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Elementary/Secondary School Teaching Among Recent College Graduates: 1994 and 2001

Statistical Analysis Report



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Elementary/Secondary School Teaching Among Recent College Graduates: 1994 and 2001

Statistical Analysis Report

July 2005

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Executive Summary

New bachelor's degree recipients represent a small but essential component of the U.S. elementary/secondary teacher workforce. In 1999–2000, nearly all (98 percent) of the approximately 3.4 million K–12 teachers in the United States had earned a bachelor's degree, and of those, about 5 percent had first earned the degree between 1998 and 2000.[1] As increasing numbers of baby-boomer teachers reach retirement age in the coming years (National Commission on Teaching and America's Future [NCTAF] 2003), new college graduates will continue to be an important source of new teachers. Beyond the rate at which new graduates enter teaching, their retention—which is associated with their professional preparation and early teaching experiences (NCTAF 2003)—concerns educators and policymakers who staff the nation's schools. Moreover, it is important to assess interest in teaching among graduates who do not teach immediately following bachelor's degree receipt. The proportion of these graduates who become teachers later in their working lives may strongly affect the effort involved in staffing the nation's schools.

This study uses data from the 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01), the spring 2001 follow-up of bachelor's degree recipients who were first surveyed as part of the 1999–2000 National Postsecondary Student Aid Study (NPSAS:2000), to examine teaching and teaching-related behavior among 1999–2000 bachelor's degree recipients as of 2001.[2] It also compares teaching rates among this cohort with those of 1992–93 bachelor's degree recipients as of 1994.

The analysis uses standard *t* tests to determine statistical significance of differences between estimates, and one-way Analysis of Variance (ANOVA) to detect trends. All differences reported in the text are statistically significant at the $p<.05$ level unless otherwise noted.

Teaching and Preparation to Teach Among 1999–2000 Bachelor's Degree Recipients

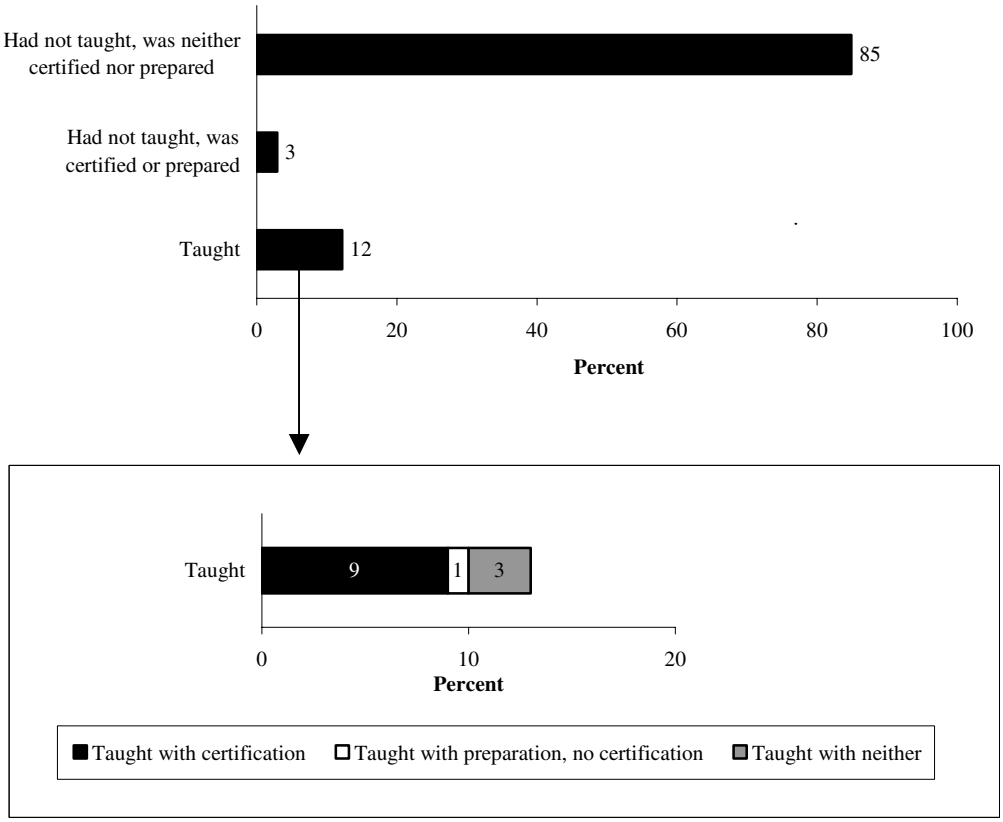
In this study, a "teacher" is defined as a bachelor's degree recipient who had taught any of grades K–12, except those degree recipients who worked only as a substitute teacher (long- or short-term) or teacher's aide. Among those who received a bachelor's degree in 1999–2000, 12 percent had taught in a K–12 school between receipt of the degree and the 2001 interview (figure A and table 1). This 12 percent of graduates includes 9 percent who had state certification, 1 percent who had prepared (completion of a teacher education program or student teaching assignment) but were not certified, and 3 percent with neither certification nor preparation.[3] Another 3 percent of all

[1]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

[2]In this analysis, "teaching-related behavior" includes working as a teacher's aide or substitute teacher, having considered teaching, and having applied for a teaching position.

[3]Detail may not sum to totals because of rounding.

Figure A. Percentage distribution of 1999–2000 bachelor's degree recipients by K–12 teaching status and percentage of 1999–2000 bachelor's degree recipients who taught, by level of teacher preparation: 2001



NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

graduates were certified or had prepared to teach but had not taught as of 2001.

Demographic Characteristics

Both gender and race/ethnicity were associated with graduates' propensity to teach. As has been the case for well over a century (Cremin 1961; Tyack 1974), women were more likely than men both to have taught and to have prepared to teach. Overall, 16 percent of women in this cohort had taught by 2001, compared with 8 percent of men (table 1). Women were also more likely than men to have prepared to teach without having taught by 2001 (4 percent vs. 2 percent). As has also been the case historically (Frankel and Stowe 1990; Gray et al. 1993), among 1999–2000 graduates, Asian/Pacific Islanders were less likely than their Black, White, or Hispanic peers to have taught by 2001.[4]

[4]Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

Undergraduate Academic Experiences

Teachers' academic preparation, both in general and in the specific fields they teach, has been the object of intense interest among researchers and policymakers for many years (Murnane et al. 1991; NCTAF 1996, 1997, 2003; Weaver 1983). Combined with the specter of teacher shortages in the early 1990s, ambitions to encourage high achieving college graduates to teach spurred the development of such programs as Teach for America (Decker, Mayer, and Glazerman 2004; Raymond, Fletcher, and Luque 2001). In recent years, legislators addressed this issue in the No Child Left Behind Act, which requires teachers of core academic subjects to be highly qualified in those respective subjects by 2005–06.

Other characteristics of teachers' education and qualifications also interest policymakers. For example, the attention to teachers' academic achievement and desire to expand the pool of potential teachers have also increased researchers' and policymakers' attention to the role of community colleges in the preparation of K–12 teachers (Blair 2003).

Institutions Attended

Between 12 and 13 percent of 1999–2000 graduates had taught as of 2001 (table 2), regardless of the type of institution in which they began postsecondary education. However, the type of institution from which 1999–2000 graduates received the bachelor's degree was associated with whether they had taught by 2001. Graduates of non-doctorate-granting institutions (whether public or private not-for-profit) were more likely than graduates of other types of institutions to have taught by 2001 (14–17 percent vs. 11 percent or less).

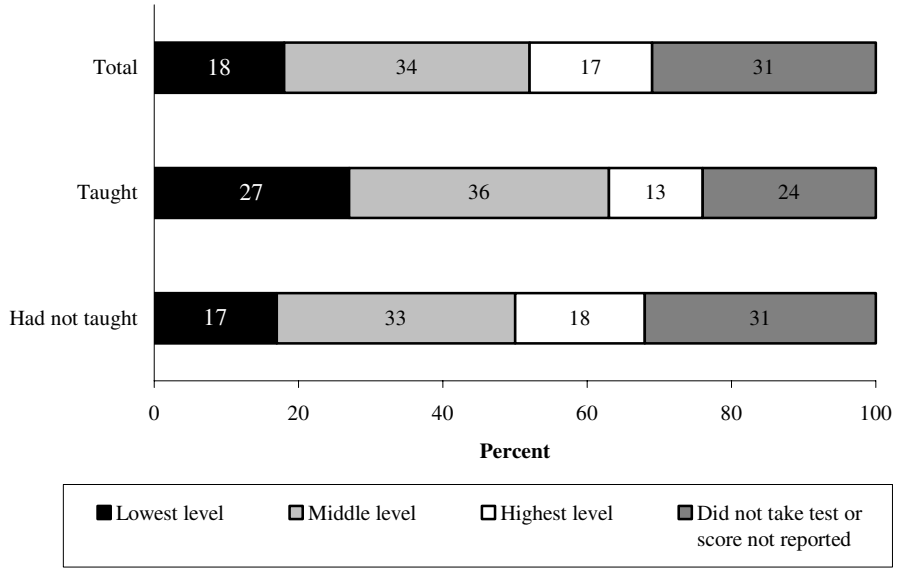
College Entrance Examination (CEE) Scores and Undergraduate Grades

For at least two decades, policymakers and education researchers have stressed the importance of improving both the quality of K–12 teaching and the training/qualifications of those who teach the nation's children. Since the early 1980s, researchers have noted that college graduates who become teachers tend to have lower college entrance examination (CEE) scores than those who do not become teachers (Henke et al. 1996; Murnane et al. 1991; Schlecty and Vance 1983; Weaver 1983). Comparisons of graduates' undergraduate grade point averages (GPAs), however, indicate either that there were no differences between graduates who later taught at the K–12 level and those who did not, or that those who later taught had higher GPAs than their nonteaching peers (Book, Freeman, and Brousseau 1985; Frankel and Stowe 1990; Gray et al. 1993; Henke et al. 1996).

These two measures of academic achievement were again associated, in opposite directions, with 1999–2000 graduates' having taught by 2001. Overall, bachelor's degree recipients who had taught were more likely than those who had not taught to have CEE scores in the lowest level of the CEE score distribution (figure B).[5] Graduates' cumulative undergraduate GPAs were positively related to having taught, and specifically to having been certified and taught.

[5]However, relatively large proportions (24 to 31 percent) of graduates did not have test scores available for analysis. Additional analyses, related to these results and discussed in the technical appendix, indicate that findings concerning CEE scores may be confounded by the large proportions of graduates with missing scores.

Figure B. Percentage distribution of 1999–2000 bachelor's degree recipients by college entrance examination score level, by teaching status: 2001



NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Undergraduate Major Field of Study

Not surprisingly, education majors were more likely than graduates who had majored in other fields both to have taught, regardless of certification or preparation, and to have prepared to teach if they had not taught (figure 3 and table 2). Two-thirds of 1999–2000 graduates who were education majors had taught by 2001, and 56 percent had taught with certification. Another 6 percent taught with preparation but not certification, and 13 percent had prepared but not taught as of the 2001 interview. After education majors, humanities majors were most likely to have taught by 2001 (17 percent), followed by social sciences majors (9 percent).

Teaching-Related Experiences

Newly qualified teachers who want to obtain a teaching position in a desired school or district, or to earn a living while looking for a position in their field of preparation, may work as a teacher's aide or substitute teacher for some period of time. Other graduates may take teacher's aide or substitute teaching positions to earn a living while pursuing other careers or to explore teaching as a potential career before investing time, money, and energy in a formal teacher preparation program.

Working as a Teacher's Aide or Substitute Teacher

Among all 1999–2000 graduates, 6 percent had worked as a teacher's aide or substitute teacher as of 2001 (table 4). Two percent of 1999–2000

graduates had done so in order to gain a permanent teaching position. Among graduates who had not taught, those who had prepared to teach were far more likely than those who had not to have worked as a teacher's aide or substitute teacher. Of the 3 percent of all graduates who had prepared or were certified to teach but had not taught as of 2001 (figure A and table 1), one-half had worked as a teacher's aide or substitute teacher (tables 4 and 5). Twenty-eight percent of them did so to gain a permanent teaching position. In comparison, graduates who had not taught and neither prepared to teach nor become certified were far less likely to have worked as an aide or substitute or to have done so to gain a permanent position: 3 percent had worked in such a capacity, and less than 1 percent had done so to gain a permanent teaching position.

Considering Teaching and Applying for Teaching Positions

Among graduates who had not taught as of 2001, 37 percent had considered teaching (table 6). Bachelor's degree recipients who had not taught as of 2001, but who were certified, had otherwise prepared to teach, or had considered teaching were asked whether they had applied for a teaching position since completing their degree. Of this group, 9 percent had applied for a teaching position. Among those who were certified or otherwise prepared to teach but had not taught, 43 percent had applied. Among those who had only considered teaching, 7 percent had applied.[6]

Teaching Experiences of Those Who Had Taught

Although new college graduates' attrition from teaching is no more frequent than their attrition from other occupations held within the first year of completing the bachelor's degree (Henke and Zahn 2001), from the perspectives of some education policymakers and administrators, the attrition of new teachers remains a concern (Ingersoll 2001; NCTAF 2003). Improving new teachers' experiences in their first few years in the classroom is believed to be key to retaining more teachers (NCTAF 2003; National Governor's Association 2000; Veenman 1984).

Characteristics of First Teaching Jobs After 1999–2000 Bachelor's Degree

Among 1999–2000 bachelor's degree recipients who had taught as of 2001, 91 percent had taught in a public school and 9 percent in a private school in their first teaching job after receiving the bachelor's degree (table 8). Compared with all 1999–2000 teachers and with 1999–2000 teachers with less than 3 years of experience, 1999–2000 bachelor's degree recipients were more likely to have taught in public schools.[7]

Among graduates who taught after completing the 1999–2000 bachelor's degree, about two-thirds first did so in elementary schools, 30 percent in secondary schools, and 4 percent in combined schools (schools that combine elementary and secondary grades) (table 9). Among all U.S. teachers in 1999–2000, 63 percent taught in

[6]Those who had not taught but had applied for teaching jobs may not have received offers for teaching jobs or may have declined all offers received.

[7]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

elementary schools, 31 percent in secondary schools, and 6 percent in combined schools.[8]

Teachers reported all of the subjects that they had taught in the first teaching job they held after receiving the bachelor's degree. About 30 percent taught elementary or early childhood education; about one-fourth taught English, reading, or writing; about one-fifth taught mathematics; 17 percent taught science; and 15 percent taught social studies or history (tables 10a–b).[9] Eight percent or less taught each of several other subjects.[10]

Most graduates were certified in the subjects they had taught in their first teaching jobs after receiving the 1999–2000 degree. Eighty-five percent of those who had taught elementary or early childhood education classes—in which a teacher teaches multiple subjects to the same group of students for all or most of the school day—were certified in elementary or early childhood education (figure C). The proportion of teachers who taught the core subjects of English/reading/writing, mathematics, science, and social studies/history and were certified in those respective subjects ranged from 74 to 80 percent.

[8]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

[9]School level and teaching field are correlated to a limited degree. Teachers in elementary schools may teach specific subjects (e.g., mathematics, science, reading, art, PE, etc.) or specific populations (e.g., special education students, LEP students, bilingual/ESL classes, etc.). In addition, the definition of elementary level schools includes schools that serve grades six through eight, many of which have departmentalized organization.

[10]Total sums to more than 100 percent because some graduates taught more than one subject.

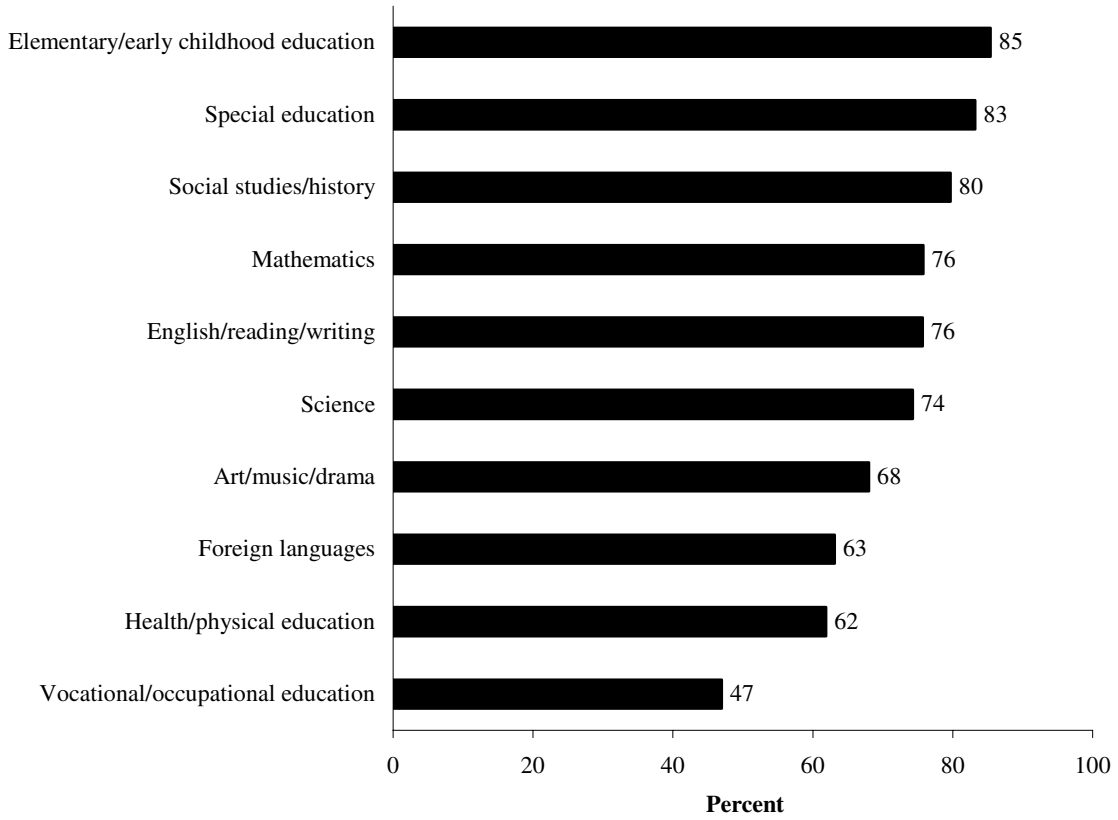
Satisfaction and Support in Most Recent Teaching Jobs

Graduates who taught were asked to indicate whether they were very satisfied, somewhat satisfied, or not satisfied with seven aspects of their most recent teaching jobs. About three-fifths were very satisfied with the support they received from their school's administration (table 11). More than one-half (56 percent) of teachers among 1999–2000 graduates were very satisfied with their school's learning environment, and one-half were very satisfied with their class size. Graduates were least likely to be very satisfied with society's perception of the teaching profession: whereas 16 percent were very satisfied with this aspect of teaching, one-third or more were very satisfied with each of the other aspects of teaching.

Graduates who had most recently taught in private schools were more likely than those who had most recently taught in public schools to be very satisfied with all seven aspects of teaching included in the interview. The level of the school in which they most recently taught was associated with teachers' satisfaction with some aspects of their jobs. New teachers who most recently taught at an elementary school were more likely than those who most recently taught at a secondary school to report that they were very satisfied with student motivation, the school's learning environment, student behavior, and class size.

Between 73 and 83 percent of graduates agreed that the school in which they had most recently taught was effective in helping new teachers with four aspects of teaching: student discipline, instruction, curriculum, and adjusting to the school environment (table 12). Graduates who had most recently taught in public schools were less likely than their peers in private schools to agree that their schools effectively helped new

Figure C. Percentage of 1999–2000 bachelor's degree recipients who were certified in the subjects taught in their first teaching job after receiving the 1999–2000 degree, by subject: 2001



SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

teachers with discipline and instruction. Whereas four-fifths (82 percent) of those who had most recently taught in elementary schools believed their schools were effective in helping new teachers with instruction, three-fourths (74 percent) of those who had most recently taught in secondary schools did so. As the percentage of minority students in the school rose, the proportion of teachers who agreed that their schools were effective in helping new teachers with discipline, curriculum, and adjusting to the school environment declined.

It is important to note that teachers' responses indicate their perceptions of the help provided to new teachers. Previous research indicates that teachers in high-minority enrollment schools differ from teachers in lower-minority enrollment schools in a number of ways, some of which may be related to teachers' perceptions of the support they receive and to their need for support. For example, teachers in urban or high-minority enrollment schools are often less experienced and less qualified than teachers in other schools (Lankford, Loeb, and Wyckoff 2002; NCTAF 1996). Such teachers may feel the need for support more strongly than other teachers.

