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ABSTRACT

A consistent set of projections for key education statistics. Included are statistics on enrollment, graduates, instructional staff, and expenditures in elementary and secondary schools and institutions of higher education is provided. The tables, charts, and narratives contain data on enrollment, teachers, graduates, and expenditures for the past 15 years and projections to the year 2000. The book is divided into three parts: (1) Projections and Analyses; (2) Projection Methodology; and (3) Technical Appendixes. Total enrollment in public and private elementary and secondary schools is projected to increase from 45.4 million in 1988 to 49.7 million in 1998. Enrollment in institutions of higher education is projected to increase from 12.8 million in 1988 to 13.4 million by the year 2000. Current expenditures of public schools are expected to increase from $161.5 billion in 1998-89 to $212.0 billion in 1999-2000. Current-fund expeditures of institutions of higher education are projected to increase from $115.5 billion in 1988-89 to $144.4 billion by 1999-2000. (SI)

Projections of Education Statistics to 2000

2000
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Foreword

This 1989 edition of *Projections of Education Statistics* is the 19th report in a series begun in 1964. This report provides projections of statistics about elementary and secondary schools and institutions of higher education. Included are projections for enrollments, graduates, instructional staff, and expenditures to the year 2000. The projections in this edition supersede those in *Projections of Education Statistics to 1997-98*, published in 1988.

The report also contains a methodology section describing models and assumptions used to develop these projections. The projections are based on an age-specific enrollment rate model, exponential smoothing models, and econometric models. The enrollment model uses population estimates and projections from the Bureau of the Census. The exponential smoothing models are based on the mathematical projection of past data patterns into the future. The econometric models use projections of exogenous variables from Data Resources, Inc.'s Macroeconomic Model of the U.S. Economy.

Most of the projections have three alternative sets of assumptions regarding various growth paths. Although the middle alternative is deemed to represent the most likely projections, the other alternatives provide a reasonable range of outcomes.

A summary of these projections is available in a pocket-sized folder, *Pocket Projections: 1977-78 to 1999-2000.*

Jeanne E. Griffith, Acting Director
Crosscutting Education Statistics and
Analysis Division
December 1989

Acknowledgments

Projections of Education Statistics to 2000 was prepared by the National Center for Education Statistics in the Crosscutting Education Statistics and Analysis Division under the supervision of Jeanne E. Griffith, Acting Director, and Thomas D. Snyder, Branch Chief.

Debra E. Gerald was responsible for the overall production of the report and developed the chapters on enrollments, earned degrees conferred, and instructional faculty. Paul J. Horn prepared the chapters on high school graduates and classroom teachers. William J. Hussar prepared the chapters on expenditures of public elementary and secondary schools and institutions of higher education. Celestine Davis typed portions of the manuscript.

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Highlights

Elementary and Secondary Education

- Total enrollment in public and private elementary and secondary schools is projected to increase from 45.4 million in 1988 to 49.7 million in 1998. By the year 2000, it will be 49.5 million.
- The number of high school graduates from public and private schools is expected to decrease from 2.8 million in 1988–89 to 2.5 million in 1991–92 before rising to 2.9 million by 1999–2000.
- The number of classroom teachers in public and private elementary and secondary schools is projected to increase from 2.6 million in 1988 to 3.1 million by the year 2000.
- Current expenditures (in constant 1987–88 dollars) of public schools are expected to increase from $161.5 billion in 1988–89 to $212.0 billion in 1999–2000.

Higher Education

- Enrollment in institutions of higher education is projected to increase from 12.8 million in 1988 to 13.4 million by the year 2000.
- By 1999–2000, women are expected to be awarded the majority of associate, bachelor's, master's, and doctor's degrees, and 40 percent of first-professional degrees.
- The number of instructional faculty is projected to increase from 741,000 in 1988 to 771,000 by the year 2000.
- Current-fund expenditures (in constant 1987–88 dollars) of institutions of higher education are projected to increase from $115.5 billion in 1988–89 to $144.4 billion by 1999–2000.

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Introduction

This 19th edition of *Projections of Education Statistics* provides a consistent set of projections for key education statistics. This edition includes statistics on enrollment, graduates, instructional staff, and expenditures in elementary and secondary schools and institutions of higher education. The tables, charts, and narratives contain data on enrollment, teachers, graduates, and expenditures for the past 15 years and projections to the year 2000. *Projections* is in three parts: Part 1—Projections and Analyses; Part 2—Projection Methodology; and Part 3—Technical Appendixes.

Limitations of Projections

Projections of time series usually differ from the 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 some 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. To measure projection reliability, upper and lower statistical confidence limits are presented for projections of elementary and secondary enrollment, classroom teachers, high school graduates, earned degrees conferred, and expenditures in public elementary and secondary schools and institutions of higher education. Statistical confidence limits are not provided for projections of enrollment and instructional faculty in institutions of higher education. Because of the complex methodologies used for projecting higher education enrollment and limited data for developing projections of instructional faculty, procedures still need to be developed to calculate statistical confidence limits. Instead, only alternative projections are presented for higher education enrollment and instructional faculty.

Changes in This Edition

This edition includes projections of private school statistics, which have not been published since 1985. They are provided for enrollment, high school graduates, and classroom teachers. Also included are projections of expenditures of institutions of higher education, which have not been published since 1982. Projections for expenditures are shown for institutions of higher education by type and control of institution.

Future Improvements

This edition does not include projections for the areas of (1) teacher supply and (2) capital outlay and interest expenditures of elementary and secondary schools. Further work in the area of teacher supply requires more data and model development. The area of elementary and secondary expenditures for capital outlays and interest is dependent on new data collection and model development. The National Center for Education Statistics (NCES) is exploring options to address these issues.

Teacher Supply and Demand

Teacher supply and demand continues to be an important issue to educational planners and policymakers. Changing demographics and enrollment trends, reports of an aging teaching force, and declining numbers of newly graduated teachers have generated concerns about an impending teacher shortage. To respond to these concerns, NCES is conducting a series of schools and staffing surveys to collect statistics on teacher demand and supply. When sufficient data become available, projections will be developed for teacher supply. However, in the area of teacher demand projections, NCES has developed an econometric model to project the number of teachers and a procedure to project teacher turnover to use in the model of the demand for new hiring of teachers. Projections of classroom teachers and demand for new hires in chapter 5 use these methods.

Capital Outlay and Interest Expenditures

Projections of capital outlay and interest expenditures in public elementary and secondary schools have not been published by NCES since 1982. They require data collection and model development before they can appear in future editions of *Projections*. The lack of these data makes it impossible to project total expenditures for public schools. This report includes only projections of current expenditures and average annual teacher salaries in public elementary and secondary schools.

Part 1: Projections and Analyses

Overview

In the 1990s, enrollment will increase in elementary and secondary schools. The primary reason for the increase is the rising number of annual births since 1977—sometimes referred to as the baby echo. This surge of births will cause increases in the preprimary and 5- to 17-year-old populations over the next 12 years. These population increases, which began in the early 1980s, are expected to continue affecting the growth in elementary enrollment and spur growth in secondary enrollment in the 1990s. As secondary enrollment rises, the number of high school graduates will increase over the projection period. The growth in elementary and secondary enrollments will cause the demand for classroom teachers to rise and the level of current expenditures to grow during this period.

Enrollment in institutions of higher education is expected to fluctuate and rise by the year 2000. The changes are due, in part, to the rising enrollment rates of 18- to 22-year-olds and increasing enrollment of older and part-time students. In addition, changes in demographics will affect enrollment levels. Changes in the traditional college-age population (18- to 24-year-olds), the 25- to 29-year-old population, and the 30- to 34-year-old population will generate fluctuations in enrollment over the projection period. As higher education enrollment rises to the year 2000, the number of college faculty is expected to rise and current-fund expenditures will grow to meet the costs of an expanding higher education. Women are expected to increase their share of earned degrees at all levels.

Summaries of the key projections are shown in figure 1 for elementary and secondary education and figure 2 for higher education.

Elementary and Secondary Education

Enrollment

From 1975 to 1984, total enrollment in public and private elementary and secondary schools decreased steadily, reflecting the decline in the school-age population. After reaching a low of 45.0 million in 1984, total enrollment reversed its downward trend and increased to 45.4 million in 1988. Enrollment is projected to continue to increase and reach 49.7 million by 1998. By the year 2000, it will be 49.5 million (figure 1).

Enrollment in public elementary and secondary schools decreased from 44.8 million in 1975 to 39.3 million in 1984. Since then, enrollment in public schools increased to 40.2 million in 1988. Enrollment in public schools is projected to continue to increase, to 44.0 million in 1998. By the year 2000, this number will be 43.8 million.

Enrollment in private elementary and secondary schools numbered between 5.1 million and 5.7 million between 1976 and 1985. In 1988, NCES estimated that there were 5.2 million students enrolled in private elementary and secondary schools. Enrollment in private schools is projected to increase to about 5.7 million by the year 2000.

Enrollment trends in elementary and secondary schools for grades K–8 and 9–12 are expected to differ through 1990 as enrollment continues to increase in grades K–8 and decline in grades 9–12 by 1990. From a low of 31.2 million in 1984, enrollment in grades K–8 increased to 32.4 million in 1988 and is projected to rise to 35.1 million by 1997. By the year 2000, this number will be 34.7 million. From a peak of 15.7 million in 1976, grades 9–12 enrollment decreased to 13.0 million in 1988. After reaching a low of 12.6 million in 1990, enrollment in grades 9–12 is expected to rise to 14.8 million by the year 2000.

Classroom Teachers

In the 1970s and early 1980s, decreases in enrollment were accompanied by increases in the number of classroom teachers in elementary and secondary schools. The number of teachers continued to rise into the late 1970s due, in part, to the increased staffing needs of special and bilingual education programs and the rising proportion of students at the secondary school level, where pupil teacher ratios are relatively low. The number of teachers then declined slightly until 1983. After 1983, the number of classroom teachers increased to an all-time high of 2.6 million in 1988. The number is expected to continue rising in the 1990s, reaching 3.1 million by the year 2000.

Over the projection period, the number of teachers in public elementary and secondary schools is projected to increase from 2.3 million in 1988 to 2.7 million by the year 2000. The number of teachers in private elementary and secondary schools is expected to rise from 345,000 in 1988 to 401,000 by the year 2000.

High School Graduates

The number of high school graduates peaked in 1976–77 at 3.2 million. Then, the number of graduates fell to 2.6 million in 1985–86, followed by a slight rise to 2.8 million in 1988–89. The number of high school graduates is expected to decrease to 2.5 million by 1991–92, and then increase to 2.9 million by 1999–2000.

Over the projection period, the number of high school graduates of public schools is expected to decrease from 2.5 million in 1988–89 to 2.2 million in 1991–92 before rising to 2.6 million by 1999–2000. The number of graduates of private schools is projected to be 298,000 by 1999–2000.

Public Current Expenditures and Teacher Salaries

In public schools, current expenditures (in constant 1987–88 dollars) increased over the past 15 years, rising from $128.2 billion in 1974–75 to $161.5 billion in 1988–89, an increase of 26 percent. The level of current expenditures is expected to rise to $212.0 billion by 1999–2000. In contrast, average salaries of teachers in public schools decreased from $26,146 in 1974–75 to $23,594 in 1980–81 in constant 1987–88 dollars, a decrease of 10 percent. Since then, teacher salaries have increased steadily, reaching $28,584 in 1988–89. By 1999–2000, the average teacher salary in public schools is projected to be $32,586, an increase of 14 percent from 1988–89.

Higher Education

Enrollment

In 1975, higher education enrollment numbered 11.2 million. In the late 1970s and early 1980s, older students, particularly women and part-time students, enrolled in greater numbers. This contributed to an increase in college enrollment to 12.5 million in 1983. In 1984 and 1985, enrollment declined to 12.2 million. By 1988, it had risen to 12.8 million, exceeding its previous level attained in 1983 by nearly 400,000 students. Under the middle alternative, college enrollment is projected to rise from 12.8 million in 1988 to 13.4 million by the year 2000 (figure 2).

Earned Degrees Conferred

The overall growth in earned degrees is due to the substantial rise in the number of degrees awarded to women. In 1988–89, women were awarded the majority of associate, bachelor's, and master's degrees, and more than one-third of the doctor's and first-professional degrees. By 1999–2000, women are expected to receive 50 percent or more of the associate, bachelor's, master's, and doctor's degrees. The proportion of first-professional degrees awarded to women is expected to be 40 percent.

Instructional Faculty

From 1975 to 1988, public and private instructional faculty increased faster than enrollment, 18 percent versus 15 percent. Instructional faculty is projected to increase from 741,000 in 1988 to 771,000 by the year 2000.

Expenditures

Current-fund expenditures (in constant 1987–88 dollars) increased steadily from $78.4 billion in 1974–75 to $115.5 billion in 1988–89, an increase of 47 percent. The level of current-fund expenditures is projected to rise to $144.4 billion by 1999–2000. Over the projection period, current-fund expenditures are expected to increase from $75.4 billion in 1988–89 to $92.4 billion by 1999–2000 for public institutions. For private institutions, this number is expected to rise from $40.1 billion to $52.0 billion.

Figure 1.—Forecast summary of elementary and secondary education statistics: 1975 to 2000

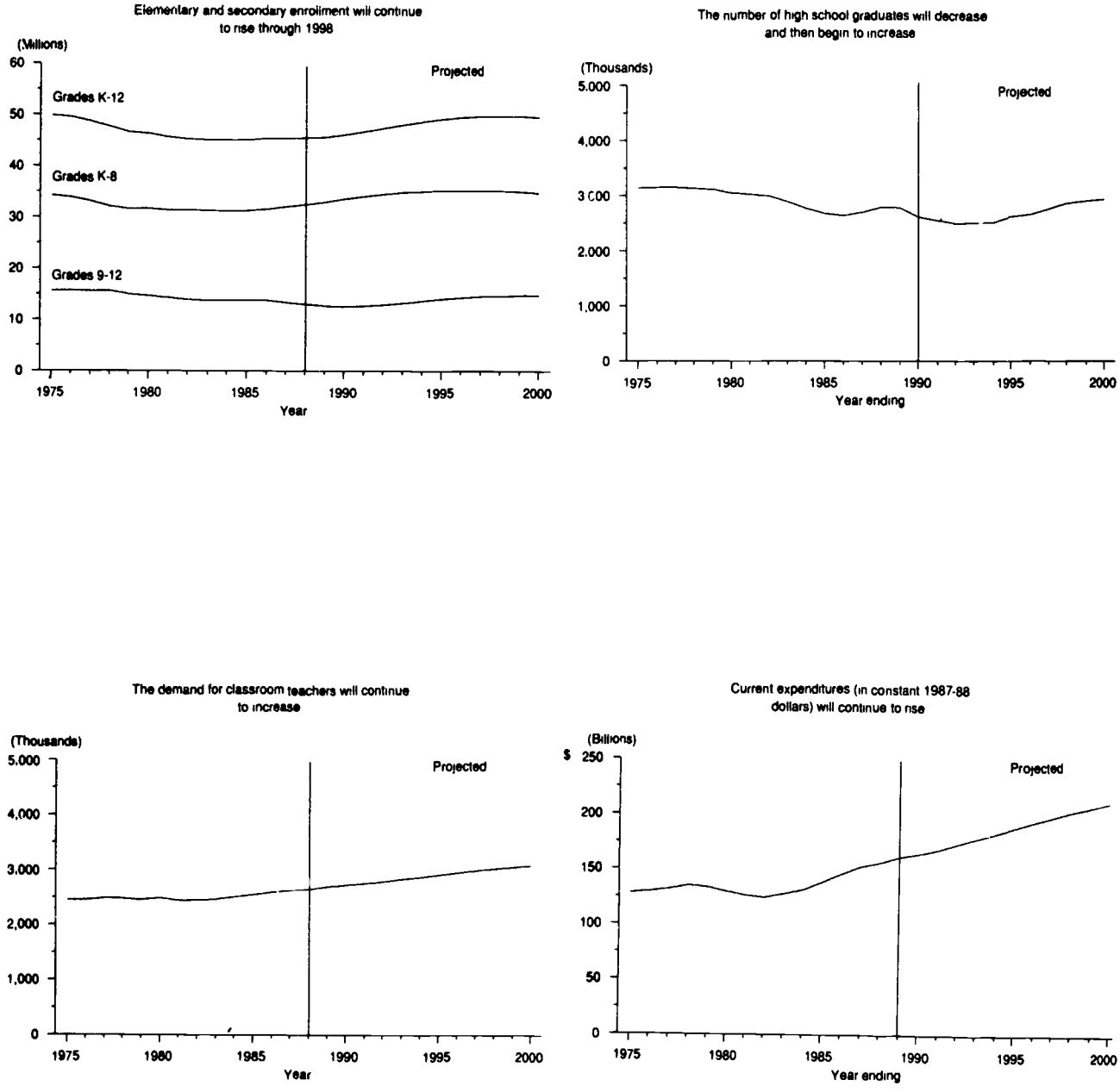
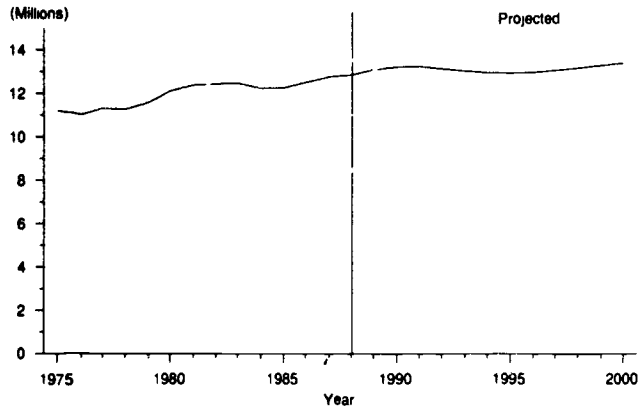
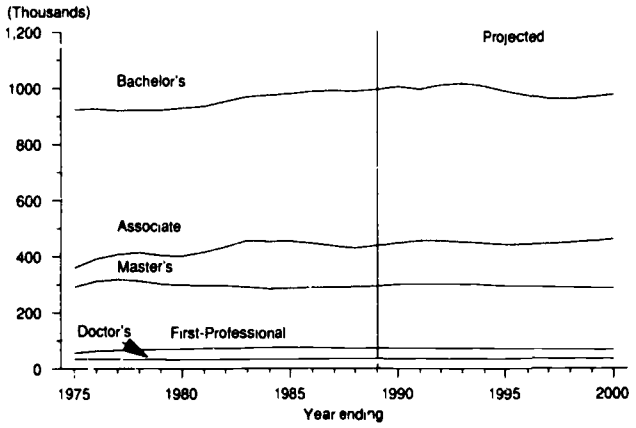


Figure 2.—Forecast summary of higher education statistics: 1975 to 2000

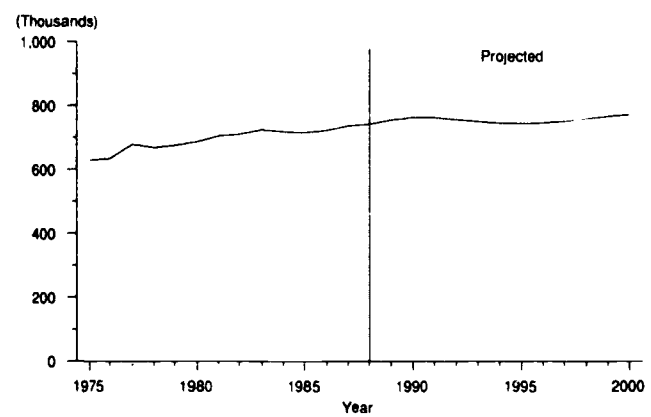
Higher education enrollment will fluctuate



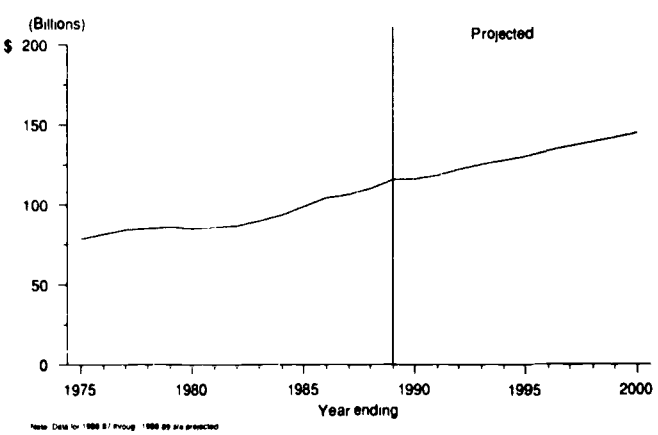
Earned degrees will exhibit slight variations in levels



Instructional faculty will fluctuate



Current fund expenditures (in constant 1987-88 dollars) will continue to increase



Chapter 1

Elementary and Secondary Enrollment

In the 1990s, enrollment will increase in elementary and secondary schools. The primary reason for the increase is the rising number of annual births since 1977—sometimes referred to as the baby echo (figure 3). This surge of births will cause increases in the preprimary and 5- to 17-year-old populations over the next 12 years (figures 4 and 5). These population increases, which began in the early 1980s, are expected to continue the growth in elementary enrollment and spur growth in secondary enrollment in the 1990s. The resulting enrollment boom will approach, but not reach, the peak attained in 1971. School districts will face new challenges as schools that contended with declining enrollments in the 1970s must now prepare for increasing numbers of elementary and secondary students in the 1990s. Many districts will need to build more schools to cope with large numbers of new students. However, these changes will vary widely among the States and in local jurisdictions. (See *State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers.*)

From 1975 to 1984, total enrollment * in public and private elementary and secondary schools decreased steadily, reflecting the decline in the school-age population (table 1 and figure 6). After reaching a low of 45.0 million in 1984, total enrollment reversed its downward trend and increased to 45.4 million in 1988. Enrollment is projected to continue to increase and reach 49.7 million by 1998. By the year 2000, enrollment will be 49.5 million.

Enrollment in public elementary and secondary schools decreased from 44.8 million in 1975 to 39.3 million in 1984 (figure 7). Since then, enrollment in public schools has increased to 40.2 million in 1988. Enrollment in public schools is projected to continue increasing, to 44.0 million in 1998. By the year 2000, this number will be 43.8 million.

Projections of enrollments in public elementary and secondary schools are computed using a grade retention method. This method depends mainly on the assumption about the entrance of 6-year-olds into the first grade and their subsequent progress through elementary and secondary schools, as determined by projected grade retention rates. The method assumes that grade retention rates will hold constant throughout the projection period. The retention rates for grades 2 through 10 are all close to 100 percent. In fact, the retention rates for grades 6 to 7 and grades 8 to 9 are significantly over 100 percent. Traditionally, these are the grades at which large numbers of private elementary students transfer to public secondary schools. The retention rates for grades 11 to 12 are about 90 percent.

Historically, enrollment in private elementary and secondary schools has numbered between 5.1 million and 5.7 million, as measured by several different surveys of private schools for 1976 through 1978, 1980, 1983, and 1985. A sample survey of private schools conducted by NCES in 1988 estimated that 5.2 million students were enrolled in private elementary and secondary schools. Enrollment in private schools is projected to increase to around 5.7 million by the year 2000 (figure 7).

Projections of private school enrollment were derived using public school enrollment data for 1988. The ratio of private school enrollment to public school enrollment was calculated for grades K–8 and 9–12. These ratios were held constant over the projection period and applied to projections of public school enrollment for grades K–8 and 9–12 to yield projections of private school enrollment. This method assumes that the future pattern in the trend of private school enrollment will be the same as in public school enrollment. However, a number of factors could alter the assumption of constant ratios over the projection period. Because of the lack of consistent time series data on private school enrollment, it was assumed that the 1988 ratios would remain constant over time.

Grade Group

Enrollment trends in elementary and secondary schools for grades K–8 and 9–12 are expected to differ through 1990 as enrollment continues to increase in grades K–8 and decline in grades 9–12. Enrollment in grades K–8 decreased from 34.2 million in 1975 to 31.2 million in 1984. As the offspring of the baby-boom generation began school, K–8 enrollment rose to 32.4 million in 1988 and is projected to rise to 35.2 million by 1996. By the year 2000, this number will be 34.7 million. Since enrollment rates for most of the school-age population are all nearly 100 percent, enrollment in grades K–8 reflects changes in the size of the 5- to 13-year-old population.

* Enrollment in public and private elementary and secondary schools includes most kindergarten and some nursery school enrollment.

Enrollment in grades 9–12 through 1990 shows a different pattern. After peaking at 15.7 million in 1976, enrollment in grades 9–12 began to decline. Between 1977 and 1988, enrollment in grades 9–12 decreased from 15.6 million to 13.0 million, a 16 percent decrease, and is expected to decrease another 3 percent between 1988 and 1990. After reaching a low of 12.6 million in 1990, enrollment in grades 9–12 is expected to rise to 14.8 million by the year 2000, a 14 percent increase from 1988 and an 18 percent increase from 1990. This pattern of decline and growth tends to reflect changes in the 14- to 17-year-old population.

Enrollment by grade group in public elementary and secondary schools shows trends similar to those of total enrollment. Enrollment in grades K–8 of public schools decreased from 30.5 million in 1975 to 26.9 million in 1984. It then increased to 28.4 million in 1988. Enrollment in grades K–8 of public schools is projected to increase to 30.8 million in 1996. By the year 2000, this number will be 30.4 million (figure 8).

Enrollment in grades 9–12 of public schools decreased from 14.3 million in 1975 to 11.8 million in 1988. Thereafter, 9–12 enrollment is expected to continue to decrease to 11.4 million in 1990 before climbing to 13.4 million by the year 2000.

Enrollment by grade group in private elementary and secondary schools shows patterns similar to public school enrollment over the projection period. Enrollment in grades K–8 of private schools is projected to increase from 4.0 million in 1988 to 4.3 million by the year 2000 (figure 9). Enrollment in grades 9–12 of private schools is projected to increase from 1.2 million in 1988 to 1.4 million by the year 2000.

Organizational Level

Enrollments may also be aggregated by the level of school attended by students. The reported enrollment in elementary schools is smaller than enrollment in kindergarten through grade 8 because it excludes enrollment in grades 7 and 8 in junior high schools. Enrollment in elementary schools decreased from 29.3 million in 1975 to 27.9 million in 1981 (table 2 and figure 10). This number increased to 29.2 million in 1988. The increase is expected to continue through 1996, when enrollment will reach 31.5 million. By the year 2000, this number will be 30.9 million.

Enrollment in secondary schools, including 7th and 8th graders in junior high schools, decreased from 20.5 million in 1975 to 16.2 million in 1988. This number is projected to rise to 18.6 million by the year 2000, a 15 percent increase.

Regional and State Patterns

The Nation will not have uniform growth in all regions, States, and communities. Regional and State-level projections of enrollment in public elementary and secondary schools from 1989 to 1993 have been developed by NCES. These short-term projections indicate that enrollments will increase most rapidly in Western States, where total enrollment will rise 12 percent between fall 1988 and fall 1993. Arizona, California, Nevada, and New Mexico show the largest growth among the Western States. Enrollment in the Southern region is projected to rise 6 percent. In this region, Florida, Georgia, and Maryland are the largest growth States. The Northeastern region will increase by 3 percent, while the Midwestern region is projected to rise by 2 percent. For additional information on State enrollment projections to 1993, see *State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers.*

Table 1.—Enrollment in grades K–8 [1] and 9–12 of elementary and secondary schools, by control of institution, with projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total			Public			Private		
	K–12 [1]	K–8 [1]	9–12	K–12 [1]	K–8 [1]	9–12	K–12 [1]	K–8 [1]	9–12
1975	49,791	34,187	15,604	44,791	30,487	14,304	[2] 5,000	3,700	1,300
1976	49,484	33,831	15,653	44,317	30,006	14,311	5,167	3,825	1,342
1977	48,716	33,133	15,583	43,577	29,336	14,240	5,140	3,797	1,343
1978	47,636	32,060	15,576	42,550	28,328	14,223	5,086	3,732	1,353
1979	46,645	31,631	15,014	41,645	27,931	13,714	[2] 5,000	3,700	1,300
1980	46,318	31,666	14,652	40,987	27,674	13,313	5,331	3,992	1,339
1981	45,600	31,345	14,255	40,099	27,245	12,855	[2] 5,500	4,100	1,400
1982	45,252	31,356	13,896	39,652	27,156	12,496	[2] 5,600	4,200	1,400
1983	45,067	31,312	13,755	39,352	26,997	12,355	5,715	4,315	1,400
1984	44,995	31,218	13,777	39,295	26,918	12,377	[2] 5,700	4,300	1,400
1985	45,066	31,244	13,822	39,509	27,049	12,460	5,557	4,195	1,362
1986	45,290	31,520	13,770	39,837	27,404	12,434	[2] 5,452	4,116	1,336
1987	45,371	32,004	13,367	40,024	27,886	12,138	[2] 5,347	4,118	1,229
1988 [3]	45,438	32,426	13,012	40,196	28,390	11,806	5,241	4,036	1,206
				Projected					
1989	45,595	32,915	12,680	40,323	28,818	11,505	5,272	4,097	1,175
1990	46,112	33,549	12,563	40,772	29,373	11,399	5,340	4,176	1,164
1991	46,718	34,040	12,678	41,306	29,803	11,503	5,412	4,237	1,175
1992	47,369	34,481	12,889	41,883	30,189	11,694	5,486	4,292	1,195
1993	48,011	34,805	13,206	42,455	30,473	11,982	5,556	4,332	1,224
1994	48,644	34,998	13,646	43,023	30,642	12,381	5,621	4,356	1,265
1995	49,122	35,123	14,000	43,453	30,751	12,702	5,669	4,372	1,298
1996	49,493	35,161	14,331	43,788	30,785	13,003	5,705	4,376	1,328
1997	49,697	35,141	14,556	43,974	30,767	13,207	5,723	4,374	1,349
1998	49,722	35,136	14,586	43,997	30,763	13,234	5,725	4,373	1,352
1999	49,668	34,954	14,715	43,954	30,603	13,351	5,714	4,351	1,364
2000	49,530	34,741	14,789	43,835	30,417	13,418	5,695	4,324	1,371

[1] Includes most kindergarten and some nursery school enrollment.
[2] Estimated by NCES.
[3] Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Ce..ter for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," NCES *Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," NCES *Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table 2.—Enrollment in elementary and secondary schools, by organizational level and control of institution, with projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total			Public			Private		
	K–12 [1]	Elementary	Secondary	K–12 [1]	Elementary	Secondary	K–12 [1]	Elementary	Secondary
1975	49,791	29,340	20,451	44,791	25,640	19,151	[2] 5,000	3,700	1,300
1976	49,484	29,255	20,229	44,317	25,430	18,887	5,167	3,825	1,342
1977	48,717	28,751	19,966	43,577	24,954	18,623	5,140	3,797	1,343
1978	47,636	28,749	18,887	42,550	25,017	17,534	5,086	3,732	1,353
1979	46,645	28,243	18,402	41,645	24,543	17,102	[2] 5,000	3,700	1,300
1980	46,318	28,148	18,170	40,987	24,156	16,831	5,331	3,992	1,339
1981	45,599	27,919	17,680	40,099	23,819	16,280	[2] 5,500	4,100	1,400
1982	45,252	28,075	17,177	39,652	23,875	15,777	[2] 5,600	4,200	1,400
1983	45,067	28,325	16,742	39,352	24,010	15,342	5,715	4,315	1,400
1984	44,995	28,447	16,548	39,295	24,147	15,148	[2] 5,700	4,300	1,400
1985	45,066	28,485	16,581	39,509	24,290	15,219	5,557	4,195	1,362
1986	45,289	28,317	16,972	39,837	24,201	15,636	[2] 5,452	4,116	1,336
1987	45,371	28,433	16,938	40,024	24,315	15,709	[2] 5,347	4,118	1,229
1988 [3]	45,438	29,242	16,196	40,196	25,206	14,990	5,241	4,036	1,206
					Projected				
1989	45,595	29,659	15,936	40,323	25,562	14,761	5,272	4,097	1,175
1990	46,112	30,203	15,909	40,772	26,027	14,745	5,340	4,176	1,164
1991	46,718	30,607	16,111	41,306	26,370	14,936	5,412	4,237	1,175
1992	47,369	30,919	16,451	41,883	26,627	15,256	5,486	4,292	1,195
1993	48,011	31,150	16,861	42,455	26,818	15,637	5,556	4,332	1,224
1994	48,644	31,297	17,347	43,023	26,941	16,082	5,621	4,356	1,265
1995	49,122	31,394	17,729	43,453	27,022	16,431	5,669	4,372	1,298
1996	49,493	31,455	18,037	43,788	27,079	16,709	5,705	4,376	1,328
1997	49,697	31,400	18,297	43,974	27,026	16,948	5,723	4,374	1,349
1998	49,722	31,338	18,384	43,997	26,965	17,032	5,725	4,373	1,352
1999	49,668	31,161	18,508	43,954	26,810	17,144	5,714	4,351	1,364
2000	49,530	30,941	18,589	43,835	26,617	17,218	5,695	4,324	1,371

[1] Includes most kindergarten and some nursery school enrollment.
[2] Estimated by NCES.
[3] Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," NCES *Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," NCES *Bulletin*, December 1984; 1985 Private School Survey; "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Figure 3.—Annual number of births, with projections: 1945 to 2000

