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U.S. Department of Education

**Career and Technical Education
Teachers and Schools**

***Results From the 2011–12 Schools
and Staffing Survey***

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Career and Technical Education Teachers and Schools

Results From the 2011–12 Schools and Staffing Survey

Prepared for the
U.S. Department of Education
Office of Career, Technical, and Adult Education

**NATIONAL CENTER FOR INNOVATION
IN CAREER AND TECHNICAL EDUCATION**

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ABBREVIATIONS

| | |
|-------------------|--|
| CCSSO | Council of Chief State School Officers |
| CTE | career and technical education |
| <i>ESEA</i> | <i>Elementary and Secondary Education Act of 2001</i> |
| <i>ESSA</i> | <i>Every Student Succeeds Act of 2015</i> |
| FCSE | family and consumer sciences education |
| <i>IDEA</i> | <i>Individuals with Disabilities Education Act</i> |
| IEP | individualized education program |
| GLMP | general labor market preparation |
| NASDCTEc | National Association of State Directors of Career Technical Education Consortium |
| NCES | National Center for Education Statistics |
| NCLB | <i>No Child Left Behind</i> |
| OCC | occupational education |
| <i>Perkins IV</i> | <i>Carl D. Perkins Career and Technical Education Act of 2006</i> |
| ROTC | Reserve Officers' Training Corps |
| SASS | Schools and Staffing Survey |
| SASS:08 | 2007–08 Schools and Staffing Survey |
| SASS:12 | 2011–12 Schools and Staffing Survey |
| SY | school year |

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EXECUTIVE SUMMARY

This report uses data drawn from the 2011–12 Schools and Staffing Survey (SASS:12),¹ administered by the National Center for Education Statistics (NCES) in the U.S.

Department of Education, to present an in-depth look at the career and technical education (CTE) teaching profession today. The purpose of this report is to provide policymakers and practitioners with information about such critical issues as CTE teacher supply and demand, preparation, certification pathways, professional development experiences, working conditions, and job satisfaction.

This report provides national statistics, as well as regional breakdowns on some measures, and serves as a source of information for questions related to the recruitment, training, and distribution of CTE teachers in public high schools.² The report describes CTE teachers in public high schools and compares them with public high school teachers overall and with non-CTE public high school teachers.³ In addition, the report presents comparisons among CTE teachers by their CTE main teaching assignment field — occupational education (OCC),⁴ family and consumer sciences education (FCSE), and general labor market preparation (GLMP) — and, among OCC teachers, by their specific occupational field.⁵ The report also offers a preliminary look at how the number and mix of CTE teachers changed

¹ See the About the Data and Analysis section for details about the Schools and Staffing Survey data source.

² All results presented in this report are from public high schools, defined as public secondary or combined elementary/secondary schools offering at least one of grades 9–12.

³ This report defines “public high school teachers” as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early-childhood, pre-K, or elementary education. CTE teachers reported that their main teaching assignment was in a career or technical education field, as described in footnote 5; non-CTE teachers reported main teaching assignments in academic or other fields. Academic teaching assignment fields include arts and music, English and language arts, English as a second language, foreign languages, mathematics, natural sciences, and social sciences. Other teaching assignment fields include special education; health education (other than health sciences); physical education; military science or Reserve Officers’ Training Corps (ROTC); religious studies; and other unspecified teaching assignments.

⁴ Occupational education is sometimes referred to as “specific labor market preparation.”

⁵ CTE main teaching assignment fields encompass OCC, FCSE, GLMP, and other unspecified CTE fields. Occupational CTE fields include agriculture and natural resources; business management; business support; communications and design; computer and information sciences; construction, architecture, and engineering; consumer, culinary, and public services; health sciences; manufacturing; marketing; and mechanics and repair. Family and consumer sciences education deals with the economics and management of the home and community. General labor market preparation includes industrial arts and technology education.



between school year (SY) 2007–08 and SY 2011–12.⁶ Because CTE teachers work in a variety of settings, including CTE-focused schools, comprehensive high schools (or “regular” high schools, as referred to by SASS:12), charter high schools, and other types of high schools,⁷ results from comparisons among these school categories are also presented. The measures reported can serve as benchmarks for state and local officials to compare their CTE teacher pipelines and professional development practices with the broader national context. Some of the key findings are summarized below.

Description of the CTE Teacher Workforce

In SY 2011–12, CTE teachers accounted for approximately 12 percent of all public high school teachers in the United States (table 4). Approximately 81 percent of CTE teachers worked in regular high schools, while the remaining CTE teachers worked in CTE schools (12 percent), charter schools (2 percent), or other types of high schools (5 percent) (table 1). About 43 percent of all CTE teachers in the United States worked in the South, compared with the Northeast (18 percent), the Midwest (23 percent), and the West (17 percent) (table 2).

The size of the CTE workforce and the distribution of CTE teachers across CTE main teaching assignment fields differed between SY 2007–08 and SY 2011–12. CTE teachers represented a smaller proportion of the overall public high school teaching force in SY 2011–12 compared with four years earlier (12 percent vs. 14 percent) (table 4). This decrease was due primarily to decreases in business support and other unspecified CTE fields, and occurred in spite of the growth in health sciences and marketing fields during the same time. Findings also suggest that the CTE workforce experienced an influx of new and younger agriculture and natural resources teachers, who appear to have replaced older retiring teachers.⁸ The growth in the health sciences field over the four years appears to be driven by an influx of teachers from business and industry.⁹

⁶ The SASS questionnaires asked teachers and principals to answer questions about the current or previous school year. Although the term is not defined in the questionnaires, a typical U.S. school year begins in August or September and runs for 12 months.

⁷ Other school types include special program emphasis schools, special education schools, and alternative/other schools.

⁸ Twenty-two percent of agriculture and natural resources teachers had less than four years of teaching experience (table 7), and 28 percent were under age 30 in SY 2011–12 (table 3). However, the overall proportion of public high school teachers who were agriculture and natural resources teachers did not change significantly between SY 2007–08 and SY 2011–12 (table 4).

⁹ As of SY 2011–12, some 74 percent of health science teachers achieved their teaching certification via an alternative route (table 5). Alternative certification may be awarded for business and industry experience in lieu of education and training in some CTE teaching fields, such as health sciences.



Teacher Background and Preparation

Several differences were found in the academic background and career preparation of CTE teachers as compared with public high school teachers overall. For example, although a master's degree or higher was the most common level of educational attainment for CTE teachers (47 percent) in SY 2011–12, the proportion of CTE teachers at that level was smaller than the proportion of all public high school teachers with a master's degree or higher (57 percent) (table 7). Furthermore, a larger percentage of CTE teachers (28 percent) than public high school teachers in general (20 percent) reported entering the teaching profession via an alternative certification route (table 5).

Early-career CTE teachers may have received some types of support less often than their non-CTE peers. For example, among all teachers, a smaller proportion of CTE teachers than public high school teachers in general reported having a student teaching experience (85 percent vs. 89 percent). Among first-year teachers,¹⁰ the proportions of CTE teachers reporting they had common planning time with other teachers (33 percent) or extra classroom assistance (14 percent) were smaller than those of first-year public high school teachers overall (43 and 20 percent, respectively) (table 6).

Working Conditions and Professional Development

The majority of CTE teachers (97 percent) reported participating in some kind of professional development in SY 2011–12 (table 8). Most participated in professional development focused on the content of their subjects taught (80 percent) or in the use of computers for instruction (73 percent). Most of the CTE teachers who participated in these areas of professional development found the activities useful (76 and 74 percent, respectively), larger percentages than among public high school teachers overall (67 and 63 percent, respectively). The data indicated that a greater percentage of CTE teachers received at least one of the following types of financial support for professional development than public high school teachers overall (67 percent vs. 53 percent) (table 9): stipends for professional development activities outside of work; full or partial reimbursement for college tuition; or reimbursement for conference or workshop fees or travel or daily expenses. This finding may be related to the requirement for subgrantees under the *Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV)* to use *Title I* funds to provide professional development to secondary and postsecondary CTE faculty.¹¹

Several measures indicated differences in the working conditions of CTE teachers compared with those of their non-CTE peers. The average class size among CTE teachers was smaller

¹⁰ Teachers who began teaching in SY 2007–08 or later were asked about their experiences in their first year of teaching.

¹¹ See Sec. 135(b)(5) of *Perkins IV*.

than the average class size for public high school teachers overall by four students (22 students vs. 26 students) (table 3). CTE teachers reported serious problems with student engagement less often than other public high school teachers did. For example, 24 percent of CTE teachers said student apathy was a serious problem, compared with 32 percent for public high school teachers overall (table 10). They also indicated having moderate or greater control over curriculum and instruction more often than did other public high school teachers; for example, 81 percent of CTE teachers said they had moderate or greater control over textbook and materials selection compared with 65 percent of public high school teachers overall (table 12). Although the apparent difference in the base salaries of CTE teachers (\$51,900) compared with those of teachers of academic subjects (\$53,000) as of SY 2011–12 was not statistically significant,¹² salaries for teachers working at CTE schools were higher than for teachers working in regular and charter high schools (\$56,800 vs. \$53,300 and \$43,700, respectively) (table 3).

CTE Teacher Retention and Job Vacancies

Despite CTE teachers' high rate of job satisfaction (92 percent) in SY 2011–12, several other measures suggest that the recruitment and retention of CTE teachers posed challenges for schools and districts. Thirty-two percent of CTE teachers reported that they would leave teaching as soon as possible if offered a higher paying job (table 13). Although schools were more likely to report having academic vacancies than CTE vacancies (90 percent vs. 33 percent), they were also more likely to report having difficulty filling their CTE vacancies than filling their academic ones (57 percent vs. 39 percent) (table 15).¹³ Thirty-three percent of all public high schools reported at least one CTE teacher vacancy in SY 2011–12 and, of these, 57 percent found the vacancies difficult to fill (table 15). Ninety-two percent of CTE schools reported CTE teaching vacancies, and 64 percent of CTE schools indicated that the positions were difficult to fill. While information on CTE vacancies by specific occupational area was not available, there were some differences by region in CTE vacancy rates, with a larger percentage of schools in the South reporting CTE vacancies than schools in other regions (40 percent vs. 26–31 percent). However, no differences were found among regions in the perceived difficulty of filling these vacancies.¹⁴

¹² See the Statistical Definitions section of Appendix B for the definition of “statistically significant.”

¹³ Difficulty filling vacancies in a field includes administrator reports that filling the vacancy was somewhat difficult, very difficult, or not possible.

¹⁴ Apparent differences in the percentages of schools reporting difficulties filling CTE vacancies in the South from other regions were not statistically significant.



INTRODUCTION

In November 2014, the Council of Chief State School Officers (CCSSO) issued a report asserting that if schools in the United States are to prepare students for success in the 21st-century labor market, they must provide these students with access to high-quality career and technical education (CTE) options (CCSSO 2014). Critical to the delivery of high-caliber instruction is the CTE teaching workforce; yet, in August 2009, the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) declared that the nation faced a shortage of CTE teachers and that efforts should be made to improve teacher recruitment and retention (NASDCTEc 2009). One recruitment strategy that states have adopted is to provide alternative licensure pathways for those entering the profession (Zirkle, Martin, and McCaslin 2007).

Beginning CTE teachers may have different induction and professional development needs than their non-CTE peers, due to potential differences in their certification and job responsibilities (Joerger and Bremer 2001). Induction experiences play an important role in the successful retention of teachers early in their careers (Ingersoll and Strong 2011). Induction support and professional development are factors that can contribute to teacher job satisfaction and teacher retention; however, state and district policies to develop and provide instructional support to novice teachers often do not meet the specific needs of beginning CTE teachers (Ruhland and Bremer 2002). Other factors that can contribute to teacher job satisfaction and retention include salary, student motivation, and degrees of faculty influence and autonomy (Ingersoll 2001).

The literature cited above suggests that successfully recruiting and retaining CTE teachers may depend on providing (1) clear pathways into teaching, (2) good working conditions, (3) appropriate compensation, and (4) professional development opportunities. Monitoring progress toward meeting these objectives requires using nationally representative data reflecting a wide range of CTE teachers in varying local contexts.

This study uses data from the 2011–12 Schools and Staffing Survey (SASS:12) to build on previous reports on CTE teachers (Bersudskaya and Cataldi 2011; Chen and Wu 2012) written for the National Center for Education Statistics (NCES) and the National Assessment of Career and Technical Education (U.S. Department of Education 2014, ch. 2). This report provides a description of the recent characteristics, supply, background, and

working conditions of CTE teachers in public high schools.¹ The report describes CTE teachers in public high schools and compares them with public high school teachers overall and with non-CTE public high school teachers.² It examines CTE teachers according to their CTE main teaching assignment field, grouping them in one of three categories: occupational education (OCC),³ family and consumer sciences education (FCSE), or general labor market preparation (GLMP).⁴ Information on specific occupational CTE fields also appears. The report also examines the differences in some measures with important policy implications, such as CTE teacher certification pathways and compensation levels, between school year (SY) 2011–12 and SY 2007–08.⁵

Because CTE teachers can be found in a variety of high school settings, the report also compares schools specializing in CTE with those without a CTE focus, the latter including comprehensive high schools (or “regular” high schools, as referred to by SASS:12), charter high schools, and other⁶ high schools. It also examines differences among teachers at these schools.

¹ All results presented in this report are from public high schools, defined as public secondary or combined elementary/secondary schools offering at least one of grades 9–12.

² This report defines “public high school teachers” as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early-childhood, pre-K, or elementary education. CTE teachers reported that their main teaching assignment was in a career or technical education field, as described in footnote 4. Academic teaching assignment fields include arts and music, English and language arts, English as a second language, foreign languages, mathematics, natural sciences, and social sciences. Other teaching assignment fields include special education; health education (other than health sciences); physical education; military science or Reserve Officers’ Training Corps (ROTC); religious studies; and other unspecified teaching assignments.

³ Occupational education is sometimes referred to as “specific labor market preparation.”

⁴ CTE main teaching assignment fields encompass OCC, FCSE, GLMP, and other unspecified CTE fields. Occupational CTE fields include agriculture and natural resources; business management; business support; communications and design; computer and information sciences; construction, architecture, and engineering; consumer, culinary, and public services; health sciences; manufacturing; marketing; and mechanics and repair. Family and consumer sciences education deals with the economics and management of the home and community. General labor market preparation includes industrial arts and technology education.

⁵ The SASS questionnaires ask teachers and principals to answer questions about the current or previous school year. Although the term is not defined in the questionnaires, a typical U.S. school year begins in August or September and runs for 12 months.

⁶ Other school types include special program emphasis schools, special education schools, and alternative/other schools.



Organization of the Report

The remainder of this report includes the following three sections:

- About the Data and Analysis
- Results
 - Teacher workforce and characteristics
 - Teacher background and preparation
 - Working conditions and satisfaction
 - School characteristics
- Conclusions





ABOUT THE DATA AND ANALYSIS

Data Sources and Analysis Sample

The Schools and Staffing Survey (SASS), which was first administered by NCES during SY 1987–88, is a nationally representative quadrennial survey of public and private elementary and secondary schools, principals, and teachers in all 50 states and the District of Columbia. The analysis presented in this report uses SASS:12 data from both the teacher and school surveys. The data presented in the tables were generated from the restricted-use data set. The teacher survey data were used to describe the CTE teacher workforce, characteristics, working conditions, and job satisfaction, and to examine differences between CTE teachers in public high schools and public high school teachers in general, as well as between CTE and non-CTE public high school teachers. The school survey data were used to examine whether there were differences in student demographics and vacancies among CTE, regular, charter, and other types of high schools. The data were collected during SY 2011–12 and represent the most recent SASS teacher and school data available from NCES.

The SASS:12 survey includes approximately 51,000 teachers from about 11,000 public regular and charter schools in the United States. The analysis sample from SASS:12 used for this report includes approximately 18,300 public high school teachers. To be included in the analysis sample, eligible teachers must

- teach at a public secondary or combined elementary/secondary school;
- teach at least one class with students in grades 9, 10, 11, or 12; and
- have a main teaching assignment that is not early-childhood, pre-K, or elementary education.

This analysis also uses data from the 2007–08 Schools and Staffing Survey (SASS:08), which surveyed approximately 47,600 teachers from 9,800 public schools. The analysis sample from SASS:08 used for this report includes approximately 20,500 public high school teachers. The two analysis samples are examined to highlight changes from SY 2007–08 to SY 2011–12 among the CTE teacher population. Readers are cautioned, however, to avoid interpreting changes as indicative of larger trends; they represent simple differences between the two sample school years.



How to Interpret Results

This report examines characteristics of public high school teachers, including CTE, academic, and other teachers. The statistics shown in the tables and discussed in the report are considered estimates because they are drawn from sample survey data. Statistics reported include counts (e.g., the number of CTE teachers), means⁷ for a group (e.g., the mean age of public high school teachers), and proportions⁸ of a group (e.g., the proportion of CTE teachers participating in professional development).

The report examines means or proportions for CTE teachers on a variety of measures and compares them with the means or proportions for other groups of public high school teachers. The Student's *t*-test⁹ was used to detect differences between estimates that were larger or smaller than would be expected due to sampling variation. In some cases, CTE teachers were compared with teachers that were distinct or separate from them, such as academic teachers. Other comparisons, however, were part-to-whole comparisons — for example, CTE teachers compared with all public high school teachers — in which case CTE teachers were a part of the larger group with which they were compared. Throughout the report, wherever differences between CTE teachers or a subset of CTE teachers (e.g., agriculture and natural resource teachers) and a larger, overarching category are discussed, the reader should note that the estimates for the larger group include the dependent group.¹⁰

Unless noted otherwise, all differences reported in the text are statistically significant¹¹ at an alpha level¹² of .05. This means that the chance that differences between findings cited in the text are due to random variation among the sample is no greater than 5 percent. Readers should note that the text points out some instances when apparent differences were not statistically significant. Readers should also note the descriptive nature of this report; specifically, relationships between two or more estimates are not necessarily causal relationships. Observational data, such as those obtained through cross-sectional surveys, cannot be used to determine the underlying cause of the findings presented.

The study may be limited by small sample sizes for some groups, the availability of only two time periods for measuring changes over time, and other general limitations of observational data. Sample sizes were small for some CTE teaching fields, particularly for teachers in schools that are not regular high schools, which limited the power to detect significant differences.

For more information on the statistical procedures used in this report, see Appendix B.

⁷ The report generally refers to means as averages. The terms are synonymous. See the Statistical Definitions section of Appendix B for the definition of “mean.”

⁸ The report may use either the term “proportion” or “percentage.” The terms are synonymous.

⁹ See the Statistical Definitions section of Appendix B for the definition of “*t*-test.”

¹⁰ See the Establishing Statistical Significance section of Appendix B for information on how statistical tests were adjusted for part-to-whole comparisons.

¹¹ See the Statistical Definitions section of Appendix B for the definition of “statistical significance.”

¹² See the Statistical Definitions section of Appendix B for the definition of “alpha level.”



RESULTS

Presented in the following sections are the results of the statistical analysis for (1) teacher workforce and characteristics, (2) teacher background and preparation, (3) working conditions and satisfaction, and (4) school characteristics.

Teacher Workforce and Characteristics

This section describes the public high school teacher workforce: it compares different types of CTE teachers with public high school teachers overall, on a number of characteristics. The section also examines differences in trends for CTE teachers and non-CTE teachers for selected measures between SY 2007–08 and SY 2011–12.

Characteristics of the CTE Teacher Workforce

Overall CTE teacher workforce

Of the more than 1 million public high school teachers in SY 2011–12, approximately 130,400 had a main teaching assignment in a CTE field (table 1). Most CTE teachers (81,800) had a main teaching assignment in an OCC field, compared with 20,700 FCSE teachers, 13,900 GLMP teachers, and 13,900 teachers in other unspecified CTE fields. Among OCC fields, more CTE teachers (17,800) taught in a business field in SY 2011–12 than in any other field, followed by construction, architecture, and engineering (11,500 teachers) and agriculture and natural resources (11,300 teachers).¹³

Full-time versus part-time status

A majority of CTE teachers (95 percent) taught full time, which is not different from the overall public high school teacher population at a statistically significant level (table 1). Among all CTE fields, the field with the largest percentage of part-time teachers was consumer, culinary, and public services teachers, with 22 percent working part time.

¹³ The numbers of construction, architecture, and engineering teachers, and agriculture and natural resources teachers were not different from the number of communications and design teachers at statistically significant levels.