Comparisons With 1992–93 Bachelor's Degree Recipients

The percentage of bachelor's degree recipients who had taught in a K–12 school within about a year of receiving a bachelor's degree increased from 10 percent to 12 percent between 1994 and 2001 (table 13). This increase occurred primarily among graduates who were certified to teach: in 1994, some 7 percent of graduates had taught with certification, 1 percent with preparation but no certification, and 2 percent with neither certification nor preparation, compared with 9 percent, 1 percent, and 3 percent, respectively, in 2001.[11] The increase in certified teachers among recent bachelor's degree recipients was accompanied by a decrease in the proportion who had prepared to teach but had not taught within a year of completing the bachelor's degree. In 1994, some 5 percent of 1992–93 graduates had prepared to teach but not yet taught, whereas in 2001, some 3 percent of 1999–2000 graduates had done so.

This increase in the likelihood of teaching occurred among both men and women and among Whites. Among Black bachelor's degree recipients, the proportion who had taught increased from 9 percent in 1994 to 13 percent in 2001 and the proportion who taught with certification increased from 4 percent to 8 percent in the same time period. Teaching status 1 year after receiving a bachelor's degree appeared to have changed over time among American Indian/Alaska Native, Asian/Pacific Islander, Hispanic, or graduates of other racial/ethnic groups. However, these estimates were associated with large standard errors, due to small samples, and the apparent differences were not statistically significant.

Graduates were less likely to have prepared to teach but not taught in 2001 than in 1994 regardless of the type of postsecondary institution they first attended (table 14). In addition, graduates who began postsecondary education in private not-for-profit or public 4-year institutions were more likely to have taught overall and with certification in 2001 than in 1994. Graduates who received their degrees from public 4-year non-doctorate-granting institutions were more likely to have taught overall and with certification in 2001 than in 1994, and they were less likely to have prepared to teach but not taught.

Graduates with CEE scores in the lowest and middle levels of the CEE score distribution were more likely to have taught overall and with certification in 2001 than in 1994. Furthermore, 1999–2000 graduates with scores in the lowest level were less likely than their 1992–93 counterparts to have neither prepared nor taught (77 percent vs. 82 percent) within a year of completing their degrees.

Similarly, graduates whose cumulative undergraduate GPAs fell between 2.75 and 3.74 were more likely to have taught overall and with certification in 2001 than in 1994. In addition, graduates whose GPAs were 2.75 or higher were less likely to have prepared but not taught in 2001 than in 1994.

Graduates who had majored in education, the humanities, and the social sciences were more likely to have taught overall and with certification in 2001 compared with 1994. In addition, whereas one-fourth of 1992–93 graduates with education majors had prepared to teach but not taught as of 1994, 13 percent of 1999–2000 graduates had done so as of 2001.

[11] Detail may not sum to totals because of rounding.

Foreword

This report examines elementary/secondary teaching and teaching-related behavior among college graduates who received a bachelor's degree from U.S. postsecondary institutions in academic year 1999–2000.[1] It is based on data from the 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01), a spring 2001 follow-up of bachelor's degree recipients from the 1999–2000 National Postsecondary Student Aid Study (NPSAS:2000). This is the second Baccalaureate and Beyond cohort that has been surveyed by the National Center for Education Statistics. The first study examined 1992–93 bachelor's degree recipients from the 1992–93 NPSAS, with follow-ups in 1994, 1997, and 2003.

This report discusses teaching in elementary and secondary schools, preparing to teach at the elementary/secondary level, and considering teaching among 1999–2000 college graduates as of 2001 (i.e., within about a year of completing the bachelor's degree). It examines whether graduates who differed in demographic characteristics (gender and race/ethnicity) and undergraduate academic characteristics (types of institutions attended, college entrance examination scores, undergraduate grade point averages, and major fields of study) also differed in terms of teaching and teaching-related behaviors as of 2001. The report also compares teaching and teaching-related behaviors of the 1999–2000 cohort as of 2001 with those of the 1992–93 cohort as of 1994.

The estimates presented in the report were produced using the Data Analysis System (DAS), a microcomputer application that allows users to specify and generate tables for the B&B:2000/01 study. The DAS produces the design-adjusted standard errors necessary for testing the statistical significance of differences in the estimates. For more information about the DAS, readers should consult appendix B of this report.

[1] In this analysis, "teaching-related behavior" includes working as a teacher's aide or substitute teacher, having considered teaching, and having applied for a teaching position.

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Introduction

The potential for volatility in the labor market for elementary/secondary schoolteachers in the United States has been readily apparent in the past few years. Newspapers across the country have published accounts of elementary/secondary teacher shortages (Associated Press 2003; Booth 2002; Coeyman 2001; Coleman 2001; Ross 2001; Sack 2001; Schulhofer-Wohl 2001; Schulhofer-Wohl and Hetzner 2001; Seymour 2001). Whether attributed to high rates of attrition among new teachers, larger enrollments, or programs to reduce class size, such articles note that many school districts find staffing classrooms with trained teachers to be a significant challenge. Reported shortages often occur in specific subject areas—bilingual education, special education, mathematics, and science—that are harder to staff regardless of the overall teacher supply (Kuchera 2002; Lindelof 2003; Melendez and Go 2002; Rossi and Grossman 2002). Schools that serve high proportions of low-income, low-achieving, or racial/ethnic minority students have difficulty attracting and retaining highly qualified teachers (Hanushek, Kain, and Rivkin 2004).

Almost simultaneously, newspapers have also reported that substantial proportions of teachers in many districts have faced the possibility of layoffs in recent years, attributing these layoffs to state and local budget shortfalls in the wake of a more slowly growing national economy (Banchero and Sherlock 2003; Murphy 2003; Rado and Keilman 2003). In at least some districts, news reports indicate that the teachers most recently hired are the first to be laid off (Walsh and Nixon 2004). Administrators in these districts have been reported to speculate that laid off teachers who find jobs in other industries may not return to teaching once state and local governments' fiscal crises ease and the demand for teachers again rises (Walsh and Nixon 2004).

New bachelor's degree recipients represent a small but essential component of the U.S. elementary/secondary teacher workforce. In 1999–2000, nearly all (98 percent) of the approximately 3.4 million K–12 teachers in the United States had earned a bachelor's degree, and of those with a bachelor's degree, approximately 5 percent had first earned a bachelor's between 1998 and 2000.[1] Approximately 11 percent of all teachers had less than 3 years of teaching

[1]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

experience in 1999–2000.[2] Thus, new college graduates made up about one-half of all new teachers.

As increasing numbers of baby-boomer teachers are expected to reach retirement age in the coming years, new college graduates will continue to be an important source of new teachers (National Commission for Teaching and America's Future [NCTAF] 2003). Beyond new graduates' rate of entry into the profession, their potential for retention, which is affected by their levels of preparation and early teaching experiences, is of significant interest to educators and policymakers responsible for staffing the nation's schools (NCTAF 2003). Moreover, it is important to assess interest in teaching among graduates who do not teach immediately following bachelor's degree receipt. The proportion of these graduates who become teachers later in their working lives may strongly affect the ease with which the nation's schools are staffed.

Data and Methodology

This report uses data collected as part of the Baccalaureate and Beyond Longitudinal Studies (B&B) in 1994 and 2001 to examine teaching, preparation to teach, and other steps taken toward a teaching career by 1992–93 and 1999–2000 bachelor's degree recipients. All participants in the B&B studies were first interviewed as part of the respective National Postsecondary Student Aid Studies, which were conducted in 1992–93 and 1999–2000 (NPSAS:93 and NPSAS:2000). The earlier B&B cohort was interviewed again in 1994, and the later one in 2001 (B&B:93/94 and 2000/01).[3] For most respondents, the B&B interview took place approximately 1 year after they graduated, but the time frame was somewhat longer for those who graduated early in the academic year. For convenience, the terms "a year later" or "after a year" are used in this report, although the actual time frame is not exactly 12 months for all graduates.

The NPSAS studies sampled about 1,100 institutions. Each sampled institution provided a list of its students, and from these lists of students, a nationally representative sample of all students enrolled in postsecondary education institutions, including undergraduate, graduate, and first-professional students, was derived. Each NPSAS sample of undergraduates represents more than 16 million undergraduates who were enrolled at some time between July 1 and June 30 of the respective survey year. The sampling frames for NPSAS were built from the Integrated Postsecondary Education Data Systems Institutional Characteristics (IPEDS-IC) file for 1990–91 and 1998–99, respectively.

[2]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

[3]The 1992–93 cohort was also interviewed in 1997 and 2003, but these data are not analyzed here.

From the lists of students provided by sampled institutions, about 12,500 students were selected for participation in the B&B sample in 1992–93 and 11,600 students in 1999–2000. Of the sampled students, approximately 10,000 students completed interviews in each first follow-up data collection. Students who, during the B&B interview or from transcripts, were determined not to have earned a bachelor's degree during the relevant academic year (of whom there were 760 in 1992–93 and 70 in 1999–2000) were excluded from the final sample. The unweighted response rate for B&B:93/94 was 92 percent (the weighted response rate was not reported) and the overall weighted response rate for B&B:2000/01 was 74 percent. The data presented in this report cover the 50 states, District of Columbia, and Puerto Rico. The bachelor's degree recipients interviewed in each study represent the approximately 1.2 million bachelor's degree completers in each of the 2 years.

Thus far, analyses of the 1992–93 cohort's teaching experiences (Henke, Chen, and Geis 2000; Henke et al. 1996) have focused on graduates' location within a hypothetical teacher pipeline. However, because the 2001 follow-up of 1999–2000 college graduates differs from the 1994 data collection in several ways, this report discusses graduates' status vis-a-vis elementary/secondary teaching somewhat differently in order to facilitate comparisons over time.[4] In this report graduates' teaching status is defined in terms of both

- whether they had taught (not including working as a substitute teacher or teacher's aide), and
- whether they had a) become certified to teach or b) prepared to teach (that is, completed a teacher education program or a student teaching assignment) but not yet been certified.

Public schools and districts must hire state-certified teachers, even if that teacher has only an emergency certification or waiver when hired. Under the No Child Left Behind Act, only highly qualified teachers may teach in public schools that receive specified federal categorical funds (e.g., Title I funds) if the schools are to retain their federal funding. States regulate teacher certification, and there is enormous variation among states in the degree, course, and assessment requirements for all levels of teacher certification (U.S. Department of Education 2004). In 2001, for example, California teachers were required to major in a content area, not in education, as undergraduates and could not obtain initial certification without a fifth year (that is, 1 year beyond the traditional 4-year bachelor's degree) of postsecondary education focused on professional training in teaching (U.S. Department of Education 2001). In other states, initial certification is available with a bachelor's degree in education only. In addition to requirements for formal education or training, some states require teaching or other related experience before

[4]Details concerning the differences between the two datasets are discussed in appendix B.

awarding teaching certificates to new teachers, and the amount and type of experience required varies among states (U.S. Department of Education 2001).

Given the nature of and variation in some state requirements for teacher certification, graduates' probability of being certified to teach within a year of completing a first bachelor's degree may vary with the state in which they reside or teach. Differences among states in requirements for certification may lead to state-by-state variation in graduates' perceptions of the difficulty of becoming certified to teach. Such differences in graduates' perceptions could influence their decisionmaking regarding whether to pursue a certificate before teaching in a private school (where certificates are not required by the state). Thus, state policies, as well as individual graduates' personal inclinations, may affect their teaching status within a year after completing a bachelor's degree.

The analysis uses standard *t* tests to determine statistical significance of differences between estimates, and one-way Analysis of Variance (ANOVA) to detect trends. All differences noted are statistically significant at the $p<.05$ level. When relevant to the discussion, the report points out apparent differences that do not reach statistical significance. More details regarding the data, definitions of variables, and statistical techniques used are available in the appendices to this report.

Organization of the Report

The report discusses teaching among recent college graduates in two major sections. The first section begins by describing the demographic and undergraduate academic characteristics of 1999–2000 baccalaureate degree recipients who taught and/or prepared to teach by 2001. The section then examines how the characteristics of graduates differ with teaching status. It continues by discussing graduates' teaching-related experiences: working as a teacher's aide or substitute teacher, having considered teaching, and having applied for teaching. It concludes by discussing the teaching experiences of graduates who taught.

The second section of the report compares the teaching status of 1999–2000 graduates in 2001 with that of 1992–93 graduates in 1994. Differences between the cohorts are compared both in the aggregate and within subgroups defined by demographic and undergraduate academic characteristics. Appendix A presents definitions of the variables used in the analysis and appendix B discusses the B&B:2000/01 data in greater detail as well as the methodology used in the analysis.

Teaching and Preparation to Teach Among 1999–2000 Bachelor's Degree Recipients

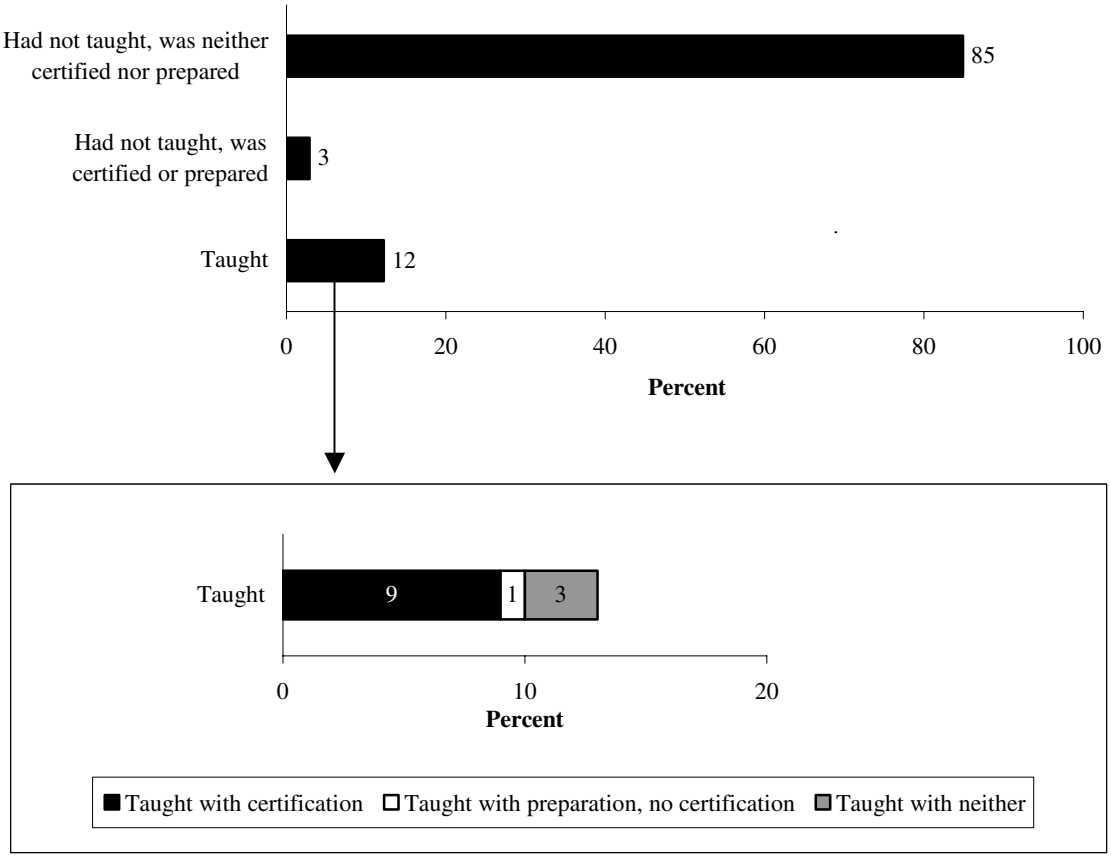
Working as an educator was common among 1999–2000 graduates: at the time of the 2001 interview, 18 percent of graduates who were working described their occupation as "educator," a proportion exceeded only by the proportion who worked in business or management (Bradburn et al. 2003). However, "educator" was defined broadly, including those who taught at the preschool and postsecondary levels, educators who worked in nonschool settings (e.g, private music teachers, religious educators associated with places of worship), instructional aides, substitute teachers, as well as those who taught any of grades K–12 in an elementary, middle, secondary, or combined school. Defining "teacher" more narrowly, as those who taught any of grades K–12 excluding instructional aides and long- and short-term substitute teachers, 12 percent of graduates had taught in a K–12 school at some point between receiving the 1999–2000 bachelor's degree and the 2001 interview (figure 1 and table 1). This 12 percent of graduates includes 9 percent with state certification, 1 percent with preparation but no certification, and 3 percent with neither certification nor preparation.[5] Another 3 percent of all graduates were certified or had prepared to teach but had not taught.

Demographic Characteristics

Elementary/secondary students and teachers have differed from each other in terms of gender and race/ethnicity for decades. Two-thirds of public elementary/secondary school teachers were women in 1976, 69 percent were women in 1986, and 79 percent were women in 2001 (Snyder, Tan, and Hoffman 2004). Although the population of elementary/secondary level students has become increasingly diverse in the last 25 years in terms of race/ethnicity, elementary and secondary school teachers are, and have been for some time, largely White. In 1976, three-quarters of public elementary/secondary school students were White (Grant and Eiden 1980). By 1986, the percentage who were White had declined to 70 percent (Snyder and Hoffman 2003), and by 2001, 60 percent of elementary/secondary school children and youth were White (Snyder, Tan, and Hoffman 2004). Among public school teachers, in 1976, some 91

[5]Detail may not sum to totals because of rounding. For the purpose of this analysis, teachers were defined as having been certified if they had received advanced, regular, or probationary certification. Those with emergency or temporary certificates were not defined as certified.

Figure 1. Percentage distribution of 1999–2000 bachelor's degree recipients by K–12 teaching status and percentage of 1999–2000 bachelor's degree recipients who taught, by level of teacher preparation: 2001



NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

percent were White, in 1986, some 90 percent were White, and in 1999–2000, approximately 84 percent were White (Snyder and Hoffman 2003).[6]

As has been the case for well over a century (Cremin 1961; Tyack 1974), among 1999–2000 college graduates, women were more likely than men to have taught and to have prepared to teach. Overall, 16 percent of women in this cohort had taught by 2001, compared with 8 percent of men (table 1). Furthermore, women were more likely than men to have taught

[6] Estimate for 1999–2000 obtained from U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

Table 1. Percentage distribution of 1999–2000 bachelor's degree recipients by K–12 teaching status, by gender and race/ethnicity: 2001

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
Total	12.2	8.5	1.2	2.6	87.8	2.9	84.9
Gender							
Male	7.6	5.2	0.5	1.8	92.5	2.1	90.4
Female	15.7	11.0	1.6	3.1	84.3	3.6	80.7
Race/ethnicity[1]							
American Indian	7.4	6.0	1.4	#	92.6	6.0	86.6
Asian/Pacific Islander	2.4	1.0	0.4	1.1	97.6	1.6	95.9
Black	12.9	7.8	1.0	4.1	87.1	3.2	83.9
White	12.4	9.2	1.0	2.2	87.6	3.0	84.6
Other	6.7	3.7	0.7	2.3	93.3	2.5	90.8
Hispanic	18.8	9.8	3.5	5.5	81.2	2.9	78.3

Rounds to zero.
[1]American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

regardless of certification or preparation. Women were also more likely than men to have prepared to teach without having taught by 2001 (4 percent compared with 2 percent).

As has also been the case historically (Frankel and Stowe 1990; Gray et al. 1993), among 1999–2000 graduates, Asian/Pacific Islanders were less likely than their Black, White, or Hispanic peers to have taught or to have prepared to teach by 2001.[7] Although it appears that Hispanic graduates were more likely than all other racial/ethnic groups to have taught by 2001, the Hispanic sample was small and associated standard errors were large and these apparent differences were not significant.

Undergraduate Academic Experiences

Teachers' academic preparation, both in general and in the specific fields they teach, has been the object of intense interest among researchers and policymakers for many years (Murnane et al. 1991; NCTAF 1996, 1997, 2003; Weaver 1983). Combined with the specter of teacher

[7]Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Race categories exclude Hispanic origin unless specified.

shortages in the early 1990s, ambitions to encourage high achieving college graduates to teach spurred the development of such programs as Teach for America (Decker, Mayer, and Glazerman 2004; Raymond, Fletcher, and Luque 2001). In recent years, legislators addressed this issue in the No Child Left Behind Act, which requires teachers of core academic subjects to be highly qualified in those respective subjects by 2005–06. Thus, the undergraduate academic experiences of graduates, and whether they differ with teaching status, are important issues for educators and policymakers. This section presents estimates of the proportion of graduates who pursued teaching in terms of the types of postsecondary institutions they attended, their achievement as measured by their college entrance examination (CEE) scores and grade point averages (GPAs), and the fields of study in which they majored as undergraduates.

Institutions Attended

College graduates begin and complete their undergraduate education in types of institutions that vary enormously in terms of their mission, the student populations they serve, their revenue sources, and so on. Institutions that typically do not grant 4-year degrees, including community colleges and private junior colleges or vocational/technical schools, are to a large degree oriented toward preparing students for the labor market or for completion of a 4-year degree at another institution. Public and private 4-year institutions vary in, among other characteristics, the degree to which faculty focus on teaching or research and the types of degrees they grant (e.g., doctorate-granting versus non-doctorate-granting).

