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Statistical Analysis Report **April 2000**

Postsecondary Education Descriptive Analysis Reports

Instructional Faculty and Staff in Higher Education Institutions Who Taught Classes to Undergraduates: Fall 1992

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April 2000

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Suggested Citation
U.S. Department of Education. National Center for Education Statistics. *Instructional Faculty and Staff in Higher Education Institutions Who Taught Classes to Undergraduates: Fall 1992,* NCES 2000–186, by Xianglei Chen. Project Officer: Dennis Carroll. Washington DC: 2000.

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Executive Summary

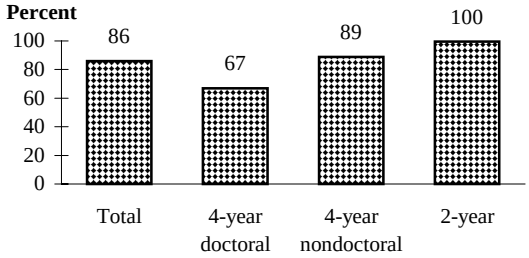
As college costs have escalated in recent years, concern about the quality of undergraduate education has intensified. Some concerns focus on what is being taught (e.g., Bloom 1987), while others emphasize who is doing the teaching (e.g., Huber 1992). The latter concern, which is the focus of this report, has become prominent because of the widespread perception that undergraduate students are increasingly taught by part-time, junior, or nontenure-track faculty and that senior and experienced professors care little about undergraduate education (Boyer Commission 1998). Despite the considerable attention that both the higher education community and the media have recently paid to this concern, little information at the national level has been obtained regarding who teaches undergraduates in U.S. higher education institutions and what their teaching loads are.

Using data from the 1992–93 National Study of Postsecondary Faculty (NSOPF:93), the purpose of this study was to determine the extent to which instructional faculty and staff of higher education institutions are involved in undergraduate teaching.[1] Specifically, it addressed the following two questions: 1) Who teaches undergraduates in the classroom? and 2) How much do they teach? The findings are based on a nationally representative sample of instructional faculty and staff who provided classroom instruction for credit to undergraduates in the fall of 1992.[2]

Instructional Faculty and Staff Who Taught Classes for Credit to Undergraduates

In the fall of 1992, a vast majority (86 percent) of instructional faculty and staff employed in higher education institutions provided classroom instruction to undergraduates for credit (figure A). Their high involvement in undergraduate teaching

Figure A—Percentage of instructional faculty and staff in higher education institutions who taught at least one class for credit to undergraduates, by type of institution: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

[1]Using graduate teaching assistants for undergraduate instruction has become increasingly common at U.S. higher education institutions and has recently received much attention from the media (See Robin Wilson, "Yale Relies on TA's and Adjuncts for Teaching," *Chronicle of Higher Education*, April 9, 1999). Unfortunately, the data used in this report from the 1992–93 National Study of Postsecondary Faculty (NSOPF:93), which excludes teaching assistants, cannot address this issue.

[2]NSOPF:93 is a study of faculty and instructional staff. In the fall of 1992, there were approximately 1,034,000 faculty and instructional staff employed in U.S. higher education institutions. Of these, about 817,000 reported teaching one or more classes for credit during the fall. These individuals became the base sample of this report, from which those who taught undergraduate classes for credit were identified. Excluded from the sample were faculty and staff who did not teach any classes during the fall (i.e., those engaged exclusively in research, administration, or public service); those who taught only independent study or one-on-one classes; or those who supervised undergraduate or graduate thesis or dissertation work without teaching any class for credit.

was not only evident in 2-year institutions, where all instructional faculty and staff reported teaching classes for credit to undergraduates, but also was apparent in 4-year institutions. For example, 89 percent of instructional faculty and staff at 4-year nondoctoral institutions and 67 percent at 4-year doctoral institutions reported teaching at least one class for credit to undergraduates in fall 1992. Because there was no variation among instructional faculty and staff at 2-year institutions regarding who taught undergraduate classes, this analysis excluded these faculty members and focused on only those at 4-year institutions.

While nearly four in five (79 percent) instructional faculty and staff at 4-year institutions reported teaching undergraduates in the classroom in 1992, relatively fewer taught only these students, especially only lower division students (i.e., freshmen and sophomores) (table A). For exam-

Table A—Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught any undergraduate classes, percentage who taught only lower division classes, by selected characteristics of faculty and staff: Fall 1992

	Percentage who taught at least one class for credit to undergraduates[1]	Percentage who taught classes for credit to only undergraduates	Of those who taught any any undergraduate classes, percentage who taught only lower division classes
Total	78.9	65.8	24.5
Employment status			
Part-time	78.6	75.1	38.4
Full-time	79.0	61.3	17.9
Sex[2]			
Female	81.8	67.4	20.4
Male	77.9	58.8	16.8
Academic rank[2]			
Instructor or lecturer	89.3	83.4	36.4
Assistant professor	82.2	65.1	16.5
Associate professor	77.6	58.0	14.6
Full professor	74.6	54.1	14.7
Tenure status[2]			
No tenure system	80.3	71.0	28.0
Not on tenure track	79.9	71.1	29.5
On tenure track	80.7	61.0	15.4
Tenured	77.9	58.1	15.2
Highest degree earned[2]			
Degree below doctoral or professional degree	94.7	84.8	27.1
Doctoral or professional degree	74.5	54.5	14.6
Basic salary[2]			
Below $35,000	92.0	80.3	23.9
$35,000–$50,000	84.3	64.0	15.5
Above $50,000	64.0	44.4	15.0

[1]A maximum of five classes could be reported by respondents.

[2]Part-time instructional faculty and staff were excluded.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

ple, 66 percent of instructional faculty and staff at 4-year institutions reported teaching only undergraduate classes. Of those who reported teaching at least one undergraduate class, one in four (25 percent) reported that all of the classes they taught were at the lower division level.[3] Thus, while most instructional faculty and staff at 4-year institutions who had teaching responsibilities were involved in undergraduate teaching, relatively fewer of them devoted their teaching entirely to undergraduates, particularly at the lower division level.

Who taught undergraduates varied considerably among instructional faculty and staff at 4-year institutions. In general, faculty who were employed part time, held a lower academic rank such as instructor or lecturer, worked in a nontenure-track position, had a highest degree below a doctoral or professional degree, and earned a lower salary from their institution were more likely than their counterparts to teach undergraduates, particularly *only* undergraduates or *only* lower division students (table A). The multivariate analysis on who was likely to teach only undergraduate classes further revealed that although the differences between part-time and full-time faculty and between male and female faculty were no longer found when other factors were taken into consideration,[4] academic rank and education degree remained significant factors in determining who teaches undergraduates exclusively (table B). Regardless of the type of 4-year institution, the faculty members' gender, race/ethnicity, age, teaching field, or employment status, those faculty or staff who were instructors, lecturers, and assistant professors were more likely than full professors to teach only undergraduate classes. Faculty who had a highest degree below a doctoral or professional degree were also more likely to teach undergraduates only than those with a doctoral or professional degree.

Table B—Unadjusted and adjusted percentages of instructional faculty and staff in all 4-year institutions who taught classes for credit to only undergraduates, by gender, employment status, academic rank, and highest degree earned: Fall 1992

	Unadjusted percentage	Adjusted percentage[2]
Total	65.8	65.8
Gender		
Female	72.9*	68.0
Male [1]	*62.0*	*64.6*
Employment status		
Part-time	75.1*	64.2
Full-time [1]	*61.3*	*66.5*
Academic rank		
Other ranks or not applicable	73.8*	65.9
Instructor or lecturer	82.7*	73.3*
Assistant professor	65.7*	69.0*
Associate professor	57.9	62.7
Full professor [1]	*53.9*	*58.1*
Highest degree obtained		
Degree below doctoral or professional degree	85.2*	78.5*
Doctoral or professional degree [1]	*54.8*	*58.6*

*p<=.05.

[1]The italicized group is the comparison group.

[2]In addition to adjusting the variables listed in the table, the percentages were also adjusted for type of institution, faculty's gender, age, race/ethnicity, and principal field of teaching.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

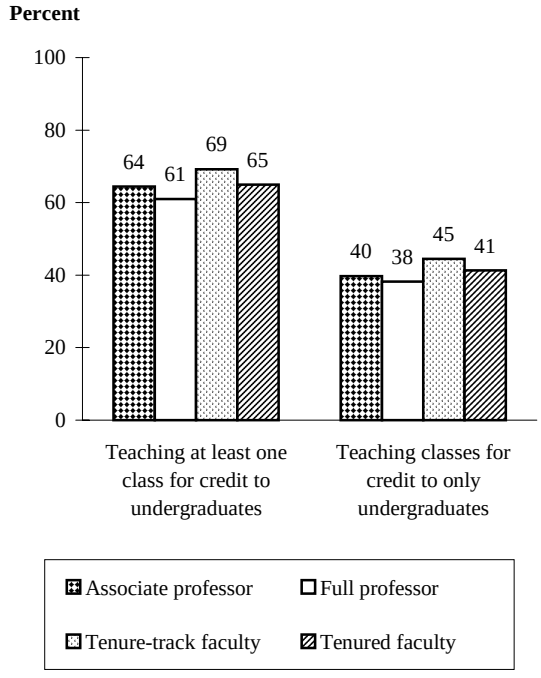
While senior faculty (e.g., full or associate professors, or tenured faculty) were less likely to provide classroom instruction to undergraduates than were junior faculty (e.g., instructors, lecturers, assistant professors, or faculty working in a nontenure-track position), a majority of senior faculty

[3]Or about 20 percent of instructional faculty and staff who had undergraduate classroom teaching duties reported teaching only lower division classes (25 × 79/100=20%).

[4]Tenure status was excluded from the multivariate regression model because of its high correlation with academic rank.

were in fact involved in undergraduate teaching. For example, at 4-year doctoral institutions, 64 percent of full-time associate professors reported teaching at least one class for credit to undergraduates, as did 61 percent of full-time full professors and 65 percent of full-time tenured faculty (figure B). Moreover, between 38 and 41 percent of these faculty members said that all of the classes they taught were targeted at the undergraduate level. These results seem inconsistent with the perception that at research and doctoral universities, few senior faculty members are involved in undergraduate teaching.

Figure B—Percentage of full-time instructional faculty and staff in 4-year doctoral institutions who taught at least one class for credit to undergraduates, and percentage who taught classes for credit to only undergraduates, by academic rank and tenure status: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Undergraduate Teaching Loads of Instructional Faculty and Staff Who Taught One or More Classes for Credit to Undergraduates

In the fall of 1992, instructional faculty and staff[5] in all types of higher education institutions (including 2-year institutions) taught about 2.3 undergraduate classes with a total of 8 credit hours (table C). In each undergraduate class taught, they had about 30 students. Overall, they spent 10 hours per week in the classroom teaching undergraduates and had a total of 272 undergraduate student contact hours per week.

Undergraduate teaching loads were not uniformly distributed across institutions. For example, full-time instructional faculty and staff at 4-year doctoral institutions had lighter undergraduate teaching loads than their full-time colleagues at 4-year nondoctoral institutions, who, in turn, had lighter undergraduate teaching loads than those who taught full time at 2-year institutions (table C). In addition, with a few exceptions, full-time senior faculty (e.g., full or associate professors, or tenured faculty) tended to teach larger but fewer undergraduate classes, whereas full-time junior faculty (e.g., instructors, lecturers, or assistant professors, or those working in a nontenure-track position) taught smaller but more undergraduate classes. Full-time senior faculty also spent fewer hours each week teaching undergraduates in class than their junior counterparts (table C). The combination of smaller class sizes with more classroom hours (or vice versa) resulted in full-time senior and junior faculty members having similar undergraduate student contact hours.

[5]This analysis was restricted to instructional faculty and staff who reported teaching one or more classes for credit to undergraduates. Thus, those who taught classes for credit to graduate students only were excluded.

Table C—Undergraduate teaching loads of instructional faculty and staff in higher education institutions who taught one or more classes for credit to undergraduates, by type of institution, academic rank, and tenure status: Fall 1992

	Number of undergraduate classes taught	Number of undergraduate classroom credit hours	Hours per week teaching undergraduates in the classroom	Average undergraduate class size	Total undergraduate student contact hours[1]
Total[2]	2.3	7.6	9.5	30.4	272.4
For full-time only					
4-year doctoral	1.9	6.2	7.4	46.8	311.3
Instructor or lecturer	2.4	8.0	10.1	38.7	398.0
Assistant professor	1.9	6.3	7.7	43.6	289.1
Associate professor	2.0	6.3	7.6	47.0	344.2
Full professor	1.7	5.5	6.2	51.9	282.7
No tenure system	2.3	7.2	11.0	32.3	478.4
Not on tenure track	2.3	7.6	9.8	45.0	378.4
On tenure track	1.9	6.1	7.3	43.8	284.9
Tenured	1.8	5.8	6.7	49.5	297.2
4-year nondoctoral	2.9	9.1	10.8	29.3	301.4
Instructor or lecturer	3.0	9.3	12.2	30.0	342.2
Assistant professor	3.0	9.5	11.2	28.7	304.2
Associate professor	2.9	9.1	10.5	29.2	292.2
Full professor	2.8	8.8	10.2	30.8	299.9
No tenure system	3.1	9.7	12.4	23.6	288.9
Not on tenure track	2.8	8.6	10.4	29.6	309.2
On tenure track	2.9	9.4	11.1	29.0	304.9
Tenured	2.8	9.0	10.3	30.6	300.7
2-year	3.5	12.3	16.2	28.9	453.0
Instructor or lecturer	3.6	12.9	18.3	27.2	474.5
Assistant professor	3.5	12.2	15.1	29.3	422.2
Associate professor	3.5	12.1	15.1	31.2	443.6
Full professor	3.7	11.9	14.8	31.6	476.5
No tenure system	3.4	12.2	16.1	26.6	431.5
Not on tenure track	3.0	10.0	14.7	26.5	369.3
On tenure track	3.6	12.6	17.5	28.7	476.5
Tenured	3.7	12.4	16.1	30.5	466.3

[1]This measure was constructed as follows. For each undergraduate class taught by faculty for credit, the number of hours per week taught in the class was multiplied by the number of students in the class. The products were then added together to obtain the total undergraduate student contact hours.

[2]The total includes both full-time and part-time instructional faculty and staff.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Foreword

The purpose of this report is to provide descriptive information about instructional faculty and staff who are involved in undergraduate teaching in U.S. higher education institutions. Using a nationally representative faculty sample from the 1992–93 National Study of Postsecondary Faculty (NSOPF:93), the report first identifies the social and academic characteristics of instructional faculty and staff who provided classroom instruction to undergraduate students in the fall of 1992. It then goes on to describe undergraduate teaching loads of those who provided such instruction.

The percentages and means presented in this report were produced using the NSOPF:93 Data Analysis System (DAS). The DAS is a microcomputer application that allows users to specify and generate their own tables. The DAS produced the design-adjusted standard errors that are necessary for testing the statistical significance of differences shown in the tables. For more information about the DAS, readers should consult Appendix B of this report.

Acknowledgments

The author wishes to thank all those who made valuable contributions to this report. In particular, Linda Zimbler of the National Center for Education Statistics (NCES) provided guidance in its planning and a substantive and methodological review; and Laura Horn of MPR Associates provided many helpful comments at various stages of the analysis and writing.

The author appreciates the careful review and thoughtful comments from the following reviewers: Dennis Carroll, Michael Cohen, Ellen Bradburn, Roz Korb, Paula Knepper, and Steve Broughman of NCES; and Elizabeth Warner of the Planning and Evaluation Service.

Thanks also go to the following people at MPR Associates: Larry Kojaku who provided thoughtful comments in the initial stage of the analysis; Vishant Shah and Shirley He who ran the tables; Andrea Livingston and Karyn Madden who edited the report; Francesca Tussing who formatted text, made graphics, and assembled the final document; Barbara Kridl who coordinated its production; and Martha Alt who assisted with the writing.