Table 1.
Number of public high school teachers and percentage distribution, by teaching status, school type, grades taught, teacher type, and CTE teaching field: School year 2011–12

| Teacher type and CTE teaching field | Number of teachers | Teaching status | | School type ^a | | | | Grades taught ^b | | | |
|---|--------------------|-----------------|------------|--------------------------|------------|------------|------------|----------------------------|-------------|-------------|-------------|
| | | Full time | Part time | Regular | CTE | Charter | Other | 9th | 10th | 11th | 12th |
| Total | 1,063,400 | 94.9 | 5.1 | 86.2 | 2.7 | 3.5 | 7.5 | 72.7 | 82.2 | 84.8 | 82.5 |
| Teacher type (main teaching assignment) | | | | | | | | | | | |
| Academic | 722,200 | 95.1 | 4.9 | 87.8 | 1.3 | 3.9 | 7.0 | 67.8 | 79.2 | 82.0 | 79.6 |
| Career and technical education (CTE) | 130,400 | 94.5 | 5.5 | 80.6 | 12.3 | 2.0 | 5.1 | 78.1 | 88.7 | 95.3 | 95.6 |
| Other ^c | 210,800 | 94.2 | 5.8 | 84.3 | ‡ | ‡ | 10.8 | 85.9 | 88.7 | 88.0 | 84.6 |
| CTE teaching field | | | | | | | | | | | |
| Occupational education (OCC) | 81,800 | 94.8 | 5.2 | 76.6 | 15.5 | 2.1 ! | 5.8 | 74.0 | 86.8 | 96.2 | 96.6 |
| Agriculture and natural resources | 11,300 | 96.8 | 3.2 ! | 90.0 | 6.4 ! | ‡ | ‡ | 89.4 | 92.0 | 99.4 | 97.1 |
| Business, total | 17,800 ! | 96.2 | ‡ | 89.3 | ‡ | 2.7 ! | ‡ | 88.4 | 94.7 | 95.4 | 98.0 |
| Business management | 12,400 | 95.3 | ‡ | 90.8 | ‡ | ‡ | ‡ | 88.3 | 96.4 | 98.2 | 98.7 |
| Business support | 5,400 | 98.5 | ‡ | 85.8 | ‡ | ‡ | ‡ | 88.4 | 90.7 | 89.0 | 96.4 |
| Communications and design | 8,600 | 97.4 | 2.6 ! | 74.8 | 10.9 ! | ‡ | ‡ | 77.2 | 91.5 | 97.5 | 94.9 |
| Computer and information sciences | 5,000 | 92.1 | 7.9 ! | 76.8 | 11.8 ! | ‡ | ‡ | 85.7 | 90.0 | 97.3 | 97.8 |
| Construction, architecture, and engineering | 11,500 | 97.2 | 2.8 ! | 63.8 | 24.8 | 3.1 ! | 8.4 ! | 68.6 | 82.0 | 92.6 | 95.7 |
| Consumer, culinary, and public services | 6,600 | 77.5 | 22.5 | 57.6 | 32.5 | ‡ | ‡ | 59.4 | 77.9 | 92.7 | 95.9 |
| Health sciences | 7,200 | 91.5 | 8.5 ! | 65.5 | 28.5 | ‡ | ‡ | 39.5 | 72.1 | 94.1 | 95.2 |
| Manufacturing | 3,100 ! | 98.9 | ‡ | 56.7 | 40.4 | ‡ | ‡ | 55.7 | 81.3 | 99.6 | 99.6 |
| Marketing | 6,600 | 99.3 | ‡ | 94.8 | ‡ | ‡ | ‡ | 77.9 | 91.4 | 100.0 | 99.7 |
| Mechanics and repair | 4,200 | 96.9 | ‡ | 60.3 | 29.5 | ‡ | ‡ | 55.9 | 74.8 | 97.2 | 91.1 |
| Family and consumer sciences education (FCSE) | 20,700 | 95.9 | 4.1 | 93.6 | 2.1 ! | ‡ | ‡ | 85.4 | 94.0 | 97.1 | 97.5 |
| General labor market preparation and other | 27,900 | 92.7 | 7.3 ! | 82.6 | 10.4 | 2.5 ! | ‡ | 84.8 | 90.4 | 91.3 | 90.9 |
| General labor market preparation (GLMP) | 13,900 | 94.4 | 5.6 | 90.0 | 5.1 ! | ‡ | 3.8 ! | 91.6 | 93.3 | 92.1 | 90.9 |
| Other career and technical education | 13,900 | 91.0 | ‡ | 75.1 | 15.7 | 3.9 ! | ‡ | 78.0 | 87.4 | 90.6 | 91.0 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

^b Columns sum to greater than 100% because some teachers reported teaching more than one grade.

^c Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-1 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Types of schools where teachers worked

As of SY 2011–12, CTE teachers worked in regular, CTE, charter, and other types of high schools in different proportions than other types of teachers. The majority of CTE teachers (81 percent) taught in regular high schools, but more of them taught in CTE high schools (12 percent) than in charter (2 percent) or other types of schools (5 percent) (table 1). Compared with public high school teachers overall, smaller percentages of CTE teachers worked at regular high schools (86 percent vs. 81 percent), charter schools (4 percent vs. 2 percent), and other schools (7 percent¹⁴ vs. 5 percent), while larger percentages of CTE teachers worked in CTE high schools than public high school teachers in general (12 percent vs. 3 percent).¹⁵

A greater proportion of OCC teachers overall worked in regular high schools than in CTE schools (77 percent vs. 16 percent).¹⁶ However, the proportions of OCC teachers whose main teaching assignments were in manufacturing; mechanics and repair; consumer, culinary, and public services; health sciences; and construction, architecture, and engineering and who taught in CTE schools (25 percent to 40 percent) were larger than the proportions of OCC teachers with main teaching assignments in agriculture and natural resources; communications and design; and computer and information sciences who also taught in CTE schools (6 percent to 12 percent).

Geographic region

In SY 2011–12, the geographic distribution of CTE teachers was different from the distribution of public high school teachers overall. The proportion of CTE teachers working in the South was greater than that of public high school teachers in general (43 percent vs. 38 percent), and the proportion of CTE teachers in the Northeast was smaller than that of public high school teachers in general (18 percent vs. 21 percent¹⁷) (table 2). Apparent differences between the populations of CTE teachers and public high school teachers overall in the Midwest and West regions were not statistically significant.

As shown in table 2, the largest percentage of public high school CTE teachers worked in the South (43 percent), compared with the Northeast (18 percent), the Midwest (23 percent), and the West (17 percent). This geographical pattern held true for OCC teachers overall (46 percent in the South vs. 23 percent or less in the other regions), FCSE teachers (40 percent vs. 25 percent or less), and GLMP and other CTE teachers (37 percent vs. 23 percent or less¹⁸).

¹⁴ The value of 7 percent appears in table 2 as 7.5. See rule 3 in the Rounding subsection in Appendix B.

¹⁵ While CTE schools have a CTE focus, they also offer academic classes. Table 1 shows that 1 percent of all academic public high school teachers in SY 2011–12 taught in CTE schools.

¹⁶ The apparent difference in the proportions of manufacturing teachers working in CTE and regular high schools (40 percent and 57 percent) was not statistically significant.

¹⁷ The value of 21 percent appears in table 2 as 21.5. See rule 3 in the Rounding subsection in Appendix B.

¹⁸ The value of 23 percent appears in table 2 as 23.5. See rule 3 in the Rounding subsection in Appendix B.

Table 2.
Percentage distribution of public high school teachers according to the region and urbanicity of their schools, by teacher type, CTE teaching field, and school type:
School year 2011–12

| Teacher type, CTE teaching field, and school type | Region ^a | | | | Urbanicity ^b | | | |
|---|---------------------|-------------|-------------|-------------|-------------------------|-------------|-------------|-------------|
| | Northeast | Midwest | South | West | City | Suburban | Town | Rural |
| Total | 21.5 | 22.2 | 37.5 | 18.8 | 25.9 | 31.4 | 11.5 | 31.2 |
| Teacher type (main teaching assignment) | | | | | | | | |
| Academic | 21.9 | 21.9 | 36.8 | 19.3 | 26.5 | 32.2 | 10.9 | 30.4 |
| Career and technical education (CTE) | 17.7 | 22.9 | 42.9 | 16.5 | 21.1 | 27.7 | 13.6 | 37.6 |
| Other ^c | 22.2 | 22.9 | 36.5 | 18.4 | 26.7 | 31.0 | 12.1 | 30.1 |
| CTE teaching field | | | | | | | | |
| Occupational education (OCC) | 15.5 | 22.8 | 45.6 | 16.1 | 21.6 | 25.3 | 13.2 | 39.9 |
| Agriculture and natural resources | ‡ | 28.9 | 48.4 | 16.6 | 5.2 ! | 4.7 ! | 16.3 | 73.9 |
| Business, total | 14.6 | 23.2 | 47.4 | 14.9 | 15.8 | 28.0 | 13.8 | 42.5 |
| Business management | 17.1 | 26.6 | 41.8 | 14.5 | 17.9 | 21.5 | 16.2 | 44.5 |
| Business support | ‡ | 15.3 | 60.2 | 15.7 | 11.1 ! | 42.8 | 8.2 ! | 37.8 |
| Communications and design | 22.6 ! | 16.7 | 41.9 | 18.8 | 42.3 | 26.1 | 6.8 ! | 24.9 |
| Computer and information sciences | 21.6 ! | 22.8 | 31.7 | 24.0 | 19.3 ! | 34.1 | 13.7 | 32.9 |
| Construction, architecture, and engineering | 24.5 | 26.7 | 36.5 | 12.3 | 22.3 | 30.5 | 10.3 | 36.8 |
| Consumer, culinary, and public services | 26.5 ! | 20.1 ! | 33.3 | 20.2 | 23.6 ! | 36.0 | 16.7 | 23.6 |
| Health sciences | ‡ | 16.3 ! | 63.1 | 15.2 ! | 22.6 | 26.0 ! | ‡ | 38.1 |
| Manufacturing | ‡ | 20.6 ! | 45.8 ! | 17.2 ! | ‡ | 19.9 ! | 12.7 ! | 43.0 ! |
| Marketing | 6.9 ! | 21.8 ! | 62.0 | 9.3 ! | 35.9 | 31.7 ! | 8.9 ! | 23.5 ! |
| Mechanics and repair | ‡ | 24.5 | 43.5 | 20.9 | 18.9 ! | 19.5 ! | 24.4 | 37.2 |
| Family and consumer sciences education (FCSE) | 18.5 | 25.0 | 40.0 | 16.5 | 25.1 | 27.6 | 14.9 | 32.4 |
| General labor market preparation and other | 23.5 | 21.9 | 36.9 | 17.7 | 16.7 | 34.9 | 13.7 | 34.7 |
| General labor market preparation (GLMP) | 29.6 | 24.9 | 28.6 | 16.9 | 11.7 | 32.6 | 16.1 | 39.7 |
| Other career and technical education | 17.3 | 19.0 | 45.3 | 18.4 | 21.7 | 37.2 | 11.3 | 29.8 |

See notes at end of table.

Table 2.
Percentage distribution of public high school teachers according to the region and urbanicity of their schools, by teacher type, CTE teaching field, and school type:
School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Region ^a | | | Urbanicity ^b | | | | |
|---|---------------------|---------|--------|-------------------------|------|----------|------|-------|
| | Northeast | Midwest | South | West | City | Suburban | Town | Rural |
| School type ^d | | | | | | | | |
| Regular | 21.7 | 22.4 | 38.2 | 17.7 | 22.7 | 32.2 | 11.9 | 33.2 |
| CTE | 32.0 | 24.5 | 29.9 | 13.6 | 25.2 | 36.4 | 10.9 | 27.5 |
| Charter | ‡ | ‡ | 26.4 ! | 36.7 ! | 55.2 | 24.2 | ‡ | 16.4 |
| Other | 17.4 | 20.5 | 37.2 | 24.8 | 48.3 | 24.1 | 10.9 | 16.6 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of "standard error."

‡ Reporting standards not met (too few cases for a reliable estimate).

^a The Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The Midwest region includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, North Dakota, Nebraska, Ohio, South Dakota, and Wisconsin. The South region includes Alabama, Arkansas, District of Columbia, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. The West region includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

^b A city refers to any territory (1) inside a principal city and (2) inside an urbanized area. A suburb refers to any territory (1) outside a principal city and (2) inside an urbanized area with a population of at least 50,000 and less than 100,000. A town refers to any territory in an urban cluster with a population between 2,500 and 50,000. Rural refers to any territory outside urbanized areas and urban clusters.

^c Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^d Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-2 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.



Locale

Higher percentages of public high school teachers overall taught in suburban and rural schools (31 percent each) than in city and town schools (26 percent and 11 percent, respectively¹⁹) in SY 2011–12 (table 2). A smaller percentage of CTE teachers than of public high school teachers overall taught in city schools (21 percent vs. 26 percent), and they more frequently taught in rural schools than did public high school teachers in general (38 percent vs. 31 percent). A larger proportion of agriculture and natural resources teachers taught in rural schools than all other OCC teachers (74 percent vs. 43 percent or less), and communications and design teachers taught in larger proportions in city schools than teachers from most other OCC areas (42 percent vs. 36 percent or less).²⁰

Teacher demographics

Several demographic characteristics of CTE teachers differed in SY 2011–12 from those of all public high school teachers combined (table 3). For example, CTE teachers were older on average than public high school teachers in general (46 years old vs. 43 years old). Among CTE teachers, OCC teachers were younger on average than FCSE teachers (45 years old vs. 48 years old). Among OCC teachers, those in agriculture and natural resources fields were generally younger than their colleagues in other OCC fields (37 years old vs. 43 to 50 years old).²¹

While female teachers comprised the majority (58 percent) of the overall public high school teacher population (table 3), they accounted for only 51 percent of the CTE teacher population, a proportion not different at a statistically significant level from 50 percent. Among CTE teachers, male teachers comprised the majority of OCC teachers (55 percent) and GLMP teachers (83 percent), while female teachers comprised the majority of FCSE teachers (96 percent).

¹⁹ The value of 11 percent appears in table 2 as 11.5. See rule 3 in the Rounding subsection in Appendix B.

²⁰ Proportions of communications and design teachers teaching in urban schools were not different at statistically significant levels from proportions of marketing; consumer, culinary, and public services; or health sciences teachers.

²¹ The apparent difference in age between agriculture and natural resources teachers and marketing teachers was not statistically significant.

Table 3.
Public high school teachers' age, sex, base salary, and average class size, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Average age | Distribution of age | | | | Sex | | Average base salary ^a | Average class size |
|--|----------------|---------------------|-------------|-------------|-------------|-------------|-------------|--|-----------------------|
| | | Younger than 30 | 30–49 | 50–54 | 55 or older | Male | Female | | |
| Total | 42.7 | 15.4 | 53.1 | 11.6 | 19.9 | 42.2 | 57.8 | \$53,100 | 25.5 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 41.8 | 17.3 | 54.4 | 9.9 | 18.3 | 40.7 | 59.3 | 53,000 | 27.3 |
| Career and technical education (CTE) | 45.6 | 10.6 | 47.6 | 15.3 | 26.5 | 48.9 | 51.1 | 51,900 | 22.0 |
| Other ^b | 43.8 | 11.9 | 52.0 | 14.9 | 21.2 | 43.2 | 56.8 | 54,200 | 21.7 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 45.0 | 10.6 | 50.2 | 14.3 | 24.9 | 55.3 | 44.7 | 51,100 | 22.2 |
| Agriculture and natural resources | 37.4 | 28.2 | 52.8 | 9.2 ! | 9.9 ! | 70.5 | 29.5 | 45,500 | 20.6 |
| Business, total | 43.4 | 10.4 | 62.6 | 11.5 | 15.4 | 30.2 | 69.8 | 49,700 | 24.1 |
| Business management | 43.4 | 9.4 ! | 64.3 | 10.2 ! | 16.1 | 29.4 | 70.6 | 48,900 | 23.4 |
| Business support | 43.3 | 12.6 ! | 58.9 | ‡ | 13.8 ! | 32.0 | 68.0 | 51,500 | 25.5 |
| Communications and design | 47.3 | ‡ | 46.0 | 24.1 ! | 23.0 ! | 55.7 | 44.3 | 53,900 | 23.6 |
| Computer and information sciences | 45.4 | 10.4 ! | 48.5 | 15.8 ! | 25.3 | 52.6 | 47.4 | 55,200 | 22.9 |
| Construction, architecture, and engineering | 48.3 | 9.9 ! | 37.5 | 10.5 ! | 42.1 | 94.3 | 5.7 ! | 54,100 | 19.6 |
| Consumer, culinary, and public services | 49.8 | ‡ | 41.2 | 13.4 ! | 40.3 | 32.9 | 67.1 | 55,700 | 23.3 |
| Health sciences | 47.0 | ‡ | 47.4 | 18.6 ! | 30.1 | 20.1 ! | 79.9 | 47,700 | 21.2 |
| Manufacturing | 50.0 | 5.7 ! | 32.6 ! | ‡ | 37.1 ! | 94.2 | ‡ | 51,600 | 19.0 |
| Marketing | 42.5 | ‡ | 62.2 | 12.4 ! | 18.2 ! | 46.1 | 53.9 | 51,700 | 24.6 |
| Mechanics and repair | 47.1 | ‡ | 50.0 | 17.0 ! | 29.6 | 98.0 | ‡ | 50,800 | 20.1 |
| Family and consumer sciences education (FCSE) | 47.8 | 12.4 | 34.4 | 18.5 | 34.7 | 4.2 ! | 95.8 | 53,300 | 24.5 |
| General labor market preparation and other | 45.6 | 9.2 | 49.8 | 16.0 | 25.0 | 63.3 | 36.7 | 53,200 | 19.8 |
| General labor market preparation (GLMP) | 45.3 | 11.6 ! | 44.6 | 19.2 | 24.6 | 82.9 | 17.1 | 52,200 | 19.7 |
| Other career and technical education | 46.0 | 6.7 | 55.1 | 12.8 | 25.4 | 43.8 | 56.2 | 54,200 | 20.0 |

See notes at end of table.

Table 3.
Public high school teachers' age, sex, base salary, and average class size, by teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Distribution of age | | | | | Sex | | Average base salary ^a | Average class size |
|--|---------------------|--------------------|-------|--------|-------------|------|--------|--|-----------------------|
| | Average age | Younger than 30 | 30–49 | 50–54 | 55 or older | Male | Female | | |
| School type ^c | | | | | | | | | |
| Regular | 42.5 | 15.6 | 53.5 | 11.6 | 19.2 | 41.6 | 58.4 | 53,300 | 26.2 |
| CTE | 46.0 | 8.4 | 50.6 | 14.0 ! | 26.9 | 52.3 | 47.7 | 56,800 | 21.1 |
| Charter | 39.4 | 24.7 | 52.1 | ‡ | 16.0 ! | 42.5 | 57.5 | 43,700 | 25.5 |
| Other | 44.9 | 11.3 | 50.1 | 12.0 | 26.6 | 45.7 | 54.3 | 54,500 | 19.9 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Average base salary is for the school year; summer earnings are not included.

^b Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^c Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-3 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Changes in Teacher Characteristics Between School Years 2007–08 and 2011–12

Changes in the CTE teacher population

Between SY 2007–08 and SY 2011–12, there were several changes in the CTE teacher population. CTE teachers accounted for a smaller proportion of the public high school teaching workforce in SY 2011–12 than in SY 2007–08 (12 percent vs. 14 percent) (table 4). Among CTE teachers, the percentage with a main teaching assignment in OCC fields increased from 55 percent²² to 63 percent between SY 2007–08 and SY 2011–12, while the percentage of CTE teachers with a main teaching assignment in other CTE fields decreased from 16 percent to 11 percent. There was no statistically significant difference in the percentage of CTE teachers with a main teaching assignment in FCSE between the years. The fields of health sciences and marketing accounted for larger proportions of CTE teachers in SY 2011–12 than in SY 2007–08 (increasing by 3 and 2 percentage points, respectively), while business support and other unspecified CTE fields accounted for smaller proportions of CTE teachers (decreasing by 2 and 5 percentage points, respectively).²³

Changes in school type and teacher demographic characteristics

There were no statistically significant differences between SY 2007–08 and SY 2011–12 in the school types (regular, CTE, charter, or other types of high schools) where CTE, academic, or other teachers worked (table 4). There were also no statistically significant differences between SY 2007–08 and SY 2011–12 in the sex of CTE, academic, or other teachers or in their average age, with the exception of academic teachers, whose average age in SY 2011–12 was somewhat lower than in SY 2007–08 (42 years vs. 43 years).

²² The value of 55 percent appears in table 4 as 55.5. See rule 3 in the Rounding subsection in Appendix B.

²³ Calculations of increase and decrease were performed on unrounded values and therefore may appear to be inconsistent with values in the tables, which were rounded according to the rounding rules described in Appendix B.

Table 4.
Percentage distribution of public high school teachers' main teaching assignment, by selected teacher and school characteristics, average age, years of experience, and annual base salary: School years 2007–08 and 2011–12

| Teacher and school characteristics | CTE | | Academic | | Other ^a | |
|---|----------------|-------------|-------------|-------------|--------------------|-------------|
| | 2007–08 | 2011–12 | 2007–08 | 2011–12 | 2007–08 | 2011–12 |
| | Percent | | | | | |
| Total | 13.9 | 12.3 | 67.1 | 67.9 | 18.9 | 19.8 |
| Career and technical education (CTE) teaching field | | | | | | |
| Occupational education (OCC) | 55.5 | 62.7 | † | † | † | † |
| Agriculture and natural resources | 8.1 | 8.6 | † | † | † | † |
| Business, total | 15.2 | 13.7 | † | † | † | † |
| Business management | 8.6 | 9.5 | † | † | † | † |
| Business support | 6.6 | 4.1 | † | † | † | † |
| Communications and design | 6.3 | 6.6 | † | † | † | † |
| Computer and information sciences | 4.4 | 3.8 | † | † | † | † |
| Construction, architecture, and engineering | 6.3 | 8.8 | † | † | † | † |
| Consumer, culinary, and public services | 3.9 | 5.0 | † | † | † | † |
| Health sciences | 2.9 | 5.5 | † | † | † | † |
| Manufacturing | 2.0 | 2.4 ! | † | † | † | † |
| Marketing | 2.6 | 5.1 | † | † | † | † |
| Mechanics and repair | 3.7 | 3.2 | † | † | † | † |
| Family and consumer sciences education (FCSE) | 16.7 | 15.9 | † | † | † | † |
| General labor market preparation and other | 27.8 | 21.4 | † | † | † | † |
| General labor market preparation (GLMP) | 11.7 | 10.7 | † | † | † | † |
| Other career and technical education | 16.1 | 10.7 | † | † | † | † |
| School type ^b | | | | | | |
| Regular | 82.1 | 80.6 | 88.5 | 87.8 | 87.6 | 84.3 |
| CTE | 12.5 | 12.3 | 1.5 | 1.3 | 1.6 | ‡ |
| Charter | 0.8 ! | 2.0 | 2.6 | 3.9 | 1.5 | ‡ |
| Other | 4.6 | 5.1 | 7.4 | 7.0 | 9.2 | 10.8 |
| Type of certificate held | | | | | | |
| Standard state or advanced certificate | 83.1 | 86.1 | 87.0 | 91.4 | 87.1 | 89.0 |
| Certificate with additional requirements | 14.1 | 12.2 | 11.5 | 7.7 | 10.6 | 9.7 |
| No certification held | 2.7 | 1.7 | 1.5 | 1.0 ! | 2.3 | 1.3 ! |
| Entered teaching through alternative certification | | | | | | |
| Yes | 25.4 | 28.3 | 17.7 | 18.6 | 15.4 | 18.0 |
| No | 74.6 | 71.7 | 82.3 | 81.4 | 84.6 | 82.0 |
| Sex | | | | | | |
| Male | 48.0 | 48.9 | 40.6 | 40.7 | 42.9 | 43.2 |
| Female | 52.0 | 51.1 | 59.4 | 59.3 | 57.1 | 56.8 |
| Years | | | | | | |
| Average age in years | 46.4 | 45.6 | 42.9 | 41.8 | 44.6 | 43.8 |
| Average years of experience | 14.4 | 14.2 | 13.2 | 13.3 | 14.3 | 14.2 |
| Dollars | | | | | | |
| Average annual base salary ^c | \$51,700 | \$51,900 | \$53,100 | \$53,000 | \$54,000 | \$54,200 |

See notes at end of table.