Given the teacher shortages experienced in the past decade and increased attention to teachers' academic preparation, the role of community colleges in the preparation of K–12 teachers has received increasing attention among researchers and policymakers (National Science Foundation 1998; Recruiting New Teachers 2002; SERVE 2000; Townsend and Ignash 2003). In more than 20 states, community colleges offer teacher education programs at the associate's, and a few at the bachelor's, degree level (Blair 2003). Furthermore, the prevalence of community college attendance among college graduates in general—20 percent of all 1999–2000 bachelor's degree recipients first enrolled in a public 2-year institution (Bradburn et al. 2003)—has led educators and policymakers to pay greater attention to the role of nearly all community colleges in preparing K–12 teachers. Bachelor's degree recipients who begin in 2-year institutions typically complete many of their required general education courses in those institutions before transferring to a 4-year institution to complete their major field of study requirements. Thus, especially for elementary grade teachers, much of their undergraduate-level education in academic subjects may be undertaken in community colleges.

In fact, bachelor's degree recipients who had begun their postsecondary education in a less-than-4-year institution were as likely as other graduates to have taught in the first year after completing the bachelor's degree. Among bachelor's degree recipients who began postsecondary education at a 2-year institution, 13 percent taught during the first year after obtaining a bachelor's degree (table 2). Similarly, 12 percent of individuals who began at 4-year public and private not-for-profit institutions taught in the first postbaccalaureate year.

At some point in their history, many public universities began as, or merged with, normal schools or teachers' colleges, that is, institutions dedicated to the preparation of elementary and, to some degree, secondary school teachers (Altenbaugh and Underwood 1990; Herbst 1989). Therefore, it is perhaps not surprising that the type of institution from which graduates received their bachelor's degrees was associated with whether they had taught by 2001. Graduates of non-doctorate-granting institutions (whether public or private not-for-profit) were more likely than graduates of other types of institutions to have taught by 2001 (14–17 percent compared with 11 percent or less).

College Entrance Examination (CEE) Scores and Undergraduate Grades

For at least two decades, policymakers and education researchers have stressed the importance of improving both the quality of K–12 teaching and the training and qualifications of those who teach the nation's children (Education Commission of the States 1983; Holmes Group 1986; NCTAF 1996, 1997, 2003; National Commission on Excellence in Education 1983). In particular, teachers' academic achievement has been associated, in some research, with their students' academic achievement (e.g., Ehrenberg and Brewer 1995; Wayne and Youngs 2003). Two measures of teachers' academic achievement that have been used are their college entrance examination (CEE) scores and undergraduate grade point averages (GPAs).

Each of these measures has advantages and disadvantages as an indicator of what teachers, or other college graduates, know and are able to do. CEEs measure entering postsecondary students' academic skill levels. These scores are of limited utility as measures of college graduates' achievement because these examinations are taken before graduates' postsecondary enrollment (or at least before their enrollment in a 4-year-institution). However, these scores provide the only measure of graduates' academic skills on a common metric. In contrast to CEE scores, GPAs are more contemporary measures of graduates' academic performance, but are not standardized among or within institutions. In addition, they are known to vary among graduates who major in different fields of study, and graduates' propensity to teach is also related to undergraduate major (Henke et al. 1996). Despite their limitations as measures of graduates' academic achievement, and in the absence of a valid and commonly taken measure of academic

Table 2. Percentage distribution of 1999–2000 bachelor's degree recipients by K–12 teaching status, by selected undergraduate academic characteristics: 2001

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
Total	12.2	8.5	1.2	2.6	87.8	2.9	84.9
First institution type[1]							
Public 2-year	13.1	9.3	1.4	2.4	86.9	3.2	83.8
Public 4-year	12.4	8.7	1.2	2.5	87.7	2.8	84.8
Private not-for-profit 4-year	12.0	8.0	1.0	3.0	88.0	2.7	85.2
Degree-granting institution type							
Public							
Non-doctorate-granting	17.3	12.9	1.7	2.8	82.7	3.8	78.9
Doctorate-granting	10.6	7.3	1.0	2.2	89.5	2.3	87.2
Private not-for-profit							
Non-doctorate-granting	14.2	10.2	1.2	2.8	85.8	3.9	82.0
Doctorate-granting	9.1	4.8	1.0	3.3	90.9	2.7	88.3
Private for-profit 2-years or more[2]	1.1	0.3	#	0.8	98.9	1.9	97.1
College entrance examination score[3]							
Lowest level	18.4	13.8	1.4	3.1	81.6	4.2	77.5
Middle level	13.1	9.6	1.3	2.2	86.9	2.9	84.0
Highest level	8.6	4.7	1.1	2.8	91.4	1.2	90.2
Did not take test or score not available	9.6	6.3	0.9	2.4	90.4	3.2	87.3
Cumulative undergraduate GPA							
Less than 2.25	8.9	4.9	0.2	3.8	91.1	4.4	86.7
2.25–2.74	8.8	4.7	1.3	2.7	91.2	2.6	88.6
2.75–3.24	12.4	8.8	1.3	2.4	87.6	3.0	84.6
3.25–3.74	13.6	10.0	0.9	2.6	86.5	2.7	83.7
3.75 or higher	14.1	10.5	1.3	2.3	85.9	3.3	82.6
Undergraduate field of study							
Business and management	1.2	0.6	0.1	0.6	98.8	0.8	98.0
Education	66.5	56.4	5.9	4.2	33.5	13.0	20.5
Humanities	16.8	9.8	2.0	5.1	83.2	2.9	80.3
Mathematics, computer science, natural sciences	5.5	3.3	0.6	1.7	94.5	1.8	92.7
Social sciences	9.1	4.7	0.6	3.8	90.9	2.6	88.3
Other	4.4	2.5	0.4	1.5	95.6	1.9	93.7

Rounds to zero.

[1] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[2] Includes 4-year degree-granting institutions.

[3] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: Detail may not sum to totals because of rounding. See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

achievement for postsecondary students or college graduates, these measures have been used consistently to study teachers' academic skill levels and to compare their skills with those of other college graduates.

Since the early 1980s, researchers have noted that college graduates who became teachers tended to have lower CEE scores than those who did not become teachers (Murnane et al. 1991; Schlecty and Vance 1983; Weaver 1983). Comparisons of graduates' undergraduate grade point averages (GPAs), however, indicated either no difference between graduates who later taught at the K–12 level and those who did not, or that those who later taught had higher GPAs than their nonteaching peers (Book, Freeman, and Brousseau 1985; Henke et al. 1996).

Among 1999–2000 graduates, CEE scores and undergraduate GPAs continued to be associated with whether they had taught by 2001, although again in opposite directions.[8] As was found among 1992–93 bachelor's degree recipients with test scores available for analysis (Henke et al. 1996), among 1999–2000 bachelor's degree recipients with test scores, those with higher CEE scores were less likely than those with lower scores to have taught. Graduates with higher scores were also less likely than those with lower scores to have taught with certification.

In this study, the data also indicate that among all bachelor's degree recipients, teachers were more likely than nonteachers to have test scores available for analysis.[9] Whereas one-fourth of teachers did not have CEE scores available for analysis, 31 percent of nonteachers did not (figure 2). Among bachelor's degree recipients with CEE scores, teachers were more likely than nonteachers to have CEE scores in the lowest level of the cohort's test score distribution.

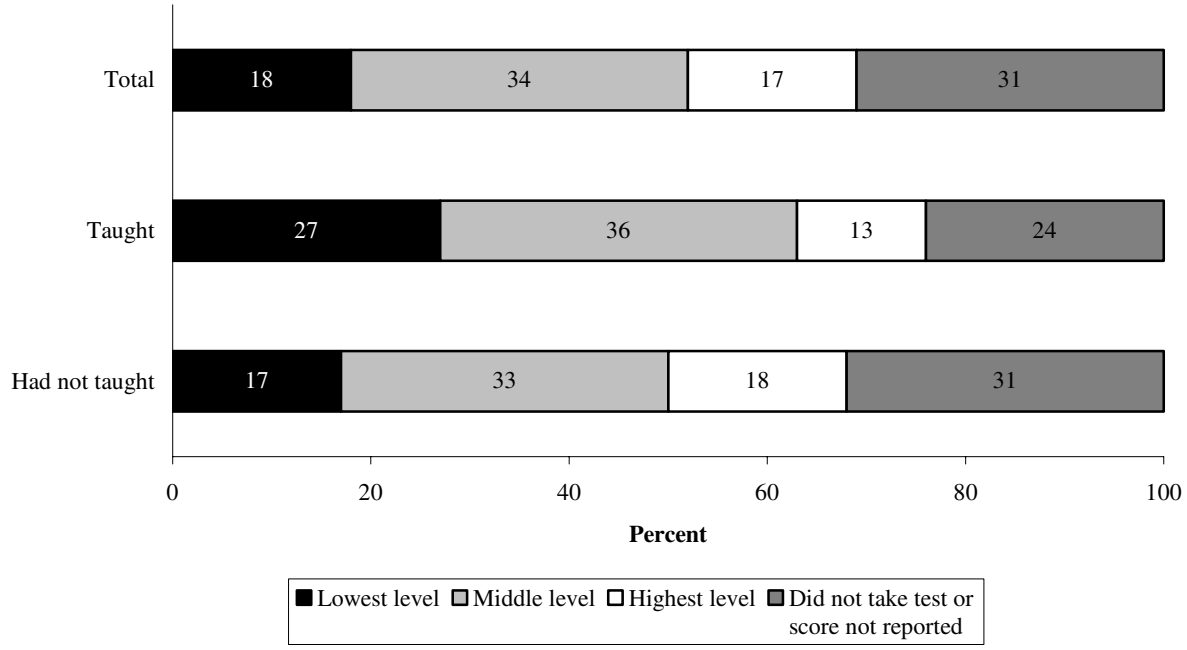
Graduates' cumulative GPAs, however, were positively related to having taught and specifically to having been certified and taught (table 2). This finding is also consistent with past research:sStudies of 1985–86, 1989–90, and 1992–93 bachelor's degree recipients 1 year after graduation found positive associations between preparing to teach and undergraduate GPAs (Frankel and Stowe 1990; Gray et al. 1993; Henke et al. 1996).

Although there is some evidence that teachers' academic achievement positively affects their students' achievement, good measures of teachers' academic achievement are difficult to obtain. The measures used in this study, teachers' CEE scores and their undergraduate GPAs, are not ideal because teachers take CEEs years before they begin their teaching careers and because

[8]CEE scores were derived from institution- or agency-reported SAT or ACT scores, where available. CEE score levels are defined as follows: the lowest level is the bottom 25 percent of scores within the cohort, the middle level is the middle 50 percent of scores within the cohort, and highest level is the top 25 percent of scores within the cohort.

[9]Additional analyses, related to these results and discussed in appendix B, indicate that findings concerning CEE scores may be confounded by the large proportions of graduates that did not have scores available for analysis.

Figure 2. Percentage distribution of 1999–2000 bachelor's degree recipients by college entrance examination score level, by teaching status: 2001



NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

GPAs have no single scale and vary among undergraduate majors and institutions. As previous research has demonstrated consistently, these two measures of achievement result in contradictory findings regarding achievement and teaching: graduates' scores were negatively related to teaching while GPAs were positively related to teaching.

Undergraduate Major Field of Study

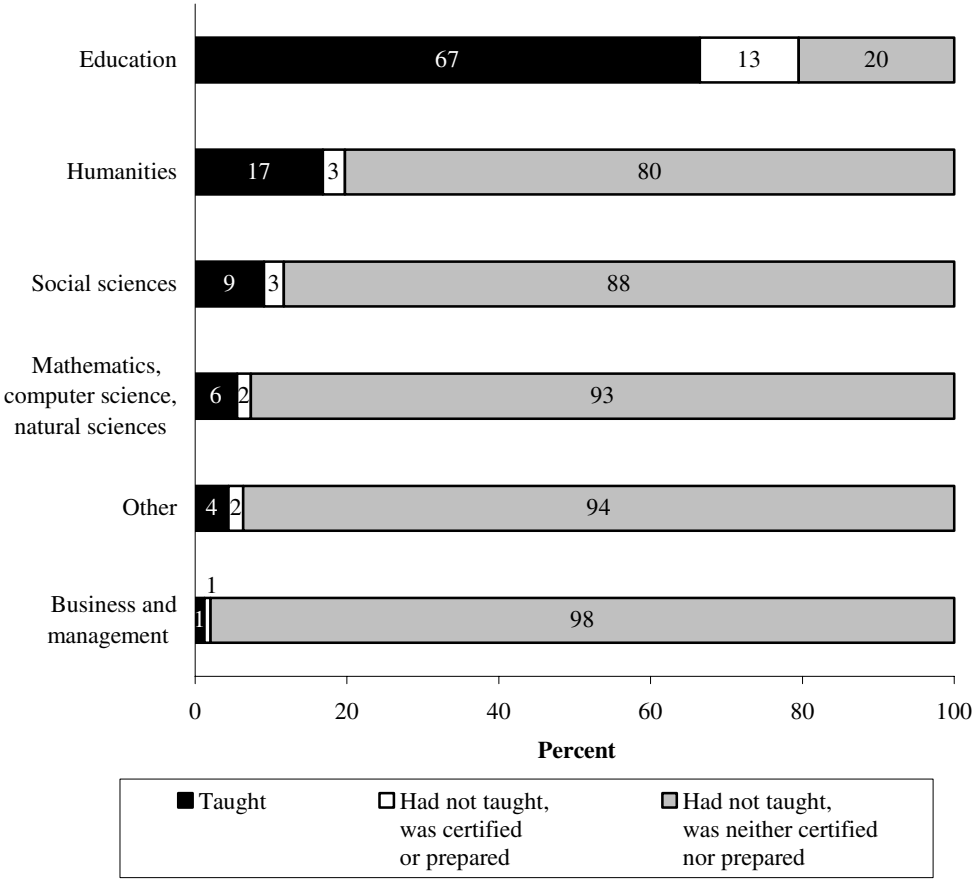
For some time, researchers and policymakers have paid particular attention to the depth of teachers' postsecondary education in the fields they teach (Ingersoll and Gruber 1996; NCTAF 1996, 1997; Seastrom et al. 2002; Wayne and Youngs 2003). As of 2001, 38 states (and Puerto Rico) required teachers to have a bachelor's degree with a major or minor in an academic content area to be certified (U.S. Department of Education 2002).[10] Furthermore, recent federal legislation requires that teachers in schools receiving certain types of federal funding be highly

[10]These states did not necessarily require all teachers to have a major or minor in an academic content area. In some cases, only middle or high school teachers were required to have them.

qualified in their fields (No Child Left Behind Act of 2001). This section examines the degree to which graduates who studied various academic fields as undergraduates became elementary and secondary school teachers or prepared to do so.

B&B:2000/01 data indicate, not surprisingly, that education majors were more likely than graduates who had majored in other fields both to have taught, regardless of certification or preparation, and to have prepared to teach if they had not taught. Two-thirds of education majors had taught by 2001, and 56 percent had taught with certification (figure 3 and table 2). Another 6

Figure 3. Percentage distribution of 1999–2000 bachelor's degree recipients by teaching status, by undergraduate major field of study: 2001



NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

percent taught with preparation but not certification, and 13 percent had prepared but not taught as of the 2001 interview. Following education majors, humanities majors were most likely to have taught—17 percent had done so by 2001. Humanities majors were followed by social sciences majors, 9 percent of whom had taught.

The B&B:2000/01 data also indicate that although education majors were considerably more likely than graduates who had majored in other fields to have taught and prepared to teach, many graduates who had taught by 2001 had not majored in education. About one-half (48 percent) of graduates who had taught had majored in education, 22 percent had majored in the humanities, 14 percent had majored in the social sciences, and 8 percent had majored in mathematics, computer science, or the natural sciences (table 3).

Table 3. Percentage distribution of 1999–2000 bachelor's degree recipients by undergraduate major field of study, by teaching status and level of school at which first taught after receiving the bachelor's degree: 2001

Teaching status and level of school	Business and management	Education	Humanities	Mathematics, computer science, natural sciences	Social sciences	Other
Total	21.1	8.9	16.5	17.4	18.3	17.9
Taught	2.1	47.5	22.3	8.1	13.5	6.5
Certified	1.4	57.9	18.6	6.9	9.9	5.3
Prepared, but not certified	1.7	44.8	28.0	8.9	9.9	6.8
Neither certified nor prepared	4.9	14.2	32.0	11.7	27.0	10.1
Had not taught	23.9	3.3	15.3	19.2	18.8	19.5
Certified or prepared	5.9	39.0	16.0	11.1	16.2	11.9
Neither certified nor prepared	24.5	2.1	15.3	19.5	18.9	19.8
Level of school where first taught after receiving bachelor's degree						
Elementary	0.8	61.2	18.2	6.2	9.4	4.2
Secondary	2.5	31.0	31.6	12.0	13.0	9.8
Combined	1.0	43.6	7.2	5.5	39.0	3.7

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Among graduates who had taught with certification by 2001, about one-fifth (19 percent) were humanities majors, one-tenth were social sciences majors, and 7 percent majored in mathematics, computer science, or a natural science. About 30 percent of those who taught with preparation but not certification were humanities majors, another 10 percent were social sciences

majors, and about 10 percent were mathematics, computer science, or natural sciences majors. In addition, 16 percent of those who had prepared to teach but not yet taught were humanities majors, another 16 percent were social sciences majors, and 11 percent were mathematics, computer sciences, or natural sciences majors.

The level of the school in which graduates taught in their first teaching jobs since college graduation was associated with the fields in which they had majored as undergraduates. Among this cohort of graduates, 61 percent of those who first taught in elementary schools had majored in education as undergraduates, in contrast to 31 percent of those who first taught in secondary level schools. About one-third (32 percent) of teachers among this cohort who began teaching in secondary schools majored in the humanities, compared with 18 percent of those who began in elementary schools and 7 percent of those who began in combined schools. About 40 percent of teachers in the cohort who had first taught in combined schools after completing their bachelor's degrees had majored in education (44 percent) and the social sciences (39 percent). Thus, although education majors were very likely to teach, graduates in other fields also pursued teaching, and particularly at the secondary level.

Teaching-Related Experiences

Newly qualified teachers who want to obtain teaching positions in particular schools or districts, or to earn a living while looking for positions in their field of preparation, may work as teacher's aides or substitute teachers for some period of time. Other graduates may take teacher's aide or substitute teaching positions to earn a living while pursuing other careers or as a means of exploring teaching as a potential career before investing time, money, and energy in a formal teacher preparation program. This section examines the proportions of 1999–2000 graduates who had not taught as of 2001, but who had worked in schools in an alternative capacity, had considered teaching, and had applied for a teaching position. The section also presents data concerning the reasons why graduates who had considered teaching but did not apply for a teaching position had chosen not to apply.

Working as a Teacher's Aide or Substitute Teacher

Among all 1999–2000 graduates, 6 percent had worked as a teacher's aide or substitute teacher as of 2001 (table 4). Two percent had done so in order to gain a permanent teaching position. Graduates who at some point taught were no more likely than all graduates to have worked as an aide or substitute, but were more likely to do so in order to gain a permanent position: among graduates who at some point did obtain a permanent teaching position, 6

Table 4. Of 1999–2000 bachelor's degree recipients, percentage who had worked as a teacher's aide or substitute teacher and percentage who had done so in order to gain a permanent teaching position, by teaching status: 2001

	Worked as teacher's aide or substitute teacher	
Teaching status	Total	To gain permanent teaching position
Total	5.5	2.0
Taught	6.1	3.8
Certified	5.5	3.4
Prepared, but not certified	7.8	6.8
Neither certified nor prepared	7.1	3.9
Had not taught	4.3	1.3
Certified or prepared	49.6	27.6
Neither certified nor prepared	2.7	0.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

percent had also worked as a teacher's aide or substitute teacher since receiving the bachelor's degree, including 4 percent who had done so to gain a permanent teaching position.

Overall, working as an aide or substitute teacher was not common among graduates who had not taught as of 2001. Among those who had not held a regular teaching position as of 2001, however, those who had become certified or who had prepared to teach were far more likely than those who had not prepared to teach to work as an aide or substitute (tables 4 and 5). Of the 3 percent of all graduates who had prepared or were certified to teach but had not taught as of 2001 (figure 1 and table 1), one-half had worked as a teacher's aide or substitute teacher, and 28 percent had done so to gain a permanent teaching position (tables 4 and 5). In comparison, only 3 percent of graduates who had not taught, prepared to teach, or become certified had worked in such a capacity, and less than 1 percent had done so to gain a permanent teaching position.

Among those who had not held a permanent teaching position as of 2001, some of the demographic and academic characteristics associated with teaching were also associated with whether they had worked as a teacher's aide or substitute teacher. For example, continuing the pattern already noted, women were more likely than men to have worked as an aide or substitute (5 percent compared with 3 percent) (table 5). Also, those who had scored in the lowest level of the CEE score distribution were more likely than those in the upper three levels (7 percent compared with 3–4 percent) to have worked as an aide or substitute. Working as an aide or substitute teacher was not observed to vary with graduates' cumulative undergraduate GPAs.

