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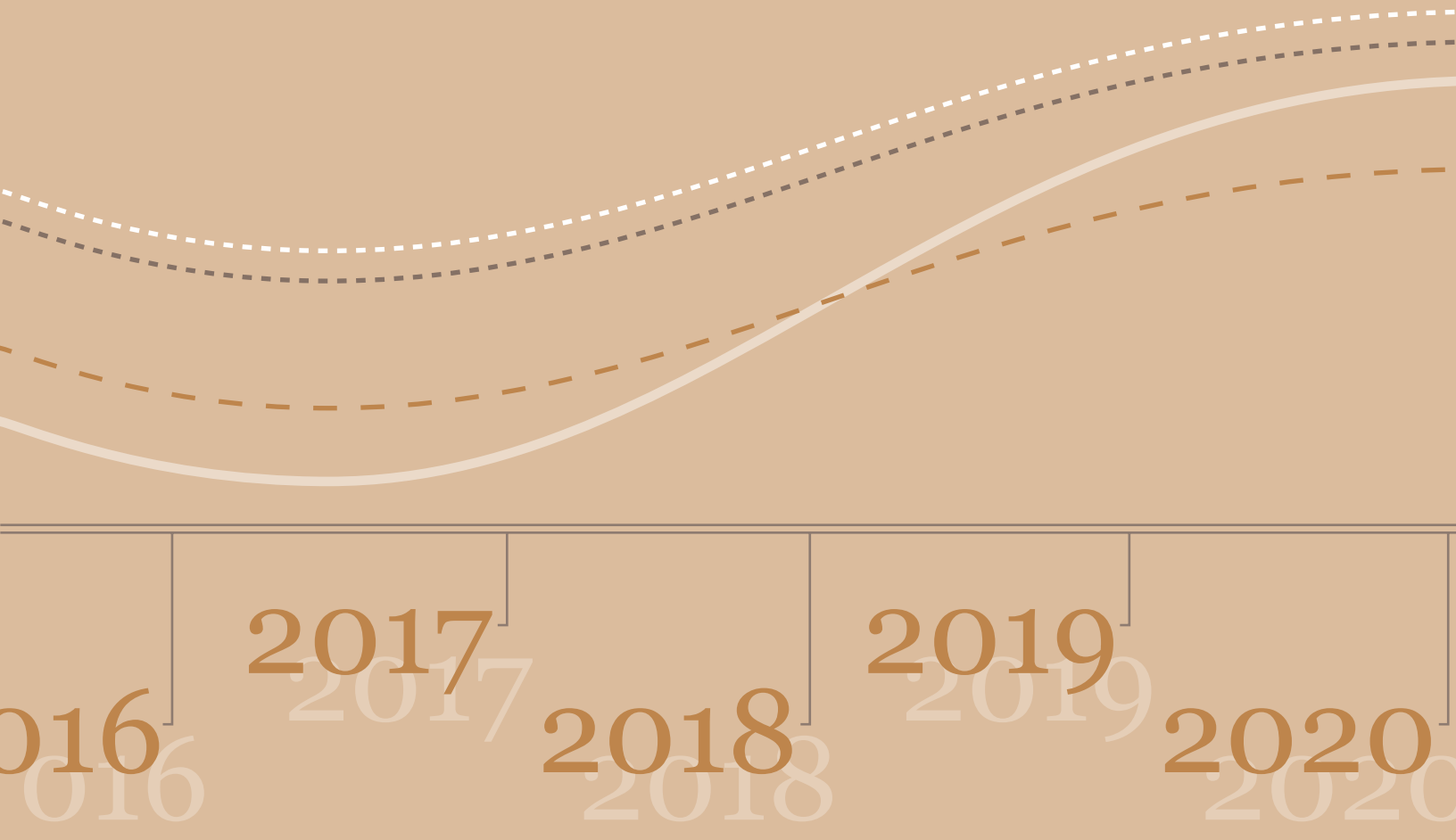
Institute of Education Sciences

Projections of Education Statistics to 2020

Thirty-ninth Edition



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U.S. DEPARTMENT OF EDUCATION

Projections of Education Statistics to 2020

Thirty-ninth Edition

September 2011

William J. Hussar
National Center for Education Statistics

Tabitha M. Bailey
IHS Global Insight

NCES 2011-026
U.S. DEPARTMENT OF EDUCATION

ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

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Foreword

Projections of Education Statistics to 2020 is the 39th report in a series begun in 1964. It includes statistics on elementary and secondary schools and postsecondary degree-granting institutions. This report provides revisions of projections shown in *Projections of Education Statistics to 2019*. Included are projections of enrollment, graduates, teachers, and expenditures to the year 2020.

In addition to projections at the national level, the report includes projections of public elementary and secondary school enrollment and public high school graduates to the year 2020 at the state level. The projections in this report were produced by the National Center for Education Statistics (NCES) to provide researchers, policy analysts, and others with state-level projections developed using a consistent methodology. They are not intended to supplant detailed projections prepared for individual states.

Assumptions regarding the population and the economy are the key factors underlying the projections of education statistics. NCES projections do not reflect changes in national, state, or local education policies that may affect education statistics.

Appendix A of this report outlines the projection methodology and describes the models and assumptions used to develop the national and state projections. The enrollment models use enrollment data and population estimates and projections from NCES and the U.S. Census Bureau. The models are based on the mathematical projection of past data patterns into the future. The models also use projections of economic variables from IHS Global Insight, an economic forecasting service.

The projections presented in this report are based on the 2000 census and assumptions for the fertility rate, internal migration, net immigration, and mortality rate from the Census Bureau. For further information, see appendix A.

Val Plisko, Associate Commissioner
Early Childhood, International, and Crosscutting Studies Division

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About This Report

PROJECTIONS

This edition of *Projections of Education Statistics* provides projections for key education statistics, including enrollment, graduates, teachers, and expenditures in elementary and secondary public and private schools, as well as enrollment and degrees conferred at postsecondary degree-granting institutions. Included are national data on enrollment and graduates for the past 15 years and projections to the year 2020. Also included are state-level data on enrollment in public elementary and secondary schools and public high schools from 2002, with projections to 2020. This report is organized by the level of schooling with sections 1, 2, 3, and 4 covering aspects of elementary and secondary education and sections 5 and 6 covering aspects of postsecondary education.

There are a number of limitations in projecting some statistics. First, state-level data on enrollment and graduates in private elementary and secondary schools and on enrollment and degrees conferred in postsecondary degree-granting institutions are not included. Further research and model development are needed to develop reliable projections of private school enrollment and graduates by state. Neither the actual numbers nor the projections of public and private elementary and secondary school enrollment include homeschooled students because more data are required to develop reliable projections.

Similar methodologies were used to obtain a uniform set of projections for each of the 50 states and the District of Columbia. These projections are further adjusted to agree with the national projections of public elementary and secondary school enrollment and public high school graduates contained in this report.

There were changes in how the exponential smoothing forecasting technique was used in this edition of *Projections of Education Statistics*, compared to how it had been used in previous editions. Exponential smoothing is used in the projections for elementary and secondary enrollments, high school graduates, new teacher hires, postsecondary degree-granting enrollments, and degrees conferred. In prior editions of *Projections of Education Statistics*, the smoothing formula used fixed coefficients and the new methodology uses variable coefficients. There has been no systematic examination to determine whether the projections computed using the new method are comparable to those using the prior method. For information about exponential smoothing used in *Projections*, see appendix A.0.

The summary of projections provides highlights of the national and state data, while the reference tables and figures present more detail. All calculations within *Projections of Education Statistics* are based on unrounded estimates. Therefore, the reader may find that a calculation, such as a difference or percentage change, cited in the text or figure may not be identical to the calculation obtained by using the rounded values shown in the accompanying tables.

Appendix A describes the methodology and assumptions used to develop the projections; appendix B presents supplementary tables; appendix C describes data sources; appendix D is a list of abbreviations; appendix E presents a list of the references; and appendix F is a glossary of terms.

LIMITATIONS OF PROJECTIONS

Projections of a time series usually differ from the final reported data due to errors from many sources, such as the properties of the projection methodologies, which depend on the validity of many assumptions.

The mean absolute percentage error is one way to express the forecast accuracy of past projections. This measure expresses the average of the absolute values of errors in percentage terms, where errors are the differences between past projections and actual data. For example, based on past editions of *Projections of Education Statistics*, the mean absolute percentage errors of public school enrollment in grades prekindergarten–12 for lead times of 1, 2, 5, and 10 years were 0.3, 0.6, 1.3, and 2.4 percent, respectively. In contrast, mean absolute percentage errors of private school enrollment in grades prekindergarten through 8 for lead times of 1, 2, 5, and 10 years were 3.5, 4.9, 9.2, and 7.9 percent, respectively. For more information on mean absolute percentage errors, see table A-2 in appendix A.

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Section 1
Elementary and Secondary Enrollment

INTRODUCTION

Total public and private elementary and secondary school enrollment was 55 million in fall 2008, representing an 8 percent increase since fall 1995. Between fall 2008, the last year of actual public school data, and fall 2020, a further increase of 5 percent is expected, with increases projected in public schools and decreases in private schools. Increases in public school enrollment are expected for Blacks, Hispanics, Asians/Pacific Islanders, and American Indians/Alaska Natives, and a decrease is expected for Whites. Increases in public school enrollment are expected in the Midwest, South, and West, and a decrease is expected in the Northeast.

Factors affecting the projections

The grade progression rate method was used to project school enrollments. This method assumes that future trends in factors affecting enrollments will be consistent with past patterns. It implicitly includes the net effect of factors such as dropouts, deaths, nonpromotion, transfers to and from public schools, and, at the state level, migration. See appendixes A.0 and A.1 for more details.

Factors that were not considered

The projections do not assume changes in policies or attitudes that may affect enrollment levels. For example, they do not account for changing state and local policies on prekindergarten (PK) and kindergarten programs. Continued expansion of these programs could lead to higher enrollments at the elementary school level. Projections also exclude the number of students who are homeschooled because more data are needed.

Accuracy of Projections

An analysis of projection errors from the past 27 editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, 5, and 10 years out for projections of public school enrollment in grades PK–12 were 0.3, 0.6, 1.3, and 2.4 percent, respectively. For the 1-year-out prediction, this means that the methodology used by the National Center for Education Statistics (NCES) has produced projections that have, on average, deviated from actual observed values by 0.3 percent. For projections of public school enrollment in grades PK–8, the MAPEs for lead times of 1, 2, 5, and 10 years out were 0.4, 0.7, 1.3, and 3.2 percent, respectively, while the MAPEs for projections of public school enrollment in grades 9–12 were 0.3, 0.6, 1.3, and 2.3 percent, respectively, for the same lead times. An analysis of projection errors from the past nine editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, 5, and 10 years out for projections of private school enrollment in grades PK–12 were 3.4, 4.6, 7.7, and 6.3 percent, respectively. For projections of private school enrollment in grades PK–8, the MAPEs for lead times of 1, 2, 5, and 10 years out were 3.5, 4.9, 9.2, and 7.9 percent, respectively, while the MAPEs for projections of private school enrollment in grades 9–12 were 3.0, 3.8, 2.8, and 1.3 percent, respectively, for the same lead times. For more information, see table A-2 in appendix A.

NATIONAL

Total elementary and secondary enrollment

- ▲ increased 8 percent between 1995 and 2008; and
- ▲ is projected to increase an additional 5 percent between 2008 and 2020.

Enrollment in prekindergarten through grade 8

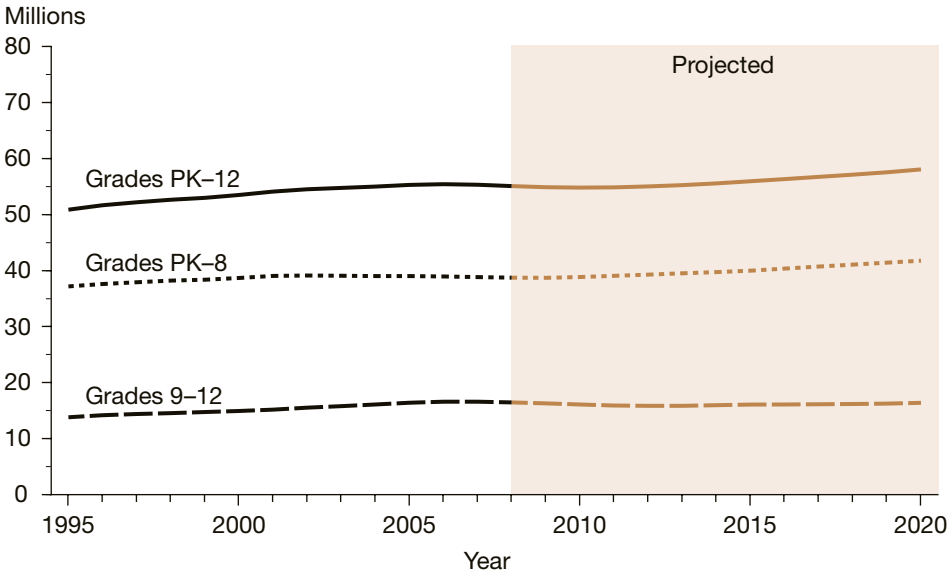
- ▲ increased 4 percent between 1995 and 2008; and
- ▲ is projected to increase an additional 8 percent between 2008 and 2020.

Enrollment in grades 9–12

- ▲ increased 19 percent between 1995 and 2008; and
- ▼ is projected to decrease less than 1 percent between 2008 and 2020.

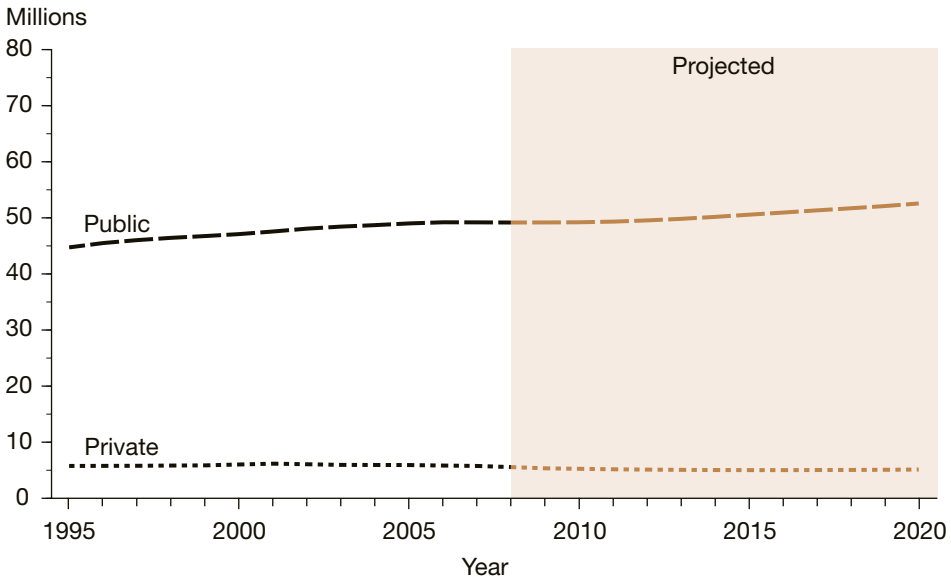
For more information:
Tables 1 and 2

Figure 1. Actual and projected numbers for enrollment in elementary and secondary schools, by grade level: Fall 1995 through fall 2020



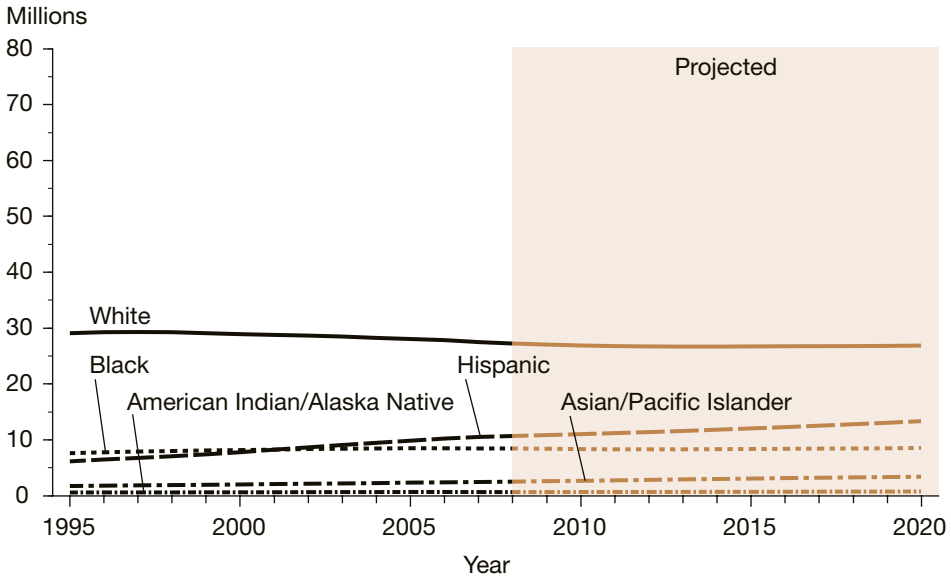
NOTE: PK = prekindergarten. Enrollment numbers for prekindergarten through 12th grade and prekindergarten through 8th grade include private nursery and prekindergarten enrollment in schools that offer kindergarten or higher grades. Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS. The private school numbers for 2009 are actual numbers from 2009–10 PSS. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years 1995–96 through 2009–10; and National Elementary and Secondary Enrollment Model, 1972–2008. (This figure was prepared February 2011.)

Figure 2. Actual and projected numbers for enrollment in elementary and secondary schools, by control of school: Fall 1995 through fall 2020



NOTE: Private school numbers include private nursery and prekindergarten enrollment in schools that offer kindergarten or higher grades. Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS. The private school numbers for 2009 are actual numbers from 2009–10 PSS. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years 1995–96 through 2009–10; and National Elementary and Secondary Enrollment Model, 1972–2008. (This figure was prepared February 2011.)

Figure 3. Actual and projected numbers for enrollment in public elementary and secondary schools, by race/ethnicity: Fall 1995 through fall 2020



NOTE: The historical racial/ethnic time-series were constructed using racial/ethnic enrollment data at the state level for individual grades. In some instances, enrollment data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic enrollment data for individual grades had to be adjusted to the state total for that grade. Beginning in 2008, jurisdictions could classify students as being of two or more races. As a limited number of states classified students as being of two or more races, those students were proportioned among the other categories. For additional information see the Elementary and Secondary Enrollment section A.1 in appendix A. Race categories exclude persons of Hispanic ethnicity. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and National Public Elementary and Secondary Enrollment by Race/Ethnicity Model, 1994–2008. (This figure was prepared February 2011.)

Enrollment by control of school

Enrollment in public elementary and secondary schools

- ▲ increased 10 percent between 1995 and 2008; and
- ▲ is projected to increase an additional 7 percent between 2008 and 2020.

Enrollment in private elementary and secondary schools

- ▼ decreased 4 percent between 1995 and 2008; and
- ▼ is projected to decrease 8 percent between 2008 and 2020.

For more information: Table 1

Enrollment by race/ethnicity

Between 2008 and 2020, enrollment in public elementary and secondary schools is projected to

- ▼ decrease 1 percent for students who are White;
- ▲ increase 1 percent for students who are Black;
- ▲ increase 25 percent for students who are Hispanic;
- ▲ increase 36 percent for students who are Asian/Pacific Islander; and
- ▲ increase 17 percent for students who are American Indian/Alaska Native.

For more information: Tables 3, 4, and 5

STATE AND REGIONAL (PUBLIC SCHOOL DATA)

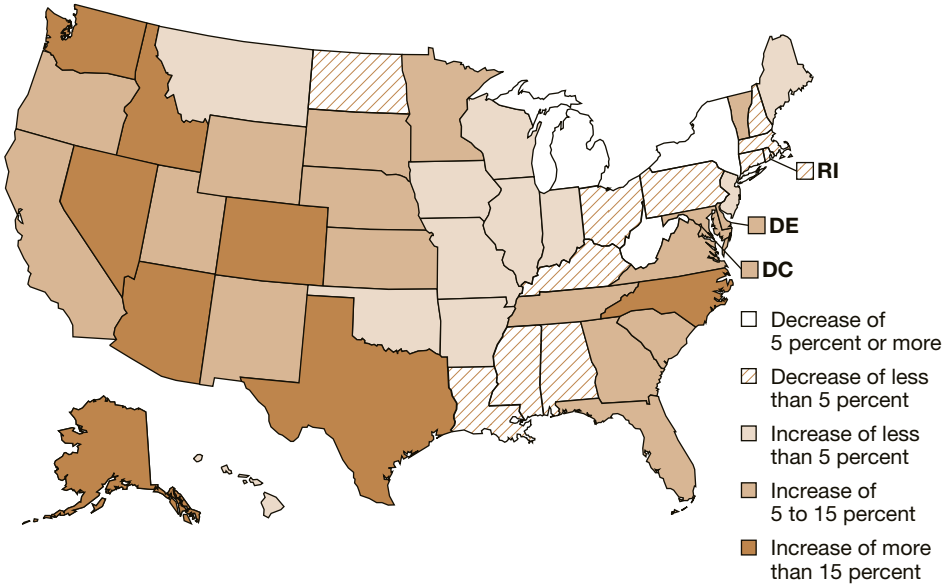
Enrollment by state

The expected 7 percent national increase in public school enrollment between 2008 and 2020 plays out differently among the states.

- ▲ Increases are projected for 36 states and the District of Columbia, with
  - increases of more than 15 percent projected for 8 states;
  - increases between 5 and 15 percent projected for 17 states and the District of Columbia; and
  - increases of less than 5 percent projected for 11 states.
- ▼ Decreases are projected for 14 states, with
  - decreases of 5 percent or more projected for 3 states; and
  - decreases of less than 5 percent projected for 11 states.

For more information:
Tables 6 through 11

Figure 4. Projected percentage change in enrollment in public elementary and secondary schools, by state: Fall 2008 through fall 2020



NOTE: Calculations are based on unrounded numbers. Mean absolute percentage errors of enrollment in public elementary and secondary schools by state and region can be found in table A-7, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2008–09; and State Elementary and Secondary Enrollment Model, 1980–2008. (This figure was prepared February 2011.)

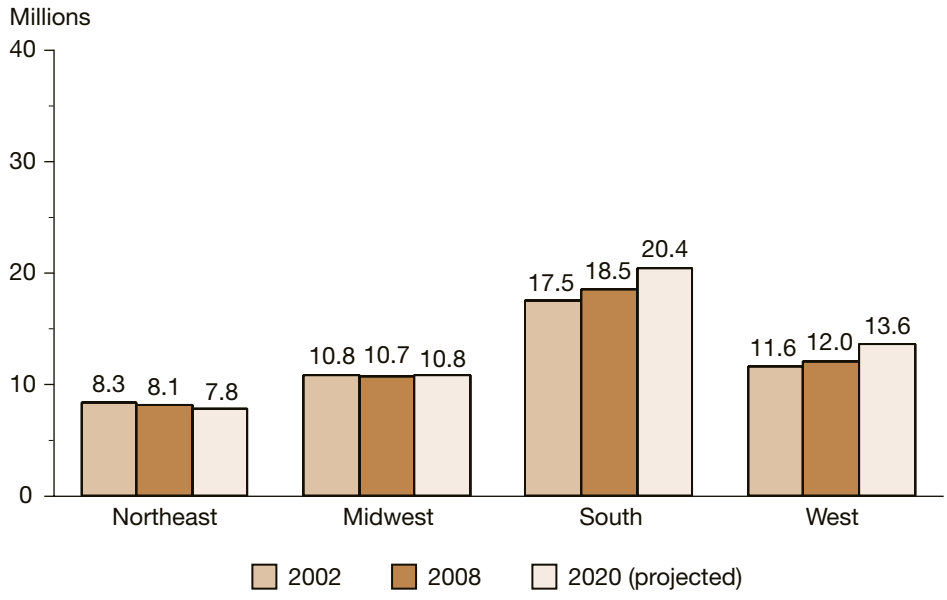
Enrollment by region

Between 2008 and 2020, public elementary and secondary enrollment is projected to

- ▼ decrease 3 percent in the Northeast;
- ▲ increase 1 percent in the Midwest;
- ▲ increase 10 percent in the South; and
- ▲ increase 13 percent in the West.

For more information:
Tables 6 through 11

Figure 5. Actual and projected numbers for enrollment in public elementary and secondary schools, by region: Fall 2002, fall 2008, and fall 2020



NOTE: Calculations are based on unrounded numbers. See the glossary for a list of the states in each region. Mean absolute percentage errors of enrollment in public elementary and secondary schools by state and region can be found in table A-7, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2002–03 and 2008–09; and State Elementary and Secondary Enrollment Model, 1980–2008. (This figure was prepared February 2011.)

Section 2
High School Graduates

INTRODUCTION

The number of high school graduates increased nationally by 32 percent between 1995–96 and 2007–08, the last year of actual data. A decrease of 3 percent is expected between 2007–08 and 2020–21. Both public schools and private schools are expected to have decreases in the number of high school graduates. Increases are expected in the West and South, and decreases are expected in the Northeast and Midwest.

Factors affecting the projections

The projections of high school graduates are related to projections of 12th-graders and the historical relationship between the number of 12th-graders and the number of high school graduates. The methodology implicitly includes the net effect of factors such as dropouts, transfers to and from public schools, and, at the state level, migration. For more details, see appendixes A.0 and A.2.

About high school graduates

A high school graduate is defined as an individual who has received formal recognition from school authorities, by the granting of a diploma, for completing a prescribed course of study. This definition does not include other high school completers or high school equivalency recipients. Projected changes in the number of graduates reflect changes in the 18-year-old population over the projection period, rather than projected changes in the graduation rates of 12th-graders. Projections of graduates could be affected by changes in policies influencing graduation requirements.

Accuracy of Projections

For National Center for Education Statistics (NCES) projections of public high school graduates produced over the last 20 years, the mean absolute percentage errors (MAPEs) for lead times of 1, 2, 5, and 10 years out were 1.0, 1.0, 1.6, and 4.0, respectively. For NCES projections of private high school graduates produced over the last 9 years, the MAPEs for lead times of 1, 2, 5, and 10 years out were 0.9, 0.9, 5.0, and 1.6, respectively. For more information, see table A-2 in appendix A.

NATIONAL

The total number of high school graduates

- ▲ increased 32 percent between 1995–96 and 2007–08, a period of 12 years; and
- ▼ is projected to decrease 3 percent between 2007–08 and 2020–21, a period of 13 years.

The number of public high school graduates

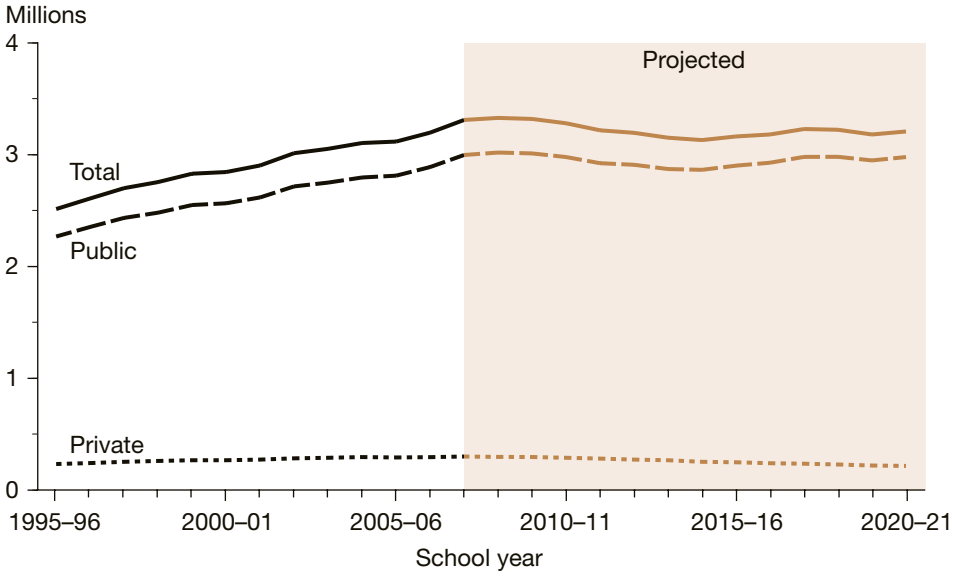
- ▲ increased 32 percent between 1995–96 and 2007–08; and
- ▼ is projected to decrease 1 percent between 2007–08 and 2020–21.

The number of private high school graduates

- ▲ increased 27 percent between 1995–96 and 2007–08; and
- ▼ is projected to decrease 27 percent between 2007–08 and 2020–21.

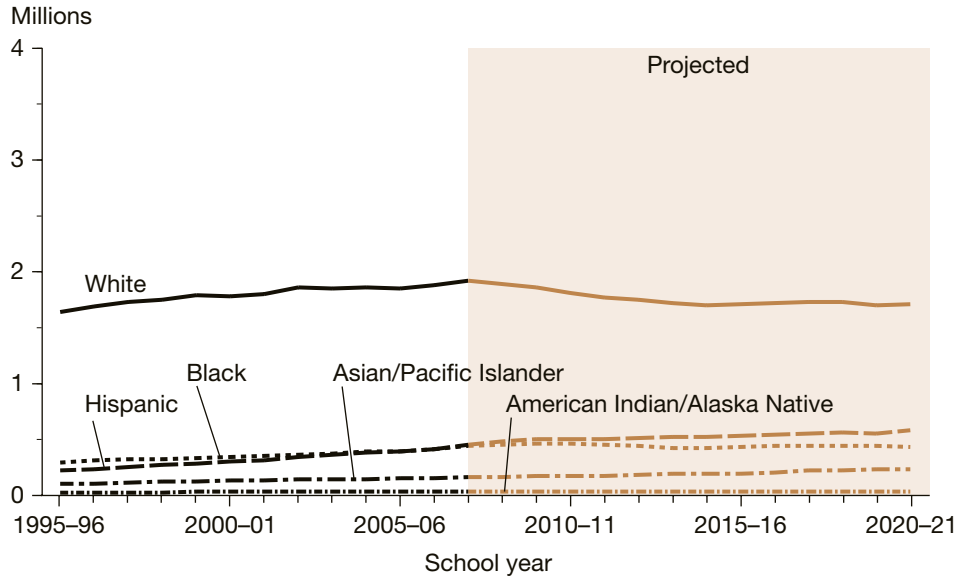
For more information:
Table 12

Figure 6. Actual and projected numbers for high school graduates, by control of school: School years 1995–96 through 2020–21



NOTE: Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2009–10; and National Elementary and Secondary High School Graduates Enrollment Model, 1972–73 through 2007–08. (This figure was prepared February 2011.)

Figure 7. Actual and projected numbers for public high school graduates, by race/ethnicity: School years 1995–96 through 2020–21



NOTE: The historical racial/ethnic time series were constructed using racial/ethnic high school graduate data at the state level. In some instances, high school graduate data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic data had to be adjusted in order for them to sum to the state total for high school graduates. For additional information, see the High School Graduates section A.2 in appendix A. Race categories exclude persons of Hispanic ethnicity. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1996–97 through 2008–09; and National Public Elementary and Secondary High School Graduates by Race/Ethnicity Model, 1995–96 through 2007–08. (This figure was prepared February 2011.)

High school graduates by race/ethnicity

Between 2007–08 and 2020–21, the number of public high school graduates is projected to

- ▼ decrease 11 percent for students who are White;
- ▼ decrease 2 percent for students who are Black;
- ▲ increase 27 percent for students who are Hispanic;
- ▲ increase 46 percent for students who are Asian/Pacific Islander; and
- ▲ increase 1 percent for students who are American Indian/Alaska Native.

For more information:
Table 13

STATE AND REGIONAL (PUBLIC SCHOOL DATA)

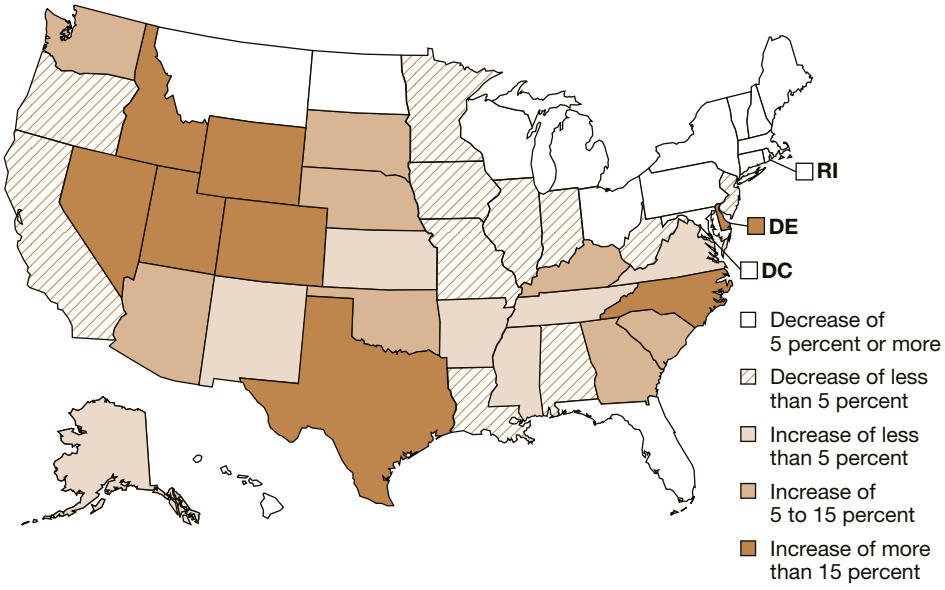
High school graduates by state

The expected 1 percent national decrease in public high school graduates between 2007–08 and 2020–21 plays out differently among the states.

- ▲ Increases are projected for 23 states, with
  - increases of more than 15 percent projected for 8 states;
  - increases between 5 and 15 percent projected for 8 states; and
  - increases of less than 5 percent projected for 7 states.
- ▼ Decreases are projected for 27 states and the District of Columbia, with
  - decreases of 5 percent or more projected for 16 states and the District of Columbia; and
  - decreases of less than 5 percent projected for 11 states.

For more information:
Tables 14 and 15

Figure 8. Projected percentage change in the number of public high school graduates, by state: School years 2007–08 through 2020–21



NOTE: Calculations are based on unrounded numbers. Mean absolute percentage errors of public high school graduates by state and region can be found in table A-10, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2008–09; and State Public High School Graduates Model, 1980–81 through 2007–08. (This figure was prepared February 2011.)

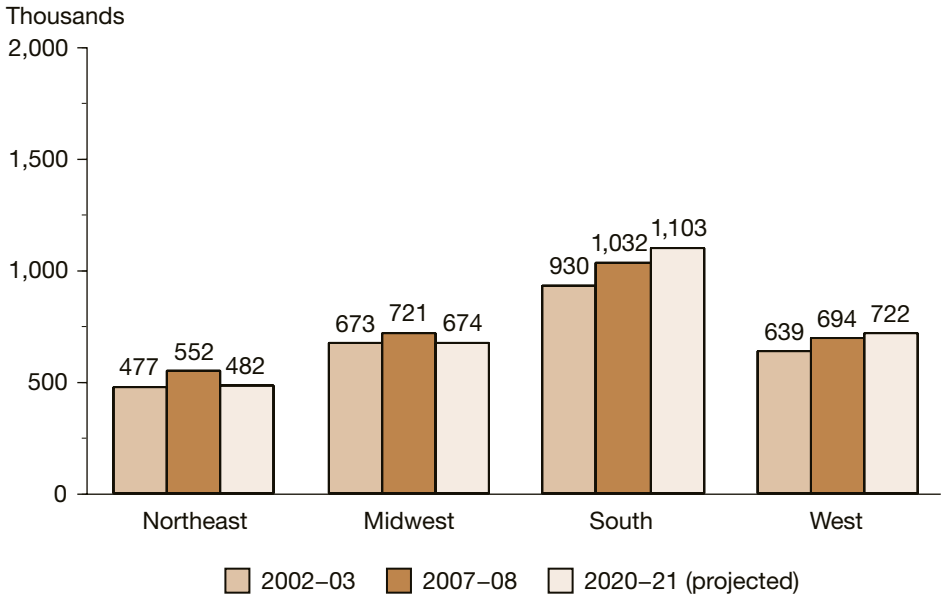
High school graduates by region

Between 2007–08 and 2020–21, the number of public high school graduates is projected to

- ▼ decrease 13 percent in the Northeast;
- ▼ decrease 6 percent in the Midwest;
- ▲ increase 7 percent in the South; and
- ▲ increase 4 percent in the West.

For more information:
Tables 14 and 15

Figure 9. Actual and projected numbers for public high school graduates, by region: School years 2002–03, 2007–08, and 2020–21



NOTE: See the glossary for a list of states in each region. Mean absolute percentage errors of public high school graduates by state and region can be found in table A-10, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2003–04 and 2008–09; and State Public High School Graduates Model, 1980–81 through 2007–08. (This figure was prepared February 2011.)

Section 3
Elementary and Secondary Teachers

INTRODUCTION

Between fall 2008, the last year of actual public school data, and fall 2020, the number of teachers in elementary and secondary schools is projected to rise. The number of public school teachers is projected to increase and the number of private school teachers is projected to decrease. The pupil/teacher ratios are projected to decrease in both public and private schools. The annual number of new teacher hires is projected to increase in both public and private schools.

Factors affecting the projections

The projections of the number of elementary and secondary teachers are related to projected levels of enrollments and education revenue receipts from state sources per capita. For more details, see appendixes A. 0 and A.3.

Factors that were not considered

The projections do not take into account possible changes in the number of teachers due to the effects of government policies.

About pupil/teacher ratios

The overall elementary and secondary pupil/teacher ratio and pupil/teacher ratios for public and private schools were computed based on elementary and secondary enrollment and the number of classroom teachers by control of school.

About new teacher hires

A teacher is considered to be a new teacher hire for a certain control of school (public or private) for a given year if the teacher teaches in that control that year but had not taught in that control in the previous year. A teacher who moves from teaching in one control to the other control is considered a new teacher hire, but a teacher who moves from one school to another school in the same control is not considered a new teacher hire. It is important to note that these projections measure the total number of teacher hires, including those hired to replace teachers retiring or leaving the teaching profession permanently or temporarily. Thus, the new teacher hire projections should not be interpreted as predicting teacher shortages.

Accuracy of Projections

An analysis of projection errors from the past 20 editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for projections of classroom teachers in public elementary and secondary schools were 1.0 percent for 1 year out, 1.4 percent for 2 years out, 2.9 percent for 5 years out, and 5.9 percent for 10 years out. For more information on the MAPEs of different National Center for Education Statistics (NCES) projection series, see table A-2 in appendix A.

TEACHERS IN ELEMENTARY AND SECONDARY SCHOOLS

Number of teachers

The total number of elementary and secondary teachers

- ▲ increased 23 percent between 1995 and 2008, a period of 13 years; and
- ▲ is projected to increase 7 percent between 2008 and 2020, a period of 12 years.

The number of teachers in public elementary and secondary schools

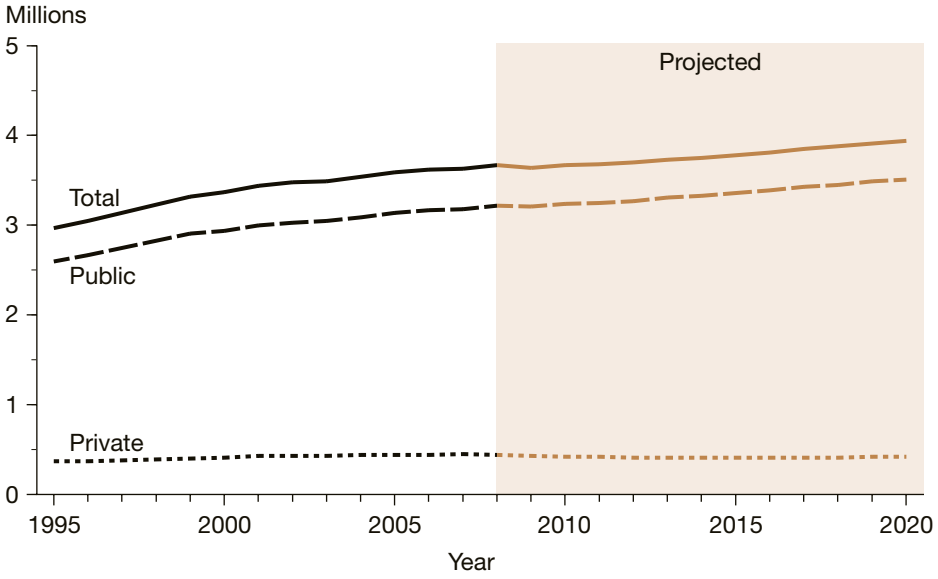
- ▲ increased 24 percent between 1995 and 2008; and
- ▲ is projected to increase 9 percent between 2008 and 2020.

The number of teachers in private elementary and secondary schools

- ▲ increased 19 percent between 1995 and 2008; and
- ▼ is projected to decrease 4 percent between 2008 and 2020.

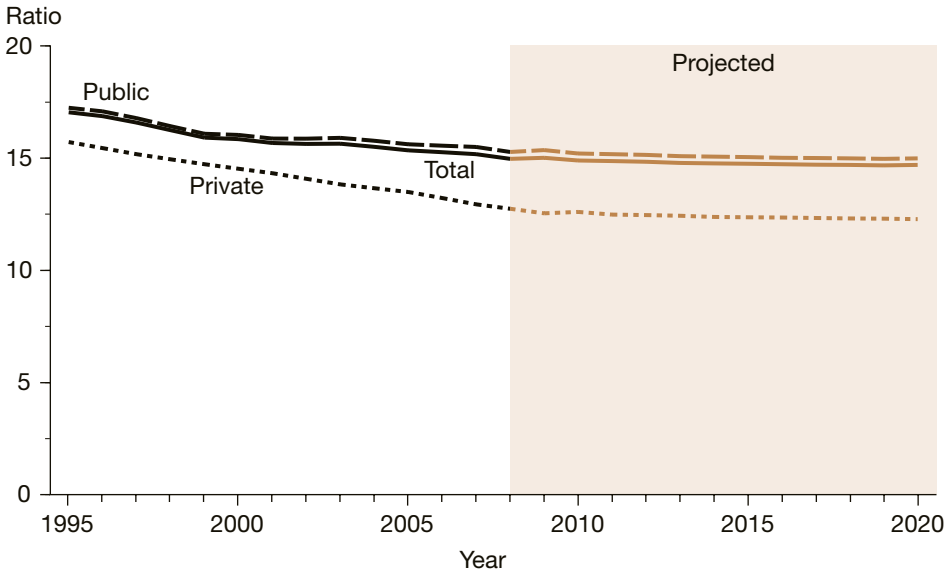
For more information:
Table 16

Figure 10. Actual and projected numbers for elementary and secondary teachers, by control of school: Fall 1995 through fall 2020



NOTE: Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS. The private school teacher number for 2009 is an actual number from the 2009–10 PSS. Teachers reported in full-time equivalents. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2009–10; Elementary and Secondary Teacher Model, 1973–2009. (This figure was prepared April 2011.)

Figure 11. Actual and projected numbers for the pupil/teacher ratios in elementary and secondary schools, by control of school: Fall 1995 through fall 2020



NOTE: Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS. The private school teacher number for 2009 is an actual number from the 2009–10 PSS. The pupil/teacher ratios were derived from tables 1 and 16. Teachers are reported in full-time equivalents. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2009–10; National Elementary and Secondary Enrollment Model, 1972–2008; and Elementary and Secondary Teacher Model, 1973–2009. (This figure was prepared April 2011.)

Pupil/teacher ratios

The pupil/teacher ratio in elementary and secondary schools

- ▼ decreased from 17.1 to 15.0 between 1995 and 2008; and
- ▼ is projected to decrease to 14.7 in 2020.

The pupil/teacher ratio in public elementary and secondary schools

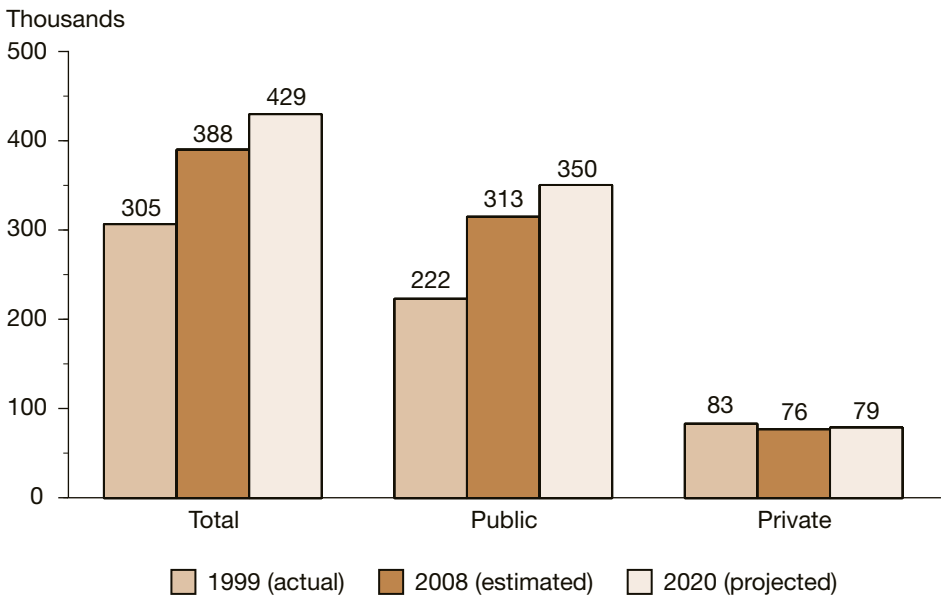
- ▼ decreased from 17.3 to 15.3 between 1995 and 2008; and
- ▼ is projected to decrease to 15.0 in 2020.

The pupil/teacher ratio in private elementary and secondary schools

- ▼ decreased from 15.7 to 12.8 between 1995 and 2008; and
- ▼ is projected to decrease to 12.3 in 2020.

For more information:
Table 17

Figure 12. Actual and projected numbers for elementary and secondary new teacher hires, by control of school: Fall 1999, fall 2008, and fall 2020



NOTE: Public and private new teacher hire numbers for 2008 are estimated using the New Teacher Hires Model.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1999–2000; Private School Universe Survey (PSS), 1999–2000; Schools and Staffing Survey (SASS), "Public School Teacher Questionnaire," 1999-2000 and "Private School Teacher Questionnaire," 1999-2000; Elementary and Secondary Teacher Model, 1973–2009; and New Teacher Hires Model, 1988–2007. (This figure was prepared April 2011.)

New teacher hires

Between 2008 and 2020, increases are expected in the annual numbers of new public school teacher hires and new private school teacher hires.

The number of new teacher hires in public schools

- • was approximately 313,000 in 2008, reflecting an increase of 41 percent compared to 1999; and
- ▲ is projected to increase 12 percent to 350,000 in 2020.

The number of new teacher hires in private schools

- • was approximately 76,000 in 2008, reflecting a decrease of 9 percent compared to 1999; and
- ▲ is projected to increase 5 percent to 79,000 in 2020.

For more information:
Table 16

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Section 4
Expenditures for Public Elementary and Secondary Education

INTRODUCTION

Current expenditures for public elementary and secondary education are projected to increase 22 percent in constant dollars between school years 2007–08, the last year of actual data, and 2020–21.

Factors affecting the projections

The projections of current expenditures are related to projections of economic growth as measured by disposable income per capita and assistance by state governments to local governments. For more details, see appendixes A.0 and A.4.

Factors that were not considered

Many factors that may affect future school expenditures were not considered in the production of these projections. Such factors include policy initiatives as well as potential changes in the age distribution of elementary and secondary teachers as older teachers retire and are replaced by younger teachers.

About constant dollars and current dollars

Throughout this section, projections of current expenditures are presented in constant 2008–09 dollars. The reference tables, later in this report, present these data both in constant 2008–09 dollars and in current dollars. The projections were developed in constant dollars and then placed in current dollars using projections for the Consumer Price Index (CPI) (table B-6 in appendix B).

Accuracy of Projections

An analysis of projection errors from similar models used in the past 20 editions of *Projections of Education Statistics* that contained expenditure projections indicates that mean absolute percentage errors (MAPEs) for current expenditures in constant dollars were 1.3 percent for 1 year out, 2.0 percent for 2 years out, 2.6 percent for 5 years out, and 4.1 percent for 10 years out. MAPEs for current expenditures per pupil in fall enrollment in current dollars were 1.3 percent for 1 year out, 2.0 percent for 2 years out, 3.0 percent for 5 years out, and 5.5 percent for 10 years out. See appendix A for further discussion of the accuracy of recent projections of current expenditures, and see table A-2 in appendix A for the mean absolute percentage errors (MAPEs) of these projections.

CURRENT EXPENDITURES

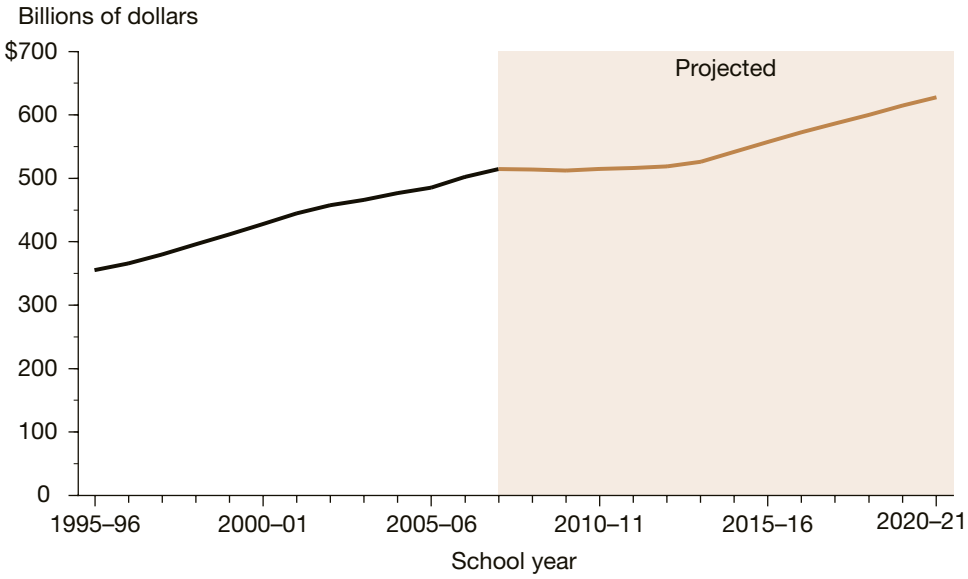
Current expenditures

Current expenditures in constant 2008–09 dollars

- increased 45 percent from 1995–96 to 2007–08, a period of 12 years; and
- are projected to increase 22 percent, to $627 billion, from 2007–08 to 2020–21, a period of 13 years.

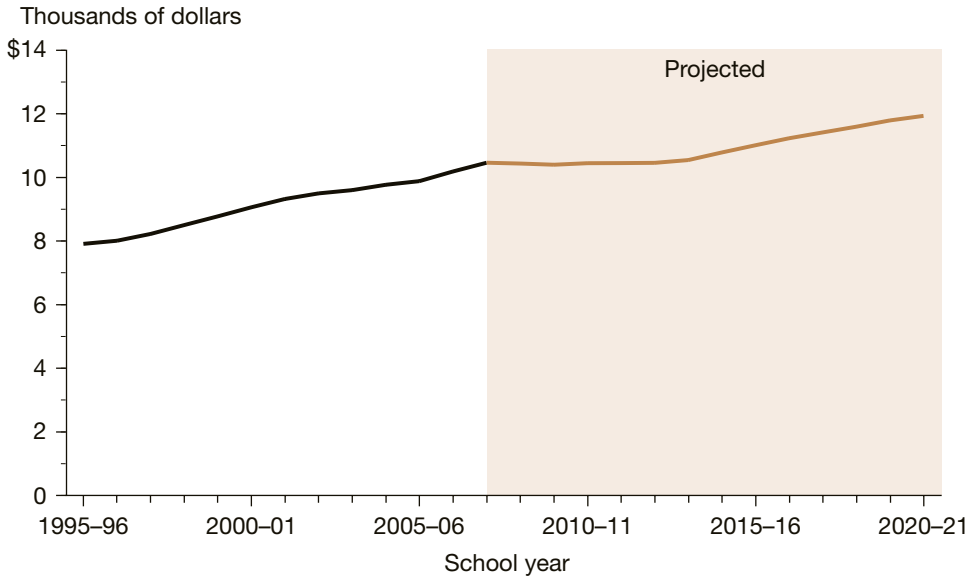
For more information:
Tables 18 and 19

Figure 13. Actual and projected current expenditures for public elementary and secondary schools (in constant 2008–09 dollars): School years 1995–96 through 2020–21



NOTE: Numbers were placed in constant dollars using the Consumer Price Index (CPI) for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. For more detail about CPI, see table B-6 in appendix B. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "National Public Education Financial Survey," 1995–96 through 2007–08; Public Elementary and Secondary School Current Expenditures Model, 1969–70 through 2007–08. (This figure was prepared March 2011.)

Figure 14. Actual and projected current expenditures per pupil in fall enrollment in public elementary and secondary schools (in constant 2008–09 dollars): School years 1995–96 through 2020–21



NOTE: Numbers were placed in constant dollars using the Consumer Price Index (CPI) for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. For more detail about CPI, see table B-6 in appendix B. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; "National Public Education Financial Survey," 1995–96 through 2007–08; National Elementary and Secondary Enrollment Model, 1972–2008; and Public Elementary and Secondary School Current Expenditures Model, 1969–70 through 2007–08. (This figure was prepared March 2011.)

Current expenditures per pupil

Current expenditures per pupil in fall enrollment in constant 2008–09 dollars

- increased 32 percent from 1995–96 to 2007–08; and
- are projected to increase 14 percent, to $11,900, from 2007–08 to 2020–21.