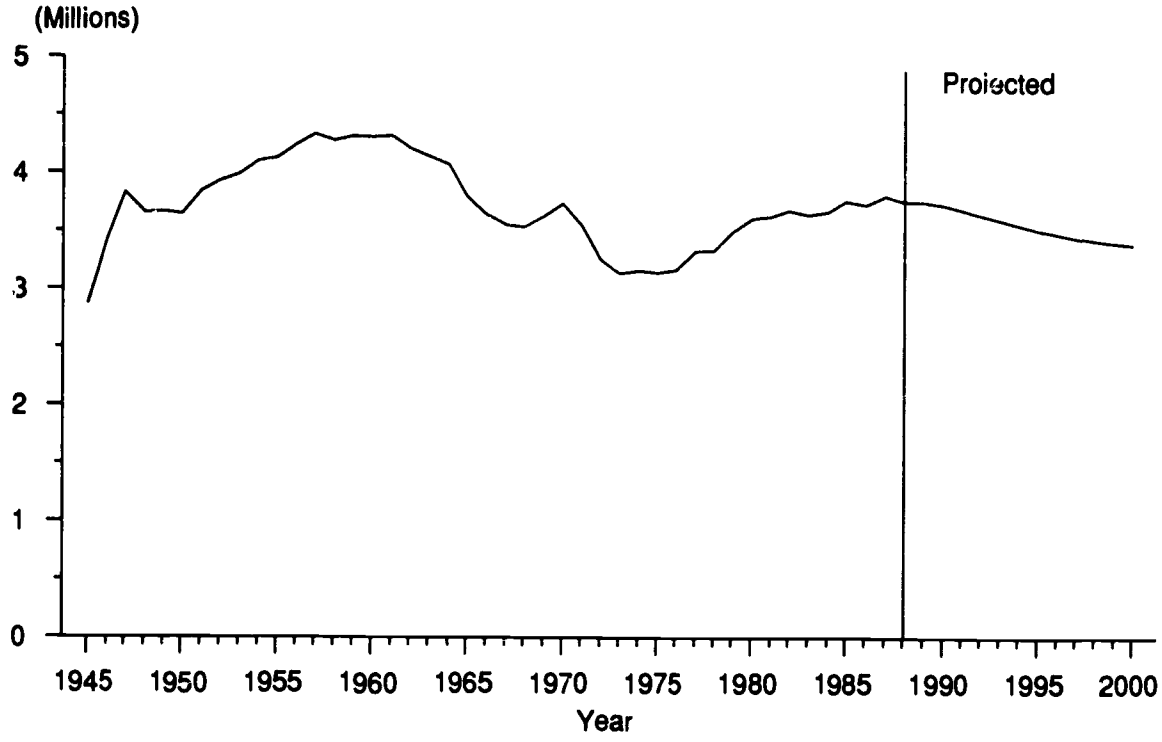


Figure 4.—Preprimary school-age population, with projections: 1975 to 2000

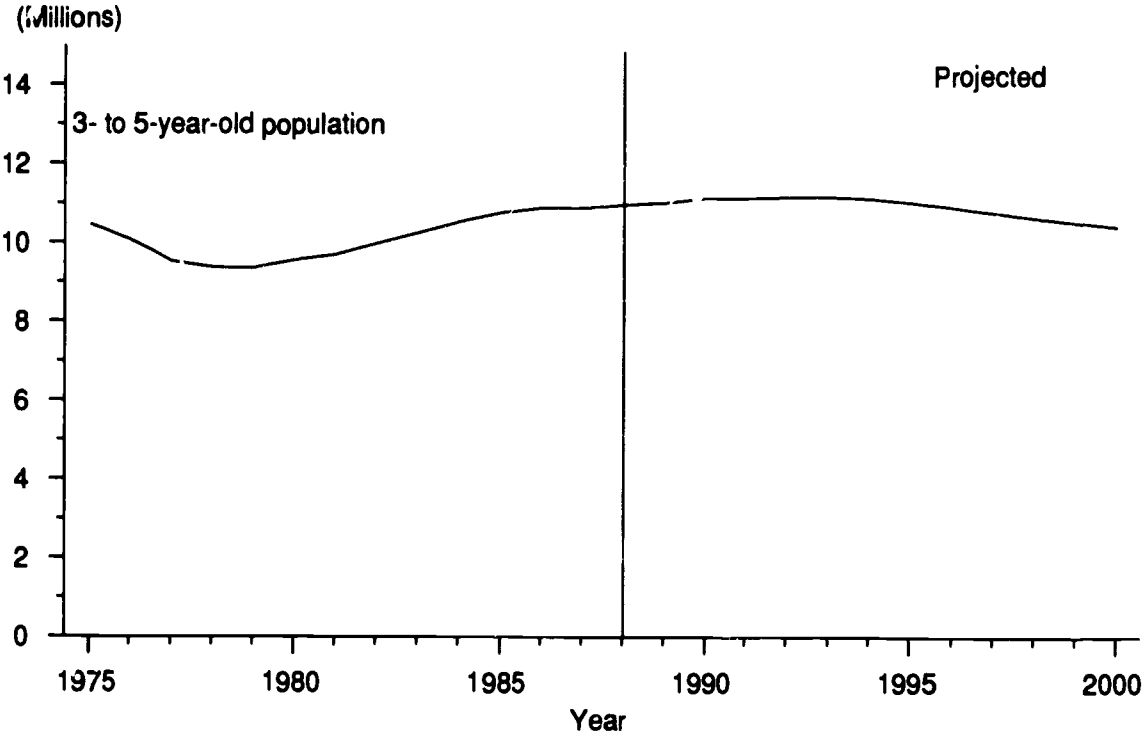


Figure 5.—School-age populations, with projections: 1975 to 2000

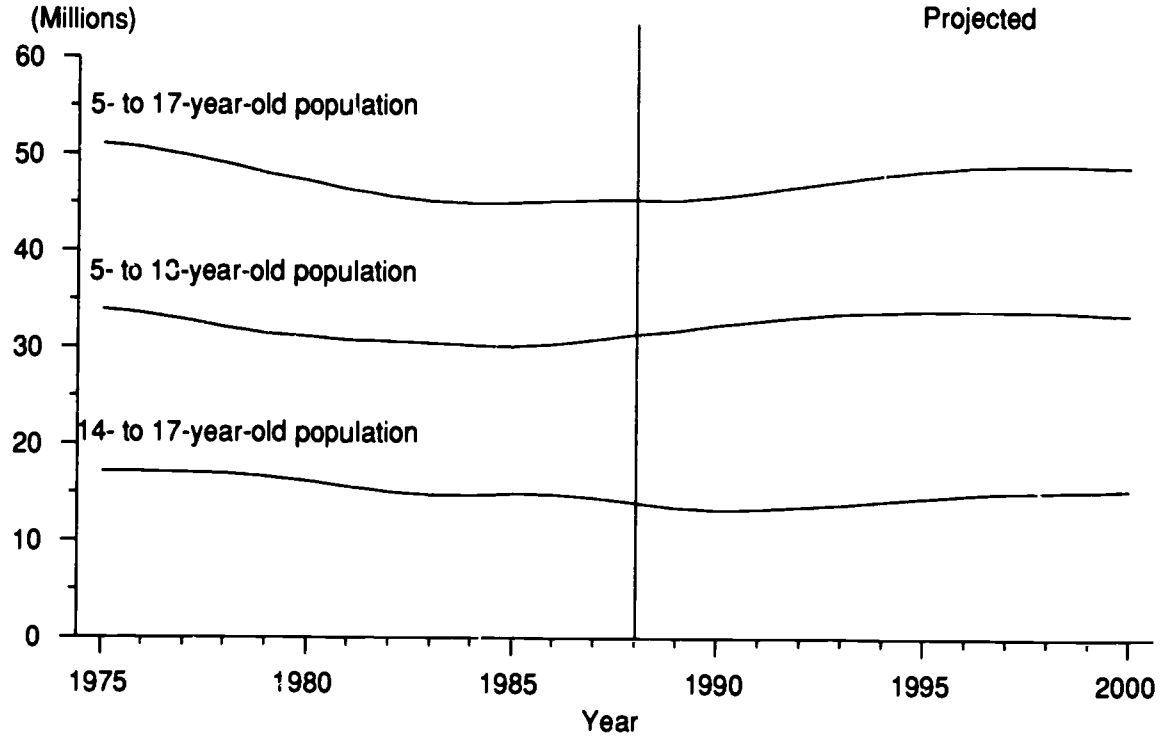


Figure 6.—Enrollment in elementary and secondary schools, by grade level, with projections: Fall 1975 to fall 2000

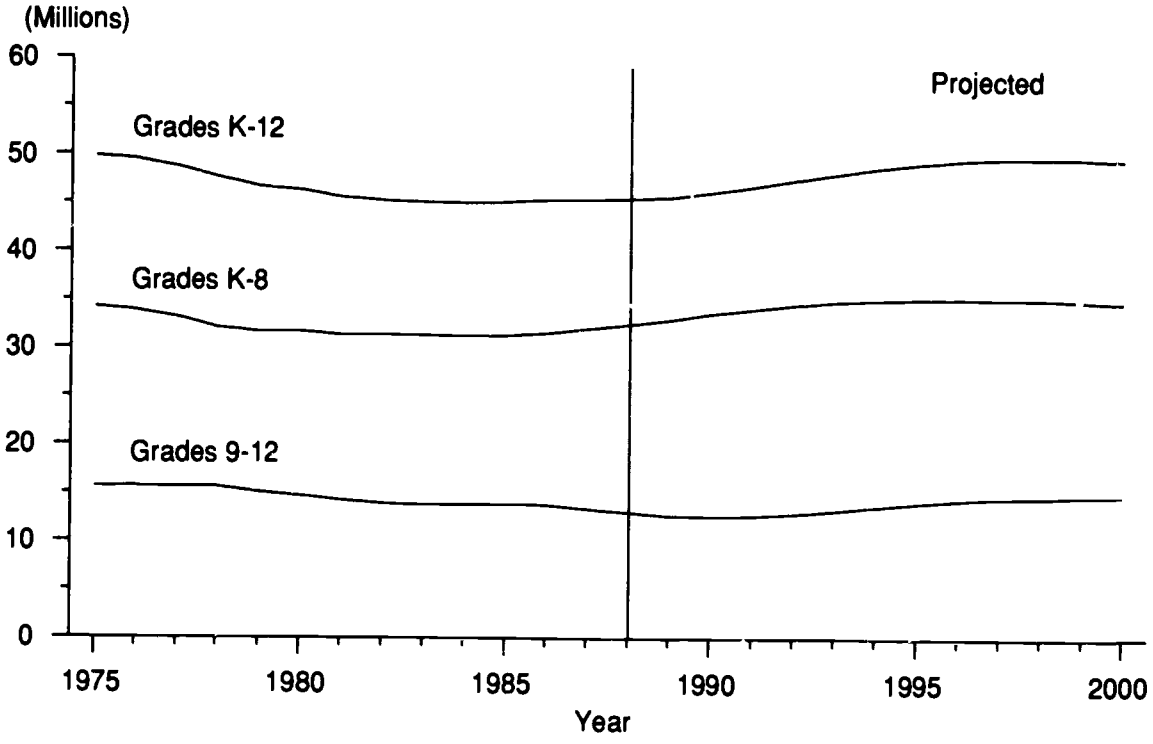


Figure 7.—Enrollment in elementary and secondary schools, by control of institution, with projections: Fall 1975 to fall 2000

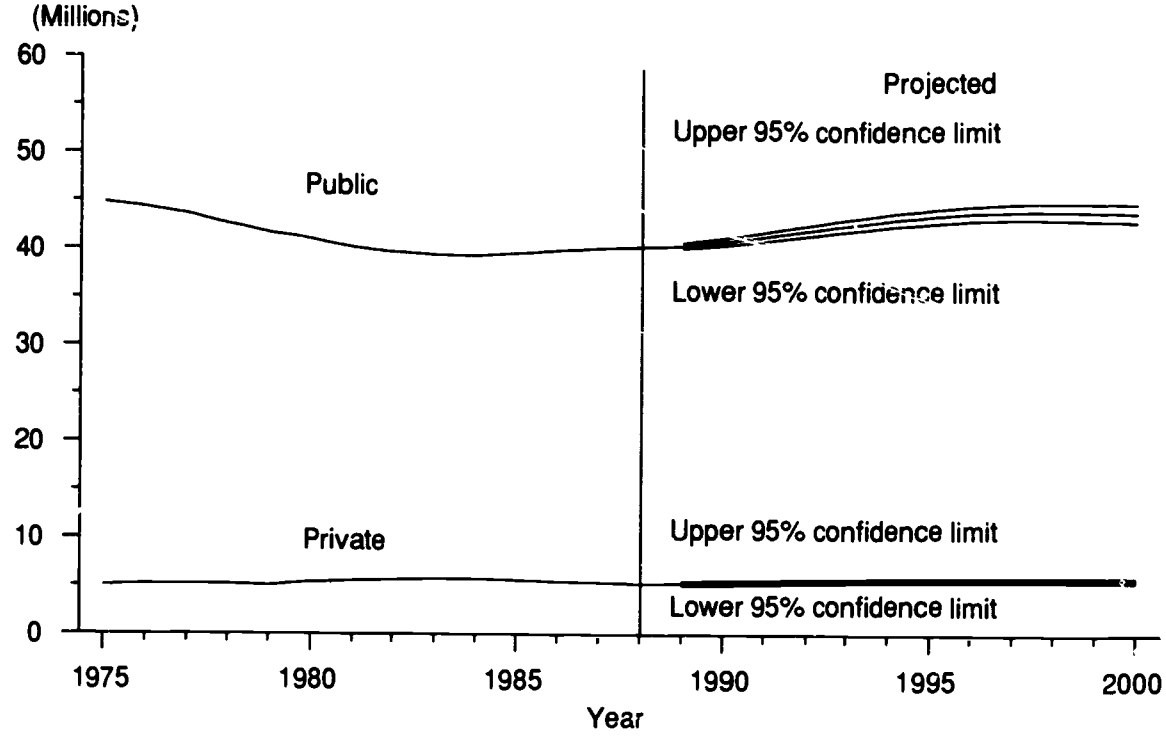


Figure 8.—Enrollment in public elementary and secondary schools, by grade level, with projections: Fall 1975 to fall 2000

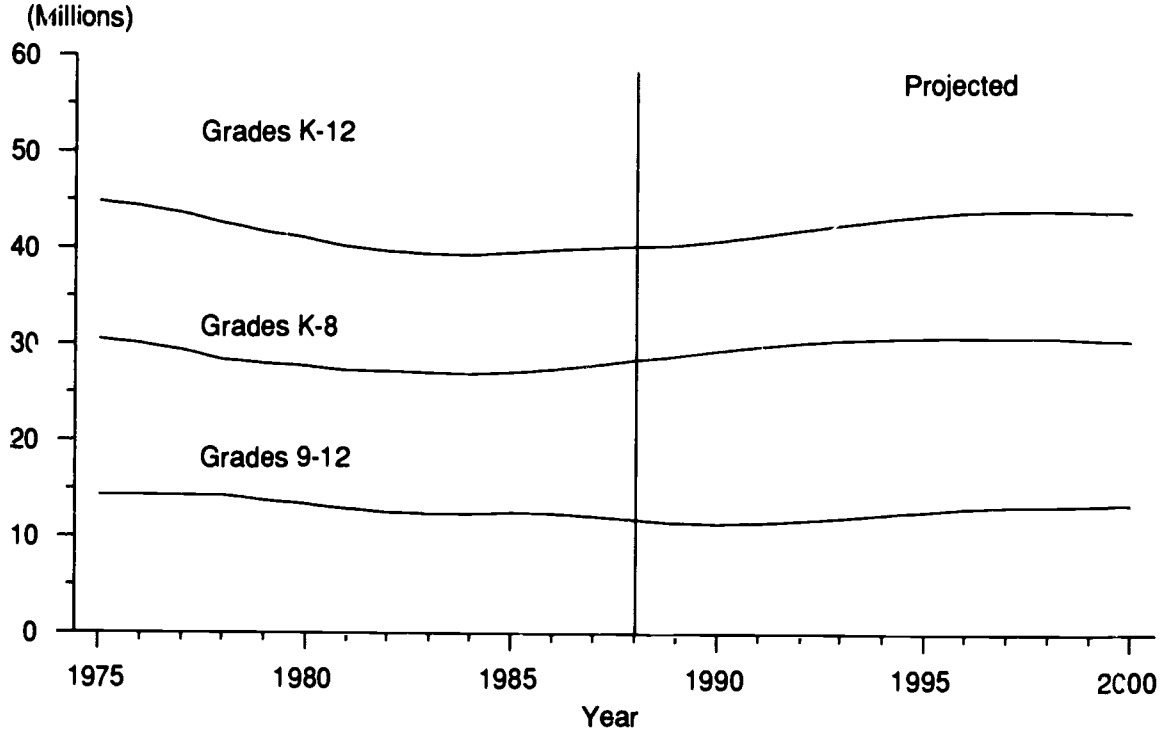


Figure 9.—Enrollment in private elementary and secondary schools, by grade level, with projections: Fall 1975 to fall 2000

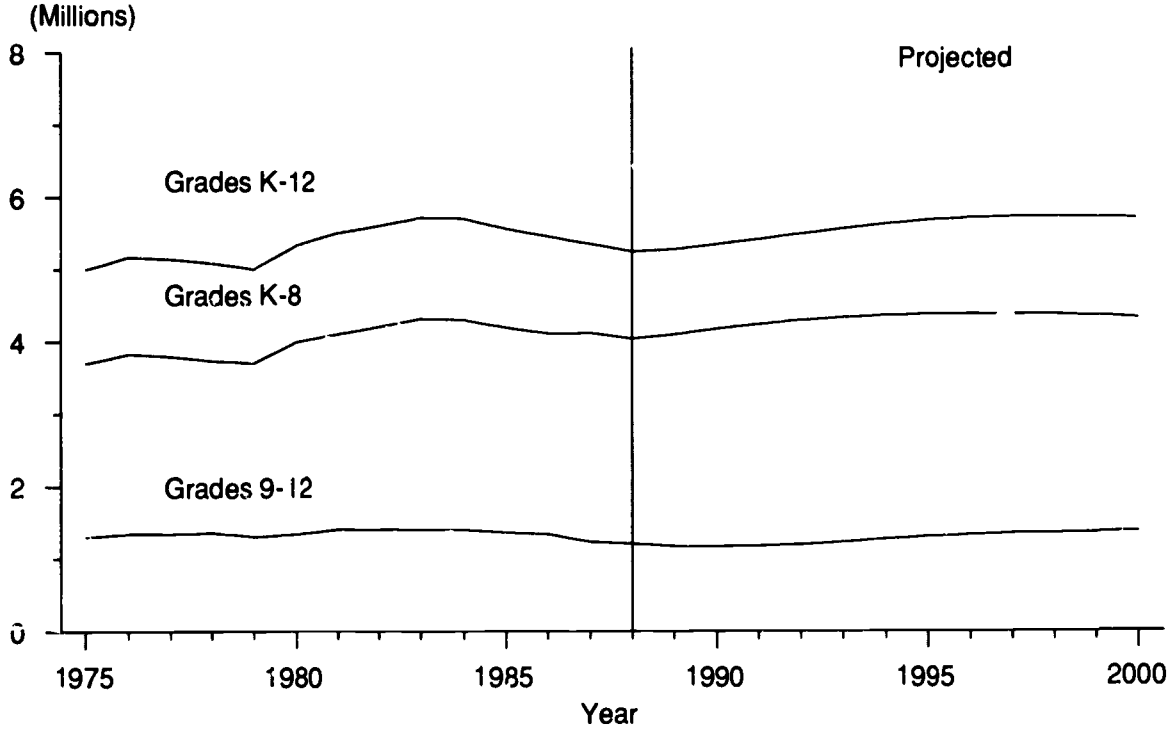
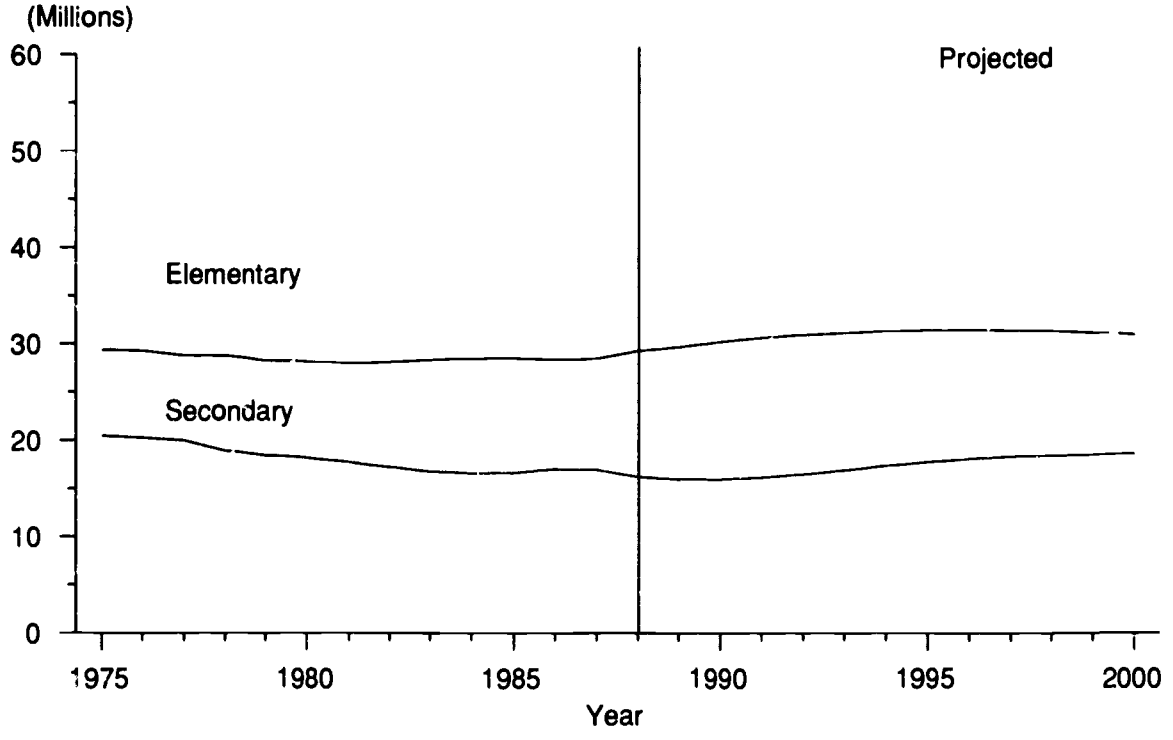


Figure 10.—Enrollment in elementary and secondary schools, by organizational level, with projections: Fall 1975 to fall 2000



Chapter 2

Higher Education Enrollment

Enrollment in institutions of higher education is expected to fluctuate through 1995 and then rise over the remainder of the projection period. The changes are due in part to the rising enrollment rates of 18- to 22-year-olds and increasing enrollment of older and part-time students. In addition, changes in demographics will affect enrollment levels. Changes in the traditional college-age population (18- to 24-year-olds), the 25- to 29-year-old population, and the 30- to 34-year-old population will generate fluctuations in enrollment over the next 7 years (figure 11). The resumption of annual enrollment increases to the year 2000 reflects, in part, the increase in the 18- to 24-year-old population beginning in 1996.

Three alternative projections of enrollment were developed for institutions of higher education. The middle alternative assumes that the age-specific enrollment rates of younger-age cohorts will increase over the projection period, while those for older age groups are expected to remain constant at levels consistent with the most recent enrollment rates. The low alternative assumes that age-specific enrollment rates will remain constant for all age groups at levels consistent with the most recent enrollment rates. Under the high alternative, the age-specific enrollment rates are projected to increase for younger and older-age cohorts.

In 1975, higher education enrollment numbered 11.2 million. In the late 1970s and early 1980s, older students, primarily women and part-time students, began to enroll in greater numbers. As a result, college enrollment increased to 12.5 million in 1983 (table 3 and figure 12). In 1984 and 1985, enrollment declined to 12.2 million. By 1988, it had risen to 12.8 million, exceeding its previous level attained in 1983 by nearly 400,000 students. Under the middle alternative, college enrollment is projected to rise to 13.4 million by the year 2000.

The rising enrollment rates of the younger age groups and the continued increase in older student enrollment are expected to compensate for the expected fewer numbers of younger students. Contrary to expectations, the college participation rates of the younger age groups have been rising since the early 1980s. There also may be small increases in enrollment, as the growth in the number of older students offsets fewer students under 25 years of age.

Under the low alternative, college enrollment is projected to decrease from 12.8 million in 1988 to 12.4 million by the year 2000. This alternative assumes that age-specific enrollment rates will hold constant at levels consistent with most recent rates. Since the enrollment rates remain constant over the projection period, the effects of declines in the college-age populations will lower college enrollment levels.

Under the high alternative, college enrollment is expected to reach 14.2 million in 1991 and then decline to 13.8 million in 1995 before rising to 14.4 million by the year 2000. This alternative assumes that age-specific enrollment rates for younger and older age groups will increase over the projection period. These high levels are expected to be maintained during the 1990s if the enrollment rates of the younger age groups remain above their 1987 levels and increased enrollment of older students offsets the enrollment declines of younger students.

Enrollment, by Sex of Student

Besides older and part-time students, women played a major role in the increase of enrollment between 1975 and 1988. The enrollment of women in college increased from 5.0 million in 1975 to 6.9 million in 1988. This number is expected to be 7.3 million by the year 2000. Women were 54 percent of all college enrollment in 1988 compared with only 51 percent in 1980. Women are expected to maintain their majority at 54 percent in the year 2000. The enrollment of men in college decreased from 6.1 million in 1975 to 5.9 million in 1988. This number is expected to be 6.1 million in the year 2000 (figure 13).

Enrollment, by Attendance Status

Full-time enrollment increased from 6.8 million in 1975 to 7.4 million in 1988. This number is expected to be 7.6 million by the year 2000. Full-time enrollment, which was 61 percent of total enrollment in 1975, is expected to be 57 percent in 2000. Part-time enrollment increased from 4.3 million in 1975 to 5.5 million in 1988 and is expected to be 5.8 million by the year 2000. Part-time enrollment accounted for 41 percent of all college enrollment in 1980, 43 percent in 1988, and is expected to remain at 43 percent in the year 2000 (figure 14).

Enrollment, by Control of Institution

Enrollment in public institutions grew from 8.8 million in 1975 to 10.0 million in 1988, an increase of 14 percent. By the year 2000, it is expected to be 10.4 million. Enrollment in private institutions increased from 2.4 million in 1975 to 2.8 million in 1988. By the year 2000, the number is expected to be 3.0 million (figure 15).

Enrollment in public 4-year institutions is projected to be 5.7 million by the year 2000, while enrollment in public 2-year institutions is expected to number 4.7 million in the year 2000. Enrollment in private 4-year institutions is expected to be 2.7 million in the year 2000, while enrollment in private 2-year institutions will be 263,000 in the year 2000.

Enrollment, by Type of Institution

The projections of enrollment in 4-year and 2-year colleges and universities are based on the assumption that the number of older students will increase, partially offsetting the expected decline in traditional college-age students, and that increasing proportions of these older students will be part-time.

As table 4 shows, enrollment in 4-year institutions increased from 7.2 million in 1975 to 8.0 million in 1988 (figure 16). The number is expected to be 8.4 million by the year 2000. Table 5 shows that enrollment in 2-year institutions rose from 4.0 million in 1975 to 4.8 million in 1988, and then is expected to number 5.0 million by the year 2000. Part-time enrollment in 2-year institutions rose from 2.2 million in 1975 to 3.1 million in 1988, and then is expected to be 3.2 million in 2000.

Enrollment, by Age

The alternative projections of college enrollments by age, sex, and attendance status are shown in table 6 (middle alternative projections), table 7 (low alternative projections), and table 8 (high alternative projections). These projections are based on age-specific enrollment data from the Bureau of the Census and enrollment data from NCES.

Under the middle alternative, the period from 1980 to 2000 will be one of changes in the age distribution of college students. The college enrollment of students under 25, which decreased more than 40,000 between 1980 and 1988, is expected to increase by nearly 500,000 to 8.0 million between 1988 and 2000. In contrast, the enrollment of students 25 years and over, which increased by 800,000 between 1980 and 1988, is projected to rise only 36,000 between 1988 and the year 2000. This is due, in part, to the declines in the 25- to 34-year-old population over the projection period. However, the 35- to 44-year-old population will continue to increase during this period, contributing to the modest growth during this period. The college enrollment of students age 25 to 29, which remained relatively unchanged at 1.9 million between 1980 and 1988 is expected to be 1.6 million by the year 2000. The number of students age 30 to 34, which rose from 1.2 million in 1980 to 1.3 million in 1988, is projected to return to 1.2 million by the year 2000. In contrast, the enrollment of students age 35 years and over, which increased from 1.4 million in 1980 to 2.0 million in 1988, is expected to increase to 2.6 million by the year 2000. The increase in enrollment of students 35 years and over is expected to offset the decrease in enrollment of students age 25 to 34.

As a result, the proportion of students under 25, which fell from 62.5 percent in 1980 to 58.5 percent in 1988, is projected to be 59.8 percent by the year 2000 (figure 17). The proportion of students age 25 to 29, which decreased from 15.4 percent in 1980 to 15.1 percent in 1988, is projected to fall further, to 11.9 percent, by the year 2000. The proportion for students age 30 to 34, which was 10.3 percent in 1980 and 1988, is projected to decrease to 8.8 percent by the year 2000. The proportion 35 years and over rose from 11.8 percent in 1980 to 16.1 percent in 1988. This proportion is projected to be 19.5 percent by the year 2000, nearly 20 percent of total enrollment.

Undergraduate Enrollment

Undergraduate enrollment increased from 9.7 million in 1975 to 11.1 million in 1988. This number is expected to be 11.6 million by the year 2000 (table 14 and figure 20). Full-time students are expected to account for most of the increase. Undergraduate enrollment in public institutions increased from 7.8 million in 1975 to 9.0 million in 1988 and is expected to be 9.3 million by the year 2000. In private institutions, undergraduate enrollment rose from 1.9 million in 1975 to 2.2 million in 1988. By the year 2000, this number is projected to be 2.3 million.

Postbaccalaureate Enrollment

Graduate enrollment rose from 1.3 million in 1975 to 1.4 million in 1988. This number is expected to be 1.5 million by the year 2000 (table 17 and figure 21). First-professional enrollment increased from 242,000 in 1975 to 268,000 in 1988 and is expected to be 269,000 by the year 2000 (table 20 and figure 21).

Full-time-equivalent Enrollment

Full-time-equivalent enrollment increased from 8.5 million in 1975 to 9.3 million in 1988. This number is projected to be 9.7 million by the year 2000 (table 23 and figure 22).

Table 23 shows that the full-time-equivalent of undergraduate enrollment in 4-year institutions, which was 5.3 million in 1988, will be 5.6 million in 2000. The full-time-equivalent of undergraduate enrollment in 2-year institutions, which was 2.8 million in 1988, will be 2.9 million by the year 2000.

In public institutions, full-time-equivalent enrollment, which was 6.9 million in 1988, will be 7.3 million by the year 2000 (table 24 and figure 23). In private institutions, full-time-equivalent enrollment, which was 2.3 million in 1988, will be 2.4 million by the year 2000 (table 25 and figure 23).

Figure 11.—College-age populations, with projections: 1975 to 2000

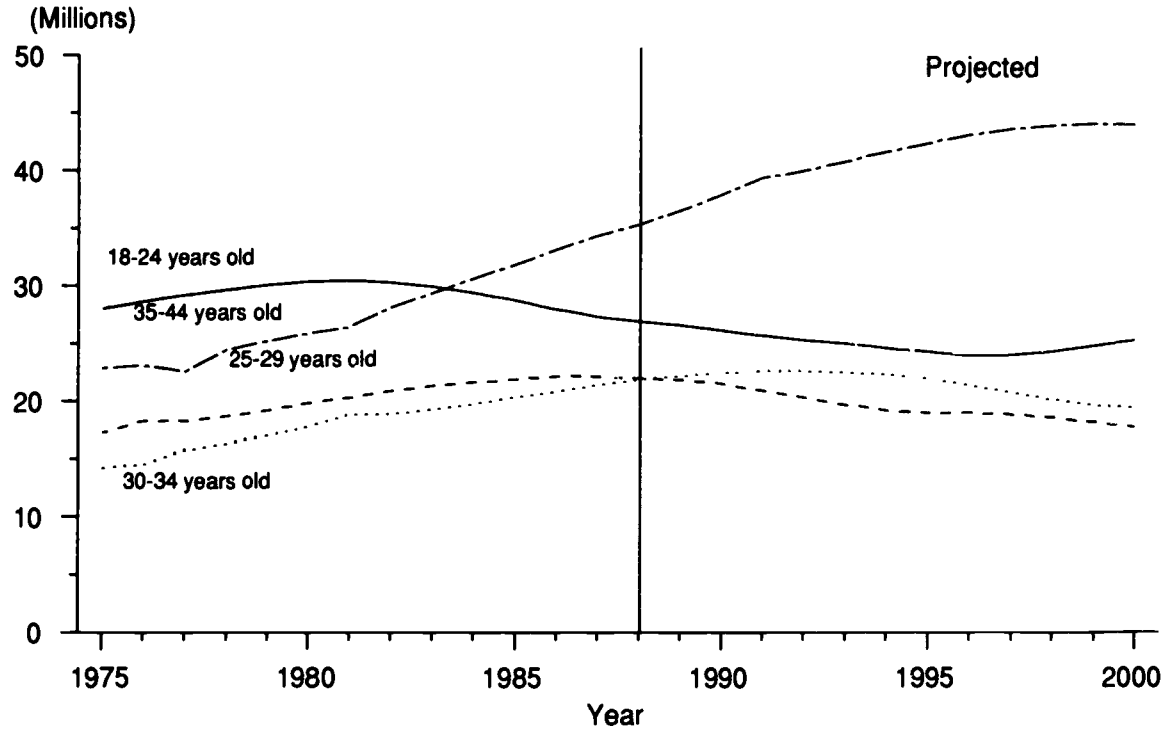


Figure 12.—Enrollment in institutions of higher education, with alternative projections: Fall 1975 to fall 2000

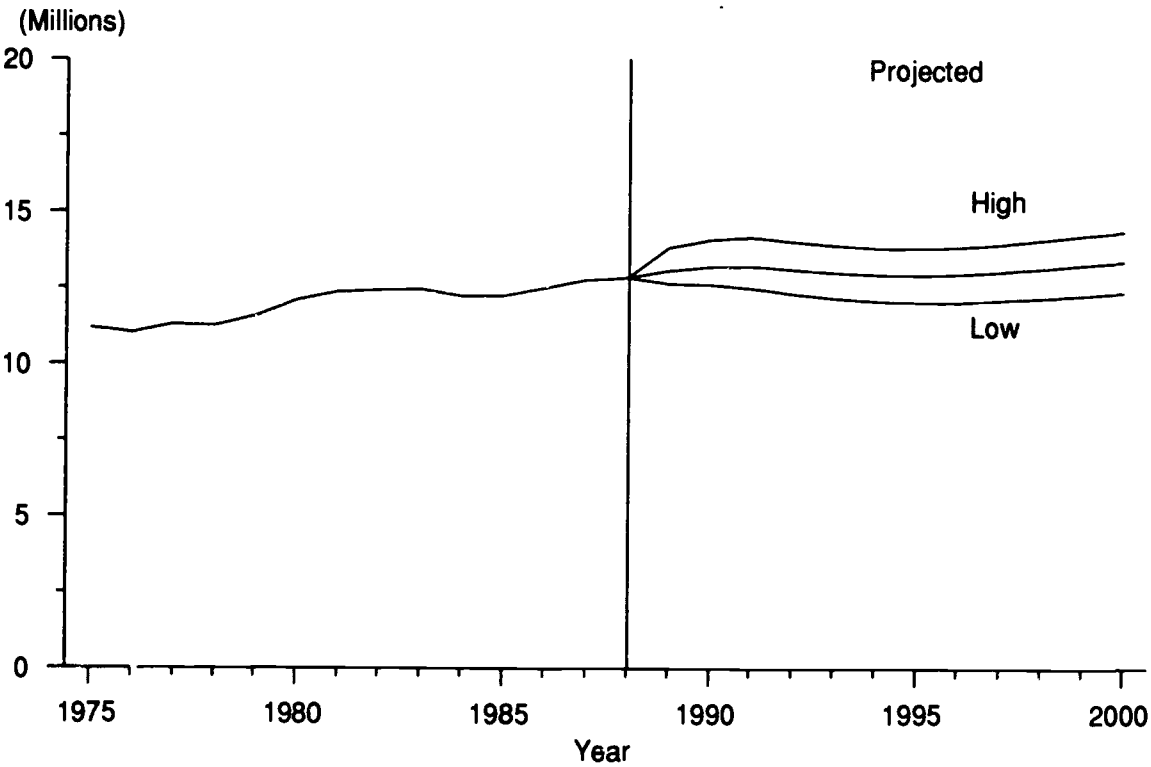


Figure 13.—Enrollment in institutions of higher education, by sex, with middle alternative projections: Fall 1975 to fall 2000

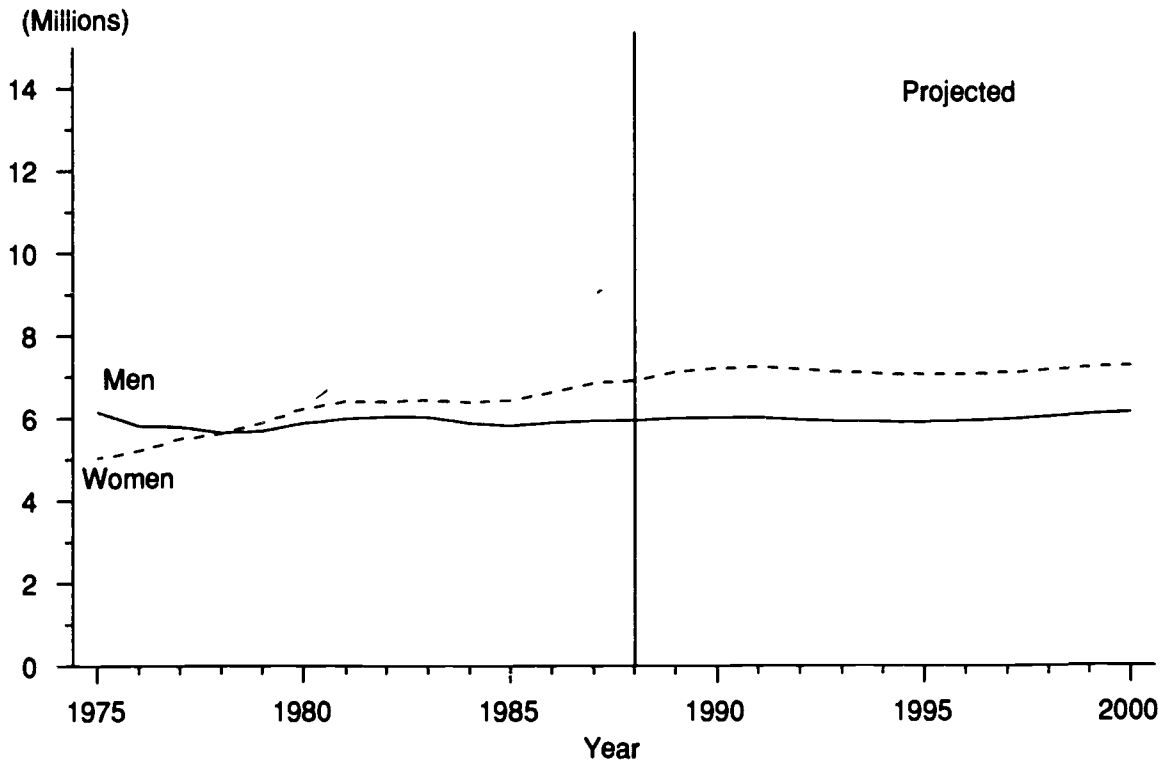


Figure 14.—Enrollment in institutions of higher education, by attendance status, with middle alternative projections: Fall 1975 to fall 2000