As with regular teaching positions, working as an aide or substitute teacher was related to undergraduate field of study. Approximately one-fourth of education majors who had not held

Table 5. Of 1999–2000 bachelor's degree recipients who had not taught, percentage who had worked as a teacher's aide or substitute teacher and percentage who had done so in order to gain a permanent teaching position, by selected characteristics: 2001

Selected characteristics	Worked as teacher's aide or substitute teacher	
	Total	To gain permanent teaching position
Total	4.3	1.3
Preparation to teach		
Certified or prepared	49.6	27.6
Neither certified nor prepared	2.7	0.4
Gender		
Male	3.3	0.9
Female	5.1	1.7
Race/ethnicity[1]		
American Indian	3.0	#
Asian/Pacific Islander	1.9	#
Black	4.9	1.3
White	4.3	1.5
Other	1.9	0.4
Hispanic	6.2	1.7
First institution type[2]		
Public 2-year	3.8	2.4
Public 4-year	4.6	1.1
Private not-for-profit 4-year	4.4	1.1
Degree-granting institution type		
Public		
Non-doctorate-granting	4.5	2.3
Doctorate-granting	4.3	0.9
Private not-for-profit		
Non-doctorate-granting	4.8	1.7
Doctorate-granting	3.7	1.1
Private for-profit 2-years or more[3]	1.7	0.7
College entrance examination score[4]		
Lowest level	7.0	2.7
Middle level	3.9	0.9
Highest level	3.3	0.6
Did not take test or score not available	3.8	1.5

See notes at end of table.

Table 5. Of 1999–2000 bachelor's degree recipients who had not taught, percentage who had worked as a teacher's aide or substitute teacher and percentage who had done so in order to gain a permanent teaching position, by selected characteristics: 2001—Continued

Selected characteristics	Worked as teacher's aide or substitute teacher	
	Total	To gain permanent teaching position
Cumulative undergraduate GPA		
Less than 2.25	5.9	1.3
2.25–2.74	3.8	0.9
2.75–3.24	4.3	1.6
3.25–3.74	4.6	1.0
3.75 or higher	3.9	2.1
Undergraduate field of study		
Business and management	1.4	0.2
Education	26.1	16.6
Humanities	5.2	1.3
Mathematics, computer science, natural sciences	1.9	0.8
Social sciences	6.5	1.3
Other	3.6	0.6

Rounds to zero.
[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.
[2] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.
[3] Includes 4-year degree-granting institutions.
[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.
NOTE: See glossary for a list of which specific fields of study are included in each listed category.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

regular teaching positions had worked as an aide or substitute as of 2001, a higher proportion than those observed in all other major fields. Social sciences and humanities majors were more likely than business/management or mathematics/computer science/natural sciences majors to have worked in these positions (5–7 percent vs. 1–2 percent). Thus, some factors associated with graduates' teaching and preparation to teach (i.e., gender, CEE scores, undergraduate field of study) were also associated with graduates' taking other teaching-related employment.

Considering Teaching

In several instances, whether graduates who had not taught reported that they had considered teaching varied with the characteristics observed in this study somewhat differently than did teaching or preparation to teach. For example, women and men considered teaching at

similar rates: among graduates who had not taught, nearly 37 percent—36 percent of men and 38 percent of women—had considered teaching (table 6). Among graduates who had not taught, those who had begun their postsecondary education in private not-for-profit 4-year institutions were more likely than those who began in public 4-year institutions to have considered teaching (40 percent compared with 35 percent). Generally, the proportion of graduates who had not taught, but had considered teaching, ranged from 34 to 40 percent regardless of the type of institution from which they received their 1999–2000 degrees, their CEE scores, and their cumulative undergraduate GPAs.[11]

As was observed with respect to teaching as of 2001, Asian/Pacific Islander graduates were less likely than Black and White graduates to have considered teaching (29 percent compared with 45 and 37 percent, respectively).[12] In addition, undergraduate major field of study was related to having considered teaching in some ways that were similar to its relationship with teaching as of 2001: humanities and social sciences majors were more likely than business/management, education, and mathematics/computer science/natural sciences majors to have considered teaching.[13]

Otherwise, characteristics that were associated with teaching—gender, type of degree-granting institution, CEE score, cumulative GPA in undergraduate major field of study—were not associated with having considered teaching. In addition, the type of postsecondary institution in which graduates had begun postsecondary education, which was not associated with whether graduates had taught, was associated with their having considered teaching (if they had not taught). Considering teaching, therefore, may be something of a different phenomenon from teaching or preparing to teach.

Applying for Teaching Among Those Who Had Considered

Applying for a teaching position by 2001 could be considered an intermediate step between having considered teaching and preparing or having taught as of 2001. Bachelor's degree

[11]There was one exception to this pattern: among graduates who had not taught, graduates of public doctorate-granting institutions were less likely than graduates of private not-for-profit doctorate-granting institutions to have considered teaching. In addition, although the proportion of graduates of private for-profit institutions appears to be greater (49 percent), there was no statistical evidence to support the conclusion that this proportion was different from those observed among graduates of other institution types.

[12]Although it appears that Asian/Pacific Islander graduates were also less likely than Hispanic graduates to have considered teaching, this difference was not statistically significant.

[13]Note that because a large proportion of graduates who had majored in education had already taught or prepared/become certified to teach, fewer education majors merely considered teaching. In addition, some graduates who majored in education taught at the prekindergarten or postsecondary levels, in adult schools (i.e., schools for adults who have not yet completed secondary education), or other settings outside elementary/secondary education. These graduates may well have reported that they did not consider elementary/secondary education.

Table 6. Of 1999–2000 bachelor's degree recipients who had not taught, percentage who had only considered teaching; of 1999–2000 bachelor's degree recipients who had not taught but had at least considered teaching, percentage who had applied for a teaching position, by selected characteristics: 2001

Selected characteristics	Only considered teaching[1]	Of graduates who had not taught but had at least considered teaching, percent who had applied for teaching position[2]
Total	37.0	9.0
Preparation to teach		
Certified or prepared	†	43.5
Neither certified nor prepared	38.3	7.4
Gender		
Male	35.9	8.0
Female	37.9	9.7
Race/ethnicity[3]		
American Indian	44.2	‡
Asian/Pacific Islander	28.9	9.0
Black	44.6	13.6
White	36.8	8.1
Other	33.9	6.5
Hispanic	39.0	10.8
First institution type[4]		
Public 2-year	38.5	8.5
Public 4-year	34.9	9.2
Private not-for-profit 4-year	40.0	9.0
Degree-granting institution type		
Public		
Non-doctorate-granting	38.7	9.7
Doctorate-granting	34.1	8.7
Private not-for-profit		
Non-doctorate-granting	40.0	9.5
Doctorate-granting	39.0	8.6
Private for-profit 2-years or more[5]	49.3	6.9
College entrance examination score[6]		
Lowest level	34.9	10.1
Middle level	34.3	9.4
Highest level	38.4	5.8
Did not take test or score not available	40.2	9.8

See notes at end of table.

Table 6. Of 1999–2000 bachelor's degree recipients who had not taught, percentage who had only considered teaching; of 1999–2000 bachelor's degree recipients who had not taught but had at least considered teaching, percentage who had applied for a teaching position, by selected characteristics: 2001—Continued

Selected characteristics	Only considered teaching[1]	Of graduates who had not taught but had at least considered teaching, percent who had applied for teaching position[2]
Cumulative undergraduate GPA		
Less than 2.25	35.8	12.5
2.25–2.74	35.1	9.8
2.75–3.24	39.1	9.1
3.25–3.74	36.3	8.4
3.75 or higher	36.2	8.2
Undergraduate field of study		
Business and management	32.5	6.5
Education	31.4	25.7
Humanities	48.9	10.0
Mathematics, computer science, natural sciences	33.5	7.0
Social sciences	43.3	10.0
Other	31.5	7.4

† Not applicable.
‡ Reporting standards not met (too few cases).
[1] Numerator includes graduates who had neither taught nor prepared to teach, but had considered teaching.
[2] Denominator includes graduates who had not taught, but who had become certified, otherwise prepared to teach, or considered teaching.
[3] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.
[4] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.
[5] Includes 4-year degree-granting institutions.
[6] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.
NOTE: See glossary for a list of which specific fields of study are included in each listed category.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

recipients who had not taught as of 2001, but who had at least considered teaching, were asked whether they had applied for a teaching position since completing the 1999–2000 degree.[14] Of

[14]Respondents who had not taught as of 2001, and a) were certified to teach, b) had completed a teacher education program or had completed a student teaching assignment, or c) had considered teaching were asked whether they had applied for a teaching position.

this group as a whole, 9 percent had applied. Among those who had prepared to teach, 43 percent had applied, compared with 7 percent among those who had only considered teaching.[15]

Of the demographic and undergraduate academic characteristics examined in this report, graduates' CEE and undergraduate majors were associated with whether those who had not taught but had at least considered teaching had applied for a teaching position. Nonteachers who had at least considered teaching were less likely to have applied to teach if their CEE scores were in the highest level among 1999–2000 graduates than if their scores were in the lower levels (6 percent compared with 9 to 10 percent). On the other hand, nonteaching graduates who had majored in education were more likely than those in other majors to have applied (26 percent compared with 10 percent or less). Thus, applying for a teaching position in the year following college graduation was associated with relatively few of the undergraduate academic characteristics observed in this study.

Reasons for Not Applying

Among graduates who had not taught but had indicated some interest in teaching (that is, had prepared to teach, worked as a substitute teacher or teacher's aide, or reported considering teaching), 91 percent had not applied for a teaching position (table 7). These graduates were asked why they had not applied, and interviewers coded their responses into up to three reasons for not applying into the following specific categories: graduate was not interested in teaching, graduate thought/felt that teaching conditions were poor, graduate wanted a higher salary than s/he thought available in teaching, graduate already had another job, graduate had received an offer for a better job, graduate was unable to pass required tests, graduate had not yet taken the required tests, graduate was not yet certified, and all other reasons.

It appears that some of these graduates may have intended to apply for a position when they had become certified to teach or had reached some milestone on the way to certification: One-fourth had not applied because they were not yet certified, and 7 percent had not applied because they had not yet taken the required tests.

Some nonteachers who had at least considered teaching appeared to have rejected the profession because it no longer appealed to them or other careers seemed more appealing. One-fifth reported that they were not interested in teaching (presumably they had considered the profession previously but were no longer interested at the time of the interview). In addition, 13

[15]Those who had applied for teaching jobs but have not taught for any of several reasons. For example, they may not have received offers for teaching jobs yet, have accepted an offer but not yet begun work, or have declined all offers received.

Table 7. Of 1999–2000 bachelor's degree recipients who had not taught as of 2001 interview but had at least considered teaching, percentage who did not apply for teaching position; of those, percentage who did not apply for various reasons, by selected characteristics: 2001

Selected characteristics	Of those who had not taught but had at least considered teaching, percent who had not applied for teaching position	Reason for not applying for teaching position								
		Not interested in teaching	Poor teaching conditions	Wanted higher salary	Already in another job	Got better job offer	Unable to pass tests	Had not taken required tests	Was not yet certified	Other
Total	91.0	19.6	1.9	12.7	17.0	2.9	0.1	6.6	24.9	33.2
Gender 1999–2000										
Male	92.0	23.4	1.6	16.9	17.7	3.3	0.2	5.9	18.7	32.5
Female	90.3	16.6	2.2	9.5	16.4	2.6	#	7.2	29.8	33.8
Race/ethnicity[1]										
American Indian	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander	91.0	18.2	0.7	13.1	14.4	1.5	#	1.4	19.5	42.6
Black	86.4	18.1	2.6	10.5	18.7	1.3	#	8.5	18.0	39.0
White	91.9	20.5	1.8	12.9	17.5	3.2	0.1	6.5	26.3	30.9
Other	93.5	17.2	#	21.3	14.9	2.8	#	2.8	15.6	42.4
Hispanic	89.2	15.5	4.0	12.0	13.1	3.2	#	10.4	26.1	38.6
First institution type[2]										
Public 2-year	91.5	20.1	2.0	13.1	16.7	1.0	0.4	7.3	24.5	27.9
Public 4-year	90.8	17.5	1.7	12.7	18.1	3.1	#	6.4	27.3	33.8
Private not-for-profit 4-year	91.0	22.8	1.5	12.3	16.6	3.6	#	6.0	21.4	35.3
Degree-granting institution type										
Public										
Non-doctorate-granting	90.3	15.8	1.3	12.5	14.3	4.2	#	7.1	34.1	30.8
Doctorate-granting	91.3	19.7	2.8	13.5	19.2	2.4	#	5.7	22.5	33.3
Private not-for-profit										
Non-doctorate-granting	90.6	21.1	1.2	8.6	15.4	2.4	0.3	7.4	27.8	32.0
Doctorate-granting	91.4	24.2	1.4	17.3	16.6	3.7	#	6.6	17.3	35.2
Private for-profit 2-years or more[3]	93.2	6.6	#	8.1	14.4	0.5	#	11.4	18.8	49.0

See notes at end of table.

Table 7. Of 1999–2000 bachelor's degree recipients who had not taught as of 2001 interview but had at least considered teaching, percentage who did not apply for teaching position; of those, percentage who did not apply for various reasons, by selected characteristics: 2001—Continued

Selected characteristics	Of those who had not taught but had at least considered teaching, percent who had not applied for teaching position	Reason for not applying for teaching position								
		Not interested in teaching	Poor teaching conditions	Wanted higher salary	Already in another job	Got better job offer	Unable to pass tests	Had not taken required tests	Was not yet certified	Other
College entrance examination score[4]										
Lowest level	89.9	18.4	1.6	10.1	16.6	2.0	0.4	9.1	30.9	30.0
Middle level	90.6	20.2	1.5	11.7	18.1	3.6	#	5.4	27.6	30.5
Highest level	94.2	25.3	2.3	16.3	14.5	3.4	#	4.5	19.6	35.5
Did not take test or score not available	90.3	16.5	2.3	13.0	17.5	2.4	#	7.7	22.7	35.9
Cumulative undergraduate GPA										
Less than 2.25	87.5	19.9	0.4	9.8	9.7	2.3	1.8	5.8	28.5	32.6
2.25–2.74	90.3	17.0	3.0	15.3	14.8	2.3	#	8.8	25.3	32.0
2.75–3.24	90.9	19.5	1.5	12.0	19.8	2.2	#	5.6	25.5	31.6
3.25–3.74	91.6	21.3	1.8	13.1	15.2	3.6	#	6.7	24.0	34.4
3.75 or higher	91.8	19.5	2.8	12.4	18.4	3.7	#	7.0	22.7	37.2
Undergraduate field of study										
Business and management	93.5	17.0	0.9	16.4	14.7	3.4	#	8.0	22.3	35.9
Education	74.3	16.0	#	7.2	17.1	1.0	2.1	4.8	42.6	35.0
Humanities	90.0	21.7	3.3	10.4	14.7	1.6	#	6.0	30.4	31.0
Mathematics, computer science, natural sciences	93.0	21.1	1.1	17.8	21.9	2.9	#	6.1	15.5	33.0
Social sciences	90.0	18.5	2.6	10.8	16.3	2.7	#	5.8	29.3	33.0
Other	92.6	21.0	1.9	9.2	18.2	4.3	#	7.4	22.7	32.6

Rounds to zero.

‡ Reporting standards not met (too few cases).

[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.

[2] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[3] Includes 4-year degree-granting institutions.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: Includes those who had become certified or otherwise prepared to teach, had worked as teacher's aide or substitute teacher, or considered teaching. See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

percent indicated that they wanted a higher salary than that available in teaching, 3 percent had received a better job offer, and 2 percent cited poor teaching conditions.

Men and women differed in their reasons for not applying for teaching positions. Men were more likely than women to report that they did not apply because they were not interested in teaching or wanted higher salaries (23 and 17 percent compared with 17 and 9 percent, respectively). Women, on the other hand, were more likely than men (30 percent versus 19 percent) to report that they had not applied because they were not yet certified, perhaps indicating an intention to teach in the future.

The types of postsecondary institutions in which graduates first enrolled and from which they received their bachelor's degrees were also related to their reasons for not applying for teaching positions. Graduates who began postsecondary education in public 4-year institutions were more likely than those who began in private not-for-profit 4-year institutions to not apply because they were not yet certified. At the same time, graduates who began in public 4-year institutions were less likely than those who began in private not-for-profit 4-year institutions to not apply because they were not interested in teaching.

Those who received their degrees from public 4-year non-doctorate-granting institutions were more likely than those from doctorate-granting institutions not to have applied because they were not certified (34 percent compared with 23 and 17 percent, respectively). Similarly, in private not-for-profit institutions, those who graduated from non-doctorate-granting institutions were more likely than their counterparts from doctorate-granting institutions to have given this reason for not applying for teaching positions (28 percent compared with 17 percent).

Although graduates' test scores were associated with their reasons for not applying to teach, their undergraduate grades appear not to have been. The higher graduates' CEE scores, the more likely they were to not apply for a teaching position because they were not interested in teaching or wanted a higher salary. For example, one-fourth of graduates with scores in the highest level did not apply because they were not interested in teaching, compared with 18 percent of those with scores in the lowest level. Graduates' scores were inversely related to not applying because they were not yet certified.

Graduates' majors in college were associated with some of the reasons they gave for not applying for teaching positions. Mathematics, computer science, and natural sciences majors were more likely than humanities and social sciences majors to have not applied for a teaching position because they wanted higher salaries. Mathematics, computer science, and natural

sciences majors and business and management majors were also more likely than "other"[16] majors to have not applied for this reason. Education majors were more likely than those who majored in business and management; mathematics, computer science, and the natural sciences; and "other" majors to have not applied because they were not yet certified (43 percent compared with 16 to 23 percent). In addition, those who majored in the humanities, social sciences, and "other" fields were more likely than mathematics, computer science, and natural sciences majors to have not applied because they were not yet certified. However, no difference was detected among graduates of different majors in the likelihood of not applying to teach because they were not interested in teaching.

Thus, graduates with some of the characteristics that were associated with teaching and preparing to teach (i.e., being a woman; receiving the bachelor's degree from a non-doctorate-granting institution; having higher CEE scores; majoring in education, the humanities, or social sciences as an undergraduate) were more likely than other graduates to report that they had not applied for a teaching position because they were not yet certified or had yet to achieve milestones related to certification. To the degree that this reason indicates an inclination to teach once certified, these results are consistent with those observed with respect to teaching and preparing to teach.

Teaching Experiences of Those Who Had Taught

Although new college graduates' attrition from teaching is no more frequent than their attrition from other occupations held within the first year of completing the bachelor's degree (Henke and Zahn 2001), from the perspectives of some education policymakers and administrators, attrition remains a concern because of its implications for the cost and quality of the teacher workforce (Ingersoll 2001; NCTAF 2003). Recruiting students into teacher education programs, training them, and then recruiting new teachers, hiring them, and providing support and training for new teachers all cost valuable resources (NCTAF 2003). In addition, students' achievement is positively correlated with their teachers' years of experience (Murnane and Phillips 1981; Rockoff 2004; Wayne and Youngs 2003).

New teachers, by definition, have the least seniority in their schools and districts, and therefore, it has been asserted, receive the most difficult teaching assignments (NCTAF 1996). Regardless of how difficult their teaching assignments, new teachers have, traditionally, assumed the same level of responsibility as highly experienced teachers, and, at least historically, have received little support (NCTAF 1996). Consequently, improving teachers' experiences in their

[16]See appendix A for a list of majors included in the "other" category.

first few years on the job is believed to be key to retaining more teachers (NCTAF 2003; National Governor's Association 2000; Veenman 1984). Policy efforts related to this goal include providing new teachers with such support as mentor teachers, reduced teaching loads, and targeted professional development programs.

This section addresses specific aspects of graduates' first teaching experiences after receiving their bachelor's degrees: the sector and level of the school in which they first taught, the subjects they taught in their first postgraduation teaching jobs, their satisfaction with various aspects of teaching, and their perceptions of the degree to which new teachers in their schools received support vis-a-vis various aspects of teaching. The discussions of their schools' sector and level and of the subjects they taught in this job provide some context for understanding their work overall and in particular, their responses to the questions on satisfaction and support for new teachers.

Sector of School Where First Taught After 1999–2000 Bachelor's Degree

Among 1999–2000 bachelor's degree recipients who had taught as of 2001, 91 percent had taught in a public school and 9 percent in a private school in their first teaching job after receiving the bachelor's degree (table 8). To put these estimates in context, the vast majority of teachers in U.S. schools teach in public schools: in 1999–2000, 87 percent of all teachers taught in public schools and 13 percent taught in private schools.[17] In general, the proportion of teachers who teach in public schools increases with teachers' experience. For example, in 1999–2000, 80 percent of teachers with less than 3 years of teaching experience taught in public schools, compared with 91 percent of teachers with more than 20 years of experience.[18] Compared with both all 1999–2000 teachers and all less experienced 1999–2000 teachers (i.e., those with 3 or fewer years of teaching experience), 1999–2000 college graduates who had taught as of 2001 were more likely to have taught in a public school.