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Introduction

As college costs have escalated in recent years, concern over the quality of undergraduate education has intensified (Middaugh 1998). Some concerns focus on what is being taught (e.g., Bloom 1987), while others focus on who is doing the teaching (e.g., Huber 1992). The latter concern, which is the focus of this report, has surfaced because of the widespread perception that undergraduate students are increasingly being taught by part-time, junior, or nontenure-track faculty and that senior and experienced faculty pay little attention to undergraduate education (Boyer Commission 1998). This perception is supported by some studies reporting that universities and colleges are increasingly hiring part-time and nontenure-track faculty to teach introductory or intermediate courses to undergraduates (Gappa and Leslie 1993; Wilson 1999); and that senior faculty members are seeking to maximize their discretionary time for research and scholarship through lowered teaching loads and reduced attention to undergraduates (Massy and Zemsky 1994). The perception is further fueled by the mass media that portrays frustrated undergraduates sitting in the huge lecture sessions where they are taught by instructors, lecturers, or even graduate teaching assistants (Wergin 1994). Public criticism by parents and legislators asserts that the quality of undergraduate education is declining because of large classes, high costs, and a lower faculty commitment to teaching (Winston 1994).

Although faculty members in U.S. higher education institutions have considerable autonomy in how they perform their jobs, many members of the public at large assert that teaching undergraduates is the primary responsibility of the faculty (Braxton 1996). Consequently, faculty research activity is often viewed as an intrusion on teaching undergraduate students (Volkwein and Carbone 1994). While the relationship between teaching and research continues to be a matter of debate, some observers and policymakers have criticized academe for being too research-oriented, with resulting detrimental effects on college and university students (Boyer 1990). Scholars such as Massy and Zemsky (1994) echo this perspective. They argue that faculty members who are heavily involved in research increase their use of discretionary time to do research at the expense of teaching. Some authors also claim that research activity creates a faculty culture that is unsupportive of undergraduate teaching. For example, Gaff (1988) asserts that in today's colleges and universities, research tends to be more highly valued than teaching; graduate teaching is more highly regarded than undergraduate teaching; and within undergraduate teaching, advanced courses are preferred over introductory courses. These criticisms, coupling with the growing concern of the public over the rising costs of higher education, have resulted in a resur-

gent interest in what faculty do, how much they work, and what they accomplish (Layzell 1996). Many states have launched studies to seek information about faculty's "work week," including teaching loads, number of contact hours with students, and productivity (Cage 1991). In some states (for example, Ohio), this inquiry has resulted in a set of policies designed to control faculty time devoted to teaching (Fairweather 1997).

Despite the attention recently paid to undergraduate education and many states' efforts to control and increase faculty's teaching time, little descriptive information exists at the national level to inform two questions central to public debate: *Who teaches undergraduates*? And *how much do they teach*? In order for both the public and policymakers to better understand how undergraduate students are served in U.S. higher education institutions, it is essential to supply information on who provides undergraduate instruction in the classroom and what their teaching loads are.[1] The purpose of this report is to present this information using a national survey of faculty and instructional staff described below. Although using graduate teaching assistants to perform undergraduate teaching has become an increasing concern of many parents, legislators, and the public at large, this report cannot address this issue because the data used in the report were from a survey of faculty and instruction staff only.

The Data

This report uses data from the 1992–93 National Study of Postsecondary Faculty (NSOPF:93). This study, sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES), was designed to provide a nationally representative profile of faculty and staff in U.S. higher education institutions (Selfa et al. 1997). Faculty and instructional staff participating in NSOPF:93 were asked a series of questions regarding the classes (up to a maximum of five)[2] they taught for credit in the fall of 1992. Specifically, faculty were asked to describe the number of weeks the class met, number of credit hours for the class they taught, number of students in the class, number of hours per week they taught the class, and the primary level of students in the class. The primary level of students in the class includes lower division students, upper division students, graduate or any other post-baccalaureate students, and all other students. In this report, "lower division students," "upper division students," as well as "all other

[1]A recent study used a nationally representative sample of faculty from the Delaware Study of Instructional Costs and Productivity to investigate the question of undergraduate teaching loads (Middaugh 1998). However, it focused only on tenured and tenure-track faculty rather than all faculty members employed in U.S. higher education institutions.

[2]Because NSOPF:93 collected class information for up to five classes, undergraduate teaching loads reported in this study may be underestimated for those who taught more than five classes. However, this underestimation is probably trivial because generally few faculty teach more than five classes in an academic term. For example, the NSOPF:93 data indicated that among instructional faculty and staff who taught classes for credit in fall 1992, 96 percent taught between one and five classes, and just 4 percent taught more than five classes.

students," were defined as "undergraduates." The primary level of students in the class was also used to distinguish the level of the class faculty taught.[3]

Since the purpose of this report is to determine the extent to which faculty in higher education institutions are involved in undergraduate classroom instruction, the base sample of this report consisted of faculty and staff who reported that they had some classroom instruction duties for credit during the 1992 fall term at the sampled institutions.[4] These faculty and staff were termed as "instructional faculty and staff" in the report.[5] Using this base sample, this report focused on those who reported that they had taught one or more classes for credit to undergraduates. For detailed information on the survey design, sample selection, and measures used in this report, see the Glossary (appendix A) and the Technical Notes and Methodology (appendix B).

Organization of the Report

The report contains two main sections. The first examines the characteristics of instructional faculty and staff who taught classes for credit to undergraduates, especially focusing on those faculty who taught *only* undergraduate classes and *only* lower division classes. The characteristics examined included social and demographic backgrounds of faculty, such as gender, race/ethnicity, and age, as well as the characteristics that define their academic profession, such as employment status, academic rank, tenure status, principal field of teaching, highest degree earned, and basic salary. Because undergraduate teaching is highly related to the mission of the institution, data were analyzed and presented separately for faculty at 4-year doctoral institutions,

[3]Because faculty in the NSOPF:93 were not asked about the level of the classes they taught, this information is derived from faculty's response to the primary level of students in the class they taught. In reality, however, a graduate-level class could include undergraduate students (particularly upper division students) and an undergraduate-level class could include a significant proportion of graduate students. Thus, the level of students in the class is not necessarily equivalent to the level of the class a faculty member teaches.

[4]This excluded sample members who had no classroom instruction responsibilities during the fall of 1992. Examples of these faculty and staff were those who were engaged exclusively in research, administration, or public service, those who only taught independent study or one-on-one classes, or those who supervised undergraduate or graduate thesis or dissertation work without teaching any class for credit.

[5]In the interest of brevity, the term "faculty" was also used throughout the report. However, it refers to only instructional faculty and staff who taught at least one class for credit in the fall of 1992. It should be noted that instructional faculty and staff may be involved in more than teaching students in the classroom. For example, they may teach independent study, advise students in the one-on-one session, or serve on various graduate and undergraduate committees. Among all faculty and staff who had some instructional duties for credit in the fall of 1992, 87 percent reported that they taught at least one class for credit (undergraduate or graduate level), 63 percent provided individualized instruction, and 26 percent advised students in various committees (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System). This report focused on a vast majority of instructional faculty and staff (87 percent) who provided classroom instruction for credit and excluded instructional faculty and staff (13 percent) who only taught students outside of the classroom setting (i.e., teaching independent study or one-on-one classes or supervising undergraduate or graduate thesis or dissertation committees). It is important for the reader to know that the sample used in this report was a subgroup of instructional faculty and staff included in NSOPF:93.

4-year nondoctoral institutions, and 2-year institutions.[6] Also, since 2-year institutions serve primarily undergraduate students and their main mission is to teach these students, all faculty members with teaching duties in these institutions should teach only undergraduate students.[7] Thus, this section eliminates the analysis of undergraduate teaching by faculty at 2-year institutions and focuses on only those at 4-year institutions.

The second section of the report examines the undergraduate teaching loads of those who reported that they taught one or more classes for credit to undergraduates. This section focuses on a number of teaching-load indicators: the number of undergraduate classes taught, total number of credit hours for these classes, total number of hours per week spent in the classroom teaching undergraduates, average undergraduate class size, and total contact hours with undergraduate students per week. Although all faculty members at 2-year institutions taught undergraduates, their teaching loads were not uniformly distributed. Thus, unlike the previous section that excludes faculty at 2-year institutions, this section includes these faculty, both a specific group and a comparison group. Data for each type of institution were analyzed and shown separately. All differences cited in this report are significant at the .05 level.[8]

[6]Four-year doctoral institutions include public and private research and doctoral institutions. Four-year nondoctoral institutions include public and private comprehensive, public and private liberal arts, and other public and private specialized institutions. Two-year institutions include both public and private 2-year colleges.

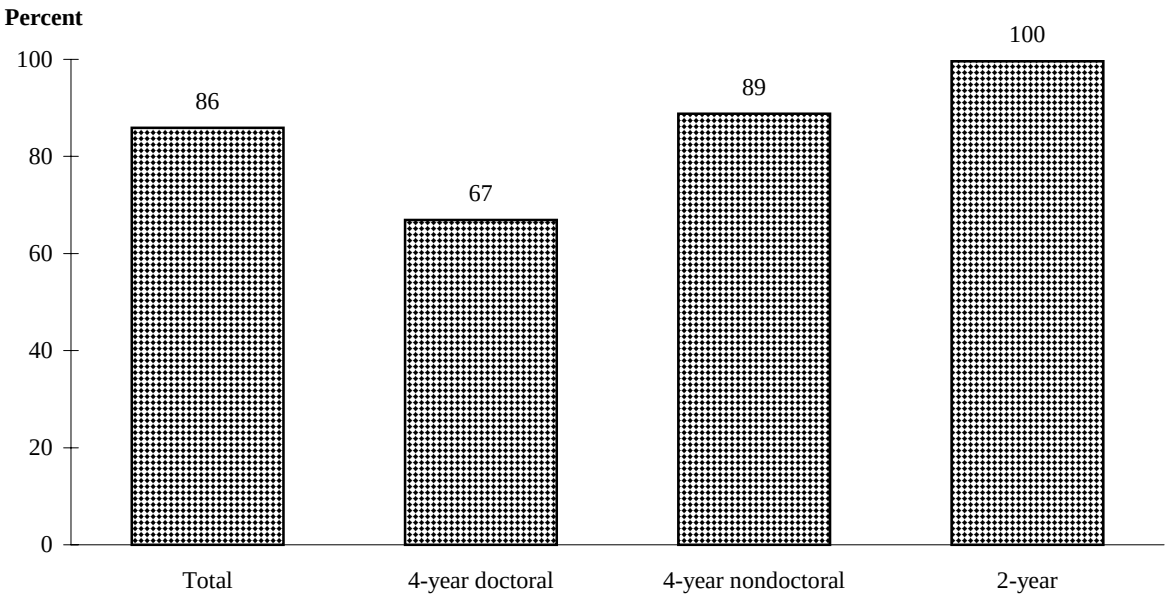
[7]This was verified by the NSOPF:93 data that showed that 100 percent of instructional faculty and staff at 2-year institutions reported that they taught at least one class for credit to undergraduates in the fall term of 1992.

[8]In accordance with NCES standards, the Bonferroni adjustment to the significance level was used when multiple comparisons were made. With this adjustment, the .05 significance level was divided by the total number of comparisons made. See Appendix B, Technical Notes and Methodology, for a description of accuracy of estimates.

Instructional Faculty and Staff Who Taught Classes for Credit to Undergraduates

In the fall of 1992, most instructional faculty and staff (86 percent) employed in U.S. higher education institutions taught one or more classes for credit to undergraduates (figure 1). This overall estimate, however, masks the considerable variation across different types of institutions. As shown in figure 1, teaching at least one class for credit to undergraduates was reported by 67 percent of instructional faculty and staff at 4-year doctoral institutions, 89 percent of instructional faculty and staff at 4-year nondoctoral institutions, and 100 percent of instructional faculty and staff at 2-year institutions. This variation may reflect the very different missions of the institutions examined here. Because 2-year institutions serve primarily undergraduate students, all faculty members who have instructional duties for credit in these institutions should teach

Figure 1—Percentage of instructional faculty and staff in higher education institutions who taught at least one class for credit to undergraduates, by type of institution: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

undergraduate students.[9] For 4-year institutions, the mission is divided between teaching and research. While the primary mission for 4-year nondoctoral institutions is teaching, the mission for 4-year doctoral institutions includes both teaching and research.[10] Given these differences, the remainder of this section excludes instructional faculty and staff at 2-year institutions and analyzes data separately for instructional faculty and staff from 4-year doctoral and nondoctoral institutions.

Although a majority of instructional faculty and staff at 4-year institutions reported teaching undergraduates, a relatively lower proportion taught only these students, especially only lower division students (i.e., freshmen and sophomores). At 4-year nondoctoral institutions, 89 percent of faculty reported teaching at least one class for credit to undergraduates, while 79 percent said that all of their classes were at the undergraduate level. At 4-year doctoral institutions, whereas 67 percent of faculty reported teaching classes to undergraduates, 50 percent said that all of their classes were targeted at undergraduates (figure 2). The proportion of faculty who devoted their classroom teaching entirely to lower division students was even lower. Looking at those who reported teaching undergraduate classes, one in four (25 percent) reported teaching only lower division classes. Instructional faculty and staff at 4-year doctoral institutions were less likely than their colleagues at 4-year nondoctoral institutions to teach only lower division students (20 versus 27 percent). Thus, while it is common for instructional faculty and staff at 4-year institutions to teach undergraduates, it is less common for them to teach undergraduates exclusively, especially lower division students.

Social and Demographic Characteristics of Instructional Faculty and Staff

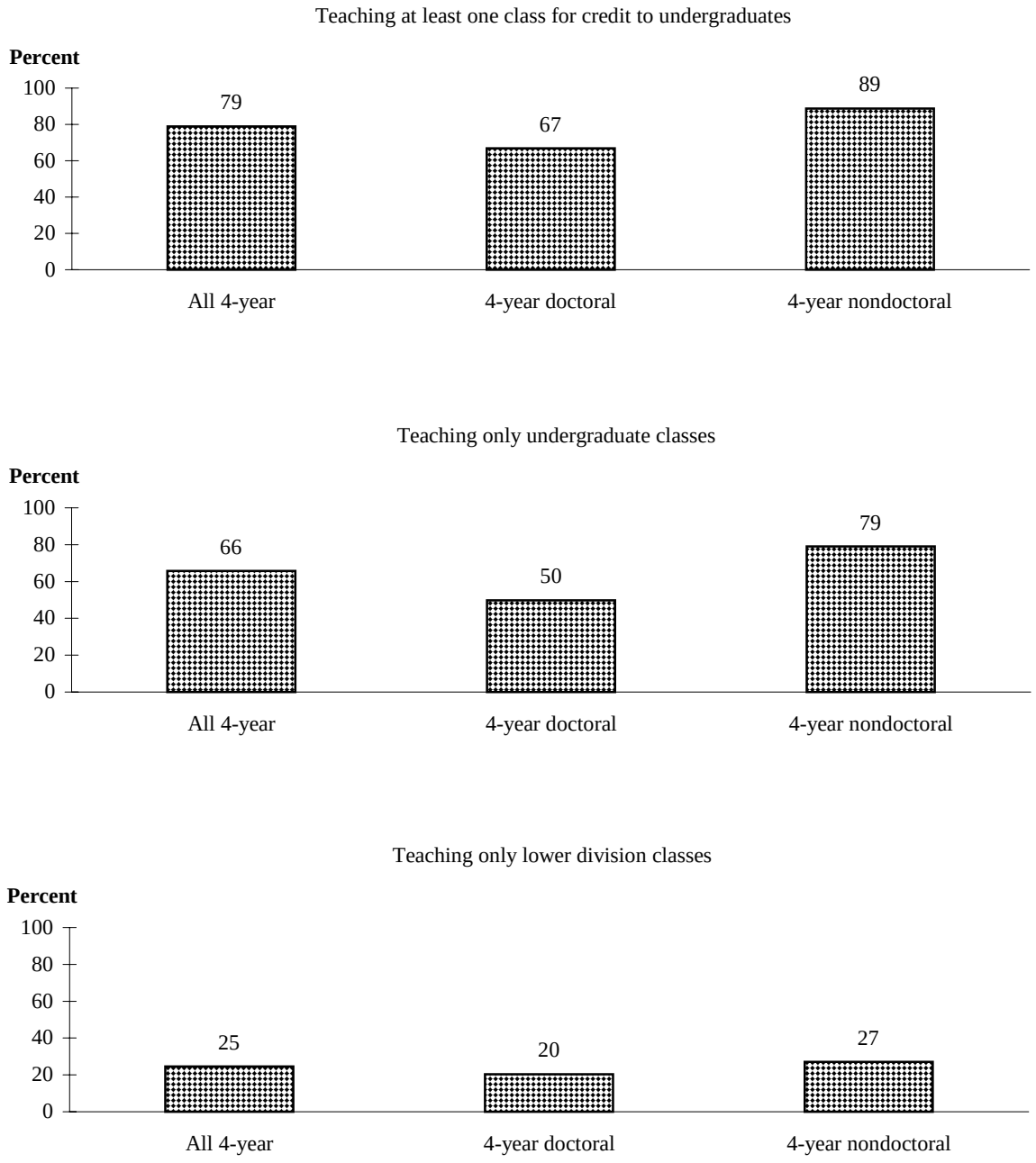
Because social and demographic characteristics are linked to almost every aspect of faculty's academic life, from hiring, promotion, and pay to workload and productivity (Allen 1997; Clery 1998; Clery and Lee 1998; Gordon and Morton 1974; Zimbler 1994; Xie and Shauman 1998), it is important to examine the social and demographic profiles of faculty who teach undergraduate classes in higher education institutions. Three characteristics are examined here: gender, race/ethnicity, and age.[11]

[9] In fact, all taught classes for credit to undergraduates.