Table 4.
Percentage distribution of public high school teachers' main teaching assignment, by selected teacher and school characteristics, average age, years of experience, and annual base salary: School years 2007–08 and 2011–12—Continued

† Not applicable.

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of "standard error."

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^b Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

^c 2007–08 salaries are reported in 2012 dollars. The small number of teachers who reported a base salary of zero in 2007–08 are not included. No salaries of zero were reported in the SASS:12 dataset.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. Details may not sum to totals due to rounding. See table A-4 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2007–08 and 2011–12.

Teacher Background and Preparation

This section describes CTE teachers' preparation for teaching and compares their pathways into teaching with those of public high school teachers overall and among CTE teachers by their specific CTE teaching fields. It also examines the educational background and experience levels of CTE teachers.

Entry Into Teaching

Alternative certification route into teaching

Alternative certification programs provide opportunities for individuals to earn teaching certificates in shorter periods of time than are typically required by teacher certification programs while often allowing these individuals to teach as they complete program requirements (Sander 2007). These programs also allow some business and industry professionals to obtain certification in CTE fields based on their work experience (Reese 2010). In SY 2011–12, a greater percentage of CTE teachers reported entering the teaching profession via an alternative certification route than public high school teachers overall (28 percent vs. 20 percent) (table 5). Among CTE teachers, a higher percentage of OCC teachers were certified via an alternative route than either FCSE or GLMP and other CTE teachers (33 percent vs. 16 percent and 24 percent, respectively). The majority of health sciences teachers were certified via an alternative route (74 percent), and their alternative certification rate was higher than that of other OCC teachers (74 percent vs. 43 percent or less), except when compared with mechanics and repair teachers.²⁴ Conversely, the agriculture and natural resources teachers' rate was the lowest among OCC teachers (7 percent vs. 25 percent or higher), with the exception of business support teachers.²⁵ As noted previously, health sciences was one of two OCC fields accounting for larger proportions of CTE teachers in SY 2011–12 than in SY 2007–08 (see table 4).

²⁴ The apparent difference between the alternative certification rate for health sciences teachers (74 percent) and mechanics and repair teachers (55 percent) was not statistically significant.

²⁵ The apparent difference between the alternative certification rate for agriculture and natural resources teachers (7 percent) and business support teachers (16 percent) was not statistically significant.

Table 5.
Percentage of public high school teachers who were designated as “Highly Qualified,” certified via an alternative route, and had various types of certification, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | “Highly Qualified” ^a | Certified via alternative route | Type of certificate | | |
|---|---------------------------------|---------------------------------|--|--------------------------------------|------------|
| | | | Standard state or advanced certificate | Provisional certificate ^b | None |
| Total | 79.1 | 19.6 | 90.3 | 8.6 | 1.1 |
| Teacher type (main teaching assignment) | | | | | |
| Academic | 82.6 | 18.6 | 91.4 | 7.7 | 1.0 ! |
| Career and technical education (CTE) | 68.1 | 28.3 | 86.1 | 12.2 | 1.7 |
| Other ^c | 74.0 | 18.0 | 89.0 | 9.7 | 1.3 ! |
| CTE teaching field | | | | | |
| Occupational education (OCC) | 67.3 | 32.9 | 84.9 | 13.5 | 1.5 |
| Agriculture and natural resources | 77.6 | 6.9 ! | 91.9 | 7.6 ! | ‡ |
| Business, total | 74.5 | 25.1 | 88.7 | 10.7 | ‡ |
| Business management | 74.7 | 29.1 | 86.2 | 12.9 ! | ‡ |
| Business support | 74.1 | 15.9 | 94.4 | ‡ | # |
| Communications and design | 65.7 | 33.0 | 80.6 | 17.3 ! | ‡ |
| Computer and information sciences | 77.8 | 25.5 | 91.5 | 8.4 ! | ‡ |
| Construction, architecture, and engineering | 59.1 | 34.6 | 82.6 | 16.2 | ‡ |
| Consumer, culinary, and public services | 60.1 | 34.3 | 76.5 | 21.4 ! | ‡ |
| Health sciences | 65.0 | 73.9 | 73.7 | 20.3 | 6.0 ! |
| Manufacturing | 46.2 | 27.7 ! | 77.5 | ‡ | ‡ |
| Marketing | 69.3 | 43.2 | 94.2 | ‡ | ‡ |
| Mechanics and repair | 50.9 | 55.4 | 81.2 | 16.5 | ‡ |
| Family and consumer sciences education (FCSE) | 70.2 | 16.4 | 92.0 | 7.2 | ‡ |
| General labor market preparation and other | 68.8 | 23.7 | 85.3 | 12.0 | 2.8 ! |
| General labor market preparation (GLMP) | 72.4 | 18.6 | 89.6 | 8.6 ! | ‡ |
| Other career and technical education | 65.2 | 28.7 | 81.0 | 15.3 ! | 3.7 ! |
| School type ^d | | | | | |
| Regular | 79.3 | 18.7 | 91.1 | 8.1 | 0.8 |
| CTE | 64.2 | 34.8 | 81.7 | 17.0 | 1.4 ! |
| Charter | 79.7 | 25.4 | 79.5 | ‡ | ‡ |
| Other | 82.1 | 21.7 | 88.4 | 10.5 | 1.1 |

Rounds to zero.

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a A highly qualified teacher is defined as a teacher who has a bachelor’s degree and full state certification and has demonstrated competency in the subject area(s) taught.

^b Teachers indicating they held a teaching certificate but still needed to complete further requirements for full certification, such as a probationary period, a certification program, student teaching, coursework, or other requirements were considered to have provisional certification.

^c Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^d Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. Details may not sum to totals due to rounding. See table A-5 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.



Teaching certificates

Approximately 90 percent of all public high school teachers in the United States held a standard or advanced teaching certificate in SY 2011–12, while 86 percent of CTE teachers held one (table 5). Twelve percent of CTE teachers held a provisional certificate compared with 9 percent of all public high school teachers. This lower rate of standard or advanced certification may be related to the fact that a higher percentage of CTE teachers entered teaching through an alternative certification route.

Among CTE teachers, 92 percent of those in the FCSE field held a standard or advanced certificate, compared with 85 percent of teachers in OCC fields (table 5). Among OCC teachers, the percentage of health sciences teachers holding a standard or advanced certificate was lower than for business support, agriculture and natural resources, and computer and information sciences teachers (74 percent vs. 91–94 percent²⁶). As noted above, health sciences teachers also had among the highest rates of entering the teaching profession through an alternative certification route.

Changes in experience and certification

There were no statistically significant differences between SY 2007–08 and SY 2011–12 in the average years of experience, the rates of alternative certification, or the type of certificate of public high school teachers, including CTE teachers (see table 4).

Student teaching and first-year support

Regardless of when they began teaching, CTE teachers reported having student teaching experiences relatively less often than public high school teachers overall in SY 2011–12. The majority (89 percent) of all public high school teachers reported participating in student teaching prior to entering the teaching profession (table 6), although a smaller percentage of CTE teachers than public high school teachers overall reported student teaching (85 percent vs. 89 percent). Among teachers who began teaching in SY 2007–08 or later, smaller proportions of CTE teachers reported having common planning time with other teachers in their subject (33 percent) or receiving extra classroom assistance (14 percent) during their first year of teaching than the overall public high school teacher population did (43 percent and 20 percent, respectively).

²⁶ The value of 91 percent appears in table 5 as 91.5. See rule 3 in the Rounding subsection in Appendix B. The apparent difference in rates of holding a standard or advanced certificate between health sciences and marketing teachers (74 percent and 94 percent, respectively) was not statistically significant.

Table 6.
Percentage of public high school teachers who student taught and, among teachers who began teaching in 2007–08 or later, percentage who participated in a teacher induction program and received other types of first-year support, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Of teachers who began teaching in school year 2007–08 or later | | | | | | |
|---|--|---|---|--|--|----------------------------|--|
| | Percent of all who student taught | Percent who received teacher induction ^a | Type of first-year support | | | | |
| | | | Modified teaching assignment ^b | Common planning time with teachers in same subject | Seminars or classes for beginning teachers | Extra classroom assistance | Regular supportive communication with administration |
| Total | 89.2 | 83.5 | 13.4 | 43.3 | 63.5 | 20.4 | 77.1 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 90.2 | 83.3 | 13.0 | 43.7 | 61.7 | 17.7 | 75.1 |
| Career and technical education (CTE) | 85.3 | 88.1 | 14.1 | 32.9 | 69.9 | 13.5 | 80.7 |
| Other ^c | 88.1 | 80.9 | 14.1 | 49.7 | 65.7 | 36.6 | 82.2 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 86.0 | 90.4 | 13.0 | 27.2 | 68.3 | 12.0 | 78.8 |
| Agriculture and natural resources | 84.7 | 93.0 | ‡ | 30.7 | 78.2 | ‡ | 73.9 |
| Business, total | 84.7 | 89.4 | ‡ | 20.5 ! | 76.0 | ‡ | 80.2 |
| Business management | 84.5 | 85.3 | ‡ | 25.7 ! | 74.1 | ‡ | 77.5 |
| Business support | 85.1 | 99.5 | ‡ | ‡ | 80.8 | ‡ | 87.0 |
| Communications and design | 88.6 | 84.2 | ‡ | 34.4 ! | 64.6 | 19.5 ! | 75.8 |
| Computer and information sciences | 89.7 | 82.3 | ‡ | 48.6 ! | 70.6 | ‡ | 75.3 |
| Construction, architecture, and engineering | 81.1 | 90.2 | 15.5 ! | 16.4 ! | 69.1 | ‡ | 88.0 |
| Consumer, culinary, and public services | 92.9 | 86.4 | ‡ | 33.6 ! | 57.4 | 23.7 ! | 76.8 |
| Health sciences | 74.3 | 85.9 | ‡ | ‡ | 63.3 | ‡ | 96.4 |
| Manufacturing | 91.4 | 100.0 | ‡ | ‡ | 96.0 | ‡ | 91.1 |
| Marketing | 95.0 | 100.0 | ‡ | ‡ | 43.7 ! | ‡ | 55.3 ! |
| Mechanics and repair | 90.1 | 99.0 | ‡ | 50.1 | 81.6 | ‡ | 87.1 |
| Family and consumer sciences education (FCSE) | 86.6 | 86.3 | ‡ | 42.1 | 71.1 | ‡ | 85.0 |
| General labor market preparation and other | 82.2 | 81.0 | 18.3 | 46.5 | 74.8 | 22.9 | 84.4 |
| General labor market preparation (GLMP) | 83.0 | 85.4 | 18.3 ! | 37.1 | 79.4 | ‡ | 82.7 |
| Other career and technical education | 81.4 | 76.9 | 18.3 ! | 55.5 | 70.4 | 35.3 ! | 86.1 |

See notes at end of table.

Table 6.
Percentage of public high school teachers who student taught and, among teachers who began teaching in 2007–08 or later, percentage who participated in a teacher induction program and received other types of first-year support, by teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Of teachers who began teaching in school year 2007–08 or later | | | | | | |
|---|--|---|---|--|--|----------------------------|--|
| | Percent of all who student taught | Percent who received teacher induction ^a | Type of first-year support | | | | |
| | | | Modified teaching assignment ^b | Common planning time with teachers in same subject | Seminars or classes for beginning teachers | Extra classroom assistance | Regular supportive communication with administration |
| School type ^d | | | | | | | |
| Regular | 89.3 | 85.2 | 13.0 | 43.5 | 64.0 | 19.8 | 77.0 |
| CTE | 89.5 | 86.4 | 19.5 | 41.2 | 78.2 | 25.6 | 85.4 |
| Charter | 86.2 | 65.4 | 16.1 | 43.2 | 49.2 | 17.7 | 75.5 |
| Other | 89.6 | 77.9 | 12.6 | 41.3 | 65.1 | 28.5 | 76.9 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a A teacher induction program is a program for beginning teachers that may include teacher orientation, mentoring, coaching, demonstrations, and/or assessments aimed at enhancing teachers’ effectiveness.

^b A teaching assignment may be modified by either reducing the teaching schedule or the number of different courses assigned to a first-year teacher.

^c Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^d Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. “New teachers” is defined as those who began teaching between school years 2007–08 and 2011–12. See table A-6 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Teacher Education and Experience

Highest level of education

Although CTE teachers more often held advanced degrees than other types of education credentials, on average, their highest level of education differed from public high school teachers overall. A larger proportion of CTE teachers indicated that a master's degree or higher was their highest degree than any other type of education credential (47 percent vs. 38 percent or less) (table 7). Among OCC fields, the only statistically significant deviation from this pattern was for mechanics and repair teachers who most frequently reported an associate degree or certificate as their highest degree (67 percent vs. 14 percent or less). However, compared with public high school teachers overall, the proportion of CTE teachers holding a master's degree or higher was smaller (57 percent vs. 47 percent, respectively), while the proportion who held an associate degree or certificate as their highest degree was larger (2 percent vs. 11 percent, respectively).

Teaching experience

In SY 2011–12, CTE teachers did not differ at a statistically significant level from the overall public high school teacher population in terms of average years of teaching experience (14 years each) or the percentage distribution of their years of teaching experience (table 7). Among CTE teachers, FCSE teachers had more years of teaching experience, on average, than OCC teachers as a group (16 years vs. 13 years²⁷). Among OCC teachers, a larger proportion (50 percent) of computer and information sciences teachers had taught for over 15 years compared with both agriculture and natural resources teachers and health sciences teachers (27 percent and 21 percent, respectively).²⁸ Combined with results from the earlier teacher demographics section, the findings indicate that FCSE teachers were generally older and had more years of teaching experience than other CTE teachers, while agriculture and natural resources teachers were generally younger and had fewer years of teaching experience.

²⁷ The value of 13 years appears in table 7 as 13.5. See rule 3 in the Rounding subsection in Appendix B.

²⁸ Although the percentage of computer and information sciences teachers with 15 or more years of experience appears similar to that of manufacturing teachers (50 percent), no statistically significant differences were found among the percentages for manufacturing teachers and any other category of OCC teacher.

Table 7.
Public high school teachers' years of teaching experience and highest level of education, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Average years teaching | Percentage distribution | | | | | | | |
|---|------------------------|------------------------------|-------------|-------------|-------------|----------------------------|---------------------------------|-------------------|---------------------------|
| | | Years of teaching experience | | | | Highest level of education | | | |
| | | Less than 4 | 4–9 | 10–14 | 15 or more | No degree | Associate degree or certificate | Bachelor's degree | Master's degree or higher |
| Total | 13.6 | 11.9 | 28.8 | 21.4 | 37.9 | 3.0 | 1.9 | 38.0 | 57.2 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 13.3 | 12.2 | 29.7 | 21.4 | 36.7 | 2.8 | 0.3 ! | 38.4 | 58.6 |
| Career and technical education (CTE) | 14.2 | 13.1 | 26.1 | 20.2 | 40.6 | 3.7 | 10.7 | 38.4 | 47.2 |
| Other ^a | 14.2 | 10.3 | 27.2 | 22.2 | 40.3 | 3.3 | 1.9 | 36.3 | 58.5 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 13.5 | 13.9 | 26.8 | 22.8 | 36.5 | 3.8 | 14.6 | 35.4 | 46.3 |
| Agriculture and natural resources | 12.3 | 21.8 | 24.2 | 26.8 | 27.2 | ‡ | ‡ | 55.7 | 37.6 |
| Business, total | 13.5 | 9.5 | 30.3 | 24.7 | 35.5 | ‡ | ‡ | 31.9 | 64.4 |
| Business management | 12.7 | 11.1 ! | 28.3 | 28.9 | 31.6 | ‡ | ‡ | 32.3 | 63.9 |
| Business support | 15.4 | ‡ | 34.7 | 15.0 ! | 44.3 | ‡ | ‡ | 31.1 | 65.6 |
| Communications and design | 12.9 | 12.6 ! | 26.5 ! | 24.8 ! | 36.1 | ‡ | 8.3 ! | 30.3 | 52.1 |
| Computer and information sciences | 14.6 | 9.6 ! | 25.3 | 15.2 ! | 49.9 | 5.1 ! | ‡ | 32.3 | 57.5 |
| Construction, architecture, and engineering | 15.1 | 18.8 | 20.3 | 16.4 | 44.6 | 5.0 ! | 25.8 | 36.9 | 32.3 |
| Consumer, culinary, and public services | 15.1 | 10.5 ! | 24.5 | 21.1 | 43.9 | ‡ | 26.6 | 24.2 | 47.8 |
| Health sciences | 10.9 | 18.5 ! | 21.9 | 38.7 | 20.9 ! | ‡ | 16.3 | 44.6 | 36.2 |
| Manufacturing | 16.7 | 8.2 ! | 26.2 ! | 15.2 ! | 50.4 | ‡ | 48.0 | 25.0 ! | ‡ |
| Marketing | 13.1 | 11.7 ! | 38.6 | ‡ | 36.3 | ‡ | # | 36.4 | 62.7 |
| Mechanics and repair | 12.2 | 11.1 ! | 32.8 | 21.7 ! | 34.4 | 7.2 ! | 67.0 | 13.5 ! | 12.3 ! |
| Family and consumer sciences education (FCSE) | 16.4 | 10.6 ! | 21.1 | 17.0 | 51.3 | ‡ | 1.4 ! | 51.2 | 45.2 |
| General labor market preparation and other | 14.8 | 12.6 | 27.7 | 15.1 | 44.5 | 4.7 ! | 6.2 ! | 37.5 | 51.6 |
| General labor market preparation (GLMP) | 15.1 | 11.6 | 26.7 | 17.2 | 44.6 | 5.9 ! | 4.1 ! | 43.4 | 46.5 |
| Other career and technical education | 14.5 | 13.7 ! | 28.8 | 13.0 | 44.5 | 3.4 ! | 8.3 ! | 31.6 | 56.7 |

See notes at end of table.

Table 7.
Public high school teachers' years of teaching experience and highest level of education, by teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Average years teaching | Percentage distribution | | | | | | | |
|---|------------------------|------------------------------|------|-------|------------|----------------------------|---------------------------------|-------------------|---------------------------|
| | | Years of teaching experience | | | | Highest level of education | | | |
| | | Less than 4 | 4–9 | 10–14 | 15 or more | No degree | Associate degree or certificate | Bachelor's degree | Master's degree or higher |
| School type ^b | | | | | | | | | |
| Regular | 13.8 | 11.3 | 28.7 | 21.4 | 38.7 | 2.9 | 1.4 | 38.0 | 57.7 |
| CTE | 13.4 | 15.3 | 27.1 | 23.1 | 34.5 | ‡ | 20.5 | 32.5 | 42.5 |
| Charter | 9.4 | 25.1 | 36.6 | 18.8 | ‡ | ‡ | 1.4 ! | 43.9 | 51.4 |
| Other | 13.7 | 12.3 | 26.8 | 22.7 | 38.3 | 2.6 | 1.3 ! | 37.1 | 59.0 |

Rounds to zero.

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^b Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. Details may not sum to totals due to rounding. See table A-7 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Highly qualified teachers

“Highly qualified teacher” was a designation associated with the *Elementary and Secondary Education Act of 2001 (ESEA)*, otherwise known as *No Child Left Behind (NCLB)* (until December 2015, when *ESEA* was reauthorized as the *Every Student Succeeds Act (ESSA)*). Section 9101(23) of *ESEA* generally defined “highly qualified” as a teacher with a bachelor’s degree in the subjects taught, full state certification or licensure, and demonstrated knowledge in the subjects taught.²⁹ One goal of *NCLB* was to have states demonstrate by SY 2006–07 that 100 percent of their public school teachers who taught courses for which students received academic credit, including CTE courses that covered core academic content or could be used to meet graduation requirements, met this standard. As of SY 2011–12, the majority of public high school teachers (79 percent) were rated as “highly qualified” (see table 5).³⁰ A smaller proportion of CTE teachers than public high school teachers in either academic or other fields, however, held this designation (68 percent vs. 83 percent and 74 percent, respectively). CTE teachers’ higher rate of alternative certification, noted above, and their lower rate of “highly qualified” designations may be related to the fact that most states do not require CTE teachers to hold a bachelor’s degree for certification (Jacques and Potemski 2014). It is worth noting that *ESSA* eliminates requirements for states specifically related to “highly qualified” teachers and strikes all references to the term “highly qualified” in other related laws, generally replacing it with such language as “teachers who meet the applicable State certification and licensure requirements, including any requirements for certification obtained through alternative routes to certification.”³¹ Furthermore, *ESSA* includes provisions that could result in more alternatives to the traditional teacher preparation routes for those entering the profession.³²

Working Conditions and Satisfaction

This section describes the working conditions of CTE teachers in SY 2011–12, including professional development, salaries, school climate, and job satisfaction, and compares their experiences and perceptions with those of public high school teachers overall.

