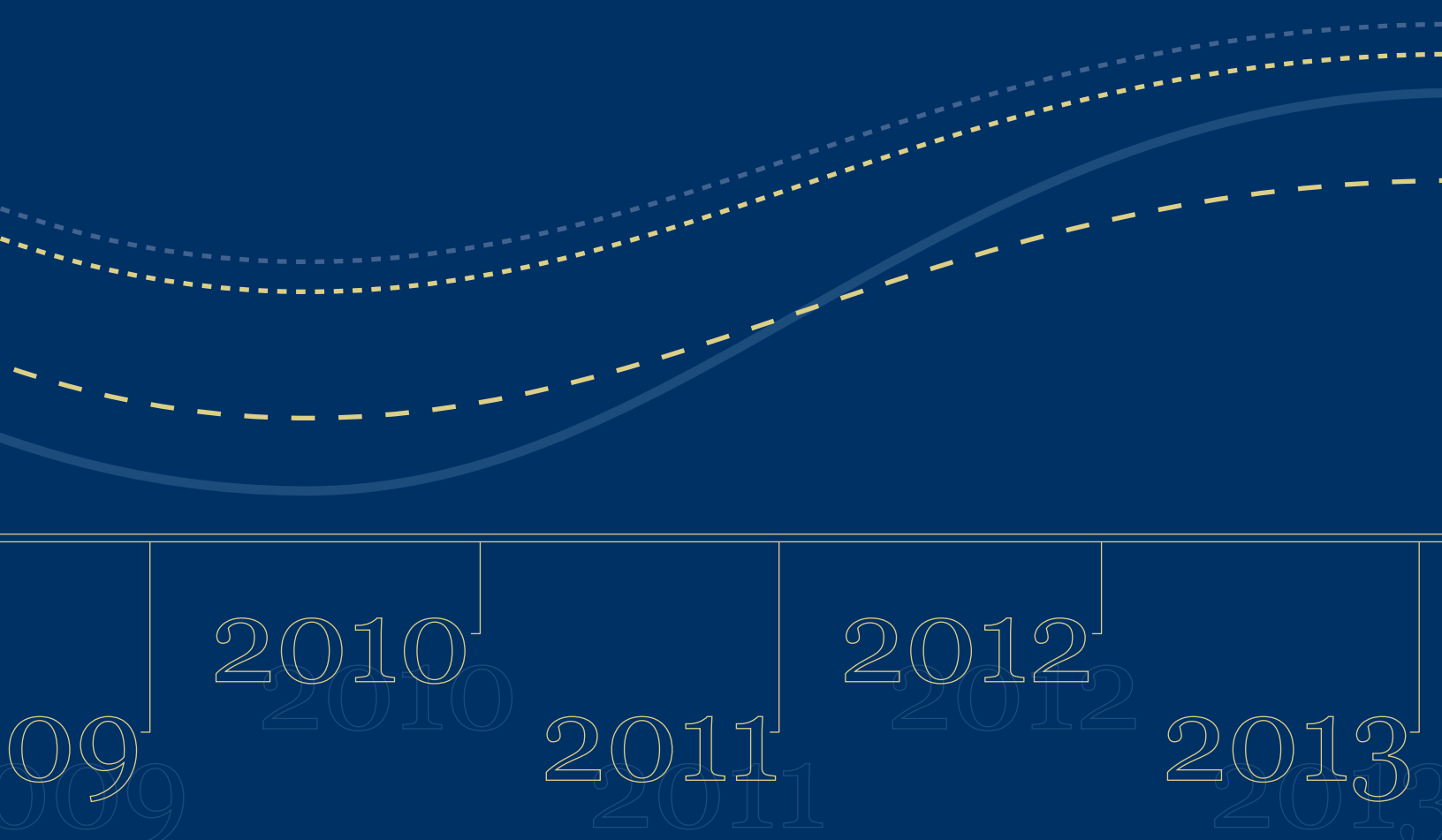




Projections of Education Statistics to 2013

U.S. Department of Education
Institute of Education Sciences
NCES 2004-013

Thirty-second Edition





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Institute of Education Sciences
NCES 2004-013

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Thirty-second Edition

October 2003

Debra E. Gerald
William J. Hussar
**National Center for
Education Statistics**

U.S. Department of Education

Rod Paige
Secretary

Institute of Education Sciences

Grover J. Whitehurst
Director

National Center for Education Statistics

Val Plisko
Associate Commissioner

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Content Contact:

Debra E. Gerald
(202) 502-7341
Debra.Gerald@ed.gov

William J. Hussar
(202) 502-7359
William.Hussar@ed.gov

Foreword

Projections of Education Statistics to 2013 is the 32nd report in a series begun in 1964. This report provides revisions of projections shown in *Projections of Education Statistics to 2012* and *Projections of Education Statistics to 2011*. It includes statistics on elementary and secondary schools and degree-granting institutions. Included are projections of enrollment, graduates, teachers, and expenditures to the year 2013.

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 2013 at the state level. These projections 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 in individual states.

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

Appendix A of this report outlines the projection methodology, describing the models and assumptions used to develop the national and state projections. The enrollment models use enrollment data and population estimates and pro-

jections 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 the company Global Insight, Inc., 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. For further information, see appendix A.

Most of the projections of education statistics include three alternatives, based on different assumptions about demographic and economic growth paths. Although the first alternative set of projections (middle alternative) in each table is deemed to represent the most likely projections, the low and high alternatives provide a reasonable range of outcomes.

This report's Summary of Projections presents highlights for key education statistics. In addition, a brief overview of the projections in this report is available in a pocket-sized booklet, *Pocket Projections: Projections of Education Statistics to 2013*.

Valena W. Plisko, Associate Commissioner
Early Childhood, International, and
Crosscutting Studies Division
October 2003

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Projections of Education Statistics to 2013 was produced by the National Center for Education Statistics (NCES) in the Early Childhood, International, and Crosscutting Studies Division under the general direction of Thomas D. Snyder, Director of the Annual Reports Program. The report was prepared by Debra E. Gerald, mathematical statistician, and William J. Hussar, financial economist. They were supported by Tabitha Bailey, Geoffrey Green, and Maria Kulikova of Global Insight, Inc., who implemented the projection models.

The technical review was done by Shelley K. Burns of NCES. Jason Sellers, Michael Regnier,

and Emily Rosenthal of the Education Statistics Services Institute (ESSI) assisted in the technical review of this report. The adjudication was conducted by Bruce Taylor, adjudicator of NCES. Valuable assistance was also provided by the following reviewers: Gregory Spencer of the U.S. Census Bureau and Stephen Broughman, William Fowler, Frank Morgan, and John Sietsema of NCES.

The cover was designed by Elina Hartwell of ESSI.