[10] This difference can be illustrated by an NCES report that found that in 1992, compared with full-time faculty at 4-year nondoctoral institutions, their counterparts at 4-year doctoral institutions spent a higher percentage of their work time conducting research (22–35 percent versus 12–14 percent) and a lower proportion of their time performing teaching activities (35–47 percent versus 59–60 percent) (Kirshstein et al. 1997).

[11] Citizenship status was examined in the preliminary analysis. It was not related to undergraduate teaching at either type of 4-year institution.

Figure 2—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught undergraduate classes, percentage who taught only lower division classes, by type of 4-year institution: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Both gender and age were related to undergraduate teaching (tables 1 and 2), although race/ethnicity appeared not to be so (table 3). Female faculty members were more likely than their male colleagues to be involved in undergraduate teaching. At 4-year doctoral institutions, female faculty members were more likely than their male peers to report teaching at least one class for credit to undergraduates (table 1). At both 4-year doctoral and nondoctoral institutions, female faculty were more likely than male faculty to report teaching only undergraduate classes and teaching only lower division classes.

Table 1—Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and gender: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only under-graduates	Undergrad-uates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	78.9	65.8	13.1	24.5	39.9	35.6
Female	82.6	72.9	9.7	29.5	39.5	31.1
Male	76.9	62.0	15.0	21.7	40.1	38.2
4-year doctoral institution	67.0	49.7	17.3	20.4	50.7	28.9
Female	71.5	59.1	12.3	24.0	52.2	23.8
Male	65.0	45.7	19.4	18.7	50.0	31.3
4-year nondoctoral institution	88.8	79.1	9.7	27.1	33.1	39.8
Female	89.7	81.8	7.9	32.2	32.9	34.8
Male	88.2	77.4	10.8	23.9	33.2	42.9
For full-time only						
4-year institution	79.0	61.3	17.7	17.9	38.1	44.0
Female	81.8	67.4	14.4	20.4	38.5	41.1
Male	77.9	58.8	19.1	16.8	37.9	45.2
4-year doctoral institution	66.0	44.2	21.8	15.8	51.0	33.2
Female	67.2	50.0	17.3	17.7	52.3	30.1
Male	65.6	42.3	23.3	15.1	50.6	34.3
4-year nondoctoral institution	91.9	78.2	13.8	19.5	28.9	51.6
Female	92.8	80.5	12.3	21.9	31.0	47.1
Male	91.5	77.0	14.5	18.2	27.9	53.9

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Table 2—Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and age: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only under-graduates	Undergrad-uates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	78.9	65.8	13.1	24.5	39.9	35.6
Under 35	87.9	77.7	10.1	34.5	37.0	28.5
35–44	77.9	65.3	12.6	24.4	41.4	34.3
45–54	77.5	63.8	13.7	23.2	38.9	37.9
55–64	80.2	65.3	14.9	20.8	39.7	39.5
65 or older	71.8	59.8	12.0	26.6	44.3	29.1
4-year doctoral institution	67.0	49.7	17.3	20.4	50.7	28.9
Under 35	79.3	63.0	16.4	29.1	49.1	21.8
35–44	65.2	47.8	17.4	20.2	50.7	29.2
45–54	65.2	49.0	16.2	18.8	50.0	31.2
55–64	68.7	48.9	19.7	16.5	52.7	30.8
65 or older	59.4	44.0	15.5	26.5	51.5	22.0
4-year nondoctoral institution	88.8	79.1	9.7	27.1	33.1	39.8
Under 35	94.7	89.6	5.1	38.1	28.9	32.9
35–44	89.5	81.3	8.2	27.2	35.2	37.7
45–54	86.8	75.0	11.8	25.7	32.6	41.7
55–64	89.8	78.9	10.9	23.5	31.5	45.0
65 or older	82.6	73.7	8.9	26.7	39.7	33.6
For full-time only						
4-year institution	79.0	61.3	17.7	17.9	38.1	44.0
Under 35	85.1	67.9	17.3	23.6	36.0	40.4
35–44	77.1	58.9	18.1	17.1	39.1	43.9
45–54	79.3	61.9	17.4	17.2	38.2	44.6
55–64	80.5	61.9	18.6	17.6	37.4	45.0
65 or older	72.3	57.6	14.7	20.0	39.0	41.0
4-year doctoral institution	66.0	44.2	21.8	15.8	51.0	33.2
Under 35	75.7	51.9	23.8	20.7	51.7	27.5
35–44	64.2	41.6	22.6	14.6	51.8	33.6
45–54	65.3	45.0	20.3	14.5	50.5	35.0
55–64	68.5	45.4	23.1	16.2	50.9	32.9
65 or older	55.9	38.3	17.6	19.4	48.9	31.7
4-year nondoctoral institution	91.9	78.2	13.8	19.5	28.9	51.6
Under 35	95.7	85.7	10.0	26.1	22.2	51.7
35–44	91.9	79.0	13.0	19.1	28.8	52.1
45–54	91.4	76.4	15.0	18.8	30.7	50.5
55–64	91.7	77.3	14.4	18.6	27.9	53.5
65 or older	90.9	79.5	11.5	20.4	32.1	47.5

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Table 3—Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and race/ethnicity: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only under-graduates	Undergrad-uates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	78.9	65.8	13.1	24.5	39.9	35.6
American Indian/Alaskan Native	92.6	66.5	26.1	14.2	52.7	33.1
Asian/Pacific Islander	76.1	57.0	19.1	21.8	37.8	40.4
Black, non-Hispanic	81.3	70.5	10.8	26.8	35.6	37.5
Hispanic	82.0	69.6	12.4	24.0	39.1	36.9
White, non-Hispanic	78.8	65.9	12.9	24.6	40.2	35.2
4-year doctoral institution	67.0	49.7	17.3	20.4	50.7	28.9
American Indian/Alaskan Native	—	—	—	—	—	—
Asian/Pacific Islander	67.8	45.3	22.4	22.4	43.0	34.6
Black, non-Hispanic	66.0	51.2	14.8	20.4	46.6	33.0
Hispanic	74.5	59.8	14.7	20.0	53.1	26.9
White, non-Hispanic	66.7	49.7	17.0	20.3	51.2	28.5
4-year nondoctoral institution	88.8	79.1	9.7	27.1	33.1	39.8
American Indian/Alaskan Native	97.4	81.5	15.9	18.7	42.2	39.1
Asian/Pacific Islander	86.3	71.3	15.0	21.3	32.8	45.9
Black, non-Hispanic	88.3	79.4	8.9	29.0	31.9	39.1
Hispanic	88.9	78.7	10.2	27.1	28.1	44.8
White, non-Hispanic	88.9	79.4	9.5	27.3	33.3	39.4

—Sample size too small for a reliable estimate.

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Faculty's age appeared to be inversely related to undergraduate teaching (table 2). At both types of 4-year institutions, the younger the faculty, the more likely they were to report teaching at least one class for credit to undergraduates, teaching only undergraduate classes, and teaching only lower division classes (table 2). Younger faculty tend to be newly hired and employed in a lower rank position (Finkelstein, Seal, and Schuster 1998), so they might be more likely to be assigned to teaching undergraduate courses than their older colleagues.

Because female and younger faculty are more likely than male and older faculty to be employed part time (Lee 1995), and part-time faculty were more likely than full-time faculty to teach only undergraduates (see below), the association between gender or age and undergraduate teaching observed above may be partly attributed to employment status rather than gender and age per se. To confirm this, the above relationships were reexamined for full-time faculty. As shown in the bottom half of table 1, after controlling for employment status, the association between gender and undergraduate teaching remained for the most part: full-time female faculty at both types of 4-year institutions were more likely than their male counterparts to teach only undergraduates, and females at 4-year nondoctoral institutions were more likely than their male colleagues to teach only lower division students. There were a few changes, however. At 4-year doctoral institutions, female faculty were no longer more likely than their male counterparts to report teaching at least one class to undergraduates. At 4-year nondoctoral institutions, females were no more likely than their male colleagues to teach only lower division students.

With a few exceptions, the association between age and undergraduate teaching among full-time faculty largely disappeared (table 2). A few exceptions occurred in the group of youngest faculty (under age 35). At 4-year doctoral institutions, those under age 35 were more likely than faculty in other age ranges (except for those ages 54–64) to teach undergraduates. At 4-year nondoctoral institutions, faculty under age 35 were more likely than those ages 44–54 to teach undergraduates and were more likely than faculty ages 35–44 and 45–54 to teach only undergraduates. In sum, among full-time faculty members, teaching only undergraduates or teaching only lower division students was more likely a responsibility of female faculty than male faculty and of youngest faculty (i.e., newly hired faculty) than middle-aged or older faculty. Teaching undergraduates, however, was not differentiated by race/ethnicity.

Academic Characteristics of Instructional Faculty and Staff

Critics of undergraduate education often target their complaints directly at senior faculty who hold a high academic rank and have attained tenure. A frequent criticism is that the most senior and experienced faculty "pay too much attention to their research and consulting and graduate students and too little attention to their undergraduates and lectures and advising and caring" (Winston 1994, 9). Across the country, there is a widespread, though largely undocumented, perception that colleges and universities of all types increasingly rely on part-time, junior, and nontenure-track faculty to handle a major part of the instructional load, and that undergraduates, particularly freshmen and sophomores, rarely see senior professors in the classroom. Thus, in order to explore the validity of this perception, the next section examines how undergraduate teaching is related to various academic characteristics of faculty that define their

profession. This array of variables includes employment status, academic rank, tenure status, principal field of teaching, highest degree earned, and basic salary.[12] The results provide an initial look at those "who teach undergraduates, particularly at the lower division level."

Employment Status

Although part- and full-time instructional faculty and staff employed at 4-year institutions were equally likely to report teaching at least one class for credit to undergraduates in the fall of 1992, part-time instructional faculty and staff appeared to be more likely than their full-time colleagues to teach only undergraduate classes as well as only lower division classes (table 4). For example, in the fall of 1992, 75 percent of part-time faculty reported that all of the classes they taught were at the undergraduate level, compared with 61 percent of full-time faculty who

Table 4—Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and employment status: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only undergraduates	Undergraduates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	78.9	65.8	13.1	24.5	39.9	35.6
Part-time	78.6	75.1	3.5	38.4	43.6	18.0
Full-time	79.0	61.3	17.7	17.9	38.1	44.0
4-year doctoral institution	67.0	49.7	17.3	20.4	50.7	28.9
Part-time	69.7	65.4	4.3	33.0	49.8	17.3
Full-time	66.0	44.2	21.8	15.8	51.0	33.2
4-year nondoctoral institution	88.8	79.1	9.7	27.1	33.1	39.8
Part-time	83.6	80.6	3.0	41.0	40.7	18.3
Full-time	91.9	78.2	13.8	19.5	28.9	51.6

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

[12]The associations of undergraduate teaching with employment type (regular versus temporary) and whether the highest degree is in the field of teaching were also examined. However, except for a few isolated cases, these associations were generally not found.

reported the same. About 38 percent of part-time faculty who taught undergraduate classes reported that all of their classes were targeted at lower division students, in contrast with 18 percent of full-time faculty.

A similar pattern existed at 4-year doctoral institutions: 65 percent of part-time faculty reported that they taught classes to only undergraduates in the fall of 1992, whereas 44 percent of full-time faculty reported the same (table 4). Of those who taught undergraduate classes, 33 percent of part-time faculty reported that they taught only lower division classes, compared with 16 percent of full-time faculty. At 4-year nondoctoral institutions, although similar proportions of both groups reported teaching only undergraduate classes, part-time faculty were more likely than full-time faculty to report teaching only lower division classes.

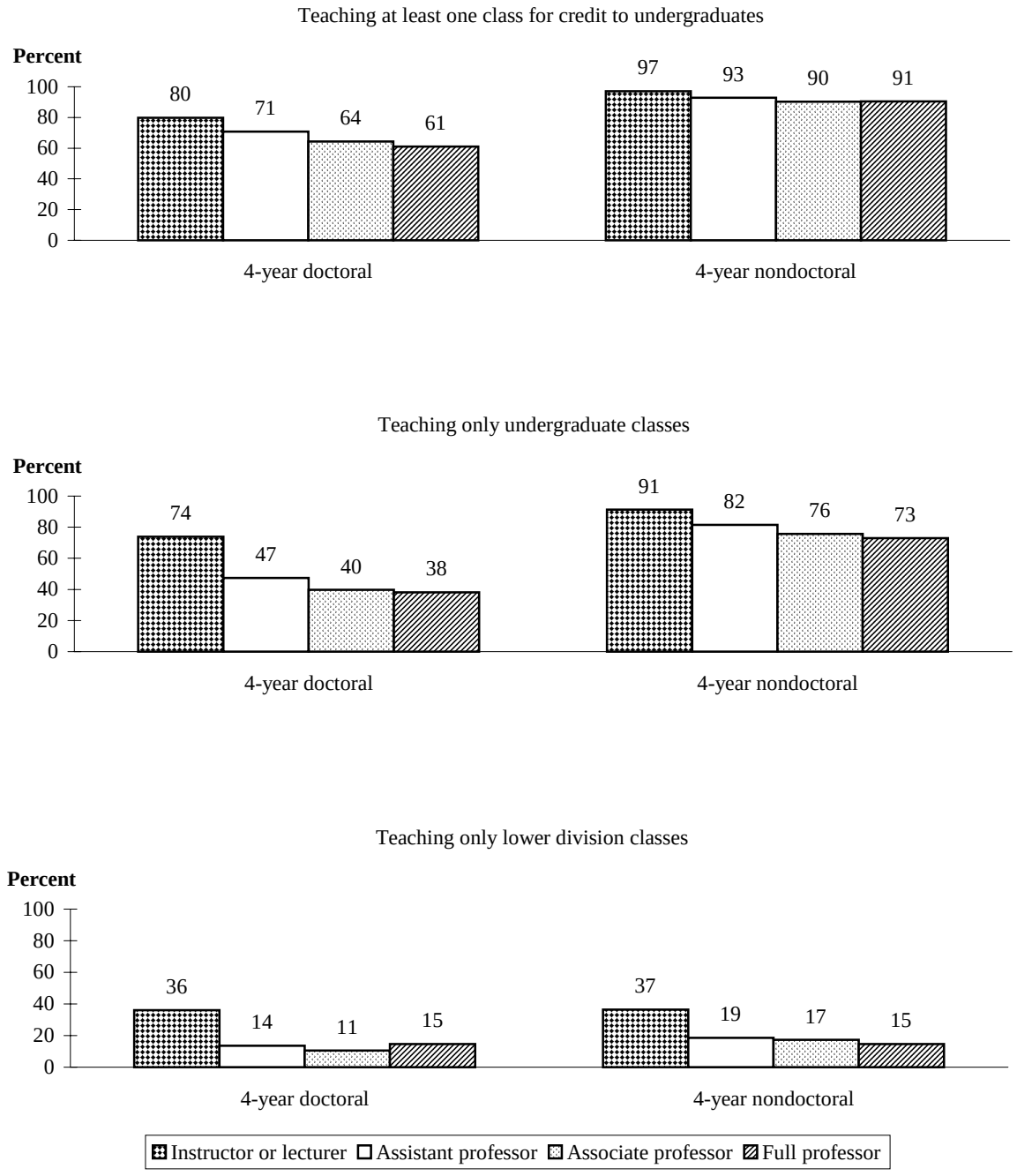
Because the employment of part-time faculty differs significantly from that of full-time faculty—e.g., part-time faculty typically have less than a full-time teaching load, receive a relatively lower salary, often lack job benefits provided to full-time faculty, seldom play a role in academic governance, and have little access to professional development (Gappa and Leslie 1993)—any estimate based on a combined sample of full-time and part-time faculty can be distorted. Thus, the remainder of the analysis in this section focuses solely on full-time faculty.