²⁹ For the definition of “highly qualified,” see Sec. 9101(23) of *ESEA* at www2.ed.gov/policy/elsec/leg/esea02/pg107.html.

³⁰ Teachers were defined as “highly qualified” for this analysis if they were designated as a highly qualified teacher, according to their state’s requirements, in one or more subjects taught.

³¹ See, for example, Sec. 9214(c)(1)(B) of *ESSA* regarding the use of the term “highly qualified” in the *Higher Education Act of 1965* at <http://www2.ed.gov/documents/essa-act-of-1965.pdf>.

³² See *Title II*, sections 2001–2003 of *ESSA* for purpose, definitions, and authorizations of appropriations related to preparing, training, and recruiting high-quality teachers, principals, and other school leaders.

Professional Development

Subgrantees under *Perkins IV* are required to use *Title I* funds to provide professional development to secondary and postsecondary school faculty and staff.³³ Because virtually all public secondary schools that offer CTE programs participate in *Perkins IV*, the legislation ensures that these funds are available to most CTE teachers working in these settings (Klein et al. 2014). The funds can be used to support training on a variety of topics that include the integration of academic and CTE education, the use of research and data to improve instruction, and the use and application of technology, as well as to support industry experiences for instructors.

In SY 2011–12, most CTE teachers (97 percent) reported participating in professional development activities focused on at least one of the categories shown in table 8.³⁴ The majority of CTE teachers participated in activities focused on the content of their subject areas (80 percent) or on using computers for instruction (73 percent), proportions that were larger than for the other categories reported (19 percent to 45 percent). While no statistically significant difference was found between the percentage of CTE and public high school teachers overall who participated in professional development that focused on the content of their subject areas (80 percent and 77 percent, respectively), a larger percentage of CTE teachers than public high school teachers overall found this professional development useful (76 percent vs. 67 percent).

CTE teachers participated in professional development that focused on using computers for instruction in greater proportions than public high school teachers overall (73 percent vs. 66 percent) and, more frequently than public high school teachers overall, they reported that they found such activities useful (74 percent vs. 63 percent) (table 8). CTE teachers did not differ at a statistically significant level from public high school teachers overall in the percentages who participated in professional development focused on reading instruction (37 percent and 40 percent, respectively) or who found such professional development useful (57 percent and 58 percent, respectively).

CTE teachers participated more than public high school teachers overall in professional development focused on student discipline and management in the classroom (45 percent vs. 39 percent) (table 8). The percentage of CTE teachers who found such activities useful was not different from the overall public high school teacher population at a statistically significant level (61 percent and 59 percent, respectively).

³³ See Sec. 135(b)(5) of *Perkins IV*.

³⁴ Categories include focus on content of subjects taught, use of computers for instruction, reading instruction, student discipline and classroom management, teaching students with disabilities, and teaching students with limited English proficiency or English language learners. “Other professional development” is not included.



While a statistically significant difference was not detected between CTE teachers' and all public high school teachers' rate of participation in professional development focused on teaching students with disabilities (38 percent and 37 percent, respectively), the rate was larger for CTE teachers than for teachers of academic subjects (38 percent vs. 31 percent) (table 8). In addition, a larger proportion of CTE teachers reported that such professional development was useful than did academic teachers (67 percent vs. 55 percent). Teaching students with special needs was an area where beginning CTE teachers indicated needing additional development (Ruhland and Bremer 2002).

CTE teachers did not differ at a statistically significant level from public high school teachers overall in the percentages who participated in professional development focused on students with limited English proficiency or English language learners (19 percent and 22 percent, respectively) or who found such professional development useful (59 percent and 57 percent, respectively) (table 8).

Although there was no statistically significant difference between the percentages of CTE teachers and public high school teachers overall who reported receiving release time from school to participate in professional development activities (44 percent and 46 percent) (table 9), a larger percentage of CTE teachers reported receiving financial support for professional development (67 percent vs. 53 percent).³⁵

³⁵ Financial support for professional development included stipends for professional development activities occurring outside of work, full or partial reimbursement for college tuition, and reimbursement for conference or workshop fees or travel or daily expenses.

Table 8.
Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Percent participating in any professional development ^a | Focus on content of subjects taught | | | Focus on uses of computers for instruction | | |
|---|--|-------------------------------------|--|---------------------------------------|--|--|---------------------------------------|
| | | Percent participating | Percent participating for 33 or more hours | Percent finding useful or very useful | Percent participating | Percent participating for 33 or more hours | Percent finding useful or very useful |
| Total | 95.1 | 77.1 | 27.1 | 67.3 | 66.3 | 8.7 | 63.1 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 94.7 | 75.5 | 28.4 | 65.2 | 64.9 | 8.0 | 59.5 |
| Career and technical education (CTE) | 96.5 | 79.5 | 27.3 | 75.8 | 72.9 | 14.6 | 73.6 |
| Other ^b | 95.6 | 81.3 | 22.9 | 68.6 | 67.1 | 6.8 | 68.0 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 96.5 | 81.6 | 28.5 | 77.2 | 73.1 | 15.9 | 73.2 |
| Agriculture and natural resources | 97.4 | 95.2 | 32.3 | 74.1 | 68.7 | ‡ | 61.4 |
| Business, total | 94.4 | 76.9 | 29.7 | 73.7 | 81.0 | 20.8 | 79.3 |
| Business management | 98.2 | 80.6 | 34.4 | 75.2 | 85.5 | 21.3 | 83.0 |
| Business support | 85.7 | 68.3 | 17.0 | 69.5 | 70.7 | 19.4 ! | 69.1 |
| Communications and design | 98.6 | 78.9 | 33.4 ! | 79.8 | 78.4 | 25.9 ! | 77.5 |
| Computer and information sciences | 96.9 | 67.1 | 18.8 ! | 71.6 | 73.5 | 23.8 ! | 68.3 |
| Construction, architecture, and engineering | 98.1 | 76.1 | 31.6 | 84.9 | 70.9 | 19.5 | 71.6 |
| Consumer, culinary, and public services | 98.4 | 84.7 | 23.6 | 78.3 | 69.7 | 9.4 ! | 74.8 |
| Health sciences | 98.3 | 94.0 | 28.1 | 79.4 | 77.6 | ‡ | 65.6 |
| Manufacturing | 97.3 | 71.8 | ‡ | 80.4 | 59.9 | ‡ | 82.4 |
| Marketing | 90.2 | 83.4 | 22.8 ! | 70.2 | 62.4 | ‡ | 79.9 |
| Mechanics and repair | 97.7 | 81.8 | 30.1 | 84.9 | 69.7 | 7.5 ! | 72.5 |
| Family and consumer sciences education (FCSE) | 96.4 | 75.4 | 22.3 | 74.6 | 71.5 | 7.3 ! | 73.1 |
| General labor market preparation and other | 96.7 | 76.4 | 27.1 | 72.4 | 73.2 | 15.8 | 75.2 |
| General labor market preparation (GLMP) | 95.6 | 75.6 | 31.1 | 68.8 | 69.6 | 22.0 | 68.5 |
| Other career and technical education | 97.9 | 77.3 | 23.1 | 75.9 | 76.7 | 10.2 | 81.3 |
| School type ^c | | | | | | | |
| Regular | 95.0 | 77.1 | 26.8 | 67.0 | 66.5 | 7.9 | 62.5 |
| CTE | 98.4 | 79.9 | 25.8 | 71.8 | 75.3 | 13.4 | 67.2 |
| Charter | 95.3 | 70.6 | 32.1 | 72.4 | 56.9 | 16.8 | 66.2 |
| Other | 94.0 | 79.4 | 29.2 | 66.8 | 65.1 | 12.7 | 67.7 |

See notes at end of table.

Table 8.
Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Focus on reading instruction | | | Student discipline and classroom management | | | Teaching students with disabilities | | |
|---|------------------------------|--------------------|-----------------------|---|--------------------|-----------------------|-------------------------------------|--------------------|-----------------------|
| | Percent participating | Percent responding | Percent finding | Percent participating | Percent responding | Percent finding | Percent participating | Percent responding | Percent finding |
| | | 33 or more hours | useful or very useful | | 33 or more hours | useful or very useful | | 33 or more hours | useful or very useful |
| Total | 39.9 | 7.4 | 57.8 | 38.6 | 4.0 | 58.8 | 37.4 | 6.7 | 62.5 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 39.2 | 7.4 | 54.8 | 34.1 | 3.4 | 54.0 | 30.5 | 2.8 | 54.9 |
| Career and technical education (CTE) | 37.4 | 6.4 | 56.8 | 44.7 | 4.0 | 60.9 | 37.6 | 6.0 ! | 66.5 |
| Other ^b | 43.5 | 7.7 | 67.4 | 50.2 | 5.6 | 68.6 | 60.6 | 13.8 | 74.2 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 37.3 | 5.1 ! | 55.7 | 47.3 | 3.7 ! | 59.8 | 39.9 | ‡ | 66.7 |
| Agriculture and natural resources | 33.6 | ‡ | 50.9 | 45.2 | ‡ | 51.3 | 46.3 | ‡ | 54.3 |
| Business, total | 34.1 | ‡ | 62.1 | 47.4 | ‡ | 60.8 | 39.2 | ‡ | 63.1 |
| Business management | 36.9 | ‡ | 62.9 | 49.0 | ‡ | 59.7 | 42.7 | # | 60.3 |
| Business support | 27.6 ! | ‡ | 59.6 | 43.5 | ‡ | 63.5 | 31.4 | ‡ | 71.7 |
| Communications and design | 48.9 | ‡ | 67.5 | 55.7 | ‡ | 60.0 | 53.9 | ‡ | 82.1 |
| Computer and information sciences | 32.0 | ‡ | 47.6 | 38.8 | ‡ | 40.8 | 33.4 | # | 50.0 |
| Construction, architecture, and engineering | 41.5 | ‡ | 45.0 | 34.0 | ‡ | 62.7 | 30.0 | ‡ | 48.3 |
| Consumer, culinary, and public services | 37.9 | ‡ | 53.5 | 57.4 | ‡ | 60.7 | 48.2 | ‡ | 80.8 |
| Health sciences | 43.4 | ‡ | 50.4 | 55.0 | ‡ | 79.1 | 43.6 | ‡ | 86.0 |
| Manufacturing | 30.7 ! | # | 44.5 ! | 59.4 | ‡ | 64.4 | 29.2 | # | 63.9 |
| Marketing | 31.4 | # | 60.5 | 45.6 | ‡ | 54.1 | 32.5 | # | 77.4 |
| Mechanics and repair | 34.1 | ‡ | 66.3 | 46.0 | ‡ | 53.0 | 30.9 ! | ‡ | 52.9 ! |
| Family and consumer sciences education (FCSE) | 36.4 | ‡ | 63.7 | 41.9 | ‡ | 70.4 | 38.2 | 4.2 ! | 70.0 |
| General labor market preparation and other | 38.5 | 9.1 ! | 55.1 | 39.4 | 4.8 ! | 57.4 | 30.4 | 9.6 ! | 62.8 |
| General labor market preparation (GLMP) | 40.6 | ‡ | 52.6 | 39.4 | ‡ | 58.3 | 28.8 | ‡ | 59.4 |
| Other career and technical education | 36.3 | 9.1 ! | 57.9 | 39.4 | ‡ | 56.5 | 32.0 | ‡ | 65.8 |
| School type ^c | | | | | | | | | |
| Regular | 39.5 | 7.2 | 56.9 | 37.2 | 3.5 | 57.8 | 36.2 | 6.1 | 61.6 |
| CTE | 37.9 | 7.2 | 52.6 | 47.7 | 3.8 ! | 59.6 | 43.7 | 6.2 ! | 61.7 |
| Charter | 42.8 | 10.1 ! | 64.1 ! | 48.6 | 6.3 ! | 63.5 | 45.0 | 8.2 ! | 66.8 |
| Other | 43.0 | 8.2 | 65.6 | 46.8 | 7.9 | 65.1 | 45.2 | 12.0 | 69.2 |

See notes at end of table.

Table 8.
Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Teaching limited English proficient students or English language learners | | | Percent participating in other professional development |
|---|---|-------------------------------------|---------------------------------------|---|
| | Percent participating | Percent responding 33 or more hours | Percent finding useful or very useful | |
| Total | 22.0 | 7.7 | 56.7 | 35.3 |
| Teacher type (main teaching assignment) | | | | |
| Academic | 23.3 | 8.5 | 55.7 | 36.3 |
| Career and technical education (CTE) | 19.3 | 5.7 ! | 59.3 | 35.0 |
| Other ^b | 19.1 | 5.6 | 59.2 | 32.2 |
| CTE teaching field | | | | |
| Occupational education (OCC) | 20.2 | ‡ | 57.8 | 34.8 |
| Agriculture and natural resources | 17.6 ! | # | 40.9 ! | 29.7 |
| Business, total | 20.6 | ‡ | 67.5 | 33.4 |
| Business management | 23.6 | ‡ | 61.5 | 35.6 |
| Business support | ‡ | ‡ | 91.3 | 28.4 |
| Communications and design | 28.3 | ‡ | 73.8 | 37.9 |
| Computer and information sciences | 23.5 | ‡ | 56.0 ! | 18.7 |
| Construction, architecture, and engineering | 13.2 ! | # | 37.8 ! | 36.9 |
| Consumer, culinary, and public services | 26.8 ! | # | 59.0 ! | 43.9 |
| Health sciences | 22.9 ! | # | 65.4 | 48.6 |
| Manufacturing | 24.7 ! | # | ‡ | 22.8 ! |
| Marketing | 16.5 ! | # | 48.0 ! | 41.7 |
| Mechanics and repair | 12.0 ! | ‡ | 66.2 | 21.9 ! |
| Family and consumer sciences education (FCSE) | 22.0 | ‡ | 63.3 | 38.3 |
| General labor market preparation and other | 14.5 | 14.2 ! | 60.8 | 33.1 |
| General labor market preparation (GLMP) | 17.7 | ‡ | 52.7 | 34.2 |
| Other career and technical education | 11.3 ! | 18.2 ! | 73.5 | 32.1 |

See notes at end of table.

Table 8.
Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Teaching limited English proficient students or English language learners | | | Percent participating in other professional development |
|---|---|-------------------------------------|---------------------------------------|---|
| | Percent participating | Percent responding 33 or more hours | Percent finding useful or very useful | |
| School type ^c | | | | |
| Regular | 22.0 | 7.7 | 55.1 | 35.4 |
| CTE | 14.6 | ‡ | 63.2 | 33.6 |
| Charter | 26.3 | 8.6 ! | 60.5 | 31.1 |
| Other | 22.4 | 6.7 | 71.1 | 37.4 |

Rounds to zero.

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Teachers indicated having participated in professional development activities concentrated on one or more of the following areas: content of their subjects taught; the use of computers for instruction; reading instruction; student discipline and classroom management; teaching students with disabilities; and teaching limited English proficient students or English language learners. Those participating in “other professional development” are not included.

^b Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^c Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-8 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Table 9.
Percentage of public high school teachers who received release time from teaching or financial support for professional development, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Release time from teaching | Financial support ^a |
|---|----------------------------|--------------------------------|
| Total | 45.9 | 53.4 |
| Teacher type (main teaching assignment) | | |
| Academic | 45.3 | 52.4 |
| Career and technical education (CTE) | 44.4 | 66.6 |
| Other ^b | 48.8 | 48.5 |
| CTE teaching field | | |
| Occupational education (OCC) | 44.0 | 69.1 |
| Agriculture and natural resources | 51.0 | 82.7 |
| Business, total | 42.1 | 64.5 |
| Business management | 43.1 | 68.7 |
| Business support | 40.0 | 54.8 |
| Communications and design | 48.2 | 60.6 |
| Computer and information sciences | 46.1 | 63.5 |
| Construction, architecture, and engineering | 47.1 | 69.0 |
| Consumer, culinary, and public services | 42.9 | 52.9 |
| Health sciences | 26.4 | 76.7 |
| Manufacturing | 35.9 ! | 62.0 |
| Marketing | 53.6 | 84.3 |
| Mechanics and repair | 35.9 | 70.8 |
| Family and consumer sciences education (FCSE) | 46.2 | 68.8 |
| General labor market preparation and other | 44.2 | 57.6 |
| General labor market preparation (GLMP) | 43.4 | 55.9 |
| Other career and technical education | 45.0 | 59.2 |
| School type ^c | | |
| Regular | 45.8 | 52.9 |
| CTE | 46.2 | 68.6 |
| Charter | 43.0 | 58.9 |
| Other | 48.3 | 50.4 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

^a Includes stipends for professional development activities occurring outside of work or full or partial reimbursement for college tuition or conference or workshop fees.

^b Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^c Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-9 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher Questionnaire,” 2011–12.



Salary and School Climate

Teacher salaries

In SY 2011–12, the average annual base salary³⁶ for CTE teachers was \$51,900 (see table 3). This average salary was not different at a statistically significant level from that of public high school teachers overall in SY 2011–12 (\$53,100). There also were no statistically significant differences in base salaries among OCC teachers overall (\$51,100), FCSE teachers (\$53,300), and GLMP and other CTE teachers (\$53,200). Among the specific OCC subject areas, however, agriculture and natural resources teachers earned a lower base salary than OCC teachers overall (\$45,500 vs. \$51,100). The lower earnings for agriculture and natural resources teachers may be related to the earlier findings that the majority of these teachers worked in rural schools and had fewer years of teaching experience than teachers in other OCC fields.

The average annual base salary for CTE teachers in SY 2011–12 of \$51,900 was not different at a statistically significant level from the average annual base salary of \$51,700 in SY 2007–08³⁷ (adjusted to 2012 constant dollars) (see table 4). Similarly, academic teachers and other teachers saw no statistically significant difference in their annual base salaries between SY 2007–08 and SY 2011–12. Academic teachers earned \$53,100 in SY 2007–08 and \$53,000 in SY 2011–12, and other teachers earned \$54,000 in SY 2007–08 and \$54,200 in SY 2011–12.

Average class size

With an average of 22 students per class, CTE teachers' classes were smaller than the average of 26 students for all public high school teachers' classes in SY 2011–12 (see table 3). Looking at class size only among the three groups of CTE teaching fields, GLMP and other CTE teachers' classes had the smallest average size (20 students) compared with those of OCC (22 students) and FCSE teachers (24 students³⁸).

Student engagement

A smaller percentage of CTE teachers than public high school teachers overall in SY 2011–12 indicated that student absenteeism (20 percent vs. 25 percent) and student apathy (24 percent vs. 32 percent) were serious problems at their schools (table 10). There were no statistically significant differences between CTE teachers and public high school teachers overall in reports of student tardiness (17 percent and 19 percent), class cutting (10 percent and 12 percent), or dropping out (8 percent each) as serious problems.

³⁶ Average base salary is for the school year; summer earnings are not included.

³⁷ The small number of teachers who reported a salary of zero in SY 2007–08 were excluded.

³⁸ The value of 24 students appears as 24.5 in table 3. See rule 3 in the Rounding subsection in Appendix B.

Table 10.
Percentage of public high school teachers who reported various student behaviors as a serious problem in their schools, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Student tardiness | Student absenteeism | Student class cutting | Students dropping out | Student apathy |
|---|-------------------|---------------------|-----------------------|-----------------------|----------------|
| Total | 19.0 | 24.6 | 12.4 | 7.6 | 32.0 |
| Teacher type (main teaching assignment) | | | | | |
| Academic | 19.2 | 26.0 | 12.5 | 7.8 | 35.9 |
| Career and technical education (CTE) | 16.5 | 20.2 | 10.4 | 7.7 | 23.9 |
| Other ^a | 20.0 | 22.3 | 13.2 | 7.0 | 23.7 |
| CTE teaching field | | | | | |
| Occupational education (OCC) | 17.0 | 19.9 | 11.0 | 8.1 | 25.1 |
| Agriculture and natural resources | 14.2! | 14.9 | ‡ | ‡ | 22.1 |
| Business, total | 21.1 | 23.1 | 17.8 | 8.1 | 25.8 |
| Business management | 24.4 | 25.3 | 20.2 | 10.2! | 26.0 |
| Business support | 13.5! | 17.9! | 12.5! | ‡ | 25.3! |
| Communications and design | 18.4! | 33.6 | 9.0! | 8.9! | 38.5 |
| Computer and information sciences | 10.3! | 14.6! | 7.7! | ‡ | 26.2 |
| Construction, architecture, and engineering | 13.5! | 18.4 | 9.5! | 9.1! | 24.1 |
| Consumer, culinary, and public services | 16.8! | 24.5 | 5.2! | 15.3! | 26.2 |
| Health sciences | 14.2! | 15.3! | 12.3! | ‡ | 23.4! |
| Manufacturing | 37.2! | 30.4! | 29.7! | 14.7! | 22.0! |
| Marketing | ‡ | 8.0! | ‡ | ‡ | 22.2! |
| Mechanics and repair | 11.9! | 13.2! | ‡ | 6.5! | 11.6! |
| Family and consumer sciences education (FCSE) | 14.4 | 21.2 | 9.7! | 7.5! | 23.5 |
| General labor market preparation and other | 16.7 | 20.6 | 9.3 | 6.4 | 20.5 |
| General labor market preparation (GLMP) | 15.0 | 22.6 | 9.7! | 6.2! | 19.7 |
| Other career and technical education | 18.3 | 18.6 | 8.9 | 6.7! | 21.4 |
| School type ^b | | | | | |
| Regular | 18.6 | 24.0 | 12.3 | 7.5 | 32.5 |
| CTE | 12.1 | 16.3 | 7.0 | 3.1! | 21.2 |
| Charter | 20.6! | 25.7! | 12.0! | 9.9! | 25.9 |
| Other | 25.2 | 33.3 | 16.0 | 10.3 | 33.4 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of "standard error."