For more information:
Tables 18 and 19

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Section 5
Enrollment in Postsecondary Degree-Granting Institutions

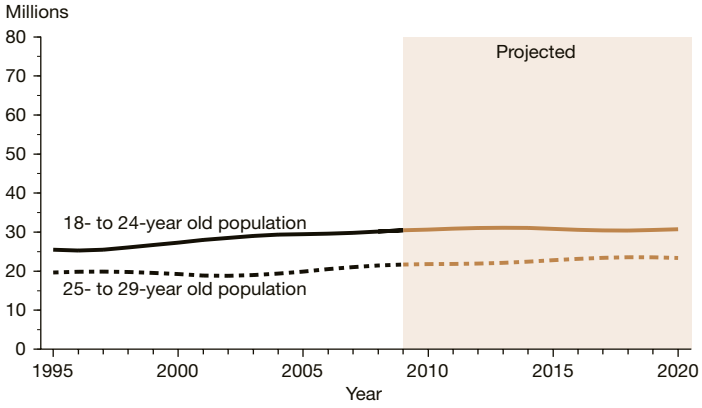
INTRODUCTION

Total enrollment in postsecondary degree-granting institutions is expected to increase 13 percent between fall 2009, the last year of actual data, and fall 2020. Degree-granting institutions are postsecondary institutions that provide study beyond secondary school and offer programs terminating in an associate's, baccalaureate, or higher degree and participate in federal financial aid programs. Differential growth is expected by student characteristics such as age, sex, and attendance status (part-time or full-time). Enrollment is expected to increase in both public and private postsecondary degree-granting institutions.

Factors affecting the projections

The projections of enrollment levels are related to projections of college-age populations, disposable income, and unemployment rates. For more details, see appendixes A.0 and A.5. An important factor in the enrollment projections is the expected increase in the population of 25- to 29-year-olds (table B-4 in appendix B).

Figure 15. Actual and projected population numbers for 18- to 24-year-olds and 25- to 29-year-olds: 1995 through 2020



NOTE: Some data have been revised from previously published figures. Projections are from the U.S. Census Bureau's 2008 National Population Projections, ratio-adjusted to line up with the most recent historical estimate.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2009, from http://www.census.gov/population/www/projections/2008projections.html.
(This figure was prepared March 2011.)

Factors that were not considered

The enrollment projections do not take into account such factors as the cost of a college education, the economic value of an education, and the impact of distance learning due to technological changes. These factors may produce changes in enrollment levels. The racial/ethnic backgrounds of nonresident aliens are not known.

Accuracy of Projections

For projections of total enrollment in postsecondary degree-granting institutions, an analysis of projection errors based on the past 13 editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, 5, and 10 years out were 1.6, 2.8, 5.2, and 11.4 percent, respectively. For the 1-year-out prediction, this means that one would expect the projection to be within 1.6 percent of the actual value, on average. For more information, see table A-2 in appendix A.

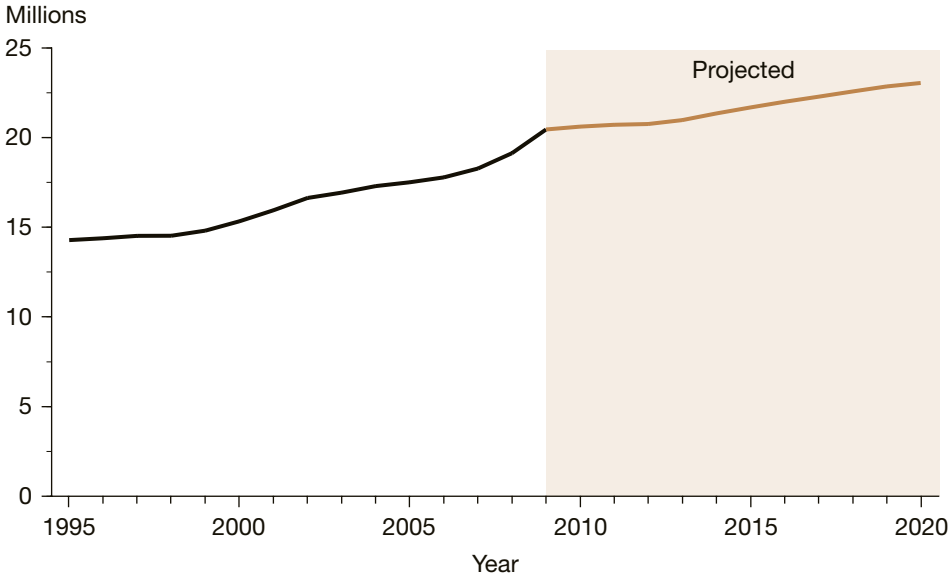
TOTAL ENROLLMENT

Total enrollment in postsecondary degree-granting institutions

- ▲ increased 43 percent from 1995 to 2009, a period of 14 years; and
- ▲ is projected to increase 13 percent, to 23 million, from 2009 to 2020, a period of 11 years.

For more information:
Table 20

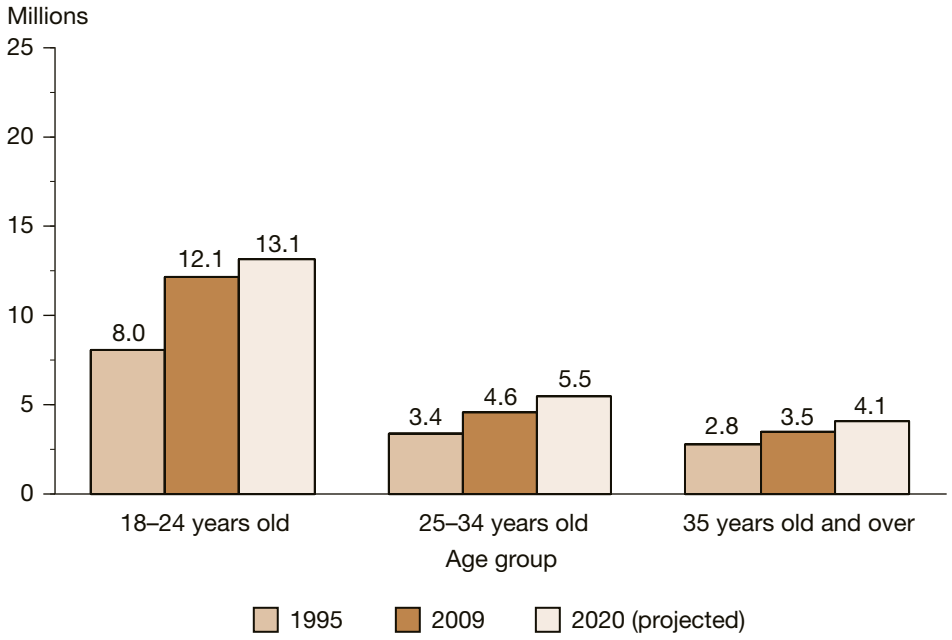
Figure 16. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This figure was prepared March 2011.)

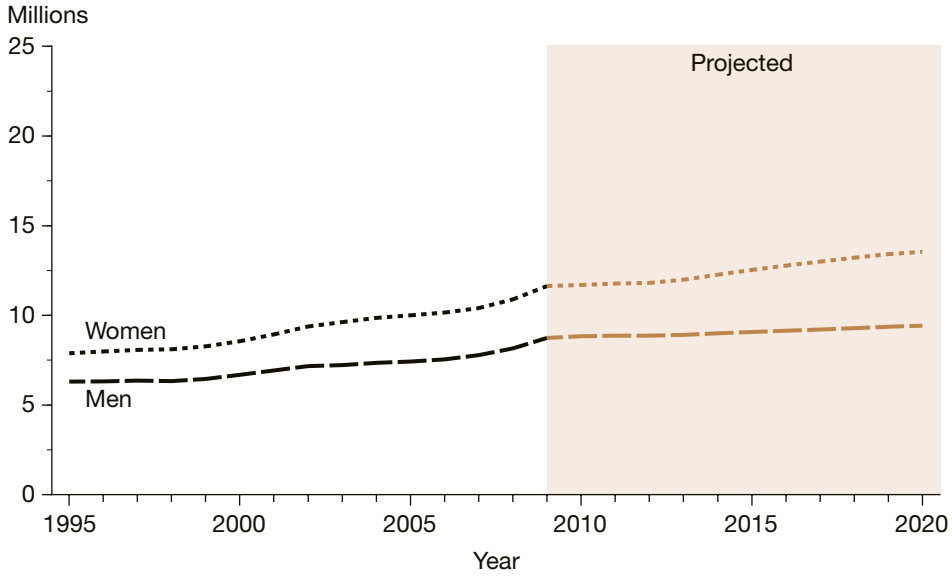
ENROLLMENT BY SELECTED CHARACTERISTICS AND CONTROL OF INSTITUTION

Figure 17. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by age group: Fall 1995, fall 2009, and fall 2020



NOTE: Some data have been revised from previously published figures. Data by age are based on the distribution by age from the Census Bureau. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95) and Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and U.S. Department of Commerce, Census Bureau, Current Population Reports, "Social and Economic Characteristics of Students," various years. (This figure was prepared March 2011.)

Figure 18. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by sex: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This figure was prepared March 2011.)

Enrollment by age of student

Between 2009 and 2020, enrollment is projected to increase

- 9 percent for students who are 18 to 24 years old;
- 21 percent for students who are 25 to 34 years old; and
- 16 percent for students who are 35 years old and over.

For more information: Table 21

Enrollment by sex of student

Between 2009 and 2020, enrollment is projected to increase

- 8 percent for men; and
- 16 percent for women.

For more information: Tables 20–26

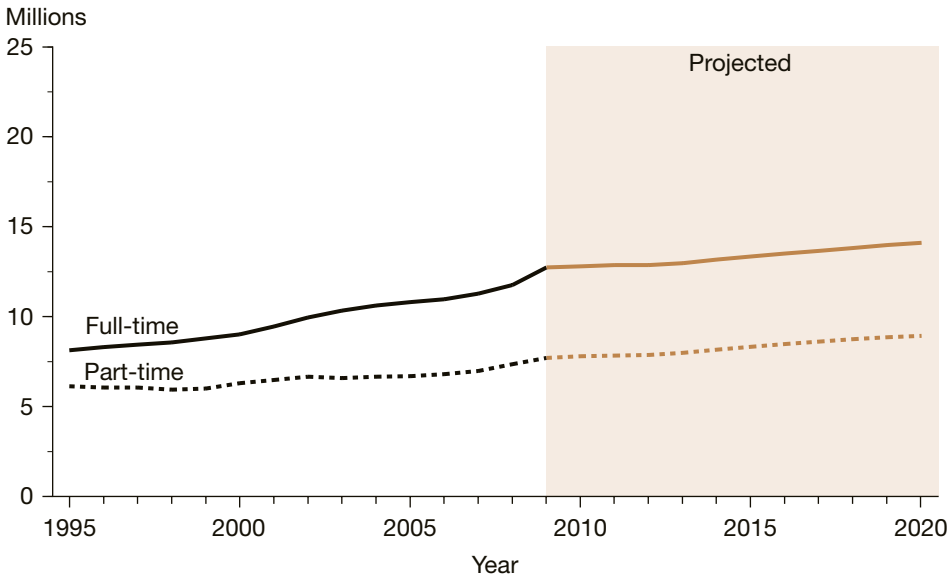
Enrollment by attendance status

Between 2009 and 2020, enrollment is projected to increase

- 11 percent for full-time students; and
- 16 percent for part-time students.

For more information: Tables 20–27

Figure 19. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by attendance status: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This figure was prepared March 2011.)

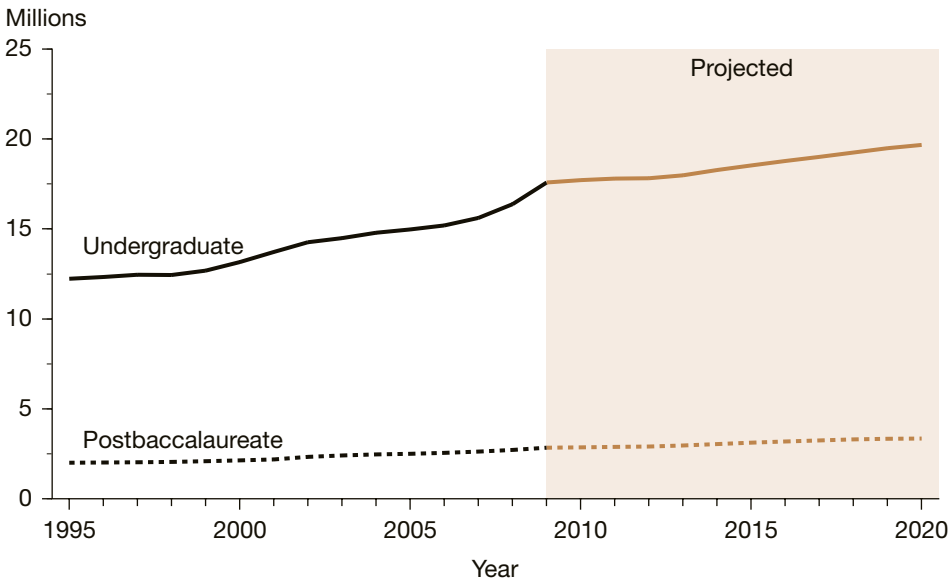
Enrollment by level of student

Between 2009 and 2020, enrollment is projected to increase

- 12 percent for undergraduate students; and
- 18 percent for postbaccalaureate students.

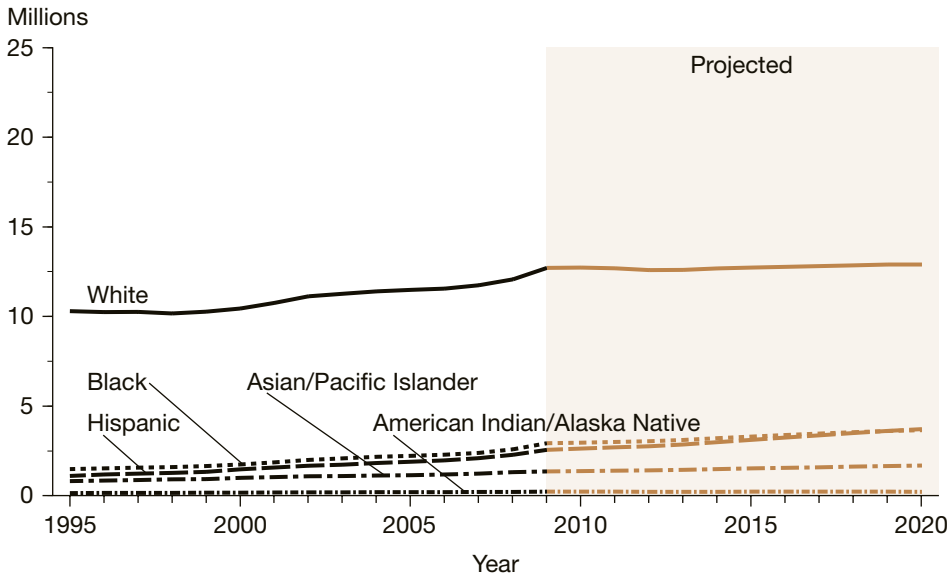
For more information: Tables 27–28

Figure 20. Actual and projected numbers for undergraduate and postbaccalaureate enrollment in all postsecondary degree-granting institutions: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This figure was prepared April 2011.)

Figure 21. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by race/ethnicity: Fall 1995 through fall 2020



NOTE: Race categories exclude persons of Hispanic ethnicity. Enrollment data in the "race/ethnicity unknown" (all years) and "two or more races" (2008 and 2009 only) categories of the IPEDS "Fall Enrollment Survey" have been prorated to the other racial/ethnic categories at the institutional level. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This figure was prepared March 2011.)

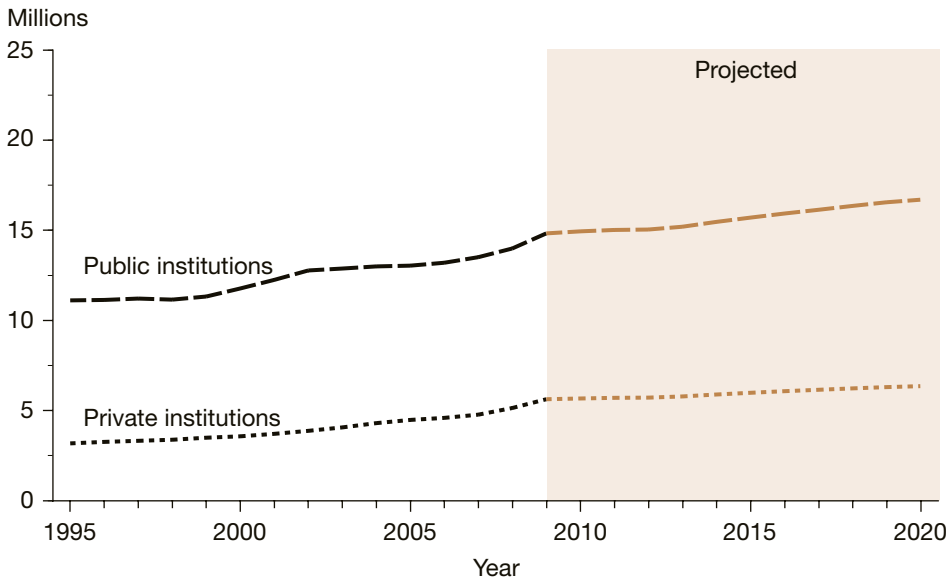
Enrollment by race/ethnicity

Between 2009 and 2020, enrollment is projected to

- ▲ increase 1 percent for students who are White;
- ▲ increase 25 percent for students who are Black;
- ▲ increase 46 percent for students who are Hispanic;
- ▲ increase 25 percent for students who are Asian/Pacific Islander; and
- ▼ decrease 1 percent for students who are American Indian/Alaska Native.

For more information:
Table 29

Figure 22. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by control of institution: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009. (This figure was prepared March 2011.)

Enrollment in public and private institutions

Between 2009 and 2020, enrollment is projected to increase

- ▲ 13 percent in public institutions; and
- ▲ 13 percent in private institutions.

For more information:
Table 20

FIRST-TIME FRESHMEN ENROLLMENT

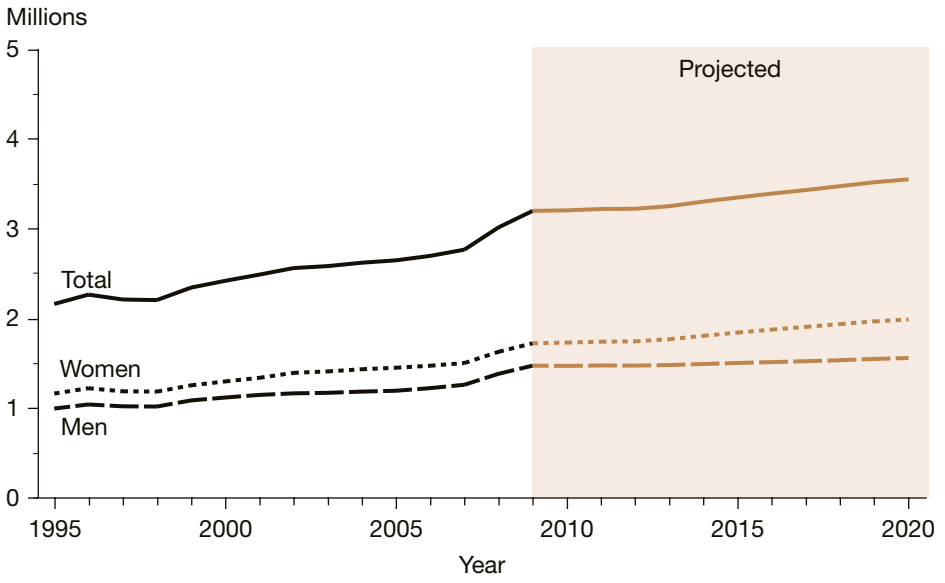
Total first-time freshmen enrollment in degree-granting institutions increased 48 percent from 1995 to 2009.

Between 2009 and 2020, first-time freshmen enrollment is projected to increase

- 11 percent overall;
- 6 percent for men; and
- 15 percent for women.

For more information:
Table 30

Figure 23. Actual and projected numbers for total first-time freshmen enrollment in all postsecondary degree-granting institutions, by sex: Fall 1995 through fall 2020



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and First-Time Freshmen Model, 1975–2009. (This figure was prepared March 2011.)

Section 6
Postsecondary Degrees Conferred

INTRODUCTION

Continuing growth in enrollment in postsecondary degree-granting institutions has been reflected by an increase in the number of degrees conferred. Increases in the number of degrees conferred are expected to continue between academic year 2008–09, the last year of actual data, and academic year 2020–21.

Factors affecting the projections

The projections of the number of degrees conferred are related to projections of the college-age populations developed by the Census Bureau and college enrollments from this report. For more details, see appendixes A.0 and A.6.

Factors that were not considered

Some factors that may affect future numbers of degrees, such as choice of degree and labor force requirements, were not included in the projection models.

About first-professional degrees

A first-professional degree is one that signifies both completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that required for a bachelor's degree. A first-professional degree is based on a program requiring at least 2 academic years of work beyond the bachelor's degree. Degree fields include dentistry, medicine, optometry, osteopathic medicine, pharmacy, podiatric medicine, veterinary medicine, chiropractic, law, and theological professions.

Accuracy of Projections

No MAPEs were calculated for degrees conferred as the current model used for producing their projections has been used for only two other editions of *Projections of Education Statistics*. For more information on the MAPEs of different National Center for Education Statistics (NCES) projection series, see table A-2 in appendix A.

DEGREES, BY LEVEL OF DEGREE AND SEX OF RECIPIENT

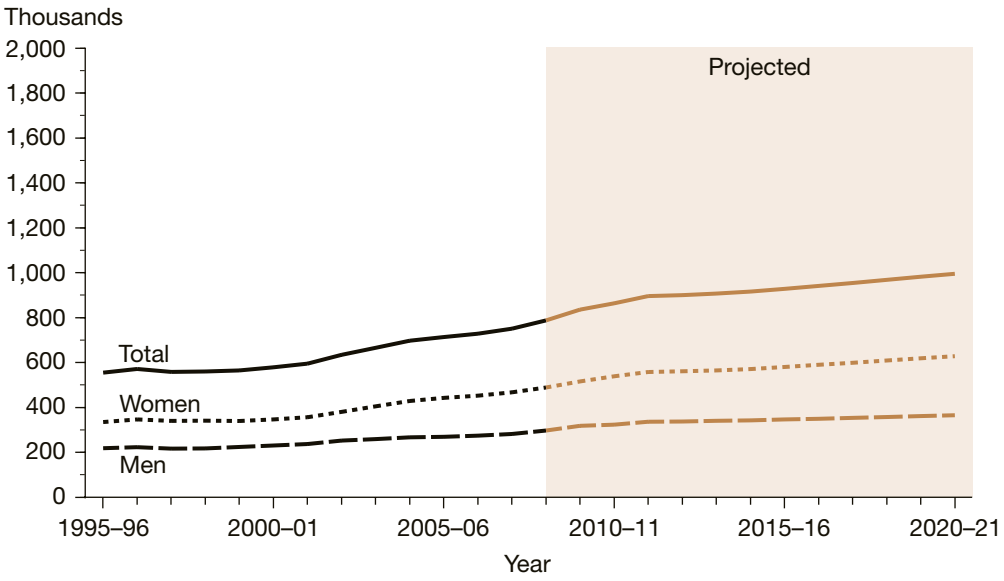
Associate's degrees

Between 2008–09 and 2020–21, the number of associate's degrees is projected to increase

- 26 percent overall;
- 23 percent for men; and
- 28 percent for women.

For more information:
Table 32

Figure 24. Actual and projected numbers for associate's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:95–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This figure was prepared April 2011.)

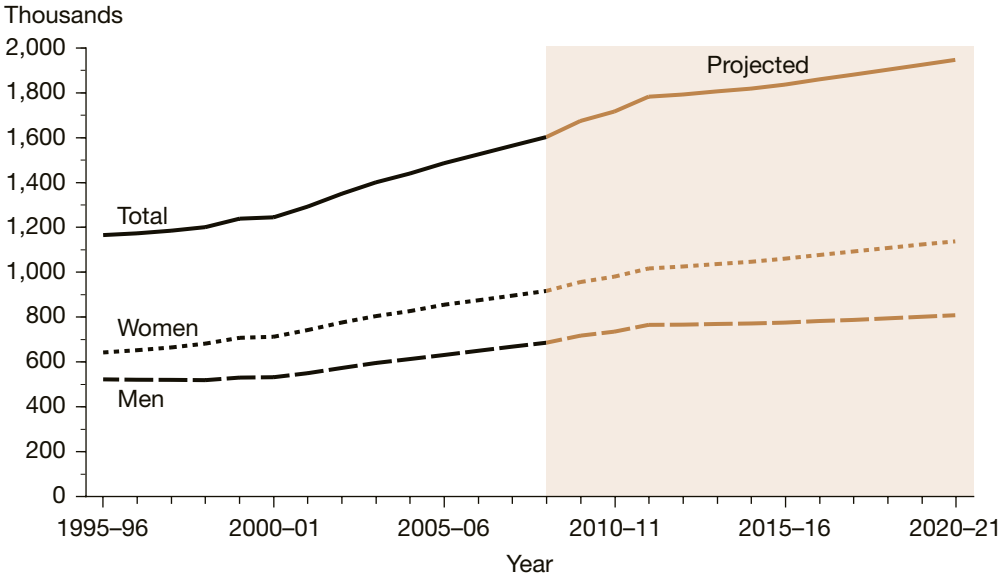
Bachelor's degrees

Between 2008–09 and 2020–21, the number of bachelor's degrees is projected to increase

- 21 percent overall;
- 18 percent for men; and
- 24 percent for women.

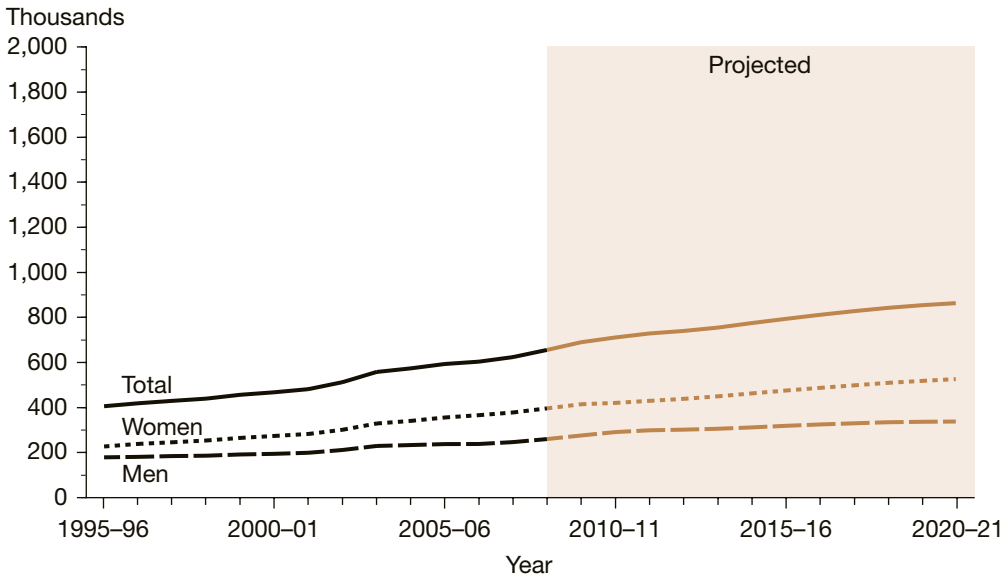
For more information:
Table 33

Figure 25. Actual and projected numbers for bachelor's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:95–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This figure was prepared April 2011.)

Figure 26. Actual and projected numbers for master's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:95–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This figure was prepared April 2011.)

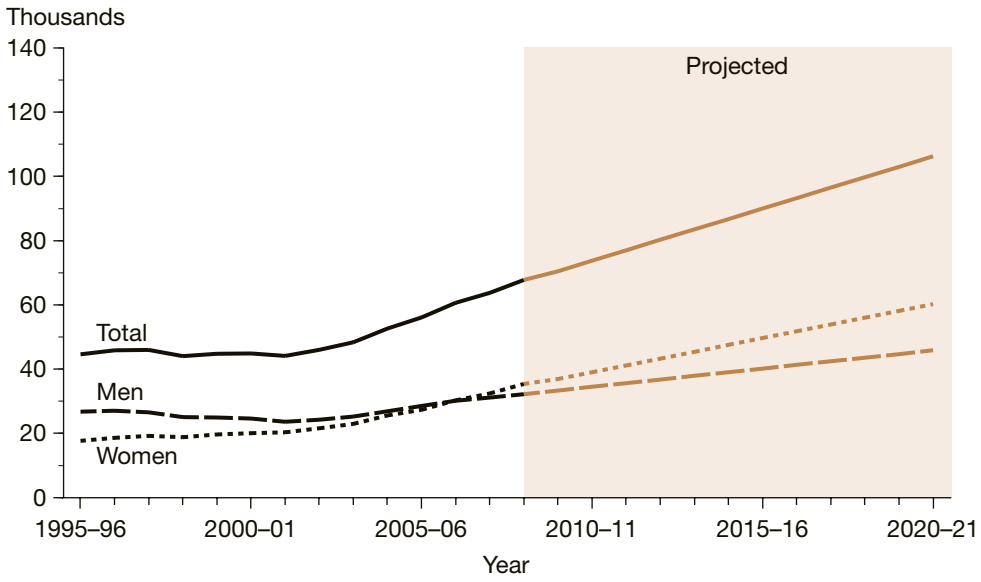
Master's degrees

Between 2008–09 and 2020–21, the number of master's degrees is projected to increase

- 32 percent overall;
- 30 percent for men; and
- 33 percent for women.

For more information: Table 34

Figure 27. Actual and projected numbers for doctor's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21



NOTE: Doctor's degrees include Ph.D., Ed.D., and comparable degrees at the doctoral level. Excluded are first-professional degrees, such as M.D., D.D.S., and law degrees. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:95–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This figure was prepared April 2011.)

Doctor's degrees

Between 2008–09 and 2020–21, the number of doctor's degrees is projected to increase

- 57 percent overall;
- 42 percent for men; and
- 70 percent for women.

For more information: Table 35

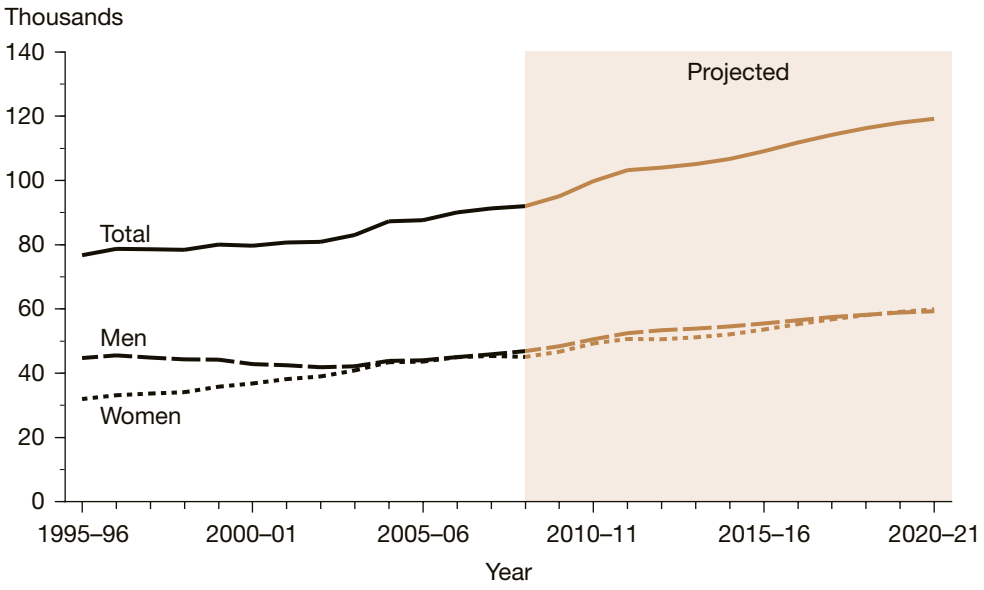
First-professional degrees

Between 2008–09 and 2020–21, the number of first-professional degrees is projected to increase

- 30 percent overall;
- 26 percent for men; and
- 33 percent for women.

For more information: Table 36

Figure 28. Actual and projected numbers for first-professional degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21



NOTE: Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:95–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This figure was prepared April 2011.)

Reference Tables

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Table 1. Actual and projected numbers for enrollment in grades PK–12, PK–8, and 9–12 in elementary and secondary schools, by control of school: Fall 1995 through fall 2020

[In thousands]

	Total			Public			Private		
Year	PK–12[1]	PK–8[1]	9–12	PK–12	PK–8	9–12	PK–12	PK–8	9–12
Actual									
1995	50,759	37,059	13,699	44,840	32,338	12,502	5,918	4,721	1,197
1996[2]	51,544	37,481	14,062	45,611	32,762	12,849	5,933	4,719	1,213
1997	52,071	37,797	14,275	46,127	33,071	13,056	5,944	4,726	1,219
1998[2]	52,526	38,091	14,435	46,539	33,344	13,195	5,988	4,747	1,240
1999	52,875	38,251	14,625	46,857	33,486	13,371	6,018	4,764	1,254
2000[2]	53,373	38,564	14,809	47,204	33,686	13,517	6,169	4,877	1,292
2001	53,992	38,929	15,063	47,672	33,936	13,736	6,320	4,993	1,327
2002[2]	54,403	39,000	15,404	48,183	34,114	14,069	6,220	4,886	1,335
2003	54,639	38,962	15,678	48,540	34,201	14,339	6,099	4,761	1,338
2004[2]	54,882	38,908	15,974	48,795	34,178	14,618	6,087	4,731	1,356
2005	55,187	38,903	16,283	49,113	34,204	14,909	6,073	4,699	1,374
2006[2]	55,307	38,838	16,469	49,316	34,235	15,081	5,991	4,604	1,388
2007	55,203	38,722	16,481	49,293	34,205	15,087	5,910	4,517	1,394
2008[2]	54,972	38,620	16,352	49,265	34,285	14,980	5,707	4,335	1,373
Projected									
2009	54,770	38,592	16,179	49,282	34,440	14,842	5,488	4,151	1,337
2010	54,704	38,729	15,975	49,306	34,637	14,668	5,398	4,092	1,306
2011	54,746	38,949	15,797	49,422	34,892	14,530	5,324	4,057	1,266
2012	54,905	39,163	15,742	49,642	35,129	14,512	5,263	4,034	1,229
2013	55,133	39,394	15,739	49,914	35,368	14,545	5,219	4,025	1,194
2014	55,455	39,606	15,849	50,268	35,579	14,689	5,187	4,027	1,160
2015	55,836	39,872	15,964	50,659	35,829	14,830	5,176	4,042	1,134
2016	56,214	40,234	15,980	51,038	36,161	14,877	5,176	4,073	1,103
2017	56,617	40,602	16,015	51,430	36,491	14,939	5,187	4,110	1,077
2018	57,009	40,949	16,060	51,803	36,803	15,000	5,206	4,146	1,060
2019	57,438	41,303	16,135	52,204	37,121	15,083	5,234	4,181	1,052
2020	57,939	41,661	16,278	52,666	37,444	15,222	5,273	4,216	1,056

[1] Includes private nursery and prekindergarten enrollment in schools that offer kindergarten or higher grades.
[2] Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS.
NOTE: PK=prekindergarten. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years 1995–96 through 2009–10; and National Elementary and Secondary Enrollment Model, 1972–2008. (This table was prepared January 2011.)

Table 2. Actual and projected numbers for enrollment in public elementary and secondary schools, by grade: Fall 1995 through fall 2020

[In thousands]

Year	Total	Grade							
		PK	K	1	2	3	4	5	6
Actual									
1995	44,840	637	3,536	3,671	3,507	3,445	3,431	3,438	3,395
1996	45,611	670	3,532	3,770	3,600	3,524	3,454	3,453	3,494
1997	46,127	695	3,503	3,755	3,689	3,597	3,507	3,458	3,492
1998	46,539	729	3,443	3,727	3,681	3,696	3,592	3,520	3,497
1999	46,857	751	3,397	3,684	3,656	3,691	3,686	3,604	3,564
2000	47,204	776	3,382	3,636	3,634	3,676	3,711	3,707	3,663
2001	47,672	865	3,379	3,614	3,593	3,653	3,695	3,727	3,769
2002	48,183	915	3,434	3,594	3,565	3,623	3,669	3,711	3,788
2003	48,540	950	3,503	3,613	3,544	3,611	3,619	3,685	3,772
2004	48,795	990	3,544	3,663	3,560	3,580	3,612	3,635	3,735
2005	49,113	1,036	3,619	3,691	3,606	3,586	3,578	3,633	3,670
2006	49,316	1,084	3,631	3,751	3,641	3,627	3,586	3,602	3,660
2007	49,293	1,081	3,609	3,750	3,704	3,659	3,624	3,600	3,628
2008	49,265	1,179	3,640	3,709	3,699	3,708	3,647	3,629	3,613
Projected									
2009	49,282	1,196	3,692	3,747	3,658	3,709	3,712	3,662	3,660
2010	49,306	1,199	3,698	3,800	3,696	3,668	3,713	3,727	3,693
2011	49,422	1,206	3,722	3,826	3,748	3,705	3,672	3,728	3,759
2012	49,642	1,215	3,750	3,850	3,773	3,758	3,710	3,687	3,760
2013	49,914	1,225	3,782	3,879	3,798	3,783	3,763	3,725	3,718
2014	50,268	1,237	3,818	3,913	3,826	3,808	3,788	3,778	3,757
2015	50,659	1,249	3,855	3,950	3,859	3,836	3,812	3,803	3,810
2016	51,038	1,262	3,893	3,989	3,896	3,869	3,841	3,828	3,836
2017	51,430	1,273	3,929	4,029	3,935	3,906	3,874	3,857	3,860
2018	51,803	1,284	3,963	4,066	3,974	3,945	3,911	3,890	3,889
2019	52,204	1,295	3,995	4,102	4,011	3,984	3,950	3,927	3,923
2020	52,666	1,304	4,024	4,135	4,046	4,022	3,989	3,966	3,960

See notes at end of table.

Table 2. Actual and projected numbers for enrollment in public elementary and secondary schools, by grade: Fall 1995 through fall 2020—Continued

[In thousands]

Year	Grade 7	8	9	10	11	12	Elementary ungraded	Secondary ungraded
Actual								
1995	3,422	3,356	3,704	3,237	2,826	2,487	500	247
1996	3,464	3,403	3,801	3,323	2,930	2,586	399	208
1997	3,520	3,415	3,819	3,376	2,972	2,673	440	216
1998	3,530	3,480	3,856	3,382	3,021	2,722	449	214
1999	3,541	3,497	3,935	3,415	3,034	2,782	415	205
2000	3,629	3,538	3,963	3,491	3,083	2,803	334	177
2001	3,720	3,616	4,012	3,528	3,174	2,863	304	159
2002	3,821	3,709	4,105	3,584	3,229	2,990	285	161
2003	3,841	3,809	4,190	3,675	3,277	3,046	255	150
2004	3,818	3,825	4,281	3,750	3,369	3,094	215	122
2005	3,777	3,802	4,287	3,866	3,454	3,180	205	121
2006	3,716	3,766	4,260	3,882	3,551	3,277	170	110
2007	3,701	3,709	4,200	3,863	3,558	3,375	139	92
2008	3,653	3,692	4,122	3,822	3,548	3,400	118	88
Projected								
2009	3,643	3,644	4,103	3,752	3,510	3,390	118	86
2010	3,691	3,635	4,049	3,734	3,446	3,355	119	85
2011	3,724	3,681	4,039	3,685	3,429	3,293	120	85
2012	3,791	3,715	4,091	3,676	3,384	3,277	121	84
2013	3,791	3,781	4,128	3,723	3,376	3,234	123	84
2014	3,750	3,782	4,202	3,757	3,420	3,226	124	84
2015	3,788	3,740	4,203	3,824	3,450	3,268	125	85
2016	3,842	3,779	4,157	3,825	3,512	3,297	126	86
2017	3,868	3,832	4,199	3,783	3,513	3,356	127	87
2018	3,893	3,858	4,259	3,822	3,474	3,357	128	88
2019	3,922	3,883	4,288	3,876	3,510	3,320	130	89
2020	3,956	3,912	4,315	3,902	3,560	3,354	131	90

NOTE: PK=prekindergarten. K=kindergarten. Elementary ungraded includes students in grades prekindergarten through 8 who are in classes or programs to which students are assigned without standard grade designations. Secondary ungraded includes students in grades 9 through 12 who are in classes or programs to which students are assigned without standard grade designations. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and National Elementary and Secondary Enrollment Model, 1972–2008. (This table was prepared January 2011.)

Table 3. Actual and projected numbers for enrollment in public elementary and secondary schools, by race/ethnicity: Fall 1995 through fall 2020

[In thousands]

Year	Total	Race/ethnicity				
		White	Black	Hispanic	Asian/Pacific Islander	American Indian/ Alaska Native
Actual						
1995	44,840	29,030	7,552	6,085	1,668	505
1996	45,611	29,217	7,708	6,429	1,731	527
1997	46,127	29,241	7,851	6,705	1,796	535
1998	46,539	29,217	7,935	7,007	1,846	534
1999	46,857	29,032	8,054	7,337	1,892	542
2000	47,204	28,873	8,099	7,733	1,949	550
2001	47,672	28,731	8,176	8,175	2,026	563
2002	48,183	28,614	8,297	8,601	2,088	583
2003	48,540	28,438	8,347	9,018	2,144	593
2004	48,795	28,186	8,400	9,415	2,204	591
2005	49,113	28,001	8,443	9,794	2,278	598
2006	49,316	27,797	8,421	10,171	2,331	595
2007	49,293	27,454	8,392	10,457	2,396	594
2008[1]	49,265	27,191	8,399	10,621	2,461	592
Projected						
2009	49,282	26,998	8,346	10,800	2,537	594
2010	49,306	26,827	8,291	10,963	2,614	597
2011	49,422	26,716	8,251	11,139	2,694	602
2012	49,642	26,658	8,239	11,334	2,775	610
2013	49,914	26,628	8,244	11,534	2,856	619
2014	50,268	26,634	8,278	11,753	2,935	629
2015	50,659	26,664	8,315	11,982	3,012	640
2016	51,038	26,687	8,344	12,217	3,090	650
2017	51,430	26,710	8,372	12,470	3,165	660
2018	51,803	26,728	8,399	12,729	3,225	670
2019	52,204	26,755	8,435	12,999	3,284	680
2020	52,666	26,814	8,481	13,289	3,338	691

[1]In 2008, five states reported enrollment counts for students of two or more races. These enrollment counts were proportioned across the other racial/ethnic categories. When more complete sets of data for students of two or more races are compiled, separate projections for that category will be presented.

NOTE: Some data have been revised from previously published figures. Race categories exclude persons of Hispanic ethnicity. The historical racial/ethnic time-series were constructed using racial/ethnic enrollment data at the state level for individual grades. In some instances, enrollment data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic enrollment data for individual grades had to be adjusted in order for them to sum to the state total for that grade. For additional information, see the Elementary and Secondary Enrollment section A.1 in appendix A. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and National Public Elementary and Secondary Enrollment by Race/Ethnicity Model, 1994–2008. (This table was prepared January 2011.)

Table 4. Actual and projected numbers for enrollment in grades PK-8 in public elementary and secondary schools, by race/ethnicity: Fall 1995 through fall 2020

[In thousands]

Year	Total	Race/ethnicity				
		White	Black	Hispanic	Asian/Pacific Islander	American Indian/ Alaska Native
Actual						
1995	32,338	20,684	5,549	4,565	1,170	371
1996	32,762	20,687	5,664	4,821	1,204	386
1997	33,071	20,625	5,782	5,030	1,244	390
1998	33,344	20,548	5,861	5,274	1,275	386
1999	33,486	20,313	5,948	5,529	1,305	391
2000	33,686	20,123	5,980	5,838	1,348	397
2001	33,936	19,954	6,002	6,167	1,408	405
2002	34,114	19,760	6,040	6,453	1,446	415
2003	34,201	19,554	6,013	6,736	1,482	415
2004	34,178	19,266	5,992	6,988	1,519	413
2005	34,204	19,047	5,953	7,223	1,569	412
2006	34,235	18,859	5,880	7,470	1,611	414
2007	34,205	18,678	5,821	7,636	1,660	412
2008[1]	34,285	18,600	5,824	7,737	1,712	412
Projected						
2009	34,440	18,582	5,792	7,869	1,773	418
2010	34,637	18,572	5,794	8,005	1,830	424
2011	34,892	18,592	5,804	8,156	1,889	432
2012	35,129	18,600	5,809	8,310	1,949	438
2013	35,368	18,599	5,814	8,475	2,008	445
2014	35,579	18,590	5,818	8,641	2,052	452
2015	35,829	18,597	5,831	8,821	2,096	459
2016	36,161	18,648	5,858	9,026	2,136	468
2017	36,491	18,689	5,906	9,223	2,171	477
2018	36,803	18,710	5,967	9,416	2,201	484
2019	37,121	18,737	6,024	9,615	2,228	492
2020	37,444	18,769	6,077	9,820	2,255	498

[1]In 2008, five states reported enrollment counts for students of two or more races. These enrollment counts were proportioned across the other racial/ethnic categories. When more complete sets of data for students of two or more races are compiled, separate projections for that category will be presented.

NOTE: Some data have been revised from previously published figures. The historical racial/ethnic time-series were constructed using racial/ethnic enrollment data at the state level for individual grades. In some instances, enrollment data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic enrollment data for individual grades had to be adjusted in order for them to sum to the state total for that grade. Race categories exclude persons of Hispanic ethnicity. For additional information, see the Elementary and Secondary Enrollment section A.1 in appendix A. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and National Public Elementary and Secondary Enrollment by Race/Ethnicity Model, 1994–2008. (This table was prepared January 2011.)

Table 5. Actual and projected numbers for enrollment in grades 9–12 in public schools, by race/ethnicity: Fall 1995 through fall 2020

[In thousands]

Year	Total	Race/ethnicity				
		White	Black	Hispanic	Asian/Pacific Islander	American Indian/ Alaska Native
Actual						
1995	12,502	8,347	2,002	1,520	498	135
1996	12,849	8,530	2,043	1,608	526	141
1997	13,056	8,616	2,068	1,675	552	145
1998	13,195	8,670	2,073	1,732	572	148
1999	13,371	8,719	2,106	1,808	587	151
2000	13,517	8,750	2,119	1,894	601	153
2001	13,736	8,777	2,173	2,008	619	158
2002	14,069	8,854	2,257	2,148	642	168
2003	14,339	8,884	2,334	2,282	663	177
2004	14,618	8,920	2,408	2,427	686	178
2005	14,909	8,954	2,490	2,570	709	186
2006	15,081	8,938	2,540	2,701	720	181
2007	15,087	8,776	2,571	2,821	736	183
2008[1]	14,980	8,590	2,575	2,885	749	180
Projected						
2009	14,842	8,416	2,553	2,931	764	176
2010	14,668	8,254	2,497	2,958	784	172
2011	14,530	8,125	2,446	2,984	806	170
2012	14,512	8,058	2,430	3,024	826	171
2013	14,545	8,029	2,430	3,059	848	174
2014	14,689	8,044	2,460	3,111	883	177
2015	14,830	8,066	2,484	3,161	916	180
2016	14,877	8,040	2,486	3,191	954	181
2017	14,939	8,021	2,466	3,247	993	183
2018	15,000	8,018	2,432	3,314	1,024	186
2019	15,083	8,018	2,410	3,384	1,055	189
2020	15,222	8,046	2,403	3,470	1,083	193

[1]In 2008, five states reported enrollment counts for students of two or more races. These enrollment counts were proportioned across the other racial/ethnic categories. When more complete sets of data for students of two or more races are compiled, separate projections for that category will be presented.

NOTE: Some data have been revised from previously published figures. The historical racial/ethnic time-series were constructed using racial/ethnic enrollment data at the state level for individual grades. In some instances, enrollment data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic enrollment data for individual grades had to be adjusted in order for them to sum to the state total for that grade. Race categories exclude persons of Hispanic ethnicity. For additional information, see the Elementary and Secondary Enrollment section A.1 in appendix A. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and National Public Elementary and Secondary Enrollment by Race/Ethnicity Model, 1994–2008. (This table was prepared January 2011.)

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Table 6. Actual and projected numbers for enrollment in grades PK–12 in public elementary and secondary schools, by region and state: Fall 2002 through fall 2020

[In thousands]

	Actual							Projected		
Region and state	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
United States	**48,183**	**48,540**	**48,795**	**49,113**	**49,316**	**49,293**	**49,265**	**49,282**	**49,306**	**49,422**
Northeast	8,297	8,292	8,271	8,240	8,258	8,122	8,052	7,960	7,887	7,831
Connecticut	570	577	577	575	575	571	567	561	556	552
Maine	204	202	199	195	194	196	193	191	189	189
Massachusetts	983	980	976	972	969	963	959	952	944	938
New Hampshire	208	207	207	206	204	201	198	195	192	190
New Jersey	1,367	1,381	1,393	1,396	1,389	1,382	1,381	1,375	1,374	1,373
New York	2,888	2,865	2,836	2,816	2,810	2,765	2,741	2,700	2,667	2,641
Pennsylvania	1,817	1,821	1,828	1,831	1,871	1,802	1,775	1,752	1,735	1,720
Rhode Island	159	159	156	153	152	148	145	143	141	139
Vermont	100	99	98	97	95	94	92	91	90	89
Midwest	10,819	10,809	10,775	10,819	10,819	10,770	10,743	10,700	10,654	10,622
Illinois	2,084	2,101	2,098	2,112	2,118	2,113	2,120	2,121	2,120	2,115
Indiana	1,004	1,011	1,021	1,035	1,046	1,047	1,046	1,046	1,044	1,044
Iowa	482	481	478	483	483	485	488	487	486	487
Kansas	471	470	469	468	470	468	471	472	474	476
Michigan	1,785	1,758	1,751	1,742	1,723	1,693	1,660	1,631	1,605	1,581
Minnesota	847	843	839	839	841	838	836	840	841	846
Missouri	906	906	905	918	920	917	918	916	912	910
Nebraska	285	286	286	287	288	291	293	294	296	298
North Dakota	104	102	101	98	97	95	95	94	93	93
Ohio	1,838	1,845	1,840	1,840	1,837	1,827	1,817	1,803	1,789	1,778
South Dakota	130	126	123	122	121	122	127	128	129	130
Wisconsin	881	880	865	875	877	875	874	869	866	865
South	17,471	17,673	17,892	18,103	18,294	18,425	18,491	18,600	18,691	18,814
Alabama	739	731	730	742	744	745	746	745	743	741
Arkansas	451	455	463	474	476	479	479	481	482	484
Delaware	116	118	119	121	122	123	125	126	127	128
District of Columbia	76	78	77	77	73	78	69	72	72	72
Florida	2,540	2,588	2,639	2,675	2,672	2,667	2,631	2,606	2,591	2,586
Georgia	1,496	1,523	1,553	1,598	1,629	1,650	1,656	1,667	1,676	1,686
Kentucky	661	663	675	680	683	666	670	671	671	671
Louisiana	730	728	724	655	676	681	685	687	686	686
Maryland	867	869	866	860	852	846	844	840	837	837
Mississippi	493	494	495	495	495	494	492	491	489	487
North Carolina	1,336	1,360	1,386	1,416	1,444	1,489	1,489	1,509	1,526	1,541
Oklahoma	625	626	629	635	639	642	645	648	650	653
South Carolina	694	699	704	702	708	712	718	722	722	725
Tennessee	928	937	941	954	978	964	972	973	975	979
Texas	4,260	4,332	4,405	4,525	4,600	4,675	4,752	4,839	4,920	5,011
Virginia	1,177	1,192	1,205	1,214	1,220	1,231	1,236	1,239	1,241	1,245
West Virginia	282	281	280	281	282	283	283	284	283	282
West	11,596	11,766	11,857	11,951	11,945	11,976	11,979	12,022	12,073	12,155
Alaska	134	134	133	133	133	131	131	131	132	133
Arizona	938	1,012	1,043	1,094	1,068	1,087	1,088	1,100	1,116	1,136
California	6,354	6,414	6,442	6,437	6,407	6,343	6,323	6,319	6,318	6,329
Colorado	752	758	766	780	794	802	818	831	843	856
Hawaii	184	184	183	183	181	180	179	179	180	180
Idaho	249	252	256	262	267	272	275	279	282	286
Montana	150	148	147	145	144	143	142	141	140	141
Nevada	369	385	400	412	425	429	433	442	449	458
New Mexico	320	323	326	327	328	329	330	331	334	336
Oregon	554	551	553	552	563	566	575	574	576	580
Utah	489	496	504	508	523	576	560	563	567	572
Washington	1,015	1,021	1,020	1,032	1,027	1,030	1,037	1,043	1,048	1,057
Wyoming	88	87	85	84	85	86	87	88	90	91

See notes at end of table.