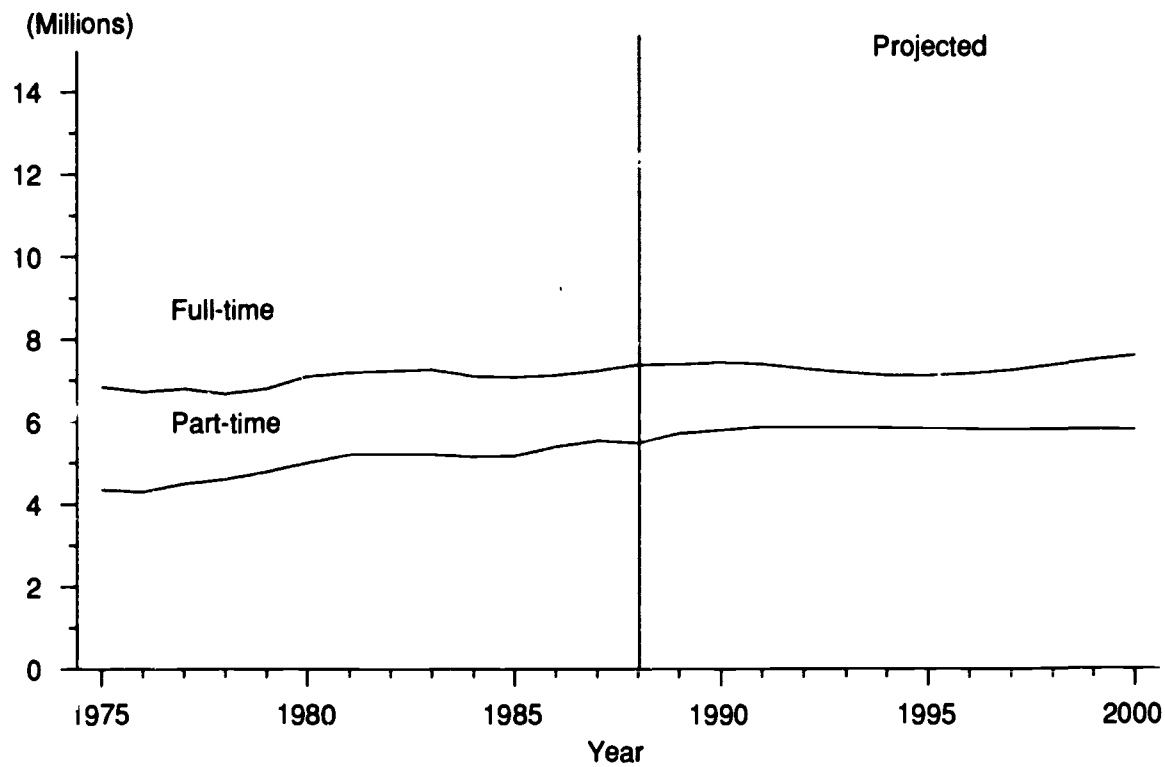


Figure 15.—Enrollment in institutions of higher education, by control of institution, with alternative projections: Fall 1975 to fall 2000

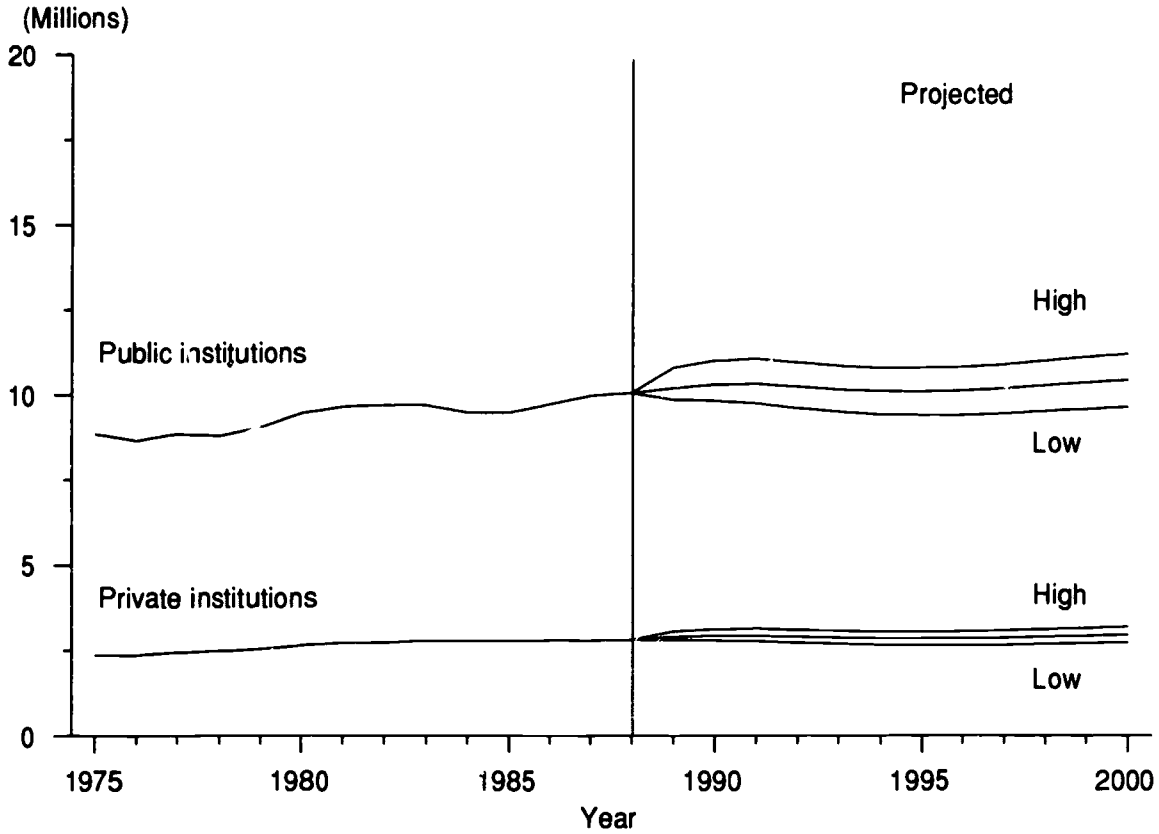


Figure 16.—Enrollment in institutions of higher education, by type of institution, with alternative projections: Fall 1975 to fall 2000

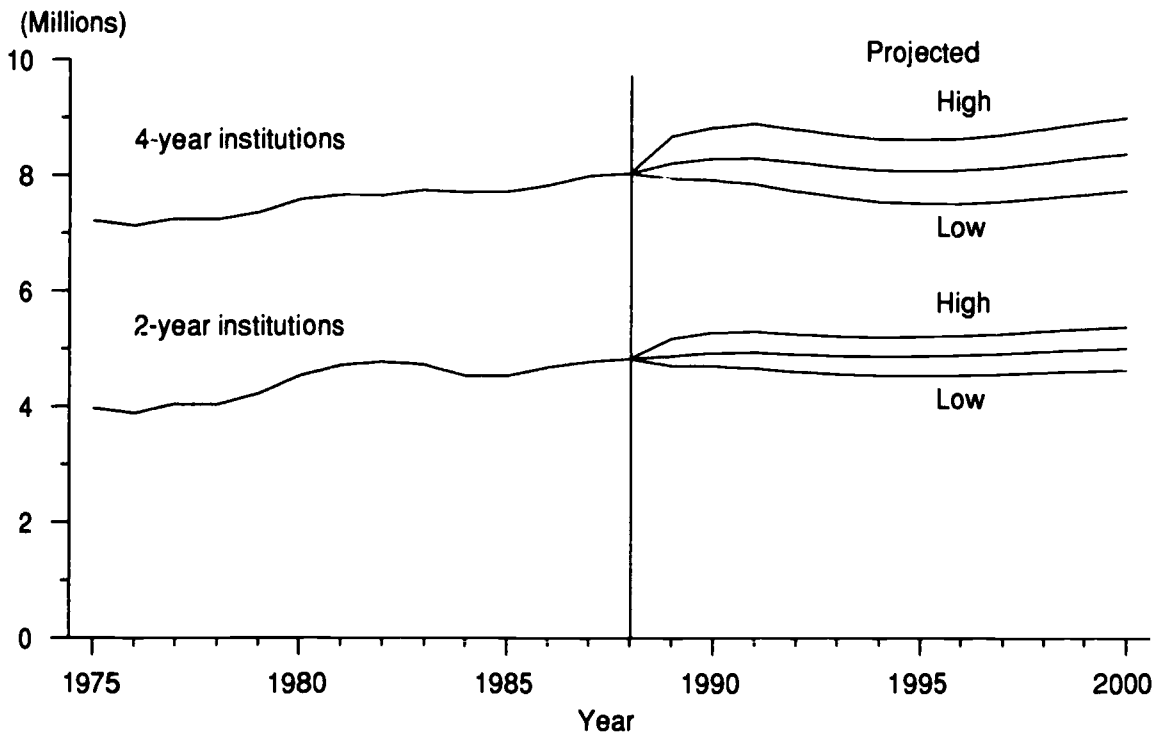
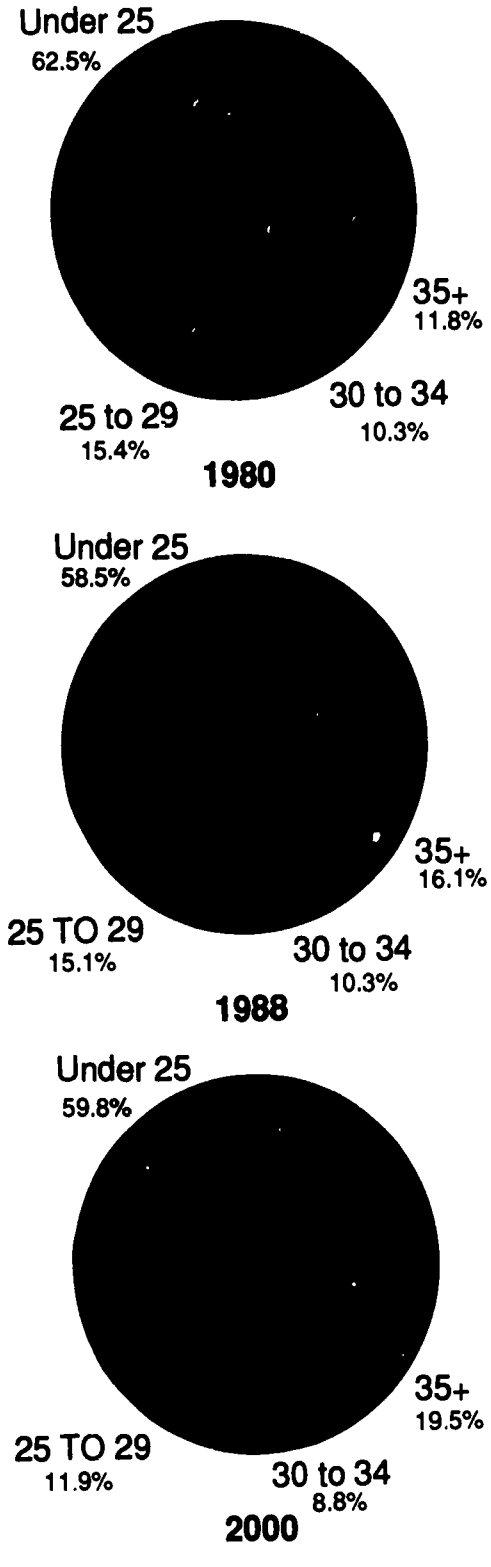
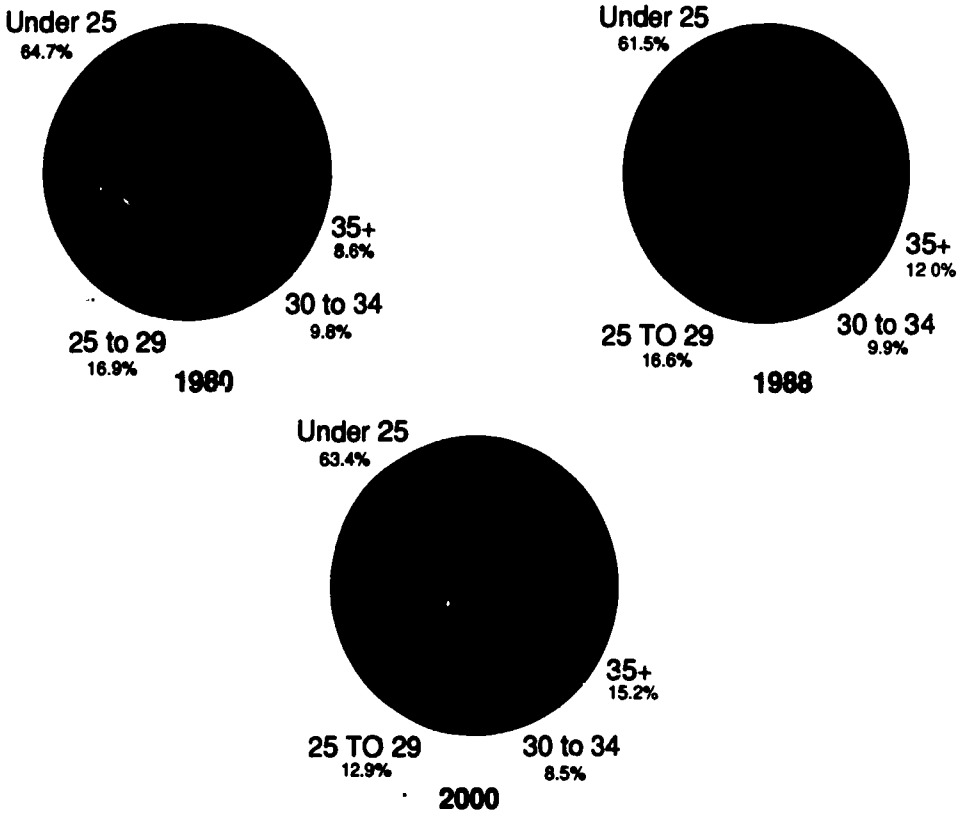


Figure 17.—Percentage distribution of enrollment in institutions of higher education, by age group: Fall 1980, 1988, and 2000



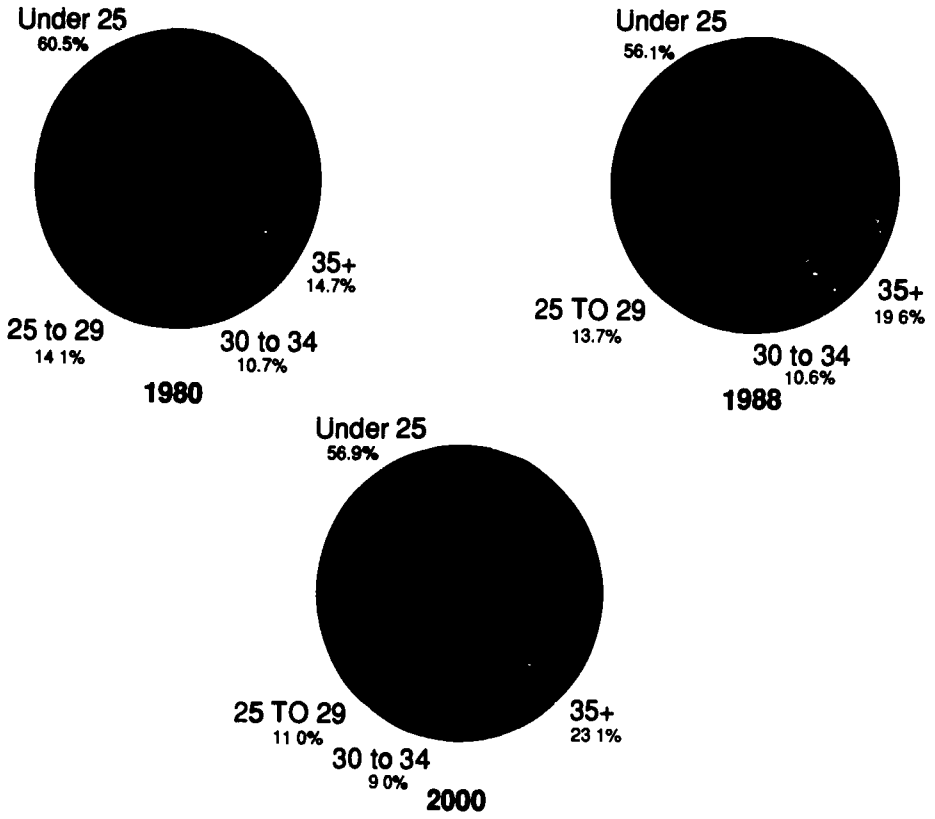
NOTE: The age distribution for the year 2000 is based on the middle alternative projections.

Figure 18.—Percentage distribution of men enrolled in institutions of higher education, by age group: Fall 1980, 1988, and 2000



NOTE: The age distribution for the year 2000 is based on the middle alternative projections.

Figure 19.–Percentage distribution of women enrolled in institutions of higher education, by age group: Fall 1980, 1988, and 2000



NOTE: The age distribution for the year 2000 is based on the middle alternative projections.

Figure 20.—Undergraduate enrollment in institutions of higher education, with alternative projections: Fall 1975 to fall 2000

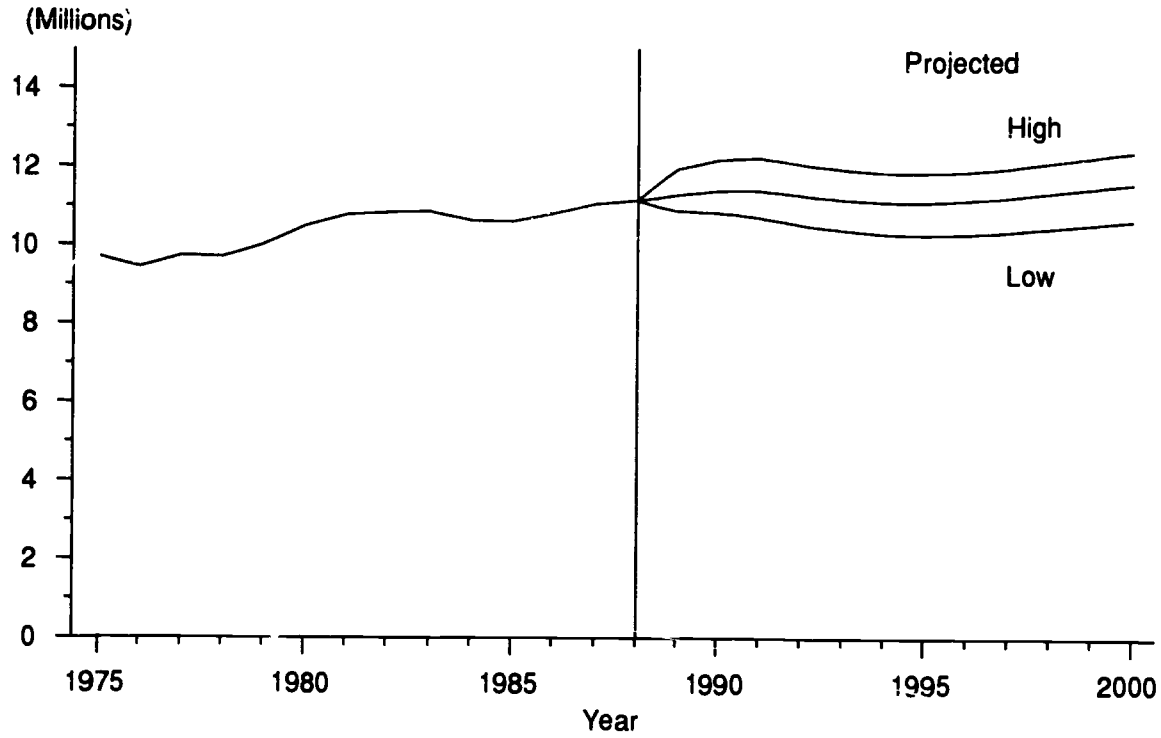


Figure 21.—Postbaccalaureate enrollment in institutions of higher education, with alternative projections: Fall 1975 to fall 2000

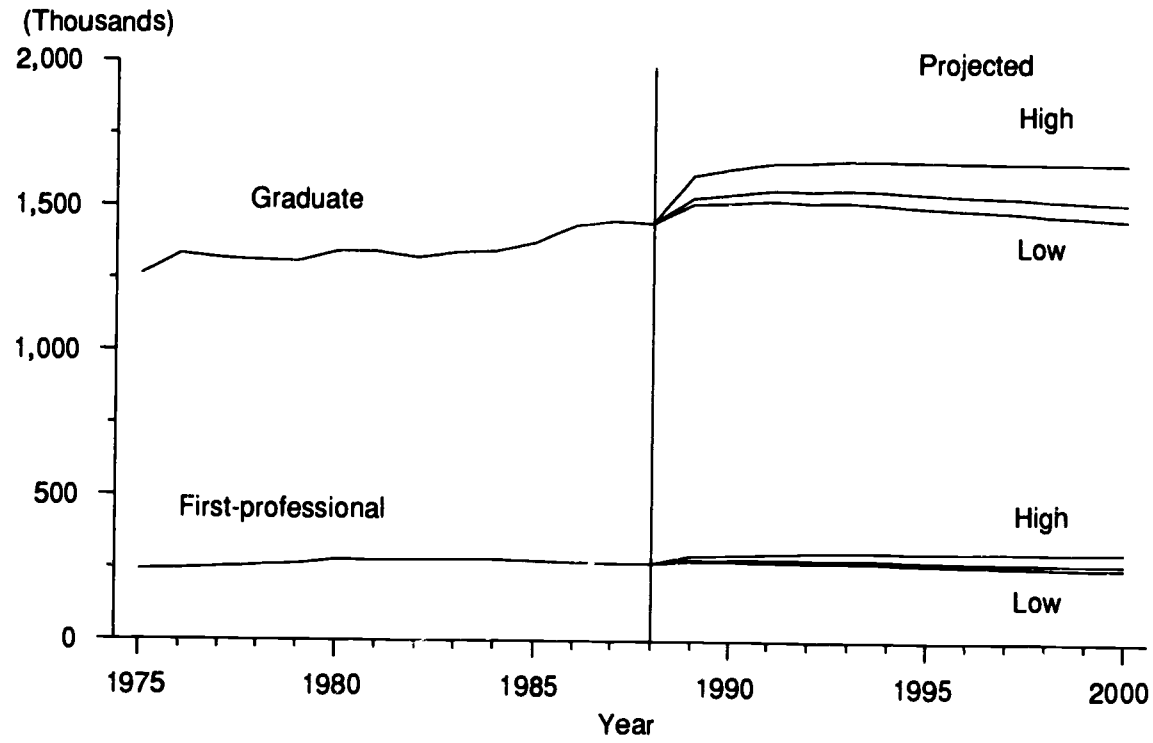


Figure 22.—Full-time-equivalent enrollment in institutions of higher education, with alternative projections: Fall 1975 to fall 2000

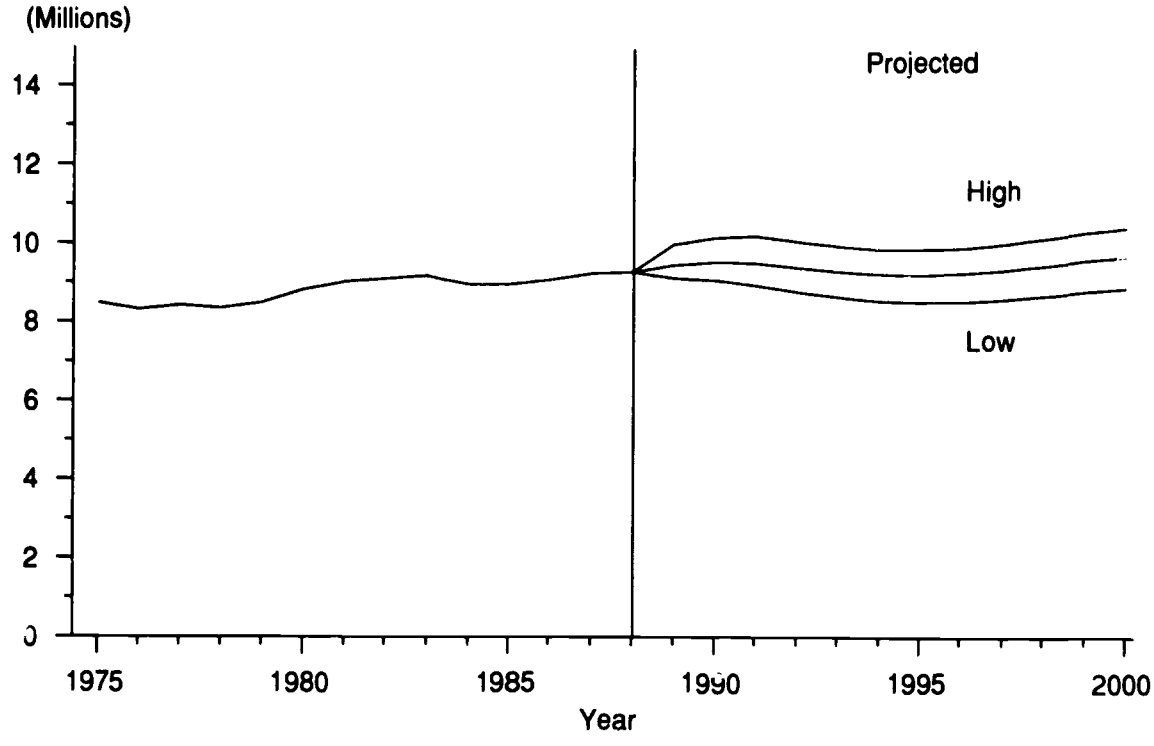


Figure 23.—Full-time-equivalent enrollment in institutions of higher education, by control, with alternative projections: Fall 1975 to fall 2000

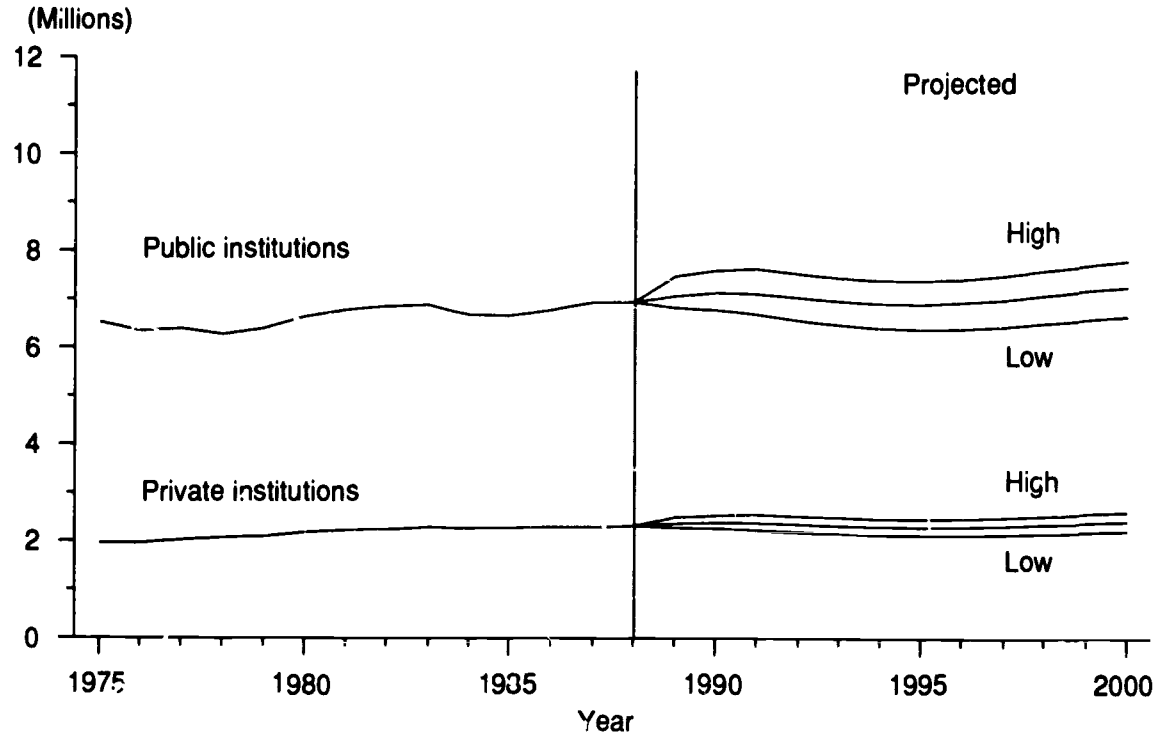


Table 3.—Total enrollment in all institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1975	11,185	6,149	5,036	6,841	4,344	8,835	2,350
1976	11,012	5,811	5,201	6,717	4,295	8,653	2,359
1977	11,286	5,789	5,497	6,793	4,493	8,847	2,439
1978	11,260	5,641	5,619	6,668	4,592	8,786	2,474
1979	11,570	5,683	5,887	6,794	4,776	9,037	2,533
1980	12,097	5,874	6,223	7,097	4,999	9,457	2,640
1981	12,372	5,975	6,397	7,181	5,190	9,647	2,725
1982	12,426	6,031	6,394	7,221	5,205	9,696	2,730
1983	12,465	6,024	6,441	7,261	5,204	9,683	2,782
1984	12,242	5,864	6,378	7,098	5,144	9,477	2,765
1985	12,247	5,818	6,429	7,075	5,172	9,479	2,768
1986	12,505	5,885	6,619	7,120	5,384	9,715	2,790
1987	12,768	5,932	6,836	7,232	5,537	9,975	2,793
1988 *	12,849	5,946	6,904	7,371	5,478	10,045	2,804
				Middle alternative projections			
1989	13,087	5,984	7,103	7,377	5,710	10,188	2,899
1990	13,213	6,010	7,203	7,428	5,785	10,291	2,922
1991	13,233	6,002	7,231	7,378	5,855	10,308	2,925
1992	13,126	5,952	7,174	7,274	5,852	10,228	2,898
1993	13,026	5,920	7,106	7,179	5,847	10,154	2,872
1994	12,955	5,901	7,054	7,117	5,838	10,102	2,853
1995	12,935	5,893	7,043	7,104	5,831	10,090	2,845
1996	12,973	5,924	7,049	7,157	5,816	10,121	2,852
1997	13,048	5,959	7,089	7,237	5,811	10,178	2,870
1998	13,162	6,014	7,148	7,356	5,806	10,264	2,898
1999	13,282	6,075	7,207	7,481	5,801	10,356	2,926
2000	13,378	6,124	7,254	7,585	5,793	10,427	2,951
				Low alternative projections			
1989	12,653	5,892	6,761	7,105	5,548	9,849	2,804
1990	12,616	5,864	6,752	7,035	5,581	9,821	2,795
1991	12,509	5,802	6,707	6,902	5,607	9,742	2,767
1992	12,323	5,707	6,616	6,747	5,576	9,599	2,724
1993	12,194	5,638	6,556	6,633	5,561	9,502	2,692
1994	12,082	5,576	6,506	6,543	5,539	9,419	2,663
1995	12,051	5,554	6,497	6,525	5,526	9,399	2,652
1996	12,051	5,548	6,503	6,540	5,511	9,401	2,650
1997	12,106	5,571	6,535	6,602	5,504	9,442	2,664
1998	12,193	5,611	6,582	6,701	5,492	9,510	2,683
1999	12,280	5,655	6,625	6,800	5,480	9,575	2,705
2000	12,359	5,695	6,664	6,892	5,467	9,634	2,725
				High alternative projections			
1989	13,847	6,493	7,354	7,772	6,075	10,786	3,061
1990	14,099	6,583	7,516	7,895	6,204	10,988	3,111
1991	14,187	6,601	7,586	7,925	6,262	11,052	3,135
1992	14,042	6,526	7,516	7,799	6,243	10,941	3,101
1993	13,920	6,473	7,447	7,692	6,228	10,848	3,072
1994	13,828	6,432	7,396	7,613	6,215	10,781	3,047
1995	13,828	6,438	7,390	7,618	6,210	10,784	3,044
1996	13,861	6,456	7,405	7,664	6,197	10,808	3,053
1997	13,957	6,504	7,453	7,764	6,193	10,881	3,076
1998	14,099	6,575	7,524	7,907	6,192	10,989	3,110
1999	14,243	6,652	7,591	8,052	6,191	11,096	3,147
2000	14,366	6,714	7,652	8,182	6,184	11,186	3,180

* Estimate.