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^b Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-10 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Staff collaboration and cooperation

A smaller percentage of CTE teachers than of the overall public high school teacher population in SY 2011–12 reported collaborating with other teachers on issues of instruction (66 percent vs. 75 percent) (table 11).³⁹ No statistically significant difference existed, however, between the percentages of CTE teachers and all public high school teachers perceiving cooperation among staff members at their schools (33 and 32 percent).⁴⁰ A larger proportion of manufacturing (60 percent) and health sciences teachers (59 percent) than other OCC teachers (50 percent or less) perceived a great deal of staff cooperation at their schools.⁴¹

Locus of Control and Job Satisfaction

Control over classroom planning and teaching

CTE teachers generally reported greater control over classroom planning and teaching than public high school teachers overall in SY 2011–12 (table 12). Specifically, higher percentages of CTE teachers than public high school teachers overall reported having at least moderate control over (1) selecting textbooks and instructional materials (81 percent vs. 65 percent); (2) selecting content, topics, and skills to be taught (84 percent vs. 71 percent); (3) selecting teaching techniques (97 percent vs. 94 percent); (4) evaluating and grading students (98 percent vs. 96 percent); and (5) determining the amount of homework to assign (98 percent vs. 96 percent). There was no statistically significant difference between the percentages of CTE teachers and public high school teachers overall reporting at least moderate control over disciplining students (85 percent each).

Job satisfaction

CTE teachers indicated levels of job satisfaction similar to those of public high school teachers overall. The majority (92 percent) of CTE teachers in SY 2011–12 strongly or somewhat agreed that they were satisfied with being a teacher at their school, although approximately 32 percent strongly or somewhat agreed that they would leave teaching as soon as possible if offered a higher paying job (table 13). There were no statistically significant differences in CTE teachers' rates of job satisfaction (92 percent) and likelihood of leaving the profession (32 percent) from those of public high school teachers overall (90 percent and 30 percent, respectively) on these two items.

³⁹ These teachers reported that they participated in regularly scheduled collaboration with other teachers on issues of instruction, excluding administrative meetings.

⁴⁰ These teachers strongly agreed that there was a great deal of cooperative effort among the staff members at their school.

⁴¹ Perception rates for manufacturing and health sciences teachers were not higher than those for mechanics and repair teachers at a statistically significant level.

Table 11.
Percentage of public high school teachers who participated in instructional collaboration and who perceived cooperation among school staff, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Percent of teachers participating in instructional collaboration ^a | Percent of teachers who perceived cooperation among school staff ^b |
|---|---|---|
| Total | 74.8 | 31.6 |
| Teacher type (main teaching assignment) | | |
| Academic | 76.0 | 30.7 |
| Career and technical education (CTE) | 65.8 | 33.1 |
| Other ^c | 76.2 | 33.5 |
| CTE teaching field | | |
| Occupational education (OCC) | 66.7 | 35.1 |
| Agriculture and natural resources | 65.1 | 27.2 |
| Business, total | 63.5 | 29.5 |
| Business management | 68.4 | 31.1 |
| Business support | 52.1 | 25.9 |
| Communications and design | 65.7 | 20.7 ! |
| Computer and information sciences | 61.7 | 31.5 |
| Construction, architecture, and engineering | 60.6 | 41.4 |
| Consumer, culinary, and public services | 73.9 | 34.0 |
| Health sciences | 75.1 | 59.1 |
| Manufacturing | 76.0 | 60.4 |
| Marketing | 74.8 | 28.0 |
| Mechanics and repair | 63.6 | 50.4 |
| Family and consumer sciences education (FCSE) | 68.5 | 30.3 |
| General labor market preparation and other | 61.3 | 29.4 |
| General labor market preparation (GLMP) | 57.6 | 29.3 |
| Other career and technical education | 65.0 | 29.5 |
| School type ^d | | |
| Regular | 75.1 | 30.1 |
| CTE | 74.9 | 43.2 |
| Charter | 72.6 | 46.4 |
| Other | 72.0 | 37.4 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

^a Teachers reported that they participated in regularly scheduled collaboration with other teachers on issues of instruction, excluding administrative meetings.

^b Teachers strongly agreed that there was a great deal of cooperative effort among the staff members at their school.

^c Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers’ Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^d Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-11 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Table 12.
Percentage of public high school teachers who reported moderate or greater levels of control over selected areas of planning and teaching, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Selecting textbooks and other materials | Selecting content, topics, and skills to be taught | Selecting teaching techniques | Evaluating and grading students | Disciplining students | Determining the amount of homework to be assigned |
|---|---|--|-------------------------------|---------------------------------|-----------------------|---|
| Total | 65.4 | 70.5 | 94.1 | 96.2 | 85.3 | 95.9 |
| Teacher type (main teaching assignment) | | | | | | |
| Academic | 63.2 | 67.7 | 94.0 | 96.2 | 85.4 | 95.9 |
| Career and technical education (CTE) | 80.8 | 83.9 | 96.7 | 97.9 | 85.0 | 97.6 |
| Other ^a | 63.5 | 71.6 | 92.8 | 95.3 | 85.1 | 95.0 |
| CTE teaching field | | | | | | |
| Occupational education (OCC) | 79.2 | 82.9 | 96.7 | 98.5 | 84.9 | 98.4 |
| Agriculture and natural resources | 87.5 | 90.2 | 97.4 | 97.5 | 85.0 | 98.3 |
| Business, total | 78.1 | 79.8 | 95.7 | 99.3 | 88.6 | 99.8 |
| Business management | 78.6 | 83.1 | 94.7 | 99.0 | 90.2 | 99.7 |
| Business support | 77.1 | 72.3 | 98.2 | 100.0 | 84.8 | 100.0 |
| Communications and design | 81.5 | 88.8 | 97.8 | 98.7 | 80.6 | 97.9 |
| Computer and information sciences | 70.3 | 81.2 | 95.4 | 95.7 | 83.4 | 93.7 |
| Construction, architecture, and engineering | 79.9 | 84.6 | 97.9 | 98.0 | 75.9 | 97.5 |
| Consumer, culinary, and public services | 86.3 | 80.3 | 100.0 | 99.1 | 86.1 | 99.4 |
| Health sciences | 75.5 | 83.8 | 98.0 | 100.0 | 87.0 | 99.0 |
| Manufacturing | 80.5 | 83.4 | 96.9 | 97.9 | 83.4 | 98.7 |
| Marketing | 60.1 | 67.6 | 91.9 | 98.0 | 95.8 | 98.5 |
| Mechanics and repair | 89.7 | 87.5 | 94.8 | 100.0 | 83.8 | 100.0 |
| Family and consumer sciences education (FCSE) | 82.4 | 86.0 | 96.6 | 98.1 | 82.5 | 97.0 |
| General labor market preparation and other | 84.5 | 85.3 | 97.0 | 95.8 | 86.9 | 95.6 |
| General labor market preparation (GLMP) | 89.3 | 91.1 | 97.6 | 95.2 | 86.8 | 96.7 |
| Other career and technical education | 79.7 | 79.6 | 96.4 | 96.5 | 86.9 | 94.6 |
| School type ^b | | | | | | |
| Regular | 65.4 | 69.6 | 94.2 | 96.4 | 85.4 | 96.8 |
| CTE | 77.1 | 84.0 | 96.2 | 96.0 | 85.0 | 95.3 |
| Charter | 66.0 | 77.5 | 91.9 | 94.1 | 84.0 | 87.0 |
| Other | 61.7 | 72.9 | 92.4 | 95.8 | 84.5 | 90.4 |

^a Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^b Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-12 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table 13.
Public high school teachers' job satisfaction, professional development benefits, average class size, and base salary, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Measures of teacher satisfaction | | | | | | |
|---|--|--|--|---|--|---|----------------------------------|
| | Percent who were satisfied with being a teacher at their school ^a | Percent who would leave teaching as soon as possible if offered higher paying job ^b | Percent who would not choose to teach again ^c | Percent receiving release time for professional development | Percent receiving financial support for professional development | Average class size (number of students) | Average base salary ^d |
| Total | 90.2 | 30.1 | 16.8 | 45.9 | 53.4 | 25.5 | \$53,100 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 89.3 | 29.7 | 17.5 | 45.3 | 52.4 | 27.3 | 53,000 |
| Career and technical education (CTE) | 91.7 | 31.5 | 16.7 | 44.4 | 66.6 | 22.0 | 51,900 |
| Other ^e | 92.1 | 30.7 | 14.3 | 48.8 | 48.5 | 21.7 | 54,200 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 90.9 | 31.0 | 16.5 | 44.0 | 69.1 | 22.2 | 51,100 |
| Agriculture and natural resources | 89.1 | 40.8 | 16.3 | 51.0 | 82.7 | 20.6 | 45,500 |
| Business, total | 92.6 | 28.8 | 12.8 | 42.1 | 64.5 | 24.1 | 49,700 |
| Business management | 91.6 | 30.4 | 10.2 ! | 43.1 | 68.7 | 23.4 | 48,900 |
| Business support | 94.8 | 25.1 ! | 18.7 ! | 40.0 | 54.8 | 25.5 | 51,500 |
| Communications and design | 90.6 | 27.7 | 23.4 | 48.2 | 60.6 | 23.6 | 53,900 |
| Computer and information sciences | 85.1 | 33.9 | 24.0 | 46.1 | 63.5 | 22.9 | 55,200 |
| Construction, architecture, and engineering | 84.9 | 33.8 | 22.1 | 47.1 | 69.0 | 19.6 | 54,100 |
| Consumer, culinary, and public services | 95.5 | 24.2 | 10.6 ! | 42.9 | 52.9 | 23.3 | 55,700 |
| Health sciences | 90.7 | 28.9 | 17.3 | 26.4 | 76.7 | 21.2 | 47,700 |
| Manufacturing | 95.1 | 22.9 ! | ‡ | 35.9 ! | 62.0 | 19.0 | 51,600 |
| Marketing | 96.1 | 34.4 ! | ‡ | 53.6 | 84.3 | 24.6 | 51,700 |
| Mechanics and repair | 94.5 | 23.5 ! | ‡ | 35.9 | 70.8 | 20.1 | 50,800 |
| Family and consumer sciences education (FCSE) | 94.3 | 33.5 | 13.3 | 46.2 | 68.8 | 24.5 | 53,300 |
| General labor market preparation and other | 92.3 | 31.7 | 19.6 | 44.2 | 57.6 | 19.8 | 53,200 |
| General labor market preparation (GLMP) | 88.7 | 31.2 | 18.7 | 43.4 | 55.9 | 19.7 | 52,200 |
| Other career and technical education | 95.9 | 32.1 | 20.5 | 45.0 | 59.2 | 20.0 | 54,200 |

See notes at end of table.

Table 13.
Public high school teachers' job satisfaction, professional development benefits, average class size, and base salary, by teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Measures of teacher satisfaction | | | | | | Average class size (number of students) | Average base salary ^d |
|---|--|--|--|---|--|--|---|----------------------------------|
| | Percent who were satisfied with being a teacher at their school ^a | Percent who would leave teaching as soon as possible if offered higher paying job ^b | Percent who would not choose to teach again ^c | Percent receiving time for professional development | Percent receiving financial support for professional development | Percent receiving financial support for professional development | | |
| School type ^f | | | | | | | | |
| Regular | 90.2 | 30.2 | 16.9 | 45.8 | 52.9 | 26.2 | 53,300 | |
| CTE | 92.3 | 28.3 | 14.4 | 46.2 | 68.6 | 21.1 | 56,800 | |
| Charter | 86.9 | 32.6 | 16.6 | 43.0 | 58.9 | 25.5 | 43,700 | |
| Other | 90.9 | 28.6 | 16.4 | 48.3 | 50.4 | 19.9 | 54,500 | |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of "standard error."

‡ Reporting standards not met (too few cases for a reliable estimate).

^a Teachers agreed or strongly agreed that they were generally satisfied with being a teacher at their school.

^b Teachers agreed or strongly agreed that they would leave teaching as soon as possible if they could get a higher paying job.

^c Teachers indicated that, if they could go back to college days, they probably or certainly would not become a teacher.

^d Average base salary is for the school year; summer earnings are not included.

^e Other teaching assignments include special education, health education (other than healthcare occupations), physical education, military science or Reserve Officers' Training Corps (ROTC), religious studies, and other unspecified teaching assignments.

^f Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.


NOTE: Table includes all public high school teachers, defined as teachers who taught students in at least one of grades 9–12 in a public secondary or combined elementary/secondary school and whose main teaching assignment was not early childhood, pre-K, or elementary education. See table A-13 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

School Characteristics

As noted earlier in the report, the majority (81 percent) of CTE teachers taught in regular high schools in SY 2011–12, while 12 percent taught in CTE schools, 2 percent in charter schools, and 5 percent in other types of public high schools (see table 1). As also noted, this pattern persisted for most occupational CTE areas,⁴² but the proportion of CTE teachers working in CTE schools was largest for the following OCC fields: manufacturing; mechanics and repair; consumer, culinary, and public services; health sciences; and construction, architecture, and engineering. This section describes characteristics of the different school types and the teachers who taught in them, focusing on differences between CTE schools

⁴² Manufacturing was the only OCC field in which the proportion of teachers was not found to be larger, at a statistically significant level, in regular high schools than in CTE schools.



and other types of schools. Many of the findings for CTE schools reflect findings reported above for CTE teachers, although fewer statistically significant differences were detected between CTE schools and non-CTE schools than were found between CTE teachers and public high school teachers overall on some of these measures. A number of apparently large differences were not statistically significant due to the small numbers of CTE and charter schools in the sample and the resulting large standard errors.

Differences Among CTE, Regular, Charter, and Other Schools

Student populations

CTE school populations were relatively similar to those of public high schools overall except in their proportions of students approved for free or reduced-priced lunch. Students approved for free or reduced-price lunch made up a smaller proportion of the student body on average at CTE schools than at public high schools overall (44 percent vs. 52 percent) (table 14). For the other student groups examined (of selected race/ethnicities, having an individualized education program [IEP],⁴³ limited English proficient), however, there were no statistically significant differences between the student bodies at CTE schools and public high schools in general. The proportion of students in CTE schools who were American Indian or Alaska Native, Asian, black or African American, Hispanic or Latino, or Native Hawaiian or other Pacific Islander was 34 percent. Twenty-one percent of students in CTE schools had an IEP, and 6 percent were limited English proficient.

⁴³ Under section 602(14) of the *Individuals with Disabilities Education Act (IDEA)*, the term “individualized education program” or “IEP” means a written statement for each child with a disability that is developed, reviewed, and revised in accordance with section 614(d) of *IDEA*.

Table 14.
Among public high schools, average percentage of students with selected characteristics, by school type: School year 2011–12

| School type | Percent of students in school who | | | |
|--------------------------|---|---|---|---------------------------------|
| | Were of selected races/ethnicities ^a | Were approved for free or reduced-price lunch | Had an individualized education program | Were limited English proficient |
| Total | 40.2 | 51.9 | 17.4 | 7.3 |
| School type ^b | | | | |
| Regular | 33.4 | 46.3 | 12.3 | 6.0 |
| CTE | 34.1 | 44.0 | 20.5 | 6.4 |
| Charter | 58.6 | 67.5 | 14.9 | 11.6 |
| Other | 55.1 | 68.3 | 35.4 | 12.2 |

^a Includes students identified as American Indian or Alaska Native, Asian, black or African American, Hispanic or Latino, and Native Hawaiian or other Pacific Islander.

^b Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

NOTE: Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. See table A-14 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Teacher vacancies

With two-thirds of all public high school teachers teaching academic subjects in SY 2011–12 (table 4), the percentage of public high schools that reported teacher vacancies for at least one academic subject was 90 percent (table 15).⁴⁴ CTE teachers represented 12 percent of public high school teachers (see table 4). Thirty-three percent of all public high schools offering CTE had CTE vacancies in SY 2011–12, and 17 percent reported vacancies in computer science (table 15).⁴⁵ The percentage of all public high schools that reported teacher vacancies in other fields was 59 percent.⁴⁶ The percentage of CTE schools (92 percent) reporting CTE vacancies was larger than the percentages of regular (31 percent), charter (29 percent), or other high schools (30 percent) reporting CTE vacancies.

Among all public high schools with CTE vacancies, 57 percent reported that these vacancies were difficult to fill (table 15),⁴⁷ a larger percentage than those that reported difficulty filling

⁴⁴ Schools were asked to report whether there were any teaching vacancies by specific academic fields, including English or language arts, social studies, mathematics, biology or life sciences, physical sciences, English as a second language or bilingual education, foreign languages, and music or art.

⁴⁵ Schools were asked to report whether there were any teaching vacancies in the field of CTE overall, not in specific CTE areas except for computer science.

⁴⁶ Other vacancies reflect both the categories “special education” and “other.”

⁴⁷ Difficulty filling vacancies in a field is based on administrator reports that filling a vacancy was somewhat difficult, very difficult, or not possible.



vacancies in academic fields (39 percent).⁴⁸ Computer science vacancies were also cited more often as being difficult to fill than academic positions (51 percent vs. 39 percent). Regular high schools reflected the general pattern, with 56 and 52 percent reporting difficulty filling CTE and computer science vacancies, respectively, and 38 percent reporting difficulty filling academic vacancies. No such difference was observed among CTE, charter, or other types of schools. There were no statistically significant differences among school types in the perception that CTE vacancies were difficult to fill: 54 percent to 64 percent reported difficulty filling their CTE vacancies.

A larger percentage of schools in the South reported CTE vacancies than schools in other regions (40 percent vs. 26–31 percent), and the percentage of schools in the South reporting vacancies in computer science was larger than in the Midwest (20 percent vs. 13 percent) (table 15). These findings are consistent with the finding that the largest percentage of CTE teachers worked in the South (see table 2). While there were statistically significant differences observed in the percentages of schools reporting CTE vacancies by region, on the issue of difficulty filling CTE vacancies, differences among regions were not found to be statistically significant.

⁴⁸ For purposes of comparison, the average degree of difficulty (across four response categories representing increasing difficulty in filling vacancies) was calculated across academic subjects for each school reporting vacancies in one or more academic subjects in SY 2011–12. The percentage of schools with an average difficulty corresponding to somewhat difficult, very difficult, or not possible to fill their academic vacancies was compared with the percentage of schools reporting that it was somewhat difficult, very difficult, or not possible to fill their CTE vacancies.

Table 15.
Percentage of public high schools that reported teacher vacancies in various fields and difficulty filling those vacancies, by selected school characteristics: School year 2011–12

| School characteristic | Percent of schools with vacancies, by vacancy type | | | | Percent of schools with vacancies reporting difficulty filling those vacancies, by vacancy type ^a | | | |
|--------------------------------|---|-------------|---------------------|--------------------|--|-------------|---------------------|--------------------|
| | Any academic field ^b | CTE | Computer science | Other ^c | Any academic field ^b | CTE | Computer science | Other ^c |
| Total | 90.1 | 33.0 | 17.2 | 59.2 | 39.0 | 57.2 | 51.1 | 56.9 |
| School type^d | | | | | | | | |
| Regular | 91.7 | 30.9 | 15.1 | 60.1 | 38.2 | 56.3 | 51.6 | 57.2 |
| CTE | 66.8 | 91.8 | 26.0 ! | 39.7 | 25.4 ! | 64.2 | 51.2 ! | 46.2 |
| Charter | 96.0 | 29.3 | 31.0 | 58.4 | 43.7 | 53.8 | 63.1 | 64.4 |
| Other | 81.3 | 29.9 | 19.6 | 57.9 | 42.3 | 57.8 | 35.3 | 52.2 |
| Enrollment size | | | | | | | | |
| Less than 499 | 85.0 | 26.2 | 16.4 | 50.8 | 43.8 | 63.5 | 53.3 | 60.7 |
| 500–999 | 91.4 | 34.2 | 14.2 | 59.5 | 39.9 | 50.9 | 50.5 | 53.4 |
| 1000–1499 | 95.4 | 44.4 | 20.0 | 63.2 | 31.9 | 53.0 | 34.0 | 53.7 |
| 1500–1999 | 97.6 | 37.5 | 17.5 | 75.7 | 28.9 | 59.0 | 69.0 | 56.1 |
| 2000 or more | 97.9 | 40.8 | 25.5 | 80.7 | 36.3 | 56.4 | 51.6 | 56.6 |
| Locale^e | | | | | | | | |
| City | 93.2 | 35.6 | 25.0 | 64.8 | 41.9 | 59.0 | 55.0 | 57.8 |
| Suburban | 92.7 | 35.7 | 16.8 | 65.7 | 30.3 | 54.0 | 39.2 | 53.6 |
| Town | 91.1 | 33.0 | 15.3 | 61.4 | 42.9 | 51.2 | 59.0 | 54.4 |
| Rural | 86.7 | 30.4 | 14.2 | 52.4 | 40.7 | 60.0 | 51.7 | 59.4 |
| Region^f | | | | | | | | |
| Northeast | 91.9 | 26.1 | 17.2 | 73.4 | 32.4 | 59.5 | 45.5 | 53.2 |
| South | 91.1 | 40.2 | 20.4 | 53.0 | 45.4 | 51.9 | 49.6 | 57.7 |
| Midwest | 87.5 | 30.7 | 12.7 | 59.8 | 34.7 | 61.2 | 56.8 | 52.5 |
| West | 90.2 | 27.5 | 17.1 | 59.5 | 38.0 | 63.5 | 52.7 | 63.9 |

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate. See the Statistical Definitions section of Appendix B for the definition of “standard error.”

^a Three response categories about perceived difficulty to fill teacher vacancies were combined: “somewhat difficult,” “very difficult,” and “could not fill the vacancy.”

^b Academic courses include English or language arts, social studies, mathematics, biology or life sciences, physical sciences, English as a second language or bilingual education, foreign languages, and music or art.

^c Other vacancy type includes special education or “other.”

^d Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. Regular schools include public high schools that are not CTE schools, charter schools, or other schools. CTE schools are vocational schools that train students for an occupation. Charter schools are publicly funded schools that are typically governed by a group or organization under a legislative contract or charter with the state or jurisdiction. Other schools include (1) special program emphasis schools (such as science or math schools, arts schools, talented or gifted schools, foreign language immersion schools, or other); (2) special education schools; and (3) alternative/other schools, which offer a curriculum designed to provide alternative or nontraditional education.

