	27	6	11	8	3	24	31	19	27	0	0	1	2	0	53	39	28
Total Non-Mnstrm Calculus I	**17**	**42**	**51**	**28**	**18**	**19**	**10**	**5**	**4**	**17**	**28**	**19**	**24**	**0**	**10**[1]	**14**	**12**	**0**	**52**	**33**	**25**
Total Non-Mnstrm Calculus II	**25**	**47**	**100**	**31**	**13**	**0**	**9**	**0**	**0**	**20**	**40**	**0**	**22**	**0**	**0**	**1**	**0**	**0**	**56**	**18**	**14**
Total Non-Mnstrm Calculus I & II	**18**	**42**	**52**	**29**	**18**	**19**	**10**	**5**	**4**	**18**	**28**	**19**	**23**	**0**	**10**	**12**	**12**	**0**	**53**	**32**	**25**

Note: 0 means less than one half of 1% in columns 1 through 18.

[1] See discussion of this percentage in the text of report.

[2] The sample size for this cell was very small.

Special Note on Table FY.5: Table FY.5 asserts that thirteen percent of smaller sections of the Non-mainstream Calculus I course taught in bachelors-level mathematics departments were taught by graduate teaching assistants (GTAs), and that seems anomalous. Part of that thirteen percent figure can be accounted for by the fact that some bachelors-level departments borrow GTAs from graduate science departments at their universities and assign the borrowed GTAs to teach mathematics courses. However, follow-up calls revealed that the bulk of that figure was caused by the inclusion of some M.A.T. programs in the bachelors-level universe of the CBMS2005 study. Such departments assigned M.A.T. students to teach some of their calculus courses, and the statistical calculations used this raw data to make the national projection of thirteen percent.

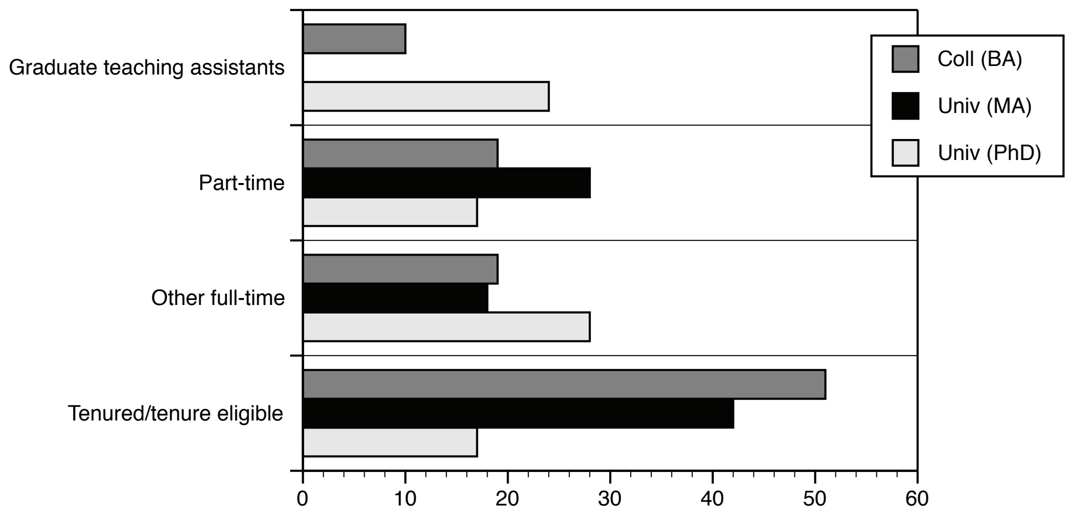

FIGURE FY.5.1 Percentage of sections (excluding distance-learning sections) in Non-mainstream Calculus I in four-year mathematics departments taught by various kinds of instructors, by type of department in fall 2005. (See the text of the report for discussion of the use of GTAs in bachelors-only departments.)

TABLE FY.6 Percentage of sections (excluding distance-learning sections) in Non-mainstream Calculus I taught using various reform methods in four-year mathematics departments in fall 2005, by type of section and type of department. Also total enrollments (in 1000s) and average section size.