Academic Rank

In recent years, one issue of much concern pertaining to undergraduate education is the widely held belief that senior faculty at research universities do little undergraduate teaching and that they instead invest their time and effort in their own research. Due to this concern, there has been a resurgent interest in what these faculty do and how much they work and accomplish. Thus, the proportion of senior professors teaching undergraduates is an important indicator that helps university administrators, state legislators, and policymakers determine the extent to which senior faculty participate in undergraduate teaching.

As shown in figure 3, most faculty with a high academic rank did some undergraduate teaching. At 4-year doctoral institutions, for example, 61 percent of full-time full professors and 64 percent of full-time associate professors reported teaching at least one class for credit to undergraduates in the fall of 1992, as did 90 percent of their colleagues at 4-year nondoctoral institutions. In addition, a fairly large proportion of full and associate professors taught classes exclusively to undergraduates (38–40 percent for full-time associate and full professors at 4-year doctoral institutions and 73–76 percent for full-time associate and full professors at 4-year

Figure 3—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught undergraduate classes, percentage who taught only lower division classes, students, by type of 4-year institution and academic rank: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

nondoctoral institutions).[13] These results appear inconsistent with the perceptions that few senior professors, particularly at research universities, perform undergraduate teaching and that undergraduate students rarely see senior faculty in the classroom (Sykes 1988).[14]

Nevertheless, teaching undergraduates were negatively related to faculty's academic rank. As academic rank increased, the proportion of full-time instructional faculty and staff teaching undergraduates decreased. At 4-year doctoral institutions, 80 percent of full-time instructors or lecturers reported that they taught at least one class for credit to undergraduates in 1992, and 74 percent of them said that all of the classes they taught were at the undergraduate level (figure 3). The comparable percentages were 71 and 47 percent for assistant professors, 64 and 40 percent for associate professors, and 61 and 38 percent for full professors. Full-time instructors and lecturers were also much more likely than full-time assistant, associate, or full professors to teach only lower division students.

A similar relationship existed at 4-year nondoctoral institutions. Faculty members with lower academic ranks (such as instructors and lecturers or assistant professors) were more likely than higher ranking faculty members (e.g., associate and full professors) to teach only undergraduate classes (figure 3). Full-time instructors or lecturers were also more likely than full-time assistant, associate, and full professors to teach only lower division classes.

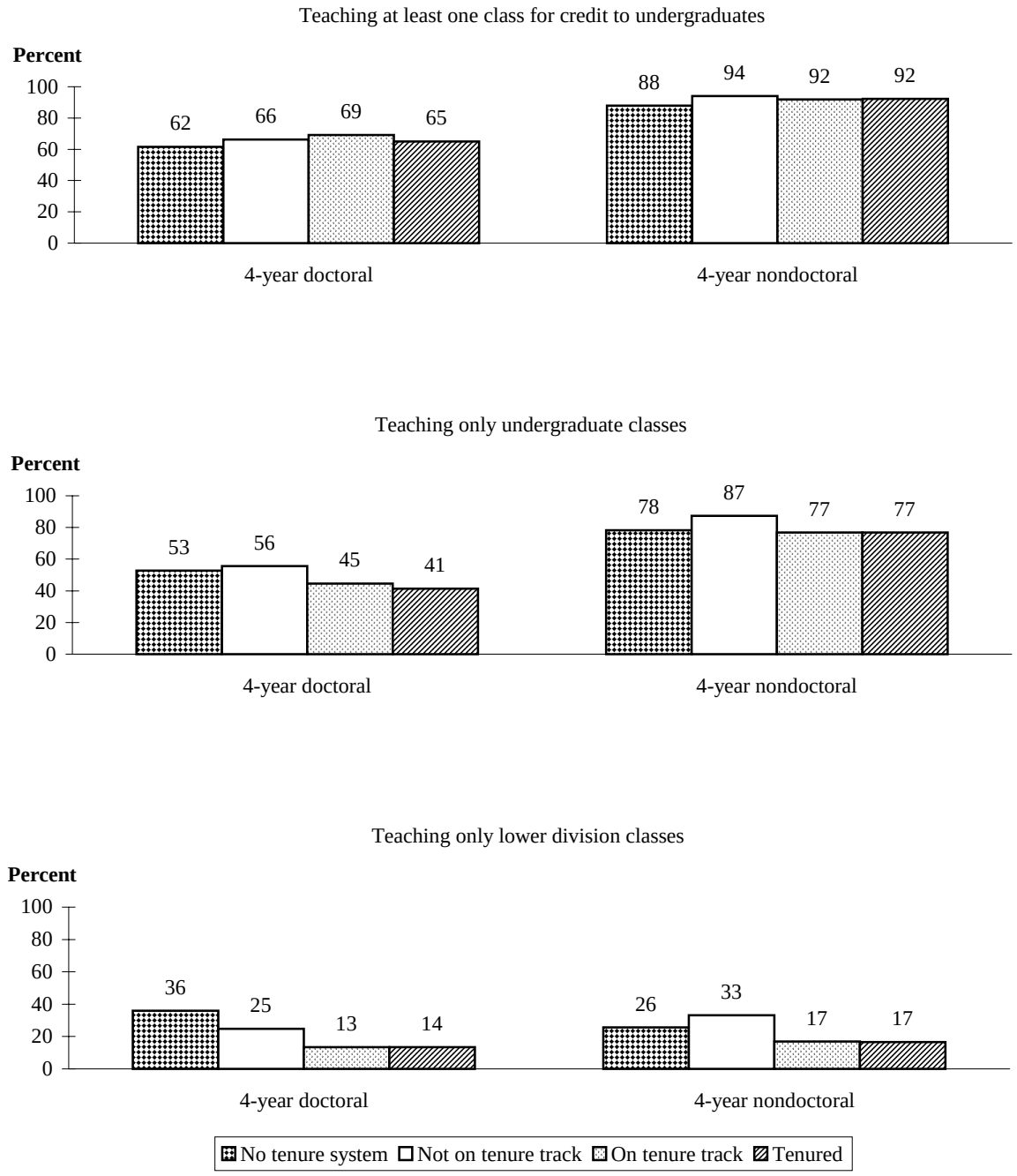
Tenure Status

A majority of full-time faculty who held tenure or were on a tenure track reported teaching at least one class for credit to undergraduates (65–69 percent for these faculty at 4-year doctoral institutions and 92 percent for their colleagues at 4-year nondoctoral institutions) (figure 4). About 41–45 percent of tenured and tenure-track faculty at 4-year doctoral institutions and 77 percent of their counterparts at 4-year nondoctoral institutions reported teaching only undergraduate classes.

[13]Or consider another way of viewing these data: more than half of full-time professors (38/61=62 percent) and associate professors (40/64=63 percent) at 4-year doctoral institutions who reported teaching undergraduate classes taught only undergraduate classes; about four in five full-time professors (73/90=81 percent) and associate professors (76/90=84 percent) at 4-year nondoctoral institutions who reported teaching undergraduate classes taught only undergraduate classes.

[14]Some may argue that senior faculty may be more likely than junior faculty to not teach (engage exclusively in research, administration, and so on), and that excluding faculty who did not teach may result in a loss of more senior faculty than junior faculty in the sample, therefore, weakening the above finding. The evidence based on the NSOPF:93 data, however, did not support this argument. In fact, it indicated that faculty members who taught were more senior than those who did not teach: full and associate professors accounted for 61 percent of full-time faculty at 4-year institutions who reported teaching in the fall of 1992, and they accounted for 47 percent of those who reported not teaching anything (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System).

Figure 4—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught undergraduate classes, percentage who taught only lower division classes, by type of 4-year institution and tenure status: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Faculty's tenure status was not related to their reports of teaching at least one class to undergraduate students at both types of 4-year institutions (figure 4). However, it was related to the type of students they taught. In general, full-time faculty with nontenure-track appointments were more likely than tenured and tenure-track faculty to teach only undergraduates, particularly at the lower division level. For example, at 4-year doctoral institutions, 56 percent of full-time nontenure-track faculty taught only undergraduate classes, compared with 41 percent of full-time tenured faculty and 45 percent of full-time tenure-track faculty. Looking just at those who reported teaching one or more undergraduate classes, 25–36 percent of full-time faculty who worked in a nontenure-track position taught only lower division students, compared with 13–14 percent for full-time faculty with tenure or on a tenure track.

A similar relationship was also observed at 4-year nondoctoral institutions. About 87 percent of full-time nontenure-track faculty reported teaching only undergraduate students, a higher proportion than for those with tenure (77 percent) or on a tenure track (77 percent) (figure 4). Similarly, full-time faculty who were not on a tenure track or who worked at institutions or in positions that did not offer tenure were more likely to teach only lower division students than were full-time faculty with tenure or on a tenure track.

Principal Field of Teaching

The results regarding teaching field are displayed in table 5. At 4-year doctoral institutions, full-time faculty members who taught health sciences and education were less likely to teach undergraduates than their colleagues who taught various other fields.[15] Compared with average full-time faculty members, those who taught fine arts and humanities were more likely to teach undergraduates. Also, full-time humanities faculty were more likely than average full-time faculty to teach only undergraduate students, and full-time natural sciences faculty were more likely to teach only lower division students. Although full-time business faculty appeared less likely than average full-time faculty members to teach only lower division students, the difference was not statistically significant.[16]

At 4-year nondoctoral institutions, teaching at least one class to undergraduates in the fall term of 1992 was reported by a vast majority of full-time faculty in fine arts (98 percent),

[15]The lower proportion of health sciences faculty teaching undergraduate classes may be due to the fact that health sciences are often not considered an undergraduate field. This proportion could also be biased because health science faculty were more likely to perform individualized instruction or noncredit teaching activities than were other types of faculty participating in NSOPF:93 (Kirshstein et al. 1997). Because of the importance of individualized instruction to health sciences faculty, selecting for analysis only those faculty who performed any for-credit classroom instruction may have the unintended consequence of excluding a greater number of health sciences faculty than is warranted. Consequently, this may bias the results for heath sciences faculty.

[16]The small sample size for full-time business faculty made it impossible to determine whether the apparent difference was real or simply a statistical artifact.

Table 5—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and principal field of teaching: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only under-graduates	Undergrad-uates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	79.0	61.3	17.7	17.9	38.1	44.0
Agriculture/home economics	81.9	65.4	16.5	12.3	50.8	36.9
Business	86.2	62.1	24.1	7.2	66.2	26.7
Education	70.0	45.1	25.1	15.0	49.6	35.5
Engineering	81.6	56.0	25.6	12.4	57.0	30.6
Fine arts	93.5	74.4	19.0	16.6	24.8	58.6
Health sciences	53.6	41.4	12.1	16.1	57.0	26.9
Humanities	94.5	78.5	16.1	21.4	22.7	56.0
Natural sciences	78.4	63.7	14.8	29.1	27.5	43.4
Social sciences	87.8	66.2	21.7	12.0	36.3	51.7
All other fields	68.6	55.2	13.4	14.8	38.9	46.3
4-year doctoral institution	66.0	44.2	21.8	15.8	51.0	33.2
Agriculture/home economics	77.1	59.3	17.8	11.6	57.4	31.0
Business	76.3	49.4	26.9	7.3	79.8	12.9
Education	58.1	32.3	25.8	16.4	54.3	29.3
Engineering	76.2	47.9	28.3	13.2	62.8	24.0
Fine arts	85.9	56.2	29.7	16.6	38.1	45.3
Health sciences	41.3	28.8	12.4	11.4	59.5	29.1
Humanities	89.0	60.3	28.8	15.9	40.4	43.7
Natural sciences	62.1	45.2	17.0	28.7	41.2	30.1
Social sciences	79.2	48.6	30.8	10.8	53.4	35.8
All other fields	54.7	37.7	17.0	8.2	47.9	43.9
4-year nondoctoral institution	91.9	78.2	13.8	19.5	28.9	51.6
Agriculture/home economics	93.3	79.7	13.5	13.6	38.2	48.2
Business	92.6	70.3	22.3	7.1	59.0	33.9
Education	77.3	53.0	24.6	14.3	47.4	38.3
Engineering	92.5	72.4	20.1	11.0	47.4	41.6
Fine arts	97.6	84.4	13.2	16.5	18.4	65.0
Health sciences	87.5	76.2	11.3	22.3	53.7	24.1
Humanities	98.2	90.7	7.5	24.7	11.9	63.4
Natural sciences	96.9	84.8	12.3	29.4	17.4	53.1
Social sciences	95.7	82.4	13.3	12.8	23.4	63.8
All other fields	79.9	69.5	10.5	18.5	33.9	47.6

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

humanities (98 percent), natural sciences (97 percent), social sciences (96 percent), engineering (93 percent), business (93 percent), and agriculture/home economics (93 percent) (table 5). Relatively lower proportions of full-time faculty taught undergraduates in three fields: education (77 percent), health sciences (88 percent), and other fields (80 percent). In addition, compared with average full-time faculty, those who taught education were less likely to teach only undergraduate students, and those who taught humanities were more likely to do so. Full-time business faculty were less likely than average full-time faculty to teach only lower division students, while full-time natural sciences faculty were more likely to teach only these students.

Highest Degree Earned

At both 4-year doctoral and nondoctoral institutions, full-time faculty whose highest education degree was below a doctoral or professional degree were more likely than those with a doctoral or professional degree to report teaching at least one class to undergraduates, teaching only undergraduates, and teaching only lower division students (figure 5).[17] For example, at 4-year doctoral institutions, 87 percent of full-time faculty without a doctoral or professional degree taught at least one class to undergraduates; 72 percent taught classes to only undergraduates; and 25 percent who taught undergraduates reported teaching only lower division classes. The corresponding percentages for full-time faculty who had doctoral or professional degrees were 63 percent, 40 percent, and 14 percent, respectively.