^e A city refers to any territory (1) inside a principal city and (2) inside an urbanized area. A suburb refers to any territory (1) outside a principal city and (2) inside an urbanized area with a population of at least 50,000 and less than 100,000. A town refers to any territory in an urban cluster with a population between 2,500 and 50,000. Rural refers to any territory outside urbanized areas and urban clusters.

^f The Northeast region includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. The Midwest region includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, North Dakota, Nebraska, Ohio, South Dakota, and Wisconsin. The South region includes Alabama, Arkansas, District of Columbia, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. The West region includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

NOTE: Table includes all public secondary or combined elementary/secondary schools offering at least one of grades 9–12. See table A-15 in Appendix A for standard errors for this table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Class size

Similar to the finding above that the classes of CTE teachers tended to be smaller than those of public high school teachers overall, the average class size of teachers in CTE schools in SY 2011–12 was smaller than the average class size of teachers in regular high schools (21 students vs. 26 students) (see table 3). There was no statistically significant difference between teachers' average class size in CTE schools (21 students) and teachers' average class size in charter (25 students⁴⁹) or other types of high schools (20 students).

Teachers at CTE, Regular, Charter, and Other High Schools

Teacher certification

As shown in table 5, a greater percentage of teachers working in CTE schools in SY 2011–12 became certified through an alternative route (35 percent) than teachers in regular (19 percent) or other, noncharter schools (22 percent). Seventeen percent of teachers in CTE schools held a provisional certificate, compared with 8 percent of teachers in regular high schools and 11 percent of teachers in other, noncharter high schools. And, as noted, health sciences teachers had one of the higher rates of alternative certification among CTE teachers (74 percent) (see table 5). The proportion of health sciences teachers working in CTE schools (29 percent) was one of the larger ones among OCC fields (see table 1) and may contribute to findings about alternative certification in CTE schools.

Highest level of education

Twenty-one percent of teachers in CTE schools indicated that their highest level of education was an associate degree, compared with 1 percent of teachers in regular, charter, and other high schools (see table 7). A smaller percentage of teachers in CTE schools than teachers at either regular or other, noncharter high schools held a master's degree or higher (43 percent vs. 58 percent and 59 percent, respectively).

Professional development

Teachers in CTE schools (75 percent) reported participating in professional development focused on the use of computers for instruction more frequently than teachers in regular (67 percent), charter (57 percent), or other types of high schools (65 percent) (see table 8).

Teachers in CTE schools reported participating in professional development that focused on teaching English language learners less often than teachers in either regular schools or other, noncharter schools (15 percent vs. 22 percent) (see table 8). Apparent differences between teachers in CTE schools and teachers in charter schools were not statistically significant. As

⁴⁹ The value of 25 students appears in table 3 as 25.5. See rule 3 in the Rounding subsection in Appendix B.



indicated above, the proportion of English language learners in CTE schools was not different from the proportion in other types of high schools at a statistically significant level.

Teachers in CTE schools reported that they received financial support for professional development more than reported by teachers in regular and other, noncharter schools (see table 9). Sixty-nine percent of teachers in CTE schools reported receiving financial support, compared with 53 percent of teachers in regular high schools and 50 percent of teachers in other types of high schools. There was no statistically significant difference between teachers in CTE schools and teachers in charter schools on this measure.

Teacher salaries

Although average annual base salaries⁵⁰ for academic, CTE, and other types of public high school teachers were not found to be different at statistically significant levels in SY 2011–12 (see table 3), teacher salaries did differ among school types. Public high school teachers working in CTE schools earned larger annual base salaries than those working in regular high schools and in charter high schools (\$56,800 vs. \$53,300 and \$43,700, respectively).

Student engagement

In SY 2011–12, smaller proportions of teachers in CTE schools reported that student engagement issues were a serious problem in their schools than teachers in either regular or other, noncharter high schools (see table 10). For example, 12 percent of teachers in CTE schools reported that student tardiness was a serious problem, compared with 19 percent of teachers in regular high schools and 25 percent of teachers in other, noncharter high schools. Similarly, 16 percent of the teachers in CTE schools reported student absenteeism as a serious problem whereas 24 percent of teachers in regular schools and 33 percent of teachers in other, noncharter schools identified absenteeism as a serious problem. No statistically significant differences were found between CTE school and charter high school teachers on other measures related to teachers' perceptions of student engagement (i.e., class cutting, dropping out, and apathy).

Teacher perceptions of control

In several areas of curriculum and instruction, teachers in CTE schools more often reported having moderate or greater control over decisions than teachers in other types of schools (see table 12). Seventy-seven percent of teachers in CTE schools reported having moderate or greater control over the selection of textbooks and other instructional materials compared with 65 percent of teachers in regular high schools and 62 percent of teachers in other schools. Eighty-four percent of teachers in CTE schools reported having moderate or greater control in selecting the content, topics, and skills to be taught compared with 70 percent of teachers at regular high schools and 73 percent of teachers in other,

⁵⁰ Average base salary is for the school year; summer earnings are not included.



noncharter schools. A higher percentage of teachers at CTE schools than teachers at charter high schools reported having moderate or greater control in determining the amount of homework to assign (95 percent vs. 87 percent). No other differences were found to be statistically significant in perceptions of control among teachers in CTE schools and teachers in charter high schools.



CONCLUSIONS

The findings presented here indicate that the career and technical education (CTE) teacher workforce as of school year (SY) 2011–12 differed from that of SY 2007–08. CTE teachers represented a smaller proportion of the overall public high school teaching force in SY 2011–12 compared with four years earlier due primarily to decreases in the number of CTE teachers in the field of business support and other unspecified CTE fields; however, the fields of health sciences and marketing grew over the period (table 4). Demand for health sciences teachers may have been addressed by providing health sciences professionals with alternative certification to teach high school (table 5). Findings discussed in the Teacher Workforce and Characteristics and Teacher Background and Preparation subsections indicate that health sciences teachers were no younger on average than other occupational education (OCC) teachers but had among the lowest averages for years of teaching experience and among the highest rates of alternative certification (tables 3, 5, and 7). Alternative certification appeared to be more common among CTE teachers, especially OCC teachers, than among academic or other types of public high school teachers (table 5). However, the field of agriculture and natural resources experienced an influx of new and younger teachers, a smaller percentage of them having alternative certification than other types of OCC teachers (tables 3 and 5). While those entering the profession to become CTE teachers appear to be taking advantage of alternative certification programs with more frequency than academic and other types of high school teachers, there is still unmet demand for CTE teachers. Schools with CTE vacancies reported difficulty in filling CTE vacancies more frequently than schools with academic vacancies reported difficulty in filling academic vacancies (table 15).

As of SY 2011–12, conditions for CTE teachers appeared favorable on some measures related to preparation, development, working conditions, and job satisfaction. The annual base salaries of CTE teachers were not different at statistically significant levels from those of academic teachers, and teachers working in CTE schools earned more than teachers in regular or charter high schools (table 4). In SY 2011–12, CTE teachers reported smaller class sizes (table 3); greater participation in, support for, and usefulness of professional development (table 8); fewer serious problems with student engagement (table 10); and greater control over curriculum and instruction (table 12) than did public high school teachers overall. Ninety-two percent of CTE teachers strongly or somewhat agreed that they were satisfied with their job (table 13).



Despite the majority being satisfied with their position, about one-third (32 percent) of CTE teachers reported that they would leave teaching as soon as possible if offered a higher-paying job (table 13). While this potential leave rate was not different from that of public high school teachers overall, CTE teachers in some fields may have greater opportunity for higher-paying jobs in business and industry than other teachers. A strong U.S. economy could have repercussions for the CTE teacher workforce and for CTE schools. With 92 percent of CTE schools reporting CTE teacher vacancies, and 64 percent indicating the positions were difficult to fill, recruitment of CTE teachers appears to have remained a key concern as of SY 2011–12 (table 15).

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APPENDIX A. STANDARD ERROR TABLES

For the definition of “standard error,” see the Statistical Definitions section of Appendix B.



Table A-1.

Standard errors for table 1: Number of public high school teachers and percentage distribution, by teaching status, school type, grades taught, teacher type, and CTE teaching field: School year 2011–12

| Teacher type and CTE teaching field | Number of teachers | Teaching status | | School type | | | Grades taught | | | | |
|---|--------------------|-----------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|-------------|
| | | Full time | Part time | Regular | CTE | Charter | Other | 9th | 10th | 11th | 12th |
| Total | 32,620 | 0.27 | 0.27 | 0.89 | 0.36 | 0.41 | 0.64 | 0.66 | 0.52 | 0.61 | 0.70 |
| Teacher type (main teaching assignment) | | | | | | | | | | | |
| Academic | 21,240 | 0.33 | 0.33 | 0.81 | 0.23 | 0.50 | 0.75 | 0.83 | 0.66 | 0.80 | 0.79 |
| Career and technical education (CTE) | 5,810 | 0.77 | 0.77 | 1.47 | 1.24 | 0.55 | 1.10 | 1.32 | 1.04 | 0.58 | 0.60 |
| Other | 12,540 | 0.70 | 0.70 | 2.30 | † | † | 1.02 | 1.29 | 1.03 | 1.59 | 1.82 |
| CTE teaching field | | | | | | | | | | | |
| Occupational education (OCC) | 4,060 | 0.73 | 0.73 | 1.92 | 1.70 | 0.68 | 1.48 | 1.79 | 1.44 | 0.64 | 0.62 |
| Agriculture and natural resources | 1,290 | 1.07 | 1.07 | 2.86 | 2.30 | † | † | 3.40 | 4.31 | 0.47 | 2.07 |
| Business, total | 1,760 | 2.32 | † | 2.90 | † | 0.95 | † | 2.17 | 1.57 | 1.92 | 1.26 |
| Business management | 1,210 | 3.20 | † | 3.80 | † | † | † | 2.60 | 1.51 | 0.95 | 0.97 |
| Business support | 1,010 | 1.42 | † | 5.12 | † | † | † | 4.39 | 4.01 | 5.46 | 3.10 |
| Communications and design | 1,620 | 1.13 | 1.13 | 8.57 | 4.39 | † | † | 7.13 | 3.01 | 1.61 | 2.76 |
| Computer and information sciences | 750 | 3.43 | 3.43 | 6.51 | 4.66 | † | † | 4.54 | 4.22 | 1.90 | 1.33 |
| Construction, architecture, and engineering | 1,600 | 1.29 | 1.29 | 5.89 | 5.25 | 1.42 | 3.85 | 5.24 | 4.41 | 3.42 | 2.69 |
| Consumer, culinary, and public services | 890 | 5.12 | 5.12 | 8.38 | 8.26 | † | † | 6.82 | 4.71 | 3.07 | 2.51 |
| Health sciences | 1,260 | 3.49 | 3.49 | 8.68 | 7.81 | † | † | 9.15 | 7.58 | 3.23 | 3.04 |
| Manufacturing | 1,180 | 0.93 | † | 12.74 | 11.99 | † | † | 13.98 | 9.20 | 0.48 | 0.48 |
| Marketing | 1,500 | 0.72 | † | 3.18 | † | † | † | 7.71 | 6.10 | # | 0.34 |
| Mechanics and repair | 760 | 1.84 | † | 8.82 | 7.49 | † | † | 9.02 | 8.06 | 2.16 | 5.64 |
| Family and consumer sciences education (FCSE) | 2,470 | 1.21 | 1.21 | 2.63 | 0.94 | † | † | 3.22 | 2.57 | 0.92 | 0.79 |
| General labor market preparation and other | 2,130 | 2.73 | 2.73 | 3.53 | 2.25 | 0.85 | † | 2.16 | 1.90 | 1.80 | 1.85 |
| General labor market preparation (GLMP) | 1,600 | 1.42 | 1.42 | 2.34 | 1.84 | † | 1.54 | 2.15 | 2.35 | 2.57 | 2.95 |
| Other career and technical education | 1,630 | 5.25 | † | 6.91 | 4.09 | 1.57 | † | 3.60 | 2.95 | 2.69 | 2.70 |

† Not applicable.

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-2.

Standard errors for table 2: Percentage distribution of public high school teachers according to the region and urbanicity of their schools, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Region | | | | Urbanicity | | | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Northeast | Midwest | South | West | City | Suburban | Town | Rural |
| Total | 0.87 | 0.97 | 1.30 | 0.76 | 0.98 | 1.15 | 0.54 | 0.95 |
| Teacher type (main teaching assignment) | | | | | | | | |
| Academic | 1.02 | 1.02 | 1.55 | 0.81 | 1.14 | 1.26 | 0.58 | 1.04 |
| Career and technical education (CTE) | 1.55 | 1.35 | 2.30 | 1.34 | 1.68 | 2.00 | 1.05 | 1.78 |
| Other | 2.15 | 1.63 | 1.71 | 1.32 | 1.86 | 1.93 | 0.99 | 1.59 |
| CTE teaching field | | | | | | | | |
| Occupational education (OCC) | 1.91 | 1.62 | 2.57 | 1.56 | 2.25 | 2.06 | 1.25 | 2.30 |
| Agriculture and natural resources | † | 4.11 | 5.52 | 3.80 | 2.21 | 1.68 | 4.07 | 5.01 |
| Business, total | 3.45 | 3.36 | 4.82 | 2.86 | 3.43 | 3.36 | 3.04 | 4.48 |
| Business management | 3.91 | 4.37 | 5.99 | 4.25 | 5.04 | 3.85 | 3.64 | 5.67 |
| Business support | † | 3.87 | 7.64 | 4.28 | 3.95 | 7.82 | 4.10 | 7.53 |
| Communications and design | 8.32 | 4.89 | 8.76 | 5.34 | 7.96 | 6.07 | 2.14 | 5.05 |
| Computer and information sciences | 6.68 | 5.56 | 7.08 | 5.53 | 5.87 | 7.23 | 4.09 | 7.09 |
| Construction, architecture, and engineering | 5.00 | 4.62 | 5.41 | 2.67 | 4.65 | 5.19 | 3.07 | 5.62 |
| Consumer, culinary, and public services | 8.19 | 6.30 | 9.06 | 5.01 | 7.31 | 6.88 | 4.98 | 6.04 |
| Health sciences | † | 4.98 | 7.89 | 4.96 | 6.50 | 7.99 | † | 9.27 |
| Manufacturing | † | 8.58 | 13.99 | 6.93 | † | 8.98 | 4.94 | 13.87 |
| Marketing | 3.44 | 6.74 | 8.52 | 3.57 | 10.10 | 9.75 | 4.00 | 8.84 |
| Mechanics and repair | † | 7.12 | 9.95 | 6.04 | 7.05 | 6.77 | 6.64 | 9.76 |
| Family and consumer sciences education (FCSE) | 3.80 | 3.76 | 5.26 | 3.26 | 4.83 | 4.75 | 2.97 | 4.46 |
| General labor market preparation and other | 3.88 | 2.75 | 3.40 | 3.21 | 3.15 | 5.11 | 2.12 | 3.41 |
| General labor market preparation (GLMP) | 5.71 | 3.91 | 4.65 | 3.43 | 3.38 | 5.70 | 2.97 | 4.77 |
| Other career and technical education | 4.70 | 3.56 | 5.18 | 5.30 | 4.51 | 6.66 | 2.49 | 4.82 |
| School type | | | | | | | | |
| Regular | 0.97 | 1.06 | 1.30 | 0.61 | 1.09 | 1.23 | 0.61 | 1.08 |
| CTE | 5.58 | 3.67 | 4.16 | 3.04 | 3.95 | 5.20 | 2.27 | 6.33 |
| Charter | † | † | 11.24 | 12.36 | 6.72 | 5.26 | † | 3.82 |
| Other | 2.51 | 3.29 | 3.99 | 2.59 | 4.87 | 2.76 | 1.80 | 2.74 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-3.

Standard errors for table 3: Public high school teachers' age, sex, base salary, and average class size, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Average age | Distribution of age | | | | Sex | | Average salary | Average class size |
|--|----------------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------------|-----------------------|
| | | Younger than 30 | 30–49 | 50–54 | 55 or older | Male | Female | | |
| Total | 0.26 | 0.64 | 0.76 | 0.56 | 0.74 | 0.65 | 0.65 | \$350 | 0.34 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 0.28 | 0.76 | 0.90 | 0.54 | 0.85 | 0.91 | 0.91 | 410 | 0.35 |
| Career and technical education (CTE) | 0.41 | 0.99 | 1.65 | 1.77 | 1.70 | 1.93 | 1.93 | 690 | 0.57 |
| Other | 0.46 | 1.01 | 1.70 | 1.35 | 1.75 | 1.62 | 1.62 | 650 | 0.67 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 0.50 | 1.18 | 2.14 | 2.14 | 2.23 | 2.33 | 2.33 | 780 | 0.68 |
| Agriculture and natural resources | 1.34 | 5.83 | 6.23 | 3.40 | 3.18 | 5.96 | 5.96 | 1,450 | 1.79 |
| Business, total | 0.97 | 2.67 | 3.89 | 3.15 | 2.78 | 4.35 | 4.35 | 1,100 | 1.35 |
| Business management | 1.07 | 3.23 | 4.57 | 3.31 | 3.46 | 4.71 | 4.71 | 1,450 | 1.12 |
| Business support | 1.86 | 5.04 | 8.98 | † | 4.76 | 9.02 | 9.02 | 1,630 | 3.59 |
| Communications and design | 1.75 | † | 8.02 | 8.09 | 7.10 | 7.45 | 7.45 | 2,950 | 2.65 |
| Computer and information sciences | 1.83 | 4.92 | 6.71 | 5.87 | 6.35 | 7.51 | 7.51 | 3,430 | 1.79 |
| Construction, architecture, and engineering | 1.31 | 3.52 | 5.85 | 3.98 | 6.60 | 2.24 | 2.24 | 1,830 | 1.59 |
| Consumer, culinary, and public services | 1.51 | † | 8.58 | 5.03 | 7.73 | 6.75 | 6.75 | 3,170 | 2.81 |
| Health sciences | 1.50 | † | 8.02 | 7.51 | 7.16 | 6.80 | 6.80 | 2,090 | 1.18 |
| Manufacturing | 2.71 | 2.80 | 9.94 | † | 13.90 | 6.27 | † | 3,090 | 2.09 |
| Marketing | 2.28 | † | 10.83 | 5.16 | 9.02 | 10.41 | 10.41 | 2,700 | 2.74 |
| Mechanics and repair | 1.85 | † | 8.24 | 5.81 | 8.32 | 1.08 | † | 2,360 | 2.07 |
| Family and consumer sciences education (FCSE) | 1.12 | 2.93 | 4.24 | 4.76 | 4.92 | 2.07 | 2.07 | 1,860 | 1.73 |
| General labor market preparation and other | 0.86 | 2.29 | 3.81 | 3.24 | 3.24 | 4.18 | 4.18 | 1,950 | 0.69 |
| General labor market preparation (GLMP) | 1.29 | 4.19 | 5.74 | 4.77 | 4.55 | 3.55 | 3.55 | 2,960 | 0.96 |
| Other career and technical education | 1.13 | 2.00 | 5.63 | 3.74 | 5.17 | 5.87 | 5.87 | 2,800 | 0.96 |
| School type | | | | | | | | | |
| Regular | 0.22 | 0.59 | 0.78 | 0.50 | 0.72 | 0.67 | 0.67 | 370 | 0.25 |
| CTE | 0.84 | 1.62 | 4.50 | 5.18 | 3.32 | 4.81 | 4.81 | 1,720 | 1.11 |
| Charter | 2.36 | 4.53 | 7.74 | † | 7.63 | 6.11 | 6.11 | 2,690 | 2.71 |
| Other | 0.63 | 1.45 | 2.43 | 2.12 | 2.61 | 2.71 | 2.71 | 1,580 | 1.37 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-4.
Standard errors for table 4: Percentage distribution of public high school teachers' main teaching assignment, by selected teacher and school characteristics, average age, years of experience, and annual base salary: School years 2007–08 and 2011–12

| Teacher and school characteristics | CTE | | Academic | | Other | |
|---|----------------|-------------|-------------|-------------|-------------|-------------|
| | 2007–08 | 2011–12 | 2007–08 | 2011–12 | 2007–08 | 2011–12 |
| | Percent | | | | | |
| Total | 0.41 | 0.44 | 0.79 | 0.77 | 0.63 | 0.80 |
| Career and technical education (CTE) teaching field | | | | | | |
| Occupational education (OCC) | 1.27 | 1.83 | † | † | † | † |
| Agriculture and natural resources | 0.87 | 1.03 | † | † | † | † |
| Business, total | 0.95 | 1.26 | † | † | † | † |
| Business management | 0.73 | 0.91 | † | † | † | † |
| Business support | 0.71 | 0.73 | † | † | † | † |
| Communications and design | 0.76 | 1.10 | † | † | † | † |
| Computer and information sciences | 0.55 | 0.56 | † | † | † | † |
| Construction, architecture, and engineering | 0.66 | 1.14 | † | † | † | † |
| Consumer, culinary, and public services | 0.54 | 0.69 | † | † | † | † |
| Health sciences | 0.45 | 0.97 | † | † | † | † |
| Manufacturing | 0.30 | 0.87 | † | † | † | † |
| Marketing | 0.36 | 1.06 | † | † | † | † |
| Mechanics and repair | 0.53 | 0.59 | † | † | † | † |
| Family and consumer sciences education (FCSE) | 0.95 | 1.52 | † | † | † | † |
| General labor market preparation and other | 1.39 | 1.42 | † | † | † | † |
| General labor market preparation (GLMP) | 1.08 | 1.15 | † | † | † | † |
| Other career and technical education | 1.10 | 1.15 | † | † | † | † |
| School type | | | | | | |
| Regular | 2.21 | 1.47 | 0.91 | 0.81 | 1.14 | 2.30 |
| CTE | 1.87 | 1.24 | 0.31 | 0.23 | 0.40 | † |
| Charter | 0.36 | 0.55 | 0.59 | 0.50 | 0.39 | † |
| Other | 0.93 | 1.10 | 0.91 | 0.75 | 1.10 | 1.02 |
| Type of certificate held | | | | | | |
| Standard state or advanced certificate | 1.20 | 1.19 | 0.60 | 0.55 | 1.04 | 1.45 |
| Certificate with additional requirements | 0.99 | 1.14 | 0.57 | 0.44 | 0.87 | 1.39 |
| No certification held | 0.59 | 0.35 | 0.19 | 0.43 | 0.42 | 0.39 |
| Entered teaching through alternative certification | | | | | | |
| Yes | 1.49 | 1.75 | 0.67 | 0.83 | 1.06 | 1.36 |
| No | 1.49 | 1.75 | 0.67 | 0.83 | 1.06 | 1.36 |
| Sex | | | | | | |
| Male | 1.42 | 1.93 | 0.74 | 0.91 | 1.20 | 1.62 |
| Female | 1.42 | 1.93 | 0.74 | 0.91 | 1.20 | 1.62 |
| Years | | | | | | |
| Average age in years | 0.33 | 0.41 | 0.17 | 0.28 | 0.31 | 0.46 |
| Average years of experience | 0.32 | 0.38 | 0.15 | 0.19 | 0.31 | 0.36 |
| Dollars | | | | | | |
| Average annual base salary | \$530 | \$690 | \$390 | \$410 | \$600 | \$650 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2007–08 and 2011–12.