	Percentage of Non-mainstream Calculus I sections taught using																				
	Graphing calculators %			Writing assignments %			Computer assignments %			On-line resource systems %			Group projects %			Enrollment in 1000s			Average section size		
Course & Department Type	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Non-mainstream Calculus I																					
Lecture/recitation	60	36	80	4	0	60	10	0	0	8	0	0	5	0	0	26	1	1	72	28	22
Regular section <31	45	44	75	1	2	0	1	0	7	1	0	5	1	0	1	5	5	20	26	23	24
Regular section >30	31	47	35	6	9	6	7	0	0	6	0	13	4	7	6	30	15	5	53	39	28
Total Non-mainstream Calculus I	**43**	**45**	**68**	**4**	**6**	**3**	**7**	**0**	**6**	**6**	**0**	**6**	**4**	**4**	**2**	**61**	**21**	**26**	**52**	**33**	**25**

Note: 0 means less than one half of 1% in columns 1 through 15, and less than 500 in the Enrollment columns.

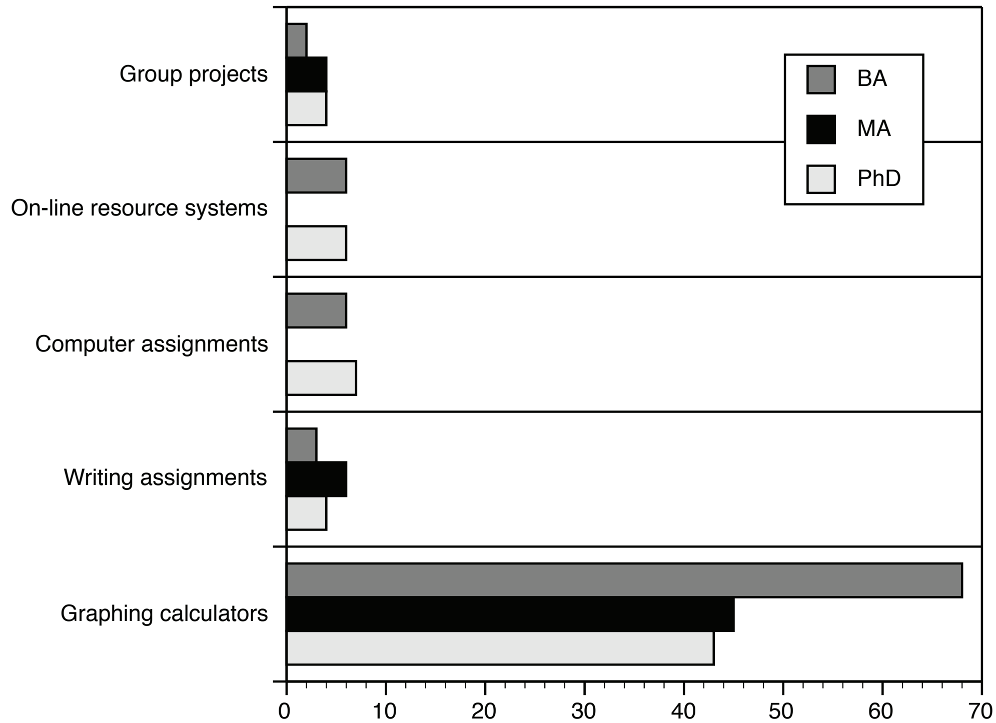

FIGURE FY.6.1 Percentage of sections (excluding distance-learning sections) in Non-mainstream Calculus I taught using various reform methods in four-year mathematics departments by type of department in fall 2005.

TABLE FY.7 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) and Probability and Statistics (non-Calculus) taught by various types of instructors in mathematics departments in fall 2005, by size of sections and type of department. Also average section size.

	Percentage of sections taught by																				
	Tenured/ tenure-eligible %			Other full-time (total) %			Other full-time (doctoral) %			Part-time %			Graduate teaching assistants %			Unknown %			Average section size		
Mathematics Departments	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Elementary Statistics (non-Calculus)																					
Lecture/ recitation	15	13	41	58	14	17	32	9	0	14	63	34	9	0	0	4	9	8	70	37	22
Regular section <31	1	35	61	51	28	8	22	4	3	14	31	29	33	6	0	0	0	2	24	26	24
Regular section >30	31	53	54	25	20	13	5	2	5	12	22	27	26	1	0	6	3	6	48	41	36
Total Elementary Statistics	**21**	**45**	**57**	**38**	**21**	**10**	**14**	**3**	**3**	**13**	**28**	**29**	**24**	**2**	**0**	**4**	**3**	**4**	**46**	**37**	**27**
Total Probability & Statistics (non-Calculus)	25	53	15	29	17	27	2	5	4	37	25	58	10	0	0	0	6	0	49	33	23
Total both courses	**21**	**47**	**53**	**37**	**20**	**12**	**13**	**4**	**3**	**17**	**27**	**32**	**22**	**2**	**0**	**3**	**4**	**3**	**47**	**36**	**26**

Note: 0 means less than one half of 1% in columns 1 through 18.