Basic Salary

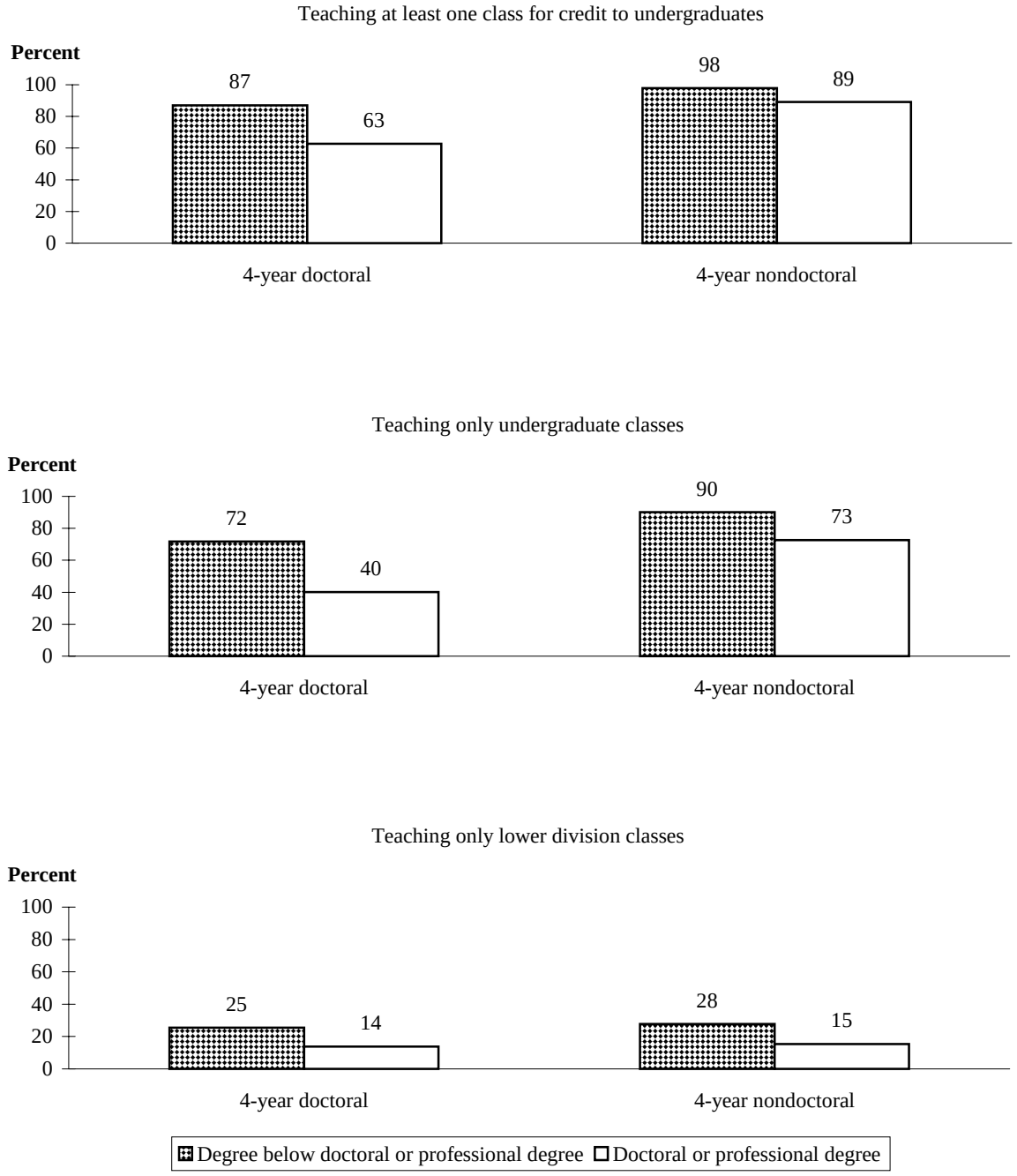
At both types of 4-year institutions, the lower the salary faculty members received, the more likely faculty were to teach undergraduates, teach only undergraduate classes, and teach only lower division classes (figure 6). This finding was consistent with the research of Fairweather (1993) who found that regardless of type of institution or discipline, faculty who devoted more of their time and effort to undergraduate teaching received lower salaries than faculty who taught less and published more.

Controlling for Related Variables

The above analysis showed that who taught undergraduates varied considerably among instructional faculty and staff at 4-year institutions. In general, faculty who were employed part time, held a lower academic rank such as instructor or lecturer, worked in a nontenure-track position, had a highest degree below a doctoral or professional degree, and earned a lower salary

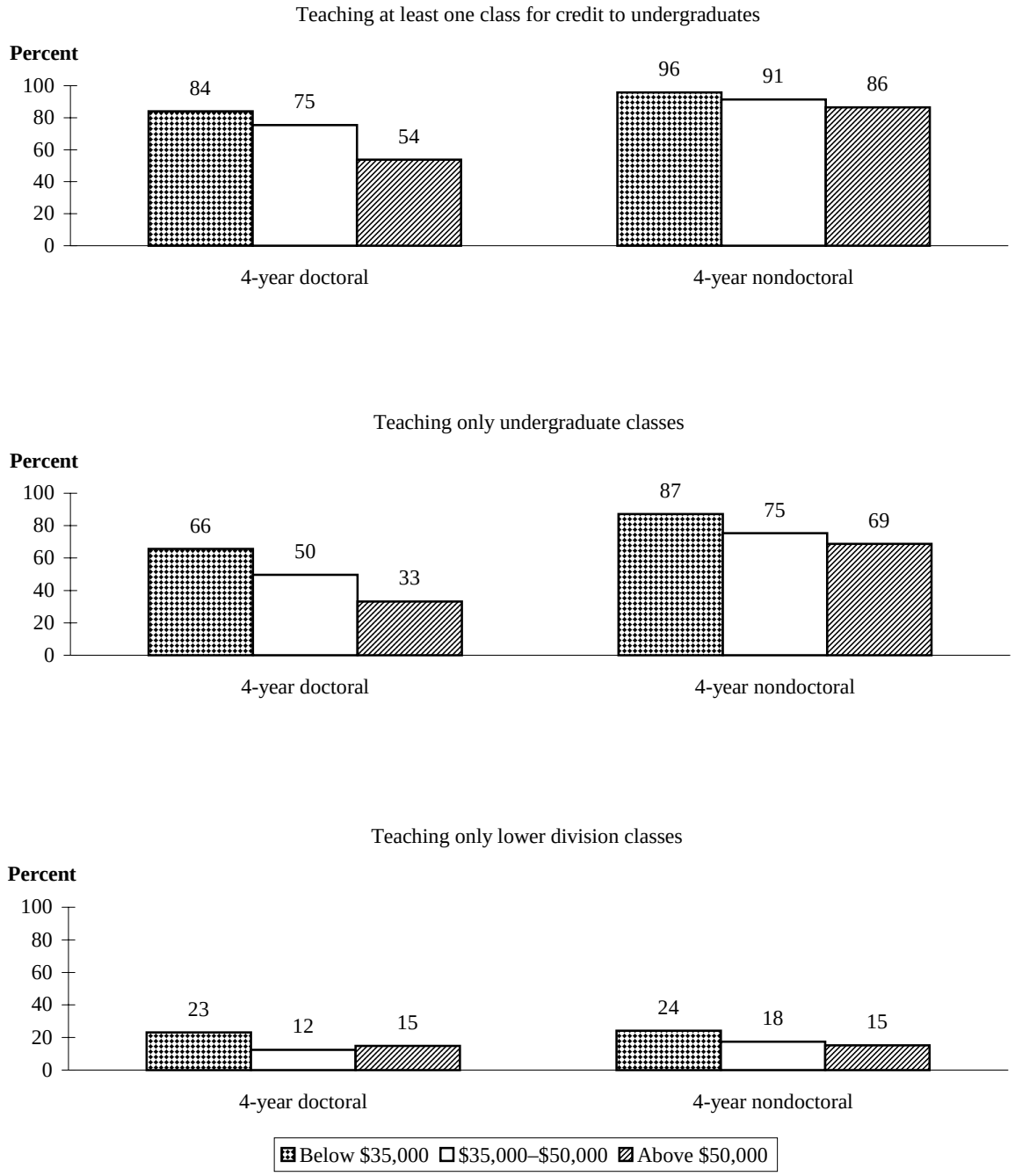
[17]Examples of a doctoral degree are Doctor of Philosophy, Doctor of Science, or Doctor of Education. Examples of a professional degree are M.D., D.D.S., L.L.B.

Figure 5—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught undergraduate classes, percentage who taught only lower division classes, by type of 4-year institution and highest degree earned: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Figure 6—Percentage of full-time instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, percentage who taught classes for credit to only undergraduates, and of those who taught undergraduate classes, percentage who taught only lower division classes, by type of 4-year institution and basic salary: Fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

from their institution were more likely to teach undergraduates and teach them exclusively than those without these characteristics. Because these faculty characteristics are interrelated, the observed relationships may not reflect the "true" relationships when the effects of other related factors are controlled. For instance, it is known that employment status is related to academic rank and that faculty who are employed part time are more likely to work in a lower ranked position than their full-time peers.[18] Therefore, the higher proportion of part-time faculty relative to that of full-time faculty who were teaching classes to undergraduates may be due to their low academic rank and not necessarily their employment status per se. This suggests that the relationship between employment status and teaching classes only to undergraduates would be reduced or disappear if academic rank were controlled.

In order to examine the relationship between faculty characteristics and undergraduate teaching independent of other related factors, a multivariate regression model was used.[19] This model allows one to examine how specific variables are associated with the outcomes of interest while simultaneously controlling for the interrelationships among a group of variables. The regression model used here focused on a dichotomous dependent variable of "whether or not faculty taught classes exclusively to undergraduates." The independent variables included the faculty member's gender, race/ethnicity, age, employment status, academic rank, highest degree obtained, principal field of teaching, and type of 4-year institution.[20] The results of this analysis are presented in table 6. Column one shows the percentages of instructional faculty and staff who taught only undergraduate classes for each independent variable category. Column two shows the corresponding percentages after controlling for the covariation of the independent variables included in the model. Asterisks indicate whether a particular group differs significantly from the comparison group.

Most relationships identified in the tabular analysis remained after controlling for various faculty characteristics. Specifically, instructional faculty and staff at 4-year doctoral institutions were significantly less likely to teach only undergraduate classes than were their colleagues at 4-year nondoctoral institutions even if other variables in the model were controlled (table 6). In addition, lower ranking faculty members, such as instructors, lecturers, and assistant professors, were more likely than full professors to teach classes exclusively to undergraduates after controlling for type of institution, principal field of teaching, employment status, degree, gender,

[18]In the fall of 1992, 59 percent of part-time instructional faculty and staff held the rank of instructor or lecturer, and 21 percent held the rank of full or associate professor; the corresponding percentages for full-time instructional faculty and staff were 10 percent and 60 percent, respectively (Kirshstein et al. 1997).

[19]See appendix B for details on the method used.

[20]Tenure status was excluded because it was highly correlated with academic rank: 81 percent of full professors and 70 percent of associate professors were tenured, whereas 94 percent of instructors or lecturers were not on a tenure track or were working at institutions or in positions that did not have a tenure system (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System).

Table 6—Percentage of instructional faculty and staff in all 4-year institutions who taught classes for credit to only undergraduates and the adjusted percentage after controlling for the variables listed in the the table: Fall 1992

Variable[1]	Unadjusted percentage[2]	Adjusted percentage[3]	Least squares coefficient[4]	Standard error[5]
Total	65.8	65.8	42.0	3.5
Gender				
Female	72.9*	68.0	3.4	1.8
Male	*62.0*	*64.6*	†	†
Race/ethnicity				
American Indian/Alaskan Native	66.5	64.1	-1.9	13.0
Asian/Pacific Islander	57.0*	60.4	-5.6	3.7
Black, non-Hispanic	70.5	66.5	0.5	3.7
Hispanic	69.6	66.3	0.3	5.3
White, non-Hispanic	*65.9*	*66.0*	†	†
Age				
Under 35	77.7*	66.7	-2.5	3.3
35–44	65.3	64.0*	-5.2	2.5
45–54	63.8	65.1	-4.1	2.3
55–64	*65.3*	*69.2*	†	†
65 or older	59.8	66.1	-3.1	3.9
Employment status				
Part-time	75.1*	64.2	-2.3	2.2
Full-time	*61.3*	*66.5*	†	†
Academic rank				
Other ranks or not applicable	73.8*	65.9	7.9	4.4
Instructor or lecturer	82.7*	73.3*	15.2	3.0
Assistant professor	65.7*	69.0*	10.9	2.6
Associate professor	57.9	62.7	4.6	2.4
Full professor	*53.9*	*58.1*	†	†
Highest degree obtained				
Below doctoral or professional degree	85.2*	78.5*	20.0	2.1
Doctoral or professional degree	*54.8*	*58.6*	†	†
Principal field of teaching				
Agriculture/home economics	71.1*	78.2*	34.8	7.0
Business	65.0*	60.7*	17.4	3.9
Engineering	61.8*	69.4*	26.1	4.0
Fine arts	78.9*	52.7*	9.3	3.6
Health sciences	47.4	80.8*	37.5	3.4
Humanities	84.2*	72.9*	29.5	3.4
Natural sciences	68.1*	72.2*	28.9	3.6
Social sciences	69.4*	58.2*	14.8	3.5
All other fields	59.7*	70.0*	26.7	4.7
Education	*48.5*	*43.3*	†	†
Type of 4-year institution				
4-year doctoral	49.7*	53.4*	-22.7	1.7
4-year nondoctoral	*79.1*	*76.0*	†	†

*p<=.05.

†Not applicable for the reference group.

[1]The italicized group in each category is the comparison group.

[2]The estimates are from the NSOPF:93 Data Analysis System.

[3]The percentages are adjusted for differences associated with other variables in the table (see appendix B).

[4]Least squares coefficient, multiplied by 100 to reflect percentage (see appendix B).

[5]Standard error of least squares coefficient, adjusted for design effect, multiplied by 100 to reflect percentage (see appendix B).

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

race/ethnicity, or age. Similarly, when other faculty characteristics were held constant, faculty with highest degree below a doctoral or professional degree were more likely to teach classes to undergraduates only than were faculty with a doctoral or professional degree.

There were two notable exceptions, however. Although the unadjusted percentages indicated that part-time faculty (75 percent) were more likely than full-time faculty (61 percent) to teach only undergraduate classes, these percentages were no longer found to be statistically different (64 and 67 percent) after other variables were taken into consideration. This suggests that employment status may not be a uniquely critical factor in differentiating who is likely to teach only undergraduate classes. The higher proportion (i.e., unadjusted proportion) of part-time faculty teaching only undergraduate classes relative to that of comparable full-time faculty may be attributed to the fact that part-time faculty are more likely than full-time faculty to hold a lower academic rank and have a highest degree below a doctoral degree,[21] and that faculty with a lower academic rank or a lower degree are more likely to be assigned to teach only undergraduate classes than those with a higher rank or a doctoral degree. This reason may also explain the gender difference. Before adjustment, female faculty members were more likely than their male colleagues to teach classes exclusively to undergraduates. After controlling for various faculty characteristics, the gender difference disappeared. It is possible that the higher unadjusted proportion of female faculty teaching only undergraduate classes relative to that of their male counterparts may be due to the fact that female faculty were more likely than male faculty to hold a lower academic rank and not have a doctoral or professional degree.[22]

[21]At all 4-year institutions, 62 percent of part-time faculty held an academic rank of instructor or lecturer, compared with 10 percent of full-time faculty. On the other hand, 23 percent of part-time faculty had a doctoral or professional degree, compared with 67 percent of full-time faculty (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System).

[22]At all 4-year institutions, 40 percent of female faculty held an academic rank of instructor or lecturer, compared with 20 percent of male faculty, and 40 percent of female faculty had a doctoral or professional degree, compared with 59 percent of male faculty (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System).