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List of Abbreviations

ADA	average daily attendance
BLS	Bureau of Labor Statistics
CPI	Consumer Price Index
EDMOD	Education Forecasting Model
ESSI	Education Statistics Services Institute
FTE	full-time-equivalent
IPEDS	Integrated Postsecondary Education Data System
MAPE	mean absolute percentage error
NCES	National Center for Education Statistics

About This Report

Guide to This Edition

This edition of *Projections of Education Statistics* provides projections for key education statistics, including enrollment, graduates, teachers, and expenditures in elementary and secondary schools and degree-granting institutions. Included are national data on enrollment and graduates for the past 14 years and projections to the year 2013, as well as state-level data on enrollment in public elementary and secondary schools and public high school graduates to the year 2013.

State-level data on enrollment and graduates in private schools are not included. Further research and model development are needed to develop reliable projections of private school enrollment and graduates by state. Projections also exclude the number of students who are homeschooled because national data are available for only 1 year.

Similar methodologies were used to obtain a uniform set of projections for 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.

The summary of projections provides highlights of the national and state data, while the reference tables and figures present more detail. While rounded numbers are presented in the tables, percentages are based on unrounded numbers.

Appendix A describes the methodology and assumptions used to develop the projections, appendix B presents supplementary tables, appendix C describes data sources, and appendix D is a glossary of terms.

Limitations of 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. Therefore, alternative projections are shown for most statistical series to denote the uncertainty involved in making projections. These alternatives are not statistical confidence limits, but instead represent judgments made by the authors as to reasonable upper and lower bounds.

The mean absolute percentage error is one way to express the forecast accuracy of past projections. This measure expresses the average value of the absolute value of errors in percentage terms. For example, the mean absolute percentage errors of public school enrollment in grades K–12 for lead times of 1, 2, 5, and 10 years were 0.3, 0.5, 1.1, and 2.7 percent, respectively. In contrast, mean absolute percentage errors for doctor's degrees for lead times of 1, 2, and 5 years were 2.2, 3.4, and 2.9 percent, respectively. For more information on mean absolute percentage errors, see table A2 in appendix A.

Alternative projections are presented for enrollment in degree-granting institutions, earned degrees conferred, elementary and secondary teachers, and expenditures of public educational institutions.

Summary of Projections

Section 1. Elementary and Secondary Enrollment

Introduction

Total public and private elementary and secondary school enrollment reached a record 54 million in fall 2001, representing a 19 percent increase since fall 1988. Between 2001 and 2013, a further increase of 5 percent is expected, with increases projected in both public and private schools. In the regions, increases are expected in the West, South, and Midwest, and a decrease is expected in the Northeast.

Factors affecting the projections

The projected changes in enrollment reflect factors such as internal migration, legal and illegal immigration, the relatively high level of births in the 1990s, and resultant changes in the population (reference figure 1), rather than changes in attendance rates.

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 and kindergarten programs. 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 national data are available for only 1 year.

National

After increasing by about one-fifth between 1988 and 2001, enrollments in both public and private schools are expected to increase at slower rates between 2001 and 2013. Small enrollment increases are expected at both the K–8 and 9–12 grade spans (figures A and B; reference figures 2 and 3 and table 1).

Total enrollment

Total elementary and secondary enrollment

- increased 19 percent between 1988 and 2001; and
- is projected to increase 5 percent between 2001 and 2013.

The grade progression rate method

The method used to project school enrollments 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, and transfers to and from public schools. See appendix A for more details.

Enrollment in grades K–8

Enrollment in kindergarten through grade 8

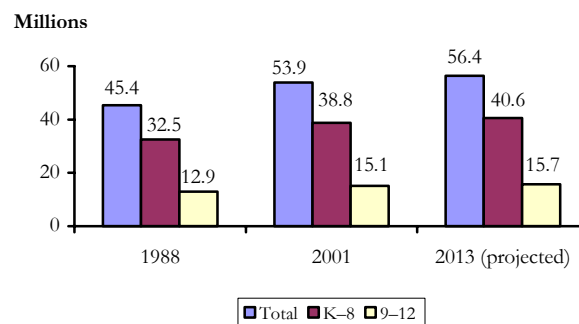
- increased 19 percent between 1988 and 2001; and
- is projected to increase 5 percent between 2001 and 2013.

Enrollment in grades 9–12

Enrollment in grades 9–12

- increased 17 percent between 1988 and 2001; and
- is projected to increase 4 percent between 2001 and 2013.

Figure A. Elementary and secondary enrollment, total and by grade group: Selected years



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

SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys, various years; Private School Universe Survey, various years; and National Elementary and Secondary School Enrollment Model. (See reference table 1.)

Public elementary and secondary enrollment

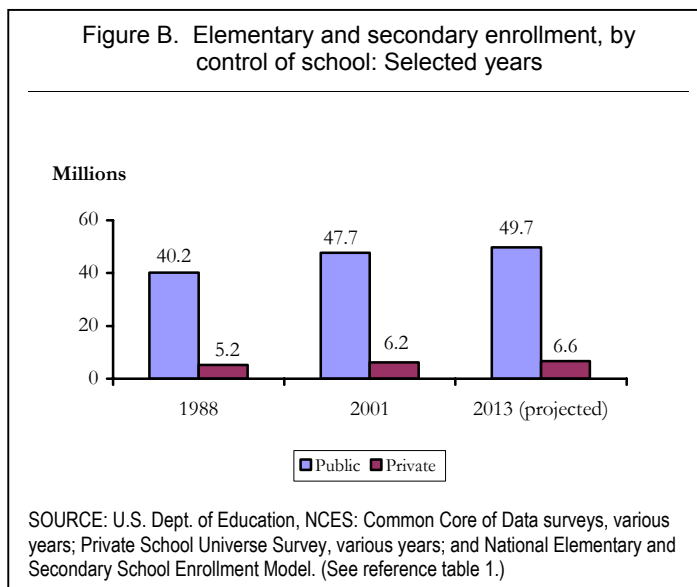
Enrollment in public elementary and secondary schools

- increased 19 percent between 1988 and 2001; and
- is projected to increase 4 percent between 2001 and 2013.

Private elementary and secondary enrollment

Enrollment in private elementary and secondary schools

- increased 18 percent between 1988 and 2001; and
- is projected to increase 7 percent between 2001 and 2013.



State and Regional (Public School Data)

Between 2001 and 2013, enrollment in public elementary and secondary schools is expected to increase in 30 states and decrease in 20 states, including the District of Columbia (tables A and B; reference figure 5 and tables 4–9). In the regions, public school enrollment during the same period is expected to increase in the South, West, and Midwest and to decrease in the Northeast.

States

The expected 4 percent national increase in public school enrollment between 2001 and 2013 plays out differently for most states.

- Increases are projected for 30 states, with
 - the largest increases projected for Alaska (17 percent), Hawaii (16 percent), and California (16 percent);
 - increases between 10 and 15 percent projected for 7 states; and
 - increases between 0.4 and 9 percent projected for 20 states.
- No change is projected for Louisiana.