Table A-5.
Standard errors for table 5: Percentage of public high school teachers who were designated as “Highly Qualified,” certified via an alternative route, and had various types of certification, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | “Highly Qualified” | Certified via alternative route | Type of certificate | | |
|---|--------------------|---------------------------------|--|-------------------------|-------------|
| | | | Standard state or advanced certificate | Provisional certificate | None |
| Total | 0.62 | 0.66 | 0.50 | 0.39 | 0.31 |
| Teacher type (main teaching assignment) | | | | | |
| Academic | 0.69 | 0.83 | 0.55 | 0.44 | 0.43 |
| Career and technical education (CTE) | 1.59 | 1.75 | 1.19 | 1.14 | 0.35 |
| Other | 1.60 | 1.36 | 1.45 | 1.39 | 0.39 |
| CTE teaching field | | | | | |
| Occupational education (OCC) | 1.92 | 2.46 | 1.65 | 1.65 | 0.37 |
| Agriculture and natural resources | 4.19 | 2.46 | 2.61 | 2.63 | † |
| Business, total | 4.00 | 4.59 | 3.33 | 3.18 | † |
| Business management | 4.61 | 5.78 | 4.65 | 4.42 | † |
| Business support | 8.01 | 4.28 | 2.93 | † | † |
| Communications and design | 7.29 | 8.58 | 6.45 | 6.44 | † |
| Computer and information sciences | 6.36 | 6.24 | 3.39 | 3.40 | † |
| Construction, architecture, and engineering | 5.18 | 5.77 | 4.33 | 4.25 | † |
| Consumer, culinary, and public services | 6.98 | 8.52 | 7.00 | 6.86 | † |
| Health sciences | 7.54 | 6.46 | 5.71 | 5.08 | 2.44 |
| Manufacturing | 13.61 | 9.39 | 11.18 | † | † |
| Marketing | 8.08 | 11.07 | 3.08 | † | † |
| Mechanics and repair | 8.45 | 8.84 | 4.85 | 4.67 | † |
| Family and consumer sciences education (FCSE) | 4.23 | 3.60 | 2.13 | 2.09 | † |
| General labor market preparation and other | 3.66 | 3.00 | 3.62 | 3.43 | 1.01 |
| General labor market preparation (GLMP) | 4.34 | 4.20 | 3.11 | 2.95 | † |
| Other career and technical education | 5.67 | 4.89 | 6.00 | 5.80 | 1.59 |
| School type | | | | | |
| Regular | 0.64 | 0.65 | 0.41 | 0.38 | 0.18 |
| CTE | 4.85 | 3.29 | 2.39 | 2.38 | 0.50 |
| Charter | 3.78 | 4.73 | 9.81 | † | † |
| Other | 2.21 | 2.71 | 1.95 | 1.91 | 0.28 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), “Public School Teacher and Public School Data Files,” 2011–12.

Table A-6.

Standard errors for table 6: Percentage of public high school teachers who student taught and, among teachers who began teaching in 2007–08 or later, percentage who participated in a teacher induction program and received other types of first-year support, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Of teachers who began teaching in school year 2007–08 or later | | | | | | |
|---|--|--|------------------------------|--|--|----------------------------|--|
| | Percent of all who student taught | Percent who received teacher induction | Type of first-year support | | | | |
| | | | Modified teaching assignment | Common planning time with teachers in same subject | Seminars or classes for beginning teachers | Extra classroom assistance | Regular supportive communication with administration |
| Total | 0.53 | 1.20 | 0.99 | 1.42 | 1.49 | 1.10 | 1.50 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 0.59 | 1.41 | 1.12 | 1.79 | 1.73 | 1.12 | 1.90 |
| Career and technical education (CTE) | 1.69 | 3.59 | 2.70 | 3.58 | 3.30 | 2.21 | 3.25 |
| Other | 1.29 | 2.70 | 3.00 | 3.74 | 3.38 | 4.01 | 2.88 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 1.83 | 2.21 | 3.12 | 4.44 | 4.46 | 2.51 | 4.33 |
| Agriculture and natural resources | 4.38 | 3.04 | † | 8.79 | 10.58 | † | 10.82 |
| Business, total | 3.56 | 4.17 | † | 7.89 | 7.64 | † | 9.09 |
| Business management | 4.49 | 5.64 | † | 9.58 | 9.95 | † | 10.67 |
| Business support | 4.50 | 0.44 | † | † | 15.93 | † | 15.53 |
| Communications and design | 6.05 | 11.92 | † | 16.47 | 14.71 | 9.03 | 10.46 |
| Computer and information sciences | 4.31 | 9.97 | † | 17.30 | 11.11 | † | 15.67 |
| Construction, architecture, and engineering | 5.55 | 4.04 | 7.37 | 7.58 | 9.53 | † | 7.04 |
| Consumer, culinary, and public services | 2.95 | 6.74 | † | 13.74 | 15.04 | 9.95 | 14.32 |
| Health sciences | 8.56 | 11.10 | † | † | 17.59 | † | 3.96 |
| Manufacturing | 4.32 | # | † | † | 10.47 | † | 12.60 |
| Marketing | 2.74 | # | † | † | 19.68 | † | 22.95 |
| Mechanics and repair | 4.29 | 0.84 | † | 13.92 | 11.51 | † | 7.23 |
| Family and consumer sciences education (FCSE) | 3.23 | 10.45 | † | 11.15 | 10.88 | † | 10.01 |
| General labor market preparation and other | 3.05 | 11.69 | 5.45 | 8.20 | 5.72 | 6.45 | 5.61 |
| General labor market preparation (GLMP) | 4.09 | 6.84 | 6.81 | 10.92 | 8.84 | † | 8.07 |
| Other career and technical education | 4.26 | 17.08 | 7.37 | 12.14 | 9.42 | 10.69 | 6.84 |
| School type | | | | | | | |
| Regular | 0.50 | 1.42 | 1.10 | 1.72 | 1.62 | 1.32 | 1.54 |
| CTE | 5.16 | 4.25 | 4.97 | 7.18 | 5.41 | 6.02 | 4.19 |
| Charter | 2.30 | 6.88 | 3.44 | 7.62 | 7.18 | 4.02 | 8.28 |
| Other | 1.72 | 4.21 | 2.98 | 5.06 | 5.37 | 4.92 | 4.07 |

† Not applicable.

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.



Table A-7.
Standard errors for table 7: Public high school teachers' years of teaching experience and highest level of education, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Average years teaching | Percentage distribution | | | | | | | |
|---|------------------------|------------------------------|-------------|-------------|-------------|----------------------------|---------------------------------|-------------------|---------------------------|
| | | Years of teaching experience | | | | Highest level of education | | | |
| | | Less than 4 | 4–9 | 10–14 | 15 or more | No degree | Associate degree or certificate | Bachelor's degree | Master's degree or higher |
| Total | 0.19 | 0.48 | 0.74 | 0.70 | 1.13 | 0.28 | 0.20 | 0.71 | 0.67 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 0.19 | 0.62 | 0.77 | 0.76 | 0.98 | 0.26 | 0.10 | 0.81 | 0.81 |
| Career and technical education (CTE) | 0.38 | 1.22 | 1.66 | 1.68 | 2.09 | 0.78 | 1.11 | 1.73 | 1.72 |
| Other | 0.36 | 0.96 | 1.96 | 1.48 | 2.54 | 0.84 | 0.54 | 1.71 | 1.64 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 0.46 | 1.54 | 2.02 | 2.41 | 2.52 | 0.98 | 1.65 | 2.34 | 2.40 |
| Agriculture and natural resources | 1.06 | 5.87 | 4.29 | 5.29 | 4.71 | † | † | 5.90 | 5.96 |
| Business, total | 0.82 | 2.83 | 4.34 | 3.41 | 4.30 | † | † | 4.12 | 4.50 |
| Business management | 0.85 | 4.02 | 5.07 | 4.70 | 4.48 | † | † | 4.77 | 5.42 |
| Business support | 1.97 | † | 9.49 | 5.57 | 9.60 | † | † | 7.77 | 7.91 |
| Communications and design | 1.29 | 5.35 | 8.01 | 8.61 | 7.20 | † | 3.30 | 6.98 | 8.32 |
| Computer and information sciences | 1.41 | 4.77 | 6.15 | 5.78 | 8.15 | 2.30 | † | 7.40 | 7.06 |
| Construction, architecture, and engineering | 1.18 | 4.29 | 4.12 | 3.68 | 5.66 | 2.28 | 4.77 | 5.69 | 5.53 |
| Consumer, culinary, and public services | 1.47 | 3.68 | 5.78 | 5.67 | 7.44 | † | 7.35 | 6.97 | 7.32 |
| Health sciences | 0.97 | 7.76 | 6.11 | 8.56 | 6.73 | † | 4.87 | 8.55 | 9.55 |
| Manufacturing | 2.98 | 3.96 | 9.83 | 5.67 | 13.51 | † | 13.50 | 10.16 | † |
| Marketing | 2.15 | 5.10 | 10.62 | † | 10.21 | † | † | 10.28 | 10.42 |
| Mechanics and repair | 1.26 | 4.52 | 7.05 | 8.69 | 9.26 | 3.26 | 8.24 | 6.12 | 4.17 |
| Family and consumer sciences education (FCSE) | 1.05 | 3.45 | 4.38 | 3.09 | 4.82 | † | 0.56 | 4.95 | 4.93 |
| General labor market preparation and other | 0.86 | 2.88 | 3.75 | 2.83 | 4.43 | 1.71 | 1.89 | 3.54 | 3.88 |
| General labor market preparation (GLMP) | 1.15 | 3.15 | 4.95 | 4.27 | 5.60 | 2.60 | 1.86 | 4.85 | 4.78 |
| Other career and technical education | 1.18 | 5.33 | 5.15 | 3.19 | 6.44 | 1.63 | 3.29 | 4.97 | 5.86 |
| School type | | | | | | | | | |
| Regular | 0.17 | 0.52 | 0.67 | 0.73 | 0.89 | 0.26 | 0.23 | 0.80 | 0.78 |
| CTE | 0.75 | 2.80 | 3.24 | 4.22 | 3.49 | † | 2.89 | 3.52 | 4.01 |
| Charter | 1.80 | 3.73 | 9.58 | 4.12 | † | † | 0.56 | 5.88 | 6.73 |
| Other | 0.50 | 1.49 | 2.17 | 2.17 | 2.54 | 0.71 | 0.57 | 2.70 | 2.59 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-8.

Standard errors for table 8: Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Percent participating in any professional development | Focus on content of subjects taught | | | Focus on uses of computers for instruction | | |
|---|---|-------------------------------------|--|---------------------------------------|--|--|---------------------------------------|
| | | Percent participating | Percent participating for 33 or more hours | Percent finding useful or very useful | Percent participating | Percent participating for 33 or more hours | Percent finding useful or very useful |
| Total | 0.31 | 0.66 | 0.73 | 0.83 | 0.74 | 0.44 | 0.75 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 0.37 | 0.78 | 0.88 | 1.02 | 0.87 | 0.50 | 1.07 |
| Career and technical education (CTE) | 0.60 | 1.64 | 1.81 | 1.80 | 1.91 | 1.91 | 2.02 |
| Other | 0.81 | 1.20 | 1.67 | 2.03 | 1.94 | 0.95 | 1.99 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 0.93 | 2.19 | 2.30 | 2.07 | 2.04 | 2.37 | 2.36 |
| Agriculture and natural resources | 1.63 | 2.57 | 6.31 | 5.10 | 5.74 | † | 7.22 |
| Business, total | 1.92 | 4.06 | 4.44 | 4.53 | 3.46 | 4.59 | 3.37 |
| Business management | 1.14 | 5.18 | 5.91 | 5.25 | 3.88 | 5.50 | 3.62 |
| Business support | 6.51 | 7.32 | 4.90 | 7.93 | 8.53 | 7.26 | 7.99 |
| Communications and design | 0.66 | 7.09 | 10.14 | 6.05 | 7.44 | 8.66 | 7.81 |
| Computer and information sciences | 1.66 | 8.59 | 6.93 | 8.06 | 6.10 | 7.85 | 8.78 |
| Construction, architecture, and engineering | 2.67 | 5.39 | 5.77 | 3.79 | 5.46 | 5.43 | 5.29 |
| Consumer, culinary, and public services | 1.49 | 4.99 | 6.89 | 7.11 | 6.80 | 4.58 | 7.00 |
| Health sciences | 1.42 | 2.31 | 7.98 | 6.48 | 5.16 | † | 10.20 |
| Manufacturing | 3.08 | 11.65 | † | 9.65 | 14.44 | † | 5.55 |
| Marketing | 7.97 | 8.45 | 7.93 | 11.31 | 9.94 | † | 9.11 |
| Mechanics and repair | 1.52 | 9.89 | 7.25 | 5.94 | 7.10 | 3.74 | 12.40 |
| Family and consumer sciences education (FCSE) | 1.73 | 3.97 | 3.36 | 6.38 | 5.97 | 2.29 | 5.70 |
| General labor market preparation and other | 0.91 | 3.48 | 4.64 | 3.93 | 3.43 | 3.79 | 3.94 |
| General labor market preparation (GLMP) | 1.57 | 4.72 | 5.50 | 6.11 | 4.58 | 6.21 | 6.39 |
| Other career and technical education | 0.99 | 5.21 | 6.90 | 4.42 | 5.00 | 2.70 | 4.13 |
| School type | | | | | | | |
| Regular | 0.35 | 0.64 | 0.77 | 0.83 | 0.72 | 0.46 | 0.86 |
| CTE | 0.56 | 2.95 | 3.52 | 6.43 | 2.90 | 3.82 | 4.41 |
| Charter | 1.51 | 6.28 | 5.55 | 8.76 | 8.18 | 4.94 | 9.19 |
| Other | 1.56 | 2.02 | 2.54 | 2.26 | 2.30 | 2.23 | 2.96 |

See notes at end of table.

Table A-8.

Standard errors for table 8: Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Focus on reading instruction | | | Student discipline and classroom management | | | Teaching students with disabilities | | |
|---|------------------------------|--------------------|-----------------------|---|--------------------|-----------------------|-------------------------------------|--------------------|-----------------------|
| | Percent participating | Percent responding | Percent finding | Percent participating | Percent responding | Percent finding | Percent participating | Percent responding | Percent finding |
| | | 33 or more hours | useful or very useful | | 33 or more hours | useful or very useful | | 33 or more hours | useful or very useful |
| Total | 0.73 | 0.54 | 1.46 | 0.63 | 0.36 | 1.02 | 0.76 | 0.54 | 1.19 |
| Teacher type (main teaching assignment) | | | | | | | | | |
| Academic | 0.89 | 0.60 | 1.51 | 0.73 | 0.41 | 1.29 | 0.77 | 0.39 | 1.90 |
| Career and technical education (CTE) | 1.74 | 1.52 | 3.02 | 1.49 | 0.99 | 2.98 | 1.88 | 2.05 | 3.27 |
| Other | 1.89 | 1.30 | 3.50 | 1.69 | 1.01 | 2.84 | 1.58 | 1.38 | 1.85 |
| CTE teaching field | | | | | | | | | |
| Occupational education (OCC) | 2.42 | 1.69 | 3.57 | 2.32 | 1.34 | 3.70 | 2.32 | 2.87 | 4.15 |
| Agriculture and natural resources | 5.10 | † | 8.36 | 6.10 | † | 9.36 | 5.83 | 2.23 | 10.64 |
| Business, total | 4.55 | † | 7.59 | 4.38 | † | 7.46 | 4.43 | 5.66 | 7.36 |
| Business management | 4.97 | † | 8.76 | 4.98 | † | 8.88 | | | |
| Business support | 8.66 | † | 15.58 | 8.32 | † | 12.83 | | | |
| Communications and design | 9.21 | † | 10.25 | 8.40 | † | 10.10 | 7.57 | 13.57 | 7.60 |
| Computer and information sciences | 7.14 | † | 14.29 | 6.44 | † | 10.50 | 7.51 | 0.00 | 13.87 |
| Construction, architecture, and engineering | 6.87 | † | 9.24 | 4.15 | † | 9.28 | 5.16 | 4.07 | 9.44 |
| Consumer, culinary, and public services | 8.42 | † | 14.69 | 7.40 | † | 11.22 | 7.48 | 0.71 | 7.34 |
| Health sciences | 9.98 | † | 14.41 | 9.26 | † | 8.39 | 8.46 | 3.63 | 7.88 |
| Manufacturing | 11.64 | † | 17.88 | 12.01 | † | 16.10 | 8.51 | 0.00 | 15.12 |
| Marketing | 7.64 | † | 13.56 | 9.58 | † | 13.86 | 8.85 | 0.00 | 14.73 |
| Mechanics and repair | 7.18 | † | 9.44 | 9.13 | † | 12.71 | 9.69 | 3.62 | 17.33 |
| Family and consumer sciences education (FCSE) | 4.41 | † | 6.83 | 4.81 | † | 6.78 | 4.68 | 1.95 | 7.09 |
| General labor market preparation and other | 4.02 | 3.39 | 6.00 | 4.05 | 1.99 | 6.00 | 3.34 | 3.64 | 6.35 |
| General labor market preparation (GLMP) | 6.04 | † | 8.55 | 5.03 | † | 7.57 | 5.35 | 6.07 | 10.93 |
| Other career and technical education | 4.97 | 3.94 | 9.15 | 5.97 | † | 9.51 | 4.70 | 4.80 | 7.46 |
| School type | | | | | | | | | |
| Regular | 0.75 | 0.56 | 1.11 | 0.66 | 0.38 | 1.25 | 0.76 | 0.58 | 1.07 |
| CTE | 4.73 | 2.05 | 5.68 | 4.07 | 1.73 | 5.46 | 4.35 | 2.06 | 8.27 |
| Charter | 7.28 | 4.82 | 20.58 | 6.06 | 2.72 | 16.24 | 5.62 | 3.02 | 13.30 |
| Other | 2.71 | 2.21 | 3.57 | 2.78 | 1.45 | 3.40 | 2.66 | 2.91 | 3.61 |

See notes at end of table.

Table A-8.

Standard errors for table 8: Percentage of public high school teachers participating in professional development activities, by content of professional development, teacher type, CTE teaching field, and school type: School year 2011–12—Continued

| Teacher type, CTE teaching field, and school type | Teaching limited English proficient students or English language learners | | | Percent participating in other professional development |
|---|---|-------------------------------------|---------------------------------------|---|
| | Percent participating | Percent responding 33 or more hours | Percent finding useful or very useful | |
| Total | 0.91 | 0.77 | 1.56 | 0.75 |
| Teacher type (main teaching assignment) | | | | |
| Academic | 1.01 | 0.90 | 1.94 | 0.94 |
| Career and technical education (CTE) | 1.95 | 2.01 | 4.36 | 1.96 |
| Other | 1.47 | 1.41 | 4.15 | 2.32 |
| CTE teaching field | | | | |
| Occupational education (OCC) | 2.35 | † | 5.06 | 2.35 |
| Agriculture and natural resources | 5.42 | † | 12.27 | 5.22 |
| Business, total | 5.12 | † | 9.76 | 4.17 |
| Business management | 5.67 | † | 10.58 | 4.94 |
| Business support | † | † | 7.32 | 6.74 |
| Communications and design | 8.27 | † | 14.26 | 8.65 |
| Computer and information sciences | 6.99 | † | 17.01 | 5.42 |
| Construction, architecture, and engineering | 4.86 | † | 14.71 | 5.25 |
| Consumer, culinary, and public services | 8.72 | † | 17.71 | 7.33 |
| Health sciences | 6.94 | † | 15.92 | 9.00 |
| Manufacturing | 10.76 | † | † | 8.93 |
| Marketing | 6.47 | † | 22.44 | 10.22 |
| Mechanics and repair | 5.69 | † | 16.75 | 8.86 |
| Family and consumer sciences education (FCSE) | 4.57 | † | 10.07 | 4.77 |
| General labor market preparation and other | 3.28 | 5.45 | 10.62 | 3.10 |
| General labor market preparation (GLMP) | 4.74 | † | 13.73 | 4.48 |
| Other career and technical education | 5.50 | 8.45 | 11.51 | 4.67 |
| School type | | | | |
| Regular | 0.95 | 0.86 | 1.60 | 0.74 |
| CTE | 2.92 | † | 9.17 | 3.37 |
| Charter | 5.59 | 3.16 | 10.49 | 8.59 |
| Other | 1.90 | 1.92 | 4.73 | 2.61 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-9.
Standard errors for table 9: Percentage of public high school teachers who received release time from teaching or financial support for professional development, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Release time from teaching | Financial support |
|---|----------------------------|-------------------|
| Total | 0.90 | 0.74 |
| Teacher type (main teaching assignment) | | |
| Academic | 1.00 | 0.91 |
| Career and technical education (CTE) | 1.90 | 2.15 |
| Other | 2.02 | 1.74 |
| CTE teaching field | | |
| Occupational education (OCC) | 2.48 | 2.34 |
| Agriculture and natural resources | 5.44 | 5.34 |
| Business, total | 4.45 | 4.68 |
| Business management | 4.98 | 5.21 |
| Business support | 8.27 | 9.74 |
| Communications and design | 9.05 | 8.59 |
| Computer and information sciences | 8.37 | 8.67 |
| Construction, architecture, and engineering | 5.72 | 4.71 |
| Consumer, culinary, and public services | 8.33 | 8.00 |
| Health sciences | 7.59 | 5.86 |
| Manufacturing | 12.02 | 12.80 |
| Marketing | 9.94 | 6.62 |
| Mechanics and repair | 8.80 | 9.63 |
| Family and consumer sciences education (FCSE) | 4.92 | 4.29 |
| General labor market preparation and other | 3.71 | 4.63 |
| General labor market preparation (GLMP) | 5.10 | 6.06 |
| Other career and technical education | 5.57 | 5.51 |
| School type | | |
| Regular | 0.96 | 0.79 |
| CTE | 4.42 | 3.59 |
| Charter | 7.16 | 5.62 |
| Other | 2.12 | 2.66 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher Questionnaire," 2011–12.