About 90 percent of men, women, and White teachers had first taught in a public school after receiving the 1999–2000 degree. Black teachers were more likely than White teachers to have first taught in a public school after receiving the degree (99 percent versus 90 percent).

Bachelor's degree recipients who had begun their postsecondary education in private not-for-profit 4-year institutions were less likely than other graduates to have taught in a public school in their first teaching job after receiving the bachelor's degree (79 percent versus 95

[17]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

[18]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

Table 8. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage distribution by sector of school of first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001

Selected characteristics	Public	Private
Total	90.8	9.2
Gender		
Male	90.1	9.9
Female	91.1	8.9
Race/ethnicity[1]		
American Indian	‡	‡
Asian/Pacific Islander	‡	‡
Black	98.9	1.1
White	89.7	10.3
Other	‡	‡
Hispanic	93.1	6.9
First institution type[2]		
Public 2-year	94.5	5.5
Public 4-year	94.8	5.2
Private not-for-profit 4-year	78.7	21.3
Degree-granting institution type		
Public		
Non-doctorate-granting	96.1	3.9
Doctorate-granting	94.9	5.1
Private not-for-profit		
Non-doctorate-granting	80.7	19.3
Doctorate-granting	80.4	19.6
Private for-profit 2-years or more[3]	‡	‡
College entrance examination score[4]		
Lowest level	91.3	8.7
Middle level	90.0	10.0
Highest level	84.1	15.9
Did not take test or score not available	94.6	5.4
Cumulative undergraduate GPA		
Less than 2.25	‡	‡
2.25–2.74	91.5	8.5
2.75–3.24	90.5	9.6
3.25–3.74	91.8	8.2
3.75 or higher	89.8	10.2
Undergraduate field of study		
Business and management	‡	‡
Education	90.6	9.4
Humanities	91.2	8.8
Mathematics, computer science, natural sciences	91.3	8.7
Social sciences	91.0	9.0
Other	88.5	11.5

‡ Reporting standards not met (too few cases).

[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.

[2] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[3] Includes 4-year degree-granting institutions.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

percent). Similarly, graduates who received their degrees from private not-for-profit institutions were less likely than those who received their degrees from public institutions to have first taught in a public school (80–81 percent versus 95–96 percent, respectively). Neither graduates' undergraduate academic performance nor their undergraduate major field of study was observed to vary with the sector of school in which they first taught after receiving the bachelor's degree.

Level of School Where First Taught After 1999–2000 Bachelor's Degree

About two-thirds of all graduates who had taught within a year of completing a bachelor's degree in 1999–2000 first did so in an elementary school (table 9). Thirty percent first taught in secondary schools and about 4 percent in combined schools (i.e., schools that combine elementary and secondary grades, such as K–12 schools). Among all U.S. teachers in 1999–2000, 63 percent taught in elementary schools, 31 percent in secondary schools, and 6 percent in combined schools.[19]

Among graduates who taught in their first year out of college, the percentage of women who taught at the elementary school level was higher than the percentage of men who taught at the elementary school level (70 vs. 53 percent, respectively), while the opposite holds true for teaching at the secondary school level (27 vs. 40 percent for women and men, respectively) and in combined elementary/secondary schools (3 vs. 7 percent for women and men, respectively).

Both the type of institution in which graduates began postsecondary education and their CEE scores were associated with the level of school in which they first taught after receiving the bachelor's degree. Graduates who began postsecondary education in community colleges were more likely than other graduates to have first taught in elementary schools (74 percent versus 60 to 65 percent). In addition, graduates with CEE scores in the highest level of the score distribution were more likely than their peers to have first taught in a secondary school (48 percent compared with 25 to 32 percent) and less likely to have first taught in an elementary school (48 percent versus 64 to 71 percent).

Teachers who majored in education as undergraduates were more likely than their peers who majored in other fields to have first taught in an elementary school: 78 percent of education majors first taught in an elementary school, compared with 48 to 56 percent of graduates who majored in other fields. Similarly, education majors were less likely than those who majored in other fields to have first taught in a secondary school (19 percent versus 34 to 50 percent). These

[19]U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, "Teacher Questionnaires," 1999–2000, unpublished tabulations.

Table 9. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage distribution by level of school of first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001

Selected characteristics	Elementary	Secondary	Combined[1]
Total	65.8	30.0	4.2
Gender			
Male	52.8	39.8	7.4
Female	70.3	26.7	3.1
Race/ethnicity[2]			
American Indian	‡	‡	‡
Asian/Pacific Islander	‡	‡	‡
Black	71.5	25.3	3.3
White	64.5	31.5	4.0
Other	‡	‡	‡
Hispanic	72.6	22.1	5.2
First institution type[3]			
Public 2-year	74.5	22.6	3.0
Public 4-year	64.7	32.2	3.2
Private not-for-profit 4-year	60.1	32.6	7.3
Degree-granting institution type			
Public			
Non-doctorate-granting	72.3	25.4	2.3
Doctorate-granting	61.9	34.5	3.6
Private not-for-profit			
Non-doctorate-granting	65.8	26.6	7.6
Doctorate-granting	61.3	34.8	3.9
Private for-profit 2-years or more[4]	‡	‡	‡
College entrance examination score[5]			
Lowest level	70.7	25.1	4.2
Middle level	64.3	31.8	3.9
Highest level	47.6	47.7	4.7
Did not take test or score not available	70.5	25.1	4.4
Cumulative undergraduate GPA			
Less than 2.25	‡	‡	‡
2.25–2.74	66.1	29.1	4.8
2.75–3.24	67.7	27.8	4.6
3.25–3.74	64.4	32.5	3.2
3.75 or higher	63.1	32.0	5.0

See notes at end of table.

Table 9. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage distribution by level of school of first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001—Continued

Selected characteristics	Elementary	Secondary	Combined[1]
Undergraduate field of study			
Business and management	‡	‡	‡
Education	78.0	18.5	3.5
Humanities	56.0	42.5	1.5
Mathematics, computer science, natural sciences	51.2	45.9	2.9
Social sciences	51.6	34.0	14.5
Other	47.7	49.7	2.6

‡ Reporting standards not met (too few cases).
[1] Combined schools had grades ranging from below grade 7 to above grade 8.
[2] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.
[3] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.
[4] Includes 4-year degree-granting institutions.
[5] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.
NOTE: Detail may not sum to totals because of rounding. See glossary for a list of which specific fields of study are included in each listed category.
SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

differences may reflect, at least in part, many states' requirements that middle- or secondary-grade teachers have undergraduate majors in an academic discipline (rather than in education) for state certification (U.S. Department of Education 2002).

Subjects Taught in First Teaching Job After 1999–2000 Bachelor's Degree

In the 2001 interview, graduates who had taught reported all of the subjects that they had taught in the first teaching job they held after receiving the bachelor's degree. Reflecting, in part, the distribution of teachers among elementary, secondary, and combined schools, about 30 percent taught elementary or early childhood education; about one-fourth taught English, reading, or writing; about one-fifth taught mathematics; 17 percent taught science; and 15 percent taught social studies or history (tables 10a–b).[20] Eight percent or less taught each of several other subjects.[21]

[20]School level and teaching field are correlated to a limited degree. Teachers in elementary schools may teach specific subjects (e.g., mathematics, science, reading, art, PE, etc.) or specific populations (e.g., special education students, LEP students, bilingual/ESL classes, etc.). In addition, the NCES definition of elementary-level schools, provided in appendix A, includes schools that serve grades 6 through 8, many of which have departmentalized organization.
[21]Total sums to more than 100 percent because some graduates taught more than one subject.

Table 10a. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who taught various subjects in first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001

Selected characteristics	Art/ drama/ music	Business	Economics/ politics	Elementary/ early childhood education	English/ reading/ writing	ESL/bilingual	Foreign languages	Health/ physical education
Total	7.8	0.7	0.3	30.6	25.8	2.5	4.8	6.5
Gender								
Male	8.8	1.7	0.5	15.5	20.3	1.1	1.6	14.8
Female	7.4	0.4	0.3	36.2	27.8	3.1	6.0	3.4
Race/ethnicity[1]								
American Indian	‡	‡	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander	‡	‡	‡	‡	‡	‡	‡	‡
Black	#	3.9	1.0	35.6	19.3	0.9	2.4	4.7
White	8.8	0.5	0.2	27.9	27.8	1.6	3.5	6.4
Other	‡	‡	‡	‡	‡	‡	‡	‡
Hispanic	5.4	#	#	45.9	16.8	8.4	12.5	9.5
First institution type[2]								
Public 2-year	8.4	0.6	0.4	34.6	26.0	1.7	1.0	9.2
Public 4-year	7.8	0.2	0.3	30.3	26.4	2.8	6.3	4.9
Private not-for-profit 4-year	7.4	1.6	0.4	26.5	24.8	2.8	5.6	7.1
Degree-granting institution type								
Public								
Non-doctorate-granting	3.9	0.4	0.5	33.6	29.1	3.1	2.7	7.6
Doctorate-granting	8.8	1.3	0.1	28.5	25.5	2.1	5.3	6.5
Private not-for-profit								
Non-doctorate-granting	9.8	0.4	0.3	31.4	21.3	1.3	6.2	5.5
Doctorate-granting	10.4	0.4	1.1	27.7	28.1	5.5	5.2	5.6
Private for-profit 2-years or more[3]	‡	‡	‡	‡	‡	‡	‡	‡
College entrance examination score[4]								
Lowest level	5.7	1.5	0.6	38.8	27.1	0.8	3.8	7.5
Middle level	8.0	0.2	0.3	28.7	24.2	2.6	5.4	7.2
Highest level	15.4	0.3	#	13.4	30.4	1.2	6.4	2.5
Did not take test or score not available	6.2	0.8	0.1	32.2	24.3	5.2	4.3	6.4

See notes at end of table.

Table 10a. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who taught various subjects in first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001—Continued

Selected characteristics	Art/ drama/ music	Business	Economics/ politics	Elementary/ early childhood education	English/ reading/ writing	ESL/bilingual	Foreign languages	Health/ physical education
Cumulative undergraduate GPA								
Less than 2.25	‡	‡	‡	‡	‡	‡	‡	‡
2.25–2.74	6.1	0.4	0.8	38.9	17.9	2.0	7.0	2.8
2.75–3.24	4.8	0.2	0.2	34.8	22.8	3.3	3.9	9.8
3.25–3.74	10.3	0.7	0.5	26.7	32.2	1.9	2.0	4.8
3.75 or higher	11.3	0.3	#	25.1	26.4	3.6	10.6	3.4
Undergraduate field of study								
Business and management	‡	‡	‡	‡	‡	‡	‡	‡
Education	4.5	0.1	0.4	42.0	27.3	2.0	2.1	6.4
Humanities	23.3	#	#	14.9	38.1	6.7	12.6	0.9
Mathematics, computer science, natural sciences	3.3	0.7	#	22.8	9.8	1.6	0.8	5.4
Social sciences	2.1	#	0.9	28.5	17.0	#	7.8	2.7
Other	0.8	#	#	16.4	19.8	0.4	#	35.9

Rounds to zero.

‡ Reporting standards not met (too few cases).

[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.

[2] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[3] Includes 4-year degree-granting institutions.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Table 10b. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who taught various subjects in first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001

Selected characteristics	Mathematics	Science	Special education	Social studies/ history	Vocational/ occupational	Other type of education
Total	21.4	16.9	6.0	14.7	2.5	4.8
Gender						
Male	18.9	19.9	6.1	16.2	3.8	5.2
Female	22.3	15.8	5.9	14.1	2.1	4.6
Race/ethnicity[1]						
American Indian	‡	‡	‡	‡	‡	‡
Asian/Pacific Islander	‡	‡	‡	‡	‡	‡
Black	19.2	14.7	4.8	15.1	9.3	5.0
White	22.8	18.2	6.3	15.3	2.3	5.0
Other	‡	‡	‡	‡	‡	‡
Hispanic	14.5	9.5	5.7	10.5	#	3.4
First institution type[2]						
Public 2-year	22.4	14.9	5.7	11.8	2.6	5.2
Public 4-year	21.2	18.4	5.5	14.8	3.3	5.3
Private not-for-profit 4-year	22.0	16.6	7.0	16.3	1.2	3.5
Degree-granting institution type						
Public						
Non-doctorate-granting	23.6	19.4	5.4	15.3	3.1	4.9
Doctorate-granting	16.7	15.5	5.9	14.3	3.1	4.9
Private not-for-profit						
Non-doctorate-granting	26.0	18.7	7.6	16.3	1.8	2.8
Doctorate-granting	22.9	11.5	4.2	10.7	0.4	8.7
Private for-profit 2-years or more[3]	‡	‡	‡	‡	‡	‡
College entrance examination score[4]						
Lowest level	19.0	12.7	8.1	12.7	3.0	4.9
Middle level	20.8	20.4	6.3	18.8	3.0	5.7
Highest level	22.3	16.3	2.1	9.5	#	3.3
Did not take test or score not available	24.5	16.7	4.9	13.2	2.5	4.1

See notes at end of table.

Table 10b. Of 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who taught various subjects in first teaching job after receiving the 1999–2000 degree, by selected characteristics: 2001—Continued

Selected characteristics	Mathematics	Science	Special education	Social studies/ history	Vocational/ occupational	Other type of education
Cumulative undergraduate GPA						
Less than 2.25	‡	‡	‡	‡	‡	‡
2.25–2.74	20.8	12.9	5.6	14.0	3.0	7.6
2.75–3.24	22.2	19.3	7.3	14.7	3.7	3.3
3.25–3.74	22.3	18.0	4.8	13.2	2.0	5.0
3.75 or higher	20.7	13.1	8.1	17.0	1.6	4.9
Undergraduate field of study						
Business and management	‡	‡	‡	‡	‡	‡
Education	27.0	20.6	7.0	15.2	1.3	3.8
Humanities	11.6	8.4	2.5	10.6	0.2	3.7
Mathematics, computer science, natural sciences	32.9	25.5	2.3	9.7	2.3	6.6
Social sciences	13.6	11.5	7.9	29.6	3.6	7.6
Other	9.5	15.5	12.4	2.8	11.9	9.0

Rounds to zero.

‡ Reporting standards not met (too few cases).

[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.

[2] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[3] Includes 4-year degree-granting institutions.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Women were twice as likely as men (36 percent compared with 16 percent) to have taught elementary or early childhood education, and more likely than men (28 percent compared with 20 percent) to have taught English, reading, or writing. Men were more likely than women to have taught in health or physical education in their first teaching jobs after receiving the bachelor's degree (15 percent compared with 3 percent).

Just as first teaching in an elementary or secondary school was associated with graduates' CEE scores, so was teaching elementary/early childhood education. The higher graduates' CEE scores, the less likely they were to have taught elementary/early childhood education in their first teaching jobs. In addition, graduates with scores in the highest level of the CEE score distribution were more likely than other graduates to have taught art, drama, or music in their first teaching jobs. Graduates with scores in the highest level were less likely than others to have taught health or physical education in their first teaching jobs. These data indicate no significant association between the proportion of graduates who taught a foreign language or mathematics in their first teaching job and graduates' CEE scores.

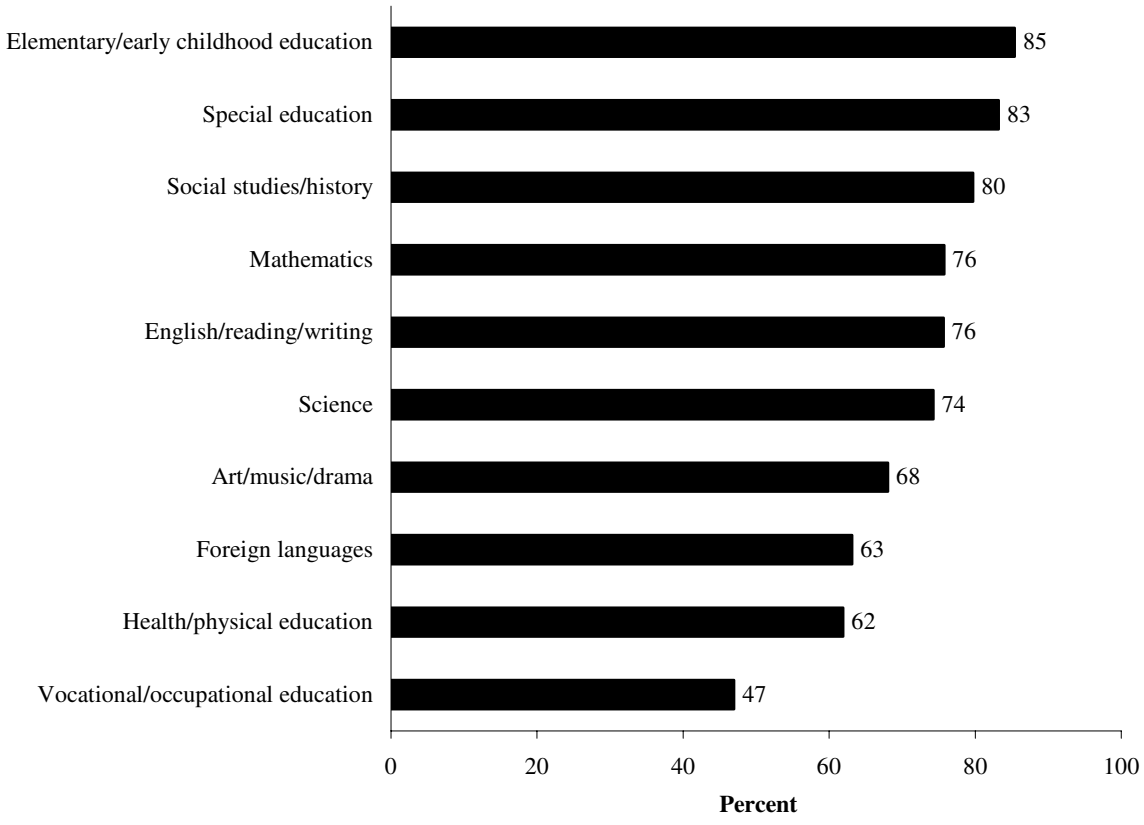
Among those who taught, graduates' cumulative undergraduate GPAs were associated with the fields they taught in their first teaching jobs after graduation. For example, graduates with lower cumulative undergraduate GPAs were more likely to have taught elementary or early childhood education in their first jobs: nearly 40 percent of those with GPAs between 2.25 and 2.74 taught this subject, compared with 25 percent of those who had GPAs of 3.75 or higher. Graduates with higher GPAs were more likely than those with lower GPAs to have taught art, drama, or music or English, reading or writing. These data did not indicate a relationship between the proportion of graduates who taught mathematics, science, and social studies or history and graduates' cumulative undergraduate GPAs.

In their first teaching jobs, graduates often, but not always, taught subjects related to the fields in which they had majored as undergraduates. For example, among new social sciences graduates who taught, 30 percent taught social studies or history in their first teaching jobs, and graduates in no other field were more likely to have taught social studies in their first teaching jobs. Likewise, education majors were more likely than any other major to have taught elementary/early childhood education in their first teaching position (42 percent compared with 29 percent or less), and humanities graduates were more likely than others to have taught art, drama, or music. Mathematics, computer science, and natural sciences majors were more likely than graduates in other majors, with the exception of education majors, to have taught

mathematics in their first teaching jobs. Similarly, humanities graduates were more likely than all but education majors to have taught English, reading, or writing.[22]

Most graduates were certified in the subjects they had taught in their first teaching jobs after receiving the 1999–2000 degree. Eighty-five percent of those who had taught elementary or early childhood education classes—in which a teacher teaches multiple subjects to the same group of students for all or most of the school day—were certified in elementary or early childhood education (figure 4). Among graduates who had taught the core subjects of

Figure 4. Percentage of 1999–2000 bachelor's degree recipients who were certified in the subjects taught in their first teaching job after receiving the 1999–2000 degree, by subject: 2001



SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

[22]Again, these patterns are likely to have been influenced by state-level policies regarding teacher certification, as discussed above.

English/reading/writing, mathematics, science, and social studies/history, 74 to 80 percent were certified in those areas. Graduates who had taught elementary/early childhood education were more likely than those who taught all other fields (except special education and social studies/history) to be certified in their respective subject. In turn, those who had taught special education and social studies/history were more likely than those who had taught art/music/drama, foreign languages, health/physical education, or vocational/occupational education to be certified in their respective subjects.