Table A. Projected percent increases in public elementary and secondary school enrollment, by state: 2001 to 2013

Alaska	17.0	Virginia	4.3
Hawaii	16.1	South Dakota	2.6
California	15.7	New Jersey	2.5
Idaho	15.1	Michigan	2.4
New Mexico	14.9	Tennessee	2.4
Nevada	13.8	Nebraska	2.0
Wyoming	13.1	Rhode Island	1.9
Utah	12.7	Delaware	1.8
Arizona	12.0	Maryland	1.7
Texas	11.2	Kansas	1.4
Colorado	8.8	Illinois	1.2
Georgia	6.8	South Carolina	0.9
Washington	5.7	Missouri	0.5
Oregon	5.4	Indiana	0.4
Florida	5.4		
Montana	4.6		

SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys and State Public Elementary and Secondary Enrollment Model. (See reference table 5.)

- Decreases are projected for 20 states, with
 - the largest decreases projected for West Virginia (6 percent) and Kentucky (6 percent);
 - decreases between 2.4 and 5 percent projected for 10 states;
 - decreases between 0.9 and 2 percent projected for 7 states; and
 - the smallest decrease projected for New Hampshire (0.2 percent).

Regions

Between 2001 and 2013, public elementary and secondary enrollment is projected to

- increase 13 percent in the West;
- increase 4 percent in the South;
- decrease 2 percent in the Northeast; and
- increase slightly in the Midwest.

Table B. Projected percent decreases in public elementary and secondary school enrollment, by state: 2001 to 2013

New Hampshire	–0.2
North Carolina	–0.9
Wisconsin	–1.1
Minnesota	–1.2
Iowa	–1.6
Alabama	–1.7
Oklahoma	–1.7
Pennsylvania	–1.9
Massachusetts	–2.4
Maine	–2.4
Mississippi	–2.4
District of Columbia	–2.8
Connecticut	–2.8
Arkansas	–2.9
Ohio	–3.2
Vermont	–3.2
New York	–3.5
North Dakota	–4.5
Kentucky	–5.5
West Virginia	–6.1

SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys and State Public Elementary and Secondary Enrollment Model. (See reference table 5.)

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 lead times of 1, 2, 5, and 10 years out for projections of public school enrollment in grades K–12 were 0.3, 0.5, 1.1, and 2.7 percent, respectively. For the 1-year-out prediction, this means that one would expect the projection to be within 0.3 percent of the actual value, on average. For projections of public school enrollment in grades K–8, the MAPEs for lead times of 1, 2, 5, and 10 years out were 0.3, 0.6, 1.1, and 3.8 percent, respectively, while the MAPEs for projections of public school enrollment in grades 9–12 were 0.6, 0.8, 1.3, and 2.8 percent, respectively, for the same lead times.

Projections of public elementary and secondary enrollment produced by the National Center for Education Statistics (NCES) over the last 20 years have been more accurate than projections of public high school graduates produced by NCES over the same period. For more information, see table A2 in appendix A.

Section 2. Enrollment in Degree-Granting Institutions

Introduction

Total enrollment in degree-granting institutions is expected to increase between 2000 and 2013. Degree-granting institutions provide study beyond secondary school and offer programs terminating in an associate's, baccalaureate, or higher degree. 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 degree-granting institutions.

Factors affecting the projections

Changes in age-specific enrollment rates and college-age populations will affect enrollment levels between 2000 and 2013. The most important factor is the expected increase in the traditional college-age population of 18- to 24-year-olds.

Three alternative sets of projections

Middle, low, and high sets of projections were made for total enrollment in degree-granting institutions and for enrollment by age, sex, attendance status, level (undergraduate, graduate, or first-professional), and control of institution.

Assumptions underlying the projections

The middle alternative uses a base-line scenario of the economy for projections of disposable income and unemployment rates. The low and high alternatives are based on the pessimistic and optimistic scenarios of the economy, respectively, to provide other possible outcomes. For more information, see appendix A.

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.

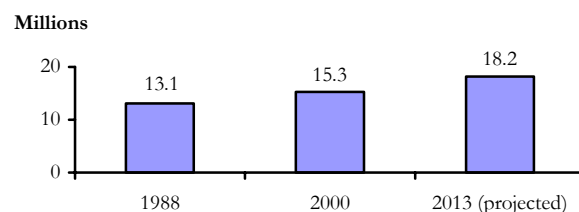
Total Enrollment

Total enrollment in degree-granting institutions increased 17 percent from 1988 to 2000 (figure C; reference figure 10 and table 10).

Between 2000 and 2013, total enrollment is projected to increase

- 19 percent, to 18.2 million, in the middle alternative projections;
- 15 percent, to 17.7 million, in the low alternative projections; and
- 23 percent, to 18.8 million, in the high alternative projections.

Figure C. Total enrollment in degree-granting institutions, with middle alternative projections: Selected years



SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey," various years; and Enrollment in Degree-Granting Institutions Model. (See reference table 10.)

Enrollment by Selected Characteristics and Control of Institution

Enrollment by age of student

Between 2000 and 2013, in the middle alternative projections, enrollment (figure D; reference figures 11–13 and tables 11–13) is projected to increase

- 22 percent for students who are 18 to 24 years old; and
- 2 percent for students who are 35 years old and over.

Enrollment by sex of student

Between 2000 and 2013, in the middle alternative projections, enrollment (reference figure 14 and tables 10–21) is projected to increase

- 15 percent for men; and
- 21 percent for women.

Enrollment by attendance status

Between 2000 and 2013, in the middle alternative projections, enrollment (reference figure 15 and tables 10–22) is projected to increase

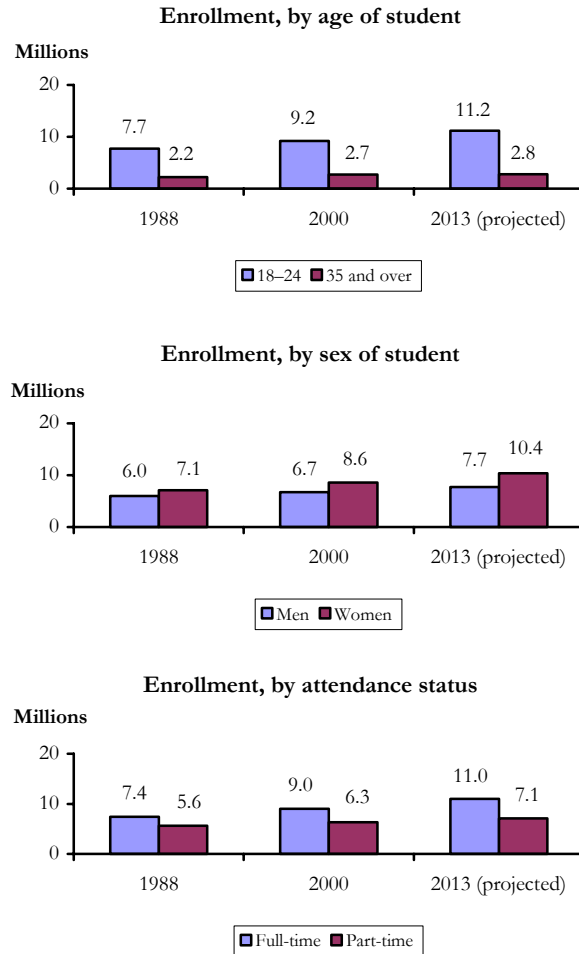
- 22 percent for full-time students; and
- 13 percent for part-time students.