Table 6. Actual and projected numbers for enrollment in grades PK–12 in public elementary and secondary schools, by region and state: Fall 2002 through fall 2020—Continued

[In thousands]

Region and state	Projected—Continued								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
United States	**49,642**	**49,914**	**50,268**	**50,659**	**51,038**	**51,430**	**51,803**	**52,204**	**52,666**
Northeast	7,790	7,762	7,752	7,753	7,758	7,770	7,784	7,805	7,836
Connecticut	549	547	545	545	544	545	547	549	552
Maine	188	188	188	189	190	191	192	193	195
Massachusetts	933	928	924	922	919	918	917	917	919
New Hampshire	188	187	187	187	187	188	189	191	193
New Jersey	1,373	1,373	1,375	1,377	1,380	1,382	1,386	1,390	1,396
New York	2,621	2,606	2,598	2,594	2,592	2,593	2,593	2,597	2,602
Pennsylvania	1,711	1,706	1,706	1,710	1,714	1,718	1,723	1,729	1,739
Rhode Island	138	138	138	138	139	140	142	143	144
Vermont	89	90	90	91	92	93	95	96	98
Midwest	10,619	10,631	10,662	10,699	10,730	10,760	10,783	10,805	10,846
Illinois	2,113	2,113	2,118	2,123	2,128	2,131	2,133	2,136	2,143
Indiana	1,044	1,045	1,046	1,049	1,051	1,053	1,055	1,055	1,059
Iowa	489	491	494	496	498	499	499	499	499
Kansas	480	483	487	491	494	496	497	499	500
Michigan	1,570	1,560	1,555	1,552	1,549	1,548	1,547	1,547	1,552
Minnesota	853	862	874	886	899	912	924	936	950
Missouri	911	913	917	920	922	925	927	929	932
Nebraska	300	303	305	308	310	313	314	315	316
North Dakota	93	93	93	93	93	93	94	94	94
Ohio	1,770	1,766	1,765	1,765	1,762	1,760	1,757	1,753	1,752
South Dakota	131	132	133	134	135	136	137	138	139
Wisconsin	866	870	876	882	888	894	899	904	910
South	18,977	19,146	19,339	19,531	19,709	19,883	20,043	20,211	20,399
Alabama	740	739	740	739	737	734	731	729	728
Arkansas	486	488	490	492	493	493	494	494	495
Delaware	130	131	133	135	137	138	139	140	142
District of Columbia	72	72	73	73	74	75	75	76	76
Florida	2,595	2,602	2,617	2,634	2,657	2,682	2,712	2,746	2,788
Georgia	1,700	1,716	1,733	1,751	1,766	1,780	1,794	1,808	1,826
Kentucky	672	672	673	674	673	672	671	670	669
Louisiana	686	685	683	684	682	679	675	671	668
Maryland	838	842	850	859	870	882	895	909	921
Mississippi	486	484	483	482	481	478	474	471	468
North Carolina	1,556	1,576	1,598	1,619	1,638	1,656	1,673	1,690	1,713
Oklahoma	656	660	664	668	669	671	671	672	672
South Carolina	728	733	738	743	746	749	750	751	754
Tennessee	985	991	998	1,004	1,010	1,014	1,019	1,024	1,031
Texas	5,113	5,211	5,313	5,408	5,502	5,592	5,673	5,751	5,830
Virginia	1,252	1,261	1,273	1,287	1,299	1,312	1,325	1,338	1,352
West Virginia	282	281	280	279	277	276	273	270	267
West	12,256	12,374	12,515	12,676	12,842	13,017	13,194	13,383	13,585
Alaska	135	138	141	144	148	152	155	159	163
Arizona	1,160	1,184	1,209	1,236	1,263	1,289	1,316	1,343	1,373
California	6,349	6,379	6,425	6,488	6,558	6,640	6,721	6,812	6,908
Colorado	869	883	897	911	924	936	946	956	966
Hawaii	180	182	182	183	185	186	187	188	188
Idaho	291	296	300	306	311	315	319	323	327
Montana	141	142	143	144	145	146	147	148	149
Nevada	467	476	486	497	508	519	530	542	556
New Mexico	339	344	348	353	357	360	363	365	367
Oregon	585	592	598	606	614	622	630	640	650
Utah	578	583	589	594	599	604	609	616	625
Washington	1,069	1,082	1,098	1,116	1,133	1,151	1,170	1,191	1,213
Wyoming	93	95	96	97	98	99	99	99	99

NOTE: PK=prekindergarten. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of PK-12 enrollment in public elementary and secondary schools by state and region can be found in table A-7, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 7. Actual and projected percentage changes in grades PK–12 enrollment in public elementary and secondary schools, by region and state: Selected years, fall 2002 through fall 2020

Region and state	Actual 2002–2008	Projected		
		2008–2014	2014–2020	2008–2020
United States	**2.2**	**2.0**	**4.8**	**6.9**
Northeast	-2.9	-3.7	1.1	-2.7
Connecticut	-0.5	-3.9	1.3	-2.6
Maine	-5.6	-2.3	3.2	0.8
Massachusetts	-2.4	-3.6	-0.6	-4.2
New Hampshire	-4.7	-5.6	3.1	-2.7
New Jersey	1.0	-0.5	1.5	1.0
New York	-5.1	-5.2	0.2	-5.1
Pennsylvania	-2.3	-3.9	1.9	-2.1
Rhode Island	-8.7	-5.4	4.8	-0.8
Vermont	-7.5	-2.3	8.0	5.6
Midwest	-0.7	-0.8	1.7	1.0
Illinois	1.7	-0.1	1.2	1.1
Indiana	4.2	#	1.2	1.2
Iowa	1.1	1.3	1.2	2.4
Kansas	#	3.3	2.7	6.2
Michigan	-7.0	-6.3	-0.2	-6.5
Minnesota	-1.3	4.5	8.7	13.6
Missouri	1.3	-0.1	1.6	1.5
Nebraska	2.5	4.3	3.5	7.9
North Dakota	-9.1	-2.1	1.7	-0.5
Ohio	-1.1	-2.9	-0.7	-3.6
South Dakota	-2.5	5.0	4.2	9.4
Wisconsin	-0.8	0.2	3.9	4.1
South	5.8	4.6	5.5	10.3
Alabama	0.9	-0.8	-1.6	-2.4
Arkansas	6.2	2.3	0.9	3.3
Delaware	7.8	6.1	6.4	12.9
District of Columbia	-9.8	5.9	4.2	10.3
Florida	3.6	-0.5	6.5	5.9
Georgia	10.7	4.7	5.3	10.3
Kentucky	1.4	0.5	-0.7	-0.2
Louisiana	-6.2	-0.2	-2.2	-2.4
Maryland	-2.6	0.7	8.4	9.2
Mississippi	-0.1	-1.7	-3.2	-4.9
North Carolina	11.4	7.4	7.2	15.1
Oklahoma	3.3	3.0	1.2	4.2
South Carolina	3.4	2.8	2.1	5.0
Tennessee	4.8	2.7	3.3	6.1
Texas	11.6	11.8	9.7	22.7
Virginia	5.0	3.0	6.2	9.4
West Virginia	0.1	-1.0	-4.6	-5.5
West	3.3	4.5	8.6	13.4
Alaska	-2.8	7.9	15.7	24.8
Arizona	16.0	11.2	13.5	26.2
California	-0.5	1.6	7.5	9.3
Colorado	8.9	9.6	7.7	18.0
Hawaii	-2.4	1.6	3.3	5.0
Idaho	10.7	9.2	8.7	18.7
Montana	-5.4	0.9	3.8	4.7
Nevada	17.3	12.3	14.3	28.4
New Mexico	3.1	5.5	5.5	11.2
Oregon	3.8	4.0	8.6	13.0
Utah	14.4	5.3	6.1	11.7
Washington	2.2	5.9	10.5	17.0
Wyoming	-1.1	10.2	3.3	13.8

Rounds to zero.
NOTE: PK=prekindergarten. Calculations are based on unrounded numbers. Mean absolute percentage errors of PK-12 enrollment in public elementary and secondary schools by state and region can be found in table A-7, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," selected years, 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 8. Actual and projected numbers for enrollment in grades PK–8 in public elementary and secondary schools, by region and state: Fall 2002 through fall 2020

[In thousands]

Region and state	Actual							Projected		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
United States	**34,114**	**34,201**	**34,178**	**34,204**	**34,235**	**34,205**	**34,285**	**34,440**	**34,637**	**34,892**
Northeast	5,810	5,752	5,689	5,623	5,574	5,504	5,476	5,435	5,413	5,403
Connecticut	406	408	404	400	398	394	392	389	387	385
Maine	142	139	136	133	132	131	129	129	129	129
Massachusetts	701	692	682	675	671	667	667	663	660	657
New Hampshire	144	142	140	139	136	134	133	131	130	129
New Jersey	979	978	976	971	963	954	957	954	955	956
New York	2,016	1,978	1,943	1,909	1,887	1,856	1,843	1,823	1,812	1,807
Pennsylvania	1,242	1,236	1,235	1,228	1,220	1,205	1,194	1,186	1,182	1,182
Rhode Island	113	111	107	104	102	99	98	97	97	96
Vermont	68	67	66	65	64	63	62	62	62	62
Midwest	7,535	7,502	7,439	7,425	7,405	7,359	7,374	7,383	7,393	7,414
Illinois	1,488	1,493	1,484	1,480	1,478	1,473	1,479	1,483	1,484	1,488
Indiana	714	717	720	724	730	730	730	731	731	732
Iowa	326	327	324	326	326	330	336	338	340	342
Kansas	322	322	321	321	326	327	331	333	336	340
Michigan	1,254	1,229	1,212	1,191	1,171	1,137	1,119	1,106	1,098	1,091
Minnesota	568	564	558	558	558	558	560	569	576	583
Missouri	635	632	629	635	634	632	635	638	640	642
Nebraska	195	195	195	195	196	200	203	206	209	211
North Dakota	69	68	67	66	64	63	64	64	64	64
Ohio	1,284	1,278	1,267	1,261	1,253	1,241	1,239	1,236	1,234	1,233
South Dakota	89	86	84	84	83	83	88	88	89	90
Wisconsin	592	590	578	584	585	585	590	591	593	597
South	12,573	12,675	12,780	12,882	12,990	13,086	13,167	13,299	13,431	13,573
Alabama	533	525	522	529	529	527	528	529	530	530
Arkansas	319	322	328	336	337	340	342	345	347	349
Delaware	82	83	84	85	85	85	87	88	89	91
District of Columbia	59	59	57	56	52	56	51	54	55	55
Florida	1,809	1,832	1,858	1,873	1,867	1,856	1,849	1,840	1,840	1,843
Georgia	1,089	1,103	1,118	1,145	1,167	1,179	1,186	1,199	1,210	1,223
Kentucky	477	478	486	487	487	469	472	475	477	479
Louisiana	537	536	534	482	492	500	504	507	506	509
Maryland	610	606	597	589	579	576	576	575	578	582
Mississippi	360	361	361	358	356	354	352	352	352	353
North Carolina	964	974	986	1,003	1,027	1,072	1,059	1,074	1,090	1,105
Oklahoma	449	450	453	457	460	463	468	472	476	480
South Carolina	500	501	504	498	501	505	508	513	517	521
Tennessee	673	675	671	677	692	682	685	689	694	698
Texas	3,080	3,133	3,184	3,268	3,320	3,375	3,447	3,524	3,601	3,676
Virginia	832	837	840	841	842	850	855	862	869	878
West Virginia	200	199	198	197	198	199	199	201	202	202
West	8,197	8,272	8,270	8,274	8,267	8,256	8,269	8,324	8,400	8,501
Alaska	94	94	92	91	90	89	89	90	92	94
Arizona	660	704	722	740	760	771	772	788	805	822
California	4,525	4,540	4,507	4,466	4,410	4,329	4,306	4,301	4,315	4,347
Colorado	534	536	541	550	559	566	580	591	602	613
Hawaii	131	130	129	127	126	126	126	127	128	129
Idaho	173	175	178	183	187	191	194	197	200	204
Montana	101	100	99	98	97	96	97	97	98	98
Nevada	271	281	289	296	303	308	308	314	320	327
New Mexico	224	226	228	230	230	230	231	234	238	241
Oregon	382	378	377	380	381	384	395	397	400	404
Utah	343	349	355	358	371	410	404	412	418	424
Washington	697	699	695	699	695	697	705	712	721	731
Wyoming	60	60	57	57	58	59	61	62	64	65

See notes at end of table.

Table 8. Actual and projected numbers for enrollment in grades PK–8 in public elementary and secondary schools, by region and state: Fall 2002 through fall 2020—Continued

[In thousands]

Region and state	Projected—Continued								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
United States	**35,129**	**35,368**	**35,579**	**35,829**	**36,161**	**36,491**	**36,803**	**37,121**	**37,444**
Northeast	5,395	5,391	5,389	5,395	5,415	5,435	5,455	5,479	5,505
Connecticut	383	382	382	382	384	386	388	391	395
Maine	129	130	131	132	133	134	135	136	136
Massachusetts	653	651	648	646	645	645	646	647	650
New Hampshire	128	128	129	129	130	132	134	136	138
New Jersey	957	957	958	959	962	964	967	970	975
New York	1,802	1,799	1,795	1,794	1,797	1,801	1,804	1,809	1,814
Pennsylvania	1,183	1,183	1,184	1,188	1,196	1,203	1,210	1,217	1,223
Rhode Island	96	98	99	99	100	101	102	103	104
Vermont	63	64	65	66	67	68	69	70	71
Midwest	7,430	7,446	7,455	7,468	7,503	7,538	7,568	7,596	7,622
Illinois	1,491	1,492	1,491	1,491	1,498	1,503	1,507	1,511	1,515
Indiana	734	735	734	733	735	738	740	743	747
Iowa	344	345	346	347	348	348	347	347	346
Kansas	342	344	345	346	348	349	350	351	351
Michigan	1,085	1,081	1,078	1,078	1,082	1,089	1,095	1,100	1,105
Minnesota	591	599	607	615	626	635	644	653	662
Missouri	643	645	646	647	649	652	654	656	658
Nebraska	214	216	217	218	219	219	219	219	219
North Dakota	64	65	65	65	66	66	66	66	66
Ohio	1,231	1,228	1,224	1,221	1,221	1,222	1,222	1,222	1,221
South Dakota	91	92	93	94	95	95	95	95	95
Wisconsin	601	605	608	612	618	623	628	632	636
South	13,699	13,814	13,906	14,008	14,138	14,274	14,402	14,535	14,672
Alabama	529	526	523	520	519	519	518	517	517
Arkansas	350	350	350	349	349	349	350	350	351
Delaware	92	93	94	95	96	97	97	98	99
District of Columbia	56	57	58	59	60	61	60	59	59
Florida	1,852	1,863	1,876	1,894	1,921	1,954	1,986	2,018	2,051
Georgia	1,233	1,242	1,250	1,257	1,268	1,281	1,294	1,307	1,321
Kentucky	478	478	477	476	474	473	471	470	469
Louisiana	508	506	503	500	498	496	493	491	488
Maryland	587	595	603	613	621	631	641	652	662
Mississippi	353	351	348	345	344	341	338	336	333
North Carolina	1,117	1,127	1,135	1,144	1,156	1,172	1,187	1,205	1,224
Oklahoma	482	483	483	483	483	483	483	484	484
South Carolina	524	525	525	526	528	530	532	534	536
Tennessee	701	703	705	707	710	715	720	726	733
Texas	3,750	3,819	3,878	3,936	3,997	4,052	4,103	4,153	4,202
Virginia	885	893	900	908	917	928	938	949	960
West Virginia	201	201	199	197	195	193	190	187	185
West	8,606	8,717	8,829	8,958	9,104	9,244	9,378	9,512	9,645
Alaska	97	99	102	104	107	111	113	116	119
Arizona	840	857	874	892	912	932	953	974	996
California	4,386	4,435	4,485	4,548	4,619	4,686	4,750	4,813	4,875
Colorado	623	632	639	646	652	658	664	671	677
Hawaii	130	132	132	134	135	135	135	135	135
Idaho	208	211	214	217	221	224	227	229	231
Montana	99	100	101	102	103	104	104	104	104
Nevada	334	340	345	352	360	369	380	390	402
New Mexico	245	248	252	254	257	259	260	261	261
Oregon	408	413	418	425	432	440	447	455	462
Utah	428	432	437	442	448	452	455	459	463
Washington	740	751	762	774	789	805	821	837	854
Wyoming	67	67	68	69	69	69	68	68	67

NOTE: PK=prekindergarten. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of PK-8 enrollment in public elementary and secondary schools by state and region can be found in table A-8, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 9. Actual and projected percentage changes in grades PK–8 enrollment in public elementary and secondary schools, by region and state: Selected years, fall 2002 through fall 2020

Region and state	Actual 2002–2008	Projected		
		2008–2014	2014–2020	2008–2020
United States	**0.5**	**3.8**	**5.2**	**9.2**
Northeast	-5.7	-1.6	2.2	0.5
Connecticut	-3.4	-2.7	3.4	0.6
Maine	-8.8	1.1	4.2	5.3
Massachusetts	-4.9	-2.8	0.3	-2.5
New Hampshire	-7.4	-3.3	7.0	3.4
New Jersey	-2.2	0.1	1.7	1.9
New York	-8.6	-2.6	1.1	-1.6
Pennsylvania	-3.8	-0.9	3.3	2.4
Rhode Island	-12.9	0.8	5.4	6.2
Vermont	-8.2	3.5	10.1	13.9
Midwest	-2.1	1.1	2.2	3.4
Illinois	-0.6	0.8	1.7	2.5
Indiana	2.2	0.6	1.7	2.3
Iowa	3.0	3.2	-0.1	3.1
Kansas	2.9	4.3	1.8	6.1
Michigan	-10.8	-3.6	2.5	-1.2
Minnesota	-1.3	8.4	9.0	18.2
Missouri	0.1	1.6	1.9	3.6
Nebraska	4.0	7.0	0.9	7.9
North Dakota	-7.4	1.8	0.8	2.6
Ohio	-3.5	-1.2	-0.2	-1.5
South Dakota	-2.0	6.1	2.3	8.5
Wisconsin	-0.4	3.1	4.7	7.9
South	4.7	5.6	5.5	11.4
Alabama	-1.0	-1.0	-1.2	-2.2
Arkansas	7.1	2.5	0.3	2.8
Delaware	5.6	8.1	5.4	13.9
District of Columbia	-13.6	14.1	1.2	15.5
Florida	2.2	1.4	9.4	10.9
Georgia	8.9	5.4	5.8	11.4
Kentucky	-1.0	1.0	-1.6	-0.7
Louisiana	-6.1	-0.3	-2.9	-3.2
Maryland	-5.5	4.6	9.8	14.8
Mississippi	-2.3	-1.1	-4.4	-5.4
North Carolina	9.9	7.2	7.8	15.5
Oklahoma	4.2	3.2	0.2	3.4
South Carolina	1.4	3.5	2.1	5.7
Tennessee	1.7	2.9	4.0	7.0
Texas	11.9	12.5	8.4	21.9
Virginia	2.8	5.3	6.6	12.3
West Virginia	-0.3	-0.3	-7.2	-7.4
West	0.9	6.8	9.2	16.6
Alaska	-5.4	13.9	16.6	32.8
Arizona	16.9	13.2	13.9	29.0
California	-4.8	4.1	8.7	13.2
Colorado	8.6	10.1	6.0	16.7
Hawaii	-3.8	5.2	1.8	7.0
Idaho	11.7	10.8	7.8	19.4
Montana	-4.3	4.4	3.3	7.8
Nevada	13.8	12.0	16.3	30.3
New Mexico	3.1	8.7	3.8	12.8
Oregon	3.5	5.8	10.4	16.8
Utah	18.1	8.0	6.0	14.5
Washington	1.1	8.1	12.1	21.1
Wyoming	1.2	12.5	-1.9	10.4

NOTE: PK=prekindergarten. Calculations are based on unrounded numbers. Mean absolute percentage errors of PK-8 enrollment in public elementary and secondary schools by state and region can be found in table A-8, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," selected years, 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 10. Actual and projected numbers for enrollment in grades 9–12 in public schools, by region and state: Fall 2002 through fall 2020

[In thousands]

Region and state	Actual							Projected		
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
United States	**14,069**	**14,339**	**14,618**	**14,909**	**15,081**	**15,087**	**14,980**	**14,842**	**14,668**	**14,530**
Northeast	2,487	2,541	2,582	2,617	2,684	2,618	2,576	2,525	2,474	2,428
Connecticut	164	169	173	175	177	177	175	172	169	167
Maine	63	63	63	62	62	66	64	63	61	60
Massachusetts	282	288	293	297	298	296	292	289	284	281
New Hampshire	64	65	67	67	67	66	65	64	62	61
New Jersey	389	402	417	425	425	428	425	421	419	417
New York	872	887	894	907	922	909	898	877	855	834
Pennsylvania	575	586	593	603	651	597	581	566	553	538
Rhode Island	47	48	49	50	50	48	47	46	44	43
Vermont	32	32	32	32	32	31	30	29	28	27
Midwest	3,284	3,307	3,337	3,394	3,415	3,411	3,370	3,317	3,261	3,208
Illinois	597	608	614	631	641	640	641	638	636	627
Indiana	290	294	301	311	316	317	316	314	313	312
Iowa	156	154	154	157	157	156	152	149	146	145
Kansas	149	148	148	147	143	142	140	139	138	137
Michigan	531	528	540	551	552	556	541	524	507	490
Minnesota	279	279	280	281	282	279	276	271	266	263
Missouri	272	274	277	283	286	285	282	278	272	267
Nebraska	90	90	91	92	92	91	90	88	87	86
North Dakota	35	34	33	33	32	32	31	30	29	29
Ohio	554	567	573	578	584	586	578	567	555	544
South Dakota	41	40	39	38	38	38	39	40	40	40
Wisconsin	290	290	287	291	292	289	284	278	272	268
South	4,898	4,998	5,112	5,221	5,304	5,338	5,324	5,301	5,260	5,241
Alabama	206	206	208	212	215	218	218	216	213	211
Arkansas	132	133	135	138	140	139	137	136	135	135
Delaware	34	35	35	36	37	38	39	38	38	38
District of Columbia	17	19	20	21	20	23	18	18	17	17
Florida	731	755	782	802	805	811	782	766	751	743
Georgia	407	419	435	453	463	471	470	468	466	463
Kentucky	184	185	189	192	196	197	198	196	194	192
Louisiana	194	191	191	172	184	181	181	180	180	177
Maryland	256	263	268	271	273	269	267	264	260	255
Mississippi	132	133	134	137	139	141	140	139	137	134
North Carolina	372	386	400	413	417	417	430	434	436	436
Oklahoma	176	176	177	178	179	179	177	176	174	173
South Carolina	194	198	199	204	207	208	211	209	206	204
Tennessee	254	261	270	277	286	283	287	284	281	281
Texas	1,180	1,199	1,221	1,257	1,280	1,300	1,306	1,315	1,319	1,335
Virginia	346	355	365	372	379	380	381	377	373	367
West Virginia	82	82	83	84	84	84	83	83	81	80
West	3,399	3,494	3,587	3,677	3,678	3,720	3,710	3,698	3,673	3,654
Alaska	40	40	41	42	42	42	41	41	39	39
Arizona	277	308	321	355	309	316	316	312	312	314
California	1,828	1,874	1,934	1,972	1,997	2,015	2,016	2,018	2,002	1,982
Colorado	217	221	225	230	235	236	238	240	241	242
Hawaii	53	54	54	55	55	54	54	52	52	51
Idaho	75	77	78	79	80	81	82	82	82	82
Montana	49	48	48	48	47	46	45	44	43	42
Nevada	99	105	111	116	122	122	125	127	129	131
New Mexico	96	97	98	97	98	99	99	97	96	95
Oregon	172	173	176	173	182	182	180	177	176	176
Utah	147	147	148	151	152	166	155	152	149	149
Washington	318	322	325	333	332	333	332	330	327	326
Wyoming	28	28	27	27	27	27	27	26	26	26

See notes at end of table.

Table 10. Actual and projected numbers for enrollment in grades 9–12 in public schools, by region and state: Fall 2002 through fall 2020—Continued

[In thousands]

Region and state	Projected—Continued								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
United States	**14,512**	**14,545**	**14,689**	**14,830**	**14,877**	**14,939**	**15,000**	**15,083**	**15,222**
Northeast	2,396	2,371	2,363	2,358	2,343	2,335	2,329	2,326	2,331
Connecticut	166	165	163	162	160	159	158	158	158
Maine	59	58	58	57	57	57	57	58	58
Massachusetts	279	277	276	276	274	273	272	270	269
New Hampshire	60	59	58	58	57	56	55	55	55
New Jersey	416	416	417	418	418	418	419	420	421
New York	820	807	803	800	794	792	789	788	788
Pennsylvania	528	523	522	522	518	515	513	512	515
Rhode Island	42	40	39	39	39	39	40	40	40
Vermont	26	26	26	25	25	25	26	26	27
Midwest	3,189	3,185	3,206	3,232	3,226	3,222	3,215	3,210	3,224
Illinois	622	622	627	632	630	629	627	625	628
Indiana	311	310	312	316	316	316	314	312	312
Iowa	145	146	148	149	150	151	152	153	154
Kansas	138	139	142	144	146	147	147	148	149
Michigan	484	479	477	475	467	458	451	447	448
Minnesota	262	263	266	271	273	277	280	282	287
Missouri	268	269	271	273	273	273	273	273	274
Nebraska	86	87	88	90	92	94	95	96	97
North Dakota	28	28	28	27	27	27	28	28	29
Ohio	539	538	541	544	541	538	535	531	531
South Dakota	40	40	40	40	41	42	42	43	44
Wisconsin	266	266	268	270	271	271	271	271	274
South	5,278	5,332	5,434	5,523	5,570	5,609	5,640	5,676	5,726
Alabama	211	213	217	219	218	216	214	212	211
Arkansas	136	138	140	142	144	144	144	144	144
Delaware	38	38	39	40	41	41	42	42	43
District of Columbia	16	15	15	14	14	14	15	16	17
Florida	742	740	741	741	736	729	726	728	736
Georgia	467	474	483	493	497	499	500	501	504
Kentucky	193	195	196	198	199	200	200	200	200
Louisiana	177	178	180	184	183	183	181	181	180
Maryland	251	247	247	246	248	251	253	257	259
Mississippi	133	133	135	137	137	137	136	135	135
North Carolina	439	449	463	476	481	484	485	486	489
Oklahoma	175	178	181	184	186	187	188	188	188
South Carolina	205	208	213	218	219	219	218	217	218
Tennessee	284	288	293	298	299	299	298	298	299
Texas	1,363	1,392	1,435	1,472	1,505	1,540	1,569	1,599	1,629
Virginia	367	368	372	378	382	385	387	389	392
West Virginia	80	80	81	82	82	83	83	83	83
West	3,650	3,657	3,686	3,718	3,738	3,773	3,816	3,872	3,941
Alaska	38	39	39	40	41	41	42	43	45
Arizona	319	327	335	344	351	356	363	369	378
California	1,963	1,944	1,941	1,940	1,939	1,954	1,971	1,999	2,034
Colorado	246	251	258	265	271	277	282	285	288
Hawaii	50	50	50	50	50	51	52	53	54
Idaho	83	85	86	88	90	91	93	94	96
Montana	42	42	42	42	43	43	43	44	44
Nevada	133	137	141	146	148	149	150	152	155
New Mexico	94	95	97	98	100	101	103	105	106
Oregon	177	179	180	182	182	182	183	185	188
Utah	150	151	152	152	150	152	154	157	162
Washington	329	332	337	341	344	346	349	353	360
Wyoming	26	27	28	29	29	30	31	32	32

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of grades 9-12 enrollment in public schools by state and region can be found in table A-9, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 11. Actual and projected percentage changes in grades 9–12 enrollment in public schools, by region and state: Selected years, fall 2002 through fall 2020

Region and state	Actual 2002–2008	Projected		
		2008–2014	2014–2020	2008–2020
United States	**6.5**	**-1.9**	**3.6**	**1.6**
Northeast	3.6	-8.3	-1.4	-9.5
Connecticut	6.7	-6.6	-3.5	-9.9
Maine	1.7	-9.2	1.0	-8.4
Massachusetts	3.7	-5.4	-2.8	-8.1
New Hampshire	1.4	-10.1	-5.5	-15.1
New Jersey	9.2	-1.7	0.9	-0.9
New York	2.9	-10.5	-1.9	-12.2
Pennsylvania	1.0	-10.1	-1.3	-11.3
Rhode Island	1.5	-18.1	3.4	-15.4
Vermont	-6.0	-14.1	2.9	-11.7
Midwest	2.6	-4.8	0.6	-4.3
Illinois	7.4	-2.2	0.2	-2.0
Indiana	9.1	-1.5	0.2	-1.2
Iowa	-2.8	-2.9	4.0	1.0
Kansas	-6.2	1.1	5.0	6.2
Michigan	1.9	-11.8	-6.2	-17.3
Minnesota	-1.2	-3.5	8.0	4.2
Missouri	3.9	-3.9	0.8	-3.1
Nebraska	-0.7	-1.7	10.0	8.0
North Dakota	-12.4	-10.3	3.8	-6.9
Ohio	4.2	-6.4	-1.9	-8.1
South Dakota	-3.7	2.4	8.6	11.3
Wisconsin	-1.8	-5.8	2.2	-3.8
South	8.7	2.1	5.4	7.6
Alabama	5.5	-0.4	-2.6	-3.0
Arkansas	3.9	2.1	2.4	4.5
Delaware	13.2	1.7	8.9	10.8
District of Columbia	3.1	-17.3	15.9	-4.2
Florida	7.0	-5.2	-0.7	-5.8
Georgia	15.4	2.8	4.3	7.2
Kentucky	7.5	-0.7	1.6	0.9
Louisiana	-6.7	-0.1	-0.1	-0.2
Maryland	4.3	-7.7	5.1	-3.0
Mississippi	5.9	-3.4	-0.3	-3.8
North Carolina	15.5	7.7	5.7	13.9
Oklahoma	0.9	2.3	3.8	6.2
South Carolina	8.5	1.2	2.2	3.5
Tennessee	13.0	2.0	1.8	3.9
Texas	10.6	9.9	13.5	24.7
Virginia	10.1	-2.2	5.3	3.0
West Virginia	1.0	-2.6	1.8	-0.9
West	9.1	-0.7	6.9	6.2
Alaska	3.5	-5.2	13.4	7.5
Arizona	13.9	6.1	12.6	19.5
California	10.3	-3.8	4.8	0.9
Colorado	9.5	8.1	11.9	21.0
Hawaii	1.1	-6.8	7.4	0.2
Idaho	8.3	5.4	11.1	17.1
Montana	-7.8	-6.7	5.2	-1.9
Nevada	26.9	12.8	9.6	23.6
New Mexico	3.2	-2.1	9.9	7.6
Oregon	4.6	0.1	4.5	4.6
Utah	5.9	-1.8	6.3	4.3
Washington	4.6	1.4	6.8	8.3
Wyoming	-5.9	4.7	16.0	21.5

NOTE: Calculations are based on unrounded numbers. Mean absolute percentage errors of grades 9-12 enrollment in public schools by state and region can be found in table A-9, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," selected years, 2002–03 through 2008–09; and State Public Elementary and Secondary Enrollment Model, 1980–2008. (This table was prepared January 2011.)

Table 12. Actual and projected numbers for high school graduates, by control of school: School years 1995–96 through 2020–21

School year	Total	Public	Private
Actual			
1995–96[1]	2,518,064	2,273,109	244,955
1996–97	2,611,988	2,358,403	253,585
1997–98[1]	2,704,133	2,439,050	265,083
1998–99	2,758,655	2,485,630	273,025
1999–2000[1]	2,832,656	2,553,844	278,812
2000–01	2,847,973	2,569,200	278,773
2001–02[1]	2,906,287	2,621,534	284,753
2002–03	3,015,702	2,719,947	295,755
2003–04[1]	3,054,247	2,753,438	300,809
2004–05	3,106,499	2,799,250	307,249
2005–06[1]	3,119,294	2,815,544	303,750
2006–07	3,198,956	2,892,351	306,605
2007–08[1]	3,311,771	2,999,508	312,263
Projected			
2008–09	3,330,340	3,021,530	308,810
2009–10	3,321,380	3,013,400	307,980
2010–11	3,282,200	2,981,520	300,680
2011–12	3,220,050	2,926,440	293,610
2012–13	3,197,300	2,912,480	284,820
2013–14	3,153,500	2,874,500	279,000
2014–15	3,132,400	2,867,400	265,000
2015–16	3,164,790	2,904,410	260,380
2016–17	3,182,750	2,930,530	252,220
2017–18	3,231,350	2,983,130	248,220
2018–19	3,224,820	2,983,780	241,040
2019–20	3,182,520	2,950,880	231,640
2020–21	3,209,510	2,981,170	228,340

[1] Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS.
NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1996–97 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2007–08; and National Elementary and Secondary High School Graduates Model, 1972–73 through 2009–10. (This table was prepared January 2011.)

Table 13. Actual and projected numbers for public high school graduates, by race/ethnicity: School years 1995–96 through 2020–21

School year	Total	Race/ethnicity				
		White	Black	Hispanic	Asian/Pacific Islander	American Indian/ Alaska Native
Actual						
1995–96	2,273,109	1,639,420	294,253	218,785	99,189	21,463
1996–97	2,358,403	1,687,681	309,626	234,043	104,764	22,287
1997–98	2,439,050	1,733,478	317,846	252,023	112,089	23,614
1998–99	2,485,630	1,754,619	322,532	268,539	115,930	24,012
1999–2000	2,553,844	1,787,322	334,206	283,738	123,231	25,347
2000–01	2,569,200	1,782,292	336,375	297,696	126,847	25,988
2001–02	2,621,534	1,801,173	345,854	314,989	132,347	27,169
2002–03	2,719,947	1,857,957	359,051	339,555	135,614	27,773
2003–04	2,753,438	1,851,136	373,307	362,467	137,913	28,615
2004–05	2,799,250	1,856,758	385,180	382,964	143,751	30,595
2005–06	2,815,544	1,854,775	392,180	388,718	150,567	29,303
2006–07	2,892,351	1,883,601	412,640	410,443	154,871	30,795
2007–08	2,999,508	1,916,642	435,920	453,383	161,164	32,401
Projected						
2008–09	3,021,530	1,893,700	450,650	480,280	164,290	32,610
2009–10	3,013,400	1,860,090	457,100	496,670	166,920	32,630
2010–11	2,981,520	1,814,440	460,110	504,600	170,270	31,550
2011–12	2,926,440	1,769,560	448,240	504,270	173,650	30,160
2012–13	2,912,480	1,748,920	440,710	514,210	178,360	29,730
2013–14	2,874,500	1,721,130	421,800	515,800	185,000	29,810
2014–15	2,867,400	1,703,760	422,650	521,950	189,720	29,740
2015–16	2,904,410	1,713,770	432,320	532,280	192,750	31,050
2016–17	2,930,530	1,722,770	436,950	538,600	198,250	31,660
2017–18	2,983,130	1,733,340	443,330	550,950	216,160	31,740
2018–19	2,983,780	1,726,110	442,460	557,020	220,000	32,370
2019–20	2,950,880	1,695,060	436,690	554,700	227,000	31,960
2020–21	2,981,170	1,707,400	425,940	575,060	234,550	32,690

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. The historical racial/ethnic time-series were constructed using racial/ethnic high school graduate data at the state level. In some instances, high school graduate data by race/ethnicity had to be imputed. Further, in some instances, the racial/ethnic data had to be adjusted in order for them to sum to the state total for high school graduates. Race categories exclude persons of Hispanic ethnicity. For additional information see the High School Graduates section A.2 in appendix A. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1996–97 through 2008–09; and National Public Elementary and Secondary High School Graduates Model by Race/Ethnicity Model, 1972–73 through 2007–08. (This table was prepared January 2011.)

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Table 14. Actual and projected numbers for public high school graduates, by region and state: School years 2002–03 through 2020–21

	Actual						Projected			
Region and state	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12
United States	**2,719,947**	**2,753,438**	**2,799,250**	**2,815,544**	**2,892,351**	**2,999,508**	**3,021,530**	**3,013,400**	**2,981,520**	**2,926,440**
Northeast	477,241	485,670	503,528	521,015	536,697	552,289	545,240	540,220	528,450	518,650
Connecticut	33,667	34,573	35,515	36,222	37,541	38,419	38,340	37,750	37,130	36,220
Maine	12,947	13,278	13,077	12,950	13,151	14,350	13,570	13,970	13,280	13,200
Massachusetts	55,987	58,326	59,665	61,272	63,903	65,197	64,040	63,650	61,470	61,270
New Hampshire	13,210	13,309	13,775	13,988	14,452	14,982	14,440	14,480	13,890	13,680
New Jersey	81,391	83,826	86,502	90,049	93,013	94,994	95,510	94,660	94,480	93,790
New York	143,818	142,526	153,203	161,817	168,333	176,310	176,380	177,260	172,390	167,610
Pennsylvania	119,933	123,474	124,758	127,830	128,603	130,298	125,850	121,890	119,940	117,300
Rhode Island	9,318	9,258	9,881	10,108	10,384	10,347	10,140	9,480	9,330	9,290
Vermont	6,970	7,100	7,152	6,779	7,317	7,392	6,980	7,070	6,540	6,290
Midwest	673,248	680,178	676,786	684,049	702,987	721,220	724,990	715,570	711,730	690,710
Illinois	117,507	124,763	123,615	126,817	130,220	135,143	137,860	133,710	139,390	138,140
Indiana	57,897	56,008	55,444	57,920	59,887	61,901	63,020	62,440	61,860	61,650
Iowa	34,860	34,339	33,547	33,693	34,127	34,573	33,660	33,510	32,500	31,700
Kansas	29,963	30,155	30,355	29,818	30,139	30,737	29,950	30,060	29,520	29,370
Michigan	100,301	98,823	101,582	102,582	111,838	115,183	116,470	112,740	112,110	102,890
Minnesota	59,432	59,096	58,391	58,898	59,497	60,409	60,280	59,700	58,190	56,890
Missouri	56,925	57,983	57,841	58,417	60,275	61,717	62,300	63,720	62,130	59,220
Nebraska	20,161	20,309	19,940	19,764	19,873	20,035	20,260	20,070	19,660	19,120
North Dakota	8,169	7,888	7,555	7,192	7,159	6,999	6,960	6,780	6,650	6,320
Ohio	115,762	119,029	116,702	117,356	117,658	120,758	121,000	120,180	118,240	115,560
South Dakota	8,999	9,001	8,585	8,589	8,346	8,582	8,400	8,640	8,890	8,890
Wisconsin	63,272	62,784	63,229	63,003	63,968	65,183	64,830	64,040	62,600	60,960
South	930,476	946,808	953,206	962,327	986,801	1,031,610	1,046,660	1,051,540	1,045,530	1,023,570
Alabama	36,741	36,464	37,453	37,918	38,912	41,346	41,310	40,630	41,650	41,010
Arkansas	27,555	27,181	26,621	28,790	27,166	28,725	28,400	28,510	27,680	27,870
Delaware	6,817	6,951	6,934	7,275	7,205	7,388	7,820	8,140	8,000	8,110
District of Columbia	2,725	3,031	2,781	3,150	2,944	3,352	3,260	3,010	2,940	2,890
Florida	127,484	131,418	133,318	134,686	142,284	149,046	147,290	144,250	140,250	130,660
Georgia	66,890	68,550	70,834	73,498	77,829	83,505	84,160	85,370	85,600	83,900
Kentucky	37,654	37,787	38,399	38,449	39,099	39,339	41,480	40,980	40,900	39,620
Louisiana	37,610	37,019	36,009	33,275	34,274	34,401	34,190	34,570	32,620	33,260
Maryland	51,864	52,870	54,170	55,536	57,564	59,171	58,010	58,150	57,370	57,120
Mississippi	23,810	23,735	23,523	23,848	24,186	24,795	25,630	25,970	26,240	25,470
North Carolina	69,696	72,126	75,010	76,710	76,031	83,307	84,050	85,490	89,700	91,520
Oklahoma	36,694	36,799	36,227	36,497	37,100	37,630	37,230	38,110	37,040	36,850
South Carolina	32,482	33,235	33,439	34,970	35,108	35,140	37,690	38,590	38,270	37,350
Tennessee	44,113	46,096	47,967	50,880	54,502	57,486	60,410	58,180	57,600	56,280
Texas	238,111	244,165	239,717	240,485	241,193	252,121	259,190	265,660	263,680	257,550
Virginia	72,943	72,042	73,667	69,597	73,997	77,369	78,790	78,440	78,670	76,920
West Virginia	17,287	17,339	17,137	16,763	17,407	17,489	17,770	17,520	17,330	17,190
West	638,982	640,782	665,730	648,153	665,866	694,389	704,650	706,070	695,800	693,520
Alaska	7,297	7,236	6,909	7,361	7,666	7,855	7,700	8,360	7,780	7,590
Arizona	49,986	45,508	59,498	54,091	55,954	61,667	62,180	60,610	59,170	58,350
California	341,097	343,480	355,217	343,515	356,641	374,561	381,190	383,680	379,340	378,140
Colorado	42,379	44,777	44,532	44,424	45,628	46,082	46,620	47,740	47,400	47,740
Hawaii	10,013	10,324	10,813	10,922	11,063	11,613	11,700	10,700	11,130	10,930
Idaho	15,858	15,547	15,768	16,096	16,242	16,567	16,950	17,220	16,840	16,840
Montana	10,657	10,500	10,335	10,283	10,122	10,396	9,970	9,940	9,430	9,260
Nevada	16,378	15,201	15,740	16,455	16,455	17,149	18,300	18,540	18,810	19,450
New Mexico	16,923	17,892	17,353	17,822	16,131	18,264	18,480	18,130	18,160	18,370
Oregon	32,587	32,958	32,602	32,394	33,446	34,949	35,580	34,860	33,720	33,230
Utah	29,527	30,252	30,253	29,050	28,276	28,167	26,410	26,390	25,930	26,460
Washington	60,435	61,274	61,094	60,213	62,801	61,625	64,150	64,510	62,920	62,020
Wyoming	5,845	5,833	5,616	5,527	5,441	5,494	5,430	5,390	5,200	5,140

See notes at end of table.

Table 14. Actual and projected numbers for public high school graduates, by region and state: School years 2002–03 through 2020–21—Continued

Region and state	Projected—Continued								
	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	2019–20	2020–21
United States	**2,912,480**	**2,874,500**	**2,867,400**	**2,904,410**	**2,930,530**	**2,983,130**	**2,983,780**	**2,950,880**	**2,981,170**
Northeast	510,180	498,260	490,680	491,270	488,800	490,950	486,690	478,550	481,850
Connecticut	35,720	35,570	34,960	35,240	34,730	34,660	34,220	33,490	33,710
Maine	12,790	12,490	12,420	12,410	12,090	12,170	12,190	12,040	12,120
Massachusetts	60,960	59,600	58,950	59,820	58,940	59,120	58,710	58,010	58,080
New Hampshire	13,330	13,040	12,890	12,840	12,550	12,510	12,330	12,170	11,860
New Jersey	93,690	92,570	92,650	93,150	93,660	93,590	93,590	92,370	93,990
New York	164,990	159,810	156,470	155,680	154,460	155,810	153,360	151,430	151,970
Pennsylvania	113,860	110,860	108,220	108,020	109,290	109,910	108,570	105,500	106,440
Rhode Island	8,750	8,480	8,240	8,300	7,300	7,560	8,110	7,950	8,000
Vermont	6,100	5,850	5,870	5,800	5,780	5,610	5,610	5,590	5,690
Midwest	680,690	669,420	665,870	673,470	677,250	687,250	688,110	671,510	674,490
Illinois	135,760	133,480	131,960	133,230	135,210	137,280	136,900	132,280	134,050
Indiana	61,640	61,700	60,740	60,830	61,360	62,450	64,230	61,100	61,140
Iowa	31,090	31,040	31,230	31,670	32,090	32,590	32,560	32,540	32,970
Kansas	29,190	28,990	28,770	29,910	30,410	31,070	31,250	31,140	31,290
Michigan	101,800	98,550	97,590	97,830	96,950	97,240	95,600	91,670	90,100
Minnesota	55,790	55,100	55,610	56,040	56,770	58,150	59,370	58,130	59,900
Missouri	58,720	57,980	58,150	59,580	59,260	60,380	60,130	59,590	59,380
Nebraska	19,040	18,910	18,950	19,120	19,530	20,080	20,360	20,720	21,300
North Dakota	6,240	6,130	6,140	6,080	5,980	5,770	5,970	5,880	6,090
Ohio	112,870	109,890	109,450	111,190	111,250	112,410	112,310	109,370	108,920
South Dakota	9,020	8,830	8,910	8,820	8,880	9,110	9,010	9,330	9,560
Wisconsin	59,540	58,830	58,370	59,190	59,570	60,730	60,440	59,780	59,810
South	1,029,680	1,019,970	1,028,350	1,050,110	1,068,770	1,097,710	1,102,230	1,095,210	1,103,230
Alabama	40,050	39,190	39,640	40,710	41,280	42,070	41,710	40,160	39,960
Arkansas	27,450	27,530	28,030	28,420	29,010	29,190	29,720	29,550	29,330
Delaware	7,730	7,760	7,810	7,980	8,330	8,450	8,550	8,430	8,770
District of Columbia	2,650	2,470	2,400	2,370	2,210	2,290	2,170	1,980	2,180
Florida	135,240	132,140	133,320	131,250	132,820	133,460	132,700	129,070	127,850
Georgia	83,450	83,440	83,400	86,210	87,850	90,010	91,050	89,690	89,960
Kentucky	39,770	39,290	39,280	40,550	40,830	40,900	40,870	41,190	41,340
Louisiana	33,620	33,880	31,220	33,340	33,990	34,960	34,210	33,510	33,670
Maryland	55,700	54,220	53,520	53,340	52,310	53,860	52,880	54,940	54,730
Mississippi	25,430	24,390	24,080	24,400	25,000	26,080	25,440	24,560	25,150
North Carolina	88,820	87,750	89,750	93,160	96,030	99,290	100,690	98,700	98,700
Oklahoma	36,280	36,140	36,610	38,170	38,490	39,240	39,460	39,460	39,540
South Carolina	36,960	36,190	36,560	37,810	38,670	39,960	40,070	39,090	39,030
Tennessee	57,280	56,200	56,990	58,710	60,080	60,660	60,880	60,170	59,840
Texas	266,010	267,820	274,970	280,660	288,320	301,180	305,530	308,140	316,560
Virginia	76,100	74,960	74,190	76,110	76,700	78,650	79,120	79,050	79,270
West Virginia	17,140	16,600	16,590	16,930	16,880	17,480	17,210	17,530	17,380
West	691,930	686,850	682,500	689,570	695,710	707,220	706,750	705,610	721,610
Alaska	7,380	7,240	7,190	7,270	7,580	7,770	7,850	7,770	7,950
Arizona	59,250	59,760	60,940	62,400	64,760	66,430	67,690	67,760	68,930
California	375,370	368,770	361,470	360,220	357,590	361,940	357,090	354,850	364,000
Colorado	47,960	48,360	48,900	50,460	51,770	53,800	54,820	55,500	56,760
Hawaii	10,310	10,720	10,120	10,280	10,300	10,590	10,010	10,460	10,790
Idaho	16,940	17,460	17,060	17,590	18,340	18,450	19,010	19,080	19,150
Montana	9,020	9,010	8,880	8,990	9,060	9,020	9,170	9,210	9,210
Nevada	19,610	19,880	19,860	20,670	21,570	22,380	22,730	22,590	22,470
New Mexico	17,570	17,150	17,490	17,620	18,080	18,290	18,680	18,680	19,040
Oregon	33,600	33,630	33,580	34,350	34,780	34,820	34,800	34,570	34,780
Utah	27,390	27,970	29,070	30,450	31,450	32,260	32,850	33,420	35,540
Washington	62,550	61,780	62,680	63,780	64,850	65,730	66,180	65,650	66,650
Wyoming	4,980	5,130	5,260	5,500	5,590	5,750	5,890	6,070	6,340

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of public high school graduates by state and region can be found in table A-10, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2003–04 through 2008–09; and State Public High School Graduates Model, 1980–81 through 2007–08. (This table was prepared January 2011.)

Table 15. Actual and projected percentage changes in public high school graduates, by region and state: Selected school years, 2002–03 through 2020–21

Region and state	Actual 2002–03 to 2007–08	Projected		
		2007–08 to 2014–15	2014–15 to 2020–21	2007–08 to 2020–21
United States	**10.3**	**-4.4**	**4.0**	**-0.6**
Northeast	15.7	-11.2	-1.8	-12.8
Connecticut	14.1	-9.0	-3.6	-12.3
Maine	10.8	-13.4	-2.4	-15.5
Massachusetts	16.5	-9.6	-1.5	-10.9
New Hampshire	13.4	-14.0	-8.0	-20.8
New Jersey	16.7	-2.5	1.4	-1.1
New York	22.6	-11.3	-2.9	-13.8
Pennsylvania	8.6	-16.9	-1.6	-18.3
Rhode Island	11.0	-20.4	-2.9	-22.7
Vermont	6.1	-20.6	-3.1	-23.0
Midwest	7.1	-7.7	1.3	-6.5
Illinois	15.0	-2.4	1.6	-0.8
Indiana	6.9	-1.9	0.7	-1.2
Iowa	-0.8	-9.7	5.6	-4.6
Kansas	2.6	-6.4	8.8	1.8
Michigan	14.8	-15.3	-7.7	-21.8
Minnesota	1.6	-7.9	7.7	-0.8
Missouri	8.4	-5.8	2.1	-3.8
Nebraska	-0.6	-5.4	12.4	6.3
North Dakota	-14.3	-12.3	-0.8	-13.0
Ohio	4.3	-9.4	-0.5	-9.8
South Dakota	-4.6	3.8	7.3	11.4
Wisconsin	3.0	-10.5	2.5	-8.2
South	10.9	-0.3	7.3	6.9
Alabama	12.5	-4.1	0.8	-3.4
Arkansas	4.2	-2.4	4.6	2.1
Delaware	8.4	5.7	12.3	18.7
District of Columbia	23.0	-28.4	-9.2	-35.0
Florida	16.9	-10.6	-4.1	-14.2
Georgia	24.8	-0.1	-4.1	7.7
Kentucky	4.5	-0.1	5.2	5.1
Louisiana	-8.5	-9.2	7.8	-2.1
Maryland	14.1	-9.6	2.3	-7.5
Mississippi	4.1	-2.9	4.4	1.4
North Carolina	19.5	7.7	10.0	18.5
Oklahoma	2.6	-2.7	8.0	5.1
South Carolina	8.2	4.0	6.8	11.1
Tennessee	30.3	-0.9	5.0	4.1
Texas	5.9	9.1	15.1	25.6
Virginia	6.1	-4.1	6.8	2.5
West Virginia	1.2	-5.1	4.8	-0.6
West	8.7	-1.7	5.7	3.9
Alaska	7.6	-8.5	10.6	1.2
Arizona	23.4	-1.2	13.1	11.8
California	9.8	-3.5	0.7	-2.8
Colorado	8.7	6.1	16.1	23.2
Hawaii	16.0	-12.9	6.6	-7.1
Idaho	4.5	3.0	12.3	15.6
Montana	-2.4	-14.6	3.7	-11.4
Nevada	4.7	15.8	13.1	31.0
New Mexico	7.9	-4.2	8.9	4.2
Oregon	7.2	-3.9	3.6	-0.5
Utah	-4.6	3.2	22.3	26.2
Washington	2.0	1.7	6.3	8.2
Wyoming	-6.0	-4.3	20.5	15.4

NOTE: Calculations are based on unrounded numbers. Mean absolute percentage errors of public high school graduates by state and region can be found in table A-10, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2003–04 and 2008–09; and State Public High School Graduates Model, 1980–81 through 2007–08. (This table was prepared January 2011.)

Table 16. Actual and projected numbers for elementary and secondary teachers and elementary and secondary new teacher hires, by control of school: Fall 1995 through fall 2020

[In thousands]

Year	Number of teachers			Number of new teacher hires		
		Control			Control	
	Total	Public	Private	Total	Public	Private
Actual						
1995	2,974	2,598	376	—	—	—
1996[1]	3,051	2,667	384	—	—	—
1997	3,138	2,746	391	—	—	—
1998[1]	3,230	2,830	400	—	—	—
1999	3,319	2,911	408	305	222	83
2000[1]	3,366	2,941	424	—	—	—
2001	3,440	3,000	441	—	—	—
2002[1]	3,476	3,034	442	—	—	—
2003	3,490	3,049	441	311	236	74
2004[1]	3,536	3,091	445	—	—	—
2005	3,593	3,143	450	—	—	—
2006[1]	3,619	3,166	453	—	—	—
2007	3,634	3,178	456	327	246	80
2008[1,2]	3,670	3,222	448	388	313	76
Projected						
2009[3]	3,644	3,207	437	353	284	69
2010	3,668	3,240	428	402	333	69
2011	3,679	3,253	426	393	319	74
2012	3,696	3,274	422	400	328	72
2013	3,725	3,306	419	414	342	72
2014	3,752	3,334	419	415	341	74
2015	3,782	3,364	418	419	345	74
2016	3,814	3,395	419	424	349	75
2017	3,846	3,425	420	425	349	76
2018	3,876	3,454	422	427	350	77
2019	3,910	3,485	425	432	354	78
2020	3,939	3,510	429	429	350	79

— Not available.

[1] Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS.

[2] Public and private new teacher hire numbers are estimated using the New Teacher Hires Model. For more information about the New Teacher Hires Model, see appendix A-3.

3 The private school teacher number is an actual number from the 2009–10 PSS.

NOTE: Number of teachers reported in full-time equivalents. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2009–10; Schools and Staffing Survey (SASS), "Public School Teacher Questionnaire," 1999–2000 through 2007–08 and "Private School Teacher Questionnaire," 1999–2000 through 2007–08; Elementary and Secondary Teacher Model, 1973–2009; and New Teacher Hires Model, 1988–2007. (This table was prepared April 2011.)

Table 17. Actual and projected numbers for the pupil/teacher ratios in elementary and secondary schools, by control of school: Fall 1995 through fall 2020

Year	Total	Public	Private
Actual			
1995	17.1	17.3	15.7
1996[1]	16.9	17.1	15.5
1997	16.6	16.8	15.2
1998[1]	16.3	16.4	15.0
1999	15.9	16.1	14.7
2000[1]	15.9	16.0	14.5
2001	15.7	15.9	14.3
2002[1]	15.7	15.9	14.1
2003	15.7	15.9	13.8
2004[1]	15.5	15.8	13.7
2005	15.4	15.6	13.5
2006[1]	15.3	15.6	13.2
2007	15.2	15.5	13.0
2008[1]	15.0	15.3	12.8
Projected			
2009[2]	15.0	15.4	12.5
2010	14.9	15.2	12.6
2011	14.9	15.2	12.5
2012	14.9	15.2	12.5
2013	14.8	15.1	12.4
2014	14.8	15.1	12.4
2015	14.8	15.1	12.4
2016	14.7	15.0	12.4
2017	14.7	15.0	12.3
2018	14.7	15.0	12.3
2019	14.7	15.0	12.3
2020	14.7	15.0	12.3

[1] Since the biennial Private School Universe Survey (PSS) is collected in the fall of odd numbered years, private school numbers for alternate years are estimated based on data from the PSS.
[2] The private school teacher number is an actual number from the 2009–10 PSS.
NOTE: The pupil/teacher ratios were derived from tables 1 and 16. Teachers reported in full-time equivalents. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; Private School Universe Survey (PSS), selected years, 1995–96 through 2009–10; National Elementary and Secondary Enrollment Model, 1972–2008; and Elementary and Secondary Teacher Model, 1973–2009. (This table was prepared February 2011.)