NOTE: Projections are based on data through 1987 Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 4.—Total enrollment in 4-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1975	7,215	3,986	3,230	5,079	2,137	4,998	2,217
1976	7,129	3,831	3,298	5,053	2,076	4,902	2,227
1977	7,243	3,823	3,419	5,138	2,104	4,945	2,298
1978	7,232	3,755	3,476	5,109	2,122	4,912	2,320
1979	7,353	3,762	3,591	5,202	2,151	4,980	2,373
1980	7,571	3,827	3,743	5,344	2,226	5,129	2,442
1981	7,655	3,852	3,805	5,387	2,270	5,166	2,489
1982	7,654	3,862	3,793	5,381	2,274	5,176	2,478
1983	7,741	3,892	3,848	5,434	2,306	5,223	2,518
1984	7,711	3,845	3,863	5,394	2,314	5,198	2,513
1985	7,716	3,814	3,898	5,384	2,328	5,210	2,506
1986	7,824	3,824	4,000	5,423	2,401	5,300	2,524
1987	7,990	3,858	4,132	5,522	2,468	5,432	2,558
1988 *	8,027	3,850	4,177	5,611	2,416	5,478	2,550
Middle alternative projections							
1989	8,212	3,906	4,306	5,615	2,597	5,569	2,643
1990	8,289	3,918	4,371	5,660	2,629	5,623	2,666
1991	8,298	3,912	4,386	5,636	2,662	5,628	2,670
1992	8,224	3,876	4,348	5,560	2,664	5,578	2,646
1993	8,147	3,853	4,294	5,481	2,666	5,525	2,622
1994	8,086	3,834	4,252	5,423	2,663	5,483	2,603
1995	8,066	3,825	4,241	5,408	2,658	5,471	2,595
1996	8,086	3,843	4,243	5,438	2,648	5,486	2,600
1997	8,137	3,866	4,271	5,496	2,641	5,521	2,616
1998	8,214	3,902	4,312	5,582	2,632	5,574	2,640
1999	8,299	3,944	4,355	5,676	2,623	5,634	2,665
2000	8,371	3,979	4,392	5,758	2,613	5,683	2,688
Low alternative projections							
1989	7,947	3,859	4,088	5,406	2,541	5,389	2,558
1990	7,917	3,841	4,076	5,358	2,559	5,367	2,550
1991	7,847	3,804	4,043	5,270	2,577	5,319	2,528
1992	7,722	3,743	3,979	5,155	2,567	5,233	2,489
1993	7,627	3,694	3,933	5,062	2,565	5,167	2,460
1994	7,542	3,647	3,895	4,985	2,557	5,109	2,433
1995	7,513	3,628	3,885	4,964	2,549	5,091	2,422
1996	7,508	3,621	3,887	4,968	2,540	5,089	2,419
1997	7,546	3,636	3,910	5,012	2,534	5,115	2,431
1998	7,606	3,663	3,943	5,084	2,522	5,158	2,448
1999	7,668	3,693	3,975	5,157	2,511	5,202	2,466
2000	7,729	3,723	4,006	5,229	2,500	5,245	2,484
High alternative projections							
1989	8,673	4,217	4,456	5,917	2,756	5,883	2,790
1990	8,823	4,263	4,560	6,016	2,807	5,986	2,837
1991	8,891	4,281	4,610	6,053	2,838	6,031	2,860
1992	8,793	4,235	4,558	5,961	2,832	5,963	2,830
1993	8,702	4,199	4,503	5,873	2,829	5,898	2,804
1994	8,628	4,166	4,462	5,804	2,824	5,848	2,780
1995	8,620	4,165	4,455	5,801	2,819	5,843	2,777
1996	8,635	4,173	4,462	5,826	2,809	5,852	2,783
1997	8,702	4,207	4,495	5,900	2,802	5,898	2,804
1998	8,798	4,254	4,544	6,004	2,794	5,964	2,834
1999	8,901	4,308	4,593	6,114	2,787	6,035	2,866
2000	8,993	4,353	4,640	6,215	2,778	6,098	2,895

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 5.—Total enrollment in 2-year institutions of higher education, by sex and attendance status of student and control of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Sex		Attendance status		Control	
		Men	Women	Full-time	Part-time	Public	Private
1975	3,970	2,166	1,805	1,762	2,209	3,836	134
1976	3,883	1,980	1,904	1,665	2,219	3,752	132
1977	4,043	1,965	2,077	1,654	2,388	3,902	140
1978	4,028	1,885	2,143	1,558	2,470	3,874	155
1979	4,217	1,924	2,294	1,551	2,627	4,057	160
1980	4,526	2,047	2,479	1,754	2,772	4,329	197
1981	4,716	2,124	2,591	1,796	2,919	4,481	235
1982	4,772	2,170	2,602	1,839	2,933	4,520	252
1983	4,723	2,132	2,592	1,827	2,897	4,459	265
1984	4,531	2,018	2,514	1,703	2,829	4,279	252
1985	4,531	2,005	2,530	1,691	2,844	4,270	261
1986	4,680	2,061	2,619	1,697	2,983	4,414	266
1987	4,776	2,073	2,703	1,709	3,067	4,541	235
1988 *	4,822	2,095	2,727	1,760	3,062	4,567	255
Middle alternative projections							
1989	4,875	2,078	2,797	1,762	3,113	4,619	256
1990	4,924	2,092	2,832	1,768	3,156	4,668	256
1991	4,935	2,090	2,845	1,742	3,193	4,680	255
1992	4,902	2,076	2,826	1,714	3,188	4,650	252
1993	4,879	2,067	2,812	1,698	3,181	4,629	250
1994	4,869	2,067	2,802	1,694	3,175	4,619	250
1995	4,869	2,068	2,801	1,696	3,173	4,619	250
1996	4,887	2,081	2,806	1,719	3,168	4,635	252
1997	4,911	2,093	2,818	1,741	3,170	4,657	254
1998	4,948	2,112	2,836	1,774	3,174	4,690	258
1999	4,983	2,131	2,852	1,805	3,178	4,722	261
2000	5,007	2,145	2,862	1,827	3,180	4,744	263
Low alternative projections							
1989	4,706	2,033	2,673	1,699	3,007	4,460	246
1990	4,699	2,023	2,676	1,677	3,022	4,454	245
1991	4,662	1,998	2,664	1,632	3,030	4,423	239
1992	4,601	1,964	2,637	1,592	3,009	4,366	235
1993	4,567	1,944	2,623	1,571	2,996	4,335	232
1994	4,540	1,929	2,611	1,558	2,982	4,310	230
1995	4,538	1,926	2,612	1,561	2,977	4,308	230
1996	4,543	1,927	2,616	1,572	2,971	4,312	231
1997	4,560	1,935	2,625	1,590	2,970	4,327	233
1998	4,587	1,948	2,639	1,617	2,970	4,352	235
1999	4,612	1,962	2,650	1,643	2,969	4,373	239
2000	4,630	1,972	2,658	1,663	2,967	4,389	241
High alternative projections							
1989	5,174	2,276	2,898	1,855	3,319	4,903	271
1990	5,276	2,320	2,956	1,879	3,397	5,002	274
1991	5,296	2,320	2,976	1,872	3,424	5,021	275
1992	5,249	2,291	2,958	1,838	3,411	4,978	271
1993	5,218	2,274	2,944	1,819	3,399	4,950	268
1994	5,200	2,266	2,934	1,809	3,391	4,933	267
1995	5,208	2,273	2,935	1,817	3,391	4,941	267
1996	5,226	2,283	2,943	1,838	3,388	4,956	270
1997	5,255	2,297	2,958	1,864	3,391	4,983	272
1998	5,301	2,321	2,980	1,903	3,398	5,025	276
1999	5,342	2,344	2,998	1,938	3,404	5,061	281
2000	5,373	2,361	3,012	1,967	3,406	5,088	285

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 6.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with middle alternative projections: 50 States and D.C., fall 1980, 1985, 1988, 1995, and 2000

(In thousands)

Age	1980 (Estimated)			1985 (Estimated)			1988 (Estimated)			1995 (Projected)			2000 (Projected)		
	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
Total	12,097	7,097	4,999	12,247	7,075	5,172	12,849	7,371	5,478	12,935	7,104	5,831	13,378	7,585	5,793
14 to 17 years	247	216	31	235	203	32	248	163	85	236	128	108	282	160	121
18 to 19 years	2,901	2,580	320	2,600	2,322	278	2,909	2,597	312	2,882	2,509	373	3,239	2,821	419
20 to 21 years	2,423	2,060	364	2,383	1,975	408	2,392	1,958	434	2,411	1,926	485	2,664	2,122	542
22 to 24 years	1,989	1,174	815	1,933	1,22[illegible]	705	1,967	1,238	729	1,886	1,137	749	1,827	1,115	712
25 to 29 years	1,871	610	1,261	1,953	695	1,258	1,938	714	1,224	1,687	620	1,067	1,588	591	997
30 to 34 years	1,243	264	979	1,261	310	951	1,326	325	1,001	1,334	321	1,013	1,178	283	894
35 years and over	1,422	193	1,229	1,885	345	1,540	2,069	377	1,692	2,498	462	2,036	2,604	494	2,110
Men	5,874	3,689	2,185	5,818	3,608	2,21[illegible]	5,946	3,636	2,310	5,893	3,455	2,438	6,124	3,699	2,425
14 to 17 years	99	84	15	121	102	19	111	75	36	111	49	62	144	74	70
18 to 19 years	1,375	1,229	146	1,230	1,108	122	1,377	1,228	149	1,380	1,207	173	1,552	1,358	195
20 to 21 years	1,259	1,104	154	1,216	1,027	189	1,170	974	196	1,158	929	229	1,285	1,025	260
22 to 24 years	1,064	687	377	1,048	730	318	990	668	322	928	599	329	901	590	311
25 to 29 years	993	379	615	991	395	596	989	394	595	847	332	514	793	311	482
30 to 34 years	576	129	447	574	149	424	590	162	428	591	160	431	521	141	380
35 years and over	507	77	430	639	97	542	715	134	581	878	177	701	928	200	729
Women	6,223	[illegible],409	2,813	6,429	3,468	2,961	6,904	3,735	3,169	7,042	3,649	3,393	7,254	3,886	3,368
14 to 17 years	148	132	17	113	101	12	137	88	49	126	79	47	138	87	51
18 to 19 years	1,526	1,352	174	1,370	1,214	156	1,532	1,369	163	1,502	1,302	200	1,687	1,463	224
20 to 21 years	1,165	955	209	1,166	948	218	1,222	984	238	1,253	997	256	1,379	1,097	282
22 to 24 years	925	487	438	885	497	388	977	570	407	958	538	420	925	525	401
25 to 29 years	878	232	646	962	299	662	949	320	629	840	288	552	795	280	516
30 to 34 years	667	135	531	687	161	527	736	163	573	743	161	582	656	142	514
35 years and over	914	115	799	1,246	248	998	1,354	243	1,111	1,620	285	1,336	1,676	294	1,382

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, "National Estimates of Higher Education. School Year 1988–89," *Early Estimates*; and U.S Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P–25, No. 1018. (This table was prepared March 1989.)

Table 7.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with low alternative projections: 50 States and D.C., fall 1980, 1985, 1988, 1995, and 2000

(In thousands)

Age	Total	1980 (Estimated)		Total	1985 (Estimated)		Total	1988 (Estimated)		Total	1995 (Projected)		Total	2000 (Projected)	
		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time
Total	**12,097**	**7,097**	**4,999**	**12,247**	**7,075**	**5,172**	**12,849**	**7,371**	**5,478**	**12,051**	**6,525**	**5,526**	**12,359**	**6,892**	**5,467**
14 to 17 years	247	216	31	235	203	32	249	164	85	207	146	61	229	162	67
18 to 19 years	2,901	2,580	320	2,600	2,322	278	2,909	2,597	312	2,554	2,244	310	2,866	2,519	348
20 to 21 years	2,423	2,060	364	2,383	1,975	408	2,392	1,958	434	2,097	1,707	390	2,303	1,875	428
22 to 24 years	1,989	1,174	815	1,933	1,227	705	1,967	1,238	729	1,710	1,060	650	1,652	1,029	623
25 to 29 years	1,871	610	1,261	1,953	695	1,258	1,939	714	1,224	1,668	601	1,067	1,560	563	997
30 to 34 years	1,243	264	979	1,261	310	951	1,326	325	1,001	1,334	321	1,013	1,178	283	894
35 years and over	1,422	193	1,229	1,885	345	1,540	2,069	377	1,692	2,481	445	2,036	2,571	461	2,110
Men	5,874	3,689	2,185	5,818	3,608	2,211	5,946	3,636	2,310	5,554	3,261	2,293	5,695	3,434	2,261
14 to 17 years	99	84	15	121	102	19	112	75	36	96	67	29	105	74	32
18 to 19 years	1,375	1,229	146	1,230	1,108	122	1,377	1,228	149	1,224	1,080	144	1,373	1,212	161
20 to 21 years	1,259	1,104	154	1,216	1,027	189	1,171	974	196	1,055	873	182	1,158	958	200
22 to 24 years	1,064	687	377	1,048	730	318	991	668	322	879	587	292	850	571	279
25 to 29 years	993	379	615	991	395	596	990	394	595	847	332	514	793	311	482
30 to 34 years	576	129	447	574	149	424	590	162	428	591	160	431	521	141	380
35 years and over	507	77	430	639	97	542	715	134	581	861	160	701	895	167	729
Women	6,223	3,409	2,813	6,429	3,468	2,961	6,904	3,735	3,169	6,497	3,264	3,233	6,664	3,458	3,206
14 to 17 years	148	132	17	113	101	12	137	88	49	111	79	32	124	89	35
18 to 19 years	1,526	1,352	174	1,370	1,214	156	1,531	1,369	163	1,330	1,164	166	1,493	1,307	186
20 to 21 years	1,165	955	209	1,166	948	218	1,221	984	238	1,042	834	208	1,146	918	228
22 to 24 years	925	487	438	885	497	388	977	570	407	831	472	358	802	459	344
25 to 29 years	878	232	646	962	299	662	949	320	629	821	269	552	767	251	516
30 to 34 years	667	135	531	687	161	527	735	163	573	743	161	582	656	142	514
35 years and over	914	115	799	1,246	248	998	1,354	243	1,111	1,620	285	1,336	1,676	294	1,382

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, "National Estimates of Higher Education: School Year 1988–89," *Early Estimates*; and U.S Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, No 1018 (This table was prepared March 1989.)

Table 8.—Enrollment in all institutions of higher education, by age, sex, and attendance status, with high alternative projections: 50 States and D.C., fall 1980, 1985, 1988, 1995, and 2000

(In thousands)

Age	Total	1980 (Estimated)		Total	1985 (Estimated)		Total	1988 (Estimated)		Total	1995 (Projected)		Total	2000 (Projected)	
		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time		Full-time	Part-time
Total	**12,097**	**7,097**	**4,999**	**12,247**	**7,075**	**5,172**	**12,849**	**7,371**	**5,478**	**13,828**	**7,618**	**6,210**	**14,366**	**8,182**	**6,184**
14 to 17 years	247	216	31	235	203	32	249	164	85	300	158	142	337	173	163
18 to 19 years	2,901	2,580	320	2,600	2,322	278	2,909	2,597	312	3,066	2,649	417	3,445	2,974	472
20 to 21 years	2,423	2,060	364	2,383	1,975	408	2,392	1,958	434	2,584	2,039	546	2,841	2,241	600
22 to 24 years	1,989	1,174	815	1,933	1,227	705	1,967	1,238	729	2,015	1,198	817	1,942	1,168	774
25 to 29 years	1,871	610	1,261	1,953	695	1,258	1,939	714	1,224	1,790	652	1,138	1,695	631	1,064
30 to 34 years	1,243	264	979	1,261	310	951	1,326	325	1,001	1,362	330	1,032	1,206	291	915
35 years and over	1,422	193	1,229	1,885	345	1,540	2,069	377	1,692	2,712	593	2,119	2,898	703	2,196
Men	5,874	3,689	2,185	5,818	3,608	2,211	5,946	3,636	2,310	6,438	3,758	2,680	6,714	4,043	2,671
14 to 17 years	99	84	15	121	102	19	112	75	36	156	69	87	178	75	103
18 to 19 years	1,375	1,229	146	1,230	1,108	122	1,377	1,228	149	1,485	1,280	205	1,669	1,435	233
20 to 21 years	1,259	1,104	154	1,216	1,027	189	1,171	974	196	1,265	992	273	1,389	1,089	300
22 to 24 years	1,064	687	377	1,048	730	318	991	668	322	989	625	364	951	609	343
25 to 29 years	993	379	615	991	395	596	990	394	595	914	343	572	856	321	535
30 to 34 years	576	129	447	574	149	424	590	162	428	608	166	442	536	146	390
35 years and over	507	77	430	639	97	542	715	134	581	1,021	283	739	1,135	366	768
Women	6,223	3,409	2,813	6,429	3,468	2,961	6,904	3,735	3,169	7,390	3,860	3,530	7,652	4,139	3,513
14 to 17 years	148	132	17	113	101	12	137	88	49	144	89	55	158	98	60
18 to 19 years	1,526	1,352	174	1,370	1,214	156	1,531	1,369	163	1,581	1,369	213	1,777	1,538	238
20 to 21 years	1,165	955	209	1,166	948	218	1,221	984	238	1,320	1,047	273	1,452	1,152	300
22 to 24 years	925	487	438	885	497	388	977	570	407	1,025	572	453	991	559	432
25 to 29 years	878	232	646	962	299	662	949	320	629	875	309	566	839	310	529
30 to 34 years	667	135	531	687	161	527	735	163	573	754	164	590	670	145	525
35 years and over	914	115	799	1,246	248	998	1,354	243	1,111	1,690	310	1,380	1,764	336	1,428

NOTE: Because of rounding, details may not add to totals

SOURCE. U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, "National Estimates of Higher Education, School Year 1988–89," *Early Estimates*; and U S Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P–25, No. 1018 (This table was prepared March 1989.)

Table 9.—Total enrollment in all institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	11,185	3,926	2,226	2,915	2,120
1976	11,012	3,704	2,107	3,014	2,188
1977	11,286	3,650	2,138	3,142	2,354
1978	11,260	3,527	2,113	3,140	2,479
1979	11,570	3,544	2,142	3,249	2,636
1980	12,097	3,689	2,185	3,409	2,813
1981	12,372	3,714	2,262	3,469	2,927
1982	12,426	3,753	2,279	3,467	2,928
1983	12,465	3,760	2,264	3,501	2,939
1984	12,242	3,647	2,216	3,450	2,927
1985	12,247	3,608	2,211	3,468	2,961
1986	12,504	3,600	2,285	3,520	3,099
1987	12,766	3,610	2,321	3,621	3,214
1988 •	12,849	3,636	2,310	3,735	3,169
		Middle alternative projections			
1989	13,087	3,599	2,385	3,778	3,325
1990	13,213	3,593	2,417	3,835	3,368
1991	13,233	3,561	2,441	3,817	3,414
1992	13,126	3,509	2,443	3,765	3,409
1993	13,026	3,479	2,441	3,700	3,406
1994	12,955	3,462	2,439	3,655	3,399
1995	12,935	3,455	2,438	3,649	3,393
1996	12,973	3,492	2,432	3,665	3,384
1997	13,048	3,529	2,430	3,708	3,381
1998	13,162	3,586	2,428	3,770	3,378
1999	13,282	3,648	2,427	3,833	3,374
2000	13,378	3,699	2,425	3,886	3,368
		Low alternative projections			
1989	12.653	3,560	2,332	3,545	3,216
1990	12,616	3,524	2,340	3,511	3,241
1991	12,509	3,458	2,344	3,444	3,263
1992	12,323	3,381	2,326	3,366	3,250
1993	12,194	3,324	2,314	3,309	3,247
1994	12,082	3,275	2,301	3,268	3,238
1995	12,051	3,261	2,293	3,264	3,233
1996	12,051	3,264	2,284	3,276	3,227
1997	12,106	3,292	2,279	3,310	3,225
1998	12,193	3,339	2,272	3,362	3,220
1999	12,280	3,388	2,267	3,412	3,213
2000	12,359	3,434	2,261	3,458	3,206
		High alternative projections			
1989	13,847	3,865	2,628	3,907	3,447
1990	14,099	3,893	2,690	4,002	3,514
1991	14,187	3,889	2,712	4,036	3,550
1992	14,042	3,831	2,695	3,968	3,548
1993	13,920	3,789	2,684	3,903	3,544
1994	13,828	3,752	2,680	3,861	3,535
1995	13,828	3,758	2,680	3,860	3,530
1996	13,861	3,781	2,675	3,883	3,522
1997	13,957	3,830	2,674	3,934	3,519
1998	14,099	3,903	2,672	4,004	3,520
1999	14,243	3,977	2,675	4,075	3,516
2000	14,366	4,043	2,671	4,139	3,513

• Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 10.—Total enrollment in public 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	4,998	1,947	764	1,522	767
1976	4,902	1,879	709	1,554	759
1977	4,945	1,873	696	1,606	770
1978	4,912	1,822	687	1,613	789
1979	4,980	1,833	676	1,661	810
1980	5,129	1,873	685	1,719	851
1981	5,166	1,877	692	1,741	858
1982	5,176	1,890	698	1,734	855
1983	5,223	1,910	698	1,755	860
1984	5,198	1,880	694	1,749	874
1985	5,210	1,864	693	1,759	892
1986	5,300	1,865	706	1,792	937
1987	5,432	1,882	722	1,854	974
1988 *	5,478	1,895	712	1,910	961
		Middle alternative projections			
1989	5,569	1,866	762	1,925	1,016
1990	5,623	1,865	771	1,958	1,029
1991	5,628	1,852	780	1,953	1,043
1992	5,578	1,826	781	1,928	1,043
1993	5,525	1,808	783	1,891	1,043
1994	5,483	1,795	783	1,864	1,041
1995	5,471	1,791	782	1,860	1,038
1996	5,486	1,807	779	1,866	1,034
1997	5,521	1,825	777	1,888	1,031
1998	5,574	1,853	774	1,920	1,027
1999	5,634	1,885	772	1,953	1,024
2000	5,683	1,912	769	1,982	1,020
		Low alternative projections			
1989	5,389	1,847	749	1,802	991
1990	5,367	1,830	752	1,786	999
1991	5,319	1,801	756	1,755	1,007
1992	5,233	1,762	753	1,714	1,004
1993	5,167	1,730	751	1,682	1,004
1994	5,109	1,702	747	1,658	1,002
1995	5,091	1,693	744	1,654	1,000
1996	5,089	1,692	741	1,659	997
1997	5,115	1,706	738	1,676	995
1998	5,158	1,730	734	1,703	991
1999	5,202	1,754	731	1,730	987
2000	5,245	1,779	728	1,755	983
		High alternative projections			
1989	5,883	2,005	834	1,992	1,052
1990	5,986	2,019	851	2,045	1,071
1991	6,031	2,020	861	2,068	1,082
1992	5,963	1,991	858	2,032	1,082
1993	5,898	1,967	856	1,994	1,081
1994	5,848	1,945	855	1,969	1,079
1995	5,843	1,946	854	1,966	1,077
1996	5,852	1,954	850	1,975	1,073
1997	5,898	1,979	848	2,001	1,070
1998	5,964	2,015	845	2,037	1,067
1999	6,035	2,053	844	2,074	1,064
2000	6,098	2,087	841	2,109	1,061

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-39," *Early Estimates.* (This table was prepared March 1989.)

Table 11.—Total enrollment in public 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	3,836	989	1,108	674	1,066
1976	3,752	858	1,061	704	1,129
1977	3,902	805	1,099	739	1,259
1978	3,874	738	1,084	700	1,351
1979	4,057	739	1,123	728	1,468
1980	4,329	812	1,152	784	1,581
1981	4,481	827	1,192	803	1,658
1982	4,520	850	1,195	810	1,665
1983	4,459	827	1,175	807	1,650
1984	4,279	762	1,138	756	1,623
1985	4,270	743	1,138	754	1,636
1986	4,414	742	1,193	764	1,715
1987	4,541	744	1,225	787	1,785
1988 *	4,567	755	1,221	823	1,769
Middle alternative projections					
1989	4,619	746	1,219	826	1,828
1990	4,668	743	1,237	835	1,853
1991	4,680	730	1,248	824	1,878
1992	4,650	718	1,247	811	1,874
1993	4,629	714	1,243	801	1,871
1994	4,619	715	1,241	796	1,867
1995	4,619	716	1,241	797	1,865
1996	4,635	730	1,239	804	1,862
1997	4,657	740	1,240	814	1,863
1998	4,690	755	1,242	828	1,865
1999	4,722	770	1,245	841	1,866
2000	4,744	781	1,247	850	1,866
Low alternative projections					
1989	4,460	736	1,186	780	1,758
1990	4,454	725	1,188	771	1,770
1991	4,423	705	1,186	752	1,780
1992	4,366	686	1,173	735	1,772
1993	4,335	676	1,165	726	1,768
1994	4,310	669	1,157	721	1,763
1995	4,308	670	1,153	723	1,762
1996	4,312	675	1,149	728	1,760
1997	4,327	683	1,148	736	1,760
1998	4,352	696	1,147	748	1,761
1999	4,373	708	1,147	758	1,760
2000	4,389	718	1,146	766	1,759
High alternative projections					
1989	4,903	802	1,351	853	1,897
1990	5,002	808	1,388	869	1,937
1991	5,021	801	1,395	869	1,956
1992	4,978	786	1,383	854	1,955
1993	4,950	778	1,376	845	1,951
1994	4,933	773	1,373	841	1,946
1995	4,941	778	1,375	844	1,944
1996	4,956	787	1,375	853	1,941
1997	4,983	799	1,376	865	1,943
1998	5,025	818	1,379	881	1,947
1999	5,061	834	1,383	896	1,948
2000	5,088	848	1,384	907	1,949

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 12.—Total enrollment in private 4-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	2,217	943	332	667	274
1976	2,227	921	322	699	286
1977	2,298	925	329	734	309
1978	2,320	919	327	755	319
1979	2,373	924	329	784	336
1980	2,442	936	333	816	357
1981	2,489	939	344	830	376
1982	2,478	933	341	824	380
1983	2,518	935	349	834	399
1984	2,513	926	345	839	401
1985	2,506	917	340	844	403
1986	2,524	910	343	856	415
1987	2,558	908	346	878	426
1988 *	2,550	909	334	898	409
Middle alternative projections					
1989	2,643	908	370	916	449
1990	2,666	907	375	930	454
1991	2,670	902	378	929	461
1992	2,646	889	380	917	460
1993	2,622	882	380	900	460
1994	2,603	876	380	888	459
1995	2,595	872	380	885	458
1996	2,600	878	379	887	456
1997	2,616	886	378	897	455
1998	2,640	898	377	911	454
1999	2,665	912	375	926	452
2000	2,688	924	374	940	450
Low alternative projections					
1989	2,558	899	364	858	437
1990	2,550	892	367	850	441
1991	2,528	878	369	836	445
1992	2,489	861	367	818	443
1993	2,460	847	366	803	444
1994	2,433	833	365	792	443
1995	2,422	827	364	790	441
1996	2,419	826	362	791	440
1997	2,431	831	361	799	440
1998	2,448	840	359	811	438
1999	2,466	851	357	822	436
2000	2,484	861	355	834	434
High alternative projections					
1989	2,790	973	405	947	465
1990	2,837	981	412	971	473
1991	2,860	983	417	982	478
1992	2,830	971	415	967	477
1993	2,804	962	414	950	478
1994	2,780	952	414	938	476
1995	2,777	952	413	937	475
1996	2,783	957	412	940	474
1997	2,804	968	412	952	472
1998	2,834	984	410	968	472
1999	2,866	1,002	409	985	470
2000	2,895	1,018	407	1,001	469

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 13.--Total enrollment in private 2-year institutions of higher education, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	134	47	22	52	13
1976	132	46	15	57	14
1977	141	47	14	63	16
1978	154	48	15	72	20
1979	160	48	14	76	22
1980	198	68	15	90	24
1981	236	71	34	95	35
1982	252	80	45	99	28
1983	264	88	42	105	30
1984	252	79	37	106	29
1985	261	84	40	110	30
1986	266	83	43	108	32
1987	235	76	28	102	29
1988 *	255	78	42	104	30
Middle alternative projections					
1989	256	79	34	111	32
1990	256	78	34	112	32
1991	255	77	35	111	32
1992	252	76	35	109	32
1993	250	75	35	108	32
1994	250	76	35	107	32
1995	250	76	35	107	32
1996	252	77	35	108	32
1997	254	78	35	109	32
1998	258	80	35	111	32
1999	261	81	35	113	32
2000	263	82	35	114	32
Low alternative projections					
1989	246	78	33	105	30
1990	245	77	33	104	31
1991	239	74	33	101	31
1992	235	72	33	99	31
1993	232	71	32	98	31
1994	230	71	32	97	30
1995	230	71	32	97	30
1996	231	71	32	98	30
1997	233	72	32	99	30
1998	235	73	32	100	30
1999	239	75	32	102	30
2000	241	76	32	103	30
High alternative projections					
1989	271	85	38	115	33
1990	274	85	39	117	33
1991	275	85	39	117	34
1992	271	83	39	115	34
1993	268	82	38	114	34
1994	267	82	38	113	34
1995	267	82	38	113	34
1996	270	83	38	115	34
1997	272	84	38	116	34
1998	276	86	38	118	34
1999	281	88	39	120	34
2000	285	90	39	122	34

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates*. (This table was prepared March 1989.)

Table 14.—Undergraduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	9,679	3,459	1,798	2,710	1,712
1976	9,429	3,242	1,660	2,788	1,739
1977	9,717	3,188	1,708	2,905	1,913
1978	9,691	3,072	1,694	2,895	2,030
1979	9,998	3,087	1,734	2,993	2,185
1980	10,475	3,227	1,773	3,135	2,340
1981	10,755	3,261	1,848	3,188	2,458
1982	10,825	3,299	1,871	3,184	2,470
1983	10,846	3,304	1,854	3,210	2,478
1984	10,618	3,195	1,812	3,153	2,459
1985	10,597	3,156	1,805	3,163	2,471
1986	10,799	3,147	1,871	3,206	2,575
1987	11,047	3,163	1,905	3,300	2,679
1988 *	11,137	3,198	1,893	3,380	2,666
		Middle alternative projections			
1989	11,275	3,143	1,932	3,443	2,757
1990	11,387	3,139	1,958	3,497	2,793
1991	11,390	3,105	1,978	3,477	2,830
1992	11,284	3,055	1,979	3,425	2,825
1993	11,179	3,023	1,976	3,359	2,821
1994	11,116	3,011	1,974	3,317	2,814
1995	11,108	3,010	1,973	3,316	2,809
1996	11,156	3,051	1,967	3,336	2,802
1997	11,237	3,091	1,966	3,380	2,800
1998	11,360	3,150	1,966	3,444	2,800
1999	11,485	3,212	1,967	3,507	2,799
2000	11,589	3,264	1,968	3,561	2,796
		Low alternative projections			
1989	10,867	3,104	1,884	3,222	2,657
1990	10,825	3,071	1,888	3,190	2,676
1991	10,711	3,007	1,889	3,123	2,692
1992	10,531	2,932	1,873	3,045	2,681
1993	10,400	2,875	1,861	2,988	2,676
1994	10,299	2,833	1,849	2,950	2,667
1995	10,283	2,827	1,841	2,951	2,664
1996	10,293	2,836	1,832	2,967	2,658
1997	10,356	2,868	1,829	3,002	2,657
1998	10,455	2,919	1,824	3,057	2,655
1999	10,551	2,971	1,821	3,108	2,651
2000	10,652	3,019	1,818	3,155	2,647
		High alternative projections			
1989	11,943	3,381	2,137	3,565	2,860
1990	12,168	3,405	2,191	3,655	2,917
1991	12,231	3,394	2,208	3,683	2,946
1992	12,077	3,330	2,193	3,610	2,944
1993	11,945	3,281	2,182	3,543	2,939
1994	11,855	3,243	2,178	3,503	2,931
1995	11,858	3,249	2,178	3,505	2,926
1996	11,893	3,271	2,173	3,530	2,919
1997	11,989	3,317	2,173	3,581	2,918
1998	12,132	3,387	2,173	3,651	2,921
1999	12,273	3,455	2,178	3,720	2,920
2000	12,398	3,518	2,177	3,783	2,920

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates*. (This table was prepared March 1989.)

Table 15.—Undergraduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	7,826	2,662	1,583	2,063	1,518
1976	7,617	2,471	1,478	2,115	1,553
1977	7,842	2,413	1,524	2,197	1,708
1978	7,786	2,302	1,510	2,161	1,813
1979	8,046	2,316	1,551	2,229	1,952
1980	8,441	2,426	1,588	2,334	2,093
1981	8,648	2,452	1,639	2,373	2,185
1982	8,713	2,487	1,653	2,373	2,201
1983	8,697	2,482	1,635	2,385	2,195
1984	8,494	2,390	1,600	2,325	2,179
1985	8,478	2,357	1,596	2,331	2,193
1986	8,661	2,351	1,652	2,367	2,291
1987	8,919	2,375	1,701	2,450	2,393
1988 *	8,985	2,397	1,687	2,522	2,379
Middle alternative projections					
1989	9,075	2,356	1,713	2,551	2,455
1990	9,169	2,353	1,737	2,591	2,488
1991	9,175	2,326	1,754	2,574	2,521
1992	9,096	2,289	1,754	2,536	2,517
1993	9,018	2,266	1,751	2,488	2,513
1994	8,971	2,257	1,749	2,458	2,507
1995	8,966	2,257	1,748	2,458	2,503
1996	9,002	2,289	1,743	2,473	2,497
1997	9,064	2,319	1,743	2,506	2,496
1998	9,155	2,363	1,743	2,553	2,496
1999	9,250	2,410	1,745	2,599	2,496
2000	9,327	2,449	1,746	2,638	2,494
Low alternative projections					
1989	8,752	2,327	1,670	2,389	2,366
1990	8,721	2,301	1,673	2,365	2,382
1991	8,637	2,253	1,673	2,315	2,396
1992	8,497	2,196	1,658	2,257	2,386
1993	8,399	2,154	1,648	2,216	2,381
1994	8,323	2,123	1,637	2,189	2,374
1995	8,311	2,119	1,630	2,190	2,372
1996	8,319	2,127	1,623	2,202	2,367
1997	8,365	2,151	1,620	2,228	2,366
1998	8,440	2,190	1,616	2,269	2,365
1999	8,510	2,228	1,614	2,306	2,362
2000	8,575	2,264	1,612	2,340	2,359
High alternative projections					
1989	9,618	2,535	1,895	2,641	2,547
1990	9,803	2,553	1,944	2,707	2,599
1991	9,851	2,543	1,958	2,726	2,624
1992	9,735	2,496	1,944	2,672	2,623
1993	9,637	2,460	1,935	2,624	2,618
1994	9,570	2,432	1,931	2,596	2,611
1995	9,575	2,438	1,932	2,598	2,607
1996	9,601	2,455	1,928	2,617	2,601
1997	9,674	2,490	1,928	2,655	2,601
1998	9,783	2,543	1,929	2,707	2,604
1999	9,889	2,594	1,933	2,758	2,604
2000	9,980	2,640	1,933	2,803	2,604

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 16.—Undergraduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	1,853	797	215	647	194
1976	1,812	771	182	673	186
1977	1,872	775	184	708	205
1978	1,905	770	184	734	217
1979	1,951	772	184	762	233
1980	2,033	800	185	801	246
1981	2,106	809	209	816	272
1982	2,112	812	219	811	270
1983	2,149	823	219	824	283
1984	2,124	805	212	827	280
1985	2,120	800	210	832	278
1986	2,138	796	219	839	284
1987	2,128	788	204	850	286
1988 *	2,152	801	206	858	287
		Middle alternative projections			
1989	2,200	787	219	892	302
1990	2,218	786	221	906	305
1991	2,215	779	224	903	309
1992	2,188	766	225	889	308
1993	2,161	757	225	871	308
1994	2,145	754	225	859	307
1995	2,142	753	225	856	306
1996	2,154	762	224	863	305
1997	2,173	772	223	874	304
1998	2,205	787	223	891	304
1999	2,235	802	222	908	303
2000	2,262	815	222	923	302
		Low alternative projections			
1989	2,115	777	214	833	291
1990	2,104	770	215	825	294
1991	2,074	754	216	808	296
1992	2,034	736	215	788	295
1993	2,001	721	213	772	295
1994	1,976	710	212	761	293
1995	1,972	708	211	761	292
1996	1,974	709	209	765	291
1997	1,991	717	209	774	291
1998	2,015	729	208	788	290
1999	2,041	743	207	802	289
2000	2,064	755	206	815	288
		High alternative projections			
1989	2,325	846	242	924	313
1990	2,365	852	247	948	318
1991	2,380	851	250	957	322
1992	2,342	834	249	938	321
1993	2,308	821	247	919	321
1994	2,285	811	247	907	320
1995	2,283	811	246	907	319
1996	2,292	816	245	913	318
1997	2,315	827	245	926	317
1998	2,349	844	244	944	317
1999	2,384	861	245	962	316
2000	2,418	878	244	980	316

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 17.—Graduate enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	1,263	290	410	163	400
1976	1,333	287	427	176	443
1977	1,319	289	411	183	434
1978	1,312	280	402	198	442
1979	1,309	280	389	196	444
1980	1,343	281	394	204	466
1981	1,343	277	397	207	462
1982	1,322	280	390	205	447
1983	1,340	286	391	211	452
1984	1,345	286	386	215	459
1985	1,376	289	388	220	479
1986	1,435	294	399	228	514
1987	1,451	293	400	233	525
1988 *	1,444	302	384	251	507
Middle alternative projections					
1989	1,533	297	435	243	558
1990	1,545	295	441	245	564
1991	1,561	297	445	247	572
1992	1,560	295	446	247	572
1993	1,564	297	447	247	573
1994	1,559	294	447	245	573
1995	1,551	290	447	242	572
1996	1,543	287	447	239	570
1997	1,539	286	446	238	569
1998	1,531	284	444	236	567
1999	1,526	284	442	236	564
2000	1,520	283	439	236	562
Low alternative projections					
1989	1,511	297	430	235	549
1990	1,516	294	434	233	555
1991	1,525	294	437	233	561
1992	1,519	292	435	233	559
1993	1,521	292	435	233	561
1994	1,513	288	434	230	561
1995	1,502	282	434	227	559
1996	1,495	278	434	224	559
1997	1,490	276	432	224	558
1998	1,479	273	430	221	555
1999	1,473	272	428	221	552
2000	1,464	270	425	220	549
High alternative projections					
1989	1,610	315	472	248	575
1990	1,634	317	480	252	585
1991	1,654	322	484	256	592
1992	1,659	326	482	259	592
1993	1,666	330	482	261	593
1994	1,664	331	482	259	592
1995	1,663	331	482	258	592
1996	1,661	332	482	256	591
1997	1,659	333	481	256	589
1998	1,659	336	480	256	587
1999	1,660	340	478	258	584
2000	1,657	342	475	259	581

* Estimate.