Satisfaction with Teaching

Graduates who had taught after receiving the 1999–2000 bachelor's degree were asked to indicate whether they were very satisfied, somewhat satisfied, or not satisfied with seven aspects of their most recent teaching jobs, and this section focuses on the proportion of teaching graduates who were very satisfied with each of these aspects. About three-fifths were very satisfied with the support they had received from their school's administration, a higher proportion than were very satisfied with all other aspects except their school's learning environment (table 11). More than one-half (56 percent) of teachers among 1999–2000 graduates

Table 11. Among 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who were very satisfied with various aspects of teaching in their current or most recent teaching job after receiving the 1999–2000 degree, by selected characteristics of that job: 2001

Most recent school/ teaching job characteristic	Student motivation	Learning environment	Student behavior	Class size	Parent support	Society's perception	Adminis-tration support
Total	35.5	56.4	39.0	51.6	33.9	15.8	58.8
Type							
Public	33.2	55.6	37.8	48.5	30.4	14.4	57.9
Private	53.6	64.9	49.9	74.4	59.9	27.5	68.1
Level							
Elementary	42.4	63.0	42.9	52.9	33.6	15.4	61.1
Secondary	15.8	42.7	26.2	40.5	29.3	13.9	55.7
Combined	25.7	58.3	47.6	66.1	33.4	19.6	84.2
Percent minority							
Less than 25 percent	37.4	66.7	41.1	53.1	43.8	16.4	69.4
25–49 percent	34.3	58.1	37.5	48.0	35.9	21.1	60.0
50–74 percent	29.3	52.6	38.7	52.3	17.5	12.4	58.2
75 percent or higher	29.6	40.2	33.7	44.5	15.6	9.6	46.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

were very satisfied with their school's learning environment, and one-half were very satisfied with their class size. Graduates were least likely to be very satisfied with society's perception of the teaching profession: whereas 16 percent were very satisfied with this aspect of teaching, one-third or more were very satisfied with each of the other six aspects of teaching.

Some characteristics of the schools in which they had most recently taught were associated with graduates' satisfaction with various aspects of teaching. Graduates who had most recently taught in private schools were more likely than those who had most recently taught in public schools to be very satisfied with all seven aspects of teaching included in the interview. The level of the school in which they had most recently taught was associated with teachers' satisfaction with some aspects of their jobs. New teachers who had most recently taught at an elementary school were more likely than those who had most recently taught at a secondary school to report that they were very satisfied with student motivation, the school's learning environment, student behavior, and class size.

The proportion of graduates who were very satisfied with their students' motivation, students' behavior, or class size did not vary significantly with the proportion of students who were of minority background in the schools where graduates had most recently taught. However, teachers' satisfaction with some aspects of their jobs was related to the proportion of minority students who were enrolled in their schools. The greater the proportion of minority students, the less likely teachers were to be very satisfied with their school's learning environment, parent support, society's perception of the profession, and the support they received from their school administration.

Teachers' responses indicate their subjective sense of satisfaction with various aspects, which may vary with teacher characteristics as well as school or student characteristics. Previous research indicates that teachers in high-minority enrollment schools differ from teachers in lower-minority enrollment schools in a number of ways, some of which may be related to teachers' perceptions of the support they receive and to their need for support. For example, teachers in high-minority enrollment schools are often less experienced than teachers in other schools (NCTAF 1996). Such teachers may feel the need for support more strongly than other teachers, and therefore be more likely to feel that the support they receive is inadequate.

Whether School Helped New Teachers

Between three-fourths and four-fifths of graduates agreed that the school in which they had most recently taught had been effective in helping new teachers with four aspects of teaching: student discipline, instruction, curriculum, and adjusting to the school environment (table 12).

Table 12. Among 1999–2000 bachelor's degree recipients who had taught as of 2001, percentage who agreed that the schools in which they taught in their current or most recent teaching job helped them with various aspects of teaching, by selected characteristics of that job: 2001

Most recent school/teaching job characteristic	Discipline	Instruction	Curriculum	Adjust to school environment
Total	73.1	79.4	79.5	83.0
Type				
Public	72.4	79.2	79.5	83.4
Private	81.4	85.0	83.8	84.7
Level				
Elementary	72.7	81.8	81.1	84.9
Secondary	71.3	73.9	76.3	77.5
Combined	78.6	80.0	77.6	91.2
Percent minority				
Less than 25 percent	76.1	78.9	81.6	86.4
25–49 percent	75.5	83.4	83.2	84.4
50–74 percent	75.5	82.8	79.8	80.1
75 percent or higher	62.7	75.7	72.7	77.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Teachers in public schools were less likely than their peers at private schools to agree that their schools had helped new teachers with discipline and instruction effectively. In addition, whereas four-fifths (82 percent) of those who first taught in elementary schools believed their schools had been effective in helping new teachers with instruction, three-fourths (74 percent) did so in secondary schools.

As observed vis-a-vis teachers' satisfaction with some aspects of their schools, as the percentage of minority students in the school rose, the proportion of teachers who agreed that their schools had been effective in helping new teachers with discipline, curriculum, and adjusting to the school environment declined. For example, in schools with less than one-fourth minority enrollment, 76 percent of teachers agreed that the schools had been effective in helping new teachers with discipline. In contrast, in schools with at least three-fourths minority students, 63 percent of teachers agreed that the schools had been effective in helping new teachers with discipline. Again, these differences may reflect teacher characteristics as well as school or student characteristics.

Comparisons With 1992–93 Bachelor's Degree Recipients

This section compares this cohort's teaching with that of a previous bachelor's degree recipient cohort, students who graduated from college 7 years earlier, in 1992–93, and were followed up in 1994. In both 1994 and 2001, 85 percent of those who had received bachelor's degrees in the previous academic year had neither taught nor prepared to teach. By 1994, 10 percent of 1992–93 graduates had taught; by 2001, 12 percent of 1999–2000 graduates had taught (table 13). In 2001, 9 percent of 1999–2000 graduates had taught with certification, an increase from the 7 percent of 1992–93 graduates who had taught with certification in 1994. In 1994, 5 percent of 1992–93 graduates had prepared to teach but not yet taught, and in 2001, 3 percent of 1999–2000 graduates had done so.

This pattern of change over time—the increases in the proportions who taught and who taught with certification and the decrease in the proportion who prepared but did not teach—occurred among both men and women. This pattern was also observed among White graduates. Among Black bachelor's degree recipients, the proportion who had taught increased from 9 percent in 1994 to 13 percent in 2001 and the proportion who taught with certification increased from 4 percent to 8 percent in the same time period. The proportion of Black graduates who neither prepared nor taught decreased over time from 89 percent to 84 percent.

Graduates who began postsecondary education in private not-for-profit or public 4-year institutions were more likely to have taught overall and with certification in 2001 than in 1994 (table 14). In addition, regardless of the type of postsecondary institution first attended, in 2001 graduates were less likely to have prepared but not taught than they were in 1994.

Change over time also occurred among graduates who received their degrees from different types of institutions. Graduates who received their degrees from 4-year non-doctorate-granting institutions, whether public or private not-for-profit, were more likely to have taught overall and with certification in 2001 than in 1994. Graduates who received their degrees from public 4-year non-doctorate-granting institutions were also less likely to have prepared but not taught in 2001 than in 1994.

The overall patterns of change between cohorts were observed among graduates at some, but not all, levels of the CEE score distribution. Among the later cohort, graduates with CEE scores in the lowest and middle levels were more likely to have taught (18 percent in 2001 versus

Table 13. Percentage distribution of 1992–93 and 1999–2000 bachelor's degree recipients by K–12 teaching status, by gender and race/ethnicity: 1994 and 2001

	Taught				Had not taught	
Selected characteristics	Total	Certified	Prepared but not certified	Neither certified nor prepared	Certified or prepared	Neither certified nor prepared
1994						
Total	10.1	6.5	1.1	2.4	4.9	85.0
Gender						
Male	5.8	3.0	0.7	2.1	2.9	91.3
Female	13.7	9.5	1.5	2.7	6.6	79.7
Race/ethnicity[1]						
American Indian	10.8	9.3	#	1.5	2.6	86.6
Asian/Pacific Islander	3.0	1.6	0.1	1.4	2.2	94.8
Black	8.7	4.4	0.7	3.6	2.3	89.0
White	10.4	6.9	1.2	2.3	5.5	84.1
Other	4.0	2.1	1.9	#	1.5	94.5
Hispanic	14.3	7.9	1.8	4.6	2.5	83.2
2001						
Total	12.2	8.5	1.2	2.6	2.9	84.9
Gender						
Male	7.6	5.2	0.5	1.8	2.1	90.4
Female	15.7	11.0	1.6	3.1	3.6	80.7
Race/ethnicity[1]						
American Indian	7.4	6.0	1.4	#	6.0	86.6
Asian/Pacific Islander	2.4	1.0	0.4	1.1	1.6	95.9
Black	12.9	7.8	1.0	4.1	3.2	83.9
White	12.4	9.2	1.0	2.2	3.0	84.6
Other	6.7	3.7	0.7	2.3	2.5	90.8
Hispanic	18.8	9.8	3.5	5.5	2.9	78.3

Rounds to zero.

[1] American Indian includes Alaska Native, Black includes African American, Asian/Pacific Islander includes Native Hawaiian, and Hispanic includes Latino. Other includes multiple races. Race categories exclude Hispanic origin unless specified.

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

Table 14. Percentage distribution of 1992–93 and 1999–2000 bachelor's degree recipients by K–12 teaching status, by selected undergraduate academic characteristics: 1994 and 2001

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
1994							
Total	10.1	6.5	1.1	2.4	89.9	4.9	85.0
First institution type[1]							
Public 2-year	11.9	8.3	1.3	2.4	88.1	6.2	81.9
Public 4-year	10.2	7.0	1.1	2.1	89.8	4.9	85.0
Private not-for-profit 4-year	9.2	4.8	1.2	3.2	90.8	4.8	86.0
Degree-granting institution type							
Public							
Non-doctorate-granting	13.3	9.7	1.4	2.2	86.7	7.7	79.0
Doctorate-granting	9.6	6.5	1.0	2.1	90.4	3.5	86.9
Private not-for-profit							
Non-doctorate-granting	9.3	5.4	1.3	2.6	90.7	5.5	85.2
Doctorate-granting	7.8	3.2	1.1	3.5	92.2	3.9	88.3
Private for-profit 2-years or more[2]	1.2	0.6	#	0.6	98.8	#	98.8
College entrance examination score[3]							
Lowest level	12.5	8.6	1.5	2.4	87.5	5.5	82.0
Middle level	10.3	7.0	1.1	2.2	89.7	5.0	84.7
Highest level	7.4	3.3	0.9	3.2	92.6	3.1	89.5
Did not take test	9.8	6.4	1.1	2.3	90.2	5.8	84.4
Cumulative undergraduate GPA							
Less than 2.25	5.1	1.8	0.7	2.6	94.9	1.1	93.8
2.25–2.74	6.7	3.5	0.8	2.4	93.3	2.3	91.1
2.75–3.24	9.6	6.6	1.0	2.0	90.4	4.6	85.8
3.25–3.74	11.4	7.6	1.3	2.4	88.6	5.8	82.8
3.75 or higher	13.0	8.1	1.6	3.2	87.0	7.2	79.8
Undergraduate field of study							
Business and management	1.7	0.4	#	1.3	98.3	0.7	97.6
Education	47.5	37.8	6.5	3.3	52.5	24.0	28.6
Humanities	10.8	4.7	1.1	5.1	89.2	4.3	84.9
Mathematics, computer science, natural sciences	6.2	3.2	0.9	2.1	93.8	2.1	91.7
Social sciences	4.5	1.6	0.2	2.8	95.5	2.9	92.7
Other	2.8	0.8	0.1	1.9	97.2	2.1	95.1

See notes at end of table.

Table 14. Percentage distribution of 1992–93 and 1999–2000 bachelor's degree recipients by K–12 teaching status, by selected undergraduate academic characteristics: 1994 and 2001—Continued

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
2001							
Total	12.2	8.5	1.2	2.6	87.8	2.9	84.9
First institution type[1]							
Public 2-year	13.1	9.3	1.4	2.4	86.9	3.2	83.8
Public 4-year	12.4	8.7	1.2	2.5	87.7	2.8	84.8
Private not-for-profit 4-year	12.0	8.0	1.0	3.0	88.0	2.7	85.2
Degree-granting institution type							
Public							
Non-doctorate-granting	17.3	12.9	1.7	2.8	82.7	3.8	78.9
Doctorate-granting	10.6	7.3	1.0	2.2	89.5	2.3	87.2
Private not-for-profit							
Non-doctorate-granting	14.2	10.2	1.2	2.8	85.8	3.9	82.0
Doctorate-granting	9.1	4.8	1.0	3.3	90.9	2.7	88.3
Private for-profit 2-years or more[2]	1.1	0.3	#	0.8	98.9	1.9	97.1
College entrance examination score[4]							
Lowest level	18.4	13.8	1.4	3.1	81.6	4.2	77.5
Middle level	13.1	9.6	1.3	2.2	86.9	2.9	84.0
Highest level	8.6	4.7	1.1	2.8	91.4	1.2	90.2
Did not take test or score not available	9.6	6.3	0.9	2.4	90.4	3.2	87.3
Cumulative undergraduate GPA							
Less than 2.25	8.9	4.9	0.2	3.8	91.1	4.4	86.7
2.25–2.74	8.8	4.7	1.3	2.7	91.2	2.6	88.6
2.75–3.24	12.4	8.8	1.3	2.4	87.6	3.0	84.6
3.25–3.74	13.6	10.0	0.9	2.6	86.5	2.7	83.7
3.75 or higher	14.1	10.5	1.3	2.3	85.9	3.3	82.6
Undergraduate field of study							
Business and management	1.2	0.6	0.1	0.6	98.8	0.8	98.0
Education	66.5	56.4	5.9	4.2	33.5	13.0	20.5
Humanities	16.8	9.8	2.0	5.1	83.2	2.9	80.3
Mathematics, computer science, natural sciences	5.5	3.3	0.6	1.7	94.5	1.8	92.7
Social sciences	9.1	4.7	0.6	3.8	90.9	2.6	88.3
Other	4.4	2.5	0.4	1.5	95.6	1.9	93.7

Rounds to zero.

[1] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[2] Includes for-profit 4-year degree-granting institutions.

[3] Derived from College Board-, institution-, or student-reported SAT or ACT scores, where available.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: Detail may not sum to totals because of rounding. See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

13 percent in 1994) and to have taught with certification (14 percent in 2001 versus 9 percent in 1994). Furthermore, 1999–2000 graduates with scores in the lowest level were less likely than their 1992–93 counterparts to have neither prepared nor taught (77 percent versus 82 percent) within a year of completing their degrees.

Similar changes were observed over time among some subgroups of graduates defined by their cumulative GPAs. Graduates whose cumulative undergraduate GPAs fell between 2.75 and 3.74 were more likely to have taught and to have taught with certification in 2001 than in 1994. In addition, graduates whose GPAs were 2.75 or higher were less likely to have prepared but not taught in 2001 than in 1994.

Graduates who had majored in education, the humanities, and the social sciences were more likely to have taught and to have taught with certification in 2001 than in 1994. Finally, one-fourth of 1992–93 graduates with education majors had prepared to teach but not taught as of 1994, compared with 13 percent of 1999–2000 education majors as of 2001.

In summary, graduates were slightly more likely to have taught in 2001 than in 1994. This slight increase appears to have been driven by an increase in the proportion of graduates who had prepared to teach and then actually taught in the year following bachelor's degree receipt. This cohort difference was observed both overall and within some subgroups of graduates.

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Conclusion

Teaching continued to be a common occupation among 1999–2000 graduates, 12 percent of whom had taught in a K–12 school within 1 year of completing their bachelor's degree. Moreover, teaching was associated with various demographic and academic characteristics in predictable ways.

As has been the case for generations, teaching continued to attract women graduates more often than their male counterparts in the 21st century. Among graduates, women were more likely than men to have taught (regardless of their level of preparation) and to have prepared to teach. Women who had not taught were more likely than their male counterparts to have expressed some interest in teaching by having worked as a substitute teacher or teacher's aide or considered teaching by 2001. Among graduates who had expressed such interest in teaching but had not applied for a teaching position, women were less likely than men to report that they had not applied because they were not interested in teaching or wanted higher salaries. They were more likely than men to have not applied because they were not yet certified, however.

In addition to gender, choosing and preparing to teach were associated with graduates' racial/ethnic background. Asian/Pacific Islander graduates were less likely than Black, Hispanic, and White graduates to have taught and to have substitute taught or worked as a teacher's aide. Among graduates who had not taught, Asian/Pacific Islanders were less likely than other racial/ethnic groups to have considered teaching.

College graduates begin and complete undergraduate education in a wide variety of types of postsecondary institutions, ranging from institutions that do not grant 4-year degrees to those whose primary mission is to provide instruction and confer bachelor's and master's degrees to those with a strong emphasis on basic research as well as undergraduate and graduate education. Recent policy discussions have focused on ways in which community colleges, although they typically do not grant the bachelor's degrees required by all states for an initial teaching credential, contribute to the preparation of elementary and secondary teachers. Some have suggested that community colleges could be fertile grounds for teacher recruitment. The B&B:2000/01 data indicate that, as of 2001, the type of institution in which graduates began their undergraduate education was not associated with whether they taught in the year following college graduation. Regardless of the type of institution in which they began their postsecondary

education, 12 to 13 percent of all graduates had taught within a year of completing the bachelor's degree.

The type of postsecondary institution from which graduates had received the 1999–2000 bachelor's degree, however, was associated with teaching (or movement toward it) among graduates. In general, graduates of public and of non-doctorate-granting institutions were more inclined toward teaching, that is, more likely to have taught, prepared to teach, and so on, than graduates of private and doctorate-granting institutions, respectively.

As in the past, academic achievement was associated with teaching, although the two measures of academic achievement used in this study were related to teaching in opposite ways. Graduates' cumulative undergraduate GPAs were positively associated with teaching and with teaching with certification. However, the difference was not great: whereas 14 percent of graduates with GPAs of 3.75 or above had taught within a year of completing their bachelor's degrees, 9 percent of graduates with GPAs below 2.75 did so.

Among graduates with CEE scores available for analysis, the B&B:2000/01 data indicate that CEE scores were negatively associated with teaching. Graduates with higher scores were less likely than those with lower scores to have taught and to have taught with certification. Among graduates who had not taught but had at least considered teaching, those with scores in the highest level were less likely than others to have applied for a teaching position by 2001. Among those with some interest who did not apply for teaching positions, those with higher scores were more likely than those with lower scores to not apply because they were not interested in teaching or wanted a higher salary.

How well these variables indicate graduates' academic skills and abilities are unclear for a number of reasons, however. Although nearly all sampled graduates had GPAs available for analysis, nearly one-third of graduates had either not taken a CEE or did not have a score available for analysis. In particular, nonteaching graduates were less likely than teaching graduates to have scores available for analysis.[23] CEE scores represent achievement prior to attending 4-year institutions, and thus do not measure any value added by attendance at those institutions. GPAs are not standardized among or within institutions. To the extent that states and professional organizations develop other measures of teachers' academic skills and achievement in response to NCLB and other legislation or policy initiatives, it will be possible to measure more directly the relationship between the curricula they are required to teach and those they have mastered themselves.

[23]Additional analyses, related to these results and discussed in the technical appendix, indicate that findings concerning CEE scores may be confounded by the large proportions of graduates with missing scores.

Legislation has already mandated that teachers of core academic subjects meet state standards for academic preparation in those subjects. Given this policy context, these data indicate that although graduates who had majored in education were consistently more likely than others to teach, prepare to teach, consider teaching, and so on, graduates in other fields also engaged in these activities. Seventeen percent of humanities majors had taught by 2001, as well as 9 percent of social science majors. In fact, one-fifth of all graduates who had taught by 2001 had majored in the humanities as undergraduates, one-tenth in the social sciences, and 7 percent in mathematics, computer science, or a natural science. Among graduates who had not taught, at least one-half of humanities and social sciences majors had considered teaching, worked as a substitute teacher, or worked as a teacher's aide.

The proportion of graduates who pursued teaching in the year following graduation varied little between 1994 and 2001. In both 1994 and 2001, approximately 15 percent of those who had graduated in the previous academic year (i.e., 1992–93 or 1999–2000, respectively) had taught or prepared to teach in an elementary or secondary school. By 2001, slightly more graduates (12 percent versus 10 percent in 1994) had taught in the year after receiving the bachelor's degree, and slightly more (9 percent versus 7 percent in 1994) had taught with certification. Whereas 3 percent of graduates had prepared or were certified to teach, but had not taught, by 2001, some 5 percent had done so by 1994. These differences over time tended to persist within subgroups of graduates, that is, regardless of their demographic or academic characteristics 1999–2000 graduates tended to be slightly more likely than 1992–93 graduates to have taught within a year of completing the bachelor's degree.

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Appendix A—Glossary

This glossary describes the variables used to derive the estimates presented in this report. The estimates were generated using the Data Analysis System (DAS), an NCES software application that generates estimates and their standard errors in tabular form, for each of two surveys: B&B:93/97 and B&B:2000/2001. (See appendix B for a description of the DAS.) The data collected in First Follow-up for B&B:93, including a weight variable that weights estimates to the population as of 1994, are included in the 1997 DAS, the most recent DAS available for this cohort.

In the index below, the variables are organized by general topic, which correspond closely to sections of the report. Within topics, the index lists variables in the order in which they appear in the report. When the variable names differ between the two surveys, both variable names are listed. The glossary entries are in alphabetical order by the B&B:2000/01 variable name, which is displayed along the right-hand column.