Undergraduate Teaching Loads of Instructional Faculty and Staff Who Taught One or More Classes for Credit to Undergraduates

Although the percentage of faculty who teach undergraduate classes provides an important measure of the scope of faculty involvement in undergraduate teaching, it tells us little about the quantity of instruction they provide. To understand more about how faculty members serve undergraduate students in higher education institutions, it is crucial to obtain information about their teaching loads. Thus, this section examines the undergraduate teaching loads of instructional faculty and staff who reported that they taught one or more classes for credit to undergraduates, with a special focus on such indicators as undergraduate class loads, undergraduate credit loads, hours per week spent on teaching undergraduates in the classroom, undergraduate class size, and contact hours with undergraduate students. Although all instructional faculty and staff at 2-year institutions reported teaching undergraduate students, their teaching loads may not be uniformly distributed. Thus, unlike the previous section that excluded instructional faculty and staff at 2-year institutions, this section includes them.

During the fall of 1992, instructional faculty and staff[23] across all types of higher education institutions taught about 2.3 undergraduate classes with a total of 8 credit hours. In each of these classes, they had an average of 30 students. Each week, they spent an average of 10 hours teaching undergraduates in the classroom,[24] and they generated a total of 272 contact hours with undergraduate students per week.[25]

While these overall estimates are informative, they mask the considerable variation that exists across different types of institutions. The previous section showed that faculty at 4-year doctoral institutions were less likely than faculty at 4-year nondoctoral institutions to teach undergraduates, and both groups were less likely than those at 2-year institutions to teach these students (figure 1). A parallel pattern exists when one looks at undergraduate teaching loads.

[23]Only instructional faculty and staff who taught at least one class for credit to undergraduates were included in this section. Instructional faculty and staff who did not teach any undergraduate classes were excluded.

[24]This measure did not include the time spent by faculty preparing for the classes, time spent with students outside of the classroom, or other instruction-related activities.

[25]This measure was constructed as follows. For each undergraduate class that faculty taught for credit, the number of hours per week taught in the class was multiplied by the number of students in the class. The products were then added together to obtain the total undergraduate student contact hours.

Faculty at 4-year doctoral institutions had lighter undergraduate teaching loads than their colleagues at 4-year nondoctoral institutions, who, in turn, had lighter undergraduate teaching loads than those at 2-year institutions. To illustrate, faculty at 4-year doctoral institutions taught an average of 2 undergraduate classes, had a total of 6 undergraduate classroom credit hours, and spent about 7 hours per week teaching undergraduates (table 7). The comparable figures for faculty at 4-year nondoctoral institutions and 2-year institutions were 3 classes, 8 credit hours, and 9 teaching hours. Although faculty at 4-year doctoral institutions tended to teach fewer classes and had fewer classroom credit hours than their colleagues at both 4-year nondoctoral and 2-year

Table 7—Undergraduate teaching loads of instructional faculty and staff in higher education institutions, by type of institution and employment status: Fall 1992

		Type of institution		
	Total	4-year doctoral	4-year nondoctoral	2-year
Total number of undergraduate classes taught				
Total	2.3	1.9	2.5	2.5
Part-time	1.8	1.7	1.8	1.8
Full-time	2.8	1.9	2.9	3.5
Total credit hours for undergraduate classes taught				
Total	7.6	5.9	7.8	8.4
Part-time	5.6	5.1	5.3	5.8
Full-time	9.1	6.2	9.1	12.3
Total number of hours per week spent in the classroom teaching undergraduates				
Total	9.5	6.9	9.4	11.1
Part-time	7.1	5.7	6.9	7.6
Full-time	11.3	7.4	10.8	16.2
Average undergraduate class size				
Total	30.4	43.1	27.6	25.5
Part-time	25.0	32.9	24.4	23.3
Full-time	34.5	46.8	29.3	28.9
Total number of contact hours with undergraduate students per week*				
Total	272.4	275.4	253.9	288.3
Part-time	173.9	177.9	167.6	176.4
Full-time	346.3	311.3	301.4	453.0

*This measure was constructed as follows. For each undergraduate class taught by faculty for credit, the number of hours per week taught in the class was multiplied by the number of students in the class. The products were then added together to obtain the total undergraduate student contact hours.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

institutions, they taught larger classes (averaging 43 students per class), compared with an average of 28 and 26 students, respectively, for faculty at 4-year nondoctoral institutions and faculty at 2-year institutions.

In addition to type of institution, undergraduate teaching loads were also markedly distinguished by employment status. As would be expected given their overall workloads, full-time faculty had higher teaching loads than their part-time colleagues. In the fall of 1992, full-time faculty taught an average of 3 undergraduate classes with a total of 9 credit hours, spent 11 hours per week in the classroom teaching undergraduates, had an average of 35 students per class, and generated a total of 346 contact hours with undergraduate students per week (table 7). By comparison, part-time faculty taught 2 undergraduate classes with a total of 6 credit hours, spent 7 hours per week teaching students in these classes, had an average of 25 students in each class they taught, and generated 174 contact hours with undergraduate students per week. Because of these differences, it is necessary to look at part- and full-time faculty separately. Thus, the remainder of this section emphasizes only full-time instructional faculty and staff, examining how undergraduate teaching loads differed with various characteristics of faculty within each type of institution.[26]

Number of Undergraduate Classes Taught and Total Undergraduate Credit Hours

Undergraduate class and credit loads were strongly related to the kinds of students faculty taught in the classroom. At both 4-year doctoral and nondoctoral institutions, full-time faculty who taught classes to only undergraduates tended to teach 1 more undergraduate class and 2 to 3 more undergraduate credit hours than those who taught classes to both undergraduates and graduates (table 8).[27] Full-time faculty who taught only lower division students also had higher undergraduate class and undergraduate credit loads than those who taught upper division students or both upper division students and graduate students. These findings are not surprising because unlike faculty who teach only undergraduates, faculty who teach both undergraduates and graduates need to divide their teaching loads between these two groups.

[26]The relationships between gender, race/ethnicity, and age and undergraduate teaching loads were not presented in the tables, because few associations were found between undergraduate teaching loads and age (and race/ethnicity), and the association with gender was not consistent and conclusive. For example, at 4-year doctoral institutions, female faculty taught more undergraduate classes and spent more hours per week in the classroom teaching undergraduates than their male colleagues; at 2-year institutions, however, female faculty taught less and spent fewer hours than male faculty, and at 4-year nondoctoral institutions, there were no gender differences (U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty, Data Analysis System).

[27]No such data were generated for faculty at 2-year institutions because all faculty at 2-year institutions taught only undergraduate students.

Table 8—Number of undergraduate classes taught for credit and total number of undergraduate classroom credit hours taught by full-time instructional faculty and staff in higher education institutions, by type of institution and selected characteristics of faculty and staff: Fall 1992

	All institutions		Type of institution					
			4-year doctoral		4-year nondoctoral		2-year	
	Classes	Credit hours	Classes	Credit hours	Classes	Credit hours	Classes	Credit hours
Total	2.8	9.1	1.9	6.2	2.9	9.1	3.5	12.3
Taught only undergraduates								
No	1.7	5.3	1.4	4.5	2.1	6.5	(1)	(1)
Yes	3.0	9.8	2.2	7.0	3.0	9.6	(1)	(1)
Level of students taught in class								
Only lower division students	3.2	10.7	2.0	6.5	2.7	8.6	(1)	(1)
Upper division/graduate students[2]	2.0	6.4	1.6	5.3	2.3	7.7	(1)	(1)
Students in various levels[3]	3.0	9.4	2.3	7.2	3.3	10.1	(1)	(1)
Academic rank								
Other ranks or not applicable	3.1	10.1	1.7	4.7	2.6	8.0	3.4	11.2
Instructor or lecturer	3.2	11.2	2.4	8.0	3.0	9.3	3.6	12.9
Assistant professor	2.7	8.7	1.9	6.3	3.0	9.5	3.5	12.2
Associate professor	2.7	8.6	2.0	6.3	2.9	9.1	3.5	12.1
Full professor	2.6	8.2	1.7	5.5	2.8	8.8	3.7	11.9
Tenure status								
No tenure system	3.2	10.9	2.3	7.2	3.1	9.7	3.4	12.2
Not on tenure track	2.7	8.4	2.3	7.6	2.8	8.6	3.0	10.0
On tenure track	2.7	8.9	1.9	6.1	2.9	9.4	3.6	12.6
Tenured	2.7	8.8	1.8	5.8	2.8	9.0	3.7	12.4
Highest degree obtained								
Degree below doctoral or professional degree	3.2	10.8	2.4	7.7	3.1	9.4	3.5	12.3
Doctoral or professional degree	2.5	7.9	1.8	5.8	2.8	9.0	3.6	11.8
Principal field of teaching								
Agriculture/home economics	2.6	8.1	1.9	5.3	2.8	9.0	3.9	13.0
Business	3.0	9.8	2.1	6.6	2.9	9.3	4.0	12.9
Education	2.7	7.8	2.1	6.2	2.8	8.0	3.2	8.9
Engineering	2.3	7.5	1.6	4.8	2.6	8.0	3.8	13.2
Fine arts	3.0	8.4	2.3	6.5	3.1	8.6	3.9	10.7
Health sciences	2.3	9.2	2.0	7.2	2.4	8.9	2.5	11.2
Humanities	3.1	10.0	2.1	7.0	3.1	9.8	3.9	13.3
Natural sciences	2.6	8.9	1.6	5.5	2.7	9.0	3.6	12.7
Social sciences	2.7	8.8	1.8	5.8	2.9	9.6	3.7	12.2
All other fields	3.0	9.8	2.1	6.3	3.0	9.2	3.5	12.6

[1]Not applicable since all instructional faculty and staff at 2-year institutions taught undergraduate students.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they reported, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Both class and credit loads were negatively associated with faculty's academic rank at both types of 4-year institutions, but not at 2-year institutions (table 8). For example, at 4-year doctoral institutions, full-time instructors or lecturers taught more undergraduate classes and more undergraduate classroom credit hours than full-time assistant, associate, and full professors, and full-time assistant and associate professors taught more than full-time full professors. At 4-year nondoctoral institutions, both full-time instructors and assistant professors taught more undergraduate classes than full-time full professors, and full-time assistant professors taught more undergraduate credit hours than full-time full professors.

Tenured faculty taught less at the undergraduate level than faculty without tenure. For example, at 4-year doctoral institutions, full-time tenured or tenure-track faculty reported lower undergraduate class and undergraduate credit loads than those who were not on a tenure track or who worked at institutions or in positions that did not have a tenure system. At 4-year nondoctoral institutions, full-time tenured faculty reported teaching fewer undergraduate classes than those who worked at institutions or in positions that did not have a tenure system, and full-time tenure-track faculty also taught fewer undergraduate credit hours than full-time nontenure-track faculty. The relationship between undergraduate class and credit loads and tenure status exhibited an opposite pattern at 2-year institutions: those with tenure or on a tenure track taught more undergraduate classes as well as more credit hours than their colleagues who were not on a tenure track.

When examining faculty according to highest degree earned, full-time faculty at both types of 4-year institutions who held a doctoral or professional degree taught fewer undergraduate classes and credit hours than their colleagues who had highest degree below a doctoral or professional degree (table 8). Such differences, however, were not found at 2-year institutions. With a few exceptions, the number of undergraduate classes taught by full-time faculty and the total credit hours taught varied little with teaching fields. The exceptions were at 4-year doctoral institutions, where faculty in natural sciences taught fewer undergraduate classes than average full-time faculty, and those in fine arts taught more undergraduate classes. At 4-year nondoctoral institutions and 2-year institutions, full-time faculty whose teaching field was health sciences taught fewer undergraduate classes than other faculty. At 2-year institutions, full-time faculty in business and humanities taught more undergraduate classes than average faculty.[28]

[28]Although full-time faculty in agriculture/home economics and fine arts appeared to teach more undergraduate classes than average faculty, these differences were associated with large standard errors and were not statistically significant.

Undergraduate Classroom Teaching Hours

Because faculty's classroom teaching hours are linked to their class loads (i.e., the more classes taught, the longer the hours per week spent in the classroom), one might expect that the relationships between this indicator and various academic characteristics of faculty would resemble those described above. That is, the number of hours per week faculty spent in the classroom teaching undergraduates would be negatively related to the level of students taught, faculty's academic rank, tenure status, and highest degree earned. The data provided in table 9 help confirm this expectation.

Undergraduate classroom teaching hours were related to faculty's academic rank. At 4-year doctoral institutions, full-time instructors or lecturers spent 10 hours per week in the classroom teaching undergraduates, which was more than the hours spent by associate professors (8 hours) and full professors (6 hours) (table 9). Similarly, full-time instructors or lecturers at 2-year institutions spent more hours per week teaching undergraduates in the classroom than full-time assistant, associate, and full professors. However, the number of hours faculty spent in the undergraduate classroom did not relate to academic rank at 4-year nondoctoral institutions.

Undergraduate classroom teaching hours were also related to tenure status at 4-year doctoral institutions: full-time tenured faculty spent fewer hours per week teaching undergraduate classes than full-time faculty who were not on a tenure track or who worked at an institution or in a position that did not offer tenure (7 hours versus 10 and 11 hours, respectively) (table 9). However, such a relationship did not exist at 4-year nondoctoral institutions or 2-year institutions.

The association of classroom teaching hours with the highest degree earned by full-time faculty was not surprising. At each type of institution examined, full-time faculty with doctoral or professional degrees spent fewer hours per week teaching undergraduate classes than those with highest degree below a doctoral or professional degree (table 9). Few significant findings were revealed by teaching field.

Class Size

Undergraduate class size was not differentiated by whether faculty taught classes to only undergraduates at both types of 4-year doctoral institutions. At 4-year doctoral institutions, full-time faculty who taught only undergraduates had an average of 46 students in each undergraduate class they taught, and those who taught both undergraduate and graduate students averaged 48 students (table 10). At 4-year nondoctoral institutions, both groups also had a similar undergraduate class size, between 29 and 30 students. Undergraduate class size, however, was differentiated by the level of students taught. At both types of 4-year institutions, full-time faculty who

Table 9—Total number of hours per week full-time instructional faculty and staff in higher education institutions spent in the classroom teaching undergraduates, by type of institution and selected characteristics of faculty and staff: Fall 1992

		Type of institution		
	Total	4-year doctoral	4-year nondoctoral	2-year
Total	11.3	7.4	10.8	16.2
Taught only undergraduates				
No	6.1	5.2	7.4	(1)
Yes	12.3	8.4	11.3	(1)
Level of students taught in class				
Only lower division students	13.8	7.7	10.8	(1)
Upper division/graduate students[2]	7.7	6.4	9.0	(1)
Students in various levels[3]	11.4	8.8	11.7	(1)
Academic rank				
Other ranks or not applicable	13.1	6.0	9.8	14.7
Instructor or lecturer	15.4	10.1	12.2	18.3
Assistant professor	10.5	7.7	11.2	15.1
Associate professor	10.2	7.6	10.5	15.1
Full professor	9.6	6.2	10.2	14.8
Tenure status				
No tenure system	14.4	11.0	12.4	16.1
Not on tenure track	10.8	9.8	10.4	14.7
On tenure track	11.0	7.3	11.1	17.5
Tenured	10.7	6.7	10.3	16.1
Highest degree obtained				
Degree below doctoral or professional degree	14.3	11.0	12.3	16.5
Doctoral or professional degree	9.0	6.6	10.0	14.8
Principal field of teaching				
Agriculture/home economics	11.3	7.6	10.2	20.6
Business	10.9	7.5	9.8	15.2
Education	9.5	7.5	9.7	11.0
Engineering	9.9	5.8	10.8	18.6
Fine arts	11.8	9.7	11.9	14.8
Health sciences	13.5	11.2	11.9	16.6
Humanities	10.7	6.9	10.7	14.4
Natural sciences	10.7	5.7	10.8	16.0
Social sciences	9.5	6.4	9.8	14.2
All other fields	14.7	8.3	12.0	21.8

[1]Not applicable since all instructional faculty and staff at 2-year institutions taught undergraduate students.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they reported, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Table 10—Average number of undergraduate students in class taught by full-time instructional faculty and staff in higher education institutions, by type of institution and selected characteristics of faculty and staff: Fall 1992

		Type of institution		
	Total	4-year doctoral	4-year nondoctoral	2-year
Total	34.5	46.8	29.3	28.9
Whether taught only undergraduates				
No	40.8	47.9	29.9	(1)
Yes	33.2	46.3	29.2	(1)
Level of students taught in class				
Only lower division students	34.4	62.0	34.4	(1)
Upper division/graduate students[2]	35.4	41.3	28.1	(1)
Students in various levels[3]	33.9	48.1	28.1	(1)
Academic rank				
Other ranks or not applicable	26.9	42.1	20.0	27.8
Instructor or lecturer	29.8	38.7	30.0	27.2
Assistant professor	34.0	43.6	28.7	29.3
Associate professor	35.6	47.0	29.2	31.2
Full professor	38.5	51.9	30.8	31.6
Tenure status				
No tenure system	26.1	32.3	23.6	26.6
Not on tenure track	34.7	45.0	29.6	26.5
On tenure track	33.9	43.8	29.0	28.7
Tenured	36.7	49.5	30.6	30.5
Highest degree obtained				
Degree below doctoral or professional degree	28.1	31.4	26.4	28.4
Doctoral or professional degree	39.1	50.1	30.8	31.4
Principal field of teaching				
Agriculture/home economics	32.3	35.9	26.2	31.3
Business	33.4	49.9	30.6	24.8
Education	31.2	38.4	26.8	33.5
Engineering	31.6	40.6	25.7	18.1
Fine arts	23.1	23.9	22.1	24.8
Health sciences	39.2	47.1	35.1	34.8
Humanities	29.2	35.3	26.4	27.7
Natural sciences	42.8	64.9	34.1	31.5
Social sciences	41.6	55.8	33.2	36.2
All other fields	28.3	41.1	26.7	22.3

[1]Not applicable since all instructional faculty and staff at 2-year institutions taught undergraduate students.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they reported, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

taught only lower division students had a larger average undergraduate class size than those who taught upper division and graduate students or students in various levels.