Table 18. Actual and projected numbers for current expenditures and current expenditures per pupil in fall enrollment for public elementary and secondary education: School years 1995–96 through 2020–21

School year	Fall enrollment (in thousands)	Current expenditures: Constant 2008–09 dollars[1] Total (in billions)	Current expenditures: Constant 2008–09 dollars[1] Per pupil in fall enrollment	Current expenditures: Current dollars Total (in billions)	Current expenditures: Current dollars Per pupil in fall enrollment
Actual					
1995–96	44,840	$354.3	$7,902	$255.1	$5,689
1996–97	45,611	364.9	8,000	270.2	5,923
1997–98	46,127	378.8	8,211	285.5	6,189
1998–99	46,539	395.0	8,488	302.9	6,508
1999–2000	46,857	410.6	8,762	323.9	6,912
2000–01	47,204	427.0	9,047	348.4	7,380
2001–02	47,672	443.7	9,308	368.4	7,727
2002–03	48,183	456.8	9,480	387.6	8,044
2003–04	48,540	465.1	9,583	403.4	8,310
2004–05	48,795	475.8	9,751	425.0	8,711
2005–06	49,113	484.5	9,865	449.1	9,145
2006–07[2]	49,262	501.3	10,165	476.8	9,669
2007–08[2]	49,221	513.8	10,439	506.8	10,297
Projected					
2008–09[3]	49,265	513.1	10,414	513.1	10,414
2009–10	49,282	511.4	10,377	516.6	10,482
2010–11	49,306	514.0	10,425	526.1	10,670
2011–12	49,422	515.4	10,428	536.5	10,855
2012–13	49,642	518.0	10,434	550.1	11,081
2013–14	49,914	525.3	10,524	569.5	11,410
2014–15	50,268	540.9	10,760	—	—
2015–16	50,659	556.6	10,987	—	—
2016–17	51,038	571.9	11,206	—	—
2017–18	51,430	585.7	11,389	—	—
2018–19	51,803	599.2	11,567	—	—
2019–20	52,204	614.1	11,764	—	—
2020–21	52,666	627.0	11,905	—	—

— Not available.
[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. For more detail about CPI, see table B-6 in appendix B.
[2] Fall enrollment pertains only to students for whom finance data were collected. This enrollment count differs slightly from enrollment counts reported on other tables.
[3] The fall enrollment number for 2008–09 is an actual number.
NOTE: Calculations were made using unrounded numbers. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; "National Public Education Financial Survey," 1995–96 through 2007–08; National Elementary and Secondary Enrollment Model, 1972–2008; and Elementary and Secondary Education Current Expenditures Model, 1969–70 through 2007–08. (This table was prepared February 2011.)

Table 19. Actual and projected numbers for current expenditures and current expenditures per pupil in average daily attendance (ADA) for public elementary and secondary education: School years 1995–96 through 2020–21

School year	ADA (in thousands)	Current expenditures			
		Constant 2008–09 dollars[1]		Current dollars	
		Total (in billions)	Per pupil in ADA	Total (in billions)	Per pupil in ADA
Actual					
1995–96	41,502	$354.3	$8,538	$255.1	$6,147
1996–97	42,262	364.9	8,634	270.2	6,393
1997–98	42,766	378.8	8,857	285.5	6,676
1998–99	43,187	395.0	9,146	302.9	7,013
1999–2000	43,807	410.6	9,372	323.9	7,394
2000–01	44,076	427.0	9,688	348.4	7,904
2001–02	44,605	443.7	9,948	368.4	8,259
2002–03	45,017	456.8	10,147	387.6	8,610
2003–04	45,326	465.1	10,262	403.4	8,900
2004–05	45,625	475.8	10,429	425.0	9,316
2005–06	45,932	484.5	10,548	449.1	9,778
2006–07	46,128	501.3	10,868	476.8	10,337
2007–08	46,156	513.8	11,132	506.8	10,981
Projected					
2008–09	46,025	513.1	11,147	513.1	11,147
2009–10	46,041	511.4	11,107	516.6	11,220
2010–11	46,063	514.0	11,159	526.1	11,421
2011–12	46,172	515.4	11,162	536.5	11,619
2012–13	46,377	518.0	11,169	550.1	11,861
2013–14	46,631	525.3	11,265	569.5	12,213
2014–15	46,962	540.9	11,517	—	—
2015–16	47,328	556.6	11,761	—	—
2016–17	47,681	571.9	11,995	—	—
2017–18	48,048	585.7	12,190	—	—
2018–19	48,396	599.2	12,381	—	—
2019–20	48,771	614.1	12,592	—	—
2020–21	49,202	627.0	12,743	—	—

— Not available.
[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. For more detail about CPI, see table B-6 in appendix B.
NOTE: Calculations were made using unrounded numbers. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "National Public Education Financial Survey," 1995–96 through 2007–08; National Elementary and Secondary Average Daily Attendance Model, 1994–95 through 2007–08; and Elementary and Secondary Education Current Expenditures Model, 1969–70 through 2007–08. (This table was prepared February 2011.)

Table 20. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions, by sex, attendance status, and control of institution: Fall 1995 through fall 2020

[In thousands]

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
Actual							
1995	14,262	6,343	7,919	8,129	6,133	11,092	3,169
1996	14,368	6,353	8,015	8,303	6,065	11,121	3,247
1997	14,502	6,396	8,106	8,438	6,064	11,196	3,306
1998	14,507	6,369	8,138	8,563	5,944	11,138	3,369
1999	14,791	6,491	8,301	8,786	6,005	11,309	3,482
2000	15,312	6,722	8,591	9,010	6,303	11,753	3,560
2001	15,928	6,961	8,967	9,448	6,480	12,233	3,695
2002	16,612	7,202	9,410	9,946	6,665	12,752	3,860
2003	16,911	7,260	9,651	10,326	6,585	12,859	4,053
2004	17,272	7,387	9,885	10,610	6,662	12,980	4,292
2005	17,487	7,456	10,032	10,797	6,690	13,022	4,466
2006	17,759	7,575	10,184	10,957	6,802	13,180	4,579
2007	18,248	7,816	10,432	11,270	6,978	13,491	4,757
2008	19,103	8,189	10,914	11,748	7,355	13,972	5,131
2009	20,428	8,770	11,658	12,723	7,705	14,811	5,617
Projected							
2010	20,582	8,862	11,720	12,784	7,798	14,926	5,657
2011	20,688	8,896	11,793	12,854	7,835	14,998	5,691
2012	20,727	8,894	11,833	12,856	7,872	15,023	5,704
2013	20,948	8,941	12,008	12,961	7,987	15,180	5,769
2014	21,320	9,028	12,291	13,158	8,162	15,445	5,875
2015	21,651	9,100	12,551	13,329	8,322	15,682	5,970
2016	21,968	9,172	12,796	13,493	8,475	15,909	6,059
2017	22,251	9,239	13,013	13,641	8,610	16,115	6,137
2018	22,546	9,313	13,233	13,801	8,745	16,330	6,217
2019	22,821	9,390	13,431	13,967	8,854	16,532	6,290
2020	23,016	9,450	13,566	14,089	8,927	16,676	6,340

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table 21. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions, by age group, sex, and attendance status: Fall 1995 through fall 2020

[In thousands]

Age group, sex, and attendance status	Actual												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total enrollment	**14,262**	**14,368**	**14,502**	**14,507**	**14,791**	**15,312**	**15,928**	**16,612**	**16,911**	**17,272**	**17,487**	**17,759**	**18,248**
14 to 17 years old	171	183	174	142	137	140	161	162	184	184	210	204	202
18 and 19 years old	2,893	3,001	3,164	3,251	3,461	3,473	3,561	3,525	3,542	3,560	3,640	3,777	3,912
20 and 21 years old	2,680	2,752	2,782	2,876	2,954	3,104	3,291	3,405	3,519	3,634	3,676	3,717	3,751
22 to 24 years old	2,397	2,396	2,406	2,416	2,462	2,602	2,769	3,079	3,137	3,211	3,104	3,191	3,310
25 to 29 years old	2,074	2,078	2,051	1,944	1,914	1,963	2,023	2,130	2,195	2,306	2,397	2,421	2,561
30 to 34 years old	1,282	1,177	1,171	1,145	1,181	1,244	1,284	1,358	1,333	1,354	1,365	1,391	1,422
35 years old and over	2,765	2,780	2,754	2,733	2,683	2,786	2,839	2,954	3,001	3,022	3,095	3,058	3,091
Men	**6,343**	**6,353**	**6,396**	**6,369**	**6,491**	**6,722**	**6,961**	**7,202**	**7,260**	**7,387**	**7,456**	**7,575**	**7,816**
14 to 17 years old	71	69	65	56	61	63	66	65	73	73	79	78	86
18 and 19 years old	1,329	1,363	1,443	1,470	1,570	1,559	1,608	1,590	1,580	1,569	1,608	1,690	1,767
20 and 21 years old	1,255	1,293	1,327	1,367	1,392	1,427	1,522	1,545	1,602	1,672	1,727	1,680	1,711
22 to 24 years old	1,185	1,175	1,172	1,136	1,160	1,234	1,315	1,430	1,427	1,453	1,401	1,451	1,499
25 to 29 years old	960	975	961	917	863	895	890	941	956	991	1,024	1,016	1,110
30 to 34 years old	545	493	462	474	488	530	527	567	550	550	539	586	598
35 years old and over	997	984	967	950	956	1,014	1,032	1,065	1,072	1,080	1,078	1,073	1,045
Women	**7,919**	**8,015**	**8,106**	**8,138**	**8,301**	**8,591**	**8,967**	**9,410**	**9,651**	**9,885**	**10,032**	**10,184**	**10,432**
14 to 17 years old	99	114	110	86	76	77	95	97	111	111	131	125	116
18 and 19 years old	1,564	1,638	1,720	1,782	1,890	1,914	1,953	1,935	1,962	1,991	2,031	2,087	2,145
20 and 21 years old	1,425	1,459	1,455	1,509	1,562	1,677	1,769	1,860	1,916	1,963	1,949	2,037	2,040
22 to 24 years old	1,213	1,221	1,234	1,280	1,302	1,368	1,453	1,649	1,710	1,759	1,703	1,740	1,811
25 to 29 years old	1,114	1,103	1,090	1,028	1,050	1,068	1,133	1,189	1,240	1,315	1,373	1,405	1,451
30 to 34 years old	737	684	709	670	693	714	757	791	782	804	826	805	825
35 years old and over	1,768	1,796	1,787	1,783	1,727	1,772	1,807	1,889	1,930	1,942	2,018	1,984	2,046
Full-time, total	**8,129**	**8,303**	**8,438**	**8,563**	**8,786**	**9,010**	**9,448**	**9,946**	**10,326**	**10,610**	**10,797**	**10,957**	**11,270**
14 to 17 years old	134	138	127	114	117	124	136	135	150	139	155	150	161
18 and 19 years old	2,402	2,501	2,619	2,704	2,882	2,859	2,932	2,924	2,992	3,006	3,065	3,181	3,301
20 and 21 years old	2,114	2,179	2,211	2,301	2,354	2,434	2,618	2,719	2,845	2,897	2,951	2,991	3,036
22 to 24 years old	1,543	1,571	1,594	1,611	1,618	1,690	1,765	1,947	2,041	2,113	2,095	2,096	2,182
25 to 29 years old	889	902	907	877	860	880	920	1,023	1,069	1,127	1,170	1,193	1,257
30 to 34 years old	416	395	379	360	368	420	456	505	486	523	552	563	540
35 years old and over	630	617	601	597	587	603	620	694	744	805	809	782	793
Men	**3,807**	**3,851**	**3,890**	**3,934**	**4,026**	**4,111**	**4,300**	**4,501**	**4,638**	**4,739**	**4,803**	**4,879**	**5,029**
14 to 17 years old	59	58	53	49	53	53	53	52	60	50	55	53	70
18 and 19 years old	1,094	1,122	1,175	1,202	1,275	1,255	1,302	1,312	1,332	1,324	1,356	1,420	1,494
20 and 21 years old	993	1,015	1,053	1,104	1,130	1,133	1,217	1,241	1,304	1,353	1,392	1,366	1,383
22 to 24 years old	811	807	800	783	795	829	872	945	970	988	972	984	1,032
25 to 29 years old	445	458	448	441	406	419	426	477	492	491	503	530	561
30 to 34 years old	171	162	149	151	154	191	196	221	206	229	224	235	224
35 years old and over	234	229	213	203	213	233	235	252	274	305	301	292	266
Women	**4,321**	**4,452**	**4,548**	**4,630**	**4,761**	**4,899**	**5,148**	**5,445**	**5,688**	**5,871**	**5,994**	**6,078**	**6,240**
14 to 17 years old	75	80	74	65	64	72	83	82	90	89	100	97	91
18 and 19 years old	1,308	1,379	1,444	1,502	1,607	1,604	1,630	1,612	1,659	1,682	1,709	1,761	1,807
20 and 21 years old	1,121	1,163	1,158	1,197	1,224	1,302	1,400	1,477	1,541	1,544	1,559	1,625	1,653
22 to 24 years old	732	765	794	828	823	861	894	1,001	1,071	1,125	1,123	1,112	1,149
25 to 29 years old	444	444	458	436	454	461	494	546	577	636	667	663	696
30 to 34 years old	245	233	230	209	214	229	260	284	280	294	328	329	316
35 years old and over	396	387	389	394	375	370	386	443	470	501	507	491	528

See notes at end of table.

Table 21. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions, by age group, sex, and attendance status: Fall 1995 through fall 2020—Continued

[In thousands]

Age group, sex, and attendance status	Actual		Projected										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total enrollment	**19,103**	**20,428**	**20,582**	**20,688**	**20,727**	**20,948**	**21,320**	**21,651**	**21,968**	**22,251**	**22,546**	**22,821**	**23,016**
14 to 17 years old	190	209	206	204	202	203	206	211	217	223	232	234	237
18 and 19 years old	4,015	4,295	4,341	4,295	4,244	4,232	4,264	4,282	4,305	4,364	4,441	4,556	4,648
20 and 21 years old	3,881	4,123	4,243	4,308	4,277	4,259	4,263	4,278	4,305	4,303	4,310	4,350	4,399
22 to 24 years old	3,485	3,682	3,713	3,771	3,860	3,958	4,044	4,083	4,098	4,106	4,113	4,100	4,083
25 to 29 years old	2,748	2,971	2,975	2,980	2,987	3,043	3,146	3,264	3,372	3,456	3,514	3,528	3,503
30 to 34 years old	1,512	1,617	1,624	1,669	1,703	1,751	1,807	1,853	1,894	1,930	1,969	2,006	2,041
35 years old and over	3,273	3,531	3,480	3,461	3,453	3,501	3,590	3,681	3,777	3,869	3,967	4,046	4,105
Men	**8,189**	**8,770**	**8,862**	**8,896**	**8,894**	**8,941**	**9,028**	**9,100**	**9,172**	**9,239**	**9,313**	**9,390**	**9,450**
14 to 17 years old	90	104	98	97	96	96	96	97	100	102	105	106	107
18 and 19 years old	1,801	1,895	1,910	1,887	1,863	1,852	1,860	1,861	1,865	1,888	1,917	1,963	2,002
20 and 21 years old	1,797	1,951	1,989	2,014	1,995	1,981	1,975	1,974	1,980	1,972	1,970	1,985	2,006
22 to 24 years old	1,577	1,665	1,700	1,724	1,763	1,799	1,825	1,831	1,829	1,825	1,821	1,809	1,798
25 to 29 years old	1,178	1,327	1,333	1,333	1,332	1,346	1,377	1,415	1,451	1,477	1,494	1,494	1,479
30 to 34 years old	641	663	684	701	713	728	743	754	763	772	781	791	802
35 years old and over	1,105	1,165	1,148	1,140	1,133	1,140	1,153	1,167	1,184	1,203	1,225	1,243	1,257
Women	**10,914**	**11,658**	**11,720**	**11,793**	**11,833**	**12,008**	**12,291**	**12,551**	**12,796**	**13,013**	**13,233**	**13,431**	**13,566**
14 to 17 years old	100	105	108	107	107	108	110	113	118	121	127	128	130
18 and 19 years old	2,214	2,400	2,431	2,408	2,381	2,380	2,404	2,421	2,439	2,476	2,524	2,593	2,647
20 and 21 years old	2,084	2,172	2,255	2,294	2,282	2,279	2,289	2,304	2,325	2,331	2,340	2,365	2,394
22 to 24 years old	1,908	2,017	2,012	2,047	2,098	2,159	2,219	2,251	2,269	2,281	2,292	2,291	2,285
25 to 29 years old	1,570	1,644	1,641	1,647	1,655	1,697	1,769	1,848	1,921	1,978	2,020	2,035	2,024
30 to 34 years old	871	954	940	969	991	1,024	1,064	1,099	1,131	1,159	1,189	1,215	1,238
35 years old and over	2,167	2,366	2,333	2,322	2,320	2,361	2,437	2,514	2,593	2,666	2,742	2,804	2,848
Full-time, total	**11,748**	**12,723**	**12,784**	**12,854**	**12,856**	**12,961**	**13,158**	**13,329**	**13,493**	**13,641**	**13,801**	**13,967**	**14,089**
14 to 17 years old	156	171	169	167	166	167	169	174	179	184	192	194	196
18 and 19 years old	3,398	3,664	3,705	3,667	3,623	3,614	3,645	3,663	3,685	3,738	3,805	3,905	3,984
20 and 21 years old	3,120	3,342	3,417	3,470	3,444	3,432	3,438	3,454	3,479	3,480	3,487	3,520	3,560
22 to 24 years old	2,336	2,561	2,542	2,584	2,646	2,711	2,769	2,797	2,810	2,818	2,825	2,815	2,803
25 to 29 years old	1,323	1,425	1,435	1,439	1,441	1,469	1,522	1,582	1,637	1,680	1,710	1,717	1,704
30 to 34 years old	550	588	592	609	621	638	660	678	694	708	722	736	748
35 years old and over	864	971	924	919	916	929	955	981	1,008	1,034	1,061	1,081	1,096
Men	**5,234**	**5,671**	**5,689**	**5,709**	**5,705**	**5,730**	**5,787**	**5,834**	**5,883**	**5,927**	**5,978**	**6,036**	**6,085**
14 to 17 years old	67	77	73	72	72	72	72	74	75	77	80	80	81
18 and 19 years old	1,545	1,645	1,646	1,626	1,606	1,598	1,607	1,610	1,616	1,637	1,664	1,705	1,739
20 and 21 years old	1,441	1,553	1,574	1,594	1,579	1,570	1,568	1,571	1,578	1,574	1,574	1,588	1,605
22 to 24 years old	1,095	1,212	1,220	1,237	1,266	1,293	1,313	1,320	1,322	1,322	1,321	1,314	1,307
25 to 29 years old	573	617	624	624	623	631	648	669	689	704	714	715	709
30 to 34 years old	238	266	263	269	274	280	288	293	299	303	308	312	317
35 years old and over	275	301	288	285	284	286	291	297	303	309	316	322	326
Women	**6,513**	**7,052**	**7,095**	**7,145**	**7,151**	**7,232**	**7,371**	**7,495**	**7,610**	**7,714**	**7,824**	**7,931**	**8,004**
14 to 17 years old	89	94	95	94	94	95	97	100	104	107	112	113	115
18 and 19 years old	1,853	2,019	2,059	2,040	2,017	2,017	2,038	2,053	2,069	2,101	2,141	2,200	2,244
20 and 21 years old	1,679	1,789	1,843	1,875	1,865	1,862	1,871	1,884	1,901	1,905	1,912	1,932	1,955
22 to 24 years old	1,241	1,350	1,322	1,346	1,379	1,419	1,456	1,477	1,488	1,496	1,503	1,501	1,496
25 to 29 years old	750	808	811	815	817	838	874	912	948	976	995	1,001	994
30 to 34 years old	312	322	329	340	347	358	372	384	395	404	415	423	430
35 years old and over	589	670	636	634	632	643	664	684	705	725	745	760	770

See notes at end of table.

Table 21. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions, by age group, sex, and attendance status: Fall 1995 through fall 2020—Continued

[In thousands]

Age group, sex, and attendance status	Actual												
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Part-time, total	**6,133**	**6,065**	**6,064**	**5,944**	**6,005**	**6,303**	**6,480**	**6,665**	**6,585**	**6,662**	**6,690**	**6,802**	**6,978**
14 to 17 years old	36	45	47	28	20	16	25	28	34	45	55	53	41
18 and 19 years old	491	500	545	547	578	614	629	601	550	554	574	596	610
20 and 21 years old	566	573	571	575	600	670	674	686	674	737	725	726	715
22 to 24 years old	854	825	812	805	845	912	1,003	1,132	1,097	1,098	1,009	1,096	1,128
25 to 29 years old	1,184	1,176	1,144	1,067	1,054	1,083	1,103	1,107	1,126	1,179	1,227	1,228	1,304
30 to 34 years old	866	782	793	785	812	825	828	852	847	832	814	828	882
35 years old and over	2,135	2,164	2,153	2,136	2,096	2,184	2,219	2,260	2,258	2,217	2,287	2,275	2,297
Men	**2,535**	**2,502**	**2,506**	**2,436**	**2,465**	**2,611**	**2,661**	**2,701**	**2,622**	**2,648**	**2,653**	**2,695**	**2,786**
14 to 17 years old	13	11	11	7	8	10	13	12	13	23	24	25	17
18 and 19 years old	235	241	268	267	295	304	307	278	248	245	252	270	273
20 and 21 years old	262	277	274	262	262	294	305	304	298	319	335	314	328
22 to 24 years old	373	369	372	353	365	405	444	485	457	465	429	467	467
25 to 29 years old	515	517	513	476	457	476	464	464	463	500	521	486	549
30 to 34 years old	375	331	313	323	334	339	331	346	344	322	315	351	373
35 years old and over	763	755	754	747	743	782	797	813	798	775	776	781	779
Women	**3,598**	**3,563**	**3,559**	**3,508**	**3,540**	**3,692**	**3,820**	**3,964**	**3,963**	**4,014**	**4,038**	**4,106**	**4,192**
14 to 17 years old	24	34	36	22	12	5	11	15	21	22	31	28	24
18 and 19 years old	256	259	276	280	283	310	323	323	302	310	322	326	337
20 and 21 years old	304	295	297	313	338	376	369	382	375	419	390	412	387
22 to 24 years old	481	456	441	452	479	507	559	647	639	633	580	628	662
25 to 29 years old	670	659	632	591	596	607	639	643	663	679	706	742	755
30 to 34 years old	491	451	480	461	479	485	496	507	502	510	499	477	509
35 years old and over	1,372	1,409	1,398	1,389	1,353	1,402	1,422	1,447	1,460	1,441	1,511	1,494	1,518

See notes at end of table.

Table 21. Actual and projected numbers for total enrollment in all postsecondary degree-granting institutions, by age group, sex, and attendance status: Fall 1995 through fall 2020—Continued

[In thousands]

Age group, sex, and attendance status	Actual		Projected										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Part-time, total	**7,355**	**7,705**	**7,798**	**7,835**	**7,872**	**7,987**	**8,162**	**8,322**	**8,475**	**8,610**	**8,745**	**8,854**	**8,927**
14 to 17 years old	33	38	37	37	36	36	37	37	38	39	40	41	41
18 and 19 years old	616	631	636	629	621	617	619	619	619	626	636	651	665
20 and 21 years old	761	781	826	838	833	827	825	824	826	824	823	830	839
22 to 24 years old	1,149	1,121	1,171	1,187	1,215	1,247	1,275	1,285	1,288	1,288	1,289	1,285	1,280
25 to 29 years old	1,425	1,546	1,539	1,542	1,546	1,574	1,624	1,682	1,735	1,776	1,804	1,812	1,799
30 to 34 years old	962	1,029	1,032	1,060	1,083	1,113	1,147	1,175	1,200	1,222	1,247	1,271	1,293
35 years old and over	2,409	2,560	2,557	2,542	2,537	2,572	2,635	2,700	2,768	2,835	2,906	2,965	3,009
Men	**2,955**	**3,099**	**3,172**	**3,186**	**3,189**	**3,211**	**3,242**	**3,266**	**3,289**	**3,312**	**3,336**	**3,354**	**3,365**
14 to 17 years old	23	27	24	24	24	24	24	24	24	25	25	26	26
18 and 19 years old	256	250	264	261	257	254	253	251	249	251	253	258	262
20 and 21 years old	356	398	414	420	415	411	407	404	402	398	396	397	401
22 to 24 years old	482	454	480	486	496	506	512	511	507	503	500	495	491
25 to 29 years old	604	710	709	709	709	715	729	746	761	773	780	778	770
30 to 34 years old	403	397	420	431	439	447	455	460	465	468	473	479	485
35 years old and over	830	864	860	854	850	853	862	870	881	894	909	921	931
Women	**4,401**	**4,606**	**4,625**	**4,648**	**4,682**	**4,776**	**4,921**	**5,056**	**5,185**	**5,299**	**5,409**	**5,500**	**5,562**
14 to 17 years old	11	11	13	13	13	13	13	13	14	14	15	15	15
18 and 19 years old	361	381	372	368	364	363	366	368	370	375	382	393	403
20 and 21 years old	405	382	412	418	417	416	418	420	424	426	427	433	439
22 to 24 years old	667	667	691	701	718	741	763	774	781	785	789	790	789
25 to 29 years old	820	836	830	832	838	859	896	936	973	1,003	1,024	1,033	1,030
30 to 34 years old	558	632	611	629	644	666	692	715	736	754	774	792	808
35 years old and over	1,579	1,696	1,697	1,688	1,688	1,718	1,773	1,829	1,887	1,941	1,997	2,044	2,078

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Data by age are based on the distribution by age from the Census Bureau. For additional information see section A.4 in appendix A. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and U.S. Department of Commerce, Census Bureau, Current Population Reports, "Social and Economic Characteristics of Students," various years. (This table was prepared February 2011.)

Table 22. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by sex and attendance status: Fall 1995 through fall 2020

[In thousands]

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
Actual					
1995	14,262	3,807	2,535	4,321	3,598
1996	14,368	3,851	2,502	4,452	3,563
1997	14,502	3,890	2,506	4,548	3,559
1998	14,507	3,934	2,436	4,630	3,508
1999	14,791	4,026	2,465	4,761	3,540
2000	15,312	4,111	2,611	4,899	3,692
2001	15,928	4,300	2,661	5,148	3,820
2002	16,612	4,501	2,701	5,445	3,964
2003	16,911	4,638	2,622	5,688	3,963
2004	17,272	4,739	2,648	5,871	4,014
2005	17,487	4,803	2,653	5,994	4,038
2006	17,759	4,879	2,695	6,078	4,106
2007	18,248	5,029	2,786	6,240	4,192
2008	19,103	5,234	2,955	6,513	4,401
2009	20,428	5,671	3,099	7,052	4,606
Projected					
2010	20,582	5,689	3,172	7,095	4,625
2011	20,688	5,709	3,186	7,145	4,648
2012	20,727	5,705	3,189	7,151	4,682
2013	20,948	5,730	3,211	7,232	4,776
2014	21,320	5,787	3,242	7,371	4,921
2015	21,651	5,834	3,266	7,495	5,056
2016	21,968	5,883	3,289	7,610	5,185
2017	22,251	5,927	3,312	7,714	5,299
2018	22,546	5,978	3,336	7,824	5,409
2019	22,821	6,036	3,354	7,931	5,500
2020	23,016	6,085	3,365	8,004	5,562

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared February 2011.)

Table 23. Actual and projected numbers for enrollment in public 4-year postsecondary degree-granting institutions, by sex and attendance status: Fall 1995 through fall 2020

[In thousands]

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
Actual					
1995	5,815	1,951	720	2,134	1,009
1996	5,806	1,943	703	2,163	997
1997	5,835	1,951	687	2,214	984
1998	5,892	1,959	685	2,260	988
1999	5,970	1,984	686	2,309	991
2000	6,055	2,009	683	2,363	1,001
2001	6,236	2,082	687	2,450	1,017
2002	6,482	2,167	706	2,557	1,052
2003	6,649	2,225	713	2,639	1,072
2004	6,737	2,260	717	2,684	1,076
2005	6,838	2,295	724	2,726	1,091
2006	6,955	2,339	740	2,765	1,111
2007	7,167	2,418	773	2,827	1,149
2008	7,332	2,488	789	2,890	1,165
2009	7,709	2,626	833	3,024	1,226
Projected					
2010	7,771	2,642	848	3,046	1,235
2011	7,817	2,653	852	3,071	1,242
2012	7,833	2,652	854	3,074	1,252
2013	7,913	2,664	862	3,109	1,279
2014	8,048	2,690	872	3,166	1,320
2015	8,167	2,711	880	3,217	1,359
2016	8,280	2,733	888	3,264	1,395
2017	8,379	2,752	895	3,306	1,427
2018	8,483	2,774	902	3,349	1,458
2019	8,581	2,800	907	3,393	1,482
2020	8,651	2,821	909	3,423	1,498

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared February 2011.)

Table 24. Actual and projected numbers for enrollment in public 2-year postsecondary degree-granting institutions, by sex and attendance status: Fall 1995 through fall 2020

[In thousands]

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
Actual					
1995	5,278	819	1,417	1,022	2,020
1996	5,314	833	1,423	1,039	2,019
1997	5,361	842	1,444	1,049	2,026
1998	5,246	841	1,383	1,040	1,981
1999	5,339	868	1,404	1,063	2,005
2000	5,697	891	1,549	1,109	2,148
2001	5,997	962	1,596	1,194	2,245
2002	6,270	1,035	1,605	1,299	2,332
2003	6,209	1,060	1,515	1,346	2,288
2004	6,244	1,065	1,518	1,360	2,300
2005	6,184	1,055	1,514	1,332	2,283
2006	6,225	1,067	1,533	1,325	2,300
2007	6,324	1,099	1,568	1,343	2,314
2008	6,640	1,152	1,672	1,396	2,420
2009	7,101	1,318	1,733	1,563	2,488
Projected					
2010	7,155	1,307	1,784	1,569	2,495
2011	7,181	1,309	1,791	1,575	2,506
2012	7,190	1,305	1,790	1,573	2,522
2013	7,266	1,308	1,799	1,590	2,569
2014	7,397	1,320	1,813	1,621	2,643
2015	7,515	1,330	1,824	1,649	2,712
2016	7,629	1,341	1,834	1,676	2,778
2017	7,736	1,352	1,845	1,703	2,836
2018	7,847	1,366	1,857	1,731	2,893
2019	7,951	1,383	1,867	1,760	2,941
2020	8,025	1,397	1,874	1,779	2,975

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table 25. Actual and projected numbers for enrollment in private 4-year postsecondary degree-granting institutions, by sex and attendance status: Fall 1995 through fall 2020

[In thousands]

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
Actual					
1995	2,955	978	364	1,089	523
1996	2,998	991	356	1,133	518
1997	3,061	1,008	360	1,170	523
1998	3,126	1,038	353	1,220	514
1999	3,229	1,073	360	1,276	519
2000	3,308	1,107	365	1,315	522
2001	3,441	1,151	365	1,389	536
2002	3,601	1,199	377	1,468	557
2003	3,768	1,250	382	1,561	574
2004	3,990	1,313	400	1,670	607
2005	4,162	1,354	402	1,774	632
2006	4,285	1,381	411	1,830	664
2007	4,464	1,422	433	1,911	698
2008	4,800	1,496	480	2,041	782
2009	5,197	1,596	518	2,228	855
Projected					
2010	5,238	1,611	526	2,241	860
2011	5,271	1,618	528	2,259	865
2012	5,285	1,619	530	2,264	872
2013	5,346	1,628	534	2,292	891
2014	5,445	1,646	541	2,338	920
2015	5,533	1,661	546	2,378	948
2016	5,616	1,676	551	2,415	973
2017	5,688	1,689	556	2,447	996
2018	5,761	1,702	561	2,480	1,018
2019	5,827	1,717	564	2,511	1,035
2020	5,873	1,729	566	2,532	1,046

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared February 2011.)

Table 26. Actual and projected numbers for enrollment in private 2-year postsecondary degree-granting institutions, by sex and attendance status: Fall 1995 through fall 2020

[In thousands]

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
Actual					
1995	215	60	33	77	45
1996	249	84	19	117	29
1997	245	89	14	115	26
1998	243	95	14	109	25
1999	253	101	15	112	25
2000	251	105	13	112	21
2001	254	105	12	114	22
2002	259	101	13	122	23
2003	285	103	13	142	28
2004	302	101	13	156	31
2005	304	99	12	161	32
2006	293	93	11	159	30
2007	294	91	12	159	31
2008	331	98	14	186	33
2009	420	131	16	237	36
Projected					
2010	419	130	16	238	35
2011	420	130	16	239	35
2012	420	129	16	239	36
2013	423	130	16	241	36
2014	430	131	16	246	37
2015	437	132	16	250	38
2016	443	133	16	254	39
2017	449	134	16	259	40
2018	455	136	16	263	41
2019	462	137	16	267	42
2020	467	139	16	270	42

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table 27. Actual and projected numbers for undergraduate enrollment in all postsecondary degree-granting institutions, by sex, attendance status, and control of institution: Fall 1995 through fall 2020

[In thousands]

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
Actual							
1995	12,232	5,401	6,831	7,145	5,086	9,904	2,328
1996	12,327	5,421	6,906	7,299	5,028	9,935	2,392
1997	12,451	5,469	6,982	7,419	5,032	10,007	2,443
1998	12,437	5,446	6,991	7,539	4,898	9,950	2,487
1999	12,681	5,559	7,122	7,735	4,946	10,110	2,571
2000	13,155	5,778	7,377	7,923	5,232	10,539	2,616
2001	13,716	6,004	7,711	8,328	5,388	10,986	2,730
2002	14,257	6,192	8,065	8,734	5,523	11,433	2,824
2003	14,480	6,227	8,253	9,045	5,435	11,523	2,957
2004	14,781	6,340	8,441	9,284	5,496	11,651	3,130
2005	14,964	6,409	8,555	9,446	5,518	11,698	3,266
2006	15,184	6,514	8,671	9,571	5,613	11,847	3,337
2007	15,604	6,728	8,876	9,841	5,763	12,138	3,466
2008	16,366	7,067	9,299	10,255	6,111	12,591	3,775
2009	17,565	7,595	9,970	11,143	6,422	13,387	4,179
Projected							
2010	17,699	7,657	10,042	11,190	6,509	13,491	4,208
2011	17,786	7,684	10,101	11,245	6,541	13,554	4,232
2012	17,801	7,675	10,125	11,231	6,570	13,567	4,234
2013	17,965	7,706	10,259	11,304	6,661	13,695	4,270
2014	18,255	7,771	10,484	11,455	6,801	13,921	4,335
2015	18,512	7,824	10,688	11,585	6,927	14,121	4,391
2016	18,759	7,877	10,882	11,713	7,046	14,313	4,446
2017	18,985	7,928	11,057	11,832	7,153	14,490	4,495
2018	19,226	7,989	11,237	11,968	7,259	14,678	4,549
2019	19,469	8,059	11,409	12,122	7,347	14,864	4,605
2020	19,649	8,117	11,532	12,243	7,406	15,000	4,648

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table 28. Actual and projected numbers for postbaccalaureate enrollment in all postsecondary degree-granting institutions, by sex, attendance status, and control of institution: Fall 1995 through fall 2020

[In thousands]

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
Actual							
1995	2,030	941	1,088	984	1,046	1,189	841
1996	2,041	932	1,108	1,004	1,036	1,185	855
1997	2,052	927	1,124	1,019	1,032	1,189	863
1998	2,070	923	1,147	1,025	1,045	1,188	882
1999	2,110	931	1,179	1,051	1,058	1,199	911
2000	2,157	943	1,213	1,087	1,070	1,213	943
2001	2,212	956	1,256	1,120	1,092	1,247	965
2002	2,355	1,010	1,345	1,212	1,142	1,319	1,035
2003	2,431	1,033	1,398	1,281	1,150	1,336	1,096
2004	2,491	1,047	1,444	1,326	1,165	1,330	1,162
2005	2,524	1,047	1,476	1,351	1,173	1,324	1,199
2006	2,575	1,061	1,513	1,386	1,188	1,333	1,242
2007	2,644	1,088	1,556	1,429	1,215	1,353	1,291
2008	2,737	1,122	1,615	1,493	1,244	1,381	1,356
2009	2,862	1,174	1,688	1,579	1,283	1,424	1,438
Projected							
2010	2,884	1,205	1,678	1,594	1,289	1,435	1,449
2011	2,903	1,212	1,691	1,609	1,294	1,445	1,459
2012	2,927	1,219	1,707	1,625	1,302	1,456	1,471
2013	2,984	1,235	1,748	1,658	1,326	1,484	1,500
2014	3,065	1,257	1,807	1,703	1,362	1,525	1,540
2015	3,140	1,277	1,863	1,744	1,396	1,562	1,578
2016	3,209	1,295	1,913	1,781	1,428	1,596	1,613
2017	3,267	1,311	1,956	1,809	1,458	1,625	1,642
2018	3,320	1,324	1,996	1,834	1,486	1,652	1,668
2019	3,353	1,331	2,021	1,845	1,507	1,668	1,684
2020	3,368	1,333	2,034	1,847	1,521	1,676	1,692

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table 29. Actual and projected numbers for enrollment in all postsecondary degree-granting institutions, by race/ethnicity: Fall 1995 through fall 2020

[In thousands]

Year	Total	Race/ethnicity					
		White	Black	Hispanic	Asian/Pacific Islander	American Indian/ Alaska Native	Nonresident alien[1]
Actual							
1995	14,262	10,311	1,474	1,094	797	131	454
1996	14,368	10,264	1,506	1,166	828	138	466
1997	14,502	10,266	1,551	1,218	859	142	465
1998	14,507	10,179	1,583	1,257	900	144	444
1999	14,791	10,282	1,643	1,319	913	145	488
2000	15,312	10,462	1,730	1,462	978	151	529
2001	15,928	10,775	1,850	1,561	1,019	158	565
2002	16,612	11,140	1,979	1,662	1,074	166	591
2003	16,911	11,281	2,068	1,716	1,076	173	598
2004	17,272	11,423	2,165	1,810	1,109	176	590
2005	17,487	11,495	2,215	1,882	1,134	176	585
2006	17,759	11,572	2,280	1,964	1,165	181	596
2007	18,248	11,756	2,383	2,076	1,218	190	624
2008	19,103	12,089	2,584	2,273	1,303	193	661
2009	20,428	12,731	2,920	2,547	1,338	208	685
Projected							
2010	20,582	12,745	2,946	2,620	1,362	208	701
2011	20,688	12,709	2,989	2,687	1,382	206	715
2012	20,727	12,613	3,031	2,753	1,401	204	726
2013	20,948	12,618	3,104	2,851	1,429	204	742
2014	21,320	12,702	3,201	2,982	1,468	205	762
2015	21,651	12,751	3,294	3,114	1,506	205	782
2016	21,968	12,794	3,382	3,243	1,542	205	802
2017	22,251	12,826	3,461	3,364	1,575	205	820
2018	22,546	12,873	3,536	3,486	1,607	206	839
2019	22,821	12,918	3,598	3,606	1,638	205	855
2020	23,016	12,921	3,646	3,707	1,666	205	872

[1] The racial/ethnic backgrounds of nonresident aliens are not known.

NOTE: Race categories exclude persons of Hispanic ethnicity. Enrollment data in the "race/ethnicity unknown" (all years) and "two or more races" (2008 and 2009 only) categories of the IPEDS "Fall Enrollment Survey" have been prorated to the other racial/ethnic categories at the institutional level. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2009; and Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared February 2011.)

Table 30. Actual and projected numbers for first-time freshmen fall enrollment in all postsecondary degree-granting institutions, by sex: Fall 1995 through fall 2020

Year	Total	Men	Women
Actual			
1995	2,169	1,001	1,168
1996	2,274	1,047	1,228
1997	2,219	1,026	1,193
1998	2,213	1,023	1,190
1999	2,352	1,092	1,260
2000	2,428	1,124	1,304
2001	2,497	1,153	1,344
2002	2,571	1,171	1,400
2003	2,592	1,176	1,416
2004	2,630	1,190	1,440
2005	2,657	1,200	1,457
2006	2,707	1,229	1,479
2007	2,776	1,267	1,509
2008	3,025	1,389	1,635
2009	3,210	1,480	1,730
Projected			
2010	3,215	1,477	1,738
2011	3,231	1,483	1,748
2012	3,233	1,481	1,752
2013	3,262	1,487	1,776
2014	3,314	1,499	1,814
2015	3,359	1,510	1,850
2016	3,403	1,520	1,883
2017	3,443	1,530	1,914
2018	3,486	1,541	1,945
2019	3,530	1,555	1,975
2020	3,562	1,566	1,996

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and First-Time Freshmen Model, 1975–2009. (This table was prepared March 2011.)

Table 31. Actual and projected numbers for full-time-equivalent enrollment in all postsecondary degree-granting institutions, by control and level of institution: Fall 1995 through fall 2020

[In thousands]

Year	Total	Public		Private	
		4-year	2-year	4-year	2-year
Actual					
1995	10,337	4,757	2,994	2,418	168
1996	10,482	4,767	3,028	2,467	219
1997	10,615	4,814	3,056	2,525	220
1998	10,699	4,869	3,011	2,599	220
1999	10,944	4,945	3,075	2,694	229
2000	11,267	5,026	3,241	2,770	231
2001	11,766	5,194	3,445	2,894	233
2002	12,331	5,406	3,655	3,033	237
2003	12,689	5,558	3,684	3,186	260
2004	13,001	5,641	3,707	3,377	276
2005	13,201	5,728	3,662	3,533	277
2006	13,403	5,825	3,679	3,631	268
2007	13,783	5,994	3,745	3,775	268
2008	14,394	6,140	3,922	4,030	302
2009	15,496	6,452	4,298	4,357	389
Projected					
2010	15,593	6,501	4,312	4,392	388
2011	15,677	6,541	4,326	4,421	389
2012	15,692	6,548	4,325	4,430	389
2013	15,840	6,608	4,364	4,476	392
2014	16,099	6,711	4,437	4,553	398
2015	16,329	6,802	4,502	4,621	404
2016	16,548	6,888	4,565	4,686	409
2017	16,745	6,963	4,626	4,741	415
2018	16,954	7,043	4,692	4,798	421
2019	17,159	7,124	4,756	4,852	427
2020	17,307	7,183	4,804	4,889	432

NOTE: Detail may not sum to totals because of rounding. Some data have been revised from previously published figures. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Fall Enrollment Survey" (IPEDS-EF:95–99), and Spring 2001 through Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared February 2011.)

Table 32. Actual and projected numbers for associate's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21

Year	Total	Men	Women
Actual			
1995–96	555,216	219,514	335,702
1996–97	571,226	223,948	347,278
1997–98	558,555	217,613	340,942
1998–99	559,954	218,417	341,537
1999–2000	564,933	224,721	340,212
2000–01	578,865	231,645	347,220
2001–02	595,133	238,109	357,024
2002–03	634,016	253,451	380,565
2003–04	665,301	260,033	405,268
2004–05	696,660	267,536	429,124
2005–06	713,066	270,095	442,971
2006–07	728,114	275,187	452,927
2007–08	750,164	282,521	467,643
2008–09	787,325	298,141	489,184
Projected			
2009–10	835,000	319,000	516,000
2010–11	863,000	324,000	539,000
2011–12	895,000	337,000	558,000
2012–13	899,000	338,000	561,000
2013–14	906,000	341,000	565,000
2014–15	915,000	343,000	571,000
2015–16	927,000	347,000	580,000
2016–17	940,000	350,000	590,000
2017–18	953,000	354,000	599,000
2018–19	967,000	358,000	609,000
2019–20	981,000	362,000	619,000
2020–21	994,000	366,000	628,000

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:96–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This table was prepared March 2011.)

Table 33. Actual and projected numbers for bachelor's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21

Year	Total	Men	Women
Actual			
1995–96	1,164,792	522,454	642,338
1996–97	1,172,879	520,515	652,364
1997–98	1,184,406	519,956	664,450
1998–99	1,200,303	518,746	681,557
1999–2000	1,237,875	530,367	707,508
2000–01	1,244,171	531,840	712,331
2001–02	1,291,900	549,816	742,084
2002–03	1,348,811	573,258	775,553
2003–04	1,399,542	595,425	804,117
2004–05	1,439,264	613,000	826,264
2005–06	1,485,242	630,600	854,642
2006–07	1,524,092	649,570	874,522
2007–08	1,563,069	667,928	895,141
2008–09	1,601,368	685,382	915,986
Projected			
2009–10	1,673,000	717,000	956,000
2010–11	1,715,000	735,000	980,000
2011–12	1,781,000	765,000	1,016,000
2012–13	1,791,000	766,000	1,025,000
2013–14	1,805,000	769,000	1,036,000
2014–15	1,817,000	771,000	1,046,000
2015–16	1,835,000	775,000	1,060,000
2016–17	1,858,000	782,000	1,076,000
2017–18	1,879,000	787,000	1,092,000
2018–19	1,901,000	794,000	1,107,000
2019–20	1,923,000	801,000	1,123,000
2020–21	1,945,000	808,000	1,137,000

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:96–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This table was prepared March 2011.)

Table 34. Actual and projected numbers for master's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21

Year	Total	Men	Women
Actual			
1995–96	406,301	179,081	227,220
1996–97	419,401	180,947	238,454
1997–98	430,164	184,375	245,789
1998–99	439,986	186,148	253,838
1999–2000	457,056	191,792	265,264
2000–01	468,476	194,351	274,125
2001–02	482,118	199,120	282,998
2002–03	513,339	211,664	301,675
2003–04	558,940	229,545	329,395
2004–05	574,618	233,590	341,028
2005–06	594,065	237,896	356,169
2006–07	604,607	238,189	366,418
2007–08	625,023	246,491	378,532
2008–09	656,784	259,998	396,786
Projected			
2009–10	691,000	276,000	415,000
2010–11	712,000	291,000	421,000
2011–12	730,000	299,000	430,000
2012–13	741,000	302,000	439,000
2013–14	756,000	306,000	450,000
2014–15	776,000	312,000	463,000
2015–16	795,000	319,000	476,000
2016–17	813,000	325,000	488,000
2017–18	829,000	330,000	499,000
2018–19	844,000	335,000	510,000
2019–20	856,000	337,000	519,000
2020–21	865,000	338,000	527,000

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:96–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This table was prepared March 2011.)

Table 35. Actual and projected numbers for doctor's degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21

Year	Total	Men	Women
Actual			
1995–96	44,652	26,841	17,811
1996–97	45,876	27,146	18,730
1997–98	46,010	26,664	19,346
1998–99	44,077	25,146	18,931
1999–2000	44,808	25,028	19,780
2000–01	44,904	24,728	20,176
2001–02	44,160	23,708	20,452
2002–03	46,042	24,351	21,691
2003–04	48,378	25,323	23,055
2004–05	52,631	26,973	25,658
2005–06	56,067	28,634	27,433
2006–07	60,616	30,251	30,365
2007–08	63,712	31,215	32,497
2008–09	67,716	32,279	35,437
Projected			
2009–10	70,400	33,400	37,000
2010–11	73,700	34,600	39,100
2011–12	76,900	35,700	41,200
2012–13	80,200	36,800	43,300
2013–14	83,400	38,000	45,400
2014–15	86,600	39,100	47,600
2015–16	89,900	40,200	49,700
2016–17	93,100	41,400	51,800
2017–18	96,400	42,500	53,900
2018–19	99,600	43,600	56,000
2019–20	102,800	44,700	58,100
2020–21	106,100	45,900	60,200

NOTE: Doctor's degrees include Ph.D., Ed.D., and comparable degrees at the doctoral level. See Glossary. Excluded are first-professional degrees, such as M.D., D.D.S., and law degrees. Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:96–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This table was prepared March 2011.)

Table 36. Actual and projected numbers for first-professional degrees conferred by postsecondary degree-granting institutions, by sex of recipient: 1995–96 through 2020–21

Year	Total	Men	Women
Actual			
1995–96	76,734	44,748	31,986
1996–97	78,730	45,564	33,166
1997–98	78,598	44,911	33,687
1998–99	78,439	44,339	34,100
1999–2000	80,057	44,239	35,818
2000–01	79,707	42,862	36,845
2001–02	80,698	42,507	38,191
2002–03	80,897	41,887	39,010
2003–04	83,041	42,169	40,872
2004–05	87,289	43,849	43,440
2005–06	87,655	44,038	43,617
2006–07	90,064	45,057	45,007
2007–08	91,309	45,916	45,393
2008–09	92,004	46,900	45,104
Projected			
2009–10	95,100	48,400	46,700
2010–11	99,800	50,600	49,300
2011–12	103,200	52,500	50,700
2012–13	104,000	53,400	50,600
2013–14	105,100	53,900	51,200
2014–15	106,700	54,600	52,100
2015–16	109,100	55,500	53,600
2016–17	111,800	56,500	55,300
2017–18	114,200	57,500	56,800
2018–19	116,300	58,200	58,100
2019–20	118,000	58,900	59,100
2020–21	119,200	59,300	59,900

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Mean absolute percentage errors of selected education statistics can be found in table A-2, appendix A.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, "Completions Survey" (IPEDS-C:96–99), and Fall 2000 through Fall 2009; and Degrees Conferred Model, 1975–76 through 2008–09. (This table was prepared March 2011.)

Technical Appendixes

Appendix A
Introduction to Projection Methodology

A.0. INTRODUCTION TO PROJECTION METHODOLOGY

Content of appendix A

Since its inception in 1964, the *Projections of Education Statistics* series has been providing projections of key education statistics to policy makers, educators, researchers, the press, and the general public. This edition of *Projections of Education Statistics* is the thirty-ninth in the series.

Appendix A contains this introduction, which provides a general overview of the projection methodology, as well as six additional sections, which discuss the specific methodology for the different statistics projected:

- A.0. Introduction to Projection Methodology;
- A.1. Elementary and Secondary Enrollment;
- A.2. High School Graduates;
- A.3. Elementary and Secondary Teachers;
- A.4. Expenditures for Public Elementary and Secondary Education;
- A.5. Enrollment in Postsecondary Degree-Granting Institutions; and
- A.6. Postsecondary Degrees Conferred.

This introduction

- outlines the two major techniques used to make the projections;
- summarizes key demographic and economic assumptions underlying the projections;
- examines the accuracy of the projections; and
- introduces the subsequent sections of appendix A.

Projection techniques

Two major projection techniques were used to develop the projections presented in this publication:

- Exponential smoothing was the technique used in the projections of elementary and secondary enrollments and high school graduates. This technique also played a role in the projections of teachers at the elementary and secondary level, as well as enrollments and degrees conferred at the postsecondary level.
- Multiple linear regression was the primary technique used in the projections of teachers and expenditures at the elementary and secondary level, as well as enrollments and degrees conferred at the postsecondary level.

Exponential smoothing

Two different types of exponential smoothing, single exponential smoothing and double exponential smoothing, were used in producing the projections presented in this publication.

Single exponential smoothing was used when the historical data had a basically horizontal pattern. Single exponential smoothing produces a single forecast for all years in the forecast period. In developing projections of elementary and secondary enrollments, for example, the rate at which students progress from one particular grade to the next (e.g., from grade 2 to grade 3) was projected using single exponential smoothing. Thus, this percentage was assumed to be constant over the forecast period.

In general, exponential smoothing places more weight on recent observations than on earlier ones. The weights for observations decrease exponentially as one moves further into the past. As a result, the older data have less influence on the projections. The rate at which the weights of older observations decrease is determined by the smoothing constant.

When using single exponential smoothing for a time series, P_t, a smoothed series, $\hat{P}$, is computed recursively by evaluating

$$\hat{P}_t = \propto P_t + (1 - \propto)\hat{P}_{t\text{-}1}$$

where $0 < \propto \leq 1$ is the smoothing constant.

By repeated substitution, we can rewrite the equation as

$$\hat{P}_t = \propto \sum_{s=0}^{t\text{-}1} (1 - \propto)^s P_{t\text{-}s}$$

where time, *s*, goes from the first period in the time series, 0, to time period *t-1*.

The forecasts are constant for all years in the forecast period. The constant equals

$$\hat{P}_{T+k} = \hat{P}_T$$

where T is the last year in the estimation sample and $k > 0$.

These equations illustrate that the projection is a weighted average based on exponentially decreasing weights. For higher smoothing constants, weights for earlier observations decrease more rapidly than for lower smoothing constants.

For each of the approximately 1,200 single exponential smoothing equations in this edition of *Projections of Education Statistics*, a smoothing constant was individually chosen to minimize the sum of squared forecast errors for that equation. The smoothing constants used to produce the projections in this report ranged from 0.001 to 0.999.

Double exponential smoothing is an extension of single exponential smoothing that allows the forecasting of data with trends. It produces different forecasts for different years in the forecast period. Double exponential smoothing with two smoothing constants was used to forecast the number of doctor's degrees awarded to men and women.

The smoothing forecast using double exponential smoothing is found using the three equations:

$$\hat{P}_{t+k} = a_t + b_t k$$

$$a_t = \propto P_t + (1 - \propto)\,(a_{t-1} + b_{t-1})$$

$$b_t = \beta\,(a_t - a_{t-1}) + (1 - \beta)\,b_{t-1}$$

where a_t denotes an estimate of the level of the series at time t, b_t denotes an estimate of the level of the series at time t, and $0 < \propto, \beta < 1$ are the smoothing constants.

Forecasts from double smoothing are computed as

$$\hat{P}_{T+k} = a_T + b_T k$$

where T is the last year in the estimation sample and $k > 0$. The last expression shows that forecasts from double smoothing lie on a linear trend with intercept a_T and slope b_T. Single exponential smoothing can be viewed as a special case of double exponential smoothing where the impact that time has on the forecasts has been eliminated (i.e., requiring the slope term b_t to equal 0.0).

The smoothing constants for each of the two double exponential smoothing equations used for this report were selected using a search algorithm that finds the pair of smoothing constants that together minimizes the sum of forecast errors for their equation.

There were two differences in the exponential smoothing methodology used for this edition of *Projections of Education Statistics* compared to that used in previous editions. In previous editions of *Projections of Education Statistics*, a smoothing constant of 0.4 was used for both single and double exponential smoothing. This change was made because there is evidence that it is preferable to select smoothing constants by using a selection criterion such as minimizing the sum of squared forecast errors rather than by using a set value for the smoothing constant. The minimization of the sum of squared forecast errors was used because it is the most commonly used selection criterion. The second difference is that this edition of *Projections of Education Statistics* uses two smoothing constants for double exponential smoothing, while previous editions used only one smoothing constant. This second change was made to eliminate the assumption that the two smoothing constants were equal. There was no systematic attempt to measure the impact of these two changes in methodology compared to the methods used in previous editions of *Projections of Education Statistics*. For more information about exponential smoothing, including the choice of the smoothing constants, see Gardner (1985) and Makridakis, Wheelwright, and Hyndman (1998).