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DAS Variable Name

Worked as teacher's aide or substitute **ADSBPERM**

Indicates whether respondent worked as a substitute teacher or teacher's aide in his/her first or current/most recent teaching position, and distinguishes between those who did so in order to gain a permanent teaching position and those who did so for other reasons.

Did not teach
Not substitute/aide job
Aide/sub job, other reason
Aide/sub job to get permanent job

Undergraduate field of study **MAJORS3 (1997); BMAJORS3 (2001)**

Major field of study for bachelor's degree, collapsed to 12 categories as shown below. B&B:93/97 DAS variable MAJORS3 was derived from MAJORS, a variable collected as part of the NPSAS:93 computer-assisted telephone interview (CATI). B&B:2000/01 DAS variable BMAJORS3 was derived from MAJORS3, a NPSAS:2000 variable. Missing values of MAJORS3 were imputed using sequential weighted hot deck imputation. Individuals with missing or out-of-range values (e.g., undeclared major) for MAJORS3 were assigned values based on random draws from individuals in the same imputation class, where imputation classes were based on GENDER, BSECTOR9, and age categories.

Business/management	Accounting, finance, secretarial, data processing, business/ management systems, public administration, marketing/ distribution, business support, and international relations
Education	Early childhood, elementary, secondary, special, or physical education; other education; leisure studies; and library/ archival sciences
Humanities	English, liberal arts, philosophy, theology, art, music, speech/ drama, art history/fine arts, area studies, African-American studies, ethnic studies, foreign languages, liberal studies, and women's studies
Mathematics, computer science, and natural sciences	Life sciences, natural resources, forestry, biological science (including zoology), botany, biophysics, geography, interdisciplinary studies, including biopsychology, environmental studies; physical sciences including chemistry, physics; mathematics, statistics, computer/information science, computer programming; electrical, chemical, mechanical, civil, or other engineering; engineering technology; and electronics
Social sciences	Psychology, economics, political science, American civilization, clinical pastoral care, social work, anthropology/archaeology, history, and sociology

DAS Variable Name

***Undergraduate field of study*—Continued**

Other	Nursing, nurse assisting, community/mental health, medicine, physical education/recreation, audiology, clinical health, dentistry, veterinary medicine, health/hospital, public health, dietetics, other/general health, mechanic technology including transportation, protective services, construction, air/other transportation, precision production, other technical/ professional, agriculture, agricultural science, architecture, professional city planning, journalism, communications, communications technology, cosmetology, textiles, military science, dental/medical technology, home economics, vocational home economics including child care, law, paralegal, basic/personal skills

BA institution sector **SECTOR_B (1997); BSECTOR9 (2001)**

Indicates the sector (level and control) of the institution from which the student received the 1992–93 bachelor's degree (B&B:93/97) or 1999–2000 bachelor's degree (B&B:2000/01), including whether the institution granted doctorates or not.

Public
Non-doctorate-granting
Doctorate-granting
Private not-for-profit
Non-doctorate-granting
Doctorate-granting
Private for-profit 2-years or more

Current/most recent teaching job, school helped new teachers adjust to school environment **CGADJUST**

With respect to the school in which they currently or most recently taught, respondents who had taught were asked "Do you agree or disagree that your school is/was effective in helping new teachers adjust to the school environment?"

Agree
Disagree

Current/most recent teaching job, very satisfied with administration support **CGADMSUP**

With respect to the school in which they currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with support from the school administration?"

Very satisfied
Somewhat satisfied
Not satisfied

DAS Variable Name

Current/most recent teaching job, very satisfied with student behavior **CGBEHAVE**

With respect to the school in which they currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with student discipline and behavior?"

Very satisfied
Somewhat satisfied
Not satisfied

Current/most recent teaching job, very satisfied with class size **CGCLSIZE**

With respect to the school in which they currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with class size?"

Very satisfied
Somewhat satisfied
Not satisfied

Current/most recent teaching job, school sector **CGCRPUPR**

With respect to the school in which they currently or most recently taught, respondents who had taught were asked "Is this school…?" Six response categories were aggregated as follows:

Public	Public school operated by local school district Public school operated by state/federal agency Other-charter school/hospital school
Private	Private Catholic school Private-other religious affiliation Private-no religious affiliation

Current/most recent teaching job, school helped new teachers with curriculum **CGCURRCL**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "Do you agree or disagree that your school is/was effective in helping new teachers with the curriculum?"

Agree
Disagree

Current/most recent teaching job, school helped new teachers with discipline **CGDISPLN**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "Do you agree or disagree that your school is/was effective in helping new teachers with student discipline?"

Agree
Disagree

DAS Variable Name

Current/most recent teaching job, very satisfied with learning environment **CGENVMNT**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with the school learning environment?"

Very satisfied
Somewhat satisfied
Not satisfied

Current/most recent teaching job, very satisfied with society's perception **CGESTEEM**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with how society feels about the teaching profession?"

Very satisfied
Somewhat satisfied
Not satisfied

Current/most recent teaching job, school helped new teachers with instruction **CGINSTRC**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "Do you agree or disagree that your school is/was effective in helping new teachers with instructional methods?"

Agree
Disagree

Current/most recent teaching job, very satisfied with student motivation **CGMTVTN**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with student motivation to learn?"

Very satisfied
Somewhat satisfied
Not satisfied

Current/most recent teaching job, very satisfied with parent support **CGPARSUP**

With respect to the school in which the currently or most recently taught, respondents who had taught were asked "In your most recent teaching job, are/were you very satisfied, somewhat satisfied, or not satisfied with support from parents?"

Very satisfied
Somewhat satisfied
Not satisfied

DAS Variable Name

Applied for teaching position **CGTCHAPP**

Respondents who had not taught, but had at least considered teaching, were asked "Have you applied for a teaching position since completing your degree?"

Yes
No

Current/most recent teaching job, school level **CRLEV97**

Level of school where teacher is currently teaching or most recently taught after receiving the 1999–2000 bachelor's degree. Respondents who had more than one teaching job between completing the 1999–2000 degree and the 2001 interview were asked the name and location of the school at which they currently or most recently taught. These data were used to match teachers with data about their schools, data that were collected in the 1997–98 Common Core of Data (CCD) or Private School Survey (PSS). Using the variables indicating the enrollment in each grade level and the NCES three-category school level algorithm, teachers' current or most recent schools were defined as elementary, secondary, or combined.

Elementary	A school that had grade 6 or lower or "ungraded" students and had no grade higher than the 8th
Secondary	A school that had grade 7 or higher and had no grade lower than the 7th (including "ungraded" students)
Combined	A school that had grades ranging from below grade 7 to above grade 8

Current/most recent teaching job, school percent minority **CRPMIN97**

Percent of student enrollment made up of minority students at school where teacher is currently teaching or most recently taught. Respondents who had more than one teaching job between completing the 1999–2000 degree and the 2001 interview were asked the name and location of the school at which they first taught (as well as those of the school at which they currently or most recently taught). These data were used to match teachers with data about their schools, data that were collected in the 1997–98 Common Core of Data (CCD) or Private School Survey (PSS).

Less than 25 percent
25–49 percent
50–74 percent
75 percent or more

DAS Variable Name

First teaching job, school level **FRLEV97**

Level of first school where teacher began teaching after receiving the 1999–2000 bachelor's degree. Respondents who had more than one teaching job between completing the 1999–2000 degree and the 2001 interview were asked the name and location of the school at which they first taught. These data were used to match teachers with data about their schools, data that were collected in the 1997–98 Common Core of Data (CCD) or Private School Survey (PSS). Using the variables indicating the enrollment in each grade level and the NCES three-category school level algorithm, schools were defined as elementary, secondary, or combined.

Elementary	A school that had grade 6 or lower or "ungraded" students and had no grade higher than the 8th
Secondary	A school that had grade 7 or higher and had no grade lower than the 7th (including "ungraded" students)
Combined	A school that had grades ranging from below grade 7 to above grade 8

First teaching job, school sector **FRTYPE97**

Sector of first school where teacher began teaching after receiving the 1999–2000 bachelor's degree. Respondents who had more than one teaching job between completing the 1999–2000 degree and the 2001 interview were asked the name and location of the school at which they first taught. These data were used to match teachers with data about their schools, data that were collected in the 1997–98 Common Core of Data (CCD) or Private School Survey (PSS).

Public (includes regular, special education, vocational, and other/alternative schools)
Private

Gender **GENDER**

Male
Female

Cumulative undergraduate GPA **GPACUM (1997); GPA2 (2001)**

Student's cumulative undergraduate Grade Point Average (GPA). The GPA was standardized to a 4.00-point scale. B&B:93/97 data are student-reported. Primary source of B&B:2000/01 data was GPA reported by the sampled NPSAS:2000 institution. If this was not available, student-reported GPA was used.

Student's GPA was below 2.25.
Student's GPA was between 2.25 and 2.74.
Student's GPA was between 2.75 and 3.24.
Student's GPA was between 3.25 and 3.74.
Student's GPA was 3.75 or above.

DAS Variable Name

First institution type **FSCTYPE (1997); I1SECT9 (2001)**

Sector of the first postsecondary institution attended. Derived by matching first institution attended as reported by students with Integrated Postsecondary Education Data System (IPEDS) data concerning those institutions.

Public 4-year	Includes all public 4-year institutions: public 4-year, non-doctorate-granting and public doctorate-granting.
Private not-for-profit 4-year	Includes all private not-for-profit 4-year institutions: private not-for-profit 4-year non-doctorate-granting, and private not-for-profit doctorate-granting.
Other	Includes all less-than 4-year institutions—public less-than-2-year, public 2-year, private not-for-profit less-than-4-year, private for-profit less-than-2-year—and private for-profit 2-years or more.

Reason for not applying for teaching position, not yet certified **NTAPPCER**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they were not yet certified.

Reason for not applying for teaching position, poor teaching conditions **NTAPPCON**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because of poor teaching conditions.

Reason for not applying for teaching position, not interested in teaching **NTAPPINT**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they were not interested in teaching.

Reason for not applying for teaching position, already in another job **NTAPPJOB**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they already had another (nonteaching) job.

DAS Variable Name

Reason for not applying for teaching position, got better job offer **NTAPPOFF**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they had gotten a better job offer.

Reason for not applying for teaching position, other **NTAPPOTH**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because of some other (unspecified) reason.

Reason for not applying for teaching position, had not taken required tests **NTAPPREQ**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they had not taken the required tests.

Reason for not applying for teaching position, wanted higher salary **NTAPPSAL**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they wanted a higher salary.

Reason for not applying for teaching position, already teaching **NTAPPTEA**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they already had a teaching job.

Reason for not applying for teaching position, unable to pass tests **NTAPPTES**

Respondents who were not teaching but who had indicated they had considered teaching were asked whether they had applied for a teaching position since receiving the 1999–2000 bachelor's degree. Those who had not applied were asked why they had not applied. This variable identifies respondents who indicated that they had not applied because they were unable to pass the required tests.

DAS Variable Name

Race/ethnicity **B2RACETH (1997); RACE1 (2001)**

Data regarding race and ethnicity were collected differently in the two surveys. In NPSAS:93, the base-year data collection for B&B:93, as well as the B&B:93 follow-up data collections, respondents were asked whether they were White, Black, American Indian/Alaska Native, Asian/Pacific Islander, or other race and also whether they were of Hispanic origin. Their responses to these two questions were combined to create the race/ethnicity variable, giving priority to Hispanic/Latino origin regardless of race.

In NPSAS:2000 and its follow-up B&B:2000/01, respondents were asked first "What is your race?" and allowed to provide up to three of the following responses: White; Black or African American; Asian; American Indian or Alaska Native; Native Hawaiian or other Pacific Islander; and Other, specify. Respondents who provided more than one response to this question were asked the following question as well: "For historical purposes, could you please identify which single race best describes you?" All respondents were asked whether they were of Hispanic origin. The composite variable RACE1 was created by giving first priority to respondents who indicated that they were of Hispanic origin, second priority to their responses to the historical race question, and third priority to the first race question (for those respondents who chose only one response to the first race question and did not indicate Hispanic origin). NCES defines the racial/ethnic categories as follows:

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

	DAS Variable Name
Teaching status	**STATUS**

Indicates respondent's teaching status.

Taught

Taught, certified	Respondent taught in any of grades K–12 (not including substitute teaching or teacher's aide position) since graduation and was certified by at least one state at the probationary or regular level.
Taught, prepared, but not certified	Respondent taught in any of grades K–12 (not including substitute teaching or teacher's aide position) since graduation and had prepared to teach without certification. In B&B:2000/01, graduates who had prepared to teach were defined as those who had completed either a teacher education program or a student teaching assignment as of 2001. In B&B:93/94, those whose undergraduate transcript included student teaching credit were defined as having prepared to teach.
Taught, neither certified nor prepared	Respondent taught in any of grades K–12 (not including substitute teaching or teacher's aide position) since graduation but had not prepared to teach (as defined above) and was not certified.

Had not taught

Had not taught, certified or prepared	Respondent had not taught in any of grades K–12 (except for those who held a substitute teaching or teacher's aide position) but had prepared to teach or were certified. Note: In B&B:2000/01 only those who said they had taught (including those who had only taught as a substitute teacher or teacher's aide) were asked their level of certification.
Had not taught, neither certified nor prepared	Respondent had not taught in any of grades K–12 (except for those who held a substitute teaching or teacher's aide position), was not prepared to teach, and was not certified to teach.

DAS Variable Name

College entrance examination score **SATACTQ2 (1997); TESATDER (2001)**

SATACTQ2 indicates the level of each graduate's score among 1992–93 sample graduates. The CEE scores used to derive SATACTQ2 were taken from one of three sources in the following order of source precedence: 1) Educational Testing Service (ETS), which administers the SAT, reported verbal and mathematics scores; 2) ACT, Inc., which administers the ACT, reported composite scores; 3) NPSAS institution-reported (CADE) SAT verbal and mathematics scores; 4) NPSAS institution-reported (CADE) ACT composite scores; 5) student self-reported SAT verbal and mathematics scores; and 6) student self-reported ACT composite scores. The weighted distribution of sampled 1992–93 graduates' scores was cut at the first and third quartiles, resulting in three levels of scores that include the bottom fourth, the middle half, and the top fourth.

TESATDER consists of graduates' SAT combined score, derived as either the sum of SAT verbal and math scores or ACT composite score converted to an estimated SAT combined score, cut into levels based on the distribution of 1999–2000 sample graduates in the same manner as the 1992–93 graduates' scores were divided. The CEE scores used to derive TESATDER were taken from the first available source in the following order of source precedence: 1) ETS-reported SAT verbal and mathematics scores; 2) ACT-reported ACT composite scores; 3) institution-reported (CADE) SAT verbal and mathematics scores; and 4) institution-reported (CADE) ACT composite scores.

Bottom level
Middle levels
Top level
Did not take test or score not reported

First taught art/drama/music **TFIRSART**

Indicates whether respondent taught art, drama, or music at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught business **TFIRSBUS**

Indicates whether respondent taught business at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught economics/political systems **TFIRSECO**

Indicates whether respondent taught economics or political systems at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

DAS Variable Name

First taught elementary/early childhood education **TFIRSELE**

Indicates whether respondent taught elementary or early childhood education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught English/reading/writing **TFIRSENG**

Indicates whether respondent taught English, reading, creative writing, or journalism at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught ESL/bilingual **TFIRSESL**

Indicates whether respondent taught English as a second language or bilingual education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught foreign languages **TFIRSFOR**

Indicates whether respondent taught foreign languages at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught mathematics **TFIRSMAT**

Indicates whether respondent taught mathematics at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

DAS Variable Name

First taught other type of education **TFIRSOTH**

Indicated whether respondent taught any other (unspecified) subject at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught health/physical education **TFIRSPHY**

Indicates whether respondent taught health or physical education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught science **TFIRSSCI**

Indicates whether respondent taught science at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught secondary education **TFIRSSEC**

Indicates whether respondent taught secondary education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught social studies/history/civics **TFIRSSOC**

Indicates whether respondent taught social studies, history, or civics at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

DAS Variable Name

First taught special education **TFIRSSPE**

Indicates whether respondent taught special education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

First taught vocational/occupational education **TFIRSVOC**

Indicates whether respondent taught vocational or occupational education at first teaching job since receiving 1999–2000 bachelor's degree.

Did not teach subject at first job
Taught subject at first job, not certified in subject
Taught subject at first job, certified in subject

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Appendix B—Technical Notes and Methodology

The Baccalaureate and Beyond Longitudinal Study

The data analyzed in this report came from the 1994 and 2001 First Follow-ups of each cohort of the Baccalaureate and Beyond Longitudinal Study (B&B:93/94 and B&B:2000/01). The data derived from these surveys provide critical information about college graduates' postsecondary education outcomes and entrance into the teaching profession. These studies track the experiences of two cohorts of college graduates—those who received baccalaureate degrees during 1992–93 and 1999–2000—and were first interviewed as a part of the 1993 and 2000 National Postsecondary Student Aid Studies (NPSAS:93 and NPSAS:2000, respectively). NPSAS, the base year survey, is based on a nationally representative sample of all students in postsecondary education institutions, including undergraduate, graduate, and first-professional students. Each represents more than 16 million undergraduates who were enrolled at some time between July 1 and June 30 of its respective survey year.

For B&B:2000/01, those members of the NPSAS:2000 sample who completed a bachelor's degree between July 1, 1999 and June 30, 2000 were identified and contacted for a follow-up interview. The estimates in this report are based on the results of interviews with approximately 10,000 bachelor's degree recipients, who represent about 1.3 million bachelor's degree completers from 1999–2000. B&B:2000/01 includes a subsample of NPSAS:2000 nonrespondents. The weighted overall study response rate is 74 percent, the product of the NPSAS:2000 institution-level response rate, 90 percent, and the B&B:2000/01 student-level response rate of 82 percent.[1] The 2001 estimates were generated using the Data Analysis System (DAS) for B&B:2000/01.

For B&B:93/94, those members of the NPSAS:93 sample who completed a bachelor's degree between July 1, 1992 and June 30, 1993 were identified and contacted for a follow-up interview. The estimates in this report are based on the results of interviews with approximately 10,100 bachelor's degree recipients, representing 1.2 million bachelor's degree completers from 1992–93. The unweighted response rate for the B&B:93/94 interviews was 92 percent.[2] The 1992–93 graduates were surveyed again in the 1997 Second Follow-up to the 1993 Baccalaureate

[1] For more information on B&B:2000/01, consult Charleston et al. (2003).

[2] For more information on B&B:93/94, consult Green et al. (1996).

and Beyond Longitudinal Study (B&B:93/97). The 1994 data were combined with 1997 data into the B&B:93/97 DAS, which was used to generate the 1994 estimates presented in this report.

The NPSAS:93 and NPSAS:2000 samples, while representative and statistically accurate, were not simple random samples. Instead, the survey samples were selected using a more complex three-step procedure with stratified samples and differential probabilities of selection at each level. Postsecondary institutions were initially selected within geographic strata. Once institutions were organized by zip code and state, they were further stratified by control (i.e., public, private not-for-profit, or private for-profit) and degree offering (less-than-2-year, 2- to 3-year, 4-year non-doctorate-granting, and 4-year doctorate-granting).[3] All analyses in this report are weighted to compensate for unequal probability of selection into the B&B samples. The weights used, the B&B panel weight for each cohort, were based on the respondents who participated in both the NPSAS and B&B interviews for each cohort and, therefore, also adjust for nonresponse. The B&B:93/97 DAS includes multiple weights so that analyses can be run as of 1994 or 1997. For the B&B:93/94 analyses included in this report, the panel weight for the 1994 follow-up (BNBWT1) was specified as the weight. The B&B:2000/01 DAS contains only one weight, which corresponds to BNBWT1, and applies it automatically to all estimates requested from it.

Data quality evaluations included both online data editing procedures and post-data collection editing. The online data editing ensured that the data collected fell within legitimate ranges. Also, where feasible, responses were crosschecked against those of related items. After data collection, the data were cleaned and edited using several steps including verification of one-way frequencies for each item, cross-tabulations of related items, standard variable recoding and formatting (such as dates), determination of outlier values, and logical imputations. After the CATI data were cleaned and edited, composite variables for specific data analyses were created and subjected to similar cleaning and checking procedures.

For more information about the NPSAS surveys, consult their respective methodology reports: *Methodology Report for the National Postsecondary Student Aid Study, 1992–93* (Loft et al. 1995) and *National Postsecondary Student Aid Study, 1999–2000 (NPSAS:2000) Methodology Report* (Riccobono et al. 2002). For more information on the B&B surveys, consult their respective methodology reports: *Baccalaureate and Beyond Longitudinal Study: 1993/94 First Follow-up Methodology Report* (Green et al. 1996)*, Baccalaureate and Beyond Longitudinal Study: 1993/97 Second Follow-up Methodology Report* (Green et al. 1999),

[3] The NPSAS universe excludes institutions offering only correspondence courses, institutions enrolling only their own employees, and U.S. service academies. For this B&B cohort, institutions were further stratified in NPSAS based on the number of degrees in education they had awarded in the past.