NOTE: Projections are based on data through 1987 Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 18.—Graduate enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	906	198	283	114	311
1976	931	190	287	120	334
1977	900	190	267	124	319
1978	894	183	258	127	326
1979	884	182	246	133	325
1980	900	180	245	137	337
1981	887	177	242	138	329
1982	870	180	237	136	317
1983	872	184	235	140	313
1984	870	182	229	142	317
1985	891	181	232	144	333
1986	940	188	244	150	358
1987	944	185	244	151	364
1988 *	946	190	237	165	354
		Middle alternative projections			
1989	998	188	265	158	387
1990	1,007	187	268	160	392
1991	1,017	188	271	161	397
1992	1,016	187	271	161	397
1993	1,019	188	272	161	398
1994	1,016	186	272	160	398
1995	1,011	184	272	158	397
1996	1,006	182	272	156	396
1997	1,002	181	271	155	395
1998	998	180	270	154	394
1999	995	180	269	154	392
2000	990	179	267	154	390
		Low alternative projections			
1989	984	188	262	153	381
1990	987	186	264	152	385
1991	993	186	266	152	389
1992	990	185	265	152	388
1993	991	185	265	152	389
1994	985	182	264	150	389
1995	979	179	264	148	388
1996	974	176	264	146	388
1997	971	175	263	146	387
1998	964	173	262	144	385
1999	960	172	261	144	383
2000	954	171	259	143	381
		High alternative projections			
1989	1,047	200	287	161	399
1990	1,063	201	292	164	406
1991	1,077	204	295	167	411
1992	1,080	206	294	169	411
1993	1,084	209	294	170	411
1994	1,084	210	294	169	411
1995	1,083	210	294	168	411
1996	1,081	210	294	167	410
1997	1,080	211	293	167	409
1998	1,079	213	292	167	407
1999	1,079	215	291	168	405
2000	1,078	217	289	169	403

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Table 19.—Graduate enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	357	92	127	49	89
1976	402	97	140	56	109
1977	416	98	144	59	115
1978	418	97	144	61	116
1979	424	98	144	63	119
1980	442	100	147	67	128
1981	456	100	155	69	132
1982	453	100	153	69	131
1983	468	103	156	71	138
1984	476	104	156	75	142
1985	486	108	156	76	147
1986	495	106	155	78	156
1987	507	108	156	82	161
1988 *	498	112	147	86	153
Middle alternative projections					
1989	535	109	170	85	171
1990	538	108	173	85	172
1991	544	109	174	86	175
1992	544	108	175	86	175
1993	545	109	175	86	175
1994	543	108	175	85	175
1995	540	106	175	84	175
1996	537	105	175	83	174
1997	537	105	175	83	174
1998	533	104	174	82	173
1999	531	104	173	82	172
2000	530	104	172	82	172
Low alternative projections					
1989	527	109	168	82	168
1990	529	108	170	81	170
1991	532	108	171	81	172
1992	529	107	170	81	171
1993	530	107	170	81	172
1994	528	106	170	80	172
1995	523	103	170	79	171
1996	521	102	170	78	171
1997	519	101	169	78	171
1998	515	'00	168	77	170
1999	513	100	167	77	169
2000	510	99	166	77	168
High alternative projections					
1989	563	115	185	87	176
1990	571	116	188	88	179
1991	577	118	189	89	181
1992	579	120	188	90	181
1993	582	121	188	91	182
1994	580	121	188	90	181
1995	580	121	188	90	181
1996	580	122	188	89	181
1997	579	122	188	89	180
1998	580	123	188	89	180
1999	581	125	187	90	179
2000	579	125	186	90	178

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989)

Table 20.—First-professional enrollment in all institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	242	177	15	43	7
1976	244	172	18	48	6
1977	251	173	18	53	7
1978	257	175	17	58	7
1979	263	176	17	63	7
1980	278	181	18	70	9
1981	275	175	18	73	9
1982	278	174	17	78	9
1983	279	169	19	81	10
1984	279	166	19	83	10
1985	274	162	17	84	10
1986	270	159	15	86	10
1987	268	154	16	88	10
1988 *	268	150	18	90	10
Middle alternative projections					
1989	279	159	18	92	10
1990	281	159	18	93	11
1991	282	159	18	93	12
1992	282	159	18	93	12
1993	283	159	18	94	12
1994	280	157	18	93	12
1995	276	155	18	91	12
1996	274	154	18	90	12
1997	272	152	18	90	12
1998	271	152	18	90	11
1999	271	152	18	90	11
2000	269	152	18	89	10
Low alternative projections					
1989	275	159	18	88	10
1990	275	159	18	88	10
1991	273	157	18	88	10
1992	273	157	18	88	10
1993	273	157	18	88	10
1994	270	154	18	88	10
1995	266	152	18	86	10
1996	263	150	18	85	10
1997	260	148	18	84	10
1998	259	147	18	84	10
1999	256	145	18	83	10
2000	256	145	18	83	10
High alternative projections					
1989	294	169	19	94	12
1990	297	171	19	95	12
1991	302	173	20	97	12
1992	306	175	20	99	12
1993	309	178	20	99	12
1994	309	178	20	99	12
1995	307	178	20	97	12
1996	307	178	20	97	12
1997	309	180	20	97	12
1998	308	180	19	97	12
1999	310	182	19	97	12
2000	311	183	19	97	12

* Estimate.

NOTE. Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 21.—First-professional enrollment in public institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	103	76	6	19	4
1976	101	76	5	23	1
1977	103	75	4	24	2
1978	105	75	3	25	1
1979	106	74	2	27	1
1980	114	79	4	32	2
1981	112	75	3	33	2
1982	113	73	3	35	2
1983	113	71	3	37	2
1984	114	70	3	38	2
1985	111	69	3	38	2
1986	113	68	3	39	3
1987	110	66	2	40	2
1988 *	114	68	3	41	2
Middle alternative projections					
1989	115	68	3	42	2
1990	115	68	3	42	2
1991	116	68	3	42	3
1992	116	68	3	42	3
1993	117	68	3	43	3
1994	115	67	3	42	3
1995	113	66	3	41	3
1996	113	66	3	41	3
1997	112	65	3	41	3
1998	111	65	3	41	2
1999	111	65	3	41	2
2000	110	65	3	40	2
Low alternative projections					
1989	113	68	3	40	2
1990	113	68	3	40	2
1991	112	67	3	40	2
1992	112	67	3	40	2
1993	112	67	3	40	2
1994	111	66	3	40	2
1995	109	65	3	39	2
1996	108	64	3	39	2
1997	106	63	3	38	2
1998	106	63	3	38	2
1999	105	62	3	38	2
2000	105	62	3	38	2
High alternative projections					
1989	121	72	3	43	3
1990	122	73	3	43	3
1991	124	74	3	44	3
1992	126	75	3	45	3
1993	127	76	3	45	3
1994	127	76	3	45	3
1995	126	76	3	44	3
1996	126	76	3	44	3
1997	127	7	3	44	3
1998	127	7	3	44	3
1999	128	7	3	44	3
2000	128	78	3	44	3

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 22.—First-professional enrollment in private institutions, by sex and attendance status, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Men		Women	
		Full-time	Part-time	Full-time	Part-time
1975	140	101	12	23	4
1976	143	99	15	27	5
1977	148	99	15	30	5
1978	152	100	14	32	6
1979	157	102	15	35	6
1980	163	104	16	38	7
1981	162	101	14	40	7
1982	165	101	14	43	7
1983	165	97	16	44	8
1984	164	96	16	43	8
1985	162	93	14	46	8
1986	157	91	12	47	7
1987	158	88	14	48	8
1988 *	154	82	15	49	8
Middle alternative projections					
1989	164	91	15	50	8
1990	166	91	15	51	9
1991	166	91	15	51	9
1992	166	91	15	51	9
1993	166	91	15	51	9
1994	165	90	15	51	9
1995	163	89	15	50	9
1996	161	88	15	49	9
1997	160	87	15	49	9
1998	160	87	15	49	9
1999	160	87	15	49	9
2000	159	87	15	49	8
Low alternative projections					
1989	162	91	15	48	8
1990	162	91	15	48	8
1991	161	90	15	48	8
1992	161	90	15	48	8
1993	161	90	15	48	8
1994	159	88	15	48	8
1995	157	87	15	47	8
1996	155	86	15	46	8
1997	154	85	15	46	8
1998	153	84	15	46	8
1999	151	83	15	45	8
2000	151	83	15	45	8
High alternative projections					
1989	173	97	16	51	9
1990	175	98	16	52	9
1991	178	99	17	53	9
1992	180	100	17	54	9
1993	182	102	17	54	9
1994	182	102	17	54	9
1995	181	102	17	53	9
1996	181	102	17	53	9
1997	182	103	17	53	9
1998	181	103	16	53	9
1999	182	104	16	53	9
2000	183	105	16	53	9

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 23.—Full-time-equivalent enrollment in all institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1975	8,480	4,914	2,579	758	229
1976	8,313	4,838	2,461	781	236
1977	8,415	4,919	2,479	776	240
1978	8,348	4,918	2,406	779	248
1979	8,487	4,989	2,469	778	249
1980	8,819	5,109	2,657	790	263
1981	9,015	5,188	2,765	801	262
1982	9,092	5,194	2,841	790	266
1983	9,166	5,254	2,841	805	266
1984	8,952	5,215	2,661	814	263
1985	8,943	5,204	2,649	829	261
1986	9,063	5,241	2,704	859	259
1987	9,228	5,361	2,743	867	257
1988 *	9,267	5,349	2,753	899	266
		Middle alternative projections			
1989	9,440	5,454	2,813	906	267
1990	9,518	5,506	2,833	911	269
1991	9,493	5,486	2,820	919	268
1992	9,389	5,412	2,790	917	269
1993	9,292	5,330	2,772	920	270
1994	9,227	5,279	2,766	915	267
1995	9,211	5,273	2,767	908	263
1996	9,258	5,303	2,788	901	261
1997	9,336	5,368	2,811	898	259
1998	9,453	5,456	2,845	893	259
1999	9,576	5,549	2,878	891	259
2000	9,677	5,631	2,900	888	257
		Low alternative projections			
1989	9,110	5,240	2,714	893	263
1990	9,052	5,200	2,697	892	263
1991	8,929	5,118	2,655	895	261
1992	8,763	5,003	2,608	891	261
1993	8,643	4,908	2,582	892	261
1994	8,545	4,838	2,564	885	258
1995	8,523	4,828	2,566	875	254
1996	8,532	4,838	2,575	868	251
1997	8,591	4,886	2,592	865	248
1998	8,686	4,962	2,619	857	247
1999	8,780	5,037	2,645	854	244
2000	8,867	5,110	2,664	849	244
		High alternative projections			
1989	9,967	5,762	2,975	949	281
1990	10,136	5,865	3,026	962	284
1991	10,187	5,897	3,028	975	288
1992	10,055	5,792	2,989	931	292
1993	9,942	5,693	2,966	987	295
1994	9,859	5,624	2,953	986	295
1995	9,862	5,622	2,961	985	293
1996	9,903	5,644	2,981	984	293
1997	10,001	5,714	3,008	984	295
1998	10,143	5,813	3,060	985	295
1999	10,287	5,914	3,087	990	297
2000	10,415	6,010	3,117	990	298

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 24.—Full-time-equivalent enrollment in public institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1975	6,522	3,428	2,465	532	98
1976	6,350	3,369	2,348	535	101
1977	6,396	3,416	2,356	523	101
1978	6,279	3,387	2,272	519	101
1979	6,393	3,438	2,332	519	103
1980	6,642	3,524	2,484	522	113
1981	6,781	3,576	2,573	524	110
1982	6,851	3,597	2,629	514	110
1983	6,881	3,635	2,616	520	111
1984	6,685	3,610	2,442	522	111
1985	6,668	3,601	2,428	529	110
1986	6,775	3,626	2,483	556	110
1987	6,935	3,728	2,542	556	109
1988 *	6,945	3,712	2,542	578	112
Middle alternative projections					
1989	7,075	3,784	2,596	582	113
1990	7,136	3,821	2,617	586	113
1991	7,116	3,806	2,605	591	114
1992	7,038	3,757	2,578	590	114
1993	6,968	3,700	2,562	591	115
1994	6,921	3,664	2,556	588	113
1995	6,913	3,661	2,557	584	111
1996	6,951	3,684	2,576	580	111
1997	7,010	3,726	2,597	577	110
1998	7,097	3,786	2,627	574	109
1999	7,190	3,851	2,657	573	109
2000	7,264	3,907	2,677	571	108
Low alternative projections					
1989	6,828	3,637	2,505	574	111
1990	6,784	3,609	2,490	573	111
1991	6,692	3,553	2,454	575	110
1992	6,567	3,472	2,411	573	110
1993	6,479	3,407	2,388	574	110
1994	6,408	3,359	2,371	568	109
1995	6,394	3,351	2,373	563	107
1996	6,404	3,359	2,381	558	106
1997	6,449	3,392	2,396	556	104
1998	6,522	3,445	2,421	551	104
1999	6,592	3,496	2,443	549	103
2000	6,656	3,547	2,460	546	103
High alternative projections					
1989	7,474	3,999	2,747	609	119
1990	7,603	4,071	2,795	618	120
1991	7,637	4,092	2,796	626	122
1992	7,536	4,020	2,762	630	124
1993	7,452	3,952	2,741	634	125
1994	7,393	3,904	2,730	634	125
1995	7,397	3,903	2,738	633	124
1996	7,428	3,918	2,755	632	124
1997	7,502	3,966	2,780	632	125
1998	7,609	4,035	2,817	633	125
1999	7,715	4,105	2,850	635	126
2000	7,808	4,170	2,875	636	126

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988-89," *Early Estimates.* (This table was prepared March 1989.)

Table 25.—Full-time-equivalent enrollment in private institutions of higher education, by level of student and type of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Undergraduate		Graduate	First-professional
		4-year	2-year	4-year	4-year
1975	1,957	1,486	114	226	131
1976	1,963	1,469	113	246	135
1977	2,019	1,503	123	253	139
1978	2,069	1,531	134	259	146
1979	2,095	1,551	137	259	146
1980	2,177	1,585	173	268	150
1981	2,233	1,612	192	277	152
1982	2,241	1,597	212	276	156
1983	2,285	1,619	225	285	155
1984	2,267	1,604	219	292	152
1985	2,276	1,603	221	300	151
1986	2,288	1,615	221	303	149
1987	2,293	1,633	201	311	148
1988 *	2,322	1,637	211	321	154
Middle alternative projections					
1989	2,364	1,670	217	324	154
1990	2,382	1,685	217	325	155
1991	2,378	1,679	215	328	155
1992	2,350	1,655	212	328	155
1993	2,324	1,630	210	329	155
1994	2,306	1,615	210	327	154
1995	2,298	1,612	210	324	152
1996	2,307	1,624	212	321	150
1997	2,326	1,642	214	321	149
1998	2,356	1,670	218	319	149
1999	2,386	1,698	221	318	149
2000	2,413	1,724	223	317	149
Low alternative projections					
1989	2,282	1,603	208	319	152
1990	2,268	1,591	207	319	152
1991	2,237	1,565	201	320	151
1992	2,196	1,530	197	318	151
1993	2,165	1,501	194	319	151
1994	2,137	1,479	193	317	149
1995	2,128	1,476	193	312	147
1996	2,128	1,479	194	310	145
1997	2,143	1,494	196	309	144
1998	2,164	1,517	198	306	143
1999	2,189	1,541	202	305	141
2000	2,211	1,563	204	304	141
High alternative projections					
1989	2,493	1,762	229	340	162
1990	2,533	1,794	231	344	164
1991	2,550	1,804	231	348	166
1992	2,518	1,772	227	351	168
1993	2,490	1,741	225	353	170
1994	2,466	1,720	224	352	170
1995	2,464	1,719	224	352	169
1996	2,475	1,726	227	352	169
1997	2,499	1,748	229	352	170
1998	2,534	1,778	233	353	170
1999	2,572	1,809	237	355	171
2000	2,607	1,840	241	354	172

* Estimate.

NOTE: Projections are based on data through 1987. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys, Integrated Postsecondary Education Data System (IPEDS) surveys, and "National Estimates of Higher Education: School Year 1988–89," *Early Estimates.* (This table was prepared March 1989.)

Chapter 3

High School Graduates

During the last decade of the twentieth century, the number of high school graduates is expected to follow closely the trend in the 18-year-old population (figure 24). The number of high school graduates will decrease from 1989 through 1992, as will the number of 18-year-olds (table 26). Then, as the number of 18-year-olds increases for the remainder of the decade, so will the number of graduates. The only year in which these two series do not behave in like fashion is 1994, when the 18-year-olds experience a slight drop, from 3.30 million in 1993 to 3.25 million, while the number of graduates remains about the same.

The number of high school graduates rose slightly from 3.13 million in 1975 to an all-time high of 3.15 million in 1977 (table 26). The number dropped to 3.12 million in 1979, and then fell more rapidly for the next 7 years, approximating the trend in the number of births 18 years earlier (from 1959 to 1967). Following an increase in the number of graduates in 1986–87, the National Center for Education Statistics (NCES) estimates another increase in 1988—to 2.79 million—before the number of high school graduates levels off in 1989 at 2.78 million. In 1992, it is expected to be 2.49 million, its lowest point since 1964. By the year 2000, the number of graduates is projected to reach 2.92 million, a level last attained 18 years earlier in 1982.

Since 1975, the number of high school graduates expressed as a percent of the 18-year-old population has been between 71 and 75 percent (table 26). From 1990 to 2000, high school graduates as a percent of the 18-year-old population is expected to increase from 75 percent at the beginning of the decade to 78 percent by the end of the century.

In the years 1975 through 1977, the number of public high school graduates was peaking, reaching its all-time high of 2.84 million in 1977 (table 26). Next followed 9 successive decreases, until the number of public graduates reached 2.38 million in 1986. In 1987, it rose to 2.43 million and then leveled off at 2.49 million in 1988 and 1989. NCES projects that the number of public high school graduates will decrease to 2.34 million in 1990, 2.28 million in 1991, and 2.23 million (its lowest value since 1964) in 1992. Over the next 8 years, the number of public high school graduates is expected to increase, reaching 2.62 million at the end of the decade. It should peak several years later as the "baby-boom echo" generation graduates from high school. It is interesting to note that the number of public high school graduates also closely follows the trend in the number of 18-year-olds (figure 25).

Private high school graduates are also expected to correspond with the trend in the 18-year-old population (figure 26). For the forecast period (1990 to 2000), this is not surprising due to the nature of the model used to predict the number of private high school graduates (see chapter 10). In the past, the graduates of private high schools have been equal to about 11 percent of public school graduates, and this relationship is expected to be maintained during the 1990s. However, none of the changes predicted are statisticaliy significant.

Figure 24.—High school graduates and 18-year-olds, with projections: 1974–75 to 1999–2000

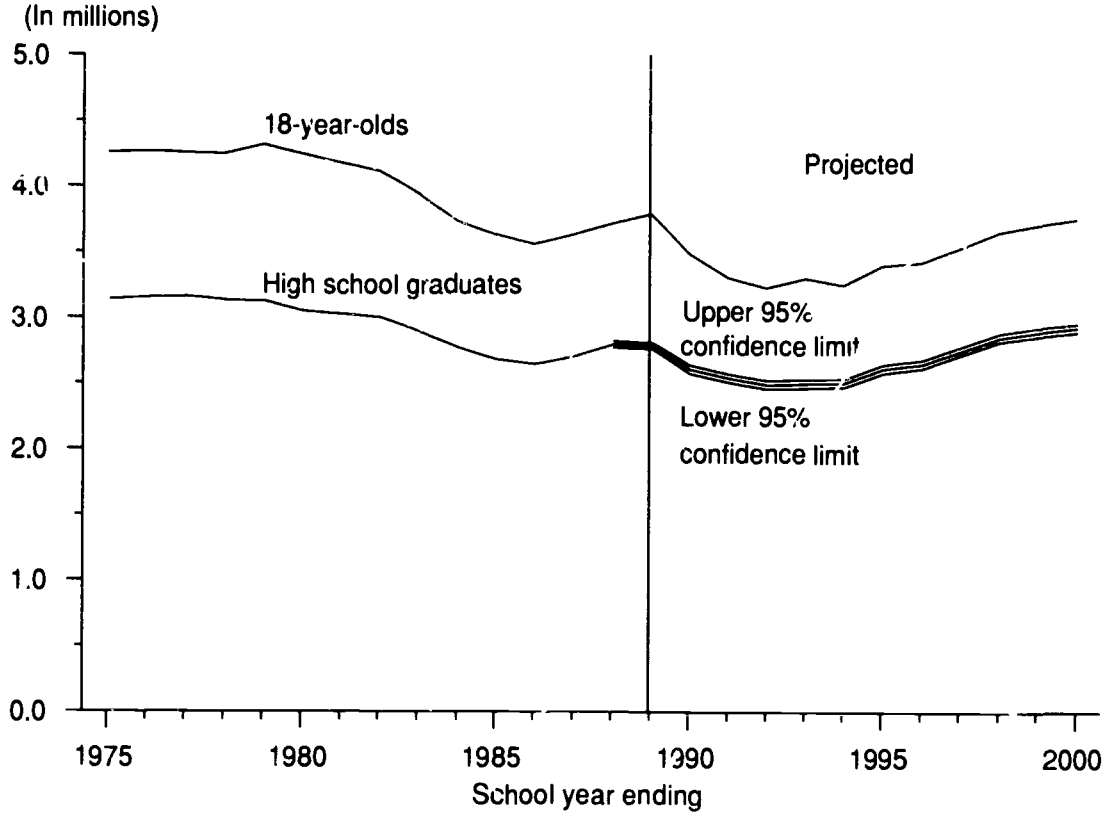


Figure 25.—Public high school graduates, with projections: 1974–75 to 1999–2000

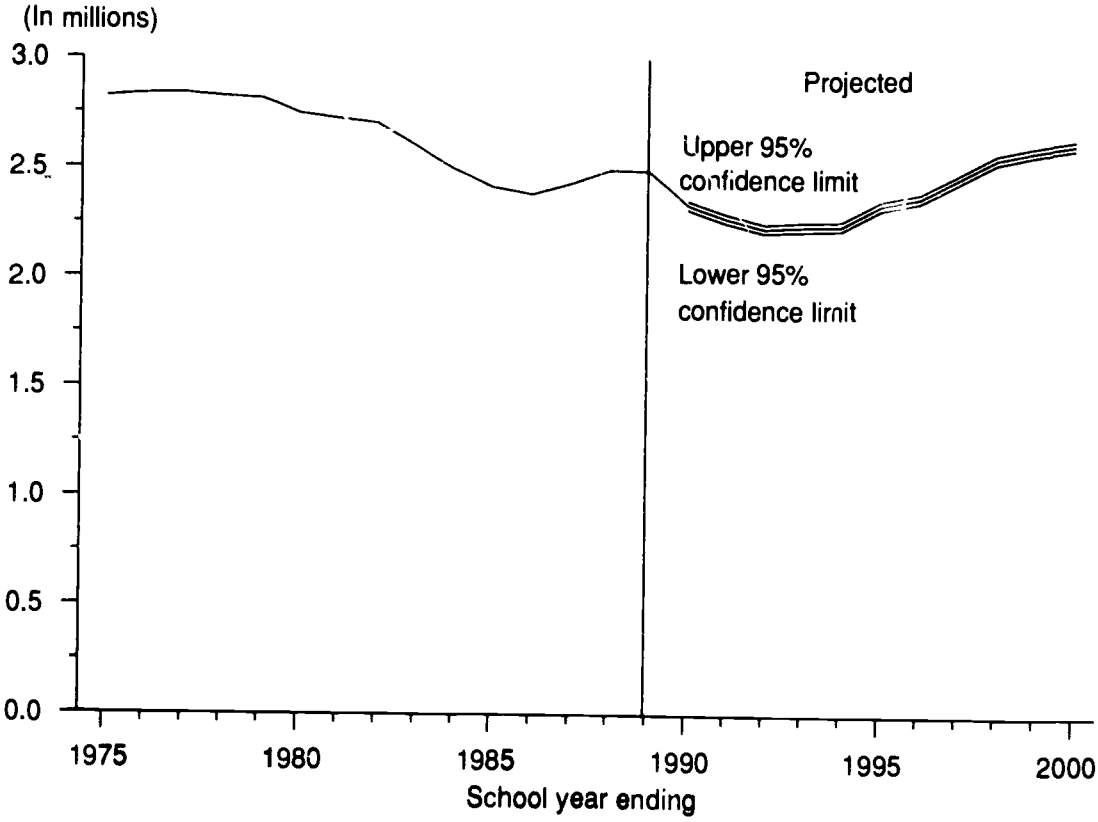


Figure 26.—Private high school graduates, with projections: 1974–75 to 1999–2000

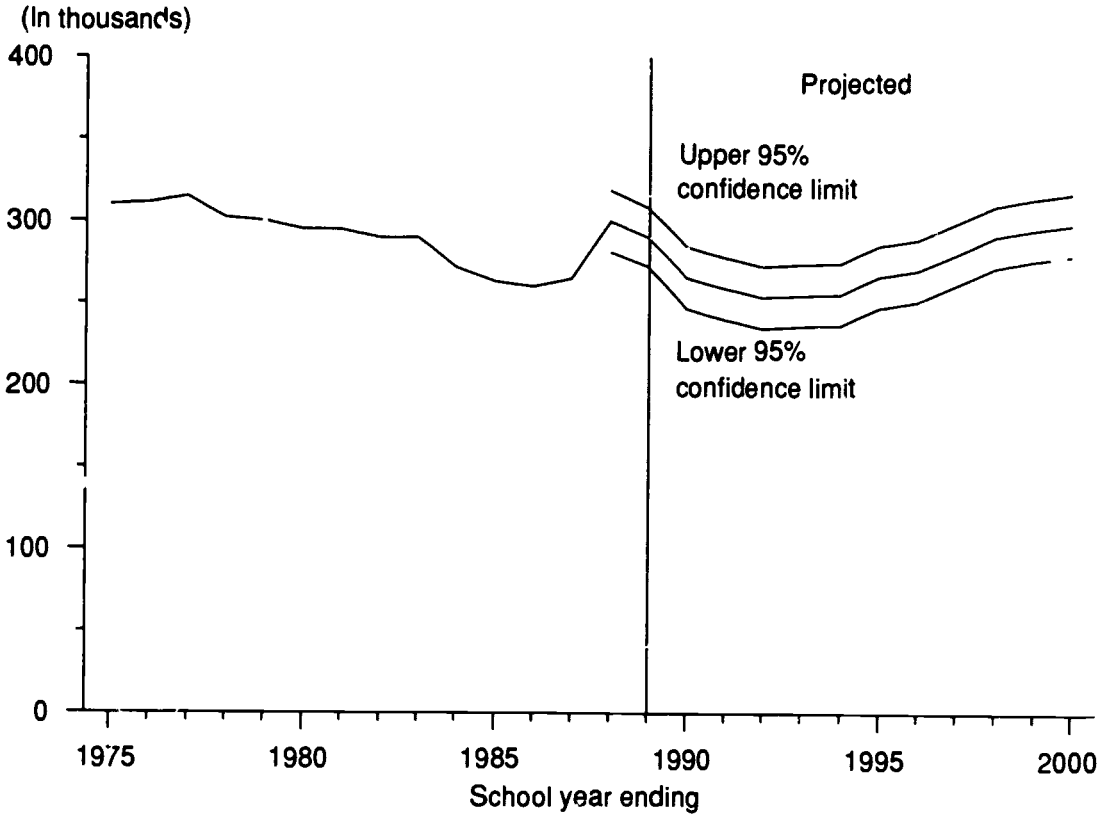


Table 26.—High school graduates, 18-year-old population, and births 18 years earlier, with projections: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	High school graduates			18-year-old population	Births lagged 18 years	High school graduates as a percent of 18-year-old population
	Total	Public	Private			
1975	3,133	2,823	310	4,256	4,312	73.6
1976	3,148	2,837	311	4,266	4,313	73.8
1977	3,155	2,840	315	4,257	4,298	74.1
1978	3,127	2,825	302	4,247	4,279	73.6
1979	3,117	2,817	300	4,316	4,350	72.2
1980	3,043	2,748	295	4,243	4,259	71.7
1981	3,020	2,725	295	4,175	4,185	72.3
1982	2,995	2,705	290	4,115	4,119	72.8
1983	2,888	2,598	290	3,946	3,940	73.2
1984	2,767	2,495	272	3,734	3,716	74.1
1985	2,677	2,414	263	3,634	3,608	73.7
1986	2,642	2,382	260	3,562	3,520	74.2
1987	2,698	2,433	265	3,632	3,583	74.3
1988 *	2,793	2,493	300	3,717	3,676	75.1
1989 *	2,781	2,491	291	3,791	3,713	73.4
				Projected		
1990	2,603	2,337	266	3,491	3,393	74.6
1991	2,535	2,276	259	3,307	3,195	76.7
1992	2,485	2,231	254	3,230	3,111	76.9
1993	2,495	2,240	255	3,304	3,181	75.5
1994	2,501	2,245	256	3,253	3,127	76.9
1995	2,608	2,341	267	3,400	3,274	76.7
1996	2,644	2,374	270	3,426	3,304	77.2
1997	2,744	2,463	280	3,533	3,415	77.7
1998	2,848	2,557	291	3,657	3,563	77.9
1999	2,889	2,593	295	3,712	3,619	77.8
2000	2,920	2,622	298	3,756	3,666	77.7

* Estimated.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey, "Key Statistics for Public Elementary and Secondary Education. School Year 1988-89", *Early Estimates*, and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*, U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25 (This table was prepared April 1989.)

Chapter 4

Earned Degrees Conferred

Over the past 14 years, the number of degrees awarded to women increased at all levels. For each degree level, with the exception of associate, the number of degrees awarded to men declined. In 1988–89, women earned the majority of associate, bachelor's, and master's degrees, and more than one-third of doctor's and first-professional degrees.

Associate Degrees

Between 1974–75 and 1988–89, the number of associate degrees rose 22 percent, from 360,000 to 439,000 (table 27 and figure 27). By 1999-2000, this number is expected to be 461,000. The number of associate degrees awarded to men increased slightly, from 191,000 in 1974–75 to 192,000 in 1988–89. This number is projected to be 201,000 by 1999–2000. The number of associate degrees awarded to women increased from 169,000 in 1974–75 to 247,000 in 1988–89. This number is expected to be 261,000 by 1999–2000 (figures 28 and 29).

Bachelor's Degrees

The number of bachelor's degrees rose from 923,000 in 1974–75 to 994,000 in 1988–89, an increase of 8 percent (table 28 and figure 30). This number is expected to be 976,000 by 1999-2000. The number of bachelor's degrees awarded to men declined from 505,000 in 1974–75 to 473,000 in 1988–89. By 1999–2000, this number will be 467,000. The number of bachelor's degrees awarded to women increased from 418,000 in 1974–75 to 521,000 in 1987–88. This number is expected to be 509,000 by 1999–2000 (figures 31 and 32).

Master's Degrees

The number of master's degrees awarded increased in the mid–1970s, peaking at 317,000 in 1976–77 (table 29 and figure 33). This number then fell to 284,000 in 1983–84 before rising to 293,000 in 1988–89. This number is expected to be 286,000 by 1999–2000. The number of master's degrees awarded to men decreased from 162,000 in 1974–75 to 137,000 in 1988–89. This number is projected to remain steady at 137,000 in 1999–2000. The number of degrees awarded to women increased from 131,000 to 156,000 in 1988–89. This number is expected to be 150,000 by 1999–2000. Women represented an increasing share of master's degrees awarded, rising from 45 percent in 1974–75 to 53 percent in 1988–89. This proportion is projected to be 52 percent by 1999–2000 (figures 34 and 35).

Doctor's Degrees

The number of doctor's degrees increased slightly, from 34,100 in 1974–75 to 34,200 in 1988–89 (table 30 and figure 36). By 1999–2000, this number is expected to be 35,100. Most notable are the contrasting trends between men and women. The number of degrees awarded to men fell from 26,800 in 1974–75 to 21,600 in 1988–89. By 1999–2000, this number is expected to fall to 16,700. The number of degrees awarded to women rose from 7,300 in 1974–75 to 12,600 in 1988–89, an increase of 73 percent (figures 37 and 38). In the 1990s, this pattern is expected to continue. By 1999–2000, the number of doctor's degrees awarded to women is projected to climb to 18,400. The share of doctor's degrees awarded to women, which was 21 percent in 1974–75 and 37 percent in 1988–89, is projected to climb to 52 percent by 1999–2000.

First-Professional Degrees

The number of first-professional degrees awarded rose from 55,900 in 1974–75 to 72,200 in 1988–89, an increase of 29 percent (table 31 and figure 39). The number is expected to be 67,100 by 1999–2000. The number of first-professional degrees awarded to men decreased from 49,000 in 1974–75 to 46,400 in 1988–89. This number is projected to be 40,400 by 1999–2000. The number of first-professional degrees awarded to women more than tripled, from 7,000 in 1974–75 to 25,800 in 1988–89, and is expected to be 26,800 by 1999–2000 (figures 40 and 41). The women's proportion of first-professional degrees rose from 12 percent in 1974–75 to 36 percent in 1988–89. By 1999–2000, this proportion is expected to be 40 percent.