Although undergraduate class size did not vary with faculty's academic ranks at all types of institutions (table 10), it did vary somewhat with tenure status. While full-time faculty with tenure, on a tenure track, or not on a tenure track at 4-year institutions taught undergraduate classes of similar size, they all taught larger classes than those who worked at institutions or in positions not offering a tenure system. At 2-year institutions, full-time tenured faculty taught larger classes than full-time nontenure-track faculty and those who worked at institutions or in positions without a tenure system. At all types of institutions, full-time faculty with a doctoral or professional degree taught larger undergraduate classes than those with highest degree below a doctoral or professional degree.

Viewed by teaching field, among full-time faculty at 4-year doctoral institutions, those who taught fine arts had the smallest undergraduate classes, whereas those who taught natural sciences had the largest (table 10). At 2-year institutions, full-time faculty who taught engineering had the smallest undergraduate class size (18 students versus 25–36 students for faculty who taught in other fields).

Undergraduate Student Contact Hours

Few significant relationships were observed in undergraduate student contact hours. This indicator was only related to the kind of students faculty taught at both 4-year doctoral and nondoctoral institutions. Full-time faculty who taught only lower division students had more undergraduate student contact hours than full-time faculty who taught both undergraduates and graduates (table 11). Full-time faculty who taught only lower division students also had more undergraduate student contact hours than those who taught upper division students or upper division and graduate students. With only two exceptions, the number of undergraduate student contact hours did not vary with full-time faculty's academic rank, tenure status, highest degree held, principal field of teaching, or appointment type. The two exceptions occurred at 2-year institutions: full-time faculty with tenure or on a tenure track had more undergraduate student contact hours than those who were not on a tenure track, and full-time faculty who taught education had fewer contact hours than their colleagues who taught other fields.

Table 11—Total number of undergraduate student contact hours of full-time instructional faculty and staff in higher education institutions, by type of institution and selected characteristics of faculty and staff: Fall 1992

		Type of institution		
	Total[1]	4-year doctoral	4-year nondoctoral	2-year
Total	346.3	311.3	301.4	453.0
Whether taught only undergraduates				
No	227.4	234.6	216.4	(2)
Yes	369.5	349.0	316.3	(2)
Level of students taught in class				
Only lower division students	419.8	415.6	331.4	(2)
Upper division/graduate students[3]	247.0	239.3	249.4	(2)
Students in various levels[4]	345.7	372.5	319.3	(2)
Academic rank				
Other ranks or not applicable	349.6	200.3	221.2	399.9
Instructor or lecturer	428.9	398.0	342.2	474.5
Assistant professor	315.6	289.1	304.2	422.2
Associate professor	334.6	344.2	292.2	443.6
Full professor	326.5	282.7	299.9	476.5
Tenure status				
No tenure system	388.1	478.4	288.9	431.5
Not on tenure track	343.2	378.4	309.2	369.3
On tenure track	330.6	284.9	304.9	476.5
Tenured	342.9	297.2	300.7	466.3
Highest degree obtained				
Degree below doctoral or professional degree	385.0	356.8	308.5	440.9
Doctoral or professional degree	317.2	301.3	297.5	496.6
Principal field of teaching				
Agriculture/home economics	338.2	254.9	235.4	636.5
Business	315.9	312.8	281.0	368.7
Education	280.1	306.9	264.3	288.2
Engineering	261.8	231.4	258.3	343.5
Fine arts	269.8	233.7	258.2	368.1
Health sciences	457.9	499.0	341.7	501.5
Humanities	300.2	214.1	289.5	398.8
Natural sciences	388.3	346.9	339.7	509.9
Social sciences	380.5	333.6	324.8	589.8
All other fields	364.5	284.6	310.5	472.8

[1]This measure was constructed as follows. For each undergraduate class taught by faculty for credit, the number of hours per week taught in the class was multiplied by the number of students in the class. The products were then added together to obtain the total undergraduate student contact hours.

[2]Not applicable since all instructional faculty and staff at 2-year institutions taught undergraduate students.

[3]This group includes instructional faculty and staff who taught classes to only upper division students or upper division and graduate students.

[4]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they reported, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Summary and Conclusions

The purpose of this report was twofold: 1) to identify the characteristics of faculty who provide classroom instruction to undergraduates, and 2) to assess the undergraduate teaching loads of those who provide this instruction. Using data from the faculty survey of the 1992–93 National Study of Postsecondary Faculty (NSOPF:93), this report described several findings that pertain to undergraduate classroom teaching of instructional faculty and staff in the fall of 1992.

Instructional Faculty and Staff Who Teach Classes for Credit to Undergraduates

A vast majority of instructional faculty and staff employed in higher education institutions taught undergraduate classes in the fall of 1992. When excluding 2-year institutions where all instructional faculty and staff taught undergraduate classes, nearly four out of five (79 percent) of instructional faculty and staff at 4-year institutions reported teaching at least one class for credit to undergraduates. Contrary to the popular notion that senior professors and tenured faculty at research universities do little undergraduate teaching, the results of this report showed that a majority of these faculty were involved in undergraduate teaching. For example, at 4-year doctoral institutions, 61 percent of full-time full professors reported teaching at least one class for credit to undergraduates, as did 64 percent of full-time associate professors, and 65 percent of full-time tenured faculty. Furthermore, between 38 and 41 percent of these faculty reported that all of the classes they taught were at the undergraduate level.

Although a majority of instructional faculty and staff at 4-year institutions taught undergraduates, some appeared to be more likely to teach than others. Faculty who were employed part time, held a lower academic rank such as instructor or lecturer, worked in a nontenure-track position, had a highest degree less than a doctoral or professional degree, and earned a lower salary from their institution were more likely to teach undergraduates and teach them exclusively than those without these characteristics. This phenomenon existed in both 4-year doctoral and non-doctoral institutions. The investigation then took a further look at instructional faculty and staff who taught only undergraduate classes, while simultaneously controlling for interrelated factors. Although the differences between part-time and full-time faculty and male and female faculty were no longer found when other factors were taken into consideration, the differences associated with faculty members' academic rank and level of degree remained. Instructors, lecturers, and

assistant professors were more likely than full professors to teach classes to undergraduates only, and similarly, faculty members without a doctoral or professional degree were also more likely to teach undergraduates than those with a doctoral or professional degree. This phenomenon existed at both 4-year doctoral and nondoctoral institutions and held regardless of the faculty members' gender, race/ethnicity, age, teaching field, and employment status.

Undergraduate Teaching Loads of Instructional Faculty and Staff Who Taught One or More Classes for Credit to Undergraduates

Overall instructional faculty and staff across all types of higher education institutions taught about 2.3 undergraduate classes with a total of 8 credit hours in fall 1992. In each of these classes, they had an average of 30 students. Each week, they spent an average of 10 hours teaching undergraduates in the classroom, and they generated a total of 272 contact hours with undergraduate students per week.

Undergraduate teaching loads varied greatly across institutions. Instructional faculty and staff at 4-year doctoral institutions had lighter undergraduate teaching loads than their colleagues at 4-year nondoctoral institutions, who, in turn, had lighter undergraduate teaching loads than those at 2-year institutions. Within the institution, the distribution of undergraduate teaching loads was also uneven. Undergraduate teaching loads were strongly related to the kind and level of students that faculty taught in class. Compared with faculty who taught both undergraduates and graduates, those who taught only undergraduates had a much higher undergraduate teaching load: that is, they taught more undergraduate classes, spent longer hours per week in the classroom teaching undergraduates, and not surprisingly, generated more contact hours with undergraduate students. Similar, but more striking, differences were also found when comparing faculty who taught only lower division students with those who taught upper division students and graduate students.

In addition, senior faculty (e.g., full or associate professors, or tenured faculty) generally taught larger but fewer undergraduate classes, whereas junior faculty (e.g., instructors, lecturers, or assistant professors, or nontenure-track faculty) tended to teach smaller but more undergraduate classes. Senior faculty also spent fewer hours each week teaching undergraduates in the classroom than their junior colleagues. The combination of smaller class sizes with longer classroom hours (or vice versa) resulted in senior and junior faculty members having similar undergraduate student contact hours.

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Appendix A—Glossary

This glossary describes the variables used in this report. The items were taken directly from the NSOPF:93 Data Analysis Systems DAS; see appendix B for a description of the DAS. The variables used in this analysis were either items taken directly from the surveys or derived by combining one or more items in these surveys.

The variables listed in the index below are in the order they appear in the report; the glossary is in alphabetical order by DAS variable name displayed along the right-hand column.

Glossary Index

Employment status **A4**

Faculty response to the question "During the 1992 fall term, did this institution consider you to be employed part-time or full-time?"

Part-time
Full-time

Basic salary **E47A**

Faculty response to the question "For the calendar year 1992, estimate your gross compensation before taxes from each of the sources listed below. [Compensation from this institution: Basic salary]" The categories for this analysis are as follows:

Below $35,000
Between $35,000 and $50,000
Above $50,000

Sex **F51**

Faulty response to the question "Are you male or female?"

Male
Female

Principal field of teaching **X01A12**

Identifies the general program area of a respondent's principal field of teaching. The resulting categories match NSOPF-88 program area categories, and are as follows:

Agriculture/home economics	Includes agriculture-unspecified, agribusiness, agricultural sciences, renewable resources, other agriculture, and home economics.
Business	Includes business-unspecified, accounting, banking and finance, business administration and management, business administrative support, human resources development, organizational behavior, marketing and distribution and other business.
Education	Includes education-unspecified, general education, basic skills, bilingual and cross-cultural education, curriculum and instruction, education administration, education evaluation and research, educational psychology, special education, student counseling and personnel, other education, teacher education-unspecified, pre-elementary, elementary, secondary, adult and continuing, other general teacher education programs and teacher education in specific subjects.
Engineering	Includes engineering-unspecified, general, civil, mechanical, chemical, and engineering, engineering-related technologies.

Fine arts	Includes art-unspecified, art history and appreciation, crafts, dance, design, dramatic arts, film arts, fine arts, music, music history and appreciation, and other visual or performing arts.
Health sciences	Includes health sciences-unspecified, allied health technologies, dentistry, health services administration, medicine, nursing, pharmacy, public health, veterinary medicine, and other health sciences.
Humanities	Includes English and literature-unspecified, general English, composition, American literature, English literature, linguistics, speech, English as second language, other English, foreign languages-unspecified, Chinese, French, German, Italian, Latin, Japanese, other Asian, Russian, Spanish, other foreign languages, philosophy and religion, and history.
Natural sciences	Includes computer science-unspecified, computer and information sciences, computer programming, data processing, systems analysis, other computer science, biological sciences-unspecified, biochemistry, biology, botany, genetics, immunology, microbiology, physiology, zoology, other biological sciences, physical sciences-unspecified, astronomy, chemistry, physics, geological sciences, other physical sciences, mathematics, and statistics.
Social sciences	Includes psychology, social sciences-unspecified, general social sciences, anthropology, archeology, area and ethnic studies, demography, economics, geography, international relations, political science, sociology, and other social sciences.
All other fields	Includes architecture, communications, industrial arts, law, library and archival sciences, military studies, multi-interdisciplinary studies, parks and recreation, theology, protective services, public affairs, science technologies, vocational training-unspecified, construction trades, consumer services, mechanics and repairers, precision production, transportation, and other.

Tenure status **X01A7**

Identifies tenure status of a respondent during the 1992 fall term. “No tenure system for respondent’s faculty status” and “no tenure system at this institution” were merged into one category.

Tenured
On tenure track
Not on tenure track
No tenured system or none for my status

Academic rank **X01A9**

Identifies a respondent's academic rank, title, or position at their sampled institution or to identify the fact that ranks are not assigned. "Other ranks" and "Not applicable" were merged into one category.

Other ranks or not applicable
Instructor or lecturer
Assistant professor
Associate professor
Full professor

Highest degree obtained **X01B16**

Describes the highest degree or award achieved by a respondent.

Degree below doctoral or professional degree
Doctoral or professional degree

Race/ethnicity **X02F53**

Indicates the race/ethnicity of respondent.

American Indian/Alaskan Native	A person having origins in any of the original peoples of North American and who maintains cultural identification through tribal affiliation or community recognition.
Asian/Pacific Islander	A person having origins in any of the peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.
Black, not Hispanic	A person having origins in any of the black racial groups of Africa, not of Hispanic origin.
Hispanic	A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
White, not Hispanic	A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

Age **X03F52**

Indicates respondent's age. "65–70" and "71 or older" were merged into one category "65 or older."

Under 35
35–44
45–54
55–64
65 or older

Taught only undergraduate students **X05C23**

Indicates a respondent's level of classroom credit instruction. A maximum of five classes could be reported.

Undergraduate	Faculty who taught classes for credit to undergraduates only.
Both	Faculty who taught classes for credit to both undergraduate and graduate students.
Graduate	Faculty who taught classes for credit to graduate students only.

Level of undergraduate students taught **X06C23**

Identifies a respondent's primary level of students taught in class for credit. A maximum of five classes could be reported.

Only lower division students	Faculty who taught classes for credit to only lower division students.
Upper division/graduate students	Faculty who taught classes for credit to only upper-division students or to both upper-division and graduate students.
Students in various levels	Faculty who taught classes for credit to students in various levels. For example, among up to five classes they reported, some classes consisted of primarily lower-division students, while other classes consisted of upper-division students or graduate students.

Type of institution **X08**

Indicates the control of and type of degree offered at institution where respondent taught. "4-year public doctoral" and "4-year private doctoral" were merged into one category. "4-year public nondoctoral" and "4-year private non-doctoral" were combined into one category. "2-year public" and "2-year private" were also combined into one category.

4-year doctoral
4-year nondoctoral
2-year

Teaching any classes for credit to undergraduates **X25C23**

Identifies whether or not a respondent taught at least one class for credit to undergraduates.

No
Yes

Total number of undergraduate classes taught for credit **X20C23**

Indicates the total number of undergraduate classes taught for credit during the 1992 fall term. A maximum of five classes could be reported. Classes where the primary level of students is graduate or any other post-baccalaureate-level were excluded from the calculation. Classes that were reported to have a zero credit hour or classes that were reported to have 0 or only 1 student enrolled were also excluded from the calculation.