Enrollment by level

Between 2000 and 2013, in the middle alternative projections, enrollment (reference figures 18 and 19 and tables 19–21) is projected to increase

- 18 percent for undergraduate students;
- 19 percent for graduate students; and
- 27 percent for first-professional students.

Figure D. Enrollment in degree-granting institutions, by selected characteristics, with middle alternative projections: Selected years



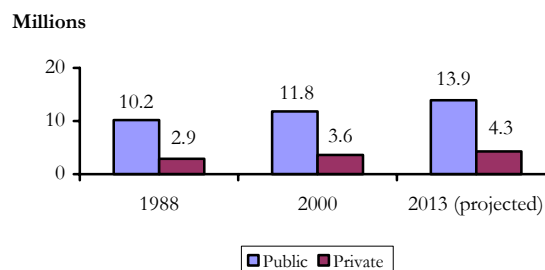
SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey," various years; and Enrollment in Degree-Granting Institutions Model. (See reference tables 10 and 11.)

Enrollment in public and private institutions

Between 2000 and 2013, in the middle alternative projections, enrollment (figure E; reference figure 16 and tables 10 and 15–22) is projected to increase

- 18 percent in public institutions; and
- 20 percent in private institutions.

Figure E. Enrollment in degree-granting institutions, by control of institution, with middle alternative projections: Selected years



SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey," various years; and Enrollment in Degree-Granting Institutions Model. (See reference table 10.)

Accuracy of Projections

For projections of total enrollment in degree-granting institutions, an analysis of projection errors based on the past six editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, and 5 years out were 1.2, 0.9, and 2.4 percent, respectively. For the 1-year-out prediction, this means that one would expect the projection to be within 1.2 percent of the actual value, on average.

NCES projections of college enrollment produced over the past 6 years have been more accurate than projections of doctor's degrees but less accurate than projections of public elementary and secondary enrollment produced over the same period. For more information, see table A2 in appendix A.

Section 3. High School Graduates

Introduction

Between 2000–01 and 2012–13, the number of high school graduates is projected to increase nationally by 11 percent. Increases are expected in each region of the country, especially the West. Both public and private schools are expected to have increases in high school graduates.

Factors affecting the projections

Projected increases in the number of graduates reflect changes in the 18-year-old population over the projection period, rather than changes in the graduation rates of 12th-graders. However, projections of graduates could be impacted by changes in policies affecting graduation requirements.

Definition

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.

National

Total number of high school graduates

The total number of high school graduates (figure F; reference figures 21 and 22 and table 23)

- increased 3 percent between 1987–88 and 2000–01; and
- is projected to increase 11 percent between 2000–01 and 2012–13.

Public high school graduates

The number of public high school graduates

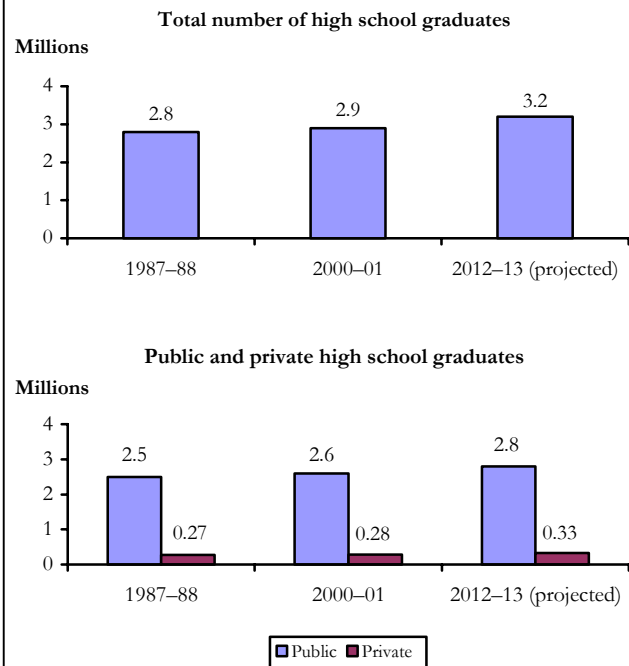
- increased 3 percent between 1987–88 and 2000–01; and
- is projected to increase 11 percent between 2000–01 and 2012–13.

Private high school graduates

The number of private high school graduates

- increased 4 percent between 1987–88 and 2000–01; and
- is projected to increase 18 percent between 2000–01 and 2012–13.

Figure F. Number of high school graduates, total and by control of school: Selected years



SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys, various years; Private School Universe Survey, various years; and National High School Graduates Model. (See reference table 23.)

State and Regional (Public School Data)

Between 2000–01 and 2012–13, the number of public high school graduates is expected to increase in nearly half the states (table C) and in all four regions (reference figure 23 and tables 24 and 25).

States

The expected 11 percent national increase in public high school graduates between 2000–01 and 2012–13 plays out differently in each state.

- Increases are projected for 25 states, with
 - the largest increases projected for Nevada (72 percent), Florida (30 percent), and Arizona (30 percent);
 - increases between 20 and 27 percent projected for 6 states;
 - increases between 4 and 19 percent projected for 14 states; and
 - the smallest increases projected for Utah (3 percent) and New York (2 percent).
- Decreases are projected for 26 states, with
 - the largest decreases projected for North Dakota (32 percent) and the District of Columbia (31 percent);
 - decreases between 11 and 26 percent projected for 8 states;
 - decreases between 2 and 11 percent projected for 14 states; and
 - the smallest decreases projected for Alaska (0.8 percent) and Idaho (0.2 percent).

Table C. Projected percent change in the number of public high school graduates, by state: 2000–01 to 2012–13

Increases		Decreases	
Nevada	72.2	Idaho	–0.2
Florida	30.3	Alaska	–0.8
Arizona	29.6	Missouri	–2.8
New Jersey	26.7	Ohio	–3.3
Michigan	25.9	Minnesota	–3.9
California	23.1	New Hampshire	–4.8
Georgia	22.7	Arkansas	–4.9
Colorado	22.1	Hawaii	–5.2
North Carolina	20.6	Wisconsin	–6.0
Virginia	19.2	Alabama	–6.2
Connecticut	19.0	Kansas	–6.3
Texas	19.0	Iowa	–7.3
Illinois	17.5	Nebraska	–7.5
South Carolina	16.9	Mississippi	–7.5
Rhode Island	15.5	Kentucky	–9.8
Tennessee	10.7	New Mexico	–10.1
Maryland	8.6	Oklahoma	–11.5
Delaware	8.6	Louisiana	–13.8
Oregon	6.9	Maine	–15.0
Massachusetts	6.1	West Virginia	–15.9
Washington	6.0	Vermont	–17.7
Pennsylvania	4.9	South Dakota	–20.6
Indiana	4.8	Montana	–20.8
Utah	2.9	Wyoming	–25.7
New York	2.0	District of Columbia	–31.3
		North Dakota	–31.7

SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys and State Public High School Graduates Model. (See reference table 25.)