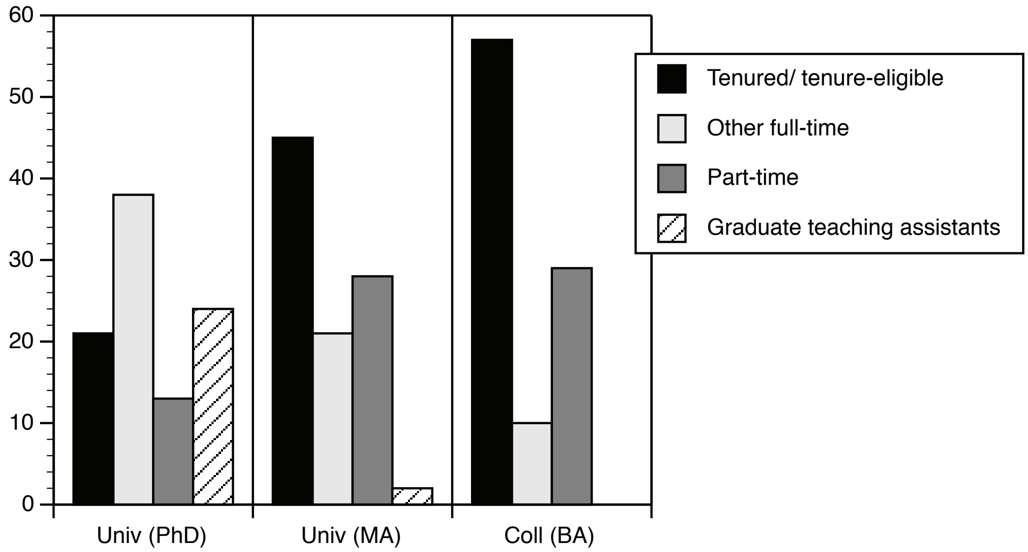

FIGURE FY.7.1 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) in four-year mathematics departments, by type of instructor and type of department in fall 2005.

TABLE FY.8 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) and Probability & Statistics (non-Calculus) taught using various reform methods in four-year mathematics departments in fall 2005, by type of section and type of department. Also total enrollments (in 1000s) and average section size.

	Percentage of Statistics & Probability (non-Calculus) sections taught using																				
	Graphing calculators %			Writing assignments %			Computer assignments %			On-line resource systems %			Group projects %			Enrollment in 1000s			Average section size		
Mathematics Departments	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA	PhD	MA	BA
Elementary Statistics (non-Calculus)																					
Lecture/recitation	0	33	62	0	67	62	69	67	92	0	0	0	0	0	65	7	1	5	70	37	22
Regular section <31	0	59	29	3	27	31	57	35	58	0	7	4	0	25	20	3	4	47	24	26	24
Regular section > 30	36	39	52	24	12	26	17	40	64	0	1	3	12	6	2	14	20	23	48	41	36
Total Elementary Statistics	**21**	**43**	**37**	**14**	**21**	**33**	**36**	**41**	**62**	**0**	**2**	**4**	**7**	**10**	**20**	**23**	**24**	**74**	**46**	**35**	**27**
Total Probability & Statistics (non-Calculus)	19	3	35	8	0	79	85	13	61	0	0	0	19	0	53	4	7	7	49	33	23
Total both courses	**21**	**34**	**37**	**13**	**16**	**37**	**43**	**35**	**62**	**0**	**2**	**3**	**8**	**7**	**23**	**27**	**31**	**81**	**43**	**32**	**26**

Note: 0 means less than one half of 1% in columns 1 through 15.