Multiple linear regression

Multiple linear regression was used in cases where a strong relationship exists between the variable being projected (the dependent variable) and independent variables. This technique can be used only when accurate data and reliable projections of the independent variables are available. Key independent variables for this publication include demographic and economic factors. For example, current expenditures for public elementary and secondary education are related to economic factors such as disposable income and education revenues from state sources. The sources of the demographic and economic projections used for this publication are discussed below, under "Assumptions."

The equations in this appendix should be viewed as forecasting rather than structural equations. That is, the equations are intended only to project values for the dependent variables, not to reflect all elements of underlying social, political, and economic structures. Lack of available data precluded the building of large-scale structural models. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2s), the *t*-statistics of the coefficients, the Durbin-Watson statistic, the Breusch-Godfrey Serial Correlation LM test statistic, and residual plots.

The functional form primarily used is the multiplicative model. When used with two independent variables, this model takes the form:

$$Y = a \cdot X_1^{b_1} \cdot X_2^{b_2}$$

This equation can easily be transformed into the linear form by taking the natural log (ln) of both sides of the equation:

$$ln(Y) = ln(a) + b_1 lnX_1 + b_2 lnX_2$$

One property of this model is that the coefficient of an independent variable shows how responsive in percentage terms the dependent variable is to a one percent change in that independent variable (also called the elasticity). For example, a 1 percent change in X_1 in the above equation would lead to a b_1 percent change in Y.

Assumptions

All projections are based on underlying assumptions, and these assumptions determine projection results to a large extent. It is important that users of projections understand the assumptions to determine the acceptability of projected time series for their purposes. All the projections in this publication are to some extent dependent on demographic and/or economic assumptions.

Demographic assumptions

Many of the projections in this publication are demographically based on the U.S. Census Bureau's 2008 National Population Projections (August 2008) and the State Interim Population Projections (April 2005).

The two sets of Census Bureau population projections are produced using cohort-component models. In order for the national-level population projections by age, sex, and race/ethnicity to be consistent with the most recent historical estimates released by the Census Bureau, the projections were ratio-adjusted by applying the ratio of the last historical estimate to the corresponding projections year to the projections for each age, sex, and race/ethnicity combination. This allows for a consistent set of historical estimates and projections. For more information on the methodology used for Census Bureau population projections, see appendix C, Data Sources.

The enrollment projections in this publication depend on Census Bureau population projections for the various age groups that attend school. The future fertility rate assumption (along with corresponding projections of female populations) determines projections of the number of births, a key factor for population projections. The fertility rate assumption plays a major role in determining population projections for the age groups enrolled in nursery school, kindergarten, and elementary grades. The effects of the fertility rate assumption are more pronounced toward the end of the forecast period, while immigration assumptions affect all years. For enrollments in secondary grades and college, the fertility rate assumption is of no consequence, since all the population cohorts for these enrollment ranges have already been born.

Economic assumptions

Various economic variables are used in the forecasting models for numbers of elementary and secondary teachers, public elementary and secondary school expenditures, and postsecondary enrollment.

The source of these variables is the trend scenario of the "U.S. Monthly Model November 2010: Short-Term Projections" developed by the economic consulting firm IHS Global Insight. The trend scenario depicts a mean of possible paths that the economy could take over the forecast period, barring major shocks. The economy, in this scenario, evolves smoothly, without major fluctuations.

More information about specific assumptions

For details about the primary assumptions used in this edition of *Projections of Education Statistics*, see table A-1 on page 82.

Accuracy of the projections

Projections of time series usually differ from the final reported data due to errors from many sources. This is because of the inherent nature of the statistical universe from which the basic data are obtained and the properties of projection methodologies, which depend on the validity of many assumptions.

The mean absolute percentage error (MAPE) is one way to express the forecast accuracy of past projections. This measure expresses the average absolute value of errors over past projections in percentage terms. For example, an analysis of projection errors over the past 27 editions of *Projections of Education Statistics* indicates that the MAPEs for public school enrollment in grades PK–12 for lead times of 1, 2, 5, and 10 years were 0.3, 0.6, 1.3, and 2.4 percent, respectively. For the 1-year-out projection, this means that one would expect the projection to be within 0.3 percent of the actual value, on average.

For a list of MAPEs for selected national statistics in this publication, see table A-2 on page 83. Sections A.1 through A.5 each contains at least one text table (tables A through F) that presents the MAPEs for the key national statistics of that section. Each text table appears directly after the discussion of accuracy of that section's national projections. For a list of MAPEs by state and region for public elementary and secondary enrollment, see tables A-7 through A-9 on pages 92-97 and for a list of MAPEs by state and region for the number of high school graduates in public schools, see table A-10 on pages 102-103.

Tables A-3 and A-4 present an example of how the MAPEs were constructed using actual values for national public elementary and secondary enrollment projections for schools years 2005 through 2008 and enrollment projections from the last four editions of *Projections of Education Statistics*. The top panel of table A-3 shows the actual values for school years 2005 through 2008 and enrollment projections for each year from *Projections of Education Statistics to 2016* with the number of projections decreasing by one for each subsequent edition. The bottom panel of table A-3 shows the percentage differences between the actual values and the projected values. For example, the projected value for 2005 presented in *Projections of Education Statistics to 2016* was 0.2 lower than the actual value for that year.

The top panel of table A-4 shows the absolute value of the percent differences from table A-3 arranged by lead time rather than year. Hence, the 0.3 appearing in the column for lead times of 1 year and the row for projections from *Projections of Education Statistics to 2017* indicates that projection of the 1-year-out forecast from *Projections of Education Statistics to 2017* differed by 0.3 in absolute terms from its actual value. The MAPEs for each lead time shown in the bottom panel of table A-4 were calculated by computing the average of the absolute values of the percentage differences for that lead time. These MAPEs are different from the MAPEs for public elementary and secondary enrollment projections elsewhere in this report because the MAPEs in the example were calculated using only the last 4 editions of *Projections of Education Statistics*.

The number of years used in the analysis of the projection error differs by statistics both because projections of additional education statistics have been added to the report over time and because, for some statistics, there have been such a substantial change in the methodology used to produce the projections that the projections produced using the earlier methodology were not included in the analysis of the projection error. MAPEs are presented for a statistic only after it has been produced using substantially the same methodology in five previous editions of *Projections of Education Statistics.*

Table A-1. Summary of forecast assumptions to 2020

Variable	Assumption
Demographic assumptions	
Population	Projections are consistent with the Census Bureau estimates[1]
18- to 24-year-old population	Census Bureau projection: average annual growth rate of 0.1%
25- to 29-year-old population	Census Bureau projection: average annual growth rate of 0.7%
30- to 34-year-old population	Census Bureau projection: average annual growth rate of 1.4%
35- to 44-year-old population	Census Bureau projection: average annual growth rate of 0.4%
Economic assumptions	
Disposable income per capita in constant dollars	Annual percent changes range between 0.1% and 2.6% with an annual growth rate of 1.3%
Education revenue receipts from state sources per capita in constant dollars	Annual percent changes range between -1.6% and 2.7% with an annual growth rate of 1.2%
Inflation rate	Inflation rate ranges between 1.0% and 2.2%
Unemployment rate (men)	
Ages 18 and 19	Remains between 17.4% and 28.4%
Ages 20 to 24	Remains between 10.3% and 17.8%
Age 25 and over	Remains between 4.6% and 8.4%
Unemployment rate (women)	
Ages 18 and 19	Remains between 13.1% and 20.4%
Ages 20 to 24	Remains between 8.1% and 13.1%
Age 25 and over	Remains between 4.3% and 7.0%

[1] As the Census Bureau projections were not updated to reflect 2010 Census Bureau population estimates, the Census Bureau age-specific population projections for each year were adjusted by multiplying the ratio of the total Census Bureau estimate for 2010 to the total Census Bureau projection for 2010.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2008, from http://www.census.gov/population/www/projections/2008projections.html; and IHS Global Insight, "U.S. Monthly Model November 2010 Short-Term Projections." (This table was prepared March 2011.)

Table A-2. Mean absolute percentage errors (MAPEs) by lead time for selected statistics in all public elementary and secondary schools and postsecondary degree-granting institutions: 2011

Statistic	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
Public elementary and secondary schools										
Prekindergarten–12 enrollment[1]	0.3	0.6	0.8	1.1	1.3	1.5	1.7	2.0	2.2	2.4
Prekindergarten–8 enrollment[1]	0.4	0.7	1.0	1.2	1.3	1.7	2.0	2.5	2.8	3.2
9–12 enrollment[1]	0.3	0.6	0.9	1.1	1.3	1.5	1.9	2.3	2.4	2.3
High school graduates[2]	1.0	1.0	1.5	1.7	1.6	2.1	2.8	3.7	4.2	4.0
Elementary and secondary teachers[3]	1.0	1.4	1.7	2.3	2.9	3.4	4.1	4.4	5.1	5.9
Total current expenditures[4]	1.3	2.0	2.1	2.2	2.6	3.3	4.1	4.3	4.0	4.1
Current expenditures per pupil in fall enrollment[4]	1.3	2.0	2.0	2.1	3.0	3.6	4.4	4.9	5.2	5.5
Private elementary and secondary schools[5]										
Prekindergarten–12 enrollment	3.4	4.6	3.7	7.2	7.7	10.6	9.3	9.4	8.1	6.3
Prekindergarten–8 enrollment	3.5	4.9	4.1	8.0	9.2	12.1	10.6	10.4	10.2	7.9
9–12 enrollment	3.0	3.8	2.3	4.3	2.8	5.8	5.7	6.1	1.3	1.3
High school graduates	0.9	0.9	1.6	2.8	5.0	6.2	4.9	4.8	1.6	1.6
Postsecondary degree-granting institutions[6]										
Total enrollment	1.6	2.8	3.5	4.0	5.2	6.1	8.1	9.8	11.7	11.4
Men	1.6	3.2	4.0	4.8	5.9	6.6	8.5	9.8	11.7	11.7
Women	1.8	2.8	3.6	3.7	4.6	5.8	7.8	9.8	11.7	11.2
4-year institutions	1.7	2.9	3.9	4.7	5.9	6.8	9.0	10.9	13.1	13.2
2-year institutions	2.2	3.7	4.3	4.4	5.1	5.0	6.4	7.8	9.4	8.3
White	0.4	1.1	2.3	2.8	3.6	—	—	—	—	—
Black or African American	2.2	5.3	7.5	9.2	9.4	—	—	—	—	—
Hispanic or Latino	2.0	4.7	7.0	9.0	9.5	—	—	—	—	—
Asian/Hawaiian or other Pacific Islander	2.2	5.2	7.1	8.3	9.2	—	—	—	—	—
American Indian/Alaska Native	4.4	6.4	3.9	4.3	4.6	—	—	—	—	—
Nonresident alien	2.6	6.2	8.8	6.5	2.9	—	—	—	—	—

— Not available.
[1] MAPEs for public prekindergarten–12 enrollments were calculated using the last 27 editions of *Projections of Education Statistics.*
[2] MAPEs for public high school graduates were calculated from the past 20 editions of *Projections of Education Statistics.*
[3] Data for teachers expressed in full-time equivalents. MAPEs for teachers were calculated from the past 20 editions containing teacher projections.
[4] In constant dollars based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. MAPEs for current expenditures were calculated using projections from the last 20 editions containing current expenditure projections.
[5] MAPEs for private prekindergarten–12 enrollments and high school graduates were calculated from the past 9 editions.
[6] MAPEs for postsecondary degree-granting institution enrollments were calculated using the last 12 editions of Projections of Education Statistics.
NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. No MAPEs are presented for degrees conferred as the current models used for producing these projections have only been used for two other editions of *Projections of Education Statistics*. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics,* various issues. (This table was prepared February 2011.)

Table A-3. Example of constructing mean absolute percentage errors, part 1

Source	Year of data			
	2005	2006	2007	2008
	Enrollment in thousands			
Actual	49,113	49,316	49,293	49,265
	Projected enrollment, in thousands			
Projections of Education Statistics 2016	49,028	49,370	49,610	49,812
Projections of Education Statistics 2017	†	49,464	49,644	49,825
Projections of Education Statistics 2018	†	†	49,470	49,623
Projections of Education Statistics 2019	†	†	†	49,265
	Percentage difference between actual and projected values			
Projections of Education Statistics 2016	-0.2	0.1	0.6	1.1
Projections of Education Statistics 2017	†	0.3	0.7	1.1
Projections of Education Statistics 2018	†	†	0.4	0.7
Projections of Education Statistics 2019	†	†	†	#

† Not applicable.
# Rounds to zero.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2005–06 through 2008–09; and *Projections of Education Statistics,* various editions. (This table was prepared January 2011.)

Table A-4. Example of constructing mean absolute percentage errors, part 2

Source	Lead time (years)			
	1	2	3	4
	Absolute value of percentage difference between actual and projected values			
Projections of Education Statistics 2016	0.2	0.1	0.6	1.1
Projections of Education Statistics 2017	0.3	0.7	1.1	†
Projections of Education Statistics 2018	0.4	0.7	†	†
Projections of Education Statistics 2019	#	†	†	†
	Mean absolute percentage error			
Example	0.2	0.5	0.9	1.1

† Not applicable.
# Rounds to zero.
NOTE: The mean absolute percentage errors presented on this table are for illustrative purpose only.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2005–06 through 2008–09; and *Projections of Education Statistics,* various editions. (This table was prepared January 2011.)

A.1. ELEMENTARY AND SECONDARY ENROLLMENT

Projections in this edition

This edition of *Projections of Education Statistics* presents projected trends in elementary and secondary enrollment from 2009 to 2020. These projections were made using three models:

- The *National Elementary and Secondary Enrollment Model* was used to project total, public, and private school enrollments for the nation by grade level and for ungraded elementary and ungraded secondary programs.
- The *State Public Elementary and Secondary Enrollment Model* was used to project total public school enrollments by grade level for individual states and regions.
- The *National Public Elementary and Secondary Enrollment by Race/Ethnicity Model* was used to project public school enrollments for the nation by race/ethnicity and grade level.

All three elementary and secondary enrollment models used the following same methods.

Overview of approach

Two methods were used in all the elementary and secondary enrollment models:

- The *grade progression rate method* was used to project enrollments in grades 2 through 12. In this method, a rate of progression from each grade (1 through 11) to the next grade (2 through 12) was projected using single exponential smoothing. (For example, the rate of progression from grade 2 to grade 3 is the current year's grade 3 enrollment expressed as a percentage of the previous year's grade 2 enrollment.) To calculate enrollment for each year in the forecast period, the progression rate for each grade was applied to the previous year's enrollment in the previous grade.
- The *enrollment rate method* was used to project prekindergarten, kindergarten, and first-grade enrollments as well as elementary special and ungraded and secondary special and ungraded enrollments. For each of these enrollment categories, the enrollment rate for the last year of actual data was used as the projected enrollment rate. To calculate enrollment for each year in the forecast period, the enrollment rate for each category was applied to the projected population in the appropriate age group.

Assumptions underlying these methods

The grade progression and enrollment rate methods assume that past trends in factors affecting public and private elementary and secondary school enrollments will continue over the forecast period. This assumption implies that all factors influencing enrollments will display future patterns consistent with past patterns. This method implicitly includes the net effect of such factors as migration, dropouts, deaths, nonpromotion, and transfers between public and private schools.

For more details on the use of the grade progression and enrollment rate methods, see "Procedures and equations used in all three elementary and secondary enrollment models," below.

Procedures and equations used in all three elementary and secondary enrollment models

The notation and equations that follow describe the basic procedures used to project elementary and secondary enrollments in each of the three elementary and secondary enrollment models.

Let:

i = Subscript denoting age

j = Subscript denoting grade

t = Subscript denoting time

T = Subscript of the first year in the forecast period

N_t = Enrollment at the prekindergarten (nursery) level

K_t = Enrollment at the kindergarten level

$G_{j,t}$ = Enrollment in grade j

E_t = Enrollment in elementary special and ungraded programs

S_t = Enrollment in secondary special and ungraded programs

$P_{i,t}$ = Population age i

$R_{j,t}$ = Progression rate for grade j

RN_t = Enrollment rate for prekindergarten (nursery school)

RK_t = Enrollment rate for kindergarten

$RG_{1,t}$ = Enrollment rate for grade 1

RE_t = Enrollment rate for elementary special and ungraded programs

RS_t = Enrollment rate for secondary special and ungraded programs.

Step 1. *Calculate historical grade progression rates for each of grades 2 through 12.* The first step in projecting the enrollments for grades 2 through 12 using the grade progression method was to calculate, for each grade, a progression rate for each year in the sample period except for the first year. The progression rate for grade j in year t equals

$$R_{j,t} = G_{j,t}/G_{j-1,t-1}$$

Step 2. *Produce a projected progression rate for each of grades 2 through 12.* Projections for each grade's progression rate were then produced for the forecast period using single exponential smoothing. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected progression rate for each grade. Single exponential smoothing produces a single forecast for all years in the forecast period. Therefore, for each grade j, the projected progression rate, $\hat{R}_j$, is the same for each year in the forecast period.

Step 3. *Calculate enrollment projections for each of grades 2 through 12.* For the first year in the forecast period, T, enrollment projections, $\hat{G}_{j,t}$, for grades 2 through 12, were produced using the projected progression rates and the enrollments of grades 1 through 11 from the last year of actual data, $T–1$. Specifically,

$$\hat{G}_{j,T} = \hat{R}_j \cdot G_{j-1,T-1}$$

This same procedure was then used to produce the projections for the following year, $T+1$, except that enrollment projections for year T were used rather than actual numbers:

$$\hat{G}_{j,T+1} = \hat{R}_j \cdot \hat{G}_{j,T}$$

The enrollment projections for grades 2 through 11 for year T were those just produced using the grade progression method. The projection for grade 1 for year T was produced using the enrollment rate method, as outlined in steps 4 and 5 below.

The same procedure was used for the remaining years in the projections period.

Step 4. *For the last year of actual data, calculate enrollment rates for prekindergarten, kindergarten, grade 1, elementary special and ungraded, and secondary special and ungraded.* The first step in projecting prekindergarten, kindergarten, first-grade, elementary special and ungraded, and secondary special and ungraded enrollments using the enrollment rate method was to calculate enrollment rates for each enrollment category for the last year in the sample period, $T–1$, where:

$$\begin{aligned}
RN_{T-1} &= N_{T-1}/P_{5,T-1} \\
RK_{T-1} &= K_{T-1}/P_{5,T-1} \\
RG_{1,T-1} &= G_{1,T-1}/P_{6,T-1} \\
RE_{T-1} &= E_{T-1}/\Sigma_{i=5}^{13} P_{i,T-1} \\
RS_{T-1} &= S_{T-1}/\Sigma_{i=14}^{17} P_{i,T-1}
\end{aligned}$$

These enrollment rates were then used as the projected enrollment rates for each year in the sample period ($\widehat{RN}$, $\widehat{RK}$, $\widehat{RG}_1$, $\widehat{RE}$, and $\widehat{RS}$.)

Step 5. *Using the rates for the last year of actual data as the projected enrollment rates, calculate enrollment projections for prekindergarten through grade 1 and the ungraded categories.* For each year in the forecast period, the enrollment rates were then multiplied by the appropriate population projections from the U.S. Census Bureau ($\hat{P}_{i,t}$) to calculate enrollment projections for prekindergarten (nursery school) ($\hat{N}_t$), kindergarten ($\hat{K}_t$), first grade ($\hat{G}_{1,t}$), elementary ungraded ($\hat{E}_t$), and secondary ungraded ($\hat{S}_t$)

$$\hat{N}_t = \widehat{RN} \cdot \hat{P}_{5,t}$$
$$\hat{K}_t = \widehat{RK} \cdot \hat{P}_{5,t}$$
$$\hat{G}_{1,t} = \widehat{RG}_1 \cdot \hat{P}_{5,t}$$
$$\hat{E}_t = \widehat{RE} \cdot (\sum_{i=5}^{13} \hat{P}_{i,t})$$
$$\hat{S}_t = \widehat{RS} \cdot (\sum_{i=14}^{17} \hat{P}_{i,t})$$

Step 6. *Calculate total elementary and secondary enrollments by summing the projections for each grade and the ungraded categories.* To obtain projections of total enrollment, projections of enrollments for the individual grades (prekindergarten through 12), elementary ungraded, and secondary ungraded were summed.

National Elementary and Secondary Enrollment Model

This model was used to project national total, public, and private school enrollments by grade level and for ungraded elementary and ungraded secondary programs. National enrollment projections for public and private schools were developed separately, then added together to yield total elementary and secondary enrollment projections for the nation. To develop these projections, enrollment data from NCES were used, along with population estimates and projections from the U.S. Census Bureau. Below is information about the specific data used to develop the public school projections and the private school projections, as well as information about the grade progression rates and enrollment rates specific to public schools and private schools.

For details on procedures used to develop the projections, see "Procedures and equations used in all three elementary and secondary enrollment models," earlier in this section of appendix A.

Data used to develop national elementary and secondary enrollment projections

Public school enrollment data. Public school enrollment data from the NCES Common Core of Data (CCD) for 1972 to 2008 were used to develop the national public school enrollment projections.

Private school enrollment data. Private school enrollment data from the NCES Private School Universe Survey (PSS) for 1989–90, 1991–92, 1993–94, 1995–96, 1997–98, 1999–2000, 2001–02, 2003–04, 2005–06, 2007–08, and 2009–10 were used to develop the national private school enrollment projections. Since the PSS is collected in the fall of odd numbered years, data for even numbered years without a PSS collection were estimated by interpolating grade-by-grade progression data from PSS.

Population estimates and projections used for public school enrollment projections. Population estimates for 1972 to 2009 and population projections for 2010 to 2020 from the U.S. Census Bureau were also used to develop the public school enrollment projections. The set of population projections used in this year's *Projections of Education Statistics* are the Census Bureau's 2008 National Population Projections by age and sex (August 2008), adjusted to line up with the most recent historical estimates. This was done through the use of ratio adjustments in which, for each combination of state, age, and sex, the population projections from 2010 to 2020 were multiplied by the ratio of the population estimate for 2009 to the population projection for 2009.

Population estimates and projections used for private school enrollment projections. Population estimates for 1989 to 2009 and population projections for 2010 to 2020 from the U.S. Census Bureau were used to develop the private school enrollment projections. The population projections were ratio-adjusted to line up with the most recent historical estimates.

Grade progression and enrollment rates for national elementary and secondary enrollment projections

Public school grade progression and enrollment rates. Table A-5 on page 91 shows the public school grade progression rates for 2008 and projections for 2009 through 2020. Table A-6 on page 91 shows the public school enrollment rates for 2008 and projections for 2009 through 2020.

Accuracy of national elementary and secondary enrollment projections

Mean absolute percentage errors (MAPEs) for projections of public school enrollment were calculated using the last 27 editions of *Projections of Education Statistics*, while MAPEs for projections of private school enrollment were calculated using the last nine editions. Table A, below, shows MAPEs for both public and private school enrollment projections.

Table A. Mean absolute percentage errors (MAPEs) of enrollment projections, by lead time, control of school, and grade in elementary and secondary schools: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Public elementary and secondary schools										
Prekindergarten–12 enrollment	0.3	0.6	0.8	1.1	1.3	1.5	1.7	2.0	2.2	2.4
Prekindergarten–8 enrollment	0.4	0.7	1.0	1.2	1.3	1.7	2.0	2.5	2.8	3.2
9–12 enrollment	0.3	0.6	0.9	1.1	1.3	1.5	1.9	2.3	2.4	2.3
Private elementary and secondary schools										
Prekindergarten–12 enrollment	3.4	4.6	3.7	7.2	7.7	10.6	9.3	9.4	8.1	6.3
Prekindergarten–8 enrollment	3.5	4.9	4.1	8.0	9.2	12.1	10.6	10.4	10.2	7.9
9–12 enrollment	3.0	3.8	2.3	4.3	2.8	5.8	5.7	6.1	1.3	1.3

NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. MAPEs for public PK–12 enrollments were calculated using the last 27 editions of *Projections of Education Statistics*. MAPEs for private PK-12 enrollments were calculated from the past nine editions. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

For more information about MAPEs, see Section A.0. Introduction, earlier in appendix A.

State Public Elementary and Secondary Enrollment Model

This edition of *Projections of Education Statistics* contains projected trends in public elementary and secondary enrollment by grade level from 2009 to 2020 for each of the 50 states and the District of Columbia, as well as for each region of the country. The state enrollment projections were produced in two stages:

- first, an initial set of projections for each state was produced; and
- second, these initial projections were adjusted to sum to the national public enrollment totals produced by the National Elementary and Secondary Enrollment Model.

For each region, the enrollment projections equaled the sum of enrollment projections for the states within that region.

Initial set of state projections

The same methods used to produce the national enrollment projections—namely, the grade progression rate method and the enrollment rate method—were used to produce the initial sets of public school enrollment projections for each state and the District of Columbia. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected progression rate for each combination of jurisdiction and grade.

For details on the procedures used to develop the initial sets of projections, see "Procedures and equations used in all three elementary and secondary enrollment models," earlier in this section of appendix A.

Limitations of the grade progression method for state projections

The grade progression rate method assumes that past trends in factors affecting public school enrollments will continue over the forecast period. This assumption implies that all factors influencing enrollments will display future patterns consistent with past patterns. Therefore, this method has limitations when applied to states with unanticipated changes in migration rates. This method implicitly includes the net effect of such factors as migration, dropouts, deaths, nonpromotion, and transfers to and from private schools.

Adjustments to the state projections

The initial projections of state public school enrollments were adjusted to sum to the national projections of public school prekindergarten (PK)–12, PK–8, and 9–12 enrollments shown in table 1 on page 31. This was done through the use of ratio adjustments in which all the states' initial enrollment projections for each grade level were multiplied by the ratio of the national enrollment projection for that grade level to the sum of the state enrollment projections for that grade level.

Data used to develop state elementary and secondary enrollment projections

Public school enrollment data. Public school enrollment data from the NCES Common Core of Data (CCD) for 1980 to 2008 were used to develop these projections.

Population estimates and projections. Population estimates for 1980 to 2009 and population projections for 2010 to 2020 from the U.S. Census Bureau were used to develop the state-level enrollment projections. The set of population projections used in this year's *Projections of Education Statistics* are the Census Bureau's set of interim state-level population projections by age and sex (April 2005). In order for the state-level population projections to be consistent with the most recent historical estimates released by the Census Bureau, these projections were adjusted to line up with the most recent historical estimate for each state. This was done through the use of ratio adjustments in which, for each combination of state, age, and sex, the population projections from 2010 to 2020 were multiplied by the ratio of the population estimate for 2009 to the population projection for 2009.

Accuracy of state elementary and secondary enrollment projections

Mean absolute percentage errors (MAPEs) for projections of public school enrollment by state were calculated using the last 15 editions of *Projections of Education Statistics*. Tables A-7 through A-9 on pages 92-97 show MAPEs for PK–12, PK–8, and 9–12 enrollment in public elementary and secondary schools by state.

National Public Elementary and Secondary Enrollment by Race/Ethnicity Model

This edition of *Projections of Education Statistics* contains projected trends in national public elementary and secondary enrollment by race/ethnicity from 2009 to 2020. The enrollment projections by race/ethnicity were produced in two stages:

- first, an initial set of projections by race/ethnicity was produced; and
- second, these initial projections were adjusted to sum to the national totals.

Initial set of projections by race/ethnicity

The same methods used to produce the national enrollment projections—namely, the grade progression rate method and the enrollment rate method—were used to produce initial sets of projections for each of the following five racial/ethnic groups: White, Black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected progression rate for each combination of race/ethnicity and grade.

For details on the procedures used to develop the initial sets of projections, see "Procedures and equations used in all three elementary and secondary enrollment models," earlier in this section of appendix A.

Adjustments to the projections by race/ethnicity

The initial projections of enrollments by race/ethnicity were adjusted to sum to the national projections of public school PK–12, PK–8, and 9–12 enrollments shown in table 1 on page 31. This was done through the use of ratio adjustments in which all the initial enrollment projections by race/ethnicity for each grade level were multiplied by the ratio of the national enrollment projection for that grade level to the sum of the initial enrollment projections by race/ethnicity for that grade level.

Data and imputations used to develop enrollment projections by race/ethnicity

Public school enrollment data. Public school enrollment data by grade level and race/ethnicity from the NCES Common Core of Data (CCD) for 1994 to 2008 were used to develop these projections. While projections by race/ethnicity were produced at the national level only, the national data used to develop these projections were constructed from state-level data on enrollment by grade level and race/ethnicity. In those instances where states did not report their enrollment data by grade level and race/ethnicity, the state-level data had to be examined and some imputations made in order to produce the national public school enrollment by grade level and race/ethnicity data. For example, in 1994, North Dakota did not report grade-level enrollment data by race/ethnicity. It did, however, report these numbers for 1995. So, to impute these numbers for 1994, North Dakota's 1994 grade-level enrollment data were multiplied by the state's 1995 racial/ethnic breakdowns at each grade level. In 2008, jurisdictions could classify students by an additional racial/ethnic group - those of two or more races. As only five states used this reporting category, those numbers were proportioned among the other five racial/ethnic groups by each of the five ethnic groups' shares of total enrollment, excluding enrollment of those of two or more races. When a sufficient number of states use this racial/ethnic group, projections will be developed for this group.

Population estimates and projections. Population estimates for 2000 to 2009 and population projections for 2010 to 2020 from the U.S. Census Bureau were used to develop the enrollment projections by race/ethnicity. The set of population projections used in this year's *Projections of Education Statistics* are the Census Bureau's 2008 National Population Projections by age, sex, and race/ethnicity (August 2008), ratio-adjusted to line up with the most recent historical estimates.

Accuracy of enrollment projections by race/ethnicity

Because this is the second edition of *Projections of Education Statistics* to include projections of elementary and secondary public school enrollments by race/ethnicity, the difference between the projections and actual data for the same years cannot yet be determined.

Table A-5. Actual and projected national public school grade progression rates: Fall 2008, and fall 2009 through fall 2020

Grade	Actual 2008	Projected 2009 through 2020
1 to 2	98.6	98.6
2 to 3	100.1	100.3
3 to 4	99.7	100.1
4 to 5	100.1	100.4
5 to 6	100.4	100.8
6 to 7	100.7	100.8
7 to 8	99.8	99.8
8 to 9	111.1	111.1
9 to 10	91.0	91.0
10 to 11	91.8	91.8
11 to 12	95.6	95.6

NOTE: The progression rate for a particular grade in a year equals the enrollment in the grade for that year divided by the enrollment in the previous grade in the previous year, all multiplied by 100. For example, the progression rate for third-graders in 2008 equals the enrollment of third-graders in 2008 divided by the enrollment of second-graders in 2007, all multiplied by 100.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2008–09; and National Elementary and Secondary Enrollment Model, 1972–2008. (This table was prepared February 2011.)

Table A-6. Actual and projected national enrollment rates in public schools, by grade level: Fall 2008, and fall 2009 through fall 2020

Grade level	Actual 2008	Projected 2009 through 2020
Prekindergarten	28.6	28.6
Kindergarten	88.2	88.2
Grade 1	90.5	90.5
Elementary ungraded	0.3	0.3
Secondary ungraded	0.4	0.4

NOTE: The enrollment rate for each grade level equals the enrollment at that grade level divided by the population of that grade's base age, all multiplied by 100. The base age for each grade level is as follows: kindergarten, 5 years old; grade 1, 6 years old; elementary ungraded, 5 to 13 years old; and secondary ungraded, 14 to 17 years old. Projected values for 2009 through 2020 were held constant at the actual values for 2008.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 2008–09; and National Elementary and Secondary Enrollment Model, 1972–2008. (This table was prepared February 2011.)

Table A-7. Mean absolute percentage errors (MAPEs) for projected prekindergarten–12 enrollment in public elementary and secondary schools, by lead time, region, and state: 2011

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.3**	**0.6**	**0.8**	**1.1**	**1.3**	**1.5**	**1.7**	**2.0**	**2.2**	**2.4**
Northeast	0.3	0.3	0.5	0.6	0.5	0.7	0.8	0.6	0.7	0.8
Connecticut	0.6	0.8	1.1	1.5	2.2	3.1	4.1	5.5	6.3	7.2
Maine	0.8	1.4	1.5	1.5	1.9	1.9	1.7	1.6	1.9	1.9
Massachusetts	0.4	0.3	0.4	0.3	0.5	0.8	0.9	1.1	1.4	1.9
New Hampshire	0.6	0.7	0.9	1.3	1.4	2.0	2.5	3.0	3.2	3.3
New Jersey	0.6	1.0	1.5	2.1	2.6	3.1	3.8	4.8	5.5	6.1
New York	0.5	0.7	1.0	1.4	1.8	2.3	2.7	3.1	3.7	4.0
Pennsylvania	0.9	1.3	1.3	1.4	1.4	1.8	1.8	1.7	1.6	2.2
Rhode Island	1.0	1.6	2.4	2.9	3.2	3.0	2.6	1.6	1.7	2.5
Vermont	1.0	1.5	1.9	2.3	3.0	3.6	4.5	5.6	6.6	7.4
Midwest	0.3	0.4	0.6	0.7	0.9	1.1	1.4	1.8	1.7	1.6
Illinois	0.6	0.8	1.0	1.1	1.3	1.6	2.0	2.6	3.0	3.3
Indiana	0.3	0.7	1.0	1.5	2.0	2.5	3.0	3.0	2.6	2.4
Iowa	0.6	0.7	0.9	1.0	1.4	1.5	1.0	1.3	1.7	2.2
Kansas	0.8	1.0	1.4	1.4	1.5	1.6	1.6	1.7	1.6	1.9
Michigan	0.7	1.7	2.5	3.1	3.4	3.9	3.9	3.5	4.0	4.0
Minnesota	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.4	1.5	1.8
Missouri	0.4	0.5	0.6	0.8	1.0	1.1	1.0	1.1	0.8	1.2
Nebraska	0.6	0.7	0.9	1.0	1.5	1.9	1.9	2.0	1.9	1.6
North Dakota	0.7	1.2	1.6	2.2	3.0	4.2	6.0	7.7	9.5	11.1
Ohio	0.4	0.4	0.7	0.9	1.2	1.6	1.8	2.2	2.5	2.4
South Dakota	1.2	2.2	3.4	4.5	5.7	7.0	7.8	9.0	10.4	13.2
Wisconsin	0.7	0.9	1.2	1.4	1.3	1.4	1.7	1.9	1.7	2.0

See notes at end of table.

Table A-7. Mean absolute percentage errors (MAPEs) for projected prekindergarten–12 enrollment in public elementary and secondary schools, by lead time, region, and state: 2011—Continued

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.3**	**0.6**	**0.8**	**1.1**	**1.3**	**1.5**	**1.7**	**2.0**	**2.2**	**2.4**
South	0.5	0.9	1.4	1.8	2.2	2.7	3.0	3.3	3.4	3.2
Alabama	0.6	0.7	1.1	1.7	2.4	3.2	3.9	5.0	6.1	7.5
Arkansas	0.6	1.2	1.9	2.6	3.6	4.5	4.8	4.5	4.0	3.5
Delaware	0.7	1.1	1.7	2.5	3.6	4.8	5.6	6.3	6.8	7.1
District of Columbia	5.5	4.5	6.4	7.0	6.6	7.7	7.4	5.8	7.2	4.3
Florida	1.0	1.8	2.3	2.7	3.3	4.2	5.4	7.0	8.3	9.2
Georgia	0.8	1.3	1.8	2.3	2.8	3.6	4.2	4.6	5.0	5.6
Kentucky	1.6	1.6	2.2	2.5	2.4	3.2	3.1	2.6	3.5	3.3
Louisiana	2.2	3.4	4.1	4.1	4.8	5.7	7.1	7.2	9.0	11.0
Maryland	0.5	0.7	1.0	1.3	1.7	1.9	2.3	2.4	2.6	3.2
Mississippi	0.4	1.0	1.3	1.6	1.9	2.3	2.6	3.1	3.8	4.4
North Carolina	0.9	1.3	2.0	2.9	3.8	4.6	4.9	4.9	4.9	4.7
Oklahoma	1.0	1.4	2.1	2.8	3.6	4.3	4.7	5.2	5.3	5.1
South Carolina	0.8	1.3	1.7	2.3	3.0	3.8	4.5	5.3	5.4	4.6
Tennessee	1.1	1.4	1.6	2.2	2.7	3.3	3.4	3.8	3.3	2.8
Texas	0.9	1.6	2.2	2.7	3.4	4.2	5.1	5.8	6.4	6.6
Virginia	0.5	0.6	0.9	1.3	1.9	2.5	2.8	3.2	3.6	3.6
West Virginia	0.6	0.7	1.1	1.5	2.3	3.0	3.5	4.3	4.7	4.8
West	0.5	1.0	1.3	1.4	1.6	1.9	2.0	1.8	1.7	1.5
Alaska	1.1	1.8	2.4	2.8	3.5	4.9	6.5	7.6	8.7	9.7
Arizona	2.6	3.6	4.8	5.0	6.2	6.9	7.3	8.7	10.7	11.9
California	0.6	1.1	1.6	2.0	2.4	2.9	2.8	2.1	1.9	2.4
Colorado	0.6	0.9	1.3	1.8	2.4	3.1	4.0	4.7	5.3	5.9
Hawaii	1.8	3.0	4.2	5.8	7.5	9.8	12.5	14.6	16.5	19.2
Idaho	0.7	1.4	2.0	2.8	3.7	4.3	4.7	5.0	5.3	5.6
Montana	0.9	1.6	2.5	3.7	5.0	6.9	8.9	10.9	12.4	13.6
Nevada	1.0	1.7	2.5	3.6	5.2	7.1	9.6	12.3	14.7	17.7
New Mexico	1.5	2.5	3.6	5.0	6.6	8.1	10.0	12.0	14.0	15.9
Oregon	0.6	1.1	1.5	1.8	2.0	2.2	2.9	3.6	3.8	4.0
Utah	1.6	1.4	1.5	2.7	3.7	4.6	5.2	5.8	6.1	5.1
Washington	0.5	0.8	1.1	1.5	1.7	1.9	2.2	2.9	3.2	4.0
Wyoming	0.9	1.5	2.7	4.0	5.7	7.3	9.1	11.5	14.3	17.5

NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. National MAPEs for public prekindergarten–12 enrollments were calculated using the last 27 editions of *Projections of Education Statistics* and state MAPEs were calculated using the last 15 editions of *Projections of Education Statistics.* Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics,* various issues. (This table was prepared February 2011.)

Table A-8. Mean absolute percentage errors (MAPEs) for projected prekindergarten–8 enrollment in public elementary and secondary schools, by lead time, region, and state: 2011

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.4**	**0.7**	**1.0**	**1.2**	**1.3**	**1.7**	**2.0**	**2.5**	**2.8**	**3.2**
Northeast	0.3	0.4	0.6	0.6	0.4	0.6	0.7	0.5	0.6	0.7
Connecticut	0.7	1.0	1.4	1.9	2.6	3.4	4.5	5.5	5.9	6.2
Maine	0.6	1.0	1.2	1.7	2.1	2.6	3.6	4.1	4.6	4.8
Massachusetts	0.3	0.5	0.7	0.9	0.9	1.4	1.5	1.7	1.8	2.1
New Hampshire	0.7	0.9	1.3	2.0	2.4	3.2	4.1	4.1	3.8	3.6
New Jersey	0.7	1.1	1.5	2.0	2.3	2.7	3.2	3.7	4.1	4.4
New York	0.5	0.7	0.9	1.4	1.6	2.1	2.5	2.9	3.4	3.8
Pennsylvania	0.5	0.9	1.0	1.1	1.2	1.4	1.2	1.1	1.3	1.6
Rhode Island	1.3	1.8	2.5	3.1	3.4	3.5	3.6	2.6	2.8	3.5
Vermont	1.3	1.7	2.1	2.6	3.9	5.2	7.1	8.7	9.9	10.6
Midwest	0.3	0.3	0.6	0.7	0.7	0.8	1.0	1.3	1.3	1.3
Illinois	0.7	0.9	1.0	1.2	1.5	1.9	2.3	2.8	2.9	2.9
Indiana	0.4	0.7	1.1	1.4	1.8	2.3	2.6	2.5	2.3	2.3
Iowa	0.8	0.9	1.1	1.4	1.9	2.1	1.6	1.8	2.1	2.4
Kansas	0.9	1.1	1.3	1.3	1.6	1.8	1.9	2.2	2.4	2.7
Michigan	0.7	1.4	2.2	2.8	2.8	3.0	3.1	3.2	3.2	2.5
Minnesota	0.4	0.5	0.7	0.9	0.9	1.1	1.0	1.0	1.0	1.3
Missouri	0.6	0.8	1.1	1.4	1.6	1.6	1.5	1.3	0.9	1.1
Nebraska	0.7	0.9	1.0	1.1	1.6	2.0	2.0	2.2	2.2	2.1
North Dakota	1.1	1.9	2.4	3.2	4.3	5.8	8.2	10.1	11.5	12.4
Ohio	0.4	0.5	0.6	0.7	0.7	0.9	1.0	1.2	1.4	1.6
South Dakota	1.2	2.2	3.4	4.9	6.7	8.9	10.2	12.1	13.5	14.9
Wisconsin	0.7	0.8	1.0	1.2	1.3	1.5	1.4	1.6	1.3	1.6

See notes at end of table.

Table A-8. Mean absolute percentage errors (MAPEs) for projected prekindergarten–8 enrollment in public elementary and secondary schools, by lead time, region, and state: 2011—Continued

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.4**	**0.7**	**1.0**	**1.2**	**1.3**	**1.7**	**2.0**	**2.5**	**2.8**	**3.2**
South	0.6	1.2	1.7	2.1	2.4	3.0	3.3	3.5	3.6	3.6
Alabama	0.7	1.1	1.7	2.3	3.1	4.0	4.8	6.3	7.9	9.4
Arkansas	0.9	1.5	2.4	3.1	4.3	5.4	5.8	5.2	4.8	4.1
Delaware	0.9	1.5	2.2	3.2	4.3	5.6	6.2	7.0	7.6	8.4
District of Columbia	4.7	4.7	6.1	6.5	6.2	6.8	7.2	4.6	8.2	5.9
Florida	1.2	2.2	2.9	3.3	3.9	4.8	6.4	7.8	8.9	9.6
Georgia	1.0	1.7	2.3	2.7	3.2	4.0	4.6	4.9	5.3	6.0
Kentucky	1.7	2.1	3.0	3.2	3.2	3.3	3.1	3.1	3.5	3.6
Louisiana	2.0	3.2	3.6	3.6	4.0	4.7	6.0	5.9	7.5	9.2
Maryland	0.5	0.7	1.1	1.6	2.2	2.6	3.3	3.9	4.6	5.5
Mississippi	0.6	1.3	1.8	2.1	2.4	2.7	2.9	3.8	4.4	4.7
North Carolina	1.1	1.7	2.5	3.4	4.5	5.6	6.0	6.4	6.6	6.5
Oklahoma	1.4	2.0	2.9	3.8	4.8	5.8	6.5	6.9	7.1	7.3
South Carolina	1.1	1.6	2.1	3.1	3.7	4.6	4.9	5.7	5.9	5.3
Tennessee	0.9	1.4	1.8	2.1	2.4	2.8	2.7	2.9	2.6	2.4
Texas	1.1	2.0	2.7	3.2	3.9	4.7	5.5	6.1	6.6	6.9
Virginia	0.6	0.9	1.1	1.4	1.8	2.6	2.9	3.2	3.3	3.3
West Virginia	0.6	0.7	1.1	1.4	2.3	3.0	3.4	4.2	4.7	4.7
West	0.6	1.1	1.5	1.5	1.6	2.0	2.1	1.9	2.0	1.9
Alaska	1.3	2.0	3.0	3.6	4.9	7.0	9.4	11.0	12.2	13.5
Arizona	2.3	2.9	3.9	4.2	5.4	7.2	7.5	9.0	10.3	11.3
California	0.9	1.5	2.0	2.4	2.9	3.5	3.3	2.5	2.3	2.7
Colorado	0.7	1.2	1.7	2.3	3.1	4.0	5.0	5.9	6.5	7.1
Hawaii	2.0	3.4	4.7	6.6	8.7	11.7	15.3	18.0	20.0	22.7
Idaho	0.9	1.9	2.8	3.6	4.6	5.3	5.7	6.1	6.7	6.6
Montana	1.2	2.0	3.4	5.0	6.9	9.7	12.9	15.6	17.5	18.5
Nevada	1.2	2.6	4.1	5.7	7.8	10.6	14.2	17.1	19.3	21.7
New Mexico	1.3	2.3	3.1	4.2	5.7	7.3	9.7	12.0	13.5	14.4
Oregon	0.6	1.0	1.1	1.5	1.9	2.2	2.8	3.5	3.9	4.4
Utah	1.6	1.6	2.0	2.9	4.3	5.2	5.8	6.1	6.1	4.5
Washington	0.5	0.8	1.1	1.6	2.0	2.3	2.5	3.2	3.6	4.2
Wyoming	1.1	1.7	3.4	5.1	7.7	10.1	12.8	16.0	18.7	21.3

NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. National MAPEs for public prekindergarten-8 enrollment were calculated using the last 27 editions of *Projections of Education Statistics* and state MAPEs were calculated using the last 15 editions of *Projections of Education Statistics.* Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics,* various issues. (This table was prepared February 2011.)

Table A-9. Mean absolute percentage errors (MAPEs) for projected grades 9–12 enrollment in public schools, by lead time, region, and state: 2011

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.3**	**0.6**	**0.9**	**1.1**	**1.3**	**1.5**	**1.9**	**2.3**	**2.4**	**2.3**
Northeast	0.6	0.8	0.9	1.0	1.2	1.2	1.2	1.3	1.3	1.5
Connecticut	0.6	0.9	0.8	1.1	1.7	2.7	3.7	5.4	7.4	9.5
Maine	1.7	3.3	4.0	4.6	4.9	6.1	7.1	8.2	8.7	7.8
Massachusetts	0.6	0.9	1.3	1.5	1.8	2.2	2.5	2.1	2.3	2.5
New Hampshire	0.6	1.0	1.4	1.8	2.0	2.3	2.6	3.2	4.3	5.3
New Jersey	0.6	1.4	2.1	2.6	3.4	4.7	5.8	7.3	9.3	10.4
New York	0.8	1.3	1.5	1.7	2.2	2.9	3.2	3.5	4.2	4.5
Pennsylvania	1.8	2.2	1.9	2.2	2.4	2.9	3.1	3.1	2.4	3.7
Rhode Island	0.8	1.5	2.4	3.5	4.5	5.0	4.6	3.5	3.1	3.6
Vermont	0.9	2.4	3.0	3.6	3.7	4.0	4.0	4.0	3.6	4.1
Midwest	0.5	0.9	1.2	1.4	1.6	1.8	2.2	2.7	2.6	2.4
Illinois	0.9	1.2	1.6	1.8	2.2	3.0	3.6	4.4	4.9	5.5
Indiana	0.6	0.9	1.5	2.0	2.6	3.3	4.0	4.4	4.4	4.1
Iowa	0.9	1.0	1.5	1.3	1.5	1.4	1.6	1.5	1.8	2.0
Kansas	1.2	1.8	2.5	2.8	2.8	2.5	2.2	2.0	1.6	0.8
Michigan	1.6	2.9	3.5	4.1	5.1	6.4	7.3	8.1	9.3	10.0
Minnesota	0.6	1.0	1.3	1.5	1.8	2.1	2.3	2.5	2.9	3.4
Missouri	0.4	0.7	0.8	1.3	1.6	1.6	1.8	1.7	1.4	1.4
Nebraska	0.4	0.8	1.1	1.5	1.9	2.5	3.0	3.2	3.0	2.6
North Dakota	0.6	1.1	1.3	1.8	2.4	3.3	4.6	6.0	7.2	9.5
Ohio	0.8	1.3	1.7	2.0	2.4	3.1	3.8	4.5	4.8	4.3
South Dakota	1.5	3.2	4.7	6.1	7.3	8.3	9.9	11.1	11.6	12.2
Wisconsin	0.9	1.4	1.7	2.1	2.0	2.1	2.4	2.7	2.6	2.8

See notes at end of table.

Table A-9. Mean absolute percentage errors (MAPEs) for projected grades 9–12 enrollment in public schools, by lead time, region, and state: 2011—Continued

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**0.3**	**0.6**	**0.9**	**1.1**	**1.3**	**1.5**	**1.9**	**2.3**	**2.4**	**2.3**
South	0.4	0.8	1.2	1.4	1.7	2.1	2.4	2.7	2.8	2.5
Alabama	0.9	1.1	1.6	2.0	2.2	3.2	3.7	4.0	4.4	4.5
Arkansas	0.5	0.9	1.4	1.6	1.9	2.2	2.5	2.6	2.3	2.2
Delaware	1.3	1.2	1.5	2.0	2.8	3.7	4.4	4.6	5.5	6.3
District of Columbia	8.1	7.4	11.1	13.9	16.5	18.8	17.5	18.5	16.9	16.0
Florida	0.7	1.1	1.4	1.7	1.9	3.0	4.2	5.3	6.9	8.3
Georgia	0.5	1.0	1.4	1.7	2.1	2.5	3.1	3.7	4.3	4.6
Kentucky	1.7	2.2	2.4	2.5	2.1	3.7	4.1	3.6	4.0	2.9
Louisiana	3.3	4.5	5.7	5.7	7.3	8.6	10.1	10.6	13.2	16.0
Maryland	0.6	0.7	1.0	1.3	1.3	1.6	1.8	2.1	2.4	2.3
Mississippi	0.6	1.3	1.9	2.1	2.4	2.8	3.2	3.3	3.6	4.0
North Carolina	1.0	1.6	1.8	1.9	2.4	2.6	2.6	2.3	2.2	2.6
Oklahoma	0.4	0.8	1.2	1.6	2.1	2.4	2.7	2.8	2.6	2.4
South Carolina	0.8	1.3	1.6	1.6	2.0	2.6	3.4	4.4	4.7	4.6
Tennessee	2.1	2.1	3.0	4.1	4.9	5.5	5.6	6.1	4.9	4.4
Texas	0.5	1.1	1.7	2.2	2.7	3.3	4.2	5.3	5.8	5.7
Virginia	0.5	0.9	1.3	2.1	2.9	3.5	4.0	4.4	5.0	4.6
West Virginia	0.7	1.0	1.3	1.6	2.2	3.1	3.9	4.4	4.7	5.1
West	0.6	0.8	1.3	1.6	1.9	2.0	2.3	2.6	2.5	1.4
Alaska	1.1	2.2	2.9	3.0	2.8	2.8	3.5	4.1	4.1	4.9
Arizona	4.3	6.7	9.6	8.7	8.2	6.7	6.7	7.8	11.5	14.1
California	0.5	1.1	1.6	2.1	2.5	2.6	2.6	2.6	2.4	2.3
Colorado	0.7	1.2	1.7	1.9	2.0	2.4	2.6	2.8	3.4	3.5
Hawaii	1.9	2.8	3.8	4.6	5.4	6.5	7.5	8.6	8.7	11.0
Idaho	0.7	1.1	1.7	2.3	3.0	3.6	4.3	4.6	4.3	4.6
Montana	0.6	1.1	1.7	2.3	3.1	3.8	4.3	4.2	3.7	4.0
Nevada	1.1	2.3	2.8	2.8	3.4	3.6	4.2	5.7	8.2	11.3
New Mexico	2.9	4.9	6.4	7.8	9.9	11.3	12.9	14.3	15.3	19.4
Oregon	1.2	1.9	2.8	3.1	3.0	3.3	4.0	5.1	5.1	4.6
Utah	1.8	1.2	0.8	2.4	2.4	3.1	3.9	4.9	6.0	6.7
Washington	0.7	0.9	1.2	1.7	1.9	2.4	3.1	3.6	4.1	4.4
Wyoming	0.8	1.3	2.2	3.2	4.1	5.1	6.3	7.5	8.5	10.3

NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. National MAPEs for public 9–12 enrollments were calculated using the last 27 editions of *Projections of Education Statistics* and state MAPEs were calculated using the last 15 editions of *Projections of Education Statistics.* Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics,* various issues. (This table was prepared February 2011.)

A.2. HIGH SCHOOL GRADUATES

Projections in this edition

This edition of *Projections of Education Statistics* presents projected trends in the number of high school graduates from 2008–09 to 2020–21. These projections were made using three models:

- The *National High School Graduates Model* was used to project the number of public high school graduates, the number of private high school graduates, and the total number of high school graduates for the nation.
- The *State Public High School Graduates Model* was used to project the number of public high school graduates for individual states and regions.
- The *National Public High School Graduates by Race/Ethnicity Model* was used to project the number of public high school graduates for the nation by race/ethnicity.

Overview of approach

All the high school graduates models first calculated the number of high school graduates as a percentage of grade 12 enrollment based on historical data. Single exponential smoothing was used to project this percentage. The projected percentage was then applied to projections of grade 12 enrollment.

Assumptions underlying this approach

The percentage of 12th-graders who graduate was assumed to remain constant at levels consistent with the most recent rates. This methodology assumes that past trends in factors affecting graduation rates, such as dropouts, migration, and public or private transfers, will continue over the forecast period. (No specific assumptions were made regarding the dropout rate; the effect of the 12th grade dropout proportion is reflected implicitly in the graduate proportion.) In addition to student behaviors, the projected number of graduates could be affected by changes in graduation requirements, but this is not considered in the projections in this report.

For more details on the steps used for projections of high school graduates, see "Procedures used in all three high school graduates models," below.

Procedures used in all three high school graduates models

The following steps were used to project the numbers of high school graduates:

Step 1. *For each year in the historic period, express the number of high school graduates as a percentage of grade 12 enrollment.* This value represents the approximate percentage of 12th-graders who graduate. For information about the specific historical data and analysis periods used for the National High School Graduates Model, the State Public High School Graduates Model, and the National Public High School Graduates by Race/Ethnicity Model, see the description of the appropriate model, later in this section of appendix A.

Step 2. *Project the percentage of 12th-graders who graduate from step 1.* This percentage was projected using single exponential smoothing with a smoothing constant chosen to minimize the sum of squared forecast errors. Because single exponential smoothing produces a single forecast for all years in the forecast period, the same projected percentage of grade 12 enrollment was used for each year in the forecast period.