Regions

Between 2000–01 and 2012–13, the number of public high school graduates is projected to

- increase 18 percent in the West;
- increase 12 percent in the South;
- increase 8 percent in the Northeast; and
- increase 4 percent in the Midwest.

Accuracy of Projections

For 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 0.6, 1.0, 1.6, and 4.4, respectively. NCES projections of public high school graduates have been less accurate than projections of public elementary and secondary enrollment but more accurate than projections of earned degrees by level. For more information, see table A2 in appendix A.

Section 4. Earned Degrees Conferred

Introduction

Historical growth in enrollment in degree-granting institutions, with particularly large increases among women, has led to a substantial increase in the number of earned degrees conferred. With the exception of doctor's degrees awarded to men, increases in the number of degrees conferred are expected to continue between 2000–01 and 2012–13.

Three alternative sets of projections

Middle, low, and high sets of projections were developed for the total number of earned degrees conferred at each level—associate's, bachelor's, master's, doctor's, and first-professional—as well as for the number conferred at each level by sex of recipient.

About the projections

Projections of earned degrees by level and sex were based primarily on college-age populations and college enrollment by level and attendance status. Some factors that may affect future numbers of earned degrees, such as choice of degree and demand for occupations, were not included in the projection models.

Earned Degrees by Level of Degree and Sex of Recipient

Between 1987–88 and 2000–01, the number and proportion of degrees awarded to women rose at all levels. In 2000–01, women earned the majority of associate's, bachelor's, and master's degrees, 45 percent of doctor's degrees, and 46 percent of first-professional degrees. Between 2000–01 and 2012–13, continued increases are expected in the number of degrees awarded to women at all levels (figure G; reference figures 24–28 and tables 26–30).

Associate's degrees

Between 2000–01 and 2012–13, in the middle alternative projections, the number of associate's degrees is projected to

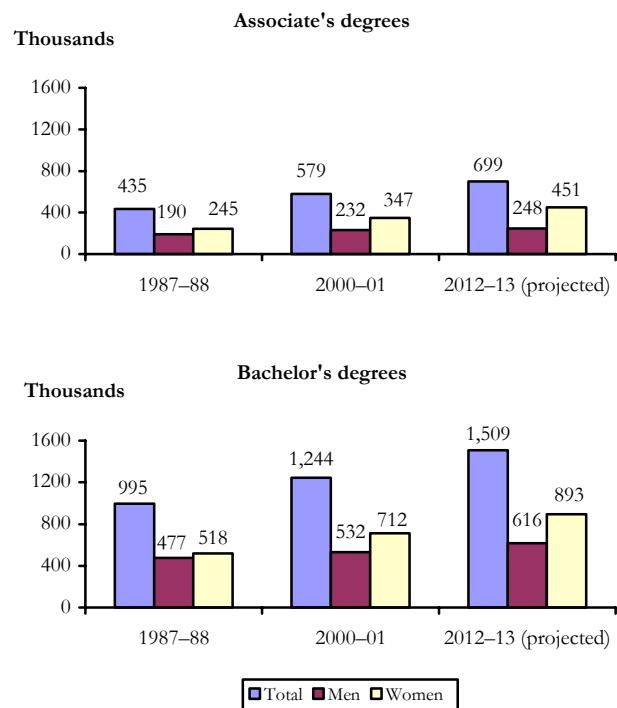
- increase 21 percent overall;
- increase 7 percent for men; and
- increase 30 percent for women.

Bachelor's degrees

Between 2000–01 and 2012–13, in the middle alternative projections, the number of bachelor's degrees is projected to

- increase 21 percent overall;
- increase 16 percent for men; and
- increase 25 percent for women.

Figure G. Earned degrees conferred, by level and sex of recipient, with middle alternative projections: Selected years



See notes at end of figure (on next page).

Master's degrees

Between 2000–01 and 2012–13, in the middle alternative projections, the number of master's degrees is projected to

- increase 19 percent overall;
- increase 17 percent for men; and
- increase 20 percent for women.

Doctor's degrees

Between 2000–01 and 2012–13, in the middle alternative projections, the number of doctor's degrees is projected to

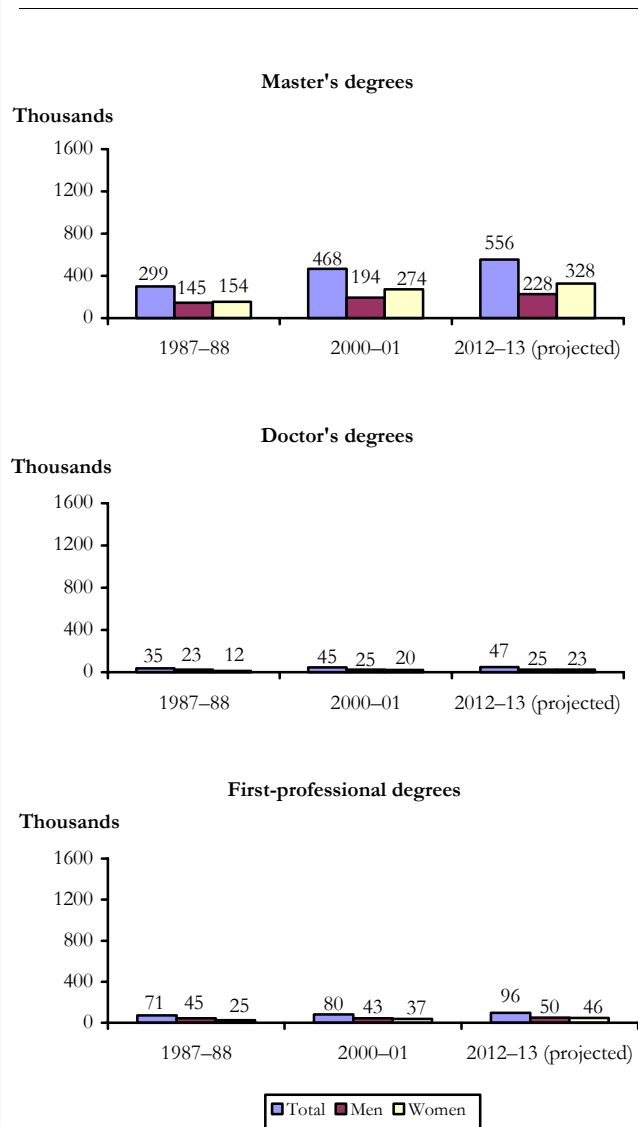
- increase 5 percent overall;
- decrease 0.1 percent for men; and
- increase 12 percent for women.

First-professional degrees

Between 2000–01 and 2012–13, in the middle alternative projections, the number of first-professional degrees is projected to

- increase 20 percent overall;
- increase 16 percent for men; and
- increase 26 percent for women.

Figure G. Earned degrees conferred, by level and sex of recipient, with middle alternative projections: Selected years—Continued



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

SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Completions Survey," various years; and Earned Degrees Conferred Model. (See reference tables 26 through 30.)