Figure 27.—Associate degrees, with projections: 1974–75 to 1999–2000

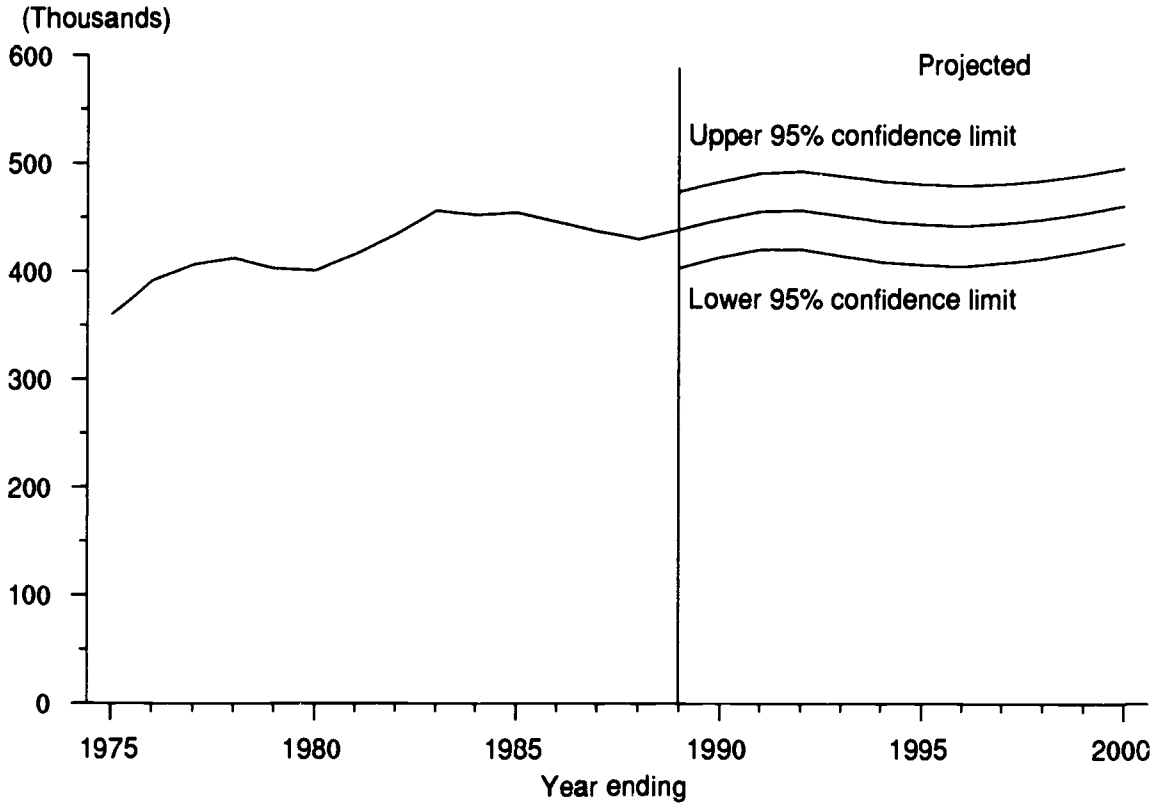


Figure 28.—Associate degrees awarded to men, with projections: 1974–75 to 1999–2000

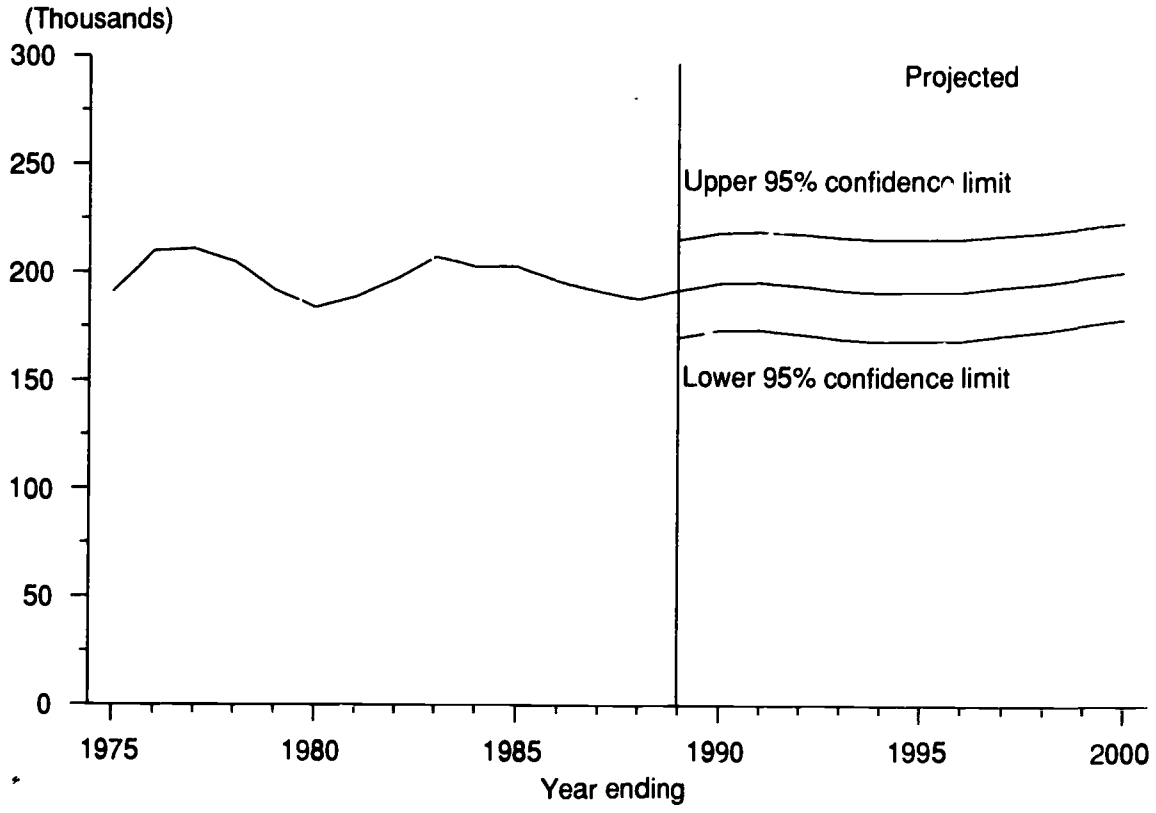


Figure 29.—Associate degrees awarded to women, with projections: 1974–75 to 1999–2000

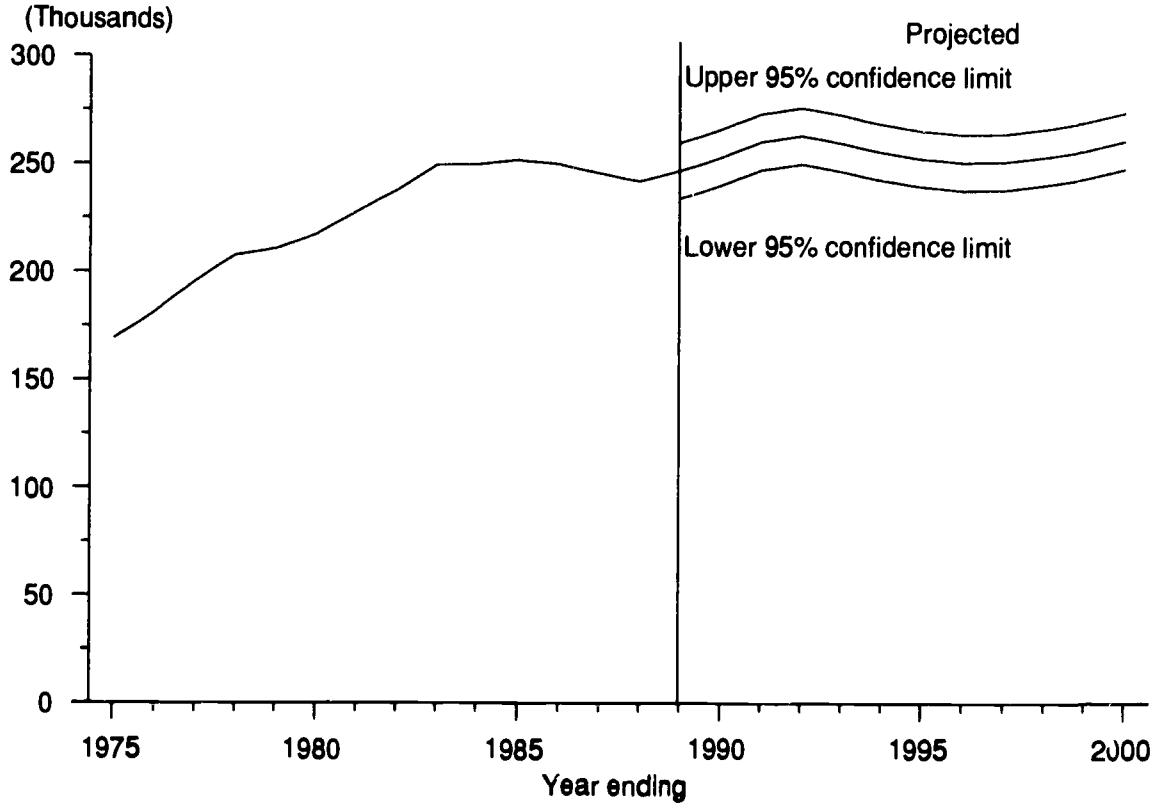


Figure 30.—Bachelor's degrees, with projections: 1974–75 to 1999–2000

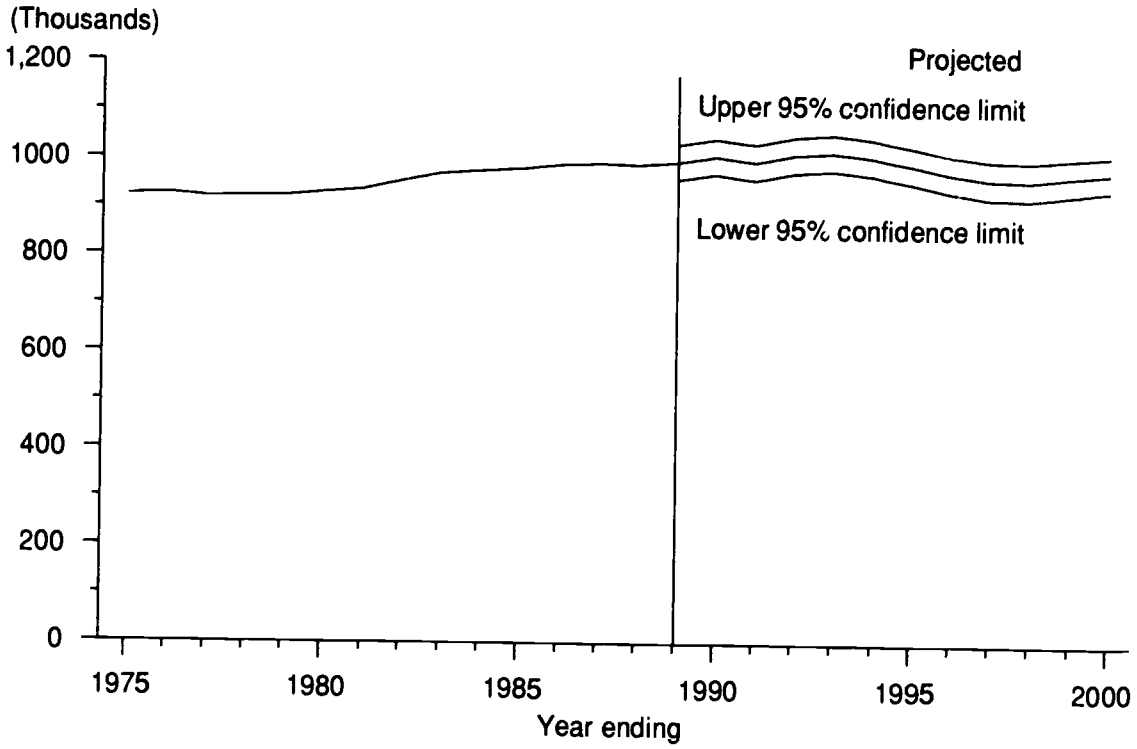


Figure 31.—Bachelor's degrees awarded to men, with projections: 1974–75 to 1999–2000

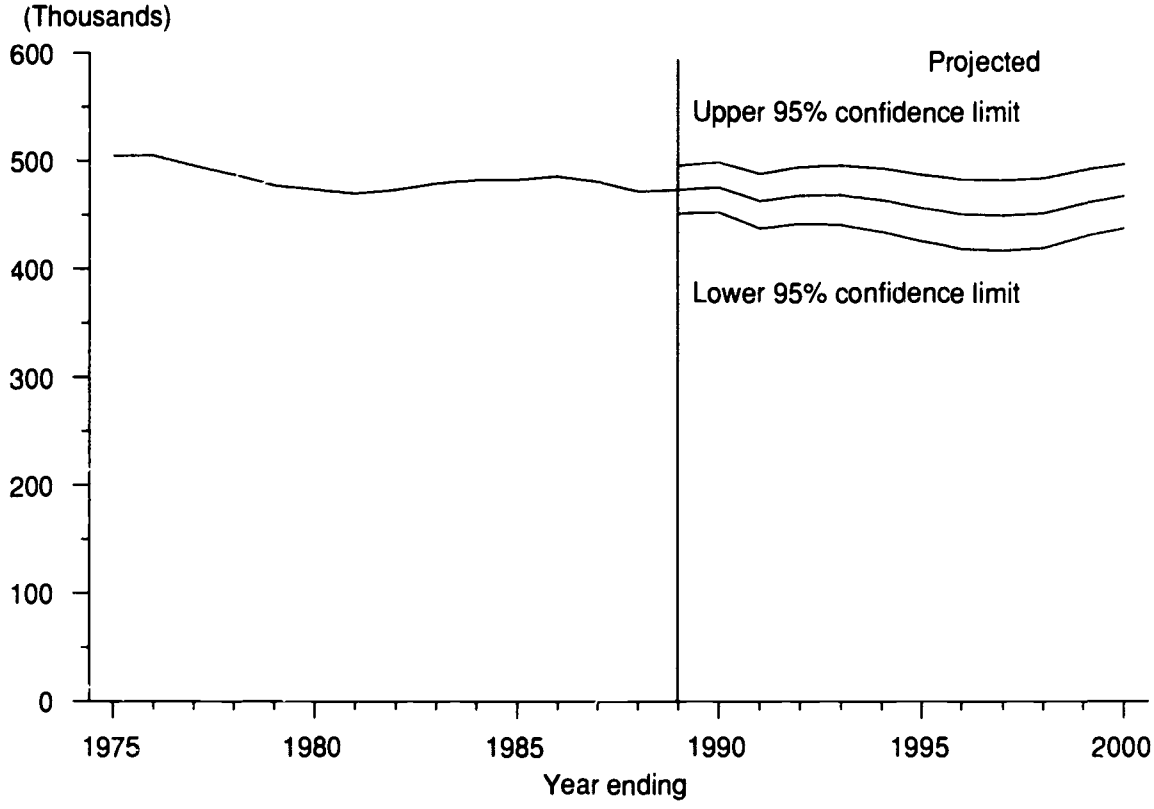


Figure 32.—Bachelor's degrees awarded to women, with projections: 1974–75 to 1999–2000

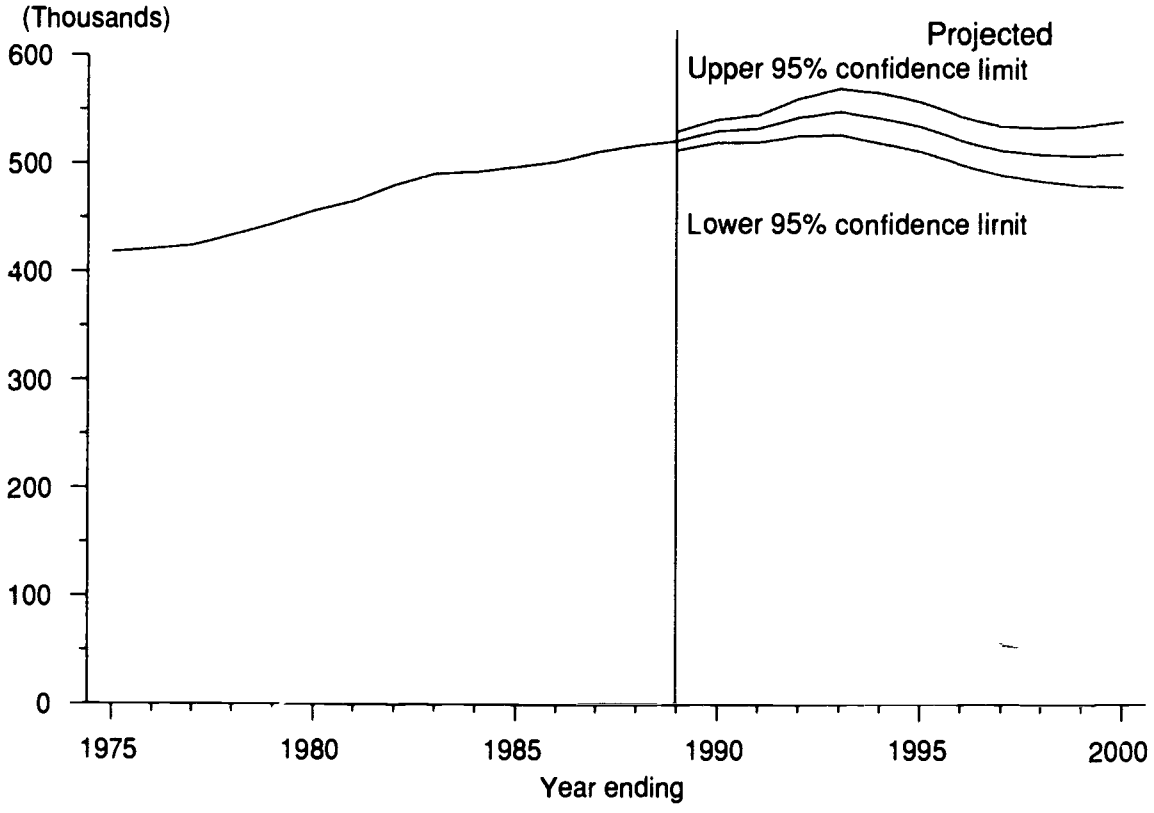


Figure 33.—Master's degrees, with projections: 1974–75 to 1999–2000

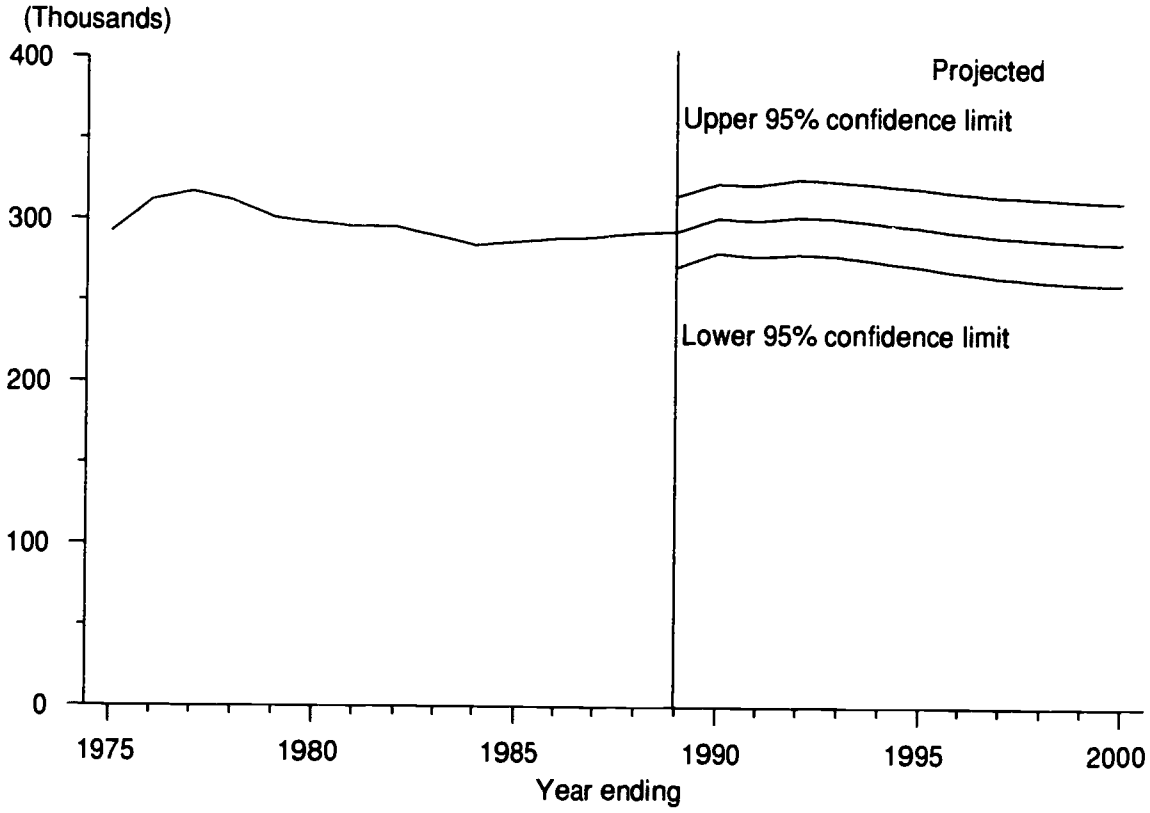


Figure 34.—Master's degrees awarded to men, with projections: 1974–75 to 1999–2000

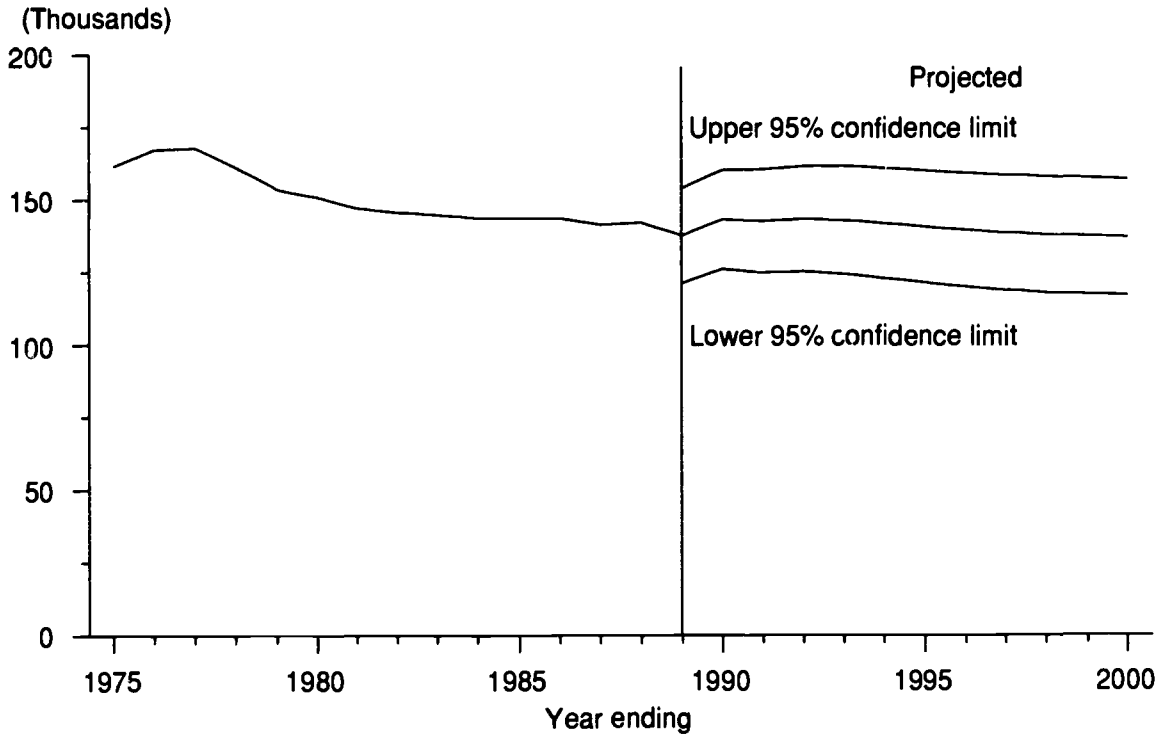


Figure 35.—Master's degrees awarded to women, with projections: 1974–75 to 1999–2000

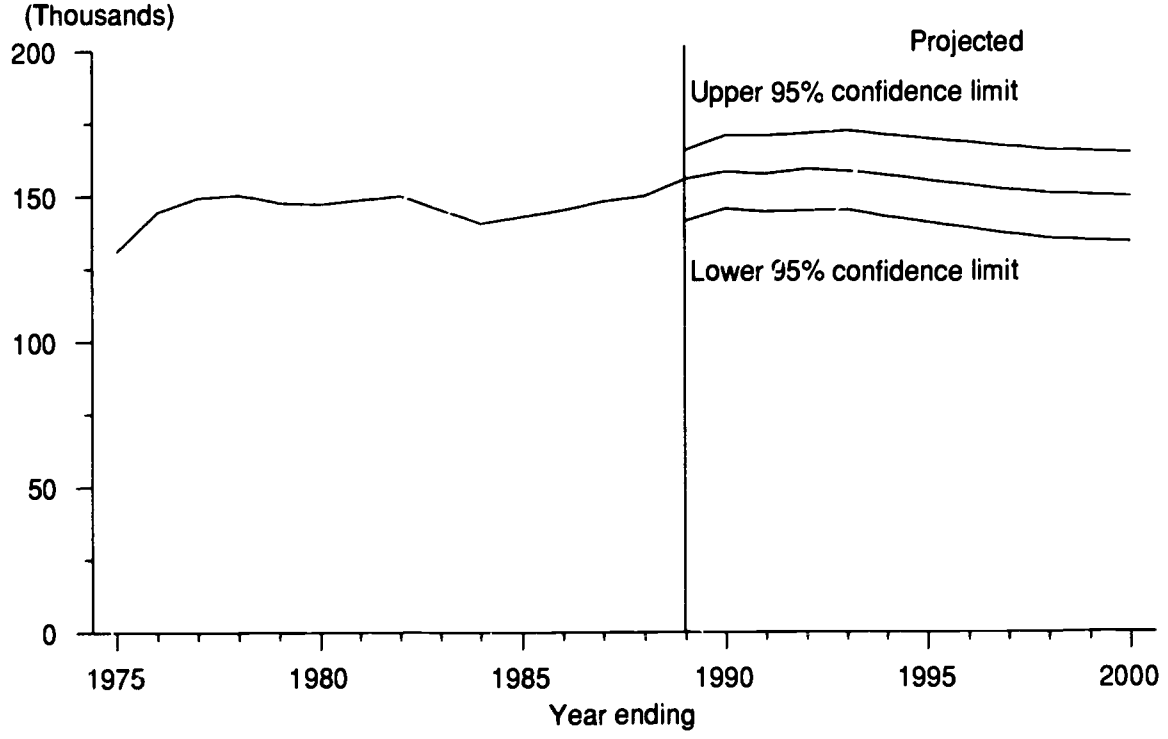


Figure 35.—Doctor's degrees, with projections: 1974–75 to 1999–2000

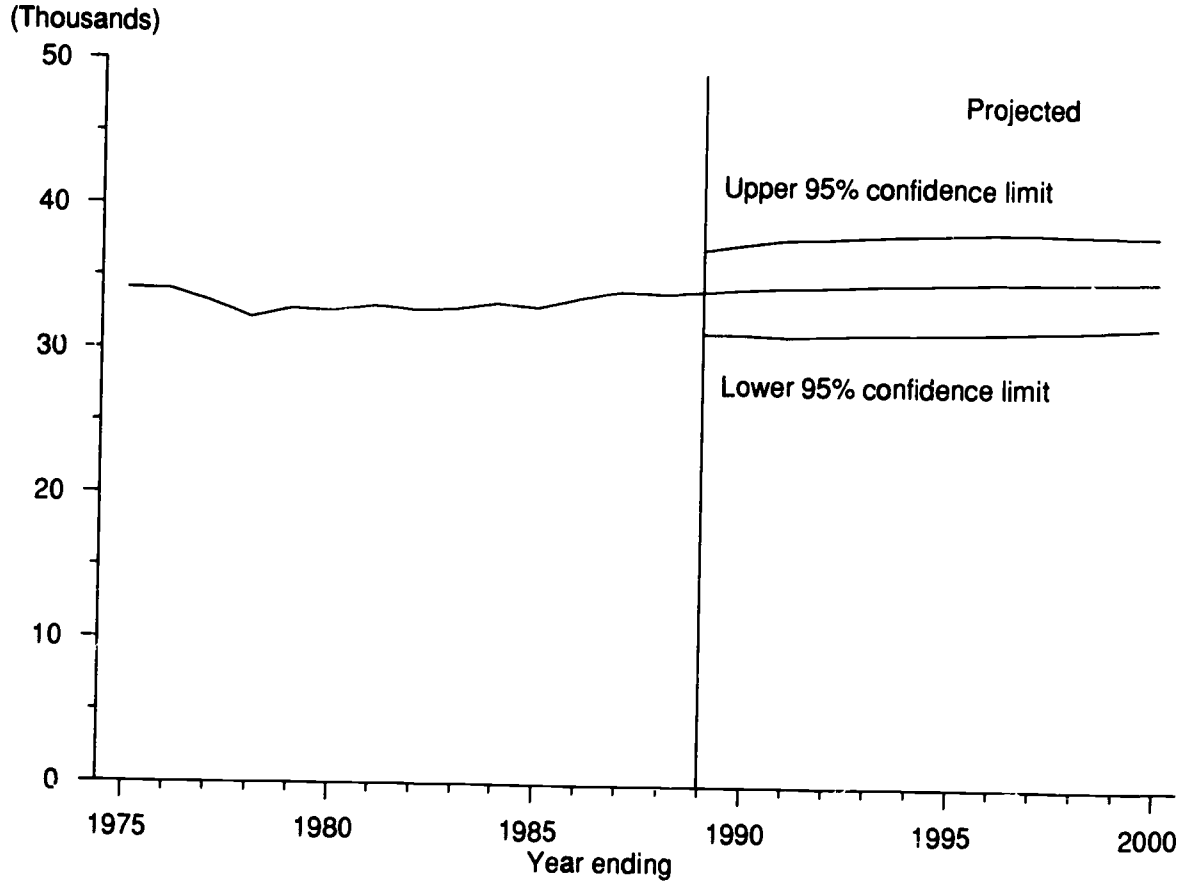


Figure 37.—Doctor's degrees awarded to men, with projections: 1974–75 to 1999–2000

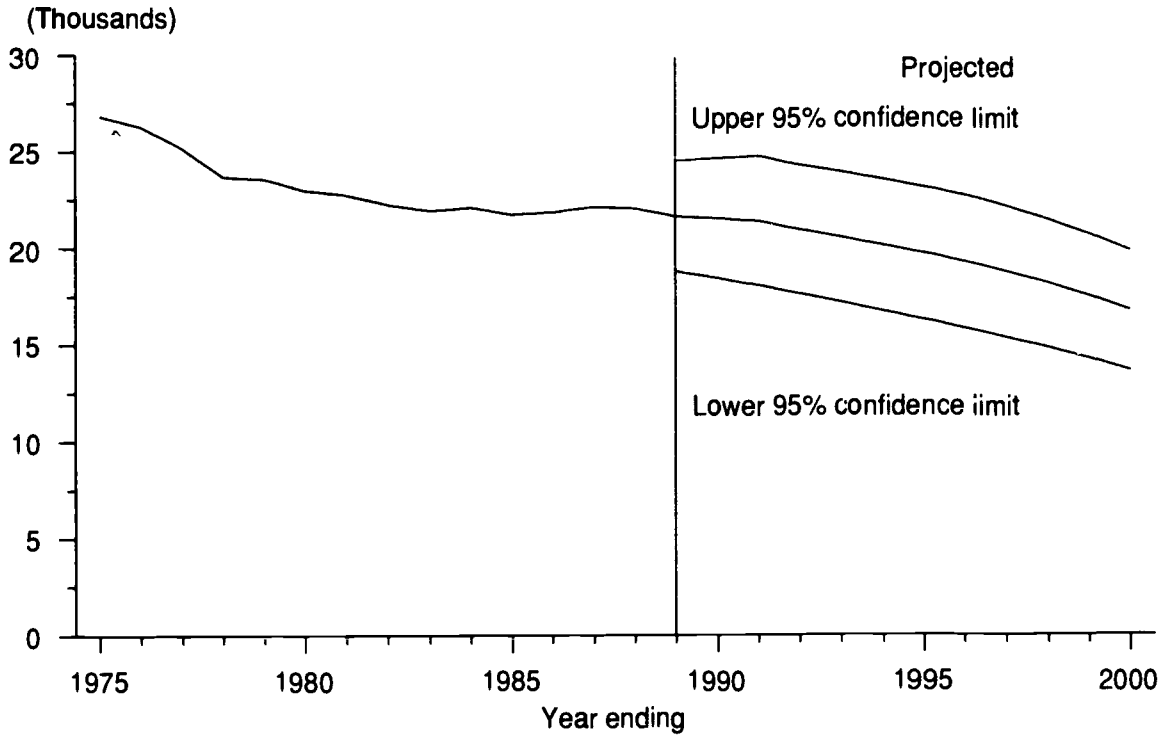


Figure 38.—Doctor's degrees awarded to women, with projections: 1974–75 to 1999–2000

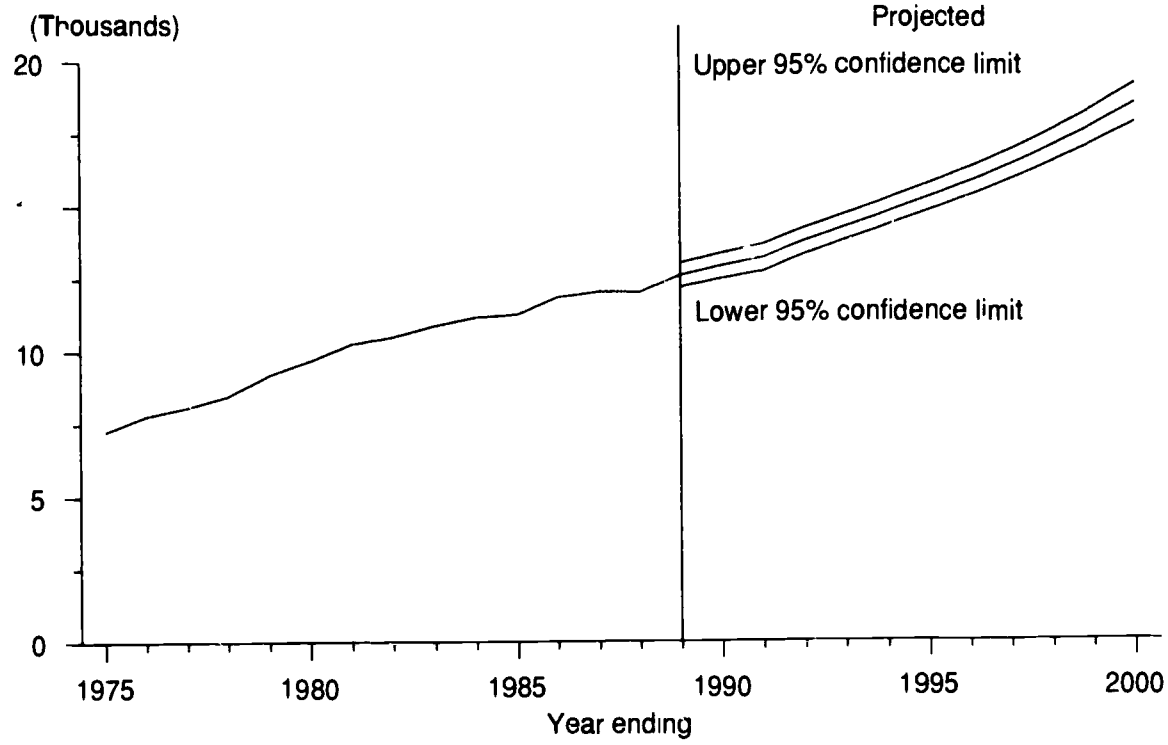


Figure 39.—First-professional degrees, with projections: 1975 to 1999–2000

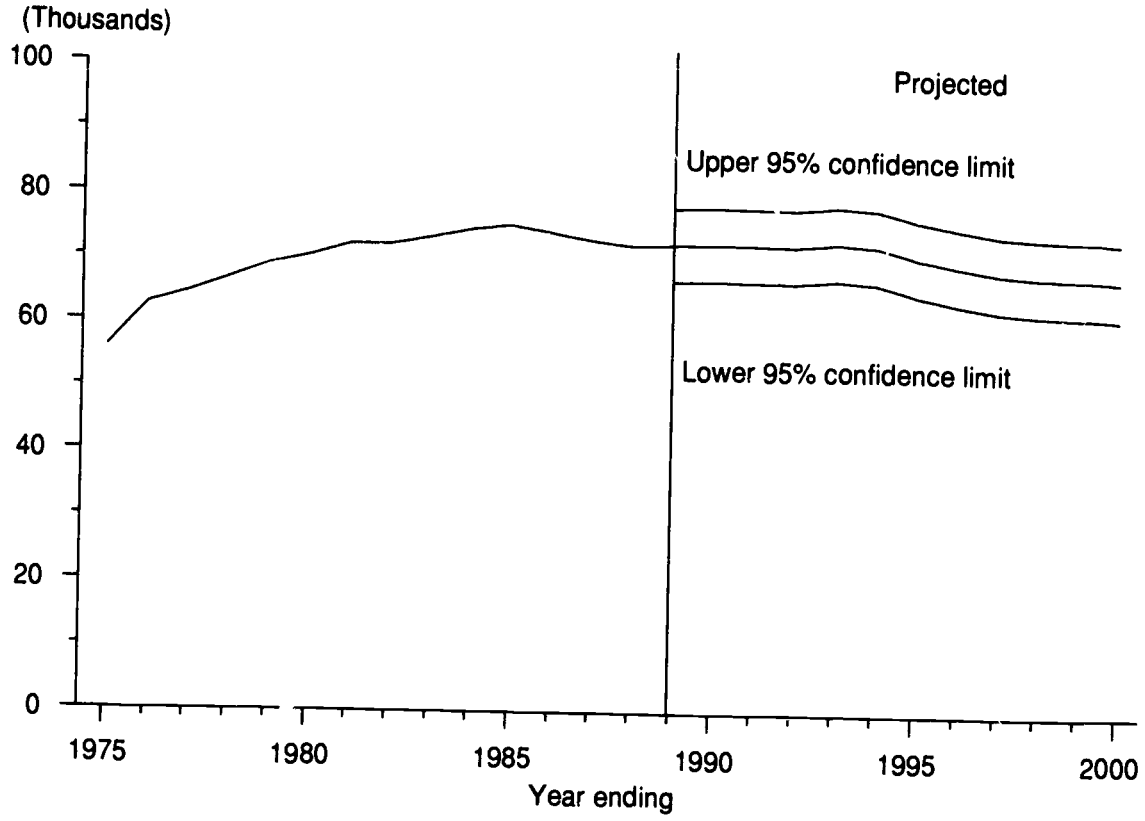


Figure 40.—First-professional degrees awarded to men, with projections: 1974–75 to 1999–2000