Step 3. *Calculate projections of the numbers of high school graduates.* For each year in the forecast period, the projected percentage from step 2 was applied to projections of grade 12 enrollment to yield projections of high school graduates.

National High School Graduates Model

This model was used to project the number of public high school graduates, the number of private high school graduates, and the total number of high school graduates for the nation. Public and private high school graduates were projected separately. The public and private projections were then summed to yield projections of the total number of high school graduates for the nation.

For details of the procedures used to develop the projections, see "Procedures used in all three high school graduates models," above.

Data used in the National High School Graduates Model

Public school data on graduates and grade 12 enrollment. Data on public school 12th-grade enrollments and high school graduates from the NCES Common Core of Data (CCD) for 1972–73 to 2007–08 were used to develop national projections of public high school graduates.

Private school data on graduates and grade 12 enrollment. Data on private school 12th-grade enrollments for 1989–90 through 2009–10 and high school graduates for 1988–89 through 2008–09 were used to develop national projections of private high school graduates. The data were from the biennial NCES Private School Universe Survey (PSS) from 1989–90 to 2009–10 with data for 12th grade enrollment the same as the year of the survey and the data for high school graduates for the preceding year (i.e. the 2009–10 PSS presents high school graduates for 2008–09). Since the PSS is collected in the fall of odd numbered years, data for missing years were estimated using data from the PSS. For 12th grade enrollment, estimates for missing years were linear interpolations of the prior year's and succeeding year's actual values. For high school graduates, estimates for the missing years were the interpolations of the high school graduates to estimated 12th grade enrollment percentages for the prior and succeeding years multiplied by the estimated enrollments for the current year.

Public and private school enrollment projections for grade 12. Projections of grade 12 enrollment in public schools and in private schools were used to develop projections of public high school graduates and private high school graduates, respectively. The grade 12 enrollment projections were made using the grade progression method. For more information, see Section A.1. Elementary and Secondary Enrollment, earlier in this appendix.

Accuracy of national high school graduates projections

Mean absolute percentage errors (MAPEs) for projections of graduates from public high schools were calculated using the last 20 editions of *Projections of Education Statistics*, while MAPEs for projections of graduates from private high schools were calculated using the last nine editions. Table B, below, shows MAPEs for both public and private school graduation projections.

Table B. Mean absolute percentage errors (MAPEs) of projections of high school graduates, by lead time and control of school: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Public high school graduates	1.0	1.0	1.5	1.7	1.6	2.1	2.8	3.7	4.2	4.0
Private high school graduates	0.9	0.9	1.6	2.8	5.0	6.2	4.9	4.8	1.6	1.6

NOTE: MAPEs for public high school graduates were calculated from the past 20 editions of *Projections of Education Statistics*. MAPEs for private high school graduates were calculated from the past nine editions. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

For more information about MAPEs, see Section A.0. Introduction, earlier in appendix A.

State Public High School Graduates Model

This edition of *Projections of Education Statistics* contains projections of public high school graduates from 2008–09 to 2020–21 for each of the 50 states and the District of Columbia, as well as for each region of the country. The state projections of high school graduates were produced in two stages:

- first, an initial set of projections for each state was produced; and
- second, these initial projections were adjusted to sum to the national public school totals produced by the National High School Graduates Model.

For each region, the high school graduate projections equaled the sum of high school graduate projections for the states within that region.

Initial set of state projections

The same steps used to produce the national projections of high school graduates were used to produce an initial set of projections for each state and the District of Columbia. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected percentage of 12th grade enrollment for each jurisdiction.

For details on the steps used to develop the initial sets of projections, see "Procedures used in all three high school graduate models," earlier in this section of appendix A.

Adjustments to the state projections

The initial projections of state public high school graduates were adjusted to sum to the national projections of public high school graduates shown in table 12 on page 47. This was done through the use of ratio adjustments in which all the states' high school graduate projections were multiplied by the ratio of the national public high school graduate projection to the sum of the state public high school projections.

Data used in the State Public High School Graduates Model

Public school data on graduates and grade 12 enrollment at the state level. State-level data on public school 12th-grade enrollments and high school graduates from the NCES Common Core of Data (CCD) for 1980–81 to 2007–08 were used to develop these projections.

Public school projections for grade 12 enrollment at the state level. State-level projections of grade 12 enrollment in public schools were used to develop the state-level projections of public high school graduates. The grade 12 enrollment projections were made using the grade progression method. For more information, see Section A.1. Elementary and Secondary Enrollment, earlier in this appendix.

Accuracy of state public high school graduate projections

Mean absolute percentage errors (MAPEs) for projections of the number of public high school graduates by state were calculated using the last 15 editions of *Projections of Education Statistics*. Table A-10 on pages 102-103 show MAPEs for the number of high school graduates by state.

National Public High School Graduates by Race/Ethnicity Model

The projections of public high school graduates by race/ethnicity were produced in two stages:

- first, an initial set of projections for each racial/ethnic group was produced; and
- second, these initial projections were adjusted to sum to the national public school totals produced by the National High School Graduates Model.

Initial set of projections by race/ethnicity

The same steps used to produce the national projections of high school graduates were used to produce an initial set of projections for each of the following five racial/ethnic groups: White, Black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native. For example, the number of White public high school graduates was projected as a percentage of White grade 12 enrollment in public schools. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected percentage of 12th-grade enrollment for each racial/ethnic group.

Adjustments to the projections by race/ethnicity

The projections of public high school graduates by race/ethnicity were adjusted to sum to the national projections of public high school graduates shown in table 12 on page 47. This was done through the use of ratio adjustments in which all high school graduate projections by race/ethnicity were multiplied by the ratio of the national high school graduate projection to the sum of the high school projections by race/ethnicity.

Data and imputations used in the Public High School Graduates by Race/Ethnicity Model

Public school data on graduates and grade 12 enrollment by race/ethnicity. Data on public high school graduates and grade 12 enrollment by race/ethnicity from the NCES Common Core of Data (CCD) for 1994–95 to 2007–08 were used to develop these projections. In those instances where states did not report their high school graduate data by race/ethnicity, the state-level data had to be examined and some imputations made. For example, in 1994, Arizona did not release high school graduate data by race/ethnicity. It did, however, release grade 12 enrollment numbers by race/ethnicity for that year. So, to impute the high school graduate numbers by race/ethnicity for that year, Arizona's total number of high school graduates for 1994 was multiplied by the state's 1994 racial/ethnic breakdowns for grade 12 enrollment.

Public enrollment projections for grade 12 by race/ethnicity. Projections of grade 12 enrollment in public schools by race/ethnicity were used to develop the projections of public high school graduates by race/ethnicity. The grade 12 enrollment projections were made using the grade progression method. For more information, see Section A.1. Elementary and Secondary Enrollment, earlier in this appendix.

Accuracy of enrollment projections by race/ethnicity

Because this is the second edition of *Projections of Education Statistics* to include projections of public high school graduates by race/ethnicity, the difference between the projections and actual data for the same years cannot yet be determined.

Table A-10. Mean absolute percentage errors (MAPEs) for the projected number of high school graduates in public schools, by lead time, region, and state: 2011

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**1.0**	**1.0**	**1.5**	**1.7**	**1.6**	**2.1**	**2.8**	**3.7**	**4.2**	**4.0**
Northeast	1.3	1.6	1.5	1.5	1.8	2.3	2.4	2.9	3.3	3.5
Connecticut	1.6	1.3	1.2	2.0	2.5	2.7	3.3	2.9	3.8	3.9
Maine	2.9	4.6	3.9	4.5	4.9	5.4	6.7	7.3	8.3	9.6
Massachusetts	0.8	1.4	2.1	2.2	2.1	2.0	2.3	1.1	1.1	1.4
New Hampshire	1.1	1.9	2.1	2.4	2.6	3.5	3.8	4.4	4.0	3.8
New Jersey	2.5	4.4	5.5	5.1	5.2	6.4	7.2	8.9	10.8	11.8
New York	2.0	3.0	2.6	2.9	3.6	4.2	4.9	6.0	5.6	6.0
Pennsylvania	1.7	2.2	1.4	1.7	1.7	2.2	2.4	3.1	3.5	2.9
Rhode Island	1.4	1.1	2.0	1.9	2.4	3.2	4.7	5.4	5.2	5.1
Vermont	2.0	2.3	3.5	4.5	6.2	6.3	6.9	7.6	8.2	8.3
Midwest	1.0	0.7	1.6	1.5	2.0	2.4	2.3	2.8	2.3	1.9
Illinois	2.7	2.2	3.3	4.2	4.4	3.8	6.2	4.6	6.6	8.1
Indiana	1.8	2.1	1.8	1.7	1.8	2.4	3.5	3.8	4.5	3.8
Iowa	1.7	1.2	2.0	1.8	2.6	3.0	2.9	2.6	3.0	2.6
Kansas	1.4	1.4	2.0	1.9	2.9	3.9	4.5	4.8	5.3	4.6
Michigan	3.5	4.5	5.4	6.6	6.7	6.9	8.5	8.6	8.1	8.5
Minnesota	2.5	1.5	1.5	1.8	2.1	2.1	2.7	3.6	4.9	5.0
Missouri	1.0	1.5	2.4	2.9	3.0	3.9	4.5	4.7	4.5	4.4
Nebraska	1.7	2.2	2.3	1.9	2.1	2.4	2.4	2.5	2.2	1.7
North Dakota	1.2	1.5	1.8	1.9	2.2	2.7	3.5	3.4	4.6	6.5
Ohio	1.7	1.5	2.9	3.2	3.7	3.6	3.2	3.5	3.1	4.4
South Dakota	2.5	3.1	3.5	5.9	9.6	10.8	12.7	14.3	17.3	18.1
Wisconsin	1.4	1.7	2.7	2.8	2.9	3.7	4.0	4.6	4.4	3.8

See notes at end of table.

Table A-10. Mean absolute percentage errors (MAPEs) for the projected number of high school graduates in public schools, by lead time, region, and state: 2011—Continued

Region and state	Lead time (years)									
	1	2	3	4	5	6	7	8	9	10
United States	**1.0**	**1.0**	**1.5**	**1.7**	**1.6**	**2.1**	**2.8**	**3.7**	**4.2**	**4.0**
South	1.2	1.3	2.3	2.0	2.2	3.0	3.4	4.5	4.3	5.0
Alabama	3.7	3.0	2.0	4.1	4.1	4.9	5.5	5.1	4.6	5.1
Arkansas	1.5	1.8	2.1	2.3	2.8	2.9	2.9	3.1	1.9	2.8
Delaware	2.4	3.0	4.0	5.1	3.5	4.2	4.2	5.2	4.4	5.1
District of Columbia	6.5	6.9	11.5	13.7	15.1	17.5	17.0	19.1	14.0	17.3
Florida	1.9	4.1	5.8	3.1	4.0	4.7	6.1	7.9	7.6	6.7
Georgia	2.0	2.5	3.2	4.8	6.4	7.2	7.6	7.5	6.8	5.9
Kentucky	2.3	3.8	3.8	4.5	5.0	5.6	6.3	4.8	4.2	4.6
Louisiana	1.4	2.4	4.3	5.4	5.1	3.8	3.6	4.4	5.0	6.8
Maryland	1.5	1.1	1.9	1.4	1.4	1.8	2.6	3.2	2.8	3.8
Mississippi	1.0	1.5	2.2	2.5	3.3	4.1	4.0	4.0	4.0	3.1
North Carolina	1.8	1.9	3.2	3.5	4.2	4.3	4.0	4.6	3.9	7.0
Oklahoma	1.5	1.6	2.0	1.7	2.2	3.0	3.3	3.1	2.0	2.4
South Carolina	1.6	3.2	2.4	3.5	4.6	5.7	5.9	6.4	4.6	4.6
Tennessee	5.4	6.9	8.9	11.2	13.3	14.4	13.7	12.9	9.3	7.4
Texas	2.7	3.8	5.2	6.0	6.3	7.6	9.0	11.1	12.9	13.9
Virginia	1.6	2.2	2.9	3.6	4.3	4.6	4.5	4.2	5.3	5.4
West Virginia	0.7	1.1	1.9	2.1	2.3	3.4	3.6	4.9	5.6	5.3
West	1.9	2.1	2.7	2.8	2.7	2.4	2.3	2.4	3.8	2.6
Alaska	2.4	2.4	2.6	3.6	3.8	4.9	6.0	6.2	6.4	6.0
Arizona	9.4	9.8	11.5	12.2	11.0	11.3	13.7	10.8	8.2	10.2
California	2.5	2.4	2.9	3.6	3.8	4.0	4.4	3.9	5.8	5.2
Colorado	1.9	2.1	2.6	1.7	2.2	2.2	2.4	3.4	4.5	3.5
Hawaii	4.0	4.5	5.4	6.7	9.9	10.8	13.7	15.4	18.4	18.6
Idaho	0.9	1.3	1.2	1.5	2.0	2.9	3.4	4.2	5.9	5.1
Montana	0.9	0.9	1.5	1.4	2.5	3.9	5.1	7.0	9.7	10.7
Nevada	4.2	6.6	10.3	11.9	11.5	11.9	10.8	11.7	9.9	13.5
New Mexico	3.6	2.8	4.6	4.3	5.7	6.2	7.1	9.0	12.0	10.7
Oregon	2.1	2.4	3.1	4.2	5.1	5.5	5.6	6.8	6.6	5.4
Utah	5.0	5.3	5.1	5.3	4.2	4.2	4.5	4.7	4.1	2.8
Washington	2.1	2.2	3.1	2.0	2.6	3.1	3.6	3.4	4.9	4.3
Wyoming	1.6	2.1	2.2	2.8	3.9	5.4	7.2	8.2	10.7	10.5

NOTE: Mean absolute percentage error is the average value over past projections of the absolute values of errors expressed in percentage terms. National MAPEs for public high school graduates were calculated using the last 20 editions of *Projections of Education Statistics* and state MAPEs were calculated using the last 15 editions of *Projections of Education Statistics.* Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics,* various issues. (This table was prepared February 2011.)

A.3. ELEMENTARY AND SECONDARY TEACHERS

Projections in this edition

This edition of *Projections of Education Statistics* presents projected trends in elementary and secondary teachers, pupil/teacher ratios, and new teacher hires from 2009 to 2020. These projections were made using two models:

- The *Elementary and Secondary Teacher Model* was used to project the number of public school teachers, the number of private school teachers, and the total number of teachers for the nation. It was also used to project pupil/teacher ratios for public schools, private schools, and all elementary and secondary schools.
- The *New Teacher Hires Model* was used to project the number of new teacher hires in public schools, private schools, and all schools.

Overview of approach

Approach for numbers of teachers and pupil/teacher ratios

Public schools. Multiple linear regression was used to produce initial projections of public school pupil/teacher ratios separately for elementary and secondary schools. The initial projections of elementary pupil/teacher ratios and secondary pupil/teacher ratios were applied to enrollment projections to project the numbers of elementary teachers and secondary teachers, which were summed to get the total number of public school teachers. Final projections of the overall public school pupil/teacher ratios were produced by dividing total projected public school enrollment by the total projected number of teachers.

Assumptions underlying this method

This method assumes that past relationships between the public school pupil/teacher ratio (the dependent variable) and the independent variables used in the regression analysis will continue throughout the forecast period. For more information about the independent variables, see "Elementary and Secondary Teacher Model," later in this section of appendix A.

Private schools. Private school pupil/teacher ratios were projected by applying each year's projected annual percentage change in the overall public school pupil/teacher ratio to the previous year's private school pupil/teacher ratio. The projected private school pupil/teacher ratios were then applied to projected enrollments at private schools to produce projected numbers of private school teachers.

Assumptions underlying this method

This method assumes that the future pattern in the trend of private school pupil/teacher ratios will be the same as that for public school pupil/teacher ratios. The reader is cautioned that a number of factors could alter the assumption of constant ratios over the forecast period.

Approach for new teacher hires

The following numbers were projected separately for public schools and for private schools:

- *The number of teachers needed to replace teachers who leave teaching from one year to the next.* This number was estimated based on continuation rates of teachers by their age.
- *The number of teachers needed to fill openings due to an increase in the size of the teaching workforce from one year to the next.* This number was estimated by subtracting the projected number of teachers in one year from the projected number of teachers in the next year.

These two numbers were summed to yield the total number of "new teacher hires" for each control of school—that is, teachers who will be hired in a given year, but who did not teach in that control the previous year. A teacher who moves from one control to the other control (e.g. from a public to private school or from a private to a public school) is considered a new teacher hire, but a teacher who moves from one school to another school in the same control is not considered a new teacher hire.

Elementary and Secondary Teacher Model

Projections for public schools were produced first. Projections for private schools were produced based partially on input from the public school projections. Finally, the public and private school projections were combined into total elementary and secondary school projections (not shown in the steps below).

Steps used to project numbers of teachers and pupil/teacher ratios

Public school teachers. The following steps were used for the public school projections:

Step 1. *Produce projections of pupil/teacher ratios for public elementary schools and public secondary schools separately.* Two separate equations were used—one for elementary schools and one for secondary schools. The equations for elementary and secondary schools included an AR(1) term for correcting for autocorrelation and the following independent variables:

- *Independent variables for public elementary school pupil/teacher ratios*—(1) average teacher wage relative to the overall economy-level wage, and (2) level of education revenue from state sources in constant dollars per public elementary student.
- *Independent variables for public secondary school pupil/teacher ratios*—(1) level of education revenue from state sources in constant dollars per public secondary student, and (2) the number of students enrolled in public secondary schools relative to the secondary school–age population.

To estimate the models, they were first transformed into nonlinear models and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation.

For details on the equations, model statistics, and data used to project public school pupil/teacher ratios, see "Data and equations used for projections of teachers and pupil/teacher ratios," below.

Step 2. *Produce projections of the number of teachers for public elementary schools and public secondary schools separately.* The projections of the public elementary pupil/teacher ratio and public secondary pupil/teacher ratio were applied to projections of enrollments in elementary schools and secondary schools, respectively, to produce projections of public elementary teachers and public secondary teachers.

Step 3. *Produce projections of the total number of teachers for public elementary and secondary schools combined.* The projections of public elementary teachers and public secondary teachers were added together to produce the projections of the total number of public elementary and secondary teachers.

Step 4. *Produce projections of the pupil/teacher ratio for public elementary and secondary schools combined.* The projections of the total number of public elementary and secondary teachers were divided by projections of total enrollment in public elementary and secondary schools to produce projections of the overall pupil/teacher ratio in public elementary and secondary schools.

Private school teachers. The following steps were used for the private school projections:

Step 1. *Produce projections of the private school pupil/teacher ratio.* First, the projection of the private school pupil/teacher ratio for 2010 was calculated by multiplying the private school pupil/teacher ratio for 2009 (the last year of actual data) by the percentage change from 2008 to 2010 in the public school pupil/teacher ratio. The same method was used to calculate the projections of the private school pupil/teacher ratio for 2011 through 2020. That is, each year's projected annual percentage change in the public school pupil/teacher ratio was applied to the previous year's private school pupil/teacher ratio.

Step 2. *Produce projections of the number of private school teachers.* The projected pupil/teacher ratios were applied to projected private school enrollments to produce projections of private school teachers from 2010 through 2020.

For information about the private school teacher and enrollment data used for the private school projections, see "Data and equations used for projections of teachers and pupil/teacher ratios," below.

Data and equations used for projections of teachers and pupil/teacher ratios

Public school data used in these projections were by organizational level (i.e., school level), not by grade level. Thus, secondary school enrollment is not the same as enrollment in grades 9 through 12 because some jurisdictions count some grade 7 and 8 enrollment as secondary. For example, some jurisdictions may have 6-year high schools with grades 7 through 12.

Data used to estimate the equation for public elementary school pupil/teacher ratios. The following data were used to estimate the equation:

- To compute the historical elementary school pupil/teacher ratios—Data on 1973–74 to 2008–09 enrollments in public elementary schools came from the NCES Common Core of Data (CCD). The proportion of public school teachers who taught in elementary schools was taken from the National Education Association and then applied to the total number of public school teachers from the CCD to produce the number of teachers in elementary schools.
- Data on 1973–74 to 2008–09 education revenue from state sources came from the CCD.

Estimated equation and model statistics for public elementary school pupil/teacher ratios. For the estimated equation and model statistics, see table A-11 on page 109. In the public elementary pupil/teacher ratio equation, the independent variables affect the dependent variable in the expected way:

- As the average teacher wage relative to the overall economy-level wage increases, the pupil/teacher ratio increases; and
- As the level of education revenue from state sources in constant dollars per public elementary student increases, the pupil/teacher ratio decreases.

Data used to project public elementary school pupil/teacher ratios. The estimated equation was run using projected values for teacher salaries and education revenues from state sources from 2009–10 through 2020–21. For more information, see Section A.0. Introduction, earlier in this appendix and Section A.4 Expenditures for Public Elementary and Secondary Education later in this appendix.

Data used to estimate the equation for public secondary school pupil/teacher ratios. The following data were used to estimate the equation:

- To compute the historical secondary school pupil/teacher ratios—Data on 1973–74 to 2008–09 enrollments in public secondary schools came from the NCES Common Core of Data (CCD). The proportion of public school teachers who taught in secondary schools was taken from the National Education Association and then applied to the total number of public school teachers from the CCD to produce the number of teachers in secondary schools.
- Data on 1973–74 to 2008–09 education revenue from state sources came from the CCD.
- To compute the historical secondary school enrollment rate—Data on the secondary school-age population from 1973–74 to 2008–09 came from the U.S. Census Bureau. Data on enrollments in public secondary schools during the same period came from the CCD, as noted above.

Estimated equation and model statistics for public secondary school pupil/teacher ratios. For the estimated equation and model statistics, see table A-11 on page 109. In the public secondary pupil/teacher ratio equation, the independent variables affect the dependent variable in the expected way:

- As enrollment rates (number of enrolled students relative to the school-age population) increase, the pupil/teacher ratio increases; and
- As the level of education revenue per secondary student increases, the pupil/teacher ratio decreases.

Data used to project public secondary school pupil/teacher ratios. The estimated equation was run using projections for education revenues, public secondary enrollments, and secondary school–age populations from 2009–10 through 2019–20. Secondary enrollment projections were derived from the enrollment projections described in Section A.1. Elementary and Secondary Enrollment. Population projections were from the Census Bureau's 2008 National Population Projections by age and sex (August 2008), ratio-adjusted to line up with the most recent historical estimates.

Private school teacher and enrollment data. Private school data for 1989–90, 1991–92, 1993–94, 1995–96, 1997–98, 1999–2000, 2001–02, 2003–04, 2005–06, 2007–08, and 2009–10 came from the biennial NCES Private School Universe Survey (PSS). Since the PSS is collected in the fall of odd numbered years, data for years without a PSS collection were estimated using data from the PSS.

Private school enrollment projections. Private school enrollments from 2009 to 2020 came from the projections described in Section A.1. Elementary and Secondary Enrollment, earlier in this appendix.

Accuracy of projections of numbers of teachers

Mean absolute percentage errors (MAPEs) for projections of public school teachers were calculated using the last 20 editions of *Projections of Education Statistics*. Table C, below, shows MAPEs for projections of the numbers of public school teachers. There was a change in the methodology for projecting private school teachers beginning with *Projections of Education Statistics to 2017*, and therefore there are too few years of data to present the MAPEs for private school teachers.

Table C. Mean absolute percentage errors (MAPEs) of projections of number of public elementary and secondary teachers, by lead time: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Public elementary and secondary teachers	1.0	1.4	1.7	2.3	2.9	3.4	4.1	4.4	5.1	5.9

NOTE: MAPEs for teachers were calculated from the past 20 editions of *Projections of Education Statistics* containing teacher projections. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

For more information about MAPEs, see Section A.0. Introduction, earlier in this appendix.

New Teacher Hires Model

The New Teacher Hires Model was estimated separately for public and private school teachers. The model produces projections of the number of teachers who were not teaching in the previous year, but who will be hired in a given year.

About new teacher hires

A teacher is considered to be a new teacher hire for a control of school (public or private) for a given year if the teacher teaches in that control that year but had not taught in that control in the previous year. Included among new teachers hires are: (1) teachers who are new to the profession; (2) teachers who had taught previously but had not been teaching the previous year; and (3) teachers who had been teaching in one control the previous year but have moved to the other control. Concerning the last category, if a teacher moves from one public school to a different public school, that teacher would not be counted as a new teacher hire for the purposes of this model. On the other hand, if a teacher moves from a public school to a private school, that teacher would be counted as a private school new teacher hire, since the teacher did not teach in a private school in the previous year.

The New Teacher Hires Model measures the demand for teacher hires. Due to difficulties in defining and measuring the pool of potential teachers, no attempt was made to measure the supply of new teacher candidates.

Steps used to project numbers of new teacher hires

The steps outlined below provide a general summary of how the New Teacher Hires Model was used to produce projections of the need for new teacher hires.

For more information about the New Teacher Hires Model, see Hussar (1999).

First, the whole series of steps outlined below was used to produce projections of public school new teacher hires. Then, the same steps were used to produce projections of private school new hires. Finally, the public and private new teacher hires were combined to produce projections of total new teacher hires.

Step 1. *Estimate the age distribution of full-time-equivalent (FTE) teachers in 2007.* For this estimate, the age distribution of the headcount of school teachers (including both full-time and part-time teachers) in 2007 was applied to the national number of FTE teachers in the same year.

Step 2. *Estimate the number of new FTE teacher hires needed to replace those who left teaching between 2007 and 2008.* In this step

- Age-specific continuation rates for 2004 were applied to the FTE count of teachers by age for 2007, resulting in estimates of the number of FTE teachers who remained in teaching in 2008 by individual age.
- The FTE teachers who remained in teaching by individual age were summed across all ages to produce an estimate of the total number of FTE teachers who remained teaching in 2008.
- The total number of remaining FTE teachers in 2008 was subtracted from the total FTE teacher count for 2007 to produce the estimated number of FTE teachers who left teaching.

Step 3. *Estimate the number of new FTE teacher hires needed due to the overall increase in the teacher workforce between 2007 and 2008.* The total number of FTE teachers in 2007 was subtracted from the total number of FTE teachers in 2008 to determine the overall increase in the teaching workforce between 2007 and 2008.

Step 4. *Estimate the total number of new FTE teacher hires needed in 2008.* The number of FTE teachers who left teaching from step 2 was added to the estimated net change in the number of FTE teachers from step 3 to estimate the total number of new FTE teacher hires needed in 2008.

Step 5. *Estimate the FTE count of teachers by age for 2008.* In this step

- The age distribution for the headcount of newly hired teachers in 2007 was applied to the estimated total number of new FTE teacher hires in 2008, resulting in the estimated number of new FTE teacher hires by age.
- For each individual age, the estimated number of new FTE teacher hires was added to the estimated number of remaining FTE teachers (from step 2, first bullet) to produce the estimated FTE count of teachers by age for 2008.

Step 6. *Repeat steps 2 to 5 for each year from 2009 through 2020.*

- In step 2
  - For public school teachers ages 22 through 66 and private school teachers ages 21 through 65, projections of age-specific continuation rates were used. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used to calculate the projected progression rate for each age. (For a general description of the exponential smoothing technique, see Section A.0. Introduction, earlier in this appendix.)
  - For all other ages, the age-specific continuation rates for 2008 (the last year of actual data) were used.
- In step 3, projections of the numbers of FTE teachers were used for all years in which there were no actual teacher numbers. The projections of FTE teachers are described under "Elementary and Secondary Teacher Model," earlier in this section of appendix A.

Assumptions underlying this method

A number of assumptions are made in order to make these projections. They include that (1) the age distribution of FTE teachers in 2007 was similar to that of full-time and part-time teachers in that year (step 1); (2) the age-specific continuation rates for FTE teachers for each year from 2008 through 2020 are similar to either the projections produced using single exponential smoothing or the values for 2008, depending on the age of the teachers (step 2); (3) the age distribution for newly hired FTE teachers from 2008 through 2020 is similar to that of newly hired full-time and part-time teachers in 2007 (step 3); (4) the actual numbers of FTE teachers for each year from 2008 through 2020 are similar to projections of FTE teachers shown in table 16 on page 53; and (5) no economic or political changes further affect the size of the teaching force.

Data used for projections of new teacher hires

Data on numbers of public school teachers. Numbers of FTE teachers for 2008 came from the NCES Common Core of Data (CCD).

Data on numbers of private school teachers. Private school data on the numbers of FTE teachers in 2003–04, 2005–06, 2007–08, and 2009–10 came from the biennial NCES Private School Universe Survey (PSS). Since the PSS is collected in the fall of odd numbered years, data for years without a PSS collection were estimated using data from the PSS.

Data on the age distribution of public and private school teachers. Data on the age distribution of full-time and part-time public and private school teachers came from the 2007–08 NCES Schools and Staffing Survey (SASS). These data and their standard errors are shown in table A-12 on page 110.

Data on the age distribution of public and private new teacher hires. Data on the age distribution of newly hired full-time and part-time public and private school teachers came from the 2007–08 NCES Schools and Staffing Survey (SASS). These data and their standard errors are shown in table A-13 on page 110.

Data on and projections of age-specific continuation rates of public and private school teachers. The 2008 continuation rates came from the 2008–09 NCES Teacher Follow-Up Survey (TFS). Data from the 1994–95, 2000–01, and 2004-05 TFS were also used in the projection of age-specific continuation rates. The actual data, their standard errors, and the projections are shown in table A-14 on page 111.

Projections of the numbers of public and private elementary and secondary school teachers. These projections are described under "Elementary and Secondary Teacher Model," earlier in this section of appendix A.

Accuracy of projections of new teacher hires

Because this is the fourth edition of *Projections of Education Statistics* to include projections of new teacher hires, there are too few years of data to present the MAPEs for new teacher hires.

Table A-11. Estimated equations and model statistics for public elementary and secondary teachers

Dependent variable									Equation[1]	R^2	Breusch-Godfrey Serial Correlation LM test statistic[2]	Time period
Elementary	ln(RELENRTCH) =	3.81 (40.307)	+	.07 ln(RSALARY) (5.102)	-	.23 ln(RSGRNTELENR) (-10.551)	+	.32 AR(1) (1.989)		0.99	.03 (0.985)	1973 to 2009
Secondary	ln(RSCENRTCH) =	4.14 (41.407)	-	.24 ln(RSGRNTSCENR) (-16.565)	+	.49 ln(RSCENRPU) (4.293)	+	.63 AR(1) (4.383)		0.99	.18 (0.912)	1973 to 2009

[1] AR(1) indicates that the model was estimated using least squares with the AR(1) process for correcting for first-order autocorrelation. To estimate the model, it was first transformed into a nonlinear model and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation. For a general discussion of the problem of autocorrelation, and the method used to forecast in the presence of autocorrelation, see Judge, G., Hill, W., Griffiths, R., Lutkepohl, H., and Lee, T. (1985). *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, pp. 315-318.

[2] The number in parentheses is the probability of the Chi-Square(2) associated with the Breusch-Godfrey Serial Correlation LM Test. A *p* value greater than 0.05 implies that we do not reject the null hypothesis of no autocorrelation at the 5 percent significance level for a two-tailed test and the 10 percent significance level for a one-tailed test (i.e., there is no autocorrelation present). For an explanation of the Breusch-Godfrey Serial Correlation LM test statistic, see Greene, W. (2000). *Econometric Analysis.* New Jersey: Prentice-Hall.

NOTE: R^2 indicates the coefficient of determination. Numbers in parentheses are *t*-statistics.
RELENRTCH = Ratio of public elementary school enrollment to classroom teachers (i.e., pupil/teacher ratio).
RSCENRTCH = Ratio of public secondary school enrollment to classroom teachers (i.e., pupil/teacher ratio).
RSALARY = Average annual teacher salary relative to the overall economy wage in 2000 dollars.
RSGRNTELENR = Ratio of education revenue receipts from state sources per capita to public elementary school enrollment in 2000 dollars.
RSGRNTSCENR = Ratio of education revenue receipts from state sources per capita to public secondary school enrollment in 2000 dollars.
RSCENRPU = Ratio of enrollment in public secondary schools to the 11- to 18-year-old population.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Elementary and Secondary Teacher Model, 1973–2009. (This table was prepared March 2011.)

Table A-12. Percentage distribution of full-time and part-time school teachers, by age, control of school, and teaching status: 2007–08

Control of school and teaching status	Percent of total	Age distribution											
		Total	Less than 25 years		25–29 years		30–39 years		40–49 years		50–59 years		60–64 years		65 years or more	
Public-actual 2007–08	**100.0 (†)**	**100.0**	**3.7**	(0.21)	**14.3**	(0.51)	**26.4**	(0.39)	**23.7**	(0.47)	**25.8**	(0.51)	**4.8**	(0.24)	**1.3**	(0.12)
Full-time	91.8 (0.29)	100.0	3.8	(0.22)	14.6	(0.50)	26.5	(0.40)	23.6	(0.50)	25.7	(0.54)	4.7	(0.25)	1.2	(0.13)
Part-time	8.2 (0.29)	100.0	2.5	(0.46)	11.8	(1.18)	25.3	(1.56)	24.7	(1.48)	27.6	(1.33)	6.0	(0.83)	2.1	(0.34)
Private-actual 2007–08	**100.0 (†)**	**100.0**	**4.6**	(0.34)	**11.7**	(0.48)	**22.3**	(0.91)	**23.8**	(0.65)	**26.2**	(0.87)	**7.9**	(0.52)	**3.6**	(0.41)
Full-time	78.8 (0.93)	100.0	5.0	(0.37)	13.0	(0.66)	23.0	(0.96)	23.0	(0.65)	25.0	(0.98)	8.0	(0.56)	3.0	(0.38)
Part-time	21.2 (0.93)	100.0	3.0	(0.80)	7.0	(0.90)	19.0	(1.86)	27.0	(1.90)	29.0	(1.46)	9.0	(1.57)	7.0	(1.09)

† Not applicable.
NOTE: Detail may not sum to totals because of rounding. Standard errors appear in parentheses. The 2007–08 data are the most recent data available.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher Questionnaire," 2007–08 and "Private School Teacher Questionnaire," 2007–08; and unpublished tabulations. (This table was prepared October 2010.)

Table A-13. Percentage distribution of full-time and part-time newly hired teachers, by age and control of school: Selected years, 1987–88 through 2007–08

Control of school and school year	Age distribution													
	Total	Less than 25 years		25–29 years		30–39 years		40–49 years		50–59 years		60–64 years		65 years or more	
Public															
1987–88	100.0	17.7	(0.79)	23.7	(1.19)	33.0	(1.43)	21.2	(0.80)	4.0	(0.51)	0.3 !	(0.11)	‡	(†)
1990–91	100.0	17.5	(1.06)	24.0	(1.35)	30.6	(1.33)	21.4	(1.28)	5.6	(0.65)	0.6	(0.18)	‡	(†)
1993–94	100.0	16.2	(0.91)	28.7	(1.15)	24.9	(1.04)	24.6	(1.16)	5.0	(0.63)	0.5	(0.13)	0.2 !	(0.09)
1999–2000	100.0	23.6	(1.28)	22.5	(0.97)	22.2	(1.10)	19.2	(0.90)	11.1	(0.88)	0.9	(0.23)	0.6 !	(0.26)
2003–04	100.0	24.4	(1.21)	19.0	(1.23)	24.6	(1.10)	16.5	(1.18)	13.3	(0.93)	1.5	(0.29)	0.7 !	(0.29)
2007–08	100.0	23.8	(1.75)	24.3	(1.79)	20.4	(1.56)	15.1	(0.94)	13.6	(1.22)	2.3	(0.39)	0.5 !	(0.22)
Private															
1987–88	100.0	17.0	(1.27)	22.8	(1.68)	32.5	(2.17)	17.9	(1.61)	5.3	(1.09)	‡	(†)	1.8 !	(0.77)
1990–91	100.0	15.8	(1.47)	26.3	(1.83)	29.1	(1.86)	21.1	(1.67)	5.6	(0.88)	1.1 !	(0.40)	1.0 !	(0.42)
1993–94	100.0	19.3	(1.13)	24.4	(1.19)	24.9	(1.49)	22.6	(1.18)	7.3	(0.85)	0.9	(0.20)	0.6 !	(0.23)
1999–2000	100.0	18.5	(0.89)	17.2	(0.87)	24.1	(1.24)	22.1	(1.19)	14.0	(1.01)	2.6	(0.39)	1.5	(0.38)
2003–04	100.0	17.1	(1.59)	16.0	(2.13)	23.0	(2.19)	22.8	(3.32)	15.3	(1.77)	3.6	(0.83)	2.1	(0.58)
2007–08	100.0	14.3	(1.26)	18.2	(1.36)	23.2	(1.97)	23.6	(1.92)	14.4	(1.49)	4.2	(0.84)	2.1 !	(0.69)

† Not applicable.
! Interpret data with caution. The coefficient of variation (CV) for this estimate is 30 percent or greater.
‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.
NOTE: Detail may not sum to totals because of rounding. Standard errors appear in parentheses. The 2007–08 data are the most recent data available.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School Teacher Questionnaire," 1987–88 through 2007–08 and "Private School Teacher Questionnaire," 1987–88 through 2007–08; and unpublished tabulations. (This table was prepared October 2010.)

Table A-14. Actual and projected continuation rates of full-time and part-time school teachers, by age and control of school: Selected years, 1993–94 to 1994–95 through 2020–21 to 2021–22

Control of school and school year	Total	Continuation rates, by age: Less than 25 years	25–29 years	30–39 years	40–49 years	50–59 years	60–64 years	65 years or older
Public actual								
1993–94 to 1994–95	93.4 (0.36)	96.2 (1.09)	90.0 (1.22)	93.3 (1.03)	96.1 (0.54)	93.7 (0.77)	69.5 (4.79)	65.9 (8.81)
1999–2000 to 2000–01	92.4 (0.38)	95.8 (0.98)	89.3 (7.38)	93.2 (2.76)	94.5 (0.61)	92.9 (4.58)	76.8! (29.18)	(‡) (†)
2003–04 to 2004–05	91.4 (0.55)	94.9 (1.79)	90.1 (1.71)	92.6 (0.93)	94.5 (0.78)	90.8 (0.81)	77.2 (3.00)	70.3 (9.40)
2007–08 to 2008–09	91.8 (0.45)	92.2 (1.95)	89.0 (2.33)	92.4 (1.29)	95.1 (1.06)	92.3 (1.23)	82.8 (3.97)	88.9 (4.26)
Public projected								
2008–09 to 2009–10	90.7 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.4 (†)	76.5 (†)	65.0 (†)
2009–10 to 2010–11	90.6 (†)	89.2 (†)	89.0 (†)	92.6 (†)	93.9 (†)	91.4 (†)	76.4 (†)	64.6 (†)
2010–11 to 2011–12	90.6 (†)	88.7 (†)	89.0 (†)	92.6 (†)	94.0 (†)	91.4 (†)	76.2 (†)	63.7 (†)
2011–12 to 2012–13	90.5 (†)	89.0 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.4 (†)	76.1 (†)	62.6 (†)
2012–13 to 2013–14	90.5 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.4 (†)	76.1 (†)	63.3 (†)
2013–14 to 2014–15	90.5 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.5 (†)	76.0 (†)	63.1 (†)
2014–15 to 2015–16	90.5 (†)	88.8 (†)	89.0 (†)	92.6 (†)	94.0 (†)	91.5 (†)	75.8 (†)	64.4 (†)
2015–16 to 2016–17	90.6 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.5 (†)	75.8 (†)	64.1 (†)
2016–17 to 2017–18	90.6 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.2 (†)	91.6 (†)	75.9 (†)	63.8 (†)
2017–18 to 2018–19	90.6 (†)	89.0 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.6 (†)	75.9 (†)	63.8 (†)
2018–19 to 2019–20	90.7 (†)	89.0 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.6 (†)	75.9 (†)	63.9 (†)
2019–20 to 2020–21	90.7 (†)	88.9 (†)	89.0 (†)	92.6 (†)	94.1 (†)	91.6 (†)	75.9 (†)	63.7 (†)
2020–21 to 2021–22	90.7 (†)	89.0 (†)	89.0 (†)	92.5 (†)	94.0 (†)	91.6 (†)	76.0 (†)	63.4 (†)
Private actual								
1993–94 to 1994–95	88.1 (0.74)	80.0 (4.42)	86.9 (1.64)	85.1 (1.70)	91.3 (1.14)	91.8 (1.52)	86.9 (2.74)	58.1 (8.67)
1999–2000 to 2000–01	83.0 (0.72)	61.7 (4.90)	72.2 (2.76)	80.2 (1.57)	86.1 (1.47)	92.3 (1.00)	78.8 (4.79)	75.2 (5.17)
2003–04 to 2004–05	83.3 (2.06)	75.4 (5.97)	71.7 (3.62)	82.2 (2.30)	86.8 (2.28)	89.2 (9.17)	80.1 (4.15)	79.5 (6.07)
2007–08 to 2008–09	82.2 (1.69)	77.7 (8.33)	71.7 (6.44)	79.1 (3.43)	86.1 (2.92)	86.8 (2.17)	85.2 (4.21)	77.3 (8.23)
Private projected								
2008–09 to 2009–10	82.3 (†)	68.5 (†)	73.1 (†)	80.5 (†)	86.2 (†)	87.7 (†)	80.7 (†)	78.4 (†)
2009–10 to 2010–11	82.1 (†)	68.2 (†)	73.2 (†)	80.5 (†)	86.2 (†)	87.7 (†)	79.9 (†)	74.6 (†)
2010–11 to 2011–12	82.2 (†)	68.1 (†)	73.4 (†)	80.4 (†)	86.1 (†)	87.8 (†)	79.4 (†)	76.7 (†)
2011–12 to 2012–13	82.2 (†)	67.8 (†)	73.3 (†)	80.3 (†)	86.2 (†)	87.8 (†)	80.1 (†)	75.0 (†)
2012–13 to 2013–14	82.2 (†)	68.0 (†)	73.2 (†)	80.3 (†)	86.1 (†)	87.7 (†)	80.4 (†)	75.3 (†)
2013–14 to 2014–15	82.3 (†)	68.0 (†)	73.2 (†)	80.3 (†)	86.3 (†)	87.8 (†)	80.0 (†)	76.9 (†)
2014–15 to 2015–16	82.2 (†)	68.0 (†)	73.1 (†)	80.3 (†)	86.2 (†)	87.8 (†)	79.8 (†)	76.4 (†)
2015–16 to 2016–17	82.2 (†)	67.9 (†)	73.1 (†)	80.3 (†)	86.3 (†)	87.6 (†)	80.3 (†)	75.7 (†)
2016–17 to 2017–18	82.2 (†)	67.9 (†)	73.1 (†)	80.4 (†)	86.2 (†)	87.8 (†)	80.4 (†)	76.2 (†)
2017–18 to 2018–19	82.2 (†)	67.9 (†)	73.1 (†)	80.3 (†)	86.3 (†)	87.8 (†)	80.2 (†)	76.0 (†)
2018–19 to 2019–20	82.2 (†)	67.9 (†)	73.1 (†)	80.3 (†)	86.3 (†)	87.7 (†)	80.3 (†)	75.6 (†)
2019–20 to 2020–21	82.1 (†)	67.9 (†)	73.1 (†)	80.3 (†)	86.3 (†)	87.7 (†)	80.0 (†)	76.0 (†)
2020–21 to 2021–22	82.1 (†)	67.9 (†)	73.1 (†)	80.3 (†)	86.3 (†)	87.7 (†)	80.1 (†)	76.1 (†)

† Not applicable.
! Interpret with caution. The coefficient of variation (CV) for this estimate is 30 percent or greater.
‡ Reporting standards not met. The coefficient of variation (CV) for this estimate is 50 percent or greater.
NOTE: The continuation rate for teachers for each control of school (public schools and private schools) is the percentage of teachers in that control who continued teaching in the same control from one year to the next. Standard errors appear in parentheses.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Teacher Follow up Survey (TFS), "Public School Teacher Questionnaire," 1994–95 through 2008–09 and "Private School Teacher Questionnaire," 1994–95 through 2008–09; and unpublished tabulations. (This table was prepared January 2011.)

A.4. EXPENDITURES FOR PUBLIC ELEMENTARY AND SECONDARY EDUCATION

Projections in this edition

This edition of *Projections of Education Statistics* presents projections of total current expenditures for public elementary and secondary education, current expenditures per pupil in fall enrollment, and current expenditures per pupil in average daily attendance for 2008–09 through 2020–21.

As the source of the elementary and secondary private school data, the NCES Private School Universe Survey, does not collect data for current expenditures, there are no projections for private school current expenditures.

Overview of approach

Theoretical and empirical background

The Public Elementary and Secondary Education Current Expenditure Model used in this report is based on the theoretical and empirical literature on the demand for local public services such as education.[1] Specifically, it is based on a type of model that has been called a median voter model. In brief, a median voter model posits that spending for each public good in the community (in this case, spending for education) reflects the preferences of the "median voter" in the community. This individual is identified as the voter in the community with the median income and median property value. The amount of spending in the community reflects the price of education facing the voter with the median income, as well as his income and tastes. There are competing models in which the level of spending reflects the choices of others in the community, such as government officials.

In a median voter model, the demand for education expenditures is typically linked to four different types of independent variables: (1) measures of the income of the median voter; (2) measures of intergovernmental aid for education going indirectly to the median voter; (3) measures of the price to the median voter of providing one more dollar of education expenditures per pupil; and (4) any other variables that may affect one's tastes for education. The Public Elementary and Secondary Education Current Expenditure Model contains independent variables of the first two types. It uses multiple linear regression analysis to define the relationships between these independent variables and current expenditures (the dependent variable).

Elementary and Secondary Education Current Expenditure Model

Projections for current expenditures per pupil in fall enrollment were produced first. These projections were then used in calculating total expenditures and expenditures per pupil in average daily attendance.

Steps used to project current expenditures for public elementary and secondary education

Step 1. *Produce projections of education revenue from state sources.* The equation for education revenue included an AR(1) term for correcting for autocorrelation and the following independent variables:

- disposable income per capita in constant dollars; and
- the ratio of fall enrollment to the population.

To estimate the model, it was first transformed into a nonlinear model and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation.

Step 2. *Produce projections of current expenditures per pupil in fall enrollment.* The equation for current expenditures per pupil for fall enrollment included an AR(1) term for correcting for autocorrelation and the following independent variables:

- disposable income per capita in constant dollars; and
- education revenue from state sources per capita in constant dollars. This variable was projected in step 1.

[1] For a discussion of the theory together with a review of some of the older literature, see Inman (1979). More recent empirical work includes Gamkhar and Oates (1996) and Mitias and Turnbull (2001).

To estimate the models, they were first transformed into nonlinear models and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation.

For details on the equations used in steps 1 and 2, the data used to estimate these equations, and their results, see "Data and equations used for projections of current expenditures for public elementary and secondary education," below.

Step 3. *Produce projections of total current expenditures.* Projections of total current expenditures were made by multiplying the projections for current expenditures per pupil in fall enrollment by projections for fall enrollment.

Step 4. *Produce projections of current expenditures per pupil in average daily attendance.* The projections for total current expenditures were divided by projections for average daily attendance to produce projections of current expenditures per pupil in average daily attendance.

All the projections were developed in 1982–84 dollars and then placed in 2008–09 dollars using the projections of the Consumer Price Index. Current-dollar projections were produced by multiplying the constant-dollar projections by projections for the Consumer Price Index. The Consumer Price Index and the other economic variables used in calculating the projections presented in this report were placed in school year terms rather than calendar year terms.

Data and equations used for projections of current expenditures for public elementary and secondary education

Data used to estimate the equations for revenue from state sources and current expenditures per pupil. The following data for the period from 1973–74 to 2007–08 were used to estimate the equations:

- Current expenditures and revenues from state sources—For 1973–74 and 1975–76, the current expenditures data came from *Statistics of State School Systems*, published by NCES. For 1974–75 and 1976–77, the current expenditures data came from *Revenues and Expenditures for Public Elementary and Secondary Education*, also published by NCES. For 1977–78 through 2007–08, these data came from the NCES Common Core of Data (CCD) and unpublished data. For most years, the sources for the past values of revenue from state sources were identical to the sources for current expenditures.
- Disposable personal income per capita—Disposable personal income from the Bureau of Economic Analysis were divided by population data from the U.S. Census Bureau.
- The ratio of fall enrollment to population data—Fall enrollment data from the CCD were divided by population data from the U.S. Census Bureau.

Estimated equations and model statistics for revenue from state sources and current expenditures per pupil. For the results of the equations, see table A-15 on page 115. In each equation, the independent variables affect the dependent variable in the expected way. In the revenues from state sources equation:

- All other things being equal, as disposable income per capita increases so does local governments' education revenue from state sources per capita; and
- As enrollment increases relative to the population, so does the local governments' education revenue from state sources per capita.
- In the current expenditures per pupil equation: All other things being equal, as disposable income per capita increases, so does current expenditures per pupil; and
- As local governments' education revenue from state sources per capita increases, so does current expenditures per pupil.

Projections for economic variables. Projections for economic variables, including disposable income and the Consumer Price Index, were from the "U.S. Monthly Model: November 2009 Short-Term Projections" from the economic consulting firm, IHS Global Insight (see supplemental table B-6). The values of all the variables from IHS Global Insight were placed in school-year terms. The school-year numbers were calculated by taking the average of the last two quarters of one year and the first two quarters of the next year.

Projections for fall enrollment. The projections for fall enrollment are those presented in section 1 of this publication. The methodology for these projections is presented in Section A.1. Elementary and Secondary Enrollment, earlier in this appendix.

Projections for population. Population estimates for 1973 to 2009 and population projections for 2010 to 2020 from the U.S. Census Bureau were used to develop the public school current expenditure projections. The set of population projections used in this year's *Projections of Education Statistics* are the Census Bureau's 2008 National Population Projections (August 2008).

Historical data for average daily attendance. For 1973–74 and 1975–76, these data came from *Statistics of State School Systems*, published by NCES. For 1974–75 and 1976–77, the current expenditures data came from *Revenues and Expenditures for Public Elementary and Secondary Education*, also published by NCES. For 1977–78 through 2007–08, these data came from the CCD and unpublished NCES data.

Projections for average daily attendance. These projections were made by multiplying the projections for enrollment by the average value of the ratios of average daily attendance to enrollment from 1993–94 to 2007–08; this average value was approximately 0.94.

Accuracy of projections

Mean absolute percentage errors (MAPEs) for projections of current expenditures for public elementary and secondary education were calculated using the last 20 editions of *Projections of Education Statistics*. Table D, below, shows the MAPEs for projections of current expenditures.

Table D. Mean absolute percentage errors (MAPEs) of projections for total and per pupil current expenditures for public elementary and secondary education, by lead time: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Total current expenditures	1.3	2.0	2.1	2.2	2.6	3.3	4.1	4.3	4.0	4.1
Current expenditures per pupil in fall enrollment	1.3	2.0	2.0	2.1	3.0	3.6	4.4	4.9	5.2	5.5

NOTE: Expenditures were in constant dollars based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor. MAPEs for current expenditures were calculated using projections from the last 20 editions of *Projections of Education Statistics* containing current expenditure projections. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

For more information about MAPEs, see Section A.0. Introduction, earlier in this appendix.

Table A-15. Estimated equations and model statistics for current expenditures per pupil in fall enrollment for public elementary and secondary schools, and education revenue from state sources per capita

Dependent variable									Equation[1]	R^2	Breusch-Godfrey Serial Correlation LM test statistic[2]	Time period
Current expenditures per pupil	ln(CUREXP)	=	0.58 (0.371)	+	0.64ln(PCI) (3.814)	+	0.21ln(SGRANT) (2.456)	+	0.93AR(1) (18.176)	0.997	2.42 (0.30)	1973–74 to 2007–08
Education revenue from state sources per capita	ln(SGRANT)	=	0.85 (0.724)	+	1.12ln(PCI) (20.324)	+	0.73ln(ENRPOP) (4.350)	+	0.54AR(1) (4.153)	0.988	2.31 (0.31)	1973–74 to 2007–08

[1] AR(1) indicates that the model was estimated using least squares with the AR(1) process for correcting for first-order autocorrelation. To estimate the model, it was first transformed into a nonlinear model and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation. For a general discussion of the problem of autocorrelation, and the method used to forecast in the presence of autocorrelation, see Judge, G., Hill, W., Griffiths, R., Lutkepohl, H., and Lee, T. *The Theory and Practice of Econometrics,* New York: John Wiley and Sons, 1985, pp. 315–318.

[2] The number in parentheses is the probability of the Chi-Square(2) associated with the Breusch-Godfrey Serial Correlation LM Test. A *p* value greater than 0.05 implies that we do not reject the null hypothesis of no autocorrelation at the 5 percent significance level for a two-tailed test and the 10 percent significance level for a one-tailed test (i.e., there is no autocorrelation present). For an explanation of the Breusch-Godfrey Serial Correlation LM test statistic, see Greene, W. *Econometric Analysis.* New Jersey: Prentice-Hall, 2000.

NOTE: R^2 indicates the coefficient of determination. Numbers in parentheses are *t*-statistics.

CUREXP = Current expenditures of public elementary and secondary schools per pupil in fall enrollment in constant 1982–84 dollars.

SGRANT = Local governments' education revenue from state sources, per capita, in constant 1982–84 dollars.

PCI = Disposable income per capita in constant 2000 chained dollars.

ENRPOP = Ratio of fall enrollment to the population.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Elementary and Secondary School Current Expenditures Model, 1973–74 through 2007–08; and Revenue Receipts from State Sources Model, 1973–74 through 2007–08. (This table was prepared March 2011.)

A.5. ENROLLMENT IN POSTSECONDARY DEGREE-GRANTING INSTITUTIONS

Projections in this edition

This edition of *Projections of Education Statistics* presents projections of enrollment in postsecondary degree-granting institutions for fall 2010 through fall 2020. Three different models were used to produce these enrollment projections:

- The *Enrollment in Degree-Granting Institutions Model* produced projections of enrollments by attendance status, level of student, level of institution, control of institution, sex, and age. It also produced projections of full-time-equivalent enrollments by level of student, level of institution, and control of institution.
- The *Enrollment in Degree-Granting Institutions by Race/Ethnicity Model* produced projections of enrollments by race/ethnicity.
- The *First-Time Freshmen Model* produced projections of enrollments of first-time freshmen by sex.