Definition

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 normally required for a bachelor's degree. A first-professional degree is based on a program requiring at least 2 academic years of work before entrance and a total of at least 6 years of work to complete the degree program, including both prior required college work and the professional program itself. Degree fields include dentistry, medicine, law, and theological professions.

Accuracy of Projections

An analysis of projection errors from the past seven editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for associate's degree projections were 2.1 percent for 1 year out, 2.4 percent for 2 years out, and 5.1 percent for 5 years out. The MAPEs for bachelor's degree projections were 1.1, 2.1, and 4.9 percent, respectively, for lead times of 1, 2, and 5 years out. The MAPEs for master's degrees were 1.2, 4.3, and 8.7 percent, respectively. For doctor's degrees, the MAPEs were 2.2, 3.4, and 2.9 percent, respectively. For first-professional degrees, the MAPEs were 1.5, 1.6, and 5.4 percent, respectively.

NCES projections of earned degrees by level produced over the last 7 years have been less accurate than NCES projections of public elementary and secondary enrollment produced over the same period. For more information on the MAPEs of different NCES projection series, see table A2 in appendix A.

Section 5. Elementary and Secondary Teachers

Introduction

Between 2001 and 2013, the number of teachers in elementary and secondary schools is projected to rise. The numbers of both public and private school teachers are projected to grow.

Factors affecting the projections

The projected increase in the number of elementary and secondary teachers is related to levels of enrollments and to education revenue receipts from state sources per capita.

Three alternative sets of projections

Middle, low, and high sets of projections were produced for the number of teachers and the pupil/teacher ratio by control of school (public or private).

Factors that were not considered

The projections do not take into account possible increases in the number of teachers due to the effects of legislative initiatives.

Assumptions underlying the projections

In order to provide a range of possible outcomes, the alternative projections make varying economic assumptions about the growth path for one of the key variables used to project the number of public school teachers—education revenue receipts from state sources per capita.

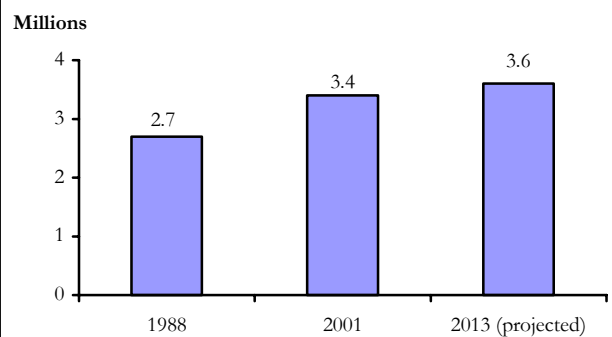
Teachers in Elementary and Secondary Schools

Total elementary and secondary teachers

The total number of elementary and secondary teachers (figure H; reference figure 29 and table 31)

- increased 27 percent between 1988 and 2001; and
- is projected to increase 5 percent between 2001 and 2013 in the middle alternative projections.

Figure H. Total number of elementary and secondary teachers, with middle alternative projections: Selected years



SOURCE: U.S. Dept. of Education, NCES: Common Core of Data surveys, various years; and Elementary and Secondary Teacher Model. (See reference table 31.)

Public school teachers

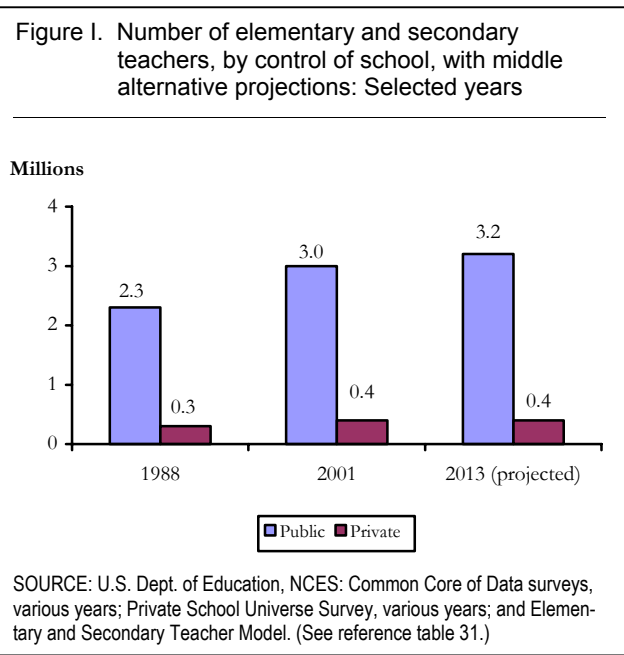
The number of teachers in public elementary and secondary schools (figure I; reference figure 30 and table 31)

- increased 29 percent between 1988 and 2001; and
- is projected to increase 5 percent between 2001 and 2013 in the middle alternative projections.

Private school teachers

The number of teachers in private elementary and secondary schools

- increased 13 percent between 1988 and 2001; and
- is projected to increase 5 percent between 2001 and 2013 in the middle alternative projections.



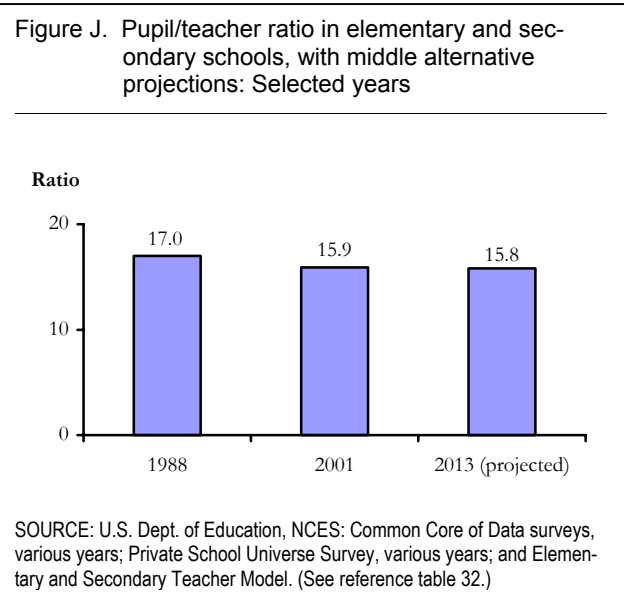
Pupil/Teacher Ratios

The pupil/teacher ratio in elementary and secondary schools (figure J; reference figures 31 and 32 and table 32)

- decreased from 17.0 to 15.9 between 1988 and 2001; and
- is projected to be 15.8 in 2013 in the middle alternative projections.

About pupil/teacher ratios

A broad relationship between numbers of pupils and teachers can be described by a pupil/teacher ratio. 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.



Accuracy of Projections

An analysis of projection errors from the past 13 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 1.7 percent for 1 year out, 2.1 percent for 2 years out, 2.6 percent for 5 years out, and 5.6 percent for 10 years out. NCES projections of public elementary and secondary teachers produced over the last 13 years have been less accurate than NCES projections of public elementary and secondary enrollment produced over the same period. For more information on the MAPEs of different NCES projection series, see table A2 in appendix A.