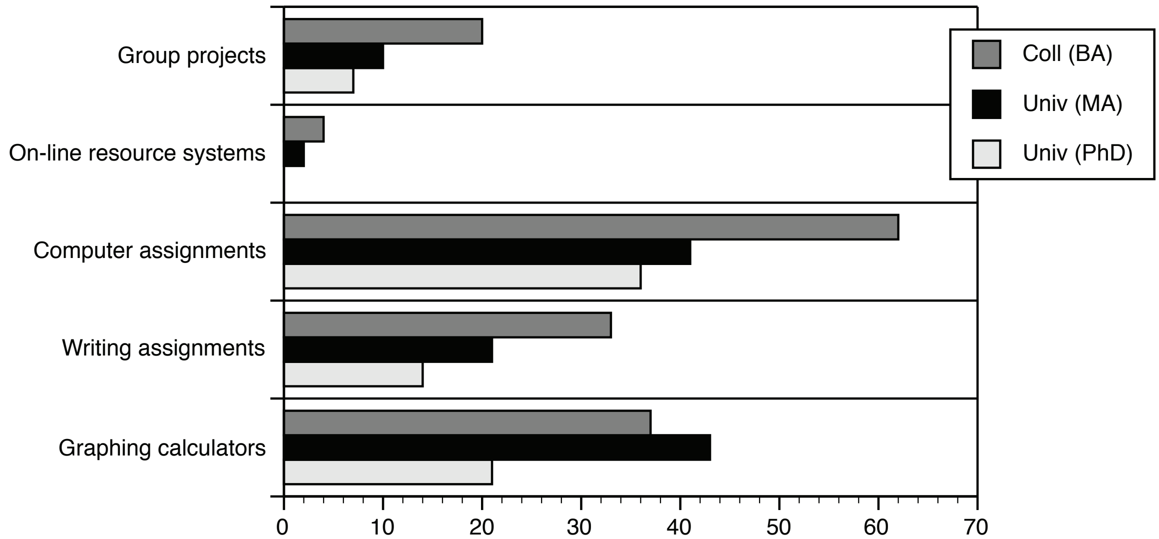

FIGURE FY.8.1 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) taught using various reform methods in four-year mathematics departments by type of department in fall 2005.

TABLE FY.9 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) and Probability and Statistics (non-Calculus) taught by instructors of various types in statistics departments in fall 2005, by size of sections and type of department. Also average section size.

	Percentage of sections taught by													
	Tenured/ tenure-eligible %		Other full-time (total) %		Other full-time (doctoral) %		Part-time %		Graduate teaching assistants %		Unknown %		Average section size	
Statistics Departments	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA
Elementary Statistics (non-Calculus)														
Lecture/recitation	18	26	21	63	8	0	16	11	20	0	25	0	75	121
Regular section <31	31	40	8	60	8	60	8	0	28	0	24	0	21	29
Regular section >30	18	58	11	20	10	4	18	17	48	0	5	5	58	38
Total Elementary Statistics	**19**	**46**	**17**	**37**	**9**	**6**	**16**	**14**	**30**	**0**	**18**	**3**	**67**	**66**
Probability & Statistics (non-Calculus)	**41**	**25**	**19**	**63**	**13**	**63**	**0**	**0**	**28**	**0**	**13**	**13**	**95**	**30**
Total Elementary Statistics and Probability & Statistics	**20**	**44**	**17**	**39**	**9**	**11**	**16**	**13**	**29**	**0**	**18**	**4**	**64**	**62**
Statistics Literacy	**13**	**0**	**22**	**67**	**12**	**33**	**10**	**33**	**20**	**0**	**35**	**0**	**61**	**94**
Total all courses in Table FY.9	**19**	**43**	**17**	**40**	**9**	**12**	**14**	**13**	**27**	**0**	**23**	**4**	**68**	**63**

Note: In the first 12 columns, 0 means less than one half of 1%.