Overview of approach

Basic features of the three degree-granting enrollment models

The Enrollment in Degree-Granting Institutions Model is the primary model for projecting enrollment in postsecondary degree-granting institutions. For this model, enrollment rates by attendance status and sex are projected for various age categories using either the pooled seemingly unrelated regression method or the pooled seemingly unrelated regression method with a first-order autocorrelation correction. These rates are applied to projections of populations of the same sex and age to produce projections of enrollment by attendance status, sex, and age. To project enrollments by level of student, level of institution, and control of institution, rates for these characteristics are projected using single exponential smoothing and applied to enrollment projections previously produced by the model.

The Enrollment in Degree-Granting Institutions by Race/Ethnicity Model takes an approach similar to that of the Enrollment in Degree-Granting Institutions Model. Enrollment rates by attendance status, sex, and race/ethnicity are projected for the age categories using either the pooled seemingly unrelated regression method or the pooled seemingly unrelated regression method with a first-order autocorrelation correction. The resulting rates are iteratively corrected to ensure consistency with those projected by the Enrollment in Degree-Granting Institutions Model. The adjusted rates are then applied to projections of populations of the same sex, age, and race/ethnicity.

The First-Time Freshmen Enrollment in Degree-Granting Institutions Model uses single exponential smoothing to project the ratio of freshmen enrollment to undergraduate enrollment separately for males and for females. It then applies the projected ratios to the projections of undergraduate enrollment by sex that were produced by the Enrollment in Degree-Granting Institutions Model.

The Enrollment in Degree-Granting Institutions Model

The Enrollment in Degree-Granting Institutions Model produces projections of enrollment counts by six levels of detail, as well as projections of full-time-equivalent enrollments by level of student, level of institution, and control of institution.

Steps used in the Enrollment in Degree-Granting Institutions Model

Step 1. *Adjust age-specific enrollment counts from the U.S. Census Bureau to make them agree with the more highly aggregated NCES enrollment counts that do not include age.* The Enrollment in Degree-Granting Institutions Model projects enrollments by six levels of detail: attendance status, level of student, level of institution, control of institution, sex, and age. While NCES does produce enrollment counts by the first five levels of detail, it does not produce data by the sixth level of detail, age, every year. However, the U.S. Census Bureau does produce age-specific enrollment counts.

In step 1, the age distributions from the Census Bureau counts for 1980 to 2009 were applied to the NCES counts to produce a set of enrollment data that breaks enrollments down by age while being consistent with NCES counts. Specifically, the most detailed level of Census Bureau data (by attendance status, level of student, level of institution, control of institution, sex, and age) was iteratively changed using proportions based on the more highly aggregated NCES enrollment numbers to ensure that all sums across this most detailed level of Census enrollment data equaled the more highly aggregated NCES enrollment totals that did not include age.

Step 2. *Calculate enrollment rates by attendance status, sex, and age category.* The enrollment data were broken up into 14 age categories, with separate age categories for individual ages 14 through 24 as well as for the age groups 25 to 29, 30 to 34, and 35 and over. For each of the 14 age categories, 4 enrollment rates were calculated—part-time male, full-time male, part-time female, and full-time female—resulting in a total of 56 enrollment rates. Each of the 56 enrollment rates was calculated by dividing the enrollment count for that combination of attendance status, sex, and age category by the total population for the corresponding combination of sex and age category. For each combination of attendance and sex, the enrollment rate for the oldest age category was calculated by dividing the enrollment count for those 35 and over by the total population for those 35 to 44.

Step 3. *Produce projections of enrollment rates by attendance status, sex, and age category.* Enrollment rates for most of the age groups were projected using multiple linear regression. However, because enrollment in postsecondary degree-granting institutions is negligible for ages 14, 15, and 16, these ages were not included in the multiple linear regression models. Instead, projections for individual ages 14, 15, and 16 were produced by double exponential smoothing.

The following 11 age categories were modeled: individual ages 17 through 24 and age groups 25 to 29, 30 to 34, and 35 and over. For each of these age categories, enrollment rates by attendance status and sex were produced using four pooled time-series models—one for each combination of attendance status and sex. Each model was pooled across age categories. Each equation contained two independent variables, which were measures of

- disposable income; and
- the unemployment rate.

Either the pooled seemingly unrelated regression method or the pooled seemingly unrelated regression method with a first-order autocorrelation correction was used to estimate each equation.

For more details on the equations used in step 3, the data used to estimate these equations, and their results, see tables A-16 through A-18 on pages 122-124.

Step 4. *Produce projections of enrollments by attendance status, sex, and age category.* For each combination of attendance status, sex, and age category, enrollment projections were produced by multiplying the projected enrollment rate for that combination by projections of the total population with the corresponding combination of sex and age category.

Step 5. *Add two additional levels of detail—level of student and level of institution—to the projected enrollments by attendance status, sex, and age category.* For this step, the 14 age categories used in the previous steps were collapsed into the following 8 categories: ages 14 to 16, 17, 18 and 19, 20 and 21, 22 to 24, 25 to 29, 30 to 34, and 35 and over. Step 5 can be broken into three parts:

First, the historic data were used to calculate the percentage distribution of enrollment by level of student and level of institution for each combination of attendance status, sex, and age category. Because it was assumed that there was no enrollment in 2-year institutions at the postbaccalaureate level, three combinations of student level and institution type were used: undergraduates at 4-year institutions, undergraduates at 2-year institutions, and postbaccalaureate students at 4-year institutions.

Second, for each combination of attendance status, sex, and age category, the percentage distribution by level of student and level of institution was projected using single exponential smoothing. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used in each case. The percentages were then adjusted so the sum of the categories by attendance status, level of student, level of institution, sex, and age category would equal 100 percent.

For the projected percentage distributions from step 5 and the actual 2009 distributions, see tables A-19 and A-20 on pages 125-126.

Third, the projected distributions by level of student and type of institution were applied to the projected enrollments by attendance status, sex, and age category from step 4 to obtain the enrollment projections by attendance status, level of student, level of institution, sex, and age category.

Step 6. *Add the sixth level of detail—control of institutions—to the projected enrollments in postsecondary degree-granting institutions.* In this step, the data on enrollment by age category were not used. Control of institutions was added in the following manner:

First, the historic data were used to calculate the percentage of enrollment in public institutions for each combination of attendance status, level of student, level of institution, and sex.

Second, the percentages of enrollment in public institutions were projected using single exponential smoothing. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used for each percentage.

For the projected percentages from step 6 and the actual 2009 percentages, see table A-21 on page 126.

Third, the projected percentages were applied to the projected enrollments in each corresponding enrollment combination to obtain projections for public institutions by attendance status, level of student, level of institution, and sex.

Fourth, the projected enrollments for public institutions were subtracted from the total to produce the projected enrollments for private institutions.

Step 7. *Produce projections of full-time-equivalent enrollment by level of student, level of institution, and control of institution.* Full-time-equivalent enrollment represents total full-time and part-time enrollment as if it were enrollment on a full-time basis. It equals the sum of full-time enrollment plus the full-time-equivalent of part-time enrollment. Full-time-equivalent enrollment projections were produced in the following manner:

First, for each combination of level of student, level of institution, and control of institution, the historic data were used to calculate the full-time-equivalent of part-time enrollment as a percentage of part-time enrollment.

Second, for each combination of level of student, level of institution, and control of institution, the full-time equivalent of part-time enrollment as a percentage of part-time enrollment was projected using single exponential smoothing. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used for each percentage.

Third, for each combination of level of student, level of institution, and control of institution, the projected percentages were applied to the projections of part-time enrollment to project the full-time equivalent of the part-time enrollment.

Fourth, the projections of full-time equivalents of part-time enrollment were added to projections of full-time enrollment to obtain projections of full-time-equivalent enrollment.

Data and equation results for the Enrollment in Degree-Granting Institutions Model

Enrollment data for postsecondary degree-granting institutions. Enrollment data for 1981 to 2009 by attendance status, level of student, level of institution, control of institution, and sex came from the NCES Integrated Postsecondary Education Data System (IPEDS). These are universe counts. The U.S. Census Bureau was the source for enrollment estimates for 1981 to 2009 by the characteristics listed above, as well as age of student.

Population data and projections. Population counts for 1980 to 2009 came from the U.S. Census Bureau. Population projections for 2010 to 2020 are the Census Bureau's 2008 National Population Projections of the population by sex and age (August 2008), ratio-adjusted to line up with the most recent historical estimates. For more information, see Section A.0. Introduction, earlier in this appendix.

Projections for economic variables. The economic variables used in developing these projections were from the "U.S. Monthly Model: November 2010 Short-Term Projections" from the economic consulting firm, IHS Global Insight.

Data and results for the equations. The following details for the equations are shown on pages 122-126:

- Table A-16 shows enrollment rates by sex, attendance status, and age for fall 2009 and projected enrollment rates for fall 2015 and fall 2020.
- Table A-17 shows the estimated equations and model statistics used to project enrollments for men by attendance status, and table A-18 shows the estimated equations and model statistics used to project enrollment rates for women by attendance status. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2s), the *t*-statistics of the coefficients, the Durbin-Watson statistic, the Breusch-Godfrey Serial Correlation LM test statistic, and residual plots.
- Table A-19 shows actual and projected percentage distributions of full-time students, and table A-20 shows actual and projected percentage distributions of part-time students.
- Table A-21 shows actual and projected data for enrollment in public degree-granting institutions as a percentage of total enrollment by sex, attendance status, level enrolled, and type of institution.

Accuracy of projections for the Enrollment in Degree-Granting Institutions Model

Mean absolute percentage errors (MAPEs) for enrollment in degree-granting institutions were calculated using the last 13 editions of *Projections of Education Statistics*. Table E, below, shows MAPEs for key projections of the Enrollment in Degree-Granting Institutions Model.

Table E. Mean absolute percentage errors (MAPEs) of projected enrollment in postsecondary degree-granting institutions, by lead time, sex, and level of institution: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Total enrollment	**1.6**	**2.8**	**3.5**	**4.0**	**5.2**	**6.1**	**8.1**	**9.8**	**11.7**	**11.4**
Men	1.6	3.2	4.0	4.8	5.9	6.6	8.5	9.8	11.7	11.7
Women	1.8	2.8	3.6	3.7	4.6	5.8	7.8	9.8	11.7	11.2
4-year institutions	1.7	2.9	3.9	4.7	5.9	6.8	9.0	10.9	13.1	13.2
2-year institutions	2.2	3.7	4.3	4.4	5.1	5.0	6.4	7.8	9.4	8.3

NOTE: MAPEs for degree-granting institution enrollments were calculated using the last 13 editions of *Projections of Education Statistics*. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

For more information about MAPEs, see Section A.0. Introduction, earlier in this appendix.

The Enrollment in Degree-Granting Institutions by Race/Ethnicity Model

The Enrollment in Degree-Granting Institutions by Race/Ethnicity Model projects enrollments in degree-granting institutions by attendance status, sex, age, and race/ethnicity. The following groups are projected in this model:

- White;
- Black;
- Hispanic;
- Asian/Pacific Islander;
- American Indian/Alaska Native; and
- nonresident alien.

See the Glossary for definitions of the five racial/ethnic categories and the nonresident alien category. (The race/ethnicity of nonresident aliens is unknown, but they are considered a separate group for purposes of this analysis.)

Steps used in the Degree-Granting Institutions by Race/Ethnicity Model

Step 1. *Adjust U.S. Census Bureau enrollment counts by attendance status, sex, age, and race/ethnicity to make them sum to NCES enrollment counts by attendance status, sex, and race/ethnicity.* For 1981 to 2009, the most detailed levels of Census Bureau enrollment data (by enrollment status, sex, age, and race/ethnicity) were iteratively changed using proportions that were based on the more highly aggregated NCES enrollment numbers to ensure that the sums across these most detailed levels of enrollment data equaled the more highly aggregated NCES enrollment numbers that did not include age.

Step 2. *Calculate enrollment rates by attendance status, sex, age category, and race/ethnicity.* The enrollment data were broken up into 14 age categories, with separate age categories for individual ages 14 through 24 as well as for the age groups 25 to 29, 30 to 34, and 35 and over. For each of the 14 age categories, enrollment rates were calculated for each combination of attendance status, sex, and the six racial/ethnic groups, resulting in a total of 336 enrollment rates. Each of the 336 enrollment rates was calculated by dividing the enrollment count for that combination of attendance status, sex, age category, and race/ethnicity by the total population for the corresponding combination of sex, age category, and race/ethnicity. For each combination of attendance status, sex and racial/ethnic group, the enrollment rate for the oldest age category was calculated by dividing the enrollment count for those 35 and over by the total population for those 35 to 44.

Step 3. *Produce projections of enrollment rates by attendance status, sex, age category, and race/ethnicity.* Enrollment rates for most of the age groups and racial/ethnic groups were projected using multiple linear regression. However, there were several exceptions:

- Due to negligible enrollments for ages 14, 15, and 16, these ages were not included in the multiple linear regression models. Instead, projections for individual ages 14, 15, and 16 were produced by single exponential smoothing.
- Due to the relatively large fluctuations in the historical enrollment rates resulting from small sample sizes, American Indian/Alaska Native enrollments were projected using single exponential smoothing.
- Since there were no applicable population counts to compute enrollment rates for non-resident aliens, their enrollments were projected using patterns in recent historical growth.

Four racial/ethnic groups were modeled: White, Black, Hispanic, and Asian/Pacific Islander. Eleven age categories were modeled: individual ages 17 through 24 and age groups 25 to 29, 30 to 34, and 35 to 44. For each of the age categories, projected enrollment rates by attendance status, sex, and race/ethnicity were produced using 16 pooled time-series models—one for each combination of attendance status, sex, and the four racial/ethnic groups. Each equation included variables measuring

- recent trends;
- economic conditions (such as disposable income); and
- demographic changes.

For more information on the equations used to project enrollment rates for the combinations of attendance status, sex, and race/ethnicity, see tables A-22 through A-29, under "Data and equations used for the Enrollment in Degree-Granting Institutions by Race/Ethnicity Model," below.

The final set of projected rates by attendance status, sex, age, and race/ethnicity were controlled to enrollment rates by attendance status, sex, and age produced by the Enrollment in Degree-Granting Institutions Model to ensure consistency across models.

Step 4. *Produce projections of enrollments by attendance status, sex, age category, and race/ethnicity.* For each combination of attendance status, sex, age category, and race/ethnicity, enrollment projections were produced by multiplying the projected enrollment rate for that combination by projections of the total population with the corresponding combination of sex, age category, and race/ethnicity.

Data and equations used for the Enrollment in Degree-Granting Institutions by Race/Ethnicity Model

Enrollment data for degree-granting institutions by race/ethnicity. Enrollment data for 1981 to 2009 by attendance status, sex, and race/ethnicity came from the NCES Integrated Postsecondary Education Data System (IPEDS). These are universe counts. The U.S. Census Bureau, Current Population Survey was the source for enrollment estimates for 1981 to 2009 by the characteristics listed above, as well as age of student.

Population data and projections by race/ethnicity. Population counts for 1981 to 2009 came from the U.S. Census Bureau, Population Estimates series. Population projections for 2010 to 2020 are the Census Bureau's 2008 National Population Projections of the population by sex, age and race/ethnicity (August 2008), ratio-adjusted to line up with most recent historical estimates.

Projections for economic variables. The economic variables used in developing these projections were from the "U.S. Monthly Model: November 2010 Short-Term Projections" from the economic consulting firm, IHS Global Insight.

Estimated equations and model statistics. Tables A-22 through A-29 show the estimated equations and model statistics used to project enrollment rates for the various combinations of attendance status, sex, and race/ethnicity.

Accuracy of projections for the Degree-Granting Institutions by Race/Ethnicity Model

Mean absolute percentage errors (MAPEs) for enrollment in degree-granting institutions by race/ethnicity were calculated using the last five editions of *Projections of Education Statistics*. Table F, below, shows MAPEs for key projections of the Enrollment in Degree-Granting Institutions by Race/Ethnicity Model.

Table F. Mean absolute percentage errors (MAPEs) of projected enrollment in postsecondary degree-granting institutions, by lead time and race/ethnicity: 2011

	Lead time (years)									
Statistic	1	2	3	4	5	6	7	8	9	10
Total enrollment	**1.6**	**2.8**	**3.5**	**4.0**	**5.2**	**6.1**	**8.1**	**9.8**	**11.7**	**11.4**
White	0.4	1.1	2.3	2.8	3.6	—	—	—	—	—
Black	2.2	5.3	7.5	9.2	9.4	—	—	—	—	—
Hispanic	2.0	4.7	7.0	9.0	9.5	—	—	—	—	—
Asian/Pacific Islander	2.2	5.2	7.1	8.3	9.2	—	—	—	—	—
American Indian/Alaska Native	4.4	6.4	3.9	4.3	4.6	—	—	—	—	—
Nonresident alien	2.6	6.2	8.8	6.5	2.9	—	—	—	—	—

— Not available.
NOTE: MAPEs for degree-granting institution enrollments were calculated using the last five editions of *Projections of Education Statistics*. Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Projections of Education Statistics*, various issues. (This table was prepared March 2011.)

The First-Time Freshmen Enrollment in Degree-Granting Institutions Model

The First-Time Freshmen Enrollment in Degree-Granting Institutions Model produced projections of first-time freshmen enrollment in degree-granting institutions by sex.

Steps used in the First-Time Freshmen Enrollment in Degree-Granting Institutions Model

The projections were produced in the following manner:

Step 1. *Calculate the ratio of first-time freshmen enrollment to undergraduate enrollment.* For 1975 to 2009, the ratio of first-time freshmen enrollment to undergraduate enrollment was calculated for males and females.

Step 2. *Project the ratio of first-time freshmen enrollment to undergraduate enrollment.* Second, the percentages for both males and females were projected using single exponential smoothing. A separate smoothing constant, chosen to minimize the sum of squared forecast errors, was used for each percentage.

Step 3. *Apply the projected ratio to projected undergraduate enrollment.* The projected ratios were applied to projections of undergraduate enrollment by sex from the Enrollment in Degree-Granting Institutions Model to yield projections of first-time freshmen enrollment.

Assumptions underlying this method

This method assumes that the future pattern in the trend of first-time freshmen enrollment will be the same as that for undergraduate enrollment.

Data used in the First-Time Freshmen Enrollment in Degree-Granting Institutions Model

Undergraduate and freshmen enrollment data for degree-granting institutions. Undergraduate and freshmen enrollment data by sex for 1975 to 2009 came from the NCES Integrated Postsecondary Education Data System (IPEDS).

Projections of undergraduate enrollment. Projections of undergraduate enrollment by sex came from the Enrollment in Degree-Granting Institutions Model, discussed earlier in this section of appendix A.

Accuracy of projections for the First-Time Freshmen Enrollment Model

Because this is the third edition of *Projections of Education Statistics* to include projections of first-time freshmen, there are too few years of data to present the MAPEs.

Table A-16. Actual and projected numbers for college enrollment rates, by sex, attendance status, and age: Fall 2009, fall 2015, and fall 2020

Sex, attendance status, and age	Actual 2009	Projected 2015	Projected 2020
Men			
Full-time			
16 years old	0.5	0.5	0.5
17 years old	2.6	2.6	2.7
18 years old	32.5	33.0	34.0
19 years old	39.4	41.8	42.9
20 years old	37.3	37.3	38.2
21 years old	31.9	32.3	33.1
22 years old	23.5	24.5	25.2
23 years old	16.7	17.2	17.8
24 years old	13.8	14.1	14.5
25 to 29 years old	5.5	5.7	5.9
30 to 34 years old	2.6	2.6	2.7
35 to 44 years old	1.4	1.4	1.5
Part-time			
16 years old	0.3	0.3	0.3
17 years old	0.9	0.9	0.9
18 years old	5.4	5.7	5.7
19 years old	5.6	5.9	5.9
20 years old	9.7	9.8	9.7
21 years old	8.1	8.1	8.1
22 years old	4.8	6.0	6.0
23 years old	7.7	7.7	7.7
24 years old	7.7	7.8	7.8
25 to 29 years old	6.3	6.3	6.4
30 to 34 years old	3.9	4.1	4.1
35 to 44 years old	4.1	4.2	4.2
Women			
Full-time			
16 years old	0.7	0.7	0.7
17 years old	3.5	4.0	4.4
18 years old	44.3	49.3	51.1
19 years old	49.2	51.3	52.8
20 years old	44.4	46.5	48.0
21 years old	40.8	42.5	44.0
22 years old	28.8	29.4	30.8
23 years old	20.0	20.9	22.0
24 years old	15.9	16.6	17.5
25 to 29 years old	7.6	8.2	8.7
30 to 34 years old	3.3	3.5	3.8
35 to 44 years old	3.2	3.4	3.6
Part-time			
16 years old	0.1	0.1	0.1
17 years old	0.4	0.5	0.6
18 years old	7.3	7.3	7.5
19 years old	10.4	10.7	11.1
20 years old	8.4	9.9	10.3
21 years old	9.8	10.0	10.4
22 years old	10.1	11.0	11.6
23 years old	11.2	12.2	13.0
24 years old	10.7	11.6	12.4
25 to 29 years old	7.9	8.4	9.0
30 to 34 years old	6.5	6.6	7.1
35 to 44 years old	8.2	9.0	9.7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and U.S. Department of Commerce, Census Bureau, Current Population Reports, "Social and Economic Characteristics of Students," 2009. (This table was prepared February 2011.)

Table A-17. Estimated equations and model statistics for full-time and part-time college enrollment rates of men

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-7.46	0.251	-29.79	1.00	1.9*
Intercept term for 18-year-olds	-4.58	0.231	-19.78		
Intercept term for 19-year-olds	-4.24	0.201	-21.06		
Intercept term for 20-year-olds	-4.32	0.204	-21.17		
Intercept term for 21-year-olds	-4.48	0.203	-22.04		
Intercept term for 22-year-olds	-4.91	0.206	-23.82		
Intercept term for 23-year-olds	-5.40	0.204	-26.40		
Intercept term for 24-year-olds	-5.74	0.222	-25.92		
Intercept term for 25- to 29-year-olds	-6.48	0.209	-31.00		
Intercept term for 30- to 34-year-olds	-7.44	0.242	-30.79		
Intercept term for 35- to 44-year-olds	-7.96	0.241	-32.98		
Log of three-period weighted average of per capita disposable income in 2000 dollars, using the present period and the previous two periods	0.67	0.034	20.06		
Log of age-specific unemployment rate for men	0.18	0.018	10.01		
Autocorrelation coefficient for 17-year-olds	0.86	0.042	20.43		
Autocorrelation coefficient for 18-year-olds	0.88	0.047	18.56		
Autocorrelation coefficient for 19-year-olds	0.44	0.125	3.49		
Autocorrelation coefficient for 20-year-olds	0.59	0.127	4.66		
Autocorrelation coefficient for 21-year-olds	0.52	0.125	4.13		
Autocorrelation coefficient for 22-year-olds	0.73	0.109	6.70		
Autocorrelation coefficient for 23-year-olds	0.65	0.120	5.42		
Autocorrelation coefficient for 24-year-olds	0.83	0.113	7.34		
Autocorrelation coefficient for 25- to 29-year-olds	0.68	0.076	8.98		
Autocorrelation coefficient for 30- to 34-year-olds	0.89	0.074	11.97		
Autocorrelation coefficient for 35- to 44-year-olds	0.87	0.068	12.81		
Part-time					
Intercept term for 17-year-olds	-8.04	0.341	-23.57	0.99	1.8*
Intercept term for 18-year-olds	-5.66	0.290	-19.55		
Intercept term for 19-year-olds	-5.31	0.369	-14.38		
Intercept term for 20-year-olds	-5.11	0.303	-16.89		
Intercept term for 21-year-olds	-5.27	0.284	-18.57		
Intercept term for 22-year-olds	-5.59	0.393	-14.22		
Intercept term for 23-year-olds	-5.46	0.282	-19.34		
Intercept term for 24-year-olds	-5.51	0.283	-19.43		
Intercept term for 25- to 29-year-olds	-5.94	0.298	-19.93		
Intercept term for 30- to 34-year-olds	-6.39	0.299	-21.40		
Intercept term for 35- to 44-year-olds	-6.32	0.285	-22.21		
Log of three-period weighted average of per capita disposable income in 2000 dollars, using the present period and the previous two periods	0.46	0.046	10.04		
Log of unemployment rate	0.16	0.021	7.44		
Autocorrelation coefficient for 17-year-olds	0.69	0.112	6.15		
Autocorrelation coefficient for 18-year-olds	0.70	0.091	7.67		
Autocorrelation coefficient for 19-year-olds	0.92	0.057	16.02		
Autocorrelation coefficient for 20-year-olds	0.82	0.101	8.10		
Autocorrelation coefficient for 21-year-olds	0.54	0.089	6.02		
Autocorrelation coefficient for 22-year-olds	0.89	0.100	8.84		
Autocorrelation coefficient for 23-year-olds	0.43	0.106	4.02		
Autocorrelation coefficient for 24-year-olds	0.55	0.112	4.88		
Autocorrelation coefficient for 25- to 29-year-olds	0.89	0.044	20.32		
Autocorrelation coefficient for 30- to 34-year-olds	0.88	0.040	21.76		
Autocorrelation coefficient for 35- to 44-year-olds	0.63	0.060	10.52		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method with a first-order autocorrelation correction. The time period used to estimate both equations is from 1981 to 2009, and the number of observations is 319 after the correction for autocorrelation. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared January 2011.)

Table A-18. Estimated equations and model statistics for full-time and part-time college enrollment rates of women

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-9.48	0.181	-52.48	1.00	1.29**
Intercept term for 18-year-olds	-6.70	0.163	-41.05		
Intercept term for 19-year-olds	-6.58	0.159	-41.37		
Intercept term for 20-year-olds	-6.70	0.159	-42.22		
Intercept term for 21-year-olds	-6.92	0.159	-43.57		
Intercept term for 22-year-olds	-7.58	0.160	-47.26		
Intercept term for 23-year-olds	-8.08	0.162	-49.98		
Intercept term for 24-year-olds	-8.46	0.163	-51.90		
Intercept term for 25- to 29-year-olds	-9.05	0.164	-55.20		
Intercept term for 30- to 34-year-olds	-9.76	0.162	-60.11		
Intercept term for 35- to 44-year-olds	-9.98	0.163	-61.28		
Log of three-period weighted average of per capita disposable income in 2000 dollars, using the present period and the previous two periods	1.17	0.031	37.27		
Log of age-specific unemployment rate for women	0.28	0.041	6.79		
Part-time					
Intercept term for 17-year-olds	-11.18	0.500	-22.38	0.99	1.88*
Intercept term for 18-year-olds	-8.46	0.297	-28.54		
Intercept term for 19-year-olds	-7.95	0.287	-27.73		
Intercept term for 20-year-olds	-8.12	0.284	-28.56		
Intercept term for 21-year-olds	-8.12	0.280	-29.06		
Intercept term for 22-year-olds	-8.29	0.280	-29.58		
Intercept term for 23-year-olds	-8.36	0.282	-29.63		
Intercept term for 24-year-olds	-8.42	0.286	-29.46		
Intercept term for 25- to 29-year-olds	-8.88	0.295	-30.08		
Intercept term for 30- to 34-year-olds	-9.25	0.292	-31.70		
Intercept term for 35- to 44-year-olds	-8.95	0.296	-30.23		
Log of three-period weighted average of per capita disposable income in 2000 dollars, using the present period and the previous two periods	1.01	0.044	22.70		
Log of unemployment rate	0.14	0.024	5.85		
Autocorrelation coefficient for 17-year-olds	0.82	0.074	11.11		
Autocorrelation coefficient for 18-year-olds	0.75	0.082	9.11		
Autocorrelation coefficient for 19-year-olds	0.77	0.071	10.71		
Autocorrelation coefficient for 20-year-olds	0.60	0.105	5.74		
Autocorrelation coefficient for 21-year-olds	0.30	0.123	2.39		
Autocorrelation coefficient for 22-year-olds	0.44	0.097	4.57		
Autocorrelation coefficient for 23-year-olds	0.52	0.077	6.82		
Autocorrelation coefficient for 24-year-olds	0.74	0.063	11.74		
Autocorrelation coefficient for 25- to 29-year-olds	0.89	0.034	25.99		
Autocorrelation coefficient for 30- to 34-year-olds	0.89	0.026	33.81		
Autocorrelation coefficient for 35- to 44-year-olds	0.89	0.026	34.19		

* $p < .05$.
** Inconclusive.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time equation was the pooled seemingly unrelated regression method. The regression method used to estimate the part-time equation was the pooled seemingly unrelated regression method with a first-order autocorrelation correction. The time period used to estimate the full-time equation was from 1980 to 2009 and that for the part-time equation was from 1981 to 2009. The number of observations for the full-time equation is 330 and the number of observations for the part-time equation, after the correction for autocorrelation, is 319. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions Model, 1980–2008. (This table was prepared March 2011.)

Table A-19. Actual and projected percentages of full-time students at postsecondary degree-granting institutions, by sex, age group, student level, and institution level: Fall 2009, and fall 2010 through fall 2020

Age and institution type	Men		Women	
	Actual 2009	Projected 2010 through 2020	Actual 2009	Projected 2010 through 2020
18 and 19 years old				
Undergraduate, 4-year institutions	66.3	65.9	65.0	65.4
Undergraduate, 2-year institutions	33.9	33.8	34.2	34.0
Postbaccalaureate, 4-year institutions	#	0.3	0.9	0.5
20 and 21 years old				
Undergraduate, 4-year institutions	76.8	76.1	80.0	80.1
Undergraduate, 2-year institutions	23.0	22.6	17.9	17.9
Postbaccalaureate, 4-year institutions	0.2	1.3	2.1	1.9
22 to 24 years old				
Undergraduate, 4-year institutions	60.6	60.7	61.3	60.9
Undergraduate, 2-year institutions	19.1	19.1	17.1	17.0
Postbaccalaureate, 4-year institutions	20.3	20.2	21.6	22.1
25 to 29 years old				
Undergraduate, 4-year institutions	40.4	40.8	39.6	39.6
Undergraduate, 2-year institutions	22.4	21.1	24.7	24.7
Postbaccalaureate, 4-year institutions	37.3	38.1	35.7	35.7
30 to 34 years old				
Undergraduate, 4-year institutions	38.2	38.1	39.0	39.0
Undergraduate, 2-year institutions	25.6	25.7	32.5	32.5
Postbaccalaureate, 4-year institutions	36.2	36.2	28.5	28.5
35 years and over				
Undergraduate, 4-year institutions	40.2	40.2	45.9	45.6
Undergraduate, 2-year institutions	22.9	22.9	31.9	31.7
Postbaccalaureate, 4-year institutions	36.9	36.8	22.2	22.6

Rounds to zero.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and U.S. Department of Commerce, Census Bureau, Current Population Reports, "Social and Economic Characteristics of Students," 2009. (This table was prepared February 2011.)

Table A-20. Actual and projected percentages of part-time students at postsecondary degree-granting institutions, by sex, age group, level enrolled, and level of institution: Fall 2009, and fall 2010 through fall 2020

Age group and level of institution	Men		Women	
	Actual 2009	Projected 2010 through 2020	Actual 2009	Projected 2010 through 2020
18 and 19 years old				
Undergraduate, 4-year institutions	11.8	11.8	18.5	18.5
Undergraduate, 2-year institutions	87.7	87.8	81.4	81.1
Postbaccalaureate, 4-year institutions	0.5	0.5	0.1	0.4
20 and 21 years old				
Undergraduate, 4-year institutions	26.6	26.6	28.3	29.9
Undergraduate, 2-year institutions	72.7	72.6	70.8	69.1
Postbaccalaureate, 4-year institutions	0.7	0.8	0.9	1.1
22 to 24 years old				
Undergraduate, 4-year institutions	32.8	33.0	35.8	35.7
Undergraduate, 2-year institutions	55.5	56.3	52.6	52.2
Postbaccalaureate, 4-year institutions	11.7	10.8	11.6	12.1
25 to 29 years old				
Undergraduate, 4-year institutions	29.4	29.4	26.3	26.3
Undergraduate, 2-year institutions	54.0	54.0	54.7	54.7
Postbaccalaureate, 4-year institutions	16.6	16.6	18.9	19.0
30 to 34 years old				
Undergraduate, 4-year institutions	34.0	33.2	27.9	27.9
Undergraduate, 2-year institutions	44.5	45.6	50.0	50.0
Postbaccalaureate, 4-year institutions	21.6	21.2	22.2	22.2
35 years and over				
Undergraduate, 4-year institutions	27.2	27.1	27.4	27.4
Undergraduate, 2-year institutions	47.4	47.1	47.6	47.8
Postbaccalaureate, 4-year institutions	25.4	25.8	25.0	24.8

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Spring 2010; Enrollment in Degree-Granting Institutions Model, 1980–2009; and U.S. Department of Commerce, Census Bureau, Current Population Reports, "Social and Economic Characteristics of Students," 2009. (This table was prepared February 2011.)

Table A-21. Actual and projected enrollment in public postsecondary degree-granting institutions as a percent of total postsecondary enrollment, by sex, attendance status, level enrolled, and level of institution: Fall 2009, and fall 2010 through fall 2020

Enrollment category	Men		Women	
	Actual 2009	Projected 2010 through 2020	Actual 2009	Projected 2010 through 2020
Full-time, undergraduate, 4-year institutions	64.8	64.8	60.0	60.0
Part-time, undergraduate, 4-year institutions	66.8	66.8	62.5	62.5
Full-time, undergraduate, 2-year institutions	91.0	91.0	86.8	86.8
Part-time, undergraduate, 2-year institutions	99.1	99.1	98.6	98.6
Full-time, postbaccalaureate, 4-year institutions	49.1	49.1	45.7	45.7
Part-time, postbaccalaureate, 4-year institutions	52.3	52.3	53.2	53.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Spring 2010; and Enrollment in Degree-Granting Institutions Model, 1980–2009. (This table was prepared February 2011.)

Table A-22. Estimated equations and model statistics for full-time and part-time college enrollment rates of White men

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-8.69	0.179	-48.41	1.00	1.46**
Intercept term for 18-year-olds	-5.65	0.159	-35.48		
Intercept term for 19-year-olds	-5.43	0.155	-34.92		
Intercept term for 20-year-olds	-5.62	0.156	-36.02		
Intercept term for 21-year-olds	-5.76	0.156	-37.01		
Intercept term for 22-year-olds	-6.25	0.156	-39.97		
Intercept term for 23-year-olds	-6.80	0.156	-43.45		
Intercept term for 24-year-olds	-7.23	0.158	-45.72		
Intercept term for 25- to 29-year-olds	-8.08	0.156	-51.73		
Intercept term for 30- to 34-year-olds	-9.11	0.159	-57.28		
Intercept term for 35- to 44-year-olds	-9.74	0.160	-60.83		
Log of White per capita disposable income in current dollars	0.26	0.008	32.35		
Part-time					
Intercept term for 17-year-olds	-5.21	0.149	-35.04	0.99	1.47*
Intercept term for 18-year-olds	-1.87	0.076	-24.70		
Intercept term for 19-year-olds	-1.49	0.091	-16.30		
Intercept term for 20-year-olds	-1.48	0.076	-19.44		
Intercept term for 21-year-olds	-1.52	0.077	-19.72		
Intercept term for 22-year-olds	-1.71	0.076	-22.45		
Intercept term for 23-year-olds	-1.72	0.071	-24.32		
Intercept term for 24-year-olds	-1.74	0.071	-24.62		
Intercept term for 25- to 29-year-olds	-2.07	0.070	-29.50		
Intercept term for 30- to 34-year-olds	-2.53	0.073	-34.65		
Intercept term for 35- to 44-year-olds	-2.56	0.069	-37.36		
Log of real total private compensation employment cost index	0.95	0.088	10.74		

* $p < .05$.
** Inconclusive.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-23. Estimated equations and model statistics for full-time and part-time college enrollment rates of White women

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-13.57	0.264	-51.31	1.00	1.50*
Intercept term for 18-year-olds	-10.61	0.248	-42.84		
Intercept term for 19-year-olds	-10.49	0.245	-42.85		
Intercept term for 20-year-olds	-10.74	0.245	-43.80		
Intercept term for 21-year-olds	-10.99	0.246	-44.74		
Intercept term for 22-year-olds	-11.72	0.246	-47.58		
Intercept term for 23-year-olds	-12.29	0.248	-49.62		
Intercept term for 24-year-olds	-12.69	0.248	-51.22		
Intercept term for 25- to 29-year-olds	-13.50	0.246	-54.83		
Intercept term for 30- to 34-year-olds	-14.22	0.245	-57.95		
Intercept term for 35- to 44-year-olds	-14.39	0.246	-58.52		
Log of White per capita disposable income in current dollars	0.54	0.013	42.42		
Part-time					
Intercept term for 17-year-olds	-9.04	0.311	-29.12	0.79	1.55*
Intercept term for 18-year-olds	-5.77	0.253	-22.84		
Intercept term for 19-year-olds	-5.32	0.256	-20.77		
Intercept term for 20-year-olds	-5.41	0.255	-21.22		
Intercept term for 21-year-olds	-5.48	0.253	-21.62		
Intercept term for 22-year-olds	-5.67	0.252	-22.46		
Intercept term for 23-year-olds	-5.72	0.252	-22.66		
Intercept term for 24-year-olds	-5.74	0.252	-22.79		
Intercept term for 25- to 29-year-olds	-6.07	0.251	-24.21		
Intercept term for 30- to 34-year-olds	-6.39	0.252	-25.36		
Intercept term for 35- to 44-year-olds	-6.08	0.251	-24.24		
Log of real total private compensation employment cost index	0.18	0.013	14.00		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-24. Estimated equations and model statistics for full-time and part-time college enrollment rates of Black men

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-9.90	0.521	-19.01	0.97	1.84*
Intercept term for 18-year-olds	-7.70	0.516	-14.92		
Intercept term for 19-year-olds	-7.43	0.516	-14.40		
Intercept term for 20-year-olds	-7.51	0.517	-14.54		
Intercept term for 21-year-olds	-7.81	0.517	-15.11		
Intercept term for 22-year-olds	-7.96	0.518	-15.37		
Intercept term for 23-year-olds	-8.48	0.520	-16.29		
Intercept term for 24-year-olds	-8.74	0.518	-16.87		
Intercept term for 25- to 29-year-olds	-9.52	0.518	-18.38		
Intercept term for 30- to 34-year-olds	-10.30	0.523	-19.69		
Intercept term for 35- to 44-year-olds	-10.69	0.519	-20.58		
Log of Black per capita disposable income in current dollars	0.33	0.028	11.83		
Part-time					
Intercept term for 17-year-olds	-10.02	0.354	-28.31	0.65	1.84*
Intercept term for 18-year-olds	-9.17	0.381	-24.07		
Intercept term for 19-year-olds	-8.36	0.360	-23.19		
Intercept term for 20-year-olds	-8.27	0.359	-23.02		
Intercept term for 21-year-olds	-8.26	0.349	-23.70		
Intercept term for 22-year-olds	-8.32	0.363	-22.92		
Intercept term for 23-year-olds	-8.53	0.370	-23.03		
Intercept term for 24-year-olds	-8.64	0.379	-22.76		
Intercept term for 25- to 29-year-olds	-8.64	0.348	-24.82		
Intercept term for 30- to 34-year-olds	-8.85	0.347	-25.53		
Intercept term for 35- to 44-year-olds	-8.92	0.344	-25.92		
Log of Black per capita disposable income in current dollars	0.29	0.018	15.64		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-25. Estimated equations and model statistics for full-time and part-time college enrollment rates of Black women

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-15.03	0.621	-24.19	0.97	1.74*
Intercept term for 18-year-olds	-12.85	0.615	-20.89		
Intercept term for 19-year-olds	-12.63	0.615	-20.55		
Intercept term for 20-year-olds	-12.90	0.615	-20.99		
Intercept term for 21-year-olds	-13.05	0.614	-21.24		
Intercept term for 22-year-olds	-13.50	0.615	-21.97		
Intercept term for 23-year-olds	-13.81	0.615	-22.46		
Intercept term for 24-year-olds	-14.17	0.616	-23.00		
Intercept term for 25- to 29-year-olds	-14.93	0.617	-24.22		
Intercept term for 30- to 34-year-olds	-15.41	0.615	-25.05		
Intercept term for 35- to 44-year-olds	-15.77	0.616	-25.62		
Log of Black per capita disposable income in current dollars	0.64	0.033	19.35		
Part-time					
Intercept term for 17-year-olds	-14.56	0.665	-21.91	0.62	1.74*
Intercept term for 18-year-olds	-13.12	0.664	-19.78		
Intercept term for 19-year-olds	-12.71	0.664	-19.16		
Intercept term for 20-year-olds	-12.78	0.662	-19.31		
Intercept term for 21-year-olds	-12.66	0.663	-19.11		
Intercept term for 22-year-olds	-12.66	0.663	-19.10		
Intercept term for 23-year-olds	-12.67	0.662	-19.15		
Intercept term for 24-year-olds	-12.85	0.662	-19.41		
Intercept term for 25- to 29-year-olds	-13.02	0.658	-19.79		
Intercept term for 30- to 34-year-olds	-13.13	0.659	-19.93		
Intercept term for 35- to 44-year-olds	-13.01	0.658	-19.78		
Log of Black per capita disposable income in current dollars	0.55	0.035	15.58		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-26. Estimated equations and model statistics for full-time and part-time college enrollment rates of Hispanic men

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-11.06	0.604	-18.32	0.94	1.89*
Intercept term for 18-year-olds	-9.09	0.596	-15.24		
Intercept term for 19-year-olds	-8.87	0.596	-14.88		
Intercept term for 20-year-olds	-9.08	0.596	-15.25		
Intercept term for 21-year-olds	-9.30	0.599	-15.54		
Intercept term for 22-year-olds	-9.77	0.597	-16.36		
Intercept term for 23-year-olds	-10.06	0.598	-16.83		
Intercept term for 24-year-olds	-10.20	0.597	-17.08		
Intercept term for 25- to 29-year-olds	-11.04	0.598	-18.46		
Intercept term for 30- to 34-year-olds	-11.85	0.599	-19.78		
Intercept term for 35- to 44-year-olds	-12.34	0.603	-20.45		
Log of Hispanic per capita disposable income in current dollars	0.39	0.033	12.02		
Part-time					
Intercept term for 17-year-olds	-10.55	0.404	-26.09	0.73	1.79*
Intercept term for 18-year-olds	-8.98	0.401	-22.39		
Intercept term for 19-year-olds	-8.66	0.408	-21.21		
Intercept term for 20-year-olds	-8.53	0.401	-21.26		
Intercept term for 21-year-olds	-8.57	0.400	-21.41		
Intercept term for 22-year-olds	-8.97	0.399	-22.47		
Intercept term for 23-year-olds	-8.93	0.408	-21.90		
Intercept term for 24-year-olds	-8.95	0.399	-22.45		
Intercept term for 25- to 29-year-olds	-9.32	0.390	-23.92		
Intercept term for 30- to 34-year-olds	-9.78	0.392	-24.93		
Intercept term for 35- to 44-year-olds	-9.80	0.390	-25.16		
Log of Hispanic per capita disposable income in current dollars	0.32	0.021	15.27		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-27. Estimated equations and model statistics for full-time and part-time college enrollment rates of Hispanic women

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-17.63	0.466	-37.82	0.95	1.88*
Intercept term for 18-year-olds	-15.11	0.446	-33.86		
Intercept term for 19-year-olds	-15.03	0.444	-33.84		
Intercept term for 20-year-olds	-15.36	0.445	-34.51		
Intercept term for 21-year-olds	-15.50	0.445	-34.80		
Intercept term for 22-year-olds	-16.06	0.449	-35.76		
Intercept term for 23-year-olds	-16.38	0.446	-36.69		
Intercept term for 24-year-olds	-16.83	0.453	-37.12		
Intercept term for 25- to 29-year-olds	-17.46	0.444	-39.29		
Intercept term for 30- to 34-year-olds	-18.18	0.448	-40.59		
Intercept term for 35- to 44-year-olds	-18.44	0.450	-40.96		
Log of Hispanic per capita disposable income in current dollars	0.75	0.024	31.18		
Part-time					
Intercept term for 17-year-olds	-15.17	0.466	-32.55	0.75	1.84*
Intercept term for 18-year-olds	-13.04	0.453	-28.77		
Intercept term for 19-year-olds	-12.73	0.448	-28.41		
Intercept term for 20-year-olds	-12.99	0.456	-28.52		
Intercept term for 21-year-olds	-12.88	0.457	-28.17		
Intercept term for 22-year-olds	-13.16	0.456	-28.84		
Intercept term for 23-year-olds	-12.98	0.450	-28.85		
Intercept term for 24-year-olds	-13.26	0.454	-29.18		
Intercept term for 25- to 29-year-olds	-13.57	0.444	-30.57		
Intercept term for 30- to 34-year-olds	-13.94	0.444	-31.42		
Intercept term for 35- to 44-year-olds	-13.77	0.443	-31.11		
Log of Hispanic per capita disposable income in current dollars	0.58	0.024	23.85		

* $p < .05$.

NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1980 to 2009. The number of observations is 330. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-28. Estimated equations and model statistics for full-time and part-time college enrollment rates of Asian/Pacific Islander men

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-9.28	0.338	-14.87	0.94	1.89*
Intercept term for 18-year-olds	-6.47	0.305	-10.11		
Intercept term for 19-year-olds	-6.27	0.309	-9.69		
Intercept term for 20-year-olds	-6.37	0.306	-9.94		
Intercept term for 21-year-olds	-6.34	0.309	-9.87		
Intercept term for 22-year-olds	-6.70	0.307	-10.48		
Intercept term for 23-year-olds	-7.03	0.309	-10.88		
Intercept term for 24-year-olds	-7.37	0.313	-11.46		
Intercept term for 25- to 29-year-olds	-8.16	0.307	-13.19		
Intercept term for 30- to 34-year-olds	-9.19	0.309	-14.98		
Intercept term for 35- to 44-year-olds	-9.96	0.307	-16.47		
Log of Asian/Pacific Islander per capita disposable income in current dollars	0.32	0.016	20.39		
Part-time					
Intercept term for 17-year-olds	-4.97	0.557	-8.92	0.72	1.80*
Intercept term for 18-year-olds	-3.94	0.552	-7.13		
Intercept term for 19-year-olds	-3.21	0.544	-5.90		
Intercept term for 20-year-olds	-3.32	0.555	-5.99		
Intercept term for 21-year-olds	-3.35	0.558	-5.99		
Intercept term for 22-year-olds	-3.38	0.570	-5.93		
Intercept term for 23-year-olds	-3.52	0.549	-6.40		
Intercept term for 24-year-olds	-3.74	0.543	-6.88		
Intercept term for 25- to 29-year-olds	-4.10	0.530	-7.74		
Intercept term for 30- to 34-year-olds	-4.55	0.531	-8.58		
Intercept term for 35- to 44-year-olds	-5.00	0.528	-9.47		
Log of Asian/Pacific Islander per capita disposable income in current dollars	0.09	0.027	3.34		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1989 to 2009. The number of observations is 231. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

Table A-29. Estimated equations and model statistics for full-time and part-time college enrollment rates of Asian/Pacific Islander women

Independent variable	Coefficient	Standard error	*t*-statistic	R^2	D.W. statistic
Full-time					
Intercept term for 17-year-olds	-14.05	0.578	-24.30	0.96	1.92*
Intercept term for 18-year-olds	-11.61	0.567	-20.47		
Intercept term for 19-year-olds	-11.03	0.572	-19.27		
Intercept term for 20-year-olds	-11.29	0.574	-19.68		
Intercept term for 21-year-olds	-11.41	0.569	-20.04		
Intercept term for 22-year-olds	-11.99	0.569	-21.08		
Intercept term for 23-year-olds	-12.40	0.568	-21.84		
Intercept term for 24-year-olds	-12.90	0.580	-22.25		
Intercept term for 25- to 29-year-olds	-13.81	0.565	-24.45		
Intercept term for 30- to 34-year-olds	-15.08	0.570	-26.47		
Intercept term for 35- to 44-year-olds	-15.63	0.572	-27.31		
Log of Asian/Pacific Islander per capita disposable income in current dollars	0.60	0.029	20.57		
Part-time					
Intercept term for 17-year-olds	-13.00	0.483	-26.92	0.86	1.89*
Intercept term for 18-year-olds	-11.11	0.465	-23.89		
Intercept term for 19-year-olds	-10.21	0.496	-20.59		
Intercept term for 20-year-olds	-10.58	0.476	-22.20		
Intercept term for 21-year-olds	-10.11	0.475	-21.28		
Intercept term for 22-year-olds	-10.41	0.454	-22.92		
Intercept term for 23-year-olds	-10.81	0.465	-23.23		
Intercept term for 24-year-olds	-10.98	0.480	-22.88		
Intercept term for 25- to 29-year-olds	-11.47	0.449	-25.52		
Intercept term for 30- to 34-year-olds	-12.12	0.452	-26.80		
Intercept term for 35- to 44-year-olds	-11.97	0.446	-26.80		
Log of Asian/Pacific Islander per capita disposable income in current dollars	0.47	0.023	20.65		

* $p < .05$.
NOTE: R^2 = Coefficient of determination. D.W. statistic = Durbin-Watson statistic, a test for autocorrelation among regression residuals. For more details, see Johnston, J., and Dinardo, J. (1996). *Econometric Methods,* New York: McGraw-Hill. The regression method used to estimate the full-time and part-time equations was the pooled seemingly unrelated regression method. The time period used to estimate the equations is from 1989 to 2009. The number of observations is 231. For additional information, see Intriligator, M.D. (1978). *Econometric Models, Techniques, & Applications.* New Jersey: Prentice-Hall, Inc., pp. 165–173. Race categories exclude persons of Hispanic ethnicity.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Enrollment in Degree-Granting Institutions by Race/Ethnicity Model, 1980–2009. (This table was prepared March 2011.)

A.6. POSTSECONDARY DEGREES CONFERRED

Projections in this edition

This edition of *Projections of Education Statistics* presents projections of postsecondary degrees conferred by level of degree and sex of recipient for 2009–10 through 2020–21.

Overview of approach

Basic approach

Projections of associate's, bachelor's, master's, and first-professional degrees for men and women were produced using forecasting equations that relate degrees conferred to full-time enrollment in degree-granting institutions by sex, student level (undergraduate or postbaccalaureate), and institution level (2-year or 4-year). Projections of doctor's degrees for men and women were produced using double exponential smoothing.

Degrees Conferred Model

Procedures used to project degrees

For all degree levels, projections of degrees conferred were made separately for men and for women. The projections for men and women were then summed to get projections of the total number of degrees.

Double exponential smoothing was used to project doctor's degrees, as described below. Multiple linear regression was used to project associate's, bachelor's, master's, and first-professional degrees based on enrollment variables for men and women. The enrollment variables used for the different levels of degrees are briefly described below.

For details and results of the regression analyses used to project associate's, bachelor's, master's, and first-professional degrees, see table A-30, under "Data and equations used to project degrees," later in this section.

Associate's degrees. *Projections were based on full-time undergraduate enrollment in 2-year institutions by sex.* Men's projections of associate's degrees were based on current full-time enrollment and full-time enrollment lagged 2 years. Women's projections of associate's degrees were based on current full-time enrollment and full-time enrollment lagged 1 and 2 years.

Bachelor's degrees. *Projections were based on full-time undergraduate enrollment in 4-year institutions by sex.* For men and for women, bachelor's degree projections were based on current full-time enrollment and full-time enrollment lagged 2 years.

Master's degrees. *Projections were based on full-time postbaccalaureate enrollment by sex.* Men's projections of master's degrees were based on current full-time enrollment and full-time enrollment lagged 1 year. Women's projections of master's degrees were based on current full-time enrollment.

Doctor's degrees. *Projections were obtained by double exponential smoothing of the historical data on doctor's degrees awarded by sex.* The smoothing constants for each sex were chosen to minimize the sum of squared forecast errors.

First-professional degrees. *Projections were based on full-time postbaccalaureate enrollment by sex.* For men and for women, first-professional degree projections were based on current full-time postbaccalaureate enrollment and full-time postbaccalaureate enrollment lagged 1 and 2 years.

Data and equations used to project degrees

Enrollment data and projections for degree-granting institutions. Historical enrollment data by sex, level of student, and level of institution came from the NCES Integrated Postsecondary Education Data System (IPEDS). For the time period used for each level of degree, see table A-30 on page 137. The enrollment projections used are those produced for this edition of *Projections of Education Statistics*. For more information about the enrollment projections, see Section A.5. Enrollment in Postsecondary Degree-Granting Institutions, earlier in this appendix.

Data on degrees awarded at all levels. Historical data by level of degree and sex of recipient came from the NCES Integrated Postsecondary Education Data System (IPEDS). Doctor's degrees were projected using data for 1960–61 to 2007–08. For the time periods used for the other degree levels, see table A-30 on page 137.

Estimated equations and model statistics. For details on the equations used to project associate's, bachelor's, master's, and first-professional degrees, see table A-30 on page 137. The equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2s), the *t*-statistics of the coefficients, the Durbin-Watson statistic, the Breusch-Godfrey Serial Correlation LM test statistic, and residual plots.

Accuracy of projections

No MAPEs were calculated for degrees conferred as the current models used for producing these projections have been used for only two other editions of *Projections of Education Statistics*.

For more information about MAPEs, see Section A.0. Introduction, earlier in this appendix.