Section 6. Expenditures of Public Elementary and Secondary Schools

Introduction

Current expenditures and average annual teacher salaries in public elementary and secondary schools are both projected to increase in constant dollars between school years 2000–01 and 2012–13, with current expenditures projected to increase more rapidly.

Three alternative sets of projections

Middle, low, and high sets of projections were made for total current expenditures, current expenditures per pupil, and teacher salaries.

Assumptions underlying the projections

Each set of projections is based on alternative assumptions concerning economic growth and assistance by state governments to local governments. For more details, see appendix A.

Current Expenditures

Between 2000–01 and 2012–13, increases are expected in the current expenditures and current expenditures per pupil of public elementary and secondary schools (figure K; reference figures 33 and 34 and tables 33 and 34).

Current expenditures

Current expenditures in constant 2001–02 dollars increased 47 percent from 1987–88 to 2000–01.

From 2000–01 to 2012–13, current expenditures in constant 2001–02 dollars are projected to increase

- 31 percent, to \$465 billion, in the middle alternative projections;
- 19 percent, to \$420 billion, in the low alternative projections; and
- 43 percent, to \$507 billion, in the high alternative projections.

Other factors that may affect the projections

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

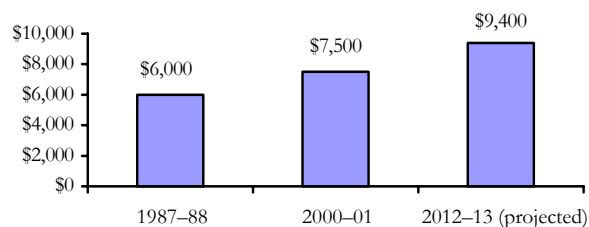
Current expenditures per pupil

Current expenditures per pupil in constant 2001–02 dollars increased 24 percent from 1987–88 to 2000–01.

From 2000–01 to 2012–13, current expenditures in constant 2001–02 dollars per pupil in fall enrollment are projected to increase

- 26 percent, to \$9,400, in the middle alternative projections;
- 14 percent, to \$8,500, in the low alternative projections; and
- 37 percent, to \$10,300, in the high alternative projections.

Figure K. Current expenditures per pupil in 2001–02 dollars, with middle alternative projections: Selected years



NOTE: Data were placed in constant 2001–02 dollars using the Consumer Price Index for all urban consumers (BLS, U.S. Dept. of Labor).

SOURCE: U.S. Dept. of Education, NCES: Common Core of Data, "National Public Education Finance Survey," various years; National Elementary and Secondary Enrollment Model; and Elementary and Secondary School Current Expenditures Model. (See reference table 33.)

Teacher Salaries

Teacher salaries are projected to increase between 2002–03 and 2012–13 (reference figure 35 and table 35).

In the middle alternative projections, teacher salaries in constant 2001–02 dollars are projected to

- increase to \$47,400 in 2012–13; and
- increase 6 percent between 2002–03 and 2012–13.

Teacher salaries increased from \$43,100 in 1987–88 to \$44,900 in 2002–03, an increase of 4 percent.

Constant versus current dollars

Throughout this section, projections of current expenditures and teacher salaries are presented in constant 2001–02 dollars. The reference tables, later in this report, present these data both in constant 2001–02 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 B6 in appendix B). Three alternative sets of projections for the CPI were used, one with each set of projections (low, middle, and high).

Accuracy of Projections

Historically, the average difference between the actual values and the projections of current expenditures, current expenditures per pupil, and teacher salaries has been about 2 percent for projections that are 2 or 3 years out from the year of the last actual data. Projections for years that are further out from the last year with actual data tend to be less accurate. The average difference between the actual values and projections 7 or more years out from the last year with actual data generally has been over 4 percent for current expenditures and current expenditures per pupil and over 8 percent for teacher salaries.

Long-term projections that are economically based, such as projections of current expenditures and teacher salaries, are generally less accurate than long-term demographic projections, such as projections of elementary and secondary enrollment. Recent NCES projections of current expenditures generally have been less accurate than recent NCES projections of public elementary and secondary enrollment but more accurate than projections of teacher salaries. Projections of teacher salaries generally have been less accurate than projections of public elementary and secondary enrollment and similar in accuracy to projections of first-professional degrees. See appendix A for further discussion of the accuracy of recent projections of current expenditures and teacher salaries, and see table A2 in appendix A for the mean absolute percentage errors (MAPEs) of these projections.

Section 7. Expenditures of Public Degree-Granting Postsecondary Institutions

Introduction

Current-fund expenditures in both public 4-year degree-granting institutions and public 2-year degree-granting institutions are projected to increase in constant dollars between school years 1999–2000 and 2012–13.

Three alternative sets of projections

Middle, low, and high sets of projections were produced for total current-fund expenditures as well as educational and general expenditures for both public 4-year and public 2-year degree-granting institutions.

About the projections

Each set of projections is based on alternative assumptions concerning economic growth and receipts to state and local governments. Many other factors that may affect future expenditures were not considered in the production of these projections. See appendix A for more details.

Public Institutions

Between 1999–2000 and 2012–13, increases are expected in the current-fund expenditures of public degree-granting institutions (figure L; reference figure 36 and tables 36 and 38).

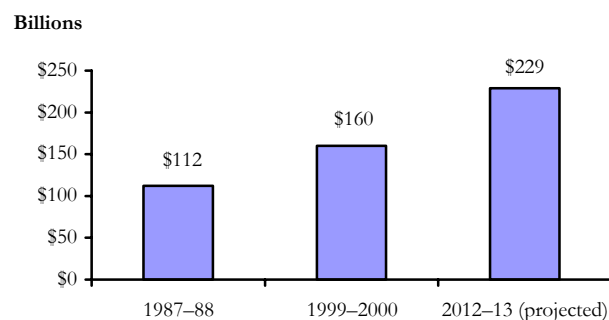
Current-fund expenditures

Current-fund expenditures in constant 2001–02 dollars of 4-year and 2-year degree-granting institutions combined increased 43 percent from 1987–88 to 1999–2000.

From 1999–2000 to 2012–13, current-fund expenditures in constant 2001–02 dollars are projected to increase

- 43 percent, to \$229 billion, in the middle alternative projections;
- 32 percent, to \$212 billion, in the low alternative projections; and
- 51 percent, to \$241 billion, in the high alternative projections.

Figure L. Current-fund expenditures of public degree-granting institutions, with middle alternative projections: Selected years



NOTE: Data were placed in constant 2001–02 dollars using the Consumer Price Index for all urban consumers (BLS, U.S. Dept. of Labor).

SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Finance Survey," various years; and Expenditures in Degree-Granting Institutions Model. (See reference tables 36 and 38.)

Public 4-Year Institutions

Between 1999–2000 and 2012–13, increases are expected in the current-fund expenditures and the educational and general expenditures of public 4-year degree-granting institutions (figure M; reference figure 36 and tables 36 and 37). Both overall increases and increases per student in full-time-equivalent (FTE) enrollment are expected.