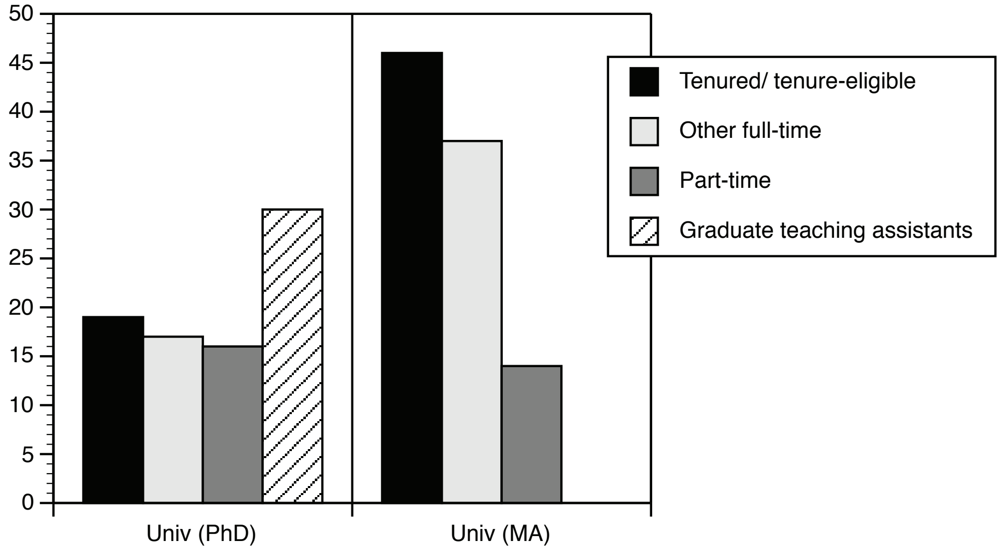

FIGURE FY.9.1 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-calculus) taught in statistics departments in fall 2005, by type of instructor and type of department. (Deficits from 100% represent unknown instructors.)

TABLE FY.10 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) taught using various reform methods in statistics departments in fall 2005, by type of section and type of department. Also total enrollments (in 1000s) and average section size.

	Percentage of Elementary Statistics (non-Calculus) sections taught using													
	Graphing calculators %		Writing assignments %		Computer assignments %		On-line resource systems %		Group projects %		Enrollment in 1000s		Average section size	
Statistics Departments	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA	PhD	MA
Elementary Statistics (non-Calculus)														
Lecture/recitation	10	0	37	74	56	74	28	15	29	41	22	7	75	121
Regular section <31	2	0	24	0	82	100	20	80	20	0	0	0	21	29
Regular section >30	2	0	62	48	43	67	0	2	6	48	9	4	58	38
Total Elementary Statistics	**7**	**0**	**44**	**54**	**54**	**71**	**18**	**11**	**20**	**43**	**31**	**11**	**67**	**66**

Note: 0 means less than one half of 1% in columns 1-12 and less than 500 in the Enrollment columns.

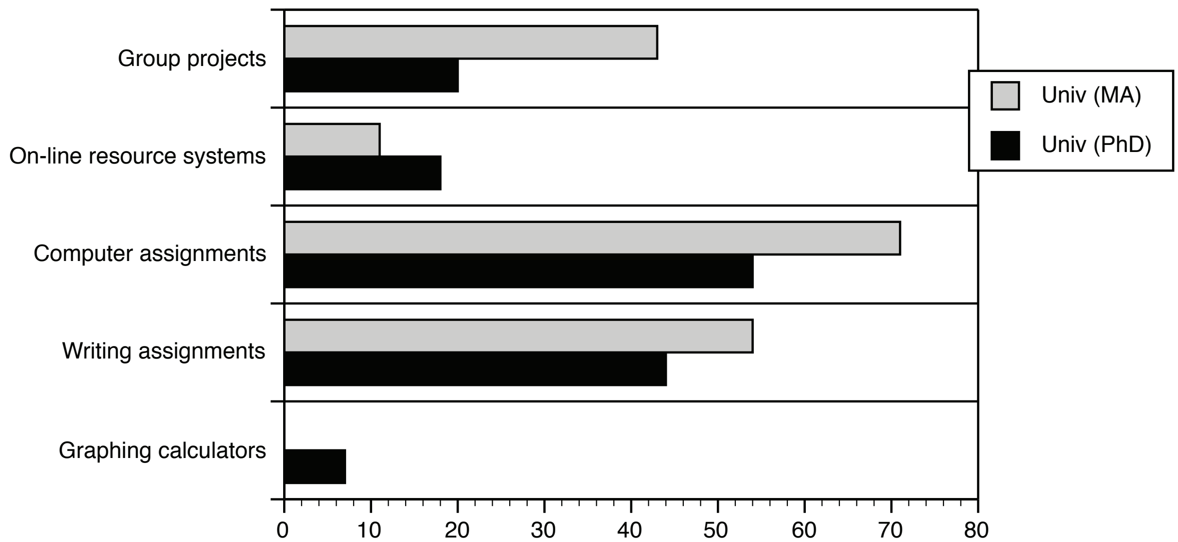

FIGURE FY.10.1 Percentage of sections (excluding distance-learning sections) in Elementary Statistics (non-Calculus) taught using various reform methods in statistics departments, by type of department in fall 2005.