Table A-30. Estimated equations and model statistics for degrees conferred, by degree level and sex

Dependent variable	Equation[1]	R^2	Breusch-Godfrey Serial Correlation LM test statistic[2]	Time period
Associate's degrees, men	DASSOCM = 1,907 + 89DUGFT2M + 58DUGFT2ML2 (2.3) (4.4) (3.0)	0.51	0.13 (0.951)	1980–81 to 2008–09
Associate's degrees, women	DLOGASSOCW = # + 0.7DLOGUGFT2WS3 + 0.5MA(1) (†) (3.9) (2.9)	0.59	0.02 (0.992)	1980–81 to 2008–09
Bachelor's degrees, men	DBACHM = 667 + 82DUGFT4M + 141DUGFT4ML2 (0.70) (3.6) (5.8)	0.81	1.462 (0.445)	1980–81 to 2008–09
Bachelor's degrees, women	DBACHW = 3772 + 87DUGFT4W + 108DUGFT4WL2 (1.7) (2.8) (3.2)	0.62	0.76 (0.684)	1980–81 to 2008–09
Master's degrees, men	PCHMASTM = # + 0.6PCHPBFTM + 0.5PCHPBFTML1 + 0.4AR(1) (†) (4.38) (3.71) (2.66)	0.67	2.98 (0.226)	1970–71 to 2008–09
Master's degrees, women	PCHMASTW = # + 0.4PCHPBFTW + 0.6AR(1) (†) (2.35) (3.79)	0.60	1.13 (0.579)	1970–71 to 2008–09
First-professional degrees, men	DFPROM = 91 + 162DPBFTML1 + 89DPBFTML2 (0.5) (5.2) (3.0)	0.61	3.34 (0.188)	1971–72 to 2008–09
First-professional degrees, women	DFPROW = 44 + 123DPBFTWL1 + 165DPBFTWL2 (0.2) (2.5) (3.8)	0.51	2.97 (0.23)	1971–72 to 2008–09

Rounds to zero.
† Not applicable.
[1] AR(1) indicates that the model was estimated to account for first-order autocorrelation. To estimate the model, it was first transformed into a nonlinear model and then the coefficients were estimated simultaneously by applying a Marquardt nonlinear least squares algorithm to the transformed equation. MA(1) indicates that the model was estimated to incorporate moving average of the residual into model fit. For a general discussion of the problem of autocorrelation and the method used to forecast in the presence of autocorrelation, see Judge, G., Hill, W., Griffiths, R., Lutkepohl, H., and Lee, T. (1985). *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, pp. 315-318.
[2] The number in parentheses is the probability of the Chi-Square(2) associated with the Breusch-Godfrey Serial Correlation LM Test. A *p* value greater than 0.05 implies that we do not reject the null hypothesis of no autocorrelation at the 5 percent significance level for a two-tailed test and the 10 percent significance level for a one-tailed test (i.e., there is no autocorrelation present). For an explanation of the Breusch-Godfrey Serial Correlation LM test statistic, see Greene, W. (2000). *Econometric Analysis.* New Jersey: Prentice-Hall.
NOTE: R^2 is the coefficient of determination. Numbers in parentheses are *t*-statistics. There are no equations for doctor's degrees for men and women as projections of those items were obtained using double exponential smoothing.
DASSOCM = First difference of associate's degrees awarded to men.
DLOGASSOCW = First difference of the log of associate's degrees awarded to women.
DBACHM = First difference of bachelor's degrees awarded to men.
DBACHW = First difference of bachelor's degrees awarded to women.
PCHMASTM = Percentage change in master's degrees awarded to men.
PCHMASTW = Percentage change in master's degrees awarded to women.
DFPROM = First difference of first-professional degrees awarded to men.
DFPROW = First difference of first-professional degrees awarded to women.
DUGFT2M = First difference of full-time male undergraduate enrollment in 2-year institutions.
DUGFT2ML2 = First difference of full-time male undergraduate enrollment in 2-year institutions, lagged two periods.
DLOGUGFT2WS3 = First difference of the sum of the full-time female undergraduate enrollment in 2-year institutions over the present year and the previous 2 years.
DUGFT4M = First difference of full-time male undergraduate enrollment in 4-year institutions.
DUGFT4ML2 = First difference of full-time male undergraduate enrollment in 4-year institutions, lagged two periods.
DUGFT4W = First difference of full-time female undergraduate enrollment in 4-year institutions.
DUGFT4WL2 = First difference of full-time female undergraduate enrollment in 4-year institutions, lagged two periods.
PCHPBFTM = Percentage change in full-time male postbaccalaureate enrollment.
PCHPBFTML1 = Percentage change in full-time female postbaccalaureate enrollment lagged one year.
PCHPBFTW = Percentage change in full-time female postbaccalaureate enrollment.
DBPFTML1 = First difference of full-time male postbaccalaureate enrollment lagged one year.
DBPFTML2 = First difference of full-time male postbaccalaureate enrollment lagged two years.
DBPFTWL1 = First difference of full-time female postbaccalaureate enrollment lagged one year.
DBPFTWL2 = First difference of full-time female postbaccalaureate enrollment lagged two years.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Degrees Conferred Model, 1970–71 through 2008–09. (This table was prepared March 2010.)

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Appendix B
Supplementary Tables

Table B-1. Annual number of births: 1946 through 2009

Calendar year	Number of births, in thousands	Calendar year	Number of births, in thousands
1946	3,426	1978	3,333
1947	3,834	1979	3,494
1948	3,655	1980	3,612
1949	3,667	1981	3,629
1950	3,645	1982	3,681
1951	3,845	1983	3,639
1952	3,933	1984	3,669
1953	3,989	1985	3,761
1954	4,102	1986	3,757
1955	4,128	1987	3,809
1956	4,244	1988	3,910
1957	4,332	1989	4,041
1958	4,279	1990	4,158
1959	4,313	1991	4,111
1960	4,307	1992	4,065
1961	4,317	1993	4,000
1962	4,213	1994	3,953
1963	4,142	1995	3,900
1964	4,070	1996	3,891
1965	3,801	1997	3,881
1966	3,642	1998	3,942
1967	3,555	1999	3,959
1968	3,535	2000	4,059
1969	3,626	2001	4,026
1970	3,739	2002	4,022
1971	3,556	2003	4,090
1972	3,258	2004	4,112
1973	3,137	2005	4,138
1974	3,160	2006	4,266
1975	3,144	2007	4,317
1976	3,168	2008	4,248
1977	3,327	2009	4,131

NOTE: Some data have been revised from previously published figures.
SOURCE: U.S. Department of Health and Human Services, National Center for Health Statistics (NCHS), *National Vital Statistics Reports,* various years. (This table was prepared February 2011.)

Table B-2. Actual and projected prekindergarten- and kindergarten-age populations, by age: 1995 through 2020

[In thousands]

Year (July 1)	3- to 5-year-olds	3-year-olds	4-year-olds	5-year-olds
Actual				
1995	12,188	4,004	4,103	4,081
1996	12,141	3,936	4,086	4,119
1997	12,019	3,894	4,021	4,104
1998	11,880	3,862	3,979	4,040
1999	11,768	3,827	3,946	3,996
2000	11,703	3,826	3,906	3,971
2001	11,601	3,828	3,847	3,926
2002	11,563	3,850	3,847	3,865
2003	11,657	3,928	3,867	3,863
2004	11,921	4,098	3,942	3,881
2005	12,122	4,052	4,113	3,957
2006	12,292	4,097	4,067	4,128
2007	12,356	4,159	4,113	4,084
2008	12,468	4,168	4,173	4,127
2009	12,590	4,224	4,181	4,186
Projected				
2010	12,779	4,349	4,236	4,193
2011	12,874	4,386	4,268	4,220
2012	12,983	4,428	4,304	4,251
2013	13,104	4,471	4,345	4,288
2014	13,231	4,515	4,388	4,328
2015	13,358	4,557	4,430	4,371
2016	13,481	4,596	4,471	4,414
2017	13,597	4,632	4,510	4,455
2018	13,705	4,665	4,546	4,494
2019	13,804	4,696	4,578	4,529
2020	13,896	4,725	4,609	4,562

NOTE: Some data have been revised from previously published figures. Detail may not sum to totals because of rounding. Projections are from the U.S. Census Bureau's 2008 National Population Projections, ratio-adjusted to line up with the most recent historical estimate.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2009, from http://www.census.gov/population/www/projections/2008projections.html.
(This table was prepared January 2011.)

Table B-3. Actual and projected school-age populations, by selected ages: 1995 through 2020

[In thousands]

Year (July 1)	5-year-olds	6-year-olds	5- to 13-year-olds	14- to 17-year-olds
Actual				
1995	4,081	3,919	34,825	15,013
1996	4,119	4,088	35,375	15,443
1997	4,104	4,127	35,915	15,769
1998	4,040	4,112	36,454	15,829
1999	3,996	4,045	36,804	16,007
2000	3,971	4,008	37,051	16,131
2001	3,926	3,990	37,085	16,221
2002	3,865	3,944	36,980	16,401
2003	3,863	3,881	36,774	16,544
2004	3,881	3,877	36,396	16,854
2005	3,957	3,895	36,162	17,104
2006	4,128	3,971	36,159	17,239
2007	4,084	4,144	36,180	17,239
2008	4,127	4,097	36,297	16,980
2009	4,186	4,139	36,487	16,761
Projected				
2010	4,193	4,198	36,736	16,550
2011	4,220	4,226	37,103	16,397
2012	4,251	4,253	37,504	16,306
2013	4,288	4,285	37,902	16,283
2014	4,328	4,322	38,302	16,327
2015	4,371	4,364	38,600	16,574
2016	4,414	4,407	38,941	16,822
2017	4,455	4,451	39,297	17,057
2018	4,494	4,492	39,645	17,300
2019	4,529	4,531	40,001	17,424
2020	4,562	4,568	40,362	17,576

NOTE: Some data have been revised from previously published figures. Projections are from the U.S. Census Bureau's 2008 National Population Projections, ratio-adjusted to line up with the most recent historical estimate.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2009, from http://www.census.gov/population/www/projections/2008projections.html. (This table was prepared January 2011.)

Table B-4. Actual and projected college-age populations, by selected ages: 1995 through 2020

[In thousands]

Year (July 1)	18-year-olds	18- to 24-year-olds	25- to 29-year-olds	30- to 34-year-olds	35- to 44-year-olds
Actual					
1995	3,601	25,585	19,742	22,425	42,765
1996	3,650	25,376	19,927	21,996	43,605
1997	3,780	25,574	19,960	21,494	44,282
1998	3,984	26,155	19,863	20,999	44,802
1999	3,993	26,780	19,632	20,647	45,130
2000	4,078	27,391	19,343	20,566	45,217
2001	4,087	28,089	18,945	20,722	45,114
2002	4,052	28,606	18,891	20,763	44,729
2003	4,154	29,117	19,071	20,624	44,284
2004	4,150	29,458	19,458	20,320	43,920
2005	4,146	29,572	19,960	19,910	43,633
2006	4,205	29,696	20,601	19,490	43,361
2007	4,285	29,899	21,116	19,413	42,934
2008	4,459	30,251	21,542	19,576	42,324
2009	4,391	30,569	21,783	19,951	41,615
Projected					
2010	4,332	30,729	21,888	20,432	41,107
2011	4,291	30,972	21,936	21,012	40,890
2012	4,233	31,147	22,034	21,482	40,856
2013	4,212	31,215	22,217	21,846	40,932
2014	4,191	31,166	22,515	22,058	41,039
2015	4,142	30,920	22,891	22,135	41,132
2016	4,147	30,677	23,227	22,188	41,358
2017	4,194	30,534	23,499	22,291	41,756
2018	4,241	30,481	23,642	22,477	42,310
2019	4,395	30,643	23,629	22,774	42,911
2020	4,402	30,833	23,451	23,149	43,485

NOTE: Some data have been revised from previously published figures. Projections are from the U.S. Census Bureau's 2008 National Population Projections, ratio-adjusted to line up with the most recent historical estimate.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2009, from http://www.census.gov/population/www/projections/2008projections.html. (This table was prepared January 2011.)

Table B-5. Actual and projected fall enrollment in public elementary and secondary schools, change in fall enrollment from previous year, resident population, and fall enrollment as a ratio of the population: School years 1995–96 through 2020–21

School year	Fall enrollment (in thousands)	Change in fall enrollment from previous year (in thousands)	Resident population (in millions)	Fall enrollment as a ratio of the population
Actual				
1995–96	44,840	729	266.6	0.168
1996–97	45,611	771	269.7	0.169
1997–98	46,127	516	272.9	0.169
1998–99	46,539	412	276.1	0.169
1999–2000	46,857	319	279.3	0.168
2000–01	47,204	346	282.4	0.167
2001–02	47,672	468	285.3	0.167
2002–03	48,183	511	288.1	0.167
2003–04	48,540	357	290.8	0.167
2004–05	48,795	255	293.5	0.166
2005–06	49,113	318	296.2	0.166
2006–07	49,316	203	299.0	0.165
2007–08	49,293	-23	302.0	0.163
2008–09	49,265	-27	304.8	0.162
Projected				
2009–10	49,282	17	307.4	0.160
2010–11	49,306	24	310.1	0.159
2011–12	49,422	116	313.1	0.158
2012–13	49,642	220	316.1	0.157
2013–14	49,914	272	319.2	0.156
2014–15	50,268	354	322.2	0.156
2015–16	50,659	392	325.4	0.156
2016–17	51,038	378	328.5	0.155
2017–18	51,430	392	331.7	0.155
2018–19	51,803	373	334.8	0.155
2019–20	52,204	401	338.0	0.154
2020–21	52,666	462	341.2	0.154

NOTE: Resident population includes civilian population and armed forces personnel residing within the United States; it excludes armed forces personnel overseas. Calculations were made using unrounded numbers. Some data have been revised from previously published figures. Projections are from the U.S. Census Bureau's 2008 National Population Projections, ratio-adjusted to line up with the most recent historical estimate.
SOURCE: U.S. Department of Commerce, Census Bureau, Population Estimates, retrieved October 4, 2010, from http://www.census.gov/popest/national/; and Population Projections, retrieved November 2, 2009, from http://www.census.gov/population/www/projections/2008projections.html. U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary/Secondary Education," 1995–96 through 2008–09; and Elementary and Secondary Enrollment Model, 1972–2008. (This table was prepared March 2011.)

Table B-6. Actual and projected macroeconomic measures of the economy: School years 1995–96 through 2020–21

School year	Disposable income per capita in constant 2008–09 dollars[1]	Education revenue receipts from state sources per capita in constant 2008–09 dollars[2]	Consumer Price Index[3]
Actual			
1995–96	$27,616	$712	0.720
1996–97	28,233	733	0.740
1997–98	29,272	766	0.754
1998–99	30,265	800	0.767
1999–2000	31,083	838	0.789
2000–01	31,886	866	0.816
2001–02	32,623	872	0.830
2002–03	32,905	877	0.849
2003–04	33,807	862	0.867
2004–05	34,300	872	0.893
2005–06	34,810	882	0.927
2006–07	35,679	927	0.951
2007–08	36,094	949	0.986
2008–09	35,999	934	1.000
Projected			
2009–10[4]	35,911	924	1.010
2010–11	36,150	925	1.023
2011–12	36,201	921	1.041
2012–13	36,250	919	1.062
2013–14	36,626	926	1.084
2014–15	37,576	951	1.108
2015–16	38,490	976	1.132
2016–17	39,375	1,000	1.156
2017–18	40,116	1,019	1.180
2018–19	40,843	1,038	1.205
2019–20	41,647	1,060	1.228
2020–21	42,218	1,075	1.246

[1] Based on the price deflator for personal consumption expenditures, Bureau of Labor Statistics, U.S. Department of Labor.
[2] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.
[3] Consumer Price Index adjusted to a school-year basis (July through June).
[4] Disposable income per capita and consumer price index numbers are actual numbers.
NOTE: Calculations were made using unrounded numbers. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "National Public Education Financial Survey," 1995–96 through 2007–08; Revenue Receipts From State Sources Model, 1971–72 through 2007–08; and IHS Global Insight, "U.S. Monthly Model: November 2010 Short-Term-Projections." (This table was prepared January 2011.)

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Appendix C
Data Sources

SOURCES AND COMPARABILITY OF DATA

The information in this report was obtained from many sources, including federal and state agencies, private research organizations, and professional associations. The data were collected by many methods, including surveys of a universe (such as all colleges) or of a sample, and compilations of administrative records. Care should be used when comparing data from different sources. Differences in procedures, such as timing, phrasing of questions, and interviewer training, mean that the results from the different sources are not strictly comparable. More extensive documentation of one survey's procedures than of another's does not imply more problems with the data, only that more information is available on the survey.

ACCURACY OF DATA

The accuracy of any statistic is determined by the joint effects of "sampling" and "nonsampling" errors. Estimates based on a sample will differ from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. Besides sampling errors, both of the surveys, universe and sample, are subject to errors of design, reporting, and processing, and errors due to nonresponse. To the extent possible, these nonsampling errors are kept to a minimum by methods built into the survey procedures. In general, however, the effects of nonsampling errors are more difficult to gauge than those produced by sampling variability.

SAMPLING ERRORS

The standard error is the primary measure of the sampling variability of an estimate. Standard errors can be used to produce confidence intervals. For example, from table A-12, an estimated 91.8 percent of public school teachers reported that they worked full time in 2007–08. This figure has an estimated standard error of 0.29 percent. Therefore, the estimated 95 percent confidence interval for this statistic is approximately 91.27 to 92.41 percent (91.8 ± 1.96 (0.29)). That is, if the processes of selecting a sample, collecting the data, and constructing the confidence interval were repeated, it would be expected that in 95 out of 100 samples from the same population, the confidence interval would contain the true full time working rate.

Analysis of standard errors can help assess how valid a comparison between two estimates might be. The *standard error of a difference* between two independent sample estimates is equal to the square root of the sum of the squared standard errors of the estimates. The standard error (*se*) of the difference between independent sample estimates *a* and *b* is

$$se_{a-b} = (se_a^2 + se_b^2)^{1/2}$$

Note that most of the standard errors in the original documents are approximations. That is, to derive estimates of standard errors that would be applicable to a wide variety of items and could be prepared at a moderate cost, a number of approximations were required. As a result, most of the standard errors presented provide a general order of magnitude rather than the exact standard error for any specific item.

NONSAMPLING ERRORS

Both universe and sample surveys are subject to nonsampling errors. Nonsampling errors are of two kinds—random and nonrandom. Random nonsampling errors may arise when respondents or interviewers interpret questions differently, when respondents must estimate values, or when coders, keyers, and other processors handle answers differently. Nonrandom nonsampling errors result from total nonresponse (no usable data obtained for a sampled unit), partial or item nonresponse (only a portion of a response may be usable), inability or unwillingness on the part of respondents to provide information, difficulty interpreting questions, mistakes in recording or keying data, errors of collection or processing, and overcoverage

or undercoverage of the target universe. Random nonresponse errors usually, but not always, result in an understatement of sampling errors and thus an overstatement of the precision of survey estimates. Because estimating the magnitude of nonsampling errors would require special experiments or access to independent data, these magnitudes are seldom available.

To compensate for suspected nonrandom errors, adjustments of the sample estimates are often made. For example, adjustments are frequently made for nonresponse, both total and partial. Imputations are usually made separately within various groups of sample members that have similar survey characteristics. Imputation for item nonresponse is usually made by substituting for a missing item the response to that item of a respondent having characteristics similar to those of the respondent.

Although the magnitude of nonsampling errors in the data used in *Projections of Education Statistics* is frequently unknown, idiosyncrasies that have been identified are noted on the appropriate tables.

FEDERAL AGENCY SOURCES

National Center for Education Statistics (NCES)

Common Core of Data

NCES uses the Common Core of Data (CCD) to acquire and maintain statistical data from each of the 50 states, the District of Columbia, the Bureau of Indian Education, Department of Defense Dependents' Schools (overseas), and the outlying areas (American Samoa, Guam, Northern Marianas, Puerto Rico, and U.S. Virgin Islands). Information about staff and students is collected annually at the school, local education agency (LEA) or school district, and state levels. Information about revenues and expenditures is also collected at the state and LEA levels.

Data are collected for a particular school year via an on-line reporting system open to state education agencies during the school year. Since the CCD is a universe collection, CCD data are not subject to sampling errors. However, nonsampling errors could come from two sources: nonresponse and inaccurate reporting. Almost all of the states submit the five CCD survey instruments each year, but submissions are sometimes incomplete.

Misreporting can occur when 58 education agencies compile and submit data for approximately 100,000 public schools and over 18,000 local education agencies. Typically, this results from varying interpretations of NCES definitions and differing record-keeping systems. NCES attempts to minimize these errors by working closely with the state education agencies through the National Forum on Education Statistics.

The state education agencies report data to NCES from data collected and edited in their regular reporting cycles. NCES encourages the agencies to incorporate into their own survey systems the NCES items they do not already collect so that these items will also be available for the subsequent CCD survey. Over time, this has meant fewer missing data cells in each state's response, reducing the need to impute data.

NCES subjects data from the state education agencies to a comprehensive edit. Where data are determined to be inconsistent, missing, or out of range, NCES contacts the agencies for verification. NCES-prepared state summary forms are returned to the agencies for verification. Each year, states are also given an opportunity to revise their state-level aggregates from the previous survey cycle.

Further information on the nonfiscal CCD may be obtained from

Chen-Su Chen
Elementary/Secondary and Libraries Studies Division
Elementary/Secondary Cooperative System and Institutional Studies Program
National Center for Education Statistics
1990 K Street NW
Washington, DC 20006
Chen-Su.Chen@ed.gov
http://nces.ed.gov/ccd/

Further information on the fiscal CCD data may be obtained from

Stephen Cornman
Elementary/Secondary and Libraries Studies Division
Elementary/Secondary Cooperative System and Institutional Studies Program
National Center for Education Statistics
1990 K Street NW
Washington, DC 20006
Stephen.Cornman@ed.gov
http://nces.ed.gov/ccd/

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) surveys approximately 6,800 postsecondary institutions, including universities and colleges, as well as institutions offering technical and vocational education beyond the high school level. IPEDS, which began in 1986, replaced the Higher Education General Information Survey (HEGIS).

IPEDS consists of nine integrated components that obtain information on who provides postsecondary education (institutions), who participates in it and completes it (students), what programs are offered and what programs are completed, and both the human and financial resources involved in the provision of institutionally based postsecondary education. Until 2000 these components included institutional characteristics, fall enrollment, completions, salaries, finance, and fall staff. Since 2000, data are collected in the fall for institutional characteristics and completions; in the winter for employees by assigned position (EAP), salaries, and fall staff; and in the spring for enrollment, student financial aid, finances, and graduation rates. With the winter 2005–06 survey the employees by assigned position, fall staff, and salaries components were merged into the human resources component. In 2007–08, the enrollment component was broken into two separate components: 12-month enrollment (collected in the fall) and fall enrollment (collected in the spring). The graduation rates 200 percent survey is new to the Spring 2010 collection. Data are collected for the number of students who completed their program within 200 percent of the normal time period. This survey was developed to fulfill requirements in the Higher Education Opportunity Act of 2008.

The degree-granting institutions portion of IPEDS is a census of colleges awarding associate's or higher degrees, that are eligible to participate in Title IV financial aid programs. Prior to 1993, data from technical and vocational institutions were collected through a sample survey. Beginning in 1993, all data were gathered in a census of all postsecondary institutions. The IPEDS tabulations developed for this edition of *Projections of Education Statistics* are based on lists of all institutions and are not subject to sampling errors.

The definition of institutions generally thought of as offering college and university education has changed in recent years. The old standard for higher education institutions included those institutions that had courses leading to an associate degree or higher, or that had courses accepted for credit toward those degrees. The higher education institutions were accredited by an agency or association that was recognized by the U.S. Department of Education, or were recognized directly by the Secretary of Education. The current category includes institutions that award associate or higher level degrees and that are eligible to participate in Title IV federal financial aid programs. The impact of this change has generally not been large. For example, tables on degrees awarded at the bachelor's level or higher were not heavily affected. Most of the data on public 4-year colleges have been affected only to a minimal extent. The impact on enrollment in public 2-year colleges was noticeable in certain states, but relatively small at the national level. The largest impact has been on private 2-year college enrollment. Overall, total enrollment for all institutions was about one-half of a percent higher for degree-granting institutions than for higher education institutions.

Prior to the establishment of IPEDS in 1986, HEGIS acquired and maintained statistical data on the characteristics and operations of institutions of higher education. Implemented in 1966, HEGIS was an annual universe survey of institutions accredited at the college level by an agency recognized by the Secretary of the U.S. Department of Education. These institutions were listed in the NCES publication Education Directory, Colleges and Universities.

HEGIS surveys collected information concerning institutional characteristics, faculty salaries, finances, enrollment, and degrees. Since these surveys were distributed to all higher education institutions, the data presented are not subject to sampling error. However, they are subject to nonsampling error, the sources of which varied with the survey instrument. Information concerning the nonsampling error of the HEGIS enrollment and degrees surveys can be obtained from the HEGIS Post Survey Validation Study conducted in 1979.

Further information may be obtained from

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Postsecondary Studies Division
Postsecondary Institutional Studies Program
National Center for Education Statistics
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Washington, DC 20006
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http://nces.ed.gov/ipeds/

Fall (Institutional Characteristics) This survey collects the basic information necessary to classify institutions, including control, level, and types of programs offered, as well as information on tuition, fees, and room and board charges. Beginning in 2000, the survey collected institutional pricing data from institutions with first-time, full-time, degree/certificate-seeking undergraduate students. Unduplicated full-year enrollment headcounts and instructional activity are now collected in a separate component (12-month Enrollment), part of the fall collection. The overall response rate was almost 100 percent for Title IV degree-granting institutions in reporting fall 2009 data.

Further information may be obtained from

Tara Lawley
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http://nces.ed.gov/ipeds/

Spring (Fall Enrollment) This survey has been part of the HEGIS and IPEDS series since 1966. Response rates for this survey have been relatively high, generally exceeding 85 percent. Beginning in 2000, with web-based data collection, higher response rates were attained. In 2009-10, the overall response rate was over 99.9 percent for degree-granting institutions. The response rate for 4-year private not-for-profit institutions was 99.9 percent, while 4-year public, 4-year private-for-profit, 2-year public, 2-year private not-for-profit, and 2-year private for-profit institutions had response rates of 100.0 percent. Imputation methods and the response bias analysis for the 2008–09 survey are discussed in Knapp (2010).

Public institutions made the majority of changes to enrollment data during the 2004 revision period (Jackson et al. 2005). The majority of changes were made to unduplicated headcount data, with the net differences between the original data and the revised data at about 1 percent. Part-time students in general and enrollment in private not-for-profit institutions were often underestimated. The fewest changes by institutions were to Classification of Instructional Programs (CIP) code data.

Further information about the Spring (Fall Enrollment) survey may be obtained from

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Fall (Completions) This survey was part of the HEGIS series throughout its existence. Collection of degree data has been maintained through IPEDS. However, the degree classification taxonomy was revised in 1970–71, 1982–83, 1991–92, and 2002–03.

The nonresponse rate does not appear to be a significant source of nonsampling error for this survey. The response rate over the years has been high, with the overall response rate for fall 2009 at 100.0 percent for degree-granting institutions. Because of the high response rate for degree-granting institutions, nonsampling error caused by imputation is also minimal. Imputation methods and the response bias analysis for the fall 2008 survey are discussed in Knapp, Kelly-Reid, and Ginder (2010).

Most Title IV institutions supplying revised data on completions in 2003–04 were able to supply missing data for the prior year (Jackson et al. 2005). The size of the differences between imputed data for the prior year and the revised actual data supplied by the institution indicated that the imputed values produced by NCES were acceptable.

Further information on the IPEDS Completions surveys may be obtained from

Andrew Mary
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http://nces.ed.gov/ipeds/

Private School Universe Survey

The purposes of Private School Universe Survey (PSS) data collection activities are to build an accurate and complete list of private schools to serve as a sampling frame for NCES sample surveys of private schools, and to report data on the total number of private schools, teachers, and students in the survey universe. The PSS is conducted every 2 years, with collections in the 1989–90, 1991–92, 1993–94, 1995–96, 1997–98, 1999–2000, 2001–02, 2003–04, 2005–06, 2007–08, and 2009–10 school years.

The PSS produces data similar to that of the CCD for public schools and can be used for public-private comparisons. The data are useful for a variety of policy and research-relevant issues, such as the growth of religiously affiliated schools, the number of private high school graduates, the length of the school year for various private schools, and the number of private school students and teachers.

The target population for this universe survey is all private schools in the United States that meet the NCES criteria of a school (i.e., a private school is an institution that provides instruction for any of grades K through 12, has one or more teachers to give instruction, is not administered by a public agency, and is not operated in a private home). The survey universe is composed of schools identified from a variety of sources. The main source is a list frame, initially developed for the 1989–90 PSS. The list is updated regularly, matching it with lists provided by nationwide private school associations, state departments of education, and other national guides and sources that list private schools. The other source is an area frame search in approximately 124 geographic areas, conducted by the U.S. Census Bureau.

Further information on the PSS may be obtained from

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Elementary/Secondary and Libraries Studies Division
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http://nces.ed.gov/surveys/pss/

Census Bureau

Current Population Survey

Prior to July 2001, estimates of school enrollment rates, as well as social and economic characteristics of students, were based on data collected in the Census Bureau's monthly household survey of about 50,000 dwelling units. Beginning in July 2001, this sample was expanded to 60,000 dwelling units. The monthly Current Population Survey (CPS) sample consists of 754 areas comprising 2,007 geographic areas, independent cities, and minor civil divisions throughout the 50 states and the District of Columbia. The samples are initially selected based on the decennial census files and are periodically updated to reflect new housing construction.

The monthly CPS deals primarily with labor force data for the civilian noninstitutional population (i.e., excluding military personnel and their families living on post and inmates of institutions). In addition, in October of each year, supplemental questions are asked about highest grade completed, level and grade of current enrollment, attendance status, number and type

of courses, degree or certificate objective, and type of organization offering instruction for each member of the household. In March of each year, supplemental questions on income are asked. The responses to these questions are combined with answers to two questions on educational attainment: highest grade of school ever attended and whether that grade was completed.

The estimation procedure employed for monthly CPS data involves inflating weighted sample results to independent estimates of characteristics of the civilian noninstitutional population in the United States by age, sex, and race. These independent estimates are based on statistics from decennial censuses; statistics on births, deaths, immigration, and emigration; and statistics on the population in the armed services. Generalized standard error tables are provided in the Current Population Reports or methods for deriving standard errors can be found within the CPS technical documentation at http://www.census.gov/apsd/techdoc/cps/cps-main.html. The CPS data are subject to both nonsampling and sampling errors.

Caution should also be used when comparing data between Census years. With the release of the January 2003 CPS data, population controls that reflect the results of Census 2000 were used in the monthly CPS estimation process. The new controls increased the size of the civilian noninstitutional population by about 3.5 million in May 2002. This adjustment usually occurs 3 to 4 years after the census, and, if the adjustment is substantial, historical data will be revised. Data from January 2000 through December 2002 were revised to reflect these new controls. Over and above these revisions, the U.S. Census Bureau introduced another large upward adjustment to the controls as part of its annual update of population estimates for 2003. The prior change in population controls occurred in March 1993, where data after this date were based on the 1990 census-based population controls and data before this date were based on 1980 or earlier census based population controls. This change in population controls between 1980-based and 1990-based had relatively little impact on summary measures, such as means, medians, and percentage distributions. It does, however, have a significant impact on levels. For example, use of 1990-based population controls resulted in about a 1 percent increase in the civilian noninstitutional population and in the number of families and households. Thus, estimates of levels for data collected in 1994 and later years differed from those for earlier years by more than what could be attributed to actual changes in the population. These differences could be disproportionately greater for certain subpopulation groups than for the total population.

In addition to the changes in population controls, two other relevant changes were introduced into the CPS with the release of the January 2003 data. First, the questions on race and Hispanic origin in the CPS were modified to comply with the new standards for maintaining, collecting, and presenting Federal data on race and ethnicity for Federal statistical agencies. A major change under those standards is that respondents may select more than one race when answering the survey. Respondents continued to be asked a separate question to determine if they are Hispanic or Latino, which is considered an ethnicity rather than a race. The ethnicity question was reworded to ask directly whether the respondent was Hispanic. Persons who report they are Hispanic also are classified separately in the race (or races) they consider themselves to be. Second, improvements were introduced to both the second stage and composite weighting procedures. These changes adapt the weighting procedures to the new race/ethnic classification system and enhance the stability over time of national and state/substate labor force estimates for demographic groups. These two changes, in addition to the change in population controls discussed above, benchmark the CPS data to the results of Census 2000, improve the estimation procedures, and ensure that the data series produced from the survey reflect the evolving composition of the U.S. population.

Further information on CPS may be obtained from

Education and Social Stratification Branch
Population Division
Census Bureau
U.S. Department of Commerce
Washington, DC 20233
http://www.census.gov/cps

School Enrollment Each October, the Current Population Survey (CPS) includes supplemental questions on the enrollment status of the population 3 years old and over, in addition to the monthly basic survey on labor force participation. Prior to 2001, the October supplement consisted of approximately 47,000 interviewed households. Beginning with the October 2001 supplement, the sample was expanded by 9,000 to a total of approximately 56,000 interviewed households. The main sources of non-sampling variability in the responses to the supplement are those inherent in the survey instrument. The question of current enrollment may not be answered accurately for various reasons. Some respondents may not know current grade information for every student in the household, a problem especially prevalent for households with members in college or in nursery school. Confusion over college credits or hours taken by a student may make it difficult to determine the year in which the student is enrolled. Problems may occur with the definition of nursery school (a group or class organized to provide educational experiences for children), where respondents' interpretations of "educational experiences" vary.

The October 2009 basic CPS household-level response rate was 92.1 percent and the school enrollment supplement person-level response rate was 93.8 percent. Since these rates are determined at different levels they cannot be combined to derive an overall response rate.

Further information on CPS methodology may be obtained from

http://www.census.gov/cps

Further information on CPS "School Enrollment" may be obtained from

Education and Social Stratification Branch
Census Bureau
U.S. Department of Commerce
Washington, DC 20233
http://www.census.gov/population/www/socdemo/school.html

National Population Projections The 2008 National Population Projections provide projections of resident population and demographic components of change (births, deaths, and net international migration) through 2050. Population projections are available by age, sex, race and Hispanic origin. The following is a general description of the methods used to produce the 2008 National Population Projections.

The projections originated with a base population from Census 2000 and were produced using a cohort-component method. Many of the characteristics of the U.S. resident population, as measured by Census 2000, were preserved as demographic patterns that worked their way through the projection period. Using the cohort-component method, the components of population change (births, deaths, and net international migration) were projected for each birth cohort (persons born in a given year). For each passing year, the population was advanced one year of age. The new age categories were updated using survival rates and levels of net international migration projected for the passing year. A new birth cohort was added to form the population under one year of age by applying projected age-specific fertility rates to the female population aged 15 to 49, and updating the new cohort for the effects of mortality and net international migration.

The assumptions for the components of change were based on time series analysis. Initially, demographic models were used to summarize historical trends. The forecast parameters obtained from these models were utilized in the models' framework to create fertility, mortality, and migration schedules required for the cohort-component method. Because of limited data about racial characteristics in the fertility and mortality historical series, the assumptions were first developed for three mutually exclusive and exhaustive groups: Hispanic origin (any race), non-Hispanic Black alone, and non-Hispanic all other races. These assumptions were then applied to their respective detailed race/ethnic categories to project the population, allowing presentation of the race categories described above.

Further information on the National Population Projections may be obtained from

Population Division
Census Bureau
U.S. Department of Commerce
Washington, DC 20233
http://www.census.gov

State Population Projections These state population projections were prepared using a cohort-component method by which each component of population change—births, deaths, state-to-state migration flows, international in-migration, and international out-migration—was projected separately for each birth cohort by sex, race, and Hispanic origin. The basic framework was the same as in past Census Bureau projections.

Detailed components necessary to create the projections were obtained from vital statistics, administrative records, census data, and national projections.

The cohort-component method is based on the traditional demographic accounting system:

$$P_1 = P_0 + B - D + DIM - DOM + IIM - IOM$$

where:

P_1 = population at the end of the period
P_0 = population at the beginning of the period
B = births during the period
D = deaths during the period
DIM = domestic in-migration during the period
DOM = domestic out-migration during the period
IIM = international in-migration during the period
IOM = international out-migration during the period

To generate population projections with this model, the Census Bureau created separate datasets for each of these components. In general, the assumptions concerning the future levels of fertility, mortality, and international migration are consistent with the assumptions developed for the national population projections of the Census Bureau.

Once the data for each component were developed the cohort-component method was applied to produce the projections. For each projection year, the base population for each state was disaggregated into eight race and Hispanic categories (non-Hispanic White; non-Hispanic Black; non-Hispanic American Indian, Eskimo, and Aleut; non-Hispanic Asian and Pacific Islander; Hispanic White; Hispanic Black; Hispanic American Indian, Eskimo, and Aleut; and Hispanic Asian and Pacific Islander), by sex, and single year of age (ages 0 to 85+). The next step was to survive each age-sex-race-ethnic group forward 1 year using the pertinent survival rate. The internal redistribution of the population was accomplished by applying the appropriate state-to-state migration rates to the survived population in each state. The projected out-migrants were subtracted from the state of origin and added to the state of destination (as in-migrants). Next, the appropriate number of immigrants from abroad was added to each group. The population under age 1 was created by applying the appropriate age-race-ethnic-specific birth rates to females of childbearing age (ages 15 to 49). The number of births by sex and race/ethnicity were survived forward and exposed to the appropriate migration rate to yield the population under age 1. The final results of the projection process were proportionally adjusted to be consistent with the national population projections by single years of age, sex, race, and Hispanic origin. The entire process was then repeated for each year of the projection.

More information on Census Bureau projections may be obtained from

Population Division
Census Bureau
U.S. Department of Commerce
Washington, DC 20233
http://www.census.gov

OTHER SOURCES

IHS Global Insight

IHS Global Insight provides an information system that includes databases of economic and financial information; simulation and planning models; regular publications and special studies; data retrieval and management systems; and access to experts on economic, financial, industrial, and market activities. One service is the IHS Global Insight Model of the U.S. Economy, which contains annual projections of U.S. economic and financial conditions, including forecasts for the federal government, incomes, population, prices and wages, and state and local governments, over a long-term (10- to 25-year) forecast period.

Additional information is available from

IHS Global Insight
1000 Winter Street
Suite 4300N
Waltham, MA 02451-124
http://www.ihsglobalinsight.com/

Appendix D
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Appendix E
List of Abbreviations

ADA	Average daily attendance
BLS	Bureau of Labor Statistics
CCD	Common Core of Data
CIP	Classification of Instructional Programs
CPI	Consumer Price Index
CPS	Current Population Survey
EAP	Employees by assigned position
EDMOD	Education Forecasting Model
FTE	Full-time-equivalent
HEGIS	Higher Education General Information Survey
IPEDS	Integrated Postsecondary Education Data System
LEA	Local education agency
MAPE	Mean absolute percentage error
NCES	National Center for Education Statistics
NCHS	National Center for Health Statistics

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Appendix F
Glossary

American Indian/Alaska Native: A person having origins in any of the original peoples of North America and who maintains cultural identification through tribal affiliation or community recognition.

Asian/Pacific Islander: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, and Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, American Samoa, India, and Vietnam.

Associate's degree: An award that normally requires at least 2 but less than 4 years of full-time equivalent college work.

Autocorrelation: Correlation of the error terms from different observations of the same variable. Also called *serial correlation.*

Average daily attendance (ADA): The aggregate attendance of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered days in session.

Average daily membership (ADM): The aggregate membership of a school during a reporting period (normally a school year) divided by the number of days school is in session during this period. Only days on which the pupils are under the guidance and direction of teachers should be considered as days in session. The ADM for groups of schools having varying lengths of terms is the average of the ADMs obtained for the individual schools.

Bachelor's degree: An award (baccalaureate or equivalent degree, as determined by the Secretary, U.S. Department of Education) that normally requires at least 4 but not more than 5 years of full-time equivalent college-level work. This includes all bachelor's degrees conferred in a 5-year cooperative (work-study) program. A cooperative plan provides for alternate class attendance and employment in business, industry, or government; thus, it allows students to combine actual work experience with their college studies. Also includes bachelor's degrees in which the normal 4 years of work are completed in 3 years.

Black: A person having origins in any of the black racial groups of Africa (except those of Hispanic origin).

Breusch-Godfrey serial correlation LM test: A statistic testing the independence of errors in least-squares regression against alternatives of first-order and higher degrees of serial correlation. The test belongs to a class of asymptotic tests known as the Lagrange multiplier (LM) tests.

Classroom teacher: A staff member assigned the professional activities of instructing pupils in self-contained classes or courses, or in classroom situations. Usually expressed in full-time-equivalents.

Cohort: A group of individuals that have a statistical factor in common (e.g., year of birth).

Cohort-component method: A method for estimating and projecting a population is distinguished by its ability to preserve knowledge of an age distribution of a population (which may be of a single sex, race, and Hispanic origin) over time.

College: A postsecondary school that offers a general or liberal arts education, usually leading to an associate's, bachelor's, master's, doctor's, or first-professional degree. Junior colleges and community colleges are included in this term.

Constant dollars: Dollar amounts that have been adjusted by means of price and cost indexes to eliminate inflationary factors and allow direct comparison across years.

Consumer Price Index (CPI): This price index measures the average change in the cost of a fixed-market basket of goods and services purchased by consumers.

Current dollars: Dollar amounts that have not been adjusted to compensate for inflation.

Current expenditures (elementary/secondary): The expenditures for operating local public schools and school districts, excluding capital outlay, interest on school debt, and programs outside of public elementary and secondary education. These expenditures include such items as salaries for school personnel, fixed charges, student transportation, school books and materials, and energy costs.

Current expenditures per pupil in average daily attendance (ADA): Current expenditures for the regular school term divided by the ADA of full-time pupils (or full-time-equivalency of pupils) during the term. See also *Current expenditures* and *Average daily attendance.*

Current Population Survey: See appendix C, Data Sources.

Degree-granting institutions: Postsecondary institutions that are eligible for Title IV federal financial aid programs and that

grant an associate's or higher degree. For an institution to be eligible to participate in Title IV financial aid programs it must offer a program of at least 300 clock hours in length, have accreditation recognized by the U.S. Department of Education, have been in business for at least 2 years, and have signed a participation agreement with the Department.

Degrees of freedom: The number of free or linearly independent sample observations used in the calculation of a statistic. In a time series regression with t time periods and k independent variables including a constant term, there would be t minus k degrees of freedom.

Dependent variable: A mathematical variable whose value is determined by that of one or more other variables in a function. In regression analysis, when a random variable, y, is expressed as a function of variables $x_1, x_2, \ldots x_k$, plus a stochastic term, then y is known as the "dependent variable."

Disposable income: Current income received by persons less their contributions for social insurance, personal tax, and nontax payments. It is the income available to persons for spending and saving. Nontax payments include passport fees, fines and penalties, donations, and tuitions and fees paid to schools and hospitals operated mainly by the government. See also *Personal income*.

Doctor's degree: The highest award a student can earn for graduate study. The doctor's degree classification includes such degrees as Doctor of Education, Doctor of Juridical Science, Doctor of Public Health, and the Doctor of Philosophy degree in any field such as agronomy, food technology, education, engineering, public administration, ophthalmology, or radiology.

Double exponential smoothing: A method that takes a single smoothed average component of demand and smoothes it a second time to allow for estimation of a trend effect.

Durbin-Watson statistic: A statistic testing the independence of errors in least squares regression against the alternative of first-order serial correlation. The statistic is a simple linear transformation of the first-order serial correlation of residuals and, although its distribution is unknown, it is tested by bounding statistics that follow R. L. Anderson's distribution.

Econometrics: The quantitative examination of economic trends and relationships using statistical techniques, and the development, examination, and refinement of those techniques.

Elementary and secondary schools: As used in this publication, includes only regular schools, that is, schools that are part of state and local school systems and also most private elementary and secondary schools, both religiously affiliated and nonsectarian. Schools not included in this term are subcollegiate departments of institutions of higher education, federal schools for Indians, and federal schools on military posts and other federal installations.

Elementary school: A school classified as elementary by state and local practice and composed of any span of grades not above grade 8. A preschool or kindergarten school is included under this heading only if it is an integral part of an elementary school or a regularly established school system.

Enrollment: The number of students registered in a given school unit at a given time, generally in the fall of a year.

Estimate: A numerical value obtained from a statistical sample and assigned to a population parameter. The particular value yielded by an estimator in a given set of circumstances or the rule by which such particular values are calculated.

Estimating equation: An equation involving observed quantities and an unknown that serves to estimate the latter.

Estimation: Estimation is concerned with inference about the numerical value of unknown population values from incomplete data, such as a sample. If a single figure is calculated for each unknown parameter, the process is called point estimation. If an interval is calculated within which the parameter is likely, in some sense, to lie, the process is called interval estimation.

Expenditures: Charges incurred, whether paid or unpaid, that are presumed to benefit the current fiscal year. For elementary and secondary schools, these include all charges for current outlays plus capital outlays and interest on school debt. For degree-granting institutions, these include current outlays plus capital outlays. For government, these include charges net of recoveries and other correcting transactions other than for retirement of debt, investment in securities, or extension of credit. Government expenditures include only external transactions, such as the provision of perquisites or other payments in kind. Aggregates for groups of governments exclude intergovernmental transactions.

Expenditures per pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as average daily attendance or average daily membership.

Exponential smoothing: A method used in time series analysis to smooth or to predict a series. There are various forms, but all are based on the supposition that more remote history has less importance than more recent history.

First-order serial correlation: When errors in one time period are correlated directly with errors in the ensuing time period. Also called *autocorrelation.*

First-professional degree: An award that requires completion of a program that meets all of the following criteria: (1) completion of the academic requirements to begin practice in the profession; (2) at least 2 years of college work prior to entering the program; and (3) a total of at least 6 academic years of college work to complete the degree program, including prior required college work plus the length of the professional program itself. First-professional degrees may be awarded in the following 10 fields: Chiropractic (D.C. or D.C.M.), Dentistry (D.D.S. or D.M.D.),

Law (L.L.B., J.D.), Medicine (M.D.), Optometry (O.D.), Osteopathic Medicine (D.O.), Pharmacy (Pharm.D.), Podiatry (D.P.M., D.P., or Pod.D.), Theology (M.Div., M.H.L., B.D., or Ordination), Veterinary Medicine (D.V.M.).

First-professional enrollment: The number of students enrolled in following degree programs: Chiropractic (D.C. or D.C.M.), Dentistry (D.D.S. or D.M.D.), Law (L.L.B., J.D.), Medicine (M.D.), Optometry (O.D.), Osteopathic Medicine (D.O.), Pharmacy (Pharm.D.), Podiatry (D.P.M., D.P., or Pod.D.), Theology (M.Div., M.H.L., B.D., or Ordination), Veterinary Medicine (D.V.M.).

First-time freshman: A student attending any institution for the first time at the undergraduate level. Includes students enrolled in academic or occupational programs. Also includes students enrolled in the fall term who attended college for the first time in the prior summer term, as well as students who entered with advanced standing (college credits earned before graduation from high school).

Forecast: An estimate of the future based on rational study and analysis of available pertinent data, as opposed to subjective prediction.

Forecasting: Assessing the magnitude that a quantity will assume at some future point in time, as distinct from "estimation," which attempts to assess the magnitude of an already existent quantity.

Four-year institution: A postsecondary institution that offers programs of at least 4 years duration or one that offers programs at or above the baccalaureate level. Includes schools that offer postbaccalaureate certificates only or those that offer graduate programs only. Also includes free-standing medical, law or other first-professional schools.

Full-time-equivalent (FTE) enrollment: A measurement equal to one student enrolled full time for one academic year. Total FTE enrollment includes full time plus the calculated equivalent of the part-time enrollment. The full-time equivalent of the part-time students can be estimated using different factors depending on the type and control of institution and level of student.

Full-time worker: In educational institutions, an employee whose position requires being on the job on school days throughout the school year at least the number of hours the schools are in session; for higher education, a member of an educational institution's staff who is employed full time.

Function: A mathematical correspondence that assigns exactly one element of one set to each element of the same or another set. A variable that depends on and varies with another.

Functional form: A mathematical statement of the relationship among the variables in a model.

Graduate: An individual who has received formal recognition for the successful completion of a prescribed program of studies.

Graduate enrollment: The number of students who hold the bachelor's or first-professional degree, or the equivalent, and who are working towards a master's or doctor's degree. First-professional students are counted separately. These enrollment data measure those students who are registered at a particular time during the fall.

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate's, baccalaureate, or higher degree.

Higher education institutions (traditional classifications):

4-year institution: An institution legally authorized to offer and offering at least a 4-year program of college-level studies wholly or principally creditable toward a bachelor's degree. A university is a postsecondary institution that typically includes one or more graduate professional schools.

2-year institution: An institution legally authorized to offer and offering at least a 2-year program of college-level studies that terminates in an associate's degree or is principally creditable toward a baccalaureate.

See also *Degree-granting institutions* and *Postsecondary education.*

High school: A secondary school offering the final years of high school work necessary for graduation, usually including grades 10, 11, and 12 (in a 6-3-3 plan) or grades 9, 10, 11, and 12 (in a 6-2-4 plan).

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.

Independent variable: In regression analysis, a random variable, y, is expressed as a function of variables $x_1, x_2, \ldots x_k$, plus a stochastic term; the x's are known as "independent variables."

Interpolation: See *Linear interpolation.*

Lag: An event occurring at time $t + k$ ($k > 0$) is said to lag behind an event occurring at time t, the extent of the lag being k. An event occurring k time periods before another may be regarded as having a negative lag.

Linear interpolation: A method that allows the prediction of an unknown value if any two particular values on the same scale are known and the rate of change is assumed constant.

Master's degree: An award that requires the successful completion of a program of study of at least the full-time equivalent of 1 but not more than 2 academic years of work beyond the bachelor's degree.

Mean absolute percentage error (MAPE): The average value of the absolute value of errors expressed in percentage terms.

Model: A system of postulates, data, and inferences presented as a mathematical description of a phenomenon, such as an actual system or process. The actual phenomenon is represented by the model in order to explain, predict, and control it.

Nonresident alien: A person who is not a citizen or national of the United States and who is in this country on a visa or temporary basis and does not have the right to remain indefinitely.

Ordinary least squares (OLS): The estimator that minimizes the sum of squared residuals.

Parameter: A quantity that describes a statistical population.

Part-time enrollment: Undergraduate—A student enrolled for either 11 semester credits or less, or 11 quarter credits or less, or less than 24 contact hours a week each term. Graduate—A student enrolled for either 8 semester credits or less, or 8 quarter credits or less.

Personal income: Current income received by persons from all sources minus their personal contributions for social insurance. Classified as "persons" are individuals (including owners of unincorporated firms), nonprofit institutions serving individuals, private trust funds, and private noninsured welfare funds. Personal income includes transfers (payments not resulting from current production) from government and business such as social security benefits, military pensions, and so forth, but excludes transfers among persons.

Postbaccalaureate enrollment: The number of students with a bachelor's degree who are enrolled in graduate-level or first-professional courses.

Postsecondary education: The provision of a formal instructional program whose curriculum is designed primarily for students who are beyond the compulsory age for high school. This includes programs whose purpose is academic, vocational, and continuing professional education, and excludes avocational and adult basic education programs.

Postsecondary education institution: An institution which has as its sole purpose or one of its primary missions, the provision of postsecondary education.

Private institution: A school or institution that is controlled by an individual or agency other than a state, a subdivision of a state, or the federal government (i.e., usually supported primarily by other than public funds) and the operation of whose program rests with other than publicly elected or appointed officials.

Projection: In relation to a time series, an estimate of future values based on a current trend.

Property tax: The sum of money collected from a tax levied against the value of property.

Public school or institution: A school or institution controlled and operated by publicly elected or appointed officials, and generally deriving its primary support from public funds.

Pupil/teacher ratio: The enrollment of pupils at a given period of time, divided by the full-time-equivalent number of classroom teachers serving these pupils during the same period.

R^2: The coefficient of determination; the square of the correlation coefficient between the dependent variable and its OLS estimate.

Race/ethnicity: Categories used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. A person may be counted in only one group. The groups used to categorize U.S. citizens, resident aliens, and other eligible non-citizens in this report are as follows: Black, American Indian/Alaska Native, Asian/Pacific Islander, Hispanic, White.

Region: The four geographical regions of the United States as defined by the Census Bureau of the U.S. Department of Commerce presented below:

Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Regression analysis: A statistical technique for investigating and modeling the relationship between variables.

Revenue receipts: Additions to assets that do not incur an obligation that must be met at some future date and do not represent exchanges of property for money. Assets must be available for expenditures.

Revenues: All funds received from external sources, net of refunds and correcting transactions. Noncash transactions such as receipt of services, commodities, or other receipts "in kind" are excluded, as are funds received from the issuance of debt, liquidation of investments, or nonroutine sale of property.

Rho: A measure of the correlation coefficient between errors in time period *t* and time period *t* minus 1.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

School: A division of the school system consisting of students in one or more grades or other identifiable groups and organized to give instruction of a defined type. One school may share a building with another school or one school may be housed in several buildings.

Secondary instructional level: The general level of instruction provided for pupils in secondary schools (generally covering grades 7 through 12 or 9 through 12), and any instruction of a comparable nature and difficulty provided for adults and youth beyond the age of compulsory school attendance.

Secondary school: A school including any span of grades beginning with the next grade following elementary or middle school (usually 7, 8, or 9) and ending with or below grade 12. Both junior high schools and senior high schools are included.

Senior high school: A secondary school offering the final years of high school work necessary for graduation.

Serial correlation: Correlation of the error terms from different observations of the same variable. Also called *autocorrelation*.

Standard error of estimate: An expression for the standard deviation of the observed values about a regression line. An estimate of the variation likely to be encountered in making predictions from the regression equation.

Student: An individual for whom instruction is provided in an educational program under the jurisdiction of a school, school system, or other educational institution. No distinction is made between the terms "student" and "pupil," although "student" may refer to one receiving instruction at any level while "pupil" refers only to one attending school at the elementary or secondary level. The term "student" is used to include individuals at all instructional levels. A student may receive instruction in a school facility or in another location, such as at home or in a hospital. Instruction may be provided by direct student-teacher interaction or by some other approved medium, such as the Internet, television, radio, telephone, or correspondence.

Tax base: The collective value of sales, assets, and income components against which a tax is levied.

Time series: A set of ordered observations on a quantitative characteristic of an individual or collective phenomenon taken at different points in time. Usually the observations are successive and equally spaced in time.

Time series analysis: The branch of quantitative forecasting in which data for one variable are examined for patterns of trend, seasonality, and cycle.

Two-year institution: A postsecondary institution that offers programs of at least 2 but less than 4 years duration. Includes occupational and vocational schools with programs of at least 1800 hours and academic institutions with programs of less than 4 years. Does not include bachelor's degree-granting institutions where the baccalaureate program can be completed in 3 years.

Undergraduate enrollment: The number of students enrolled in a 4- or 5-year bachelor's degree program, an associate's degree program, or a vocational or technical program below the baccalaureate.

Undergraduate students: Students registered at an institution of higher education who are working in a program leading to a baccalaureate or other formal award below the baccalaureate, such as an associate's degree.

Ungraded student (elementary/secondary): A student who has been assigned to a school or program that does not have standard grade designations.

Variable: A quantity that may assume any one of a set of values.

White: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).