Current-fund expenditures

Current-fund expenditures in constant 2001–02 dollars increased 42 percent from 1987–88 to 1999–2000.

From 1999–2000 to 2012–13, public 4-year institutions' current-fund expenditures in constant 2001–02 dollars are projected to increase

- 43 percent, to \$188 billion, in the middle alternative projections;
- 35 percent, to \$178 billion, in the low alternative projections; and
- 49 percent, to \$196 billion, in the high alternative projections.

Current-fund expenditures per student

Current-fund expenditures in constant 2001–02 dollars per student in FTE enrollment increased 26 percent from 1987–88 to 1999–2000.

From 1999–2000 to 2012–13, current-fund expenditures in constant 2001–02 dollars per student in FTE enrollment are projected to increase

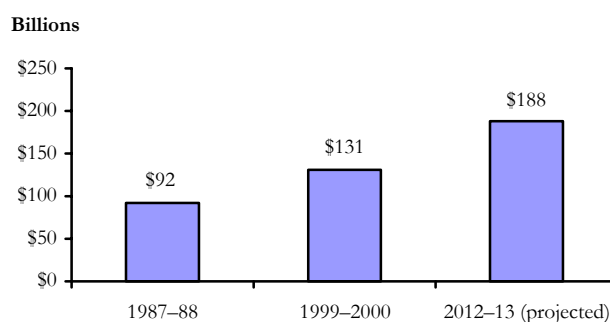
- 16 percent, to \$30,800, in the middle alternative projections;
- 12 percent, to \$29,900, in the low alternative projections; and
- 16 percent, to \$31,000, in the high alternative projections.

Educational and general expenditures

In the middle alternative projections, from 1999–2000 to 2012–13, educational and general expenditures in constant 2001–02 dollars are projected to increase

- 38 percent overall, from \$99 billion to \$136 billion; and
- 12 percent per student in FTE enrollment, from \$20,000 to \$22,300.

Figure M. Current-fund expenditures of public 4-year degree-granting institutions, with middle alternative projections: Selected years



NOTE: Data were placed in constant 2001–02 dollars using the Consumer Price Index for all urban consumers (BLS, U.S. Dept. of Labor).

SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Finance Survey," various years; and Expenditures in Degree-Granting Institutions Model. (See reference table 36.)

Projections for public institutions only

Projections are presented for public institutions only. This is because private institutions began using a new accounting model to report financial data beginning with data for 1996–97, and there is not yet enough data to produce projections with the new accounting model. The new model measures economic changes, while the old model measured financial flows. Also, the terms current-fund expenditures and educational and general expenditures are not used in the new accounting model for private institutions.

A subset of current-fund expenditures

Educational and general expenditures consist of those current-fund expenditures that are for activities directly related to the education of students. Expenditures for such activities as auxiliary enterprises (e.g., student dormitories, cafeterias, and bookstores) and university hospitals are excluded from educational and general expenditures but are included in total current-fund expenditures.

Public 2-Year Institutions

Between 1999–2000 and 2012–13, increases are expected in the current-fund expenditures and the educational and general expenditures of public 2-year degree-granting institutions (figure N; reference tables 38 and 39). Both overall increases and increases per student in FTE enrollment are expected.

Current-fund expenditures

Current-fund expenditures in constant 2001–02 dollars increased 50 percent from 1987–88 to 1999–2000.

From 1999–2000 to 2012–13, public 2-year institutions' current-fund expenditures in constant 2001–02 dollars are projected to increase

- 40 percent, to \$41 billion, in the middle alternative projections;
- 18 percent, to \$34 billion, in the low alternative projections; and
- 56 percent, to \$45 billion, in the high alternative projections.

Current-fund expenditures per student

Current-fund expenditures in constant 2001–02 dollars per student in FTE enrollment increased 24 percent from 1987–88 to 1999–2000.

From 1999–2000 to 2012–13, current-fund expenditures in constant 2001–02 dollars per student in FTE enrollment are projected to

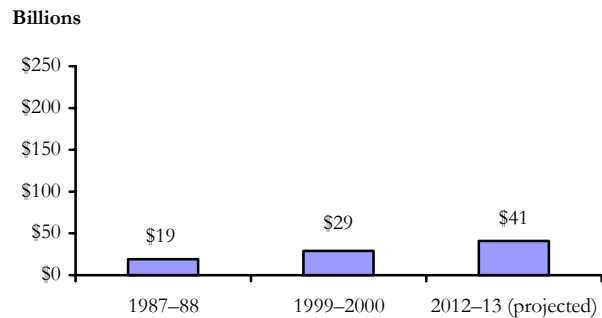
- increase 16 percent, to \$10,800, in the middle alternative projections;
- decrease less than 1 percent, to \$9,300, in the low alternative projections; and
- increase 24 percent, to \$11,600, in the high alternative projections.

Educational and general expenditures

In the middle alternative projections, from 1999–2000 to 2012–13, educational and general expenditures in constant 2001–02 dollars are projected to increase

- 42 percent overall, from \$27 billion to \$38 billion; and
- 16 percent per student in FTE enrollment, from \$8,800 to \$10,300.

Figure N. Current-fund expenditures of public 2-year degree-granting institutions, with middle alternative projections: Selected years



NOTE: Data were placed in constant 2001–02 dollars using the Consumer Price Index for all urban consumers (BLS, U.S. Dept. of Labor).

SOURCE: U.S. Dept. of Education, NCES: Integrated Postsecondary Education Data System (IPEDS), "Finance Survey," various years; and Expenditures in Degree-Granting Institutions Model. (See reference table 38.)

Constant versus current dollars

Throughout this section, projections of current-fund expenditures and educational and general expenditures are presented in constant 2001–02 dollars. The reference tables, later in this report, present these data both in constant 2001–02 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 B6 in appendix B). Three alternative sets of projections for the CPI were used, one with each set of projections (low, middle, and high).

Accuracy of Projections

Historically, the average difference between the actual values and the projections of current-fund expenditures of public degree-granting institutions has been about 2 percent for projections that are 2 or 3 years out from the year of the last actual data. Projections for years that are further out from the last year with actual data tend to be less accurate. The average difference between the actual values and projections 7 or more years out from the last year with actual data generally has been about 3 percent for both current-fund expenditures of public 4-year institutions and current-fund expenditures of public 2-year institutions.

Long-term projections that are economically based, such as projections of expenditures, are generally less accurate than long-term demographic projections, such as projections of elementary and secondary enrollment. NCES projections of current-fund expenditures of public degree-granting institutions produced over the last 8 years generally have been less accurate than recent NCES projections of public elementary and secondary enrollment. They have been more accurate than projections of teacher salaries. They have been similar in accuracy to projections of current expenditures in elementary and secondary schools. See appendix A for further discussion of the accuracy of recent projections of expenditures of public degree-granting institutions, and see table A2 in appendix A for the mean absolute percentage errors (MAPEs) of these projections.