Table A-10.
Standard errors for table 10: Percentage of public high school teachers who reported various student behaviors as a serious problem in their schools, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Student tardiness | Student absenteeism | Student class cutting | Students dropping out | Student apathy |
|---|-------------------|---------------------|-----------------------|-----------------------|----------------|
| Total | 0.55 | 0.65 | 0.54 | 0.42 | 0.73 |
| Teacher type (main teaching assignment) | | | | | |
| Academic | 0.72 | 0.83 | 0.70 | 0.48 | 0.83 |
| Career and technical education (CTE) | 1.64 | 1.62 | 1.39 | 1.02 | 1.66 |
| Other | 1.33 | 1.29 | 1.20 | 1.00 | 1.71 |
| CTE teaching field | | | | | |
| Occupational education (OCC) | 2.19 | 2.10 | 1.81 | 1.36 | 2.27 |
| Agriculture and natural resources | 4.92 | 3.74 | † | † | 4.37 |
| Business, total | 3.98 | 4.12 | 4.32 | 2.37 | 5.14 |
| Business management | 4.93 | 4.89 | 5.49 | 3.16 | 5.38 |
| Business support | 5.42 | 6.78 | 6.09 | † | 8.91 |
| Communications and design | 6.12 | 8.26 | 3.27 | 3.79 | 8.64 |
| Computer and information sciences | 5.04 | 5.39 | 3.17 | † | 6.16 |
| Construction, architecture, and engineering | 4.14 | 4.57 | 4.13 | 3.66 | 5.46 |
| Consumer, culinary, and public services | 5.19 | 6.76 | 2.09 | 6.87 | 6.23 |
| Health sciences | 5.79 | 6.01 | 6.08 | † | 8.12 |
| Manufacturing | 14.51 | 10.31 | 13.74 | 6.15 | 8.27 |
| Marketing | † | 3.10 | † | † | 10.67 |
| Mechanics and repair | 5.51 | 5.67 | † | 3.02 | 4.03 |
| Family and consumer sciences education (FCSE) | 3.37 | 3.89 | 3.12 | 2.67 | 3.87 |
| General labor market preparation and other | 2.91 | 3.23 | 2.32 | 1.63 | 3.45 |
| General labor market preparation (GLMP) | 3.85 | 4.98 | 3.99 | 2.14 | 3.67 |
| Other career and technical education | 4.11 | 4.10 | 2.38 | 2.32 | 5.71 |
| School type | | | | | |
| Regular | 0.64 | 0.72 | 0.60 | 0.49 | 0.75 |
| CTE | 1.98 | 3.04 | 1.76 | 1.48 | 3.29 |
| Charter | 6.48 | 8.20 | 3.88 | 2.98 | 4.93 |
| Other | 2.49 | 2.86 | 1.93 | 1.32 | 2.18 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-11.

Standard errors for table 11: Percentage of public high school teachers who participated in instructional collaboration and who perceived cooperation among school staff, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Percent of teachers participating in instructional collaboration | Percent of teachers who perceived cooperation among school staff |
|---|--|--|
| Total | 0.65 | 0.80 |
| Teacher type (main teaching assignment) | | |
| Academic | 0.78 | 0.89 |
| Career and technical education (CTE) | 1.59 | 1.81 |
| Other | 1.47 | 1.78 |
| CTE teaching field | | |
| Occupational education (OCC) | 2.45 | 2.40 |
| Agriculture and natural resources | 6.42 | 5.12 |
| Business, total | 4.80 | 4.18 |
| Business management | 5.42 | 5.29 |
| Business support | 9.68 | 6.91 |
| Communications and design | 8.08 | 7.15 |
| Computer and information sciences | 7.14 | 6.75 |
| Construction, architecture, and engineering | 5.32 | 6.08 |
| Consumer, culinary, and public services | 6.80 | 6.97 |
| Health sciences | 8.27 | 8.49 |
| Manufacturing | 8.64 | 10.64 |
| Marketing | 9.22 | 7.86 |
| Mechanics and repair | 9.39 | 10.87 |
| Family and consumer sciences education (FCSE) | 4.10 | 4.14 |
| General labor market preparation and other | 3.60 | 3.72 |
| General labor market preparation (GLMP) | 4.62 | 4.60 |
| Other career and technical education | 5.72 | 5.18 |
| School type | | |
| Regular | 0.74 | 0.74 |
| CTE | 3.45 | 4.72 |
| Charter | 4.00 | 6.94 |
| Other | 2.70 | 2.27 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-12.
Standard errors for table 12: Percentage of public high school teachers who reported moderate or greater levels of control over selected areas of planning and teaching, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Selecting textbooks and other materials | Selecting content, topics, and skills to be taught | Selecting teaching techniques | Evaluating and grading students | Disciplining students | Determining the amount of homework to be assigned |
|--|--|--|-------------------------------------|--|--------------------------|---|
| Total | 0.67 | 0.66 | 0.35 | 0.26 | 0.50 | 0.38 |
| Teacher type (main teaching assignment) | | | | | | |
| Academic | 0.80 | 0.93 | 0.47 | 0.33 | 0.60 | 0.50 |
| Career and technical education (CTE) | 1.79 | 1.63 | 0.59 | 0.43 | 1.52 | 0.53 |
| Other | 1.63 | 1.34 | 0.79 | 0.62 | 1.61 | 0.65 |
| CTE teaching field | | | | | | |
| Occupational education (OCC) | 2.31 | 2.16 | 0.84 | 0.36 | 1.82 | 0.38 |
| Agriculture and natural resources | 4.18 | 2.74 | 0.90 | 1.04 | 4.95 | 0.74 |
| Business, total | 4.85 | 4.06 | 2.23 | 0.64 | 3.31 | 0.11 |
| Business management | 4.89 | 4.87 | 3.10 | 0.90 | 4.22 | 0.16 |
| Business support | 9.97 | 7.53 | 1.14 | † | 6.00 | † |
| Communications and design | 4.77 | 3.85 | 1.25 | 1.32 | 7.23 | 1.01 |
| Computer and information sciences | 8.26 | 6.12 | 3.52 | 3.37 | 6.20 | 3.40 |
| Construction, architecture, and engineering | 5.18 | 4.70 | 0.91 | 1.14 | 5.46 | 1.55 |
| Consumer, culinary, and public services | 5.81 | 7.79 | † | 0.98 | 4.82 | 0.62 |
| Health sciences | 7.18 | 5.27 | 1.24 | † | 5.39 | 1.48 |
| Manufacturing | 8.25 | 7.32 | 4.31 | 2.90 | 8.86 | 1.18 |
| Marketing | 11.35 | 12.57 | 7.81 | 1.36 | 2.05 | 0.96 |
| Mechanics and repair | 4.35 | 5.05 | 3.02 | † | 7.32 | † |
| Family and consumer sciences education (FCSE) | 4.44 | 2.96 | 1.56 | 1.31 | 5.00 | 2.04 |
| General labor market preparation and other | 3.86 | 3.33 | 1.07 | 1.59 | 3.01 | 1.50 |
| General labor market preparation (GLMP) | 4.36 | 4.10 | 1.48 | 2.95 | 4.28 | 1.16 |
| Other career and technical education | 5.87 | 5.03 | 1.67 | 1.58 | 4.02 | 2.64 |
| School type | | | | | | |
| Regular | 0.72 | 0.75 | 0.34 | 0.26 | 0.49 | 0.26 |
| CTE | 2.90 | 2.46 | 1.28 | 1.15 | 2.69 | 1.41 |
| Charter | 5.85 | 4.49 | 2.49 | 1.94 | 5.76 | 3.72 |
| Other | 2.26 | 2.20 | 2.00 | 1.29 | 2.51 | 2.22 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-13.
Standard errors for table 13: Public high school teachers' job satisfaction, professional development benefits, average class size, and base salary, by teacher type, CTE teaching field, and school type: School year 2011–12

| Teacher type, CTE teaching field, and school type | Measures of teacher satisfaction | | | | | Average class size (number of students) | Average base salary |
|--|---|---|---|--|---|--|------------------------|
| | Percent who were satisfied with being a teacher at their school | Percent who would leave teaching as soon as possible if offered higher paying job | Percent who would not choose to teach again | Percent receiving release time for professional development | Percent receiving financial support for professional development | | |
| Total | 0.50 | 0.70 | 0.66 | 0.90 | 0.74 | 0.34 | \$350 |
| Teacher type (main teaching assignment) | | | | | | | |
| Academic | 0.60 | 0.83 | 0.79 | 1.00 | 0.91 | 0.35 | 410 |
| Career and technical education (CTE) | 1.10 | 1.94 | 1.48 | 1.90 | 2.15 | 0.57 | 690 |
| Other | 0.88 | 1.85 | 1.20 | 2.02 | 1.74 | 0.67 | 650 |
| CTE teaching field | | | | | | | |
| Occupational education (OCC) | 1.39 | 2.18 | 1.62 | 2.48 | 2.34 | 0.68 | 730 |
| Agriculture and natural resources | 3.71 | 6.73 | 3.73 | 5.44 | 5.34 | 1.79 | 1,450 |
| Business, total | 3.04 | 4.24 | 3.16 | 4.45 | 4.68 | 1.35 | 1,100 |
| Business management | 3.83 | 4.74 | 3.36 | 4.98 | 5.21 | 1.12 | 1,450 |
| Business support | 3.64 | 7.70 | 5.88 | 8.27 | 9.74 | 3.59 | 1,630 |
| Communications and design | 3.64 | 7.08 | 5.55 | 9.05 | 8.59 | 2.65 | 2,950 |
| Computer and information sciences | 5.30 | 6.36 | 6.14 | 8.37 | 8.67 | 1.79 | 3,430 |
| Construction, architecture, and engineering | 5.02 | 5.51 | 4.49 | 5.72 | 4.71 | 1.59 | 1,830 |
| Consumer, culinary, and public services | 2.61 | 5.78 | 3.91 | 8.33 | 8.00 | 2.81 | 3,170 |
| Health sciences | 4.81 | 6.10 | 4.90 | 7.59 | 5.86 | 1.18 | 2,090 |
| Manufacturing | 4.61 | 11.34 | † | 12.02 | 12.80 | 2.09 | 3,090 |
| Marketing | 3.18 | 10.39 | † | 9.94 | 6.62 | 2.74 | 2,700 |
| Mechanics and repair | 3.02 | 8.75 | † | 8.80 | 9.63 | 2.07 | 2,360 |
| Family and consumer sciences education (FCSE) | 2.80 | 5.65 | 3.05 | 4.92 | 4.29 | 1.73 | 1,860 |
| General labor market preparation and other | 2.60 | 3.95 | 3.99 | 3.71 | 4.63 | 0.69 | 1,950 |
| General labor market preparation (GLMP) | 4.62 | 4.78 | 5.13 | 5.10 | 6.06 | 0.96 | 2,960 |
| Other career and technical education | 1.52 | 6.03 | 5.57 | 5.57 | 5.51 | 0.96 | 2,800 |
| School type | | | | | | | |
| Regular | 0.50 | 0.72 | 0.66 | 0.96 | 0.79 | 0.25 | 370 |
| CTE | 2.11 | 3.26 | 2.38 | 4.42 | 3.59 | 1.11 | 1,720 |
| Charter | 3.80 | 7.56 | 4.62 | 7.16 | 5.62 | 2.71 | 2,690 |
| Other | 1.77 | 2.31 | 2.20 | 2.12 | 2.66 | 1.37 | 1,580 |

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-14.
Standard errors for table 14: Among public high schools, average percentage of students with selected characteristics, by school type: School year 2011–12

| School type | Percent of students in school who | | | |
|--------------|------------------------------------|---|---|---------------------------------|
| | Were of selected races/ethnicities | Were approved for free or reduced-price lunch | Had an individualized education program | Were limited English proficient |
| Total | 0.61 | 0.63 | 0.40 | 0.39 |
| School type | | | | |
| Regular | 0.60 | 0.55 | 0.15 | 0.28 |
| CTE | 3.53 | 3.99 | 1.58 | 1.40 |
| Charter | 5.66 | 2.21 | 1.57 | 2.89 |
| Other | 1.64 | 1.80 | 1.63 | 1.31 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

Table A-15.
Standard errors for table 15: Percentage of public high schools that reported teacher vacancies in various fields and difficulty filling those vacancies, by selected school characteristics: School year 2011–12

| School characteristic | Percent of schools with vacancies, by vacancy type | | | | Percent of schools with vacancies reporting difficulty filling those vacancies, by vacancy type | | | |
|-----------------------|---|-------------|---------------------|-------------|---|-------------|---------------------|-------------|
| | Any academic field | CTE | Computer science | Other | Any academic field | CTE | Computer science | Other |
| Total | 0.84 | 1.35 | 1.14 | 1.26 | 1.42 | 2.70 | 3.49 | 1.54 |
| School type | | | | | | | | |
| Regular | 0.79 | 1.44 | 1.14 | 1.31 | 1.49 | 3.07 | 4.14 | 1.76 |
| CTE | 5.88 | 3.66 | 7.89 | 7.77 | 8.08 | 6.06 | 21.00 | 13.57 |
| Charter | 1.61 | 6.91 | 9.30 | 6.75 | 8.68 | 13.75 | 9.95 | 7.01 |
| Other | 3.63 | 4.73 | 3.73 | 3.89 | 3.91 | 9.39 | 9.04 | 4.84 |
| Enrollment size | | | | | | | | |
| Less than 499 | 1.60 | 2.03 | 1.55 | 2.31 | 2.49 | 4.39 | 5.41 | 2.85 |
| 500–999 | 1.43 | 2.30 | 2.00 | 2.78 | 2.66 | 4.57 | 8.82 | 3.03 |
| 1000–1499 | 1.43 | 3.64 | 2.83 | 3.28 | 2.86 | 5.80 | 6.69 | 3.98 |
| 1500–1999 | 0.96 | 3.63 | 3.52 | 2.61 | 3.28 | 7.11 | 10.07 | 4.54 |
| 2000 or more | 1.01 | 4.59 | 4.32 | 3.30 | 4.00 | 6.92 | 10.35 | 4.64 |
| Locale | | | | | | | | |
| City | 1.49 | 3.47 | 3.83 | 3.26 | 4.17 | 5.61 | 7.74 | 3.86 |
| Suburban | 1.35 | 2.93 | 2.14 | 2.31 | 2.30 | 5.16 | 6.44 | 3.23 |
| Town | 2.15 | 3.20 | 1.84 | 3.12 | 3.39 | 5.73 | 9.77 | 4.32 |
| Rural | 1.48 | 1.97 | 1.42 | 1.85 | 1.96 | 4.15 | 6.77 | 2.22 |
| Region | | | | | | | | |
| Northeast | 1.64 | 2.86 | 2.99 | 2.69 | 3.51 | 6.61 | 9.89 | 3.47 |
| South | 1.36 | 2.38 | 2.21 | 2.34 | 2.27 | 4.20 | 5.61 | 3.47 |
| Midwest | 1.47 | 2.22 | 1.59 | 2.14 | 2.19 | 4.83 | 7.76 | 2.84 |
| West | 1.64 | 2.27 | 2.59 | 3.22 | 3.30 | 4.58 | 6.58 | 3.87 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher and Public School Data Files," 2011–12.

APPENDIX B. STATISTICAL PROCEDURES

Information on the rounding standards used throughout the text and tables of this report and the methods used to establish statistical significance are described below. A glossary of statistical terms used in the report is also included.

Rounding

Counts and dollar amounts reported in both summary tables and text were rounded to the nearest hundred, for example, \$55,671 is rounded to \$55,700. Standard errors for counts and dollar amounts, reported in Appendix A, were rounded to the nearest ten. In summary tables, percentages and means (e.g., average age) are reported to the tenth, that is, the first digit after the decimal point (e.g., 44.3), but when referred to in the text, they are rounded to whole numbers. Standard errors for percentages and means, also reported in Appendix A, were rounded to the nearest hundredth, that is, the second digit after the decimal place.

Rounding was conducted according to the following rules:

1. If the first digit to be dropped is less than 5, the last retained digit is not changed.

Example: 6.1473 is rounded to 6.1 in a table and to 6 in the text.

2. If the first digit to be dropped is greater than or equal to 5, the last digit retained is increased by 1.

Examples: 6.6888 is rounded to 6.7 in a table and to 7 in the text.

3. A percentage or mean value that is reported to the tenth in a table but to a whole number in the text is rounded from the original value in both cases.

Examples: 5.451 is rounded to 5.5 in a table and to 5 in the text.

Establishing Statistical Significance

Comparisons between estimates were tested for statistical significance at the .05 level using the Student's *t*-test to ensure that the differences are larger than those that might be expected due to sampling variation. The Student's *t*-test is recommended for testing differences between estimates generated from large samples, for example, SASS.



Differences between estimates were tested against the probability of a Type I error⁵¹ or significance level. The statistical significance of each comparison was determined by calculating the t statistic for the difference between each pair of means or proportions and comparing the t statistic with the critical t value for two-tailed hypothesis testing. The Student's t statistics were computed to test differences between independent estimates using the following formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{SE_1^2 + SE_2^2}}$$

where \bar{x}_1 and \bar{x}_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors.

When making part-to-whole comparisons, the following formula was used, where p represents the part's proportion of the whole. For example, this formula was used to compare the average annual base salary of CTE teachers with that of public high school teachers overall; and p represents the proportion of public high school teachers who are CTE teachers. This formula takes the covariance of the two estimates into account when computing the t statistic.

$$t = \frac{\bar{x}_{subgroup} - \bar{x}_{whole}}{\sqrt{SE_{subgroup}^2 + SE_{whole}^2 - 2pSE_{subgroup}^2}}$$

A hazard in reporting statistical tests is the possibility that one can report a false positive or Type I error. Statistical tests are designed to limit the risk of this type of error using a value denoted by alpha. The alpha level of .05 was selected for findings in this report and ensures that a difference of a certain magnitude or larger would be produced when there was no actual difference between the quantities in the underlying population no more than 1 time out of 20.⁵² When analysts test hypotheses that show alpha values at the .05 level or smaller, they reject the null hypothesis that there is no difference between the two quantities. Failing to reject a null hypothesis (i.e., detect a difference), however, does not imply that the values are the same or equivalent.

With large samples such as SASS, one may detect a statistically significant difference even when the observed difference is fairly small. However, just because a difference is statistically significant, the magnitude of the difference is not necessarily meaningful.

⁵¹ 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 was present.

⁵² No adjustments were made for multiple comparisons.

Statistical Definitions

| Term | Definition |
|--------------------------|--|
| Alpha level | The minimum level of probability to conclude that a difference between findings is not due to chance, or the probability of rejecting the null hypothesis when it is true. ¹ |
| Mean | The mean is a measure of central tendency for a data set, found by dividing the sum of the data entries by the number of entries. ² |
| Null hypothesis | A hypothesis stating that any differences between estimates are due to chance, or that there are no real differences between estimates. ¹ |
| Standard deviation | A measure of variation across observations in a sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean. A high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values. ³ |
| Standard error | The standard deviation of the sampling distribution; ⁴ also refers to the average amount of measurement error for an estimate. ⁵ |
| Statistical significance | The probability that a finding based on sample data is due to chance rather than a real difference in the population from which the sample was drawn. When the probability that a finding is due to random chance is less than 5 percent (or some other percentage), the finding is often considered to be <i>statistically significant</i> . ³ |
| <i>t</i> -test | A statistical significance test used to test hypotheses about one or two means when the population standard deviation is unknown. ¹ |
| Type I error | Rejecting the null hypothesis when it is actually true. ¹ |

¹ Harris, Mary B. 1998. *Basic Statistics for Behavioral Science Research*. Upper Saddle River, NJ: Allyn and Bacon.

² Larson, Ron, and Betsy Farber. 2003. *Elementary Statistics: Picturing the World*. 2nd ed. Upper Saddle River, NJ: Prentice-Hall Inc.

³ U.S. Department of Education, Institute of Education Sciences. "What Works Clearinghouse." Accessed June 30, 2015. <http://ies.ed.gov/ncee/wwc/Glossary.aspx>.

⁴ U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. 2012. *2012 Revision of NCES Statistical Standards: Final*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. <http://nces.ed.gov/statprog/2012/pdf/Glossary.pdf>

⁵ Wooldridge, Jeffrey M. 2009. *Introductory Econometrics: A Modern Approach*. 4th ed. Mason, OH: South-Western Cengage Learning.



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