Baccalaureate and Beyond Longitudinal Study: 2000–01 (B&B: 2000/01) Methodology Report (Charleston et al. 2003).

Measuring K–12 Teaching Status With B&B Data

The 2001 Follow-up of 1999–2000 college graduates differs from the 1994 data collection in several ways that affect the classification of respondents by teaching experience. First, the 1994 data collection included a measure of when graduates had first taught at the K–12 level. Using this information, some analyses of 1992–93 graduates' teaching excluded graduates who had taught before completing the 1992–93 degree or who had been certified to teach at least 1 year before completing that degree (for example, Henke, Chen, and Geis 2000; Henke et al. 1996). Approximately 3 percent of 1992–93 graduates fell into this category. The B&B:2000/01 data do not include information on when graduates had first taught or were first certified. Therefore, the analyses presented in this report include graduates who had taught before receiving the bachelor's degree, because they could not be excluded.

Second, the 1994 Follow-up included the collection of graduates' transcripts from the degree-granting postsecondary institution. Information regarding whether 1992–93 graduates had completed a student teaching assignment was obtained from these transcripts. B&B:2000/01 did not include the collection of transcripts and instead relied on graduates' reports of whether they had completed a student teaching assignment. The net effect of this difference is unknown.

Third, nonteachers among 1992–93 graduates were asked in 1994 whether they had ever been certified to teach. In 2001, however, 1999–2000 graduates who had not taught were not asked whether they had ever been certified to teach. In 2001, nonteachers were asked whether they had done anything to prepare to teach, and if so, whether they had, for example, completed a teacher education program or completed a student teaching assignment.

Fourth, the two surveys asked graduates who had neither taught nor done anything to prepare for a teaching position slightly different questions regarding whether they considered teaching. In 1994, 1992–93 graduates who had neither taught nor prepared to teach were asked whether they were "considering teaching." In contrast, in 2001, 1999–2000 graduates were asked whether they had "considered teaching."

Taking these four differences into account, the teaching status variable was created to enable the generation of comparable estimates regarding graduates K–12 teaching status 1 year after receiving their bachelor's degrees. In most tables of the report, particularly tables 13 and 14, graduates who had neither prepared to teach nor taught were combined into one category,

regardless of whether they had considered/were considering teaching, in order to facilitate comparisons over time. The proportion of 1999–2000 graduates who had considered teaching as of 2001 is presented in table 6 but should not be compared with the proportion of 1992–93 graduates who were considering teaching at the time of the 1994 interview.

For both cohorts follow-up data collection began after the end of the academic year immediately following bachelor's degree receipt: on June 15, 1994 for the 1992–93 cohort and on July 9, 2001 for the 1999–2000 cohort. Therefore, graduates who completed a 1-year graduate teacher preparation program in the year immediately following degree receipt would be included in the prepared or teaching categories of the status variable. Graduates who were pursuing master's degrees or teacher certification in a year of graduate study beyond the bachelor's degree would be categorized as

- having taught if they had taught in the ensuing year, not including student teaching;
- having prepared if they had completed a student teaching assignment as of 2001 (for 1999–2000 bachelor's degree recipients) or had a transcript record of having completed a student teaching assignment (for 1992–93 bachelor's degree recipients), or
- having done neither if they met none of these criteria.

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, 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 likely to represent a population difference. Table B-1 contains estimated standard errors that correspond to the estimates presented in table 14 of this report. Additional standard errors for estimates provided in this report can be obtained from the B&B:93/97 and B&B:2000/01 Data Analysis Systems (DASs) or from the NCES website.

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

Table B-1. Standard errors for table 14: Percentage distribution of 1992–93 and 1999–2000 bachelor's degree recipients by K–12 teaching status, by selected undergraduate academic characteristics: 1994 and 2001

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
1994							
Total	0.35	0.32	0.12	0.18	0.35	0.32	0.51
First institution type[1]							
Public 2-year	0.92	0.79	0.28	0.45	0.92	0.86	1.16
Public 4-year	0.51	0.43	0.19	0.26	0.51	0.45	0.70
Private not-for-profit 4-year	0.63	0.47	0.19	0.37	0.63	0.60	0.91
Degree-granting institution type							
Public							
Non-doctorate-granting	0.89	0.78	0.34	0.38	0.89	0.83	1.16
Doctorate-granting	0.50	0.48	0.17	0.24	0.50	0.37	0.66
Private not-for-profit							
Non-doctorate-granting	0.85	0.68	0.25	0.41	0.85	0.77	1.31
Doctorate-granting	0.75	0.48	0.30	0.53	0.75	0.76	1.14
Private for-profit 2-years or more[2]	0.66	0.47	#	0.58	0.66	#	0.66
College entrance examination score[3]							
Lowest level	0.80	0.60	0.28	0.43	0.80	0.64	1.02
Middle level	0.52	0.48	0.18	0.24	0.52	0.39	0.74
Highest level	0.72	0.48	0.20	0.52	0.72	0.50	0.91
Did not take test	0.85	0.66	0.30	0.43	0.85	0.80	1.15
Cumulative undergraduate GPA							
Less than 2.25	2.04	0.83	0.48	1.15	2.04	0.62	2.06
2.25–2.74	0.82	0.54	0.29	0.58	0.82	0.46	0.96
2.75–3.24	0.51	0.44	0.17	0.22	0.51	0.39	0.67
3.25–3.74	0.62	0.53	0.24	0.32	0.62	0.56	0.85
3.75 or higher	1.21	0.97	0.35	0.72	1.21	1.04	1.58
Undergraduate field of study							
Business and management	0.39	0.20	0.03	0.35	0.39	0.25	0.49
Education	1.65	1.60	0.79	0.53	1.65	1.62	1.67
Humanities	1.14	0.87	0.31	0.76	1.14	0.75	1.39
Mathematics, computer science, natural sciences	0.67	0.49	0.27	0.36	0.67	0.42	0.82
Social sciences	0.69	0.27	0.08	0.56	0.69	0.51	0.83
Other	0.51	0.21	0.05	0.47	0.51	0.57	0.74

See notes at end of table.

Table B-1. Standard errors for table 14: Percentage distribution of 1992–93 and 1999–2000 bachelor's degree recipients by K–12 teaching status, by selected undergraduate academic characteristics: 1994 and 2001—Continued

	Taught				Had not taught		
Selected characteristics	Total	Certified	Prepared, but not certified	Neither certified nor prepared	Total	Certified or prepared	Neither certified nor prepared
2001							
Total	0.43	0.36	0.14	0.21	0.43	0.21	0.47
First institution type							
Public 2-year	1.00	0.89	0.32	0.42	1.00	0.44	1.07
Public 4-year	0.63	0.53	0.21	0.33	0.63	0.29	0.69
Private not-for-profit 4-year	0.71	0.56	0.23	0.39	0.71	0.34	0.77
Degree-granting institution type							
Public							
Non-doctorate-granting	1.21	1.07	0.39	0.48	1.21	0.50	1.32
Doctorate-granting	0.59	0.50	0.22	0.30	0.59	0.28	0.67
Private not-for-profit							
Non-doctorate-granting	1.03	0.88	0.28	0.52	1.03	0.59	1.13
Doctorate-granting	0.86	0.57	0.25	0.51	0.86	0.48	1.00
Private for-profit 2-years or more[2]	0.76	0.24	#	0.73	0.76	0.65	1.04
College entrance examination score[4]							
Lowest level	1.22	1.04	0.32	0.56	1.22	0.58	1.29
Middle level	0.69	0.61	0.25	0.26	0.69	0.29	0.73
Highest level	0.84	0.54	0.34	0.50	0.84	0.27	0.86
Did not take test or score not available	0.65	0.55	0.21	0.37	0.65	0.39	0.75
Cumulative undergraduate GPA							
Less than 2.25	2.15	1.68	0.23	1.50	2.15	1.62	2.92
2.25–2.74	0.88	0.71	0.44	0.51	0.88	0.52	1.01
2.75–3.24	0.81	0.71	0.22	0.34	0.81	0.36	0.88
3.25–3.74	0.69	0.61	0.18	0.36	0.69	0.29	0.76
3.75 or higher	1.15	0.92	0.38	0.52	1.15	0.49	1.20
Undergraduate field of study							
Business and management	0.36	0.23	0.07	0.27	0.36	0.32	0.48
Education	1.96	1.97	1.02	0.84	1.96	1.28	1.83
Humanities	1.30	1.06	0.49	0.69	1.30	0.50	1.35
Mathematics, computer science, natural sciences	0.62	0.52	0.21	0.34	0.62	0.38	0.72
Social sciences	0.80	0.63	0.26	0.60	0.80	0.44	0.92
Other	0.65	0.48	0.18	0.35	0.65	0.40	0.76

Rounds to zero.

[1] The 2.2 percent of graduates who began in other types of institutions (public less-than-2-year, private not-for-profit less-than-4-year, and private for-profit institutions) are included in the total row, but excluded from this variable.

[2] Includes for-profit 4-year degree-granting institutions.

[3] Derived from College Board-, institution-, or student-reported SAT or ACT scores, where available.

[4] Derived from institution- or agency-reported SAT or ACT scores, where available. See glossary (appendix A) for definition of CEE score levels.

NOTE: See glossary for a list of which specific fields of study are included in each listed category.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

obtain complete information about all students in all institutions in the sample (some students or institutions refused to participate, or students 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.

Nonsampling errors due to interview and item nonresponse can be reduced somewhat by the adjustment of sample weights and imputation procedures. Adjustment of weights for various levels of survey/interview nonresponse was discussed above and is further described in the studies' methodology reports, also cited above. In addition, weighted item response rates were calculated for all variables used in this report. The weighted item response rates were calculated by dividing the weighted number of valid responses by the weighted population for which the item was applicable.

With the exception of the variables listed in table B-2, all variables used in this report had a weighted item response rate of at least 90 percent. Of the variables listed in table B-2, all but six—CRLEV97, CRPMIN97, FRLEV97, FRTYPE97, SATACTQ2, and TSATDER—had low weighted response rates largely because they applied to a small proportion of the sample. That is, because applicability could not be determined for respondents with incomplete interviews, those respondents are considered to have indeterminate responses. Incomplete interviews thus make up a relatively high proportion of the indeterminate responses for those items. However, it is highly likely that the majority of cases with incomplete interviews would have been excluded from each of these items if these cases' information for these items had been gathered. When incomplete interviews are excluded from the calculation of the item response rates, the response rates for these variables are 92 percent or higher. Therefore, for these variables, it is unlikely that reported differences are biased because of missing data.

Four of the remaining variables—the level of the school at which the respondent taught during the current or most recent teaching job (CRLEV97), the percentage of minority students enrolled in that school (CRPMIN97), the level of the school at which the respondent taught during the first teaching job since receiving the bachelor's degree (FRLEV97), and the sector of that school (FRTYPE97)—were derived by matching graduates' reports of the schools in which they had taught with NCES universe survey data on public (1997–98 Common Core of Data, CCD) and private (1997–98 Private School Survey, PSS) schools. Respondents had invalid data on these variables for reasons other than not completing the interview, not knowing the name/location of the school(s) in which they taught, or refusing to respond. In some cases the school code that was believed to match a respondent's school was not correct, in other cases the code appeared to be valid but could not be matched to the CCD or PSS. In other cases, the

Table B-2. Variables with response rates less than 85 percent

Variable name	Variable label	Item response rate: Including "not reached" cases	Item response rate: Excluding "not reached" cases
CGADJUST	Whether current/most recent school helped new teachers adjust to school environment	66.7	94.3
CGADMSUP	Whether very satisfied with administration support in current/ most recent school	73.8	95.6
CGBEHAVE	Whether very satisfied with student behavior in current/most recent school	73.9	95.6
CGCLSIZE	Whether very satisfied with class size in current/most recent school	74.0	95.8
CGCRPUPR	Type of school (current or most recent school)	66.4	94.3
CGCURRCL	Whether current/most recent school helped new teachers with curriculum	66.2	93.6
CGDISPLN	Whether current/most recent school helped new teachers with discipline	66.0	93.2
CGENVMNT	Whether very satisfied with learning environment at current/ most recent school	74.0	95.8
CGESTEEM	Whether very satisfied with society's esteem for teaching profession	73.5	95.2
CGINSTRC	Whether current/most recent school helped new teachers with instruction	66.3	93.7
CGMTVTN	Whether very satisfied with student motivation in current/most recent school	73.6	95.3
CGPARSUP	Whether very satisfied with parent support in current/most recent school	71.0	91.9
CGTCHAPP	Percentage who applied for teaching job	84.5	97.2
CRLEV97	Level of current/most recent school	54.7	78.0
CRPMIN97	Percentage minority enrollment of current/most recent school	54.5	77.7
FRLEV97	Level of school at which first taught	56.5	80.4
FRTYPE97	Sector of school at which first taught	56.5	80.4
NTAPP series	Reasons for not applying for teaching position	83.1	96.7
SATACTQ2	College entrance examination score	78.8	†
TFIRS series	Whether taught various subjects in first teaching job	74.3	94.5
TESATDER	College entrance examination score	69.1	†

† Not applicable. These variables apply to all sample cases.

NOTE: Weighted item response rates were calculated by dividing the total weighted number of valid responses by the total population for whom the question was applicable. Bias analyses were conducted for variables with a weighted item response rate below 85 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2000/01 Baccalaureate and Beyond Longitudinal Study (B&B:2000/01).

respondent's school could be matched to a school on the CCD/PSS file, but the CCD/PSS file did not include data on the particular school variable (e.g., percentage minority enrollment in the school).

Bias analyses were conducted to determine whether the cases that did not have data on these variables differed from those who did. After removing legitimate skips (those in the analysis sample for whom the question did not apply) and sample members who did not complete the interview (but who were unlikely to have been eligible for these items because most sample members had not taught), cases with missing and nonmissing responses were compared with each other with respect to several variables: gender (GENDER), race/ethnicity (RACE1), undergraduate major (BMAJORS3), cumulative undergraduate grade point average (GPA2), and degree-granting institution type (BSECTOR9). Each of these comparison variables had a response rate of 97.8 percent or higher.

These comparisons indicated that graduates who taught and who had data on these school characteristics were more likely than those without school data to be women; to be White, non-Hispanic; to have been graduated from public 4-year non-doctorate-granting institutions; to have majored in education; and to have had a cumulative undergraduate GPA of 3.75 or higher. As demonstrated in the report, graduates with these characteristics were more likely than other graduates to have taught and prepared to teach. Graduates who taught and for whom school characteristics data were available were less likely than those without such data to be Asian/Pacific Islander (or, for FRLEV97 and FRTYPE97, other unspecified race/ethnicity); to have been graduated from a private for-profit institution or a private not-for-profit doctorate-granting institution (except for FRLEV97 and FRTYPE97); to have majored in business and management, mathematics/computer science/natural sciences, social sciences, or another unspecified major; or to have a GPA of 2.25 to 2.74. Thus, it is possible that bias was introduced into the analyses of teachers according to these characteristics of the schools in which they taught.

Bias analyses were also conducted on the remaining two variables—SATACTQ2 and TSATDER, which indicate graduates' CEE scores for the 1992–93 and 1999–2000 cohorts, respectively—because relatively high proportions of graduates had no CEE score available for analysis. B&B:93/94 graduates did not have scores available for analysis because they had not taken a CEE or because neither they nor their NPSAS institution reported a CEE score. B&B:2000/01 graduates did not have scores available for analysis either because they had not taken a CEE or because their degree-granting institutions did not have a score on record and no score was available from the administering agency because they were older than the files

purchased for matching. B&B:2000/01 graduates were not asked to report CEE scores in either the NPSAS or B&B interview.

Among 1992–93 graduates, those with CEE scores were more likely than those without scores to be men. Those with scores were also more likely to be White and less likely to be Hispanic. In terms of academic characteristics, graduates with CEE scores were more likely to have begun in a 4-year institution and less likely to have begun postsecondary education in a less-than-4-year institution. Graduates who had a CEE score available for analysis were more likely than graduates without scores to have received bachelor's degrees from doctorate-granting institutions, and less likely to have received them from private 4-year non-doctorate-granting institutions. Compared with graduates who did not have CEE scores available for analysis, graduates with CEE scores were more likely to have majored in mathematics or the physical sciences, and less likely to have majored in business/management or an "other" field. Finally, those who had CEE scores available for analysis were less likely than those who did not have them to have cumulative undergraduate GPAs in both the lowest and the highest GPA categories.

Some similar relationships were found between those with and without CEE scores among 1999–2000 graduates. Compared with those who did not have CEE scores available for analysis, graduates with scores were more likely to be White and less likely to be American Indian, Black, or Hispanic. Graduates with scores were also more likely to have begun postsecondary education in 4-year institutions and more likely to have received the bachelor's degree from doctorate-granting institutions. Graduates with scores were more likely than those without scores to have GPAs between 2.75 and 3.24 and less likely to have GPAs of 3.75 or higher. Finally, graduates with scores were more likely to have majored in business/management and less likely to have majored in education or the social sciences. Thus, for both cohorts not having test scores available for analysis was not a random occurrence, and the estimates regarding graduates' scores may be biased.

Data Analysis System

The estimates presented in this report were produced using the B&B:93/97 and B&B:2000/01 Data Analysis Systems (DASs).[4] The DAS software makes it possible for users to specify and generate their own tables from the B&B data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS

[4]As noted above, the B&B:93/97 DAS is cumulative (i.e., includes B&B:93/94 data as well as B&B:93/97 data) and supersedes the B&B:93/94 DAS, which is no longer available.

calculates proper standard errors[5] and weighted sample sizes for these estimates. For example, table B1 contains estimated standard errors that correspond to the estimates presented in table 14 and that were generated by the B&B:93/97 and B&B:2000/01 DASs. 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 B&B:93/97, B&B:2000/01, and other Data Analysis Systems, consult the NCES DAS website (http://nces.ed.gov/das) or contact

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Statistical Procedures

Differences Between Means

The descriptive comparisons were tested in this report using Student's *t* statistic. Differences between estimates are tested against the probability of a Type I error,[6] or significance level. The significance levels were determined by calculating the Student's *t* values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

Student's *t* values may be computed to test the difference between estimates with the following formula:

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

[5] The B&B sample 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.

[6] A Type I error occurs when one concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn, when no such difference is present.

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. This formula is valid only for independent estimates. When estimates are not independent, a covariance term must be added to the formula:

$$\frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2 - 2(r)se_1\ se_2}} \tag{2}$$

where r is the correlation between the two estimates.[7] This formula is used when comparing two percentages from a distribution that adds to 100. If the comparison is between the mean of a subgroup and the mean of the total group, which is the primary comparison in this report, the following formula is used:

$$\frac{E_{sub} - E_{tot}}{\sqrt{se_{sub}^2 + se_{tot}^2 - 2p\,se_{sub}^2}} \tag{3}$$

where p is the proportion of the total group contained in the subgroup.[8] The estimates, standard errors, and correlations can all be obtained from the DAS.

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 students in the specific categories used for comparison. Hence, a small difference compared across a large number of students would produce a large t statistic.

A second hazard in reporting statistical tests is the possibility that one can report a "false positive" or Type I error. In the case of a t statistic, this false positive would result when a difference measured with a particular sample showed a statistically significant difference when there is no difference in the underlying population. Statistical tests are designed to control this type of error, the probability of which is denoted by alpha. The alpha level of .05 selected for findings in this report indicates that a difference of a certain magnitude or larger would be produced no more than one time out of twenty when there was no actual difference in the quantities in the underlying population. When we test hypotheses that show t values at the .05 level or smaller, we treat this finding as rejecting the null hypothesis that there is no difference between the two quantities. However, there are other cases when exercising additional caution is warranted. When there are significant results not indicated by any hypothesis being tested or when we test a large number of comparisons in a table, Type I errors cannot be ignored. For

[7] U.S. Department of Education, National Center for Education Statistics, *A Note from the Chief Statistician*, no. 2, 1993.
[8] Ibid.

example, when making paired comparisons among 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 the either of the two situations described in the previous paragraph was encountered in this report, comparisons were made 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 will sum to $p \leq .05$.[9]

For example, in a comparison of males and females, only one comparison is possible (males versus females). In this family, k=1, and the comparison can be evaluated without adjusting the significance level. When students are divided into five racial/ethnic groups and all possible comparisons are made, then k=10 and the significance level of each test must be $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \tag{4}$$

where j is the number of categories for the variable being tested. In the case of race/ethnicity, there are six racial/ethnic groups (American Indian/Alaska Native; Asian/Pacific Islander; Black, non-Hispanic; Hispanic; White, non-Hispanic; and other), so substituting 6 for j in equation 4,

$$k = \frac{6(6-1)}{2} = 15 .$$

Linear Trends

While most descriptive comparisons in this report were tested using Student's t statistic, some comparisons among 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 differences among percentages 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. 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

[9] 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 Dunn (1961).

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.[10] 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.

[10] 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.