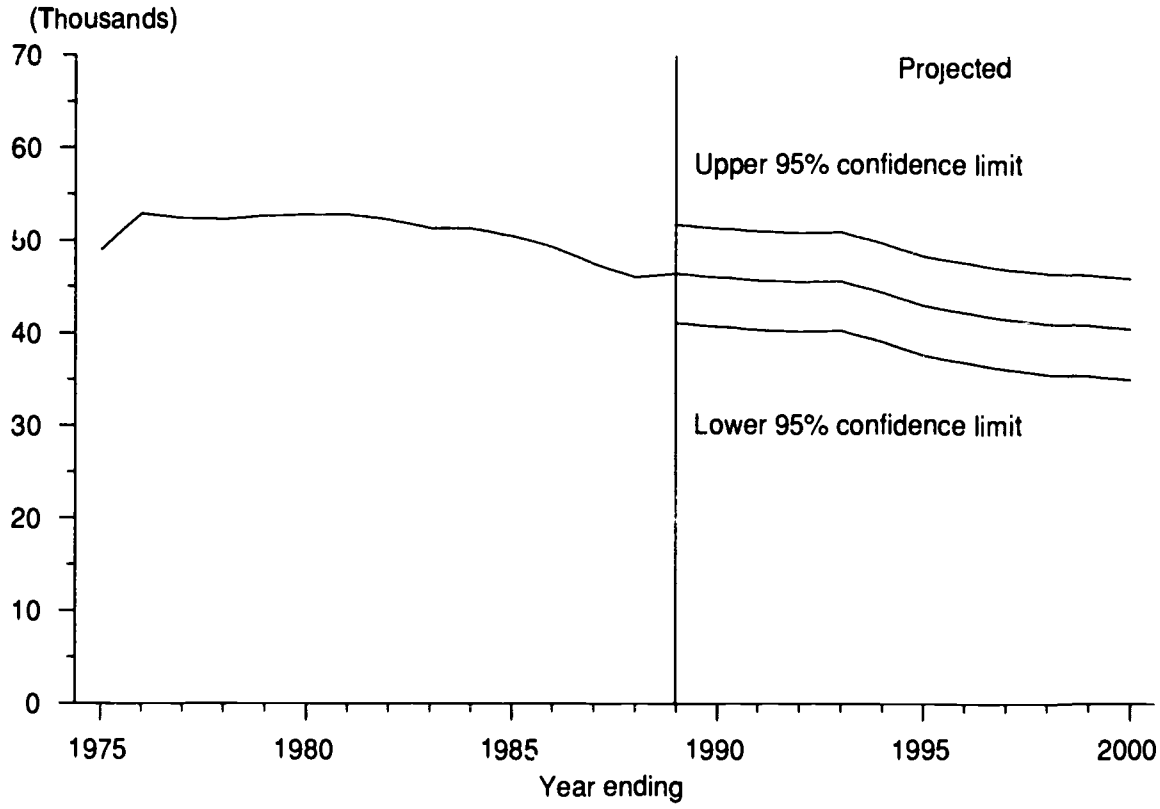


Figure 41.—First-professional degrees awarded to women, with projections: 1974–75 to 1999–2000

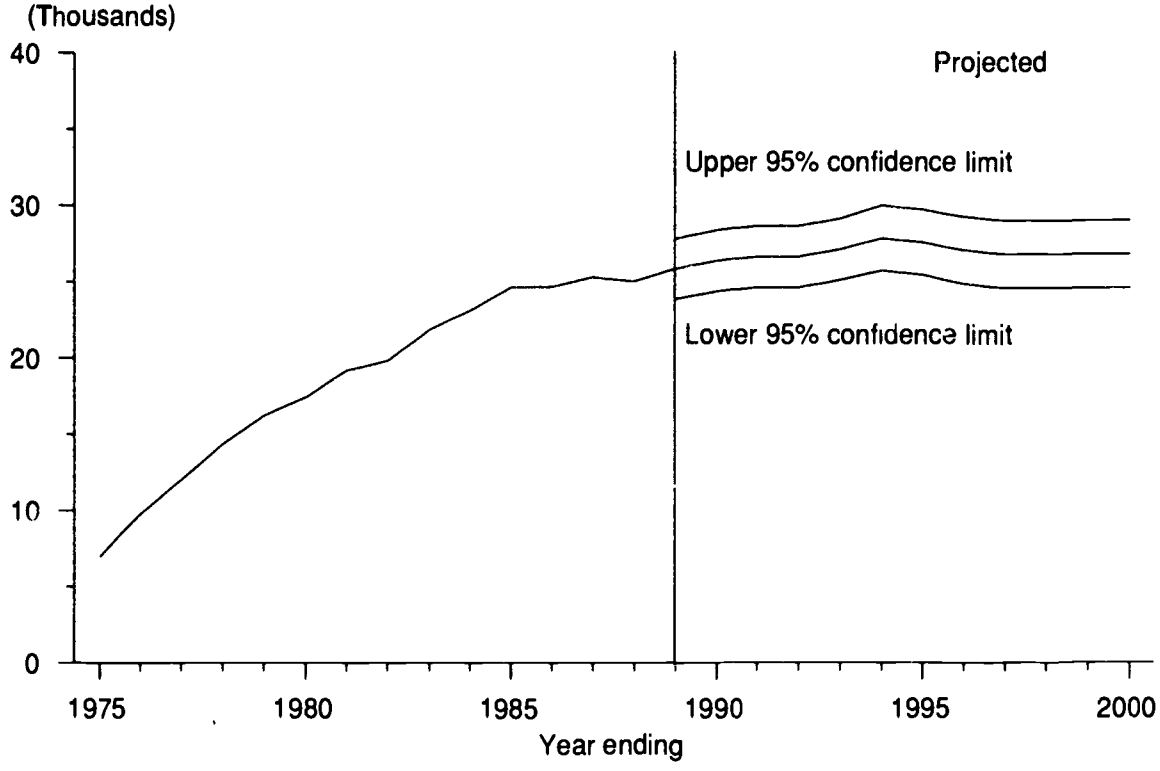


Table 27.—Associate degrees, by sex of recipient, with projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Total	Men	Women
1975	360,171	191,017	169,154
1976	391,454	209,996	181,458
1977	406,377	210,842	195,535
1978	412,246	204,718	207,528
1979	402,702	192,091	210,611
1980	400,910	183,737	217,173
1981	416,377	188,638	227,739
1982	434,515	196,939	237,576
1983	456,441	207,141	249,300
1984	452,416	202,762	249,654
1985	454,712	202,932	251,780
1986	446,047	196,166	249,881
1987	437,137	191,525	245,612
1988 [1]	430,000	188,000	242,000
1989 [2]	439,000	192,000	247,000
		Projected	
1990	448,000	195,000	253,000
1991	456,000	196,000	260,000
1992	457,000	194,000	263,000
1993	452,000	192,000	260,000
1994	446,000	191,000	255,000
1995	443,000	191,000	252,000
1996	443,000	192,000	251,000
1997	445,000	194,000	251,000
1998	448,000	195,000	253,000
1999	454,000	198,000	256,000
2000	461,000	201,000	261,000

[1] Estimate.
[2] Estimated on the basis of past data.

NOTE: Because of rounding, details may not add to totals

SOURCE. U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table 28.—Bachelor's degrees, by sex of recipient, with projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Total	Men	Women
1975	922,933	504,841	418,092
1976	925,746	504,925	420,821
1977	919,549	495,545	424,004
1978	921,204	487,347	433,857
1979	921,390	477,344	444,046
1980	929,417	473,611	455,806
1981	935,140	469,883	465,257
1982	952,998	473,364	479,634
1983	969,510	479,140	490,370
1984	974,309	482,319	491,990
1985	979,477	482,528	496,949
1986	987,823	485,923	501,900
1987	991,339	480,854	510,485
1988 [1]	989,000	472,000	517,000
1989 [2]	994,000	473,000	521,000
		Projected	
1990	1,005,000	475,000	530,000
1991	995,000	463,000	532,000
1992	1,011,000	468,000	543,000
1993	1,016,000	468,000	548,000
1994	1,006,000	464,000	542,000
1995	990,000	456,000	534,000
1996	973,000	451,000	522,000
1997	962,000	450,000	512,000
1998	961,000	452,000	509,000
1999	968,000	461,000	507,000
2000	976,000	467,000	509,000

[1] Estimate.
[2] Estimated on the basis of past data.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table 29.—Master's degrees, by sex of recipient, with projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Total	Men	Women
1975	292,450	161,570	130,880
1976	311,771	167,248	144,523
1977	317,164	167,783	149,381
1978	311,620	161,212	150,408
1979	301,079	153,370	147,709
1980	298,081	150,749	147,332
1981	295,739	147,043	148,696
1982	295,546	145,532	150,014
1983	289,921	144,697	145,224
1984	284,263	143,595	140,668
1985	286,251	143,390	142,861
1986	288,567	143,508	145,059
1987	289,557	141,363	148,194
1988 [1]	292,000	142,000	150,000
1989 [2]	293,000	137,000	156,000
		Projected	
1990	301 000	143,000	158,000
1991	300,000	142,000	158,000
1992	302,000	143,000	159,000
1993	301,000	143,000	158,000
1994	299,000	142,000	157,000
1995	295,000	140,000	155,000
1996	292,000	139,000	153,000
1997	290,000	138,000	152,000
1998	289,000	138,000	151,000
1999	287,000	137,000	150,000
2000	286,000	137,000	150,000

[1] Estimate.
[2] Estimated on the basis of past data.

NOTE: Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table 30.—Doctor's degrees, by sex of recipient, with projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Total	Men	Women
1975	34,083	26,817	7,266
1976	34,064	26,267	7,797
1977	33,232	25,142	8,090
1978	32,131	23,658	8,473
1979	32,730	23,541	9,189
1980	32,615	22,943	9,672
1981	32,958	22,711	10,247
1982	32,707	22,224	10,483
1983	32,775	21,902	10,873
1984	33,209	22,064	11,145
1985	32,943	21,700	11,243
1986	33,653	21,819	11,834
1987	34,120	22,099	12,021
1988 [1]	34,000	22,000	12,000
1989 [2]	34,200	21,600	12,600
		Projected	
1990	34,400	21,500	12,900
1991	34,500	21,300	13,200
1992	34,600	20,900	13,700
1993	34,700	20,500	14,200
1994	34,800	20,100	14,700
1995	34,900	19,700	15,200
1996	34,900	19,200	15,700
1997	35,000	18,700	16,300
1998	35,000	18,100	16,900
1999	35,000	17,400	17,600
2000	35,100	16,700	18,400

[1] Estimate

[2] Estimated on the basis of past data.

NOTE Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table 31.—First-professional degrees, by sex of recipient, with projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Total	Men	Women
1975	55,916	48,956	6,960
1976	62,649	52,892	9,757
1977	64,359	52,374	11,985
1978	66,581	52,270	14,311
1979	68,848	52,652	16,196
1980	70,131	52,716	17,415
1981	71,956	52,792	19,164
1982	72,032	52,223	19,809
1983	73,136	51,310	21,826
1984	74,407	51,334	23,073
1985	75,063	50,455	24,608
1986	73,910	49,261	24,649
1987	72,750	47,460	25,290
1988 [1]	72,000	46,000	25,000
1989 [2]	72,200	46,400	25,800
		Projected	
1990	72,400	46,000	26,400
1991	72,300	45,700	26,600
1992	72,100	45,500	26,600
1993	72,700	45,600	27,100
1994	72,200	44,400	27,800
1995	70,600	43,000	27,600
1996	69,200	42,200	27,000
1997	68,300	41,500	26,800
1998	67,800	41,000	26,800
1999	67,600	40,800	26,800
2000	67,100	40,400	26,800

[1] Estimate.
[2] Estimated on the basis of past data.

NOTE: Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Chapter 5

Classroom Teachers

With this issue of *Projections*, NCES resumes projections of private classroom teachers. This was done by calculating the ratio of the number of private classroom teachers for the year ending 1988 to the public classroom teachers for that year. This rate was multiplied by projections of public classroom teachers to obtain the private classroom teacher projections. While this model is not very sophisticated, it is the best that can be done with limited data. Although numbers of private classroom teachers are shown for years earlier than 1988, they are not completely consistent with the 1988 numbers. Thus, they could not be used to develop a model for private school teachers. These earlier data have been included for consistency with earlier editions of this publication and with the *Digest of Education Statistics*.

Elementary and Secondary School Teachers

The number of classroom teachers in the Nation's schools has increased by almost 200,000 from 1975 to 1988 (table 32). Initially, it rose from 2.45 million in 1975 to 2.49 million in 1977. Then it decreased to 2.44 million in 1981. Since then it has increased steadily to its present level of 2.64 million. Meanwhile, enrollment decreased from 49.8 million in 1975 to 45.0 million in 1984, and then increased to 45.4 million in 1988. NCES projects that the number of classroom teachers will increase by about 15 percent, from 2.69 million in 1989 to 3.08 million by the end of the century. Enrollments, however, are projected to increase by about 9 percent.

Elementary Classroom Teachers

While enrollments at the elementary level decreased from 1975 to 1981, the number of elementary teachers rose slightly, from 1.35 million in 1975, reached 1.40 million in 1980, and then decreased to 1.38 million in 1981. From 1981 to 1988, the number of elementary teachers rose by about 13 percent to 1.56 million. Through the same period, enrollments rose about 5 percent. For the last 11 years of the 20th century, NCES forecasts that the number of elementary school teachers will increase from 1.60 million in 1989 to 1.80 million in the year 2000.

Secondary Classroom Teachers

The number of secondary classroom teachers decreased by 21,000 from 1975 to 1988. In fact, this 14-year period was a rather stable one for the number of secondary teachers, which varied within a 70,000 range (figure 42). From 1975 to 1978, the number stayed at about 1.10 million. Then it decreased slowly to 1.04 million in 1982, and then rose to 1.08 million by 1988. Secondary enrollments, however, decreased by about 21 percent, showing increases only in the years 1985 and 1986. The number of secondary teachers is projected to increase from 1.10 million in 1989 to 1.29 million in the year 2000.

Public Classroom Teachers

The number of public classroom teachers hovered around 2.20 million from 1975 to 1978, decreased gradually to 2.12 million in 1982, and then increased to 2.30 million in 1988. Enrollments, meanwhile, decreased from 44.8 million in 1975 to 39.3 million in 1984, and then increased gradually to 40.2 million by 1988. NCES predicts that the number of teachers will continue increasing, reaching 2.68 million at the end of the decade.

Public Elementary Classroom Teachers

While elementary enrollments in public schools were decreasing from 1975 to 1981, the number of public elementary classroom teachers remained relatively stable. Enrollments and the number of teachers increased from 1981 to 1988. However, the number of teachers increased more rapidly than enrollments, as indicated by the pupil-teacher ratios (table 33), which decreased from 21.7 in 1975 to 18.7 in 1987, followed by an increase (the first in many years) to 19.2 in 1988. NCES forecasts that the number of public elementary teachers will increase between 1989 and 2000. NCES projections for public elementary enrollment are similar, except that enrollment is projected to peak in 1998.

Public Secondary Classroom Teachers

The number of public secondary classroom teachers decreased between the years 1975 and 1988, from 1.02 million to 0.98 million. Increases in 1976 and 1977 were followed by decreases in 1978 and 1979. Next came a slight increase in 1980 followed by three decreases, to 0.95 million in 1983. The last 5 years show moderate increases. During the same period (1975 to 1988), enrollments at the secondary level in public schools showed steady decreases, which are reflected in the decrease in pupil-teacher ratios (table 33). NCES projections show the pupil-teacher ratio remaining steady from 1989 to 2000.

Private Classroom Teachers

While private classroom teachers represented around 13 percent of the total classroom teachers in 1988, private enrollment was approximately 12 percent. This indicates that private schools have somewhat more teachers for a given number of students than public schools, i.e., private school pupil-teacher ratios are smaller than public school pupil-teacher ratios (figure 43).

NCES projections show the number of private elementary and secondary teachers increasing by nearly 50,000, from 352,000 in 1989 to 401,000 by the end of the decade. The number of private elementary teachers will account for the greater part of the increase, from 256,000 in 1989 to 289,000 in 2000. The number of private secondary classroom teachers are forecast to increase by nearly 17 percent, from 96,000 to 112,000 by the end of the century.

The pupil-teacher ratios for private school teachers are projected to behave similarly to their counterparts in the public sector, showing no significant changes in the last decade of this century.

Demand For New Hiring of Teachers

Interest in the supply and demand for elementary and secondary teachers has increased in the past several years. Sufficient data for a detailed teacher supply and demand analysis are not available from NCES. A discussion of problems involved in accomplishing this analysis appears in *Toward Understanding Teacher Supply and Demand, Priorities for Research and Development, Interim Report,* National Academy Press. According to this report, the number of teachers employed is nearly equal to total teacher demand. Given this assumption and an assumption about future teacher turnover, it is possible to calculate the demand for new-hiring of teachers. This is the number of teachers, not already in the classroom, that schools will need to hire, if these forecasts are correct.

The reader is cautioned in using this data to determine future teacher shortages or surpluses. According to the National Academy of Sciences report, newly hired teachers come from many sources: "experienced teachers on leave last year or recalled from layoffs; experienced teachers out of teaching for longer periods; substitute teachers; in-migrants . . .; new graduates of teacher training programs; other new graduates who obtain certification; and persons hired on emergency certificates." Any attempt to use just one of these components of supply, such as new teacher graduates, will greatly underestimate supply, and consequently, overestimate a shortage.

For this study, the demand for new-hiring of teachers is divided into three parts. The first part is the demand due to turnover, such as retirement or job changes. According to unpublished tables from the Bureau of Labor Statistics, the turnover rate for teachers has been decreasing since 1977–78. For elementary teachers, it fell from 7.6 percent to 4.9 percent in 1983–84. Secondary teacher turnover fell from 7.7 percent to 5.6 percent. For the purposes of calculating the demand for new-hiring of teachers, three alternate turnover series have been developed (see chapter 13 for details).

The second part is the demand for new-hiring due to enrollment changes, assuming that teacher-pupil ratios remain constant. The third part is due to other factors, including changing class size policies, changes in approaches to special education, and budget considerations.

Under each of the alternate turnover scenarios, the demand for new-hiring of elementary and secondary teachers follows the same pattern (figure 44). An initial increase from 1989 to 1990 is followed by a decrease the following year. In the early 1990s, the demand for new-hiring of teachers fluctuates somewhat. Finally, in the latter part of the decade, each alternative shows gradual increases through the year 2000.

Under each alternative, the component due to turnover is the largest influence, contributing increases each year (table 34). Thus, the decreases and leveling off must be due to the influence of the other factors. The sum of the demand due to enrollment changes and the demand due to other factors decreases from 51,000 in 1989 to 25,000 in 1991. It then increases to 44,000 in 1993, and levels off at about 40,000 for the next 4 years. In the last 3 years, this sum drops to about 29,000 at the end of the decade.

The low alternative shows the total demand for the additional hiring of elementary and secondary teachers increasing by 4 percent, from 212,000 in 1989 to 221,000 in 2000. For the middle alternative, this increase is 13 percent, from 216,000 in 1989 to 243,000

by the year 2000. For the high alternative, total demand for new hiring of classroom teachers is projected to rise from 225,000 in 1989 to 285,000 in the year 2000, an increase of 27 percent.

According to the middle alternative, the total demand for elementary classroom teachers is projected to increase from 114,000 in 1989 to 122,000 in 1990. It is then expected to drop to about 110,000 for the next 2 years, and then increase to 120,000 the following year. It will then remain about the same for the next 3 years, then rise to 128,000 at the end of the century. The demand due to turnover is projected to increase by about 3,000 per year, going from 85,000 in 1989 to 114,000 by the year 2000. The contribution to total demand due to enrollment changes decreases throughout the 1990s, going from 29,000 to −13,000. However, the demand due to other factors is projected to do the opposite, increasing from 5,000 in 1990 to 26,000 in 2000.

The low alternative shows the demand due to turnover increasing from 82,000 in 1989 to 103,000 in 2000. This increase, in combination with the other two factors, produces an increase of 6,000 in the total demand, from 111,000 to 117,000. The high alternative demand due to turnover increases by about 4,000 a year, from 90,000 in 1989 to 138,000 11 years later. The corresponding total demand for new-hiring of elementary classroom teachers increases from 119,000 to 152,000.

Total demand for new-hiring of secondary teachers, under the middle alternative, increases by 8 percent, from 102,000 in 1989 to 110,000 in 1990. It then drops to 95,000 the following year, increases to 106,000 in 1993, and rises to 114,000 by the year 2000. The demand due to turnover increases from 73,000 to 100,000 during this time frame. The demand due to enrollment changes, starts off at −17,000, increases to 33,000 by 1994, and then drops to 6,000 by the end of the decade. The demand due to other factors, which starts at 39,000 in 1989, is negative for the next 6 years, reflecting the rising pupil-teacher ratios through this same period (table 33). For the last 5 years, the highest it gets is 14,000 (in 1998), but finishes the decade at 9,000.

Under the low alternative, the demand due to turnover increases by 20,000, from 71,000 in 1989 to 91,000 in 2000. Meanwhile, the total demand is increasing by just 5,000, from 100,000 in 1989 to 105,000 in 2000. The high alternative shows the demand due to turnover increasing from 77,000 in 1989 to 120,000 in 2000. At the same time, the total demand is increasing from 106,000 to 134,000.

Figure 42.—Elementary and secondary classroom teachers, with projections: Fall 1975 to fall 2000

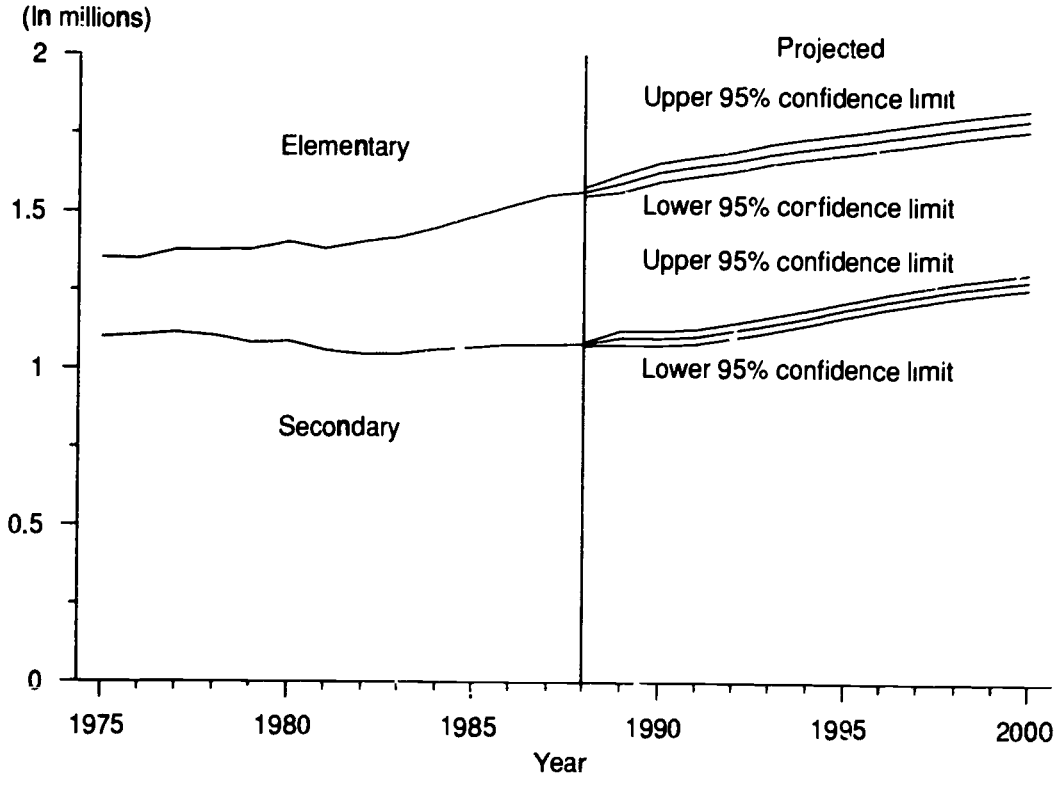


Figure 43.—Pupil-teacher ratios, by organizational level and control: Fall 1975 to fall 2000

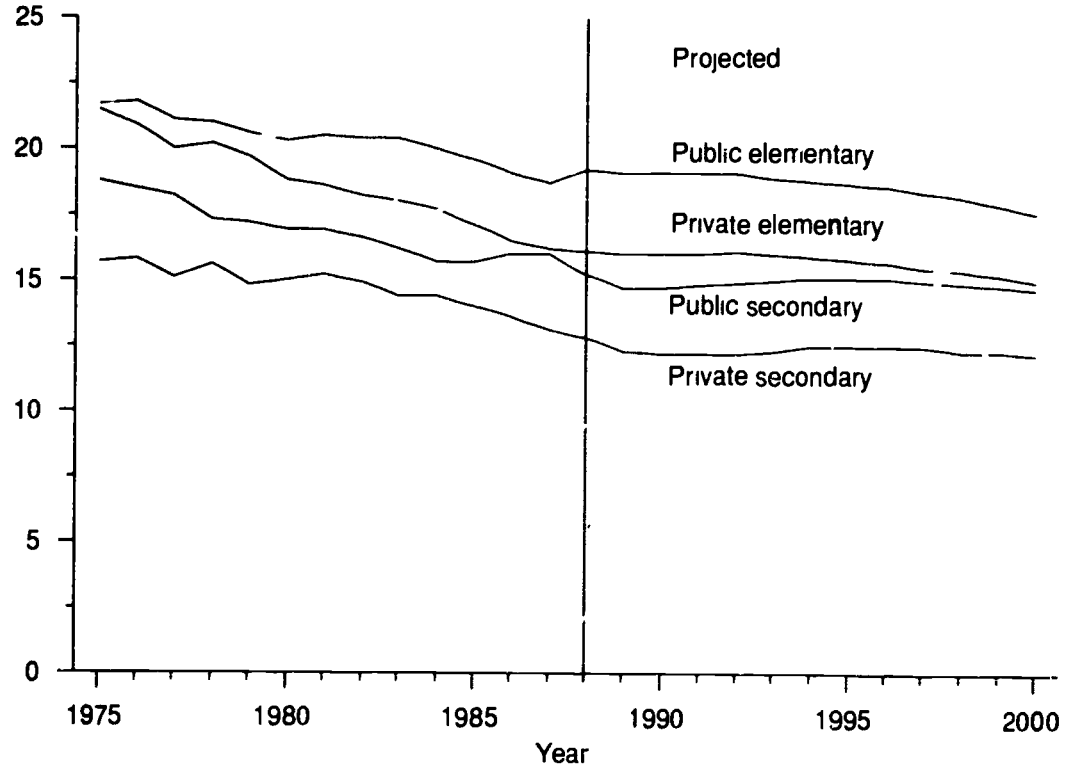


Figure 44.—Demand for new-hiring of classroom teachers, with alternative projections: Fall 1989 to fall 2000

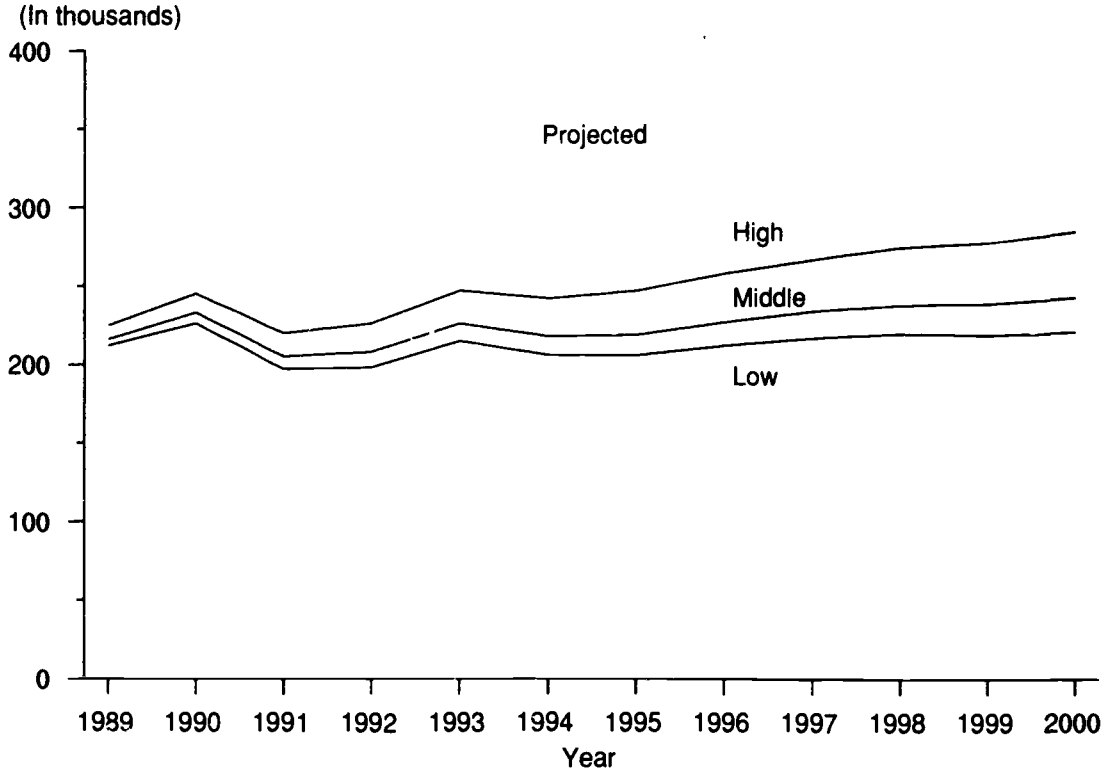


Table 32.—Classroom teachers in elementary and secondary schools, by control, with projections: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year (fall)	Total			Public			Private		
	K–12	Elementary	Secondary	K–12	Elementary	Secondary	K–12	Elementary	Secondary
1975	2,451	1,352	1,099	2,196	1,180	1,016	255	172	83
1976	2,454	1,349	1,105	2,186	1,166	1,020	268	183	85
1977	2,488	1,375	1,113	2,209	1,185	1,024	279	190	89
1978	2,478	1,375	1,103	2,206	1,190	1,016	272	185	87
1979	2,459	1,378	1,081	2,183	1,190	993	276	188	88
1980	2,485	1,401	1,084	2,184	1,189	995	301	212	89
1981	2,438	1,380	1,057	2,125	1,159	965	313	221	92
1982	2,446	1,402	1,044	2,121	1,171	950	325	231	94
1983	2,463	1,418	1,045	2,126	1,178	948	337	240	97
1984	2,508	1,448	1,060	2,168	1,205	963	340	243	97
1985	2,550	1,483	1,067	2,207	1,237	970	343	246	97
1986	2,592	1,517	1,075	2,244	1,267	977	348	250	98
1987	2,627	1,551	1,076	2,279	1,297	982	348	254	94
1988 *	2,641	1,563	1,078	2,296	1,312	984	345	251	94
					Projected				
1989	2,691	1,592	1,099	2,340	1,336	1,003	352	256	96
1990	2,724	1,627	1,097	2,367	1,365	1,001	357	261	96
1991	2,748	1,645	1,103	2,388	1,381	1,007	360	264	96
1992	2,785	1,662	1,123	2,420	1,395	1,025	365	267	98
1993	2,829	1,686	1,143	2,459	1,415	1,043	370	271	100
1994	2,868	1,703	1,165	2,493	1,430	1,064	375	274	102
1995	2,909	1,719	1,191	2,529	1,443	1,087	380	276	104
1996	2,950	1,735	1,215	2,565	1,456	1,109	385	279	106
1997	2,988	1,752	1,236	2,599	1,471	1,128	389	281	108
1998	3,024	1,769	1,256	2,631	1,485	1,146	394	284	109
1999	3,053	1,783	1,270	2,656	1,497	1,159	397	286	111
2000	3,082	1,797	1,285	2,681	1,508	1,173	401	289	112

* Estimated.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*, "Key Statistics for Public Elementary and Secondary Education: School Year 1988-89," *Early Estimates*, and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89", *Early Estimates*, Common Core of Data survey, and unpublished tabulations; National Education Association, *Estimates of School Statistics* (various years), copyrighted. (This table was prepared May 1989.)

Table 33.—Pupil-teacher ratios in elementary and secondary schools, by control, with projections: 50 States and D.C., fall 1975 to fall 2000

	Public		Private	
	Elementary	Secondary	Elementary	Secondary
1975	21.7	18.8	21.5	15.7
1976	21.8	18 5	20.9	15.8
1977	21.1	18 2	20.0	15.1
1978	21.0	17.3	20.2	15.6
1979	20.6	17.2	19.7	14.8
1980	20.3	16.9	18.8	15.0
1981	20.5	16.9	18 6	15.2
1982	20.4	16 6	18.2	14.9
1983	20.4	16 2	18 0	14.4
1984	20.0	15.7	17.7	14.4
1985	19.6	15.7	17.1	14.0
1986	19.1	16 0	16.5	13.6
1987	18.7	16.0	16.2	13.1
1988	19.2	15.2	16 1	12.8
		Projected		
1989	19.1	14.7	16.0	12.3
1990	19.1	14.7	16.0	12.2
1991	19.1	14.8	16.0	12.2
1992	19.1	14.9	16.1	12.2
1993	18.9	15.0	16.0	12.3
1994	18.8	15.1	15.9	12.5
1995	18.7	15 1	15.8	12.5
1996	18.6	15.1	15.7	12.5
1997	18.4	15 0	15.5	12.5
1998	18 2	14 9	15.4	12.3
1999	17.9	14.8	15.2	12.3
2000	17.6	14.7	15.0	12.2

SOURCE: U.S. Department of Education, National Center for Education Statistics *Statistics of Public Elementary and Secondary Schools,* "Key Statistics for Elementary and Secondary Education: School Year 1988–89," *Early Estimates,* Common Core of Data survey, and unpublished tabulations; National Education Association, *Estimates of School Statistics* (various years) copyrighted. (This table was prepared May 1989)

Table 34.—Projected demand for new-hiring of classroom teachers in elementary and secondary schools, by level: 50 States and D.C., fall 1989 to fall 2000

(In thousands)

Year	Middle alternative				Low alternative		High alternative	
	Total	Due to			Total	Due to turnover	Total	Due to turnover
		Turnover	Enrollment changes	Other factors				
				Elementary and secondary				
1989	216	158	5	45	212	153	225	167
1990	233	164	27	5	226	158	245	176
1991	205	168	36	(11)	197	161	220	184
1992	208	173	40	(4)	198	164	226	191
1993	226	178	40	4	215	167	247	199
1994	218	184	41	(2)	206	171	242	208
1995	219	189	31	10	206	175	247	216
1996	227	194	24	16	212	179	258	225
1997	234	200	14	24	217	183	267	233
1998	238	205	2	34	220	187	275	241
1999	239	210	(2)	30	219	190	278	250
2000	243	215	(7)	36	221	194	285	257
				Elementary				
1989	114	85	22	7	111	82	119	90
1990	122	88	29	5	119	85	129	95
1991	109	91	22	(4)	105	87	118	100
1992	111	94	17	1	106	89	121	104
1993	120	96	12	12	115	91	132	108
1994	117	99	8	9	110	93	130	113
1995	117	102	5	10	110	94	132	117
1996	121	104	3	13	113	96	138	121
1997	124	107	(3)	20	115	98	142	125
1998	126	109	(3)	20	116	99	146	129
1999	126	112	(10)	24	115	101	148	134
2000	128	114	(13)	26	117	103	152	138
				Secondary				
1989	102	73	(17)	39	100	71	106	77
1990	110	76	(2)	(0)	108	73	116	81
1991	95	77	14	(8)	92	74	102	84
1992	96	79	23	(4)	92	75	105	87
1993	106	82	28	(7)	101	77	115	91
1994	101	84	33	(11)	96	79	112	95
1995	102	87	26	(0)	96	81	115	99
1996	107	90	21	3	100	83	120	104
1997	110	93	18	4	102	85	125	108
1998	112	96	6	14	104	87	129	112
1999	113	98	8	6	104	89	130	116
2000	114	100	6	9	105	91	134	120

NOTE: Negative numbers in parentheses.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*, "Key Statistics for Public Elementary and Secondary Education: School Year 1988-89," *Early Estimates* and "Key Statistics for Private Elementary and Secondary Education: School Year 1988-89," *Early Estimates*, Common Core of Data survey, and unpublished tabulations; National Education Association, *Estimates of School Statistics* (various years), copyrighted. (This table was prepared May 1989.)