Total credit hours for undergraduate classes taught **X21C23**

Provides a calculation of the total number of undergraduate classroom credit hours reported by adding together the number of credit hours for each class. A maximum of five classes could be reported. Classes where the primary level of students is graduate or any other post-baccalaureate-level were excluded from the calculation. Classes that were reported to have a zero credit hour or classes that were reported to have 0 or only 1 student enrolled were also excluded from the calculation.

Average undergraduate class size **X22C23**

Indicates the average size of undergraduate classes taught for credit. A maximum of five classes could be reported. Classes where the primary level of students is graduate or any other post-baccalaureate-level were excluded from the calculation. Classes that were reported to have a zero credit hour or classes that were reported to have 0 or only 1 student enrolled were also excluded from the calculation.

Total number of hours per week spent in the classroom teaching undergraduates **X23C23**

Indicates the total number of hours per week a respondent spent in the classroom teaching undergraduates. A maximum of five classes could be reported. Classes where the primary level of students is graduate or any other post-baccalaureate-level were excluded from the calculation. Classes that were reported to have a zero credit hour or classes that were reported to have 0 or only 1 student enrolled were also excluded from the calculation.

Total number of contact hours with undergraduate students per week **X24C23**

Indicates the total contact hours per week with students in five or fewer undergraduate classes for credit. Classes where the primary level of students is graduate or any other post-baccalaureate-level were excluded from the calculation. Classes that were reported to have a zero credit hour or classes that were reported to have 0 or only 1 student enrolled were also excluded from the calculation. For each undergraduate class taught for credit, the number of hours per week the respondent taught the class was multiplied by the number of students enrolled in the class. The results were added together to obtain the total student contact hours in five or fewer undergraduate classes for credit.

Appendix B—Technical Notes and Methodology

Data

The data of this report came from the 1992–93 National Study of Postsecondary Faculty (NSOPF:93).[29] Sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES) and conducted by the National Opinion Research Center at the University of Chicago, this study was designed to provide a national profile of faculty at U.S. higher education institutions, including their professional background, responsibilities, workloads, salaries, benefits, and attitudes.

The NSOPF:93 contained two major components: (1) a survey of institutional-level respondents in a stratified random sample of 974 public and private, not-for-profit higher education institutions in the United States; and (2) a survey of a stratified random sample of 31,354 faculty and instructional staff in the sampled institutions. Both NSOPF:93 institutional and faculty respondents completed surveys in 1993 that described their policies and activities during the 1992 fall term. The institution survey collected such information as faculty composition, new hires, departures and recruitment, and retention and tenure policies; the faculty survey gathered information regarding the professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes of both full- and part-time faculty and staff in public and private 2- and 4-year institutions. The response rate for the institution survey was 91 percent, and the overall response rate for faculty (adjusted by the institution participation rate) was 74 percent. All analyses in this report were weighted to compensate for unequal probability of selection into the NSOPF:93 faculty sample and to adjust for nonresponse. For more information on procedures for the 1992–93 National Study of Postsecondary Faculty (NSOPF:93), consult the *1993 National Study of Postsecondary Faculty: Methodology Report*, NCES 97–467 (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1997).

[29]The text in this section is based on excerpts from Kirshstein et al., *Instructional Faculty and Staff in Higher Education Institutions: Fall 1987 and 1992* (Washington, DC: U.S. Department of Education, National Center for Education Statistics, 1997).

Study Sample

The base sample of this report consisted of faculty and staff who reported that they had had some instructional duties for credit during the 1992 fall term at the sampled institutions.[30] Among a total of 1,033,966 faculty members employed in nationwide colleges and universities, about 905,000 (88 percent) were identified as instructional faculty and staff. Of these, about 817,000 reported that they taught one or more classes for credit during the fall of 1992. These individuals became the base sample of the first section of the report.

Faculty and staff participating in NSOPF:93 were asked a series of questions regarding the classes (up to a maximum of five) they taught for credit in the fall of 1992. Among 817,000 instructional faculty and staff who reported teaching classes for credit, about 697,000 reported teaching at least one class for credit to undergraduates during the 1992 fall term. This subgroup of instructional faculty and staff became the sample of the second section of the report that examined the undergraduate teaching loads of faculty who taught undergraduates in the fall of 1992. Excluded, therefore, were those faculty and staff who (1) did not have any instructional duties (i.e., those engaged exclusively in research, administration, or public service); (2) had instructional duties related to noncredit teaching; (3) only taught classes for credit at the graduate level; or (4) only taught independent study or supervised undergraduate or graduate thesis or dissertation work.

Accuracy of Estimates

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Surveys of population universes are not subject to sampling errors. Estimates based on a sample will differ somewhat from those that would have been obtained by a complete census of the relevant population using the same survey instruments, instructions, and procedures. The standard error of a statistic is a measure of the variation due to sampling; it indicates the precision of the statistic obtained in a particular sample. In addition, the standard errors for two sample statistics can be used to estimate the precision of the difference between the two statistics and to help determine whether the difference based on the sample is large enough so that it represents the population difference.

Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations. Nonsampling errors can be attributed to a number of sources: inability to obtain

[30]Instructional duties include teaching credit courses or supervising students' academic activities for credit.

complete information about all faculty and staff in all institutions in the sample (some faculty members or institutions refused to participate, or faculty participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, sampling, and imputing missing data. Although nonsampling errors due to questionnaire and item nonresponse can be reduced somewhat by the adjustment of sample weights and imputation procedures, correcting nonsampling errors or gauging the effects of these errors is usually difficult.

Data Analysis System

The estimates presented in this report were produced using the NSOPF:93 Data Analysis System (DAS). The DAS software makes it possible for users to specify and generate their own tables from the NSOPF:93 data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[31] and weighted sample sizes for these estimates. For example, table B1 contains standard errors that correspond to table 4 in the text, and was generated by the DAS. If the number of valid cases is too small to produce a reliable estimate (fewer than 30 cases), the DAS prints the message "low N" instead of the estimate.

For more information about the NSOPF:93 and other Data Analysis Systems, consult the NCES DAS website (www.nces.ed.gov/das) or its West Coast mirror site (www.pedar-das.org), or contact:

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[31]The faculty sample in NSOPF:93 is not a simple random sample, and therefore simple random sample techniques for estimating sampling error cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table B1—Standard errors for table 4: Percentage of instructional faculty and staff in all 4-year institutions who taught at least one class for credit to undergraduates, and of those who taught, percentage distribution according to the level of students taught, by type of 4-year institution and employment status: Fall 1992

	Taught at least one class for credit to undergraduate students[1]			Of those who taught undergraduates, the level of students taught		
	Total	Only under-graduates	Undergrad-uates and graduates	Only lower division students	Upper level and graduate students[2]	Students in various levels[3]
4-year institution	0.91	0.93	0.46	0.67	0.83	0.71
Part-time	1.57	1.65	0.56	1.34	1.37	0.98
Full-time	0.90	0.93	0.58	0.57	0.92	0.81
4-year doctoral institution	1.50	1.36	0.80	1.10	1.60	1.16
Part-time	2.79	2.88	1.26	2.62	3.12	1.94
Full-time	1.48	1.27	0.91	0.99	1.65	1.38
4-year nondoctoral institution	0.92	1.04	0.52	0.83	0.88	0.90
Part-time	1.77	1.86	0.51	1.53	1.35	1.12
Full-time	0.67	1.00	0.74	0.68	0.96	0.88

[1]A maximum of five classes could be reported by respondents.

[2]This group includes instructional faculty and staff who taught classes to only upper division students or to upper division and graduate students.

[3]This group includes instructional faculty and staff who taught classes to students in various levels. For example, among up to five classes they taught, some classes consisted of primarily lower division students, while others consisted of upper division students or graduate students. However, instructional faculty and staff who taught only graduate students were excluded.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1993 National Study of Postsecondary Faculty (NSOPF:93).

Statistical Procedures

Three types of statistical procedures were employed in this report: testing differences between means (or proportions), testing for linear trends, and adjustment of means after controlling for covariation among several variables. Each procedure is described below.

Differences Between Means or Proportions

Since the estimates in this report are based on a sample, observed differences between two estimates can reflect either of two possibilities: differences that exist in the population at large and are reflected in the sample, or differences due solely to the composition of the sample that do not reflect underlying population differences. To minimize the risk of erroneously interpreting differences due to sampling alone as signifying population differences (a Type I error), the statistical significance of differences between estimates was tested using a *t*-test. Statistical signifi-

cance was determined by calculating *t* values for differences between pairs of means or proportions and comparing these with published values of *t* for two-tailed hypothesis testing, using a 5 percent probability of a Type I error (a significance level of .05).[32]

The *t* values may be computed to test the difference between estimates with the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}} \quad (1)$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. Note that this formula is valid only for independent estimates. When the estimates are not independent (for example, when comparing a total percentage with that for a subgroup that is included in the total), a covariance term must be added to the denominator of the *t*-test formula. When comparing the estimate for a total with that of a subgroup, the following formula was used:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2 - 2p\ se_{sub}^2}} \quad (2)$$

where *p* is the proportion of the total contained in the subgroup.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading since the magnitude of the *t* statistic is related not only to the observed differences in means or percentages but also to the number of sample members in the specific categories used for comparison. Hence, a small difference compared across a large number of sample members would produce a large *t* statistic.

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons between categories of an independent variable. For example, when making paired comparisons between different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

[32]A Type I error occurs when one erroneously concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn.

Comparisons were made in this report only when $p \leq .05/k$ for a particular pairwise comparison, where that comparison was one of k tests within a family. This guarantees both that the individual comparison would have $p \leq .05$ and that for k comparisons within a family of possible comparisons, the significance level for all the comparisons would sum to $p \leq .05$.[33]

For example, when comparing males and females, only one comparison is possible. In this family, k=1, and there is no need to adjust the significance level. When faculty members are divided into five racial/ethnic groups and all possible comparisons are made, then k=10 and the significance level for each test within this family of comparisons must be $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \tag{3}$$

where j is the number of categories for the variable being tested. For example, in the case of a variable with five categories such as race/ethnicity, one substitutes 5 for j in equation 3:

$$k = \frac{5(5-1)}{2} = 10$$

Different schools of thought exist on the application of the Bonferroni adjustment: while some would use an experiment-wise calculation of k, where all the dependent variables were considered simultaneously in selecting a critical value, here the calculation of k and the accompanying critical value were restricted to a single dependent variable at a time, since the Bonferroni adjustment is already a conservative strategy.

Linear Trends

While most descriptive comparisons in this report were tested using Student's t statistic, some comparisons across categories of an ordered variable with three or more levels involved a test for a linear trend across all categories, rather than a series of tests between pairs of categories. In this report, when averages of a continuous variable were examined relative to a variable with ordered categories, Analysis of Variance (ANOVA) was used to test for a linear relationship between the two variables, particularly. To do this, ANOVA models included orthogonal linear contrasts corresponding to successive levels of the independent variable. The squares of the Taylorized standard errors (that is, standard errors that were calculated by the Taylor series

[33]The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the t statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56 (1961): 52–64.

method), the variance between the means, and the unweighted sample sizes were used to partition total sum of squares into within- and between-group sums of squares. These were used to create mean squares for the within- and between-group variance components and their corresponding F statistics, which were then compared with published values of F for a significance level of .05.[34] Significant values of both the overall F and the F associated with the linear contrast term were required as evidence of a linear relationship between the two variables. Means and Taylorized standard errors were calculated by the DAS. Unweighted sample sizes are not available from the DAS and were provided by NCES.

Adjustment of Means to Control for Covariation Among Several Variables

Tabular results are limited by sample size when attempting to control for the multiplicity of factors that may account for the variation observed between two variables. For example, when examining the proportion of faculty who taught classes for credit to only undergraduates, it is impossible to know to what extent the observed variation is due to employment status differences and to what extent it is due to differences in other factors related to employment status, such as type of institution, academic rank held, and so on. However, if a nested table were produced showing employment status within type of institution, within academic rank, the cell sizes would be too small to identify the patterns. When the sample size becomes too small to support controls for another level of variation, one must use other methods to take such variation into account.

To overcome this difficulty, multiple linear regression was used to obtain means that were adjusted for covariation among a list of control variables.[35] Adjusted means for subgroups were obtained by regressing the dependent variable on a set of faculty characteristics such as gender, race/ethnicity, age, and so on. Substituting ones or zeros for the subgroup characteristic(s) of interest and the mean proportions for the other variables results in an estimate of the adjusted mean for the specified subgroup, holding all other variables constant. For example, consider a hypothetical case in which two variables, gender and employment status, are used to describe an outcome, *Y* (such as whether or not teaching classes for credit to only undergraduates). The variables gender and employment status are recoded into dummy variables:

[34]More information about ANOVA and significance testing using the F statistic can be found in any standard textbook on statistical methods in the social and behavioral sciences.

[35]For more information about multiple regression, see Michael S. Lewis-Beck, *Applied Regression: An Introduction*, vol. 22 (Beverly Hills, CA: Sage Publications, Inc., 1980) or William D. Berry and Stanley Feldman, *Multiple Regression in Practice,* vol. 50 (Beverly Hills, CA: Sage Publications, Inc., 1987).

Gender	***G***
Female	1
Male	0

Employment status	***E***
Part-time	1
Full-time	0

The following regression equation is then estimated from the correlation matrix output from the DAS:

$$Y = a + b_1G + b_2E \quad (4)$$

To estimate the adjusted mean for any subgroup evaluated at the mean of all other variables, one substitutes the appropriate values for that subgroup's dummy variables (1 or 0) and the mean for the dummy variable(s) representing all other subgroups. For example, suppose we had a case where *Y* was being described by gender (*G*) and employment status (*E*), coded as shown above, and the means for *R* and *S* are as follows:

Variable	**Mean**
G	0.346
E	0.323

Suppose the regression equation results in:

$$Y = 0.59 + (0.09)G + (0.12)E$$

To estimate the adjusted value for female faculty members, one substitutes the appropriate parameter values into equation 4.

Variable	Parameter	Value
a	0.59	—
G	0.09	1.000
E	0.12	0.323

This results in:

$$Y = 0.59 + (0.09)(1) + (0.12)(0.323) = 0.719$$

In this case, the adjusted proportion for female faculty is 0.719 and represents the expected outcome for the expected likelihood of teaching only undergraduate classes for female faculty who

look like average faculty with respect to the other variables in the model (in this example, employment status).

One can produce a multivariate model using the DAS, since one of the DAS output options is a correlation matrix, computed using pairwise missing values and weighted to account for the complex sampling design and nonresponse.[36] This matrix can be used by most statistical software packages as the input data for least-squares regression. That is the approach used for this report, with an additional adjustment to incorporate the complex sampling design into the statistical significance tests of the parameter estimates (described below). For tabular presentation, parameter estimates and standard errors were multiplied by 100 to match the scale used for reporting unadjusted and adjusted percentages.

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of complex sampling design used for the NSOPF:93, this assumption is incorrect. A better approximation of the standard errors is to multiply each standard error by the average design effect of the dependent variable (DEFT),[37] where the DEFT is the ratio of the true standard error to the standard error computed under the assumption of simple random sampling. It is calculated by the DAS and produced with the correlation matrix.

[36]Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use other than pairwise treatment of missing values or to estimate probit/logit models (which are the most appropriate for models with categorical dependent variables) can apply for a restricted data license from NCES. See John H. Aldrich and Forrest D. Nelson, *Linear Probability, Logit and Probit Models* (Quantitative Applications in Social Sciences, Vol. 45) (Beverly Hills, CA: Sage University Press, 1984).

[37]The adjustment procedure and its limitations are described in C.J. Skinner, D. Holt, and T.M.F. Smith, eds., *Analysis of Complex Surveys* (New York: John Wiley & Sons, 1989).