Chapter 6

Instructional Faculty

From 1975 to 1988, the number of instructional faculty (excluding graduate assistants) increased faster than total college enrollment. The number of instructional faculty rose 18 percent, from 628,000 to 741,000 (table 35 and figure 45). Over the same period, total college enrollment increased 15 percent. The increase in faculty was due to an increase in the proportion of part-time instructors employed in institutions of higher education. This proportion rose from 30 percent in 1975 to 37 percent in 1988.

Instructional faculty is projected to increase to 771,000 by the year 2000. Instructional faculty at public institutions increased from 443,000 in 1975 to 524,000 in 1988. This number is expected to rise to 547,000 by the year 2000. Instructional faculty at private institutions rose from 185,000 in 1975 to 217,000 in 1988. This number is expected to reach 225,000 by the year 2000. These projections assume that faculty-student ratios will remain constant at 1983 levels throughout the projection period. However, if this ratio increases, instructional faculty will tend to exceed the number shown for the middle alternative in table 35.

Much of the faculty growth since 1975 was in 2-year institutions, an increase of 37 percent between 1975 and 1988, compared with a 12 percent increase for 4-year institutions. Instructional faculty at 2-year institutions increased from 161,000 in 1975 to 221,000 in 1988. This number is expected to rise to 231,000 by the year 2000, an increase of 5 percent from 1988. Instructional faculty at 4-year institutions rose from 467,000 in 1975 to 521,000 in 1988. This number is expected to rise to 540,000 by the year 2000, an increase of 4 percent from 1988.

The number of full-time faculty increased from 440,000 in 1975 to 467,000 in 1988 and is projected to rise to 489,000 by the year 2000. Part-time faculty increased from 188,000 in 1975 to 275,000 in 1988. By the year 2000, the number is expected to increase to 283,000 (figure 46).

Alternative Instructional Faculty Projections

The alternative projections of instructional faculty are based on the low and high alternative projections of enrollment in institutions of higher education (tables 10 through 13). Under the low alternative, instructional faculty will decrease 4 percent, from 741,000 in 1988 to 711,000 by the year 2000. Under the high alternative, it will increase to 829,000 by the year 2000, a 12 percent increase from 1988.

Figure 45.—Instructional faculty in institutions of higher education, with alternative projections: Fall 1975 to fall 2000

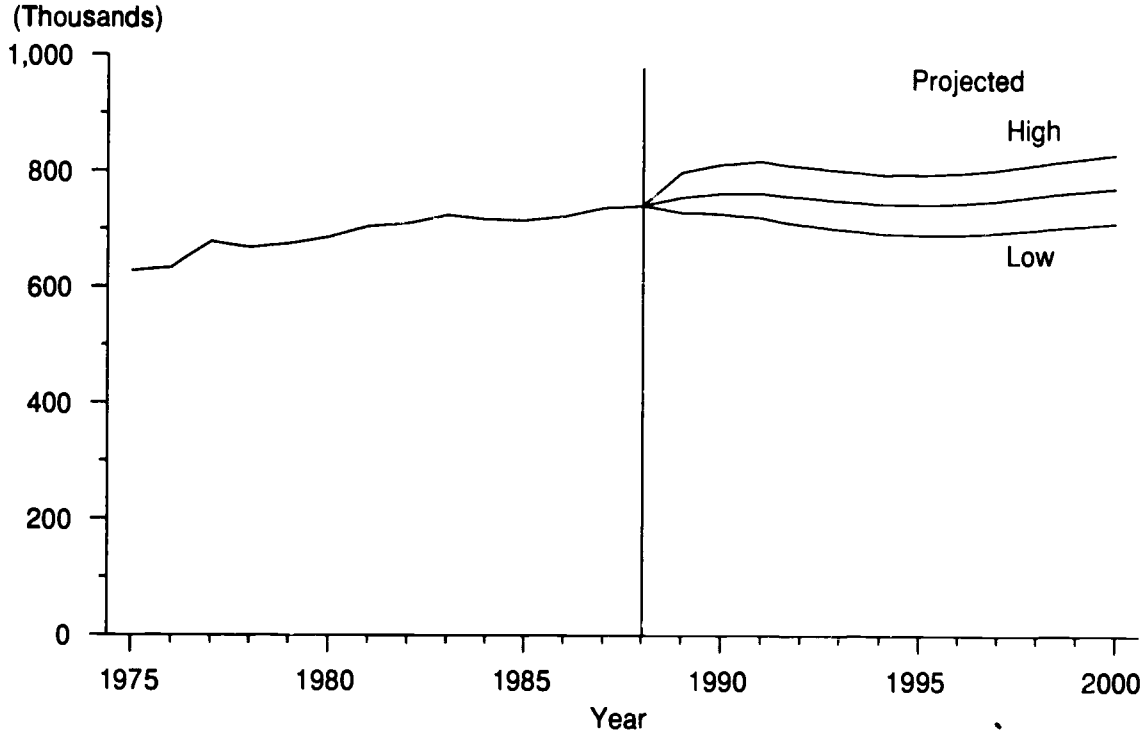


Figure 46.—Full-time and part-time instructional faculty, with middle alternative projections: Fall 1975 to fall 2000

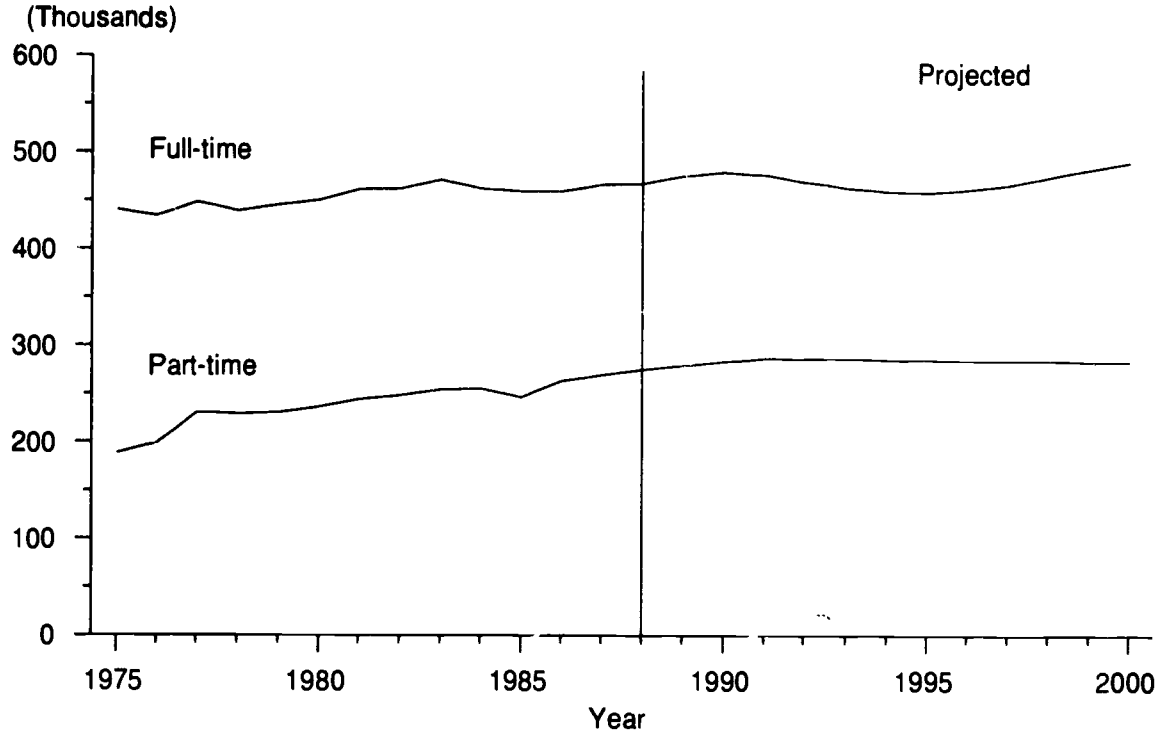


Table 35.—Full-time and part-time instructional faculty [1] in institutions of higher education, by employment status, control, and type of institution, with alternative projections: 50 States and D.C., fall 1975 to fall 2000

(In thousand

Year	Total	Employment status		Control of institution		Type of institution	
		Full-time	Part-time	Public	Private	4-year	2-year
1975 [2]	628	440	188	443	185	467	161
1976	633	434	199	450	183	467	166
1977	678	448	230	492	186	485	193
1978 [2]	668	439	229	482	186	485	183
1979 [2]	675	445	230	488	187	494	182
1980 [2]	686	450	236	495	191	494	192
1981	705	461	244	509	196	493	212
1982 [2]	710	462	248	506	204	493	217
1983	724	471	254	512	212	504	220
1984 [2]	717	462	255	505	212	504	213
1985 [2]	715	459	246	503	212	504	211
1986 [3]	722	459	263	510	212	506	216
1987 [3]	736	466	269	523	213	516	220
1988 [3]	741	467	275	524	217	521	221
Middle alternative projections							
1989	755	475	279	534	221	530	225
1990	762	479	283	539	223	534	227
1991	762	476	286	539	223	535	228
1992	755	469	286	534	221	529	226
1993	749	463	286	530	219	524	225
1994	744	459	285	527	218	520	224
1995	743	458	285	526	217	519	224
1996	745	461	284	528	217	520	225
1997	750	466	284	532	219	524	227
1998	758	474	284	537	221	529	228
1999	765	482	283	542	223	535	230
2000	771	489	283	547	225	540	231
Low alternative projections							
1989	729	458	271	516	214	512	217
1990	727	453	273	514	213	510	217
1991	720	445	274	508	211	505	215
1992	708	435	273	500	208	496	212
1993	700	428	272	495	206	490	210
1994	693	422	271	490	203	484	209
1995	691	421	271	489	203	482	209
1996	691	421	270	489	202	482	209
1997	695	425	269	491	203	485	210
1998	700	432	269	496	205	489	212
1999	706	438	268	500	206	493	213
2000	711	444	267	504	208	498	214
High alternative projections							
1989	798	501	297	565	233	559	239
1990	812	509	303	575	237	569	243
1991	817	511	306	578	239	573	244
1992	808	503	305	572	236	566	242
1993	801	496	304	566	234	560	240
1994	795	491	304	562	232	555	240
1995	795	491	303	562	232	555	240
1996	797	494	303	564	233	556	241
1997	803	500	303	569	234	560	242
1998	812	509	303	575	237	567	245
1999	821	519	302	582	240	574	247
2000	829	527	302	587	242	581	248

[1] Includes faculty members with the title of professor, associate professor, assistant professor, instructor, lecturer, assisting professor, adjunct professor, or interim professor (or its equivalent). Excluded are graduate students with titles such as graduate or teaching fellow who assist senior staff.

[2] Estimated on the basis of enrollment.

[3] Estimated on the basis of past data.

NOTE: Because of rounding, details may not add to totals. Some data have been revised from previously published figures.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Employees in Institutions of Higher Education,* various years; and U.S. Equal Employment Opportunity Commission, Higher Education Staff Information Report File, 1977, 1981, and 1983. (This table was prepared April 1989.)

Chapter 7

Expenditures of Public Elementary and Secondary Schools

Current expenditures and average annual teacher salaries in public elementary and secondary schools are projected to increase between school years 1989–90 and 1999–2000. The projections are based on the key assumptions of continued economic growth and increased assistance by State governments to local governments. Projections based on alternative economic scenarios are discussed below.

Current Expenditures

Past Trends

Current expenditures, which had already been in a period of growth, have continued to increase since 1974–75. These expenditures, in constant 1987–88 dollars,[1] amounted to $128.2 billion in 1974–75 and are expected to reach $161.5 billion in 1988–89, an increase of 26 percent (table 36 and figure 46). At the same time, current expenditures per pupil in average daily attendance (ADA) rose 41 percent from 1974–75, to an estimated $4,348 in 1988–89 (table 36 and figure 47). Expenditures per student rose more rapidly than the current expenditures because of a decline in student enrollment.

Disposable income per capita has increased substantially since 1974–75, enabling more money to be spent on education. There was also a rapid rise in State education aid to local governments. As education revenue from State sources increased, local governments increased spending on education. Another factor in higher current expenditures per pupil has been the decrease in the ratio of the number of pupils to the population, i.e., the fewer number of pupils per person, the greater amount of money can be spent per pupil with the same level of per capita revenue.

The only time in the past 15 years in which current expenditures decreased was from 1978–79 to 1981–82. Three events may account for this. First, disposable income per capita and State education aid per capita were in periods of either slow growth or decline. Second, this was the period of the "tax revolt," when many voters expressed displeasure at the spending habits of either State or local government by voting for measures that would limit either taxes or spending. It was also a period of high inflation, when State and local governments may have had difficulty anticipating the rapid rise in school costs.

Alternative Projections

Current expenditure projections were developed using multiple linear regression models. Expenditures per pupil were related to the state of the economy (as measured by disposable income per capita), the amount of education revenue from State sources, and enrollments (as measured by the average daily attendance (ADA)). (For more details, see chapter 15.) Hence, the projections for current expenditures depend on the projections for these three inputs. Another important assumption is that the relationships which have existed among the variables in the past continue throughout the projection period.

Three sets of projections are presented for current expenditures in this chapter. Each is based on an alternative set of assumptions about the state of the economy. These alternative economic scenarios were developed by Data Resources, Inc (DRI). The middle alternative projections are based on the assumption that the economy continues to grow at a steady rate (disposable income per capita increases each year at a rate between 0.5 and 1.9 percent.) Two alternative sets of projections were developed to demonstrate the impact of various economic scenarios. In the low alternative, the economy grows at a lower rate than in the middle alternative set of projections and there is a recession in the early 1990s. The growth rate of disposable income per capita varies between -0.4 and 1.3 percent. In the high alternative, the economy enters a period of rapid growth and disposable income grows at rates between 1.0 and 1.9 percent. (For more information about the alternative economic scenarios, see chapter 15.)

In each set of projections, revenue receipts from State sources are assumed to increase at the same annual rate as from 1986–87 to 1987–88, approximately 2.4 percent. Average daily attendance is as-

[1] All elementary and secondary finance data presented in this chapter have been adjusted for inflation using the Consumer Price Index for all urban consumers (CPI). There are no forecasts for elementary and secondary price indices.

sumed to increase at the same rates as the projections for fall enrollment presented in chapter 1.

In the middle alternative projection, current expenditures in constant 1987–88 dollars are projected to be $212.0 billion in 1999–2000. This is an increase of 31 percent over the estimated level for 1988–89. Current expenditures per pupil in ADA are projected to increase 20 percent, to $5,221 (table 36 and figure 48).

In the low alternative projection, current expenditures are projected to increase 28 percent, to $206.3 billion in 1999–2000. Current expenditures per pupil in ADA will increase 17 percent, to $5,079.

In the high alternative projection, current expenditures are projected to increase approximately 34 percent, to $217 billion in 1999–2000. Current expenditures per pupil in ADA are projected to increase 23 percent, to $5,345.

Salaries

Recent History

There have been two sharply different periods in the history of teacher salaries since 1974–75. Already in a period of decline, teacher salaries declined 10 percent from 1974–75 to 1980–81, from $26,146 to $23,594 in constant 1987–88 dollars. Then, teacher salaries began increasing every year. In 1985–86, the average salary surpassed its 1974–75 level. From 1980–81 to 1988–89, teacher salaries have increased 21 percent, reaching an estimated $28,584 in 1988–89.

In the 1970s, the number of people preparing to become teachers was much greater than the number of openings for newly qualified teachers. The drop in teacher salaries during this time may be attributed, in part, to excess supply. Then, the number of people preparing to become teachers dropped. Eventually, the decline in teacher salaries stopped. Some of the increase in teacher salaries which has occurred during the 1980s is due to the reforms enacted to encourage more people to enter the teaching profession.

Alternative Projections

As with current expenditures, a multiple linear regression model was developed for teacher salaries. Teachers salaries are seen as being related to current expenditures and enrollments. (See chapter 15.) Also like current expenditures, these projections depend on the projections of these inputs, and that the relationships which have existed among the variables in the past continue throughout the projection period.

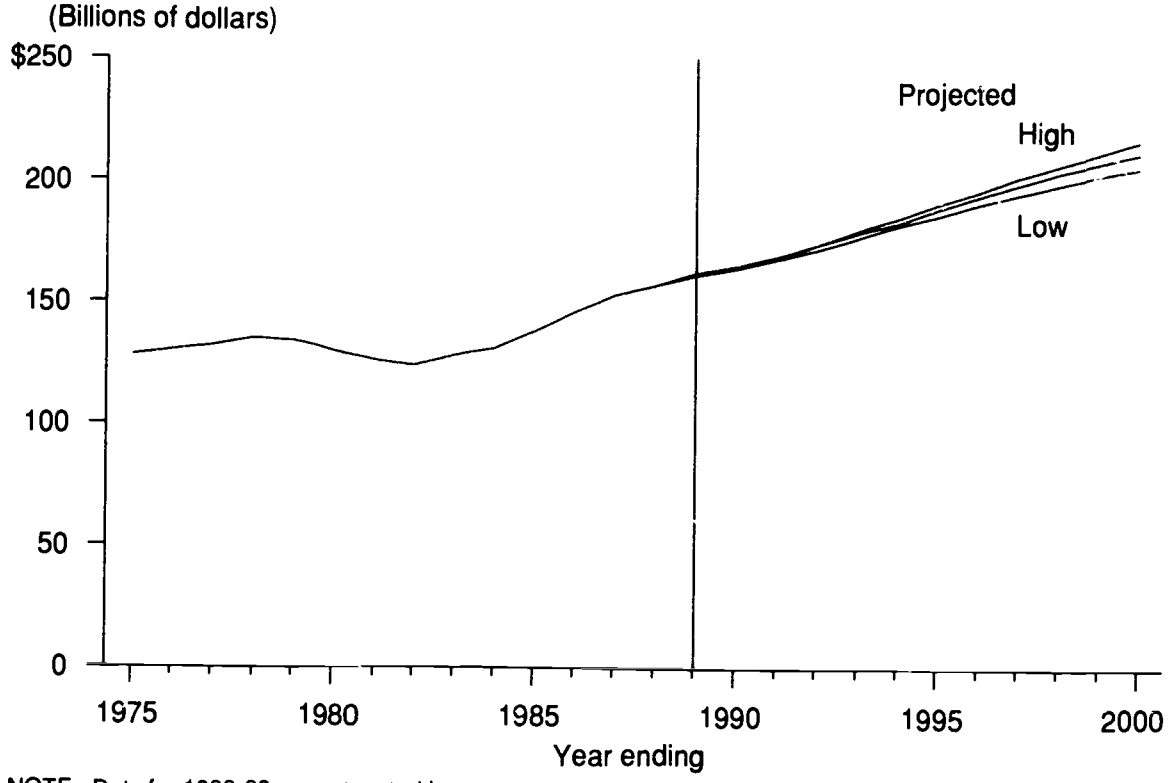
Three sets of alternative projections of teacher salaries—low, middle, and high—have been developed. Each alternative is based on one of the alternative sets of projections for current expenditures presented earlier in this chapter. Average daily attendance is assumed to increase at the same rates as the projections for fall enrollment presented in chapter 1.

In the middle alternative projection, the average teacher salary in constant 1987–88 dollars is projected to reach $32,586 in 1999–2000 (table 37, figure 50). This is a 14 percent increase from the level estimated for 1988–89.

In the low alternative projection, teacher salaries will rise during the period, though at a slightly lower rate than in the middle alternative projection. The average salary is projected to reach $31,919 in 1999–2000, an increase of about 12 percent.

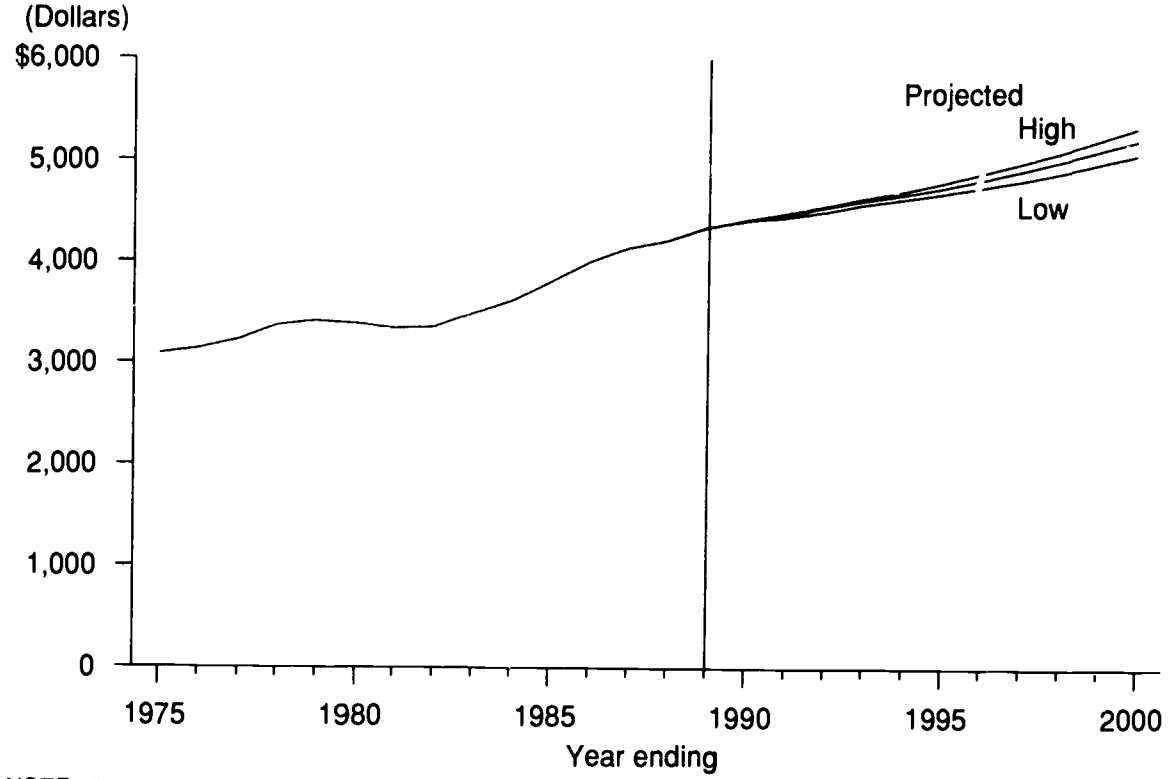
In the high alternative projection, teacher salaries are projected to reach $33,165 in 1999–2000, an increase of about 16 percent.

Figure 47.—Current expenditures of public schools (constant 1987–88 dollars), with alternative projections: 1974–75 to 1999–2000



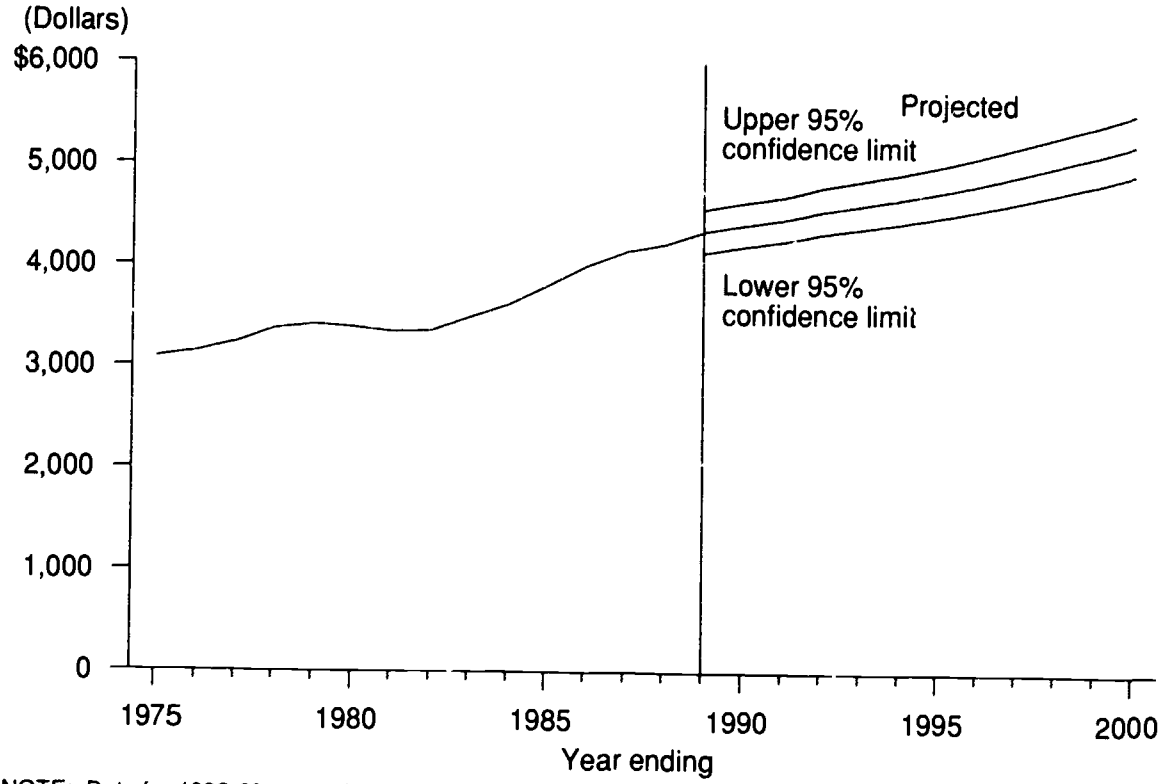
NOTE: Data for 1988-89 are estimated by using past data.

Figure 48.—Current expenditures per pupil in ADA (constant 1987–88 dollars) of public schools, with alternative projections: 1974–75 to 1999–2000



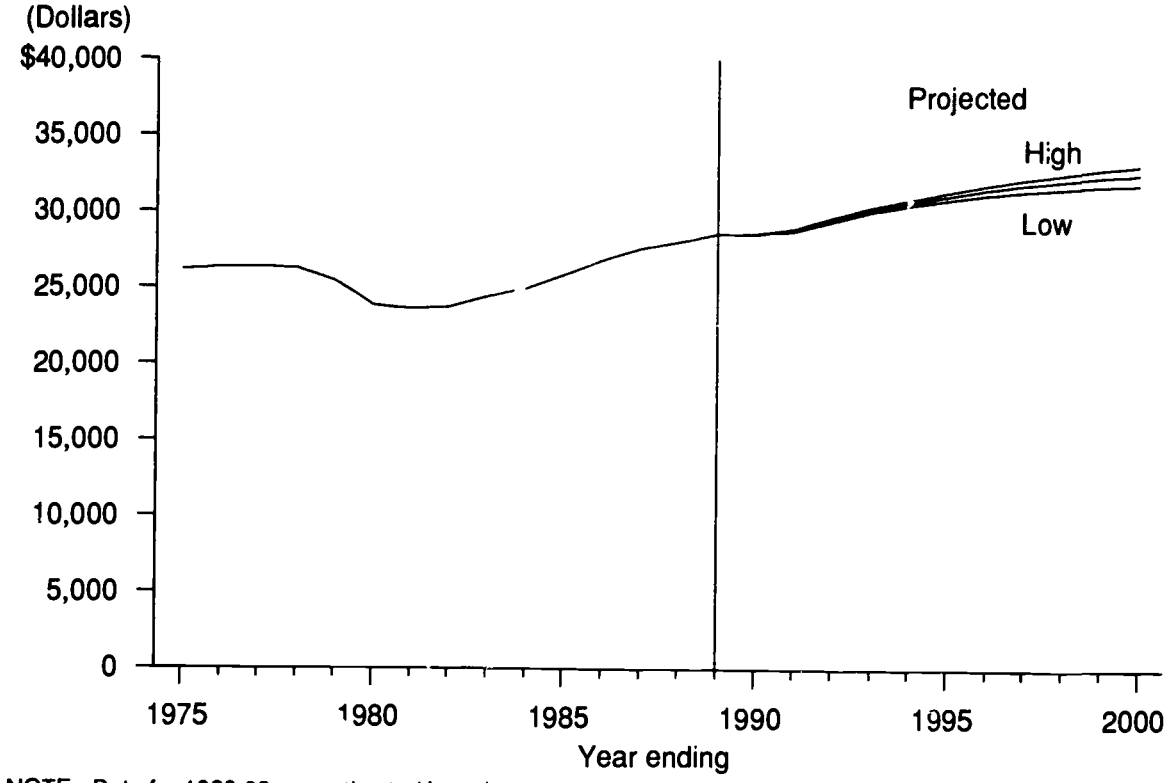
NOTE: Data for 1988-89 are estimated by using past data.

Figure 49.—Current expenditures per pupil in ADA (constant 1987–88 dollars) of public schools, with middle alternative projections: 1974–75 to 1999–2000



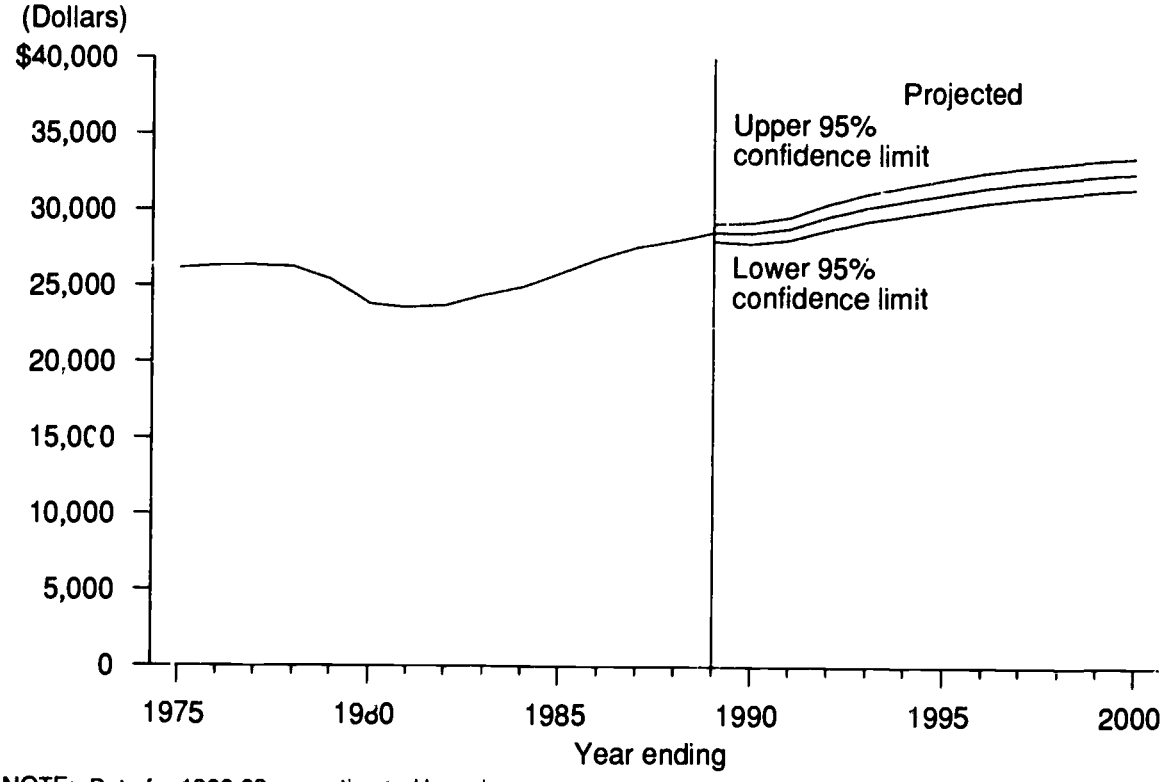
NOTE: Data for 1988-89 are estimated by using past data.

Figure 50.—Average annual salaries of teachers (constant 1987–88 dollars) in public schools with alternative projections: 1974–75 to 1999–2000



NOTE: Data for 1988-89 are estimated by using past data.

Figure 51.—Average annual salaries of teachers (constant 1987–88 dollars) in public schools, with middle alternative projections: 1974–75 to 1999–2000



NOTE: Data for 1988-89 are estimated by using past data.

Table 36.—Current expenditures and current expenditures per pupil in average daily attendance in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Average daily attendance (in thousands)	Constant 1987–88 dollars [1]		Current dollars	
		Total (in billions)	Per pupil in average daily attendance	Total (in billions)	Per pupil in average daily attendance
1975	41,524	$128.2	$3,088	$57.3	$1,381
1976	41,270	129.6	3,141	62.1	1,504
1977	40,832	132.0	3,232	66.9	1,638
1978	40,080	135.1	3,371	73 1	1,823
1979	39,076	133.5	3,417	79.0	2,020
1980	38,289	129.8	3,390	87.0	2,272
1981	37,704	126.1	3,345	94 3	2,502
1982	37,095	124.5	3,355	101.1	2,726
1983	36,636	127.8	3,488	108 3	2,955
1984	36,363	131.4	3,613	115.4	3,173
1985	36,404	138.4	3,802	126.3	3,470
1986	36,523	146.1	3,999	137 2	3,756
1987	36,858	152.7	4,142	146 6	3,977
1988 [2]	37,118	156.5	4,217	156.5	4,217
1989 [3]	37,140	161.5	4,348	168 6	4,540
Middle alternative projections					
1990	37,258	164.4	4,414	179.7	4,822
1991	37,673	168.4	4,471	192.6	5,113
1992	38,166	173.8	4,554	208.9	5,472
1993	38,699	178.7	4,617	225.5	5,827
1994	39,228	183.5	4,677	243.0	6,195
1995	39,752	188.6	4,744	—	-
1996	40,150	193.9	4,828	—	-
1997	40,459	198.9	4,916	—	-
1998	40,631	203.6	5,011	—	—
1999	40,652	207.9	5,115	—	—
2000	40.613	212.0	5,221	—	—
Low alternative projections					
1990	37,258	164.6	4,418	179.9	4,828
1991	37,673	167.7	4,450	191 7	5,090
1992	38,166	172.1	4,509	206.8	5,418
1993	38,699	177.1	4,577	223 5	5,777
1994	39,223	181.8	4,634	240.8	6,138
1995	39,752	186.4	4,688	—	—
1996	40,150	190.8	4,752	—	—
1997	40,459	195.1	4,821	—	—
1998	40,631	199.1	4,900	—	—
1999	40,652	202.8	4,988	—	—
2000	40,613	206.3	5,079	—	—
High alternative projections					
1990	37,258	164.8	4,424	180.1	4,834
1991	37,673	169.1	4,488	193.4	5,132
1992	38,166	174.3	4,566	209.4	5,487
1993	38,599	179.6	4,640	226 6	5,856
1994	39,228	184.8	4,712	244.8	6,241
1995	39,752	190.6	4,794	—	—
1996	40,150	196.3	4,889	—	—
1997	40,459	201.9	4,990	—	—
1998	40,631	207.2	5,099	—	—
1999	40,652	212.2	5,220	—	—
2000	40,613	217.1	5,345	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Current expenditures is an Early Estimate. Average daily attendance is from the National Education Association.

[3] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems*; *Revenues and Expenditures for Public Elementary and Secondary Education*; Common Core of Data survey; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; and National Education Association, annual *Estimates of State School Statistics*. (This table was prepared March 1989.)

Table 37.—Average annual salaries of classroom teachers in public elementary and secondary schools, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]	Current dollars
1975	$26,146	$11,690
1976	26,318	12,600
1977	26,356	13,354
1978	26,259	14,198
1979	25,420	15,032
1980	23,829	15,970
1981	23,594	17,644
1982	23,725	19,274
1983	24,423	20,695
1984	24,956	21,921
1985	25,847	23,593
1986	26,834	25,198
1987	27,633	26,534
1988	28,031	28,031
1989 [2]	28,584	29,850
	Middle alternative projections	
1990	28,576	31,221
1991	28,875	33,021
1992	29,671	35,652
1993	30,281	38,218
1994	30,733	40,708
1995	31,161	—
1996	31,601	—
1997	31,911	—
1998	32,179	—
1999	32,407	—
2000	32,586	—
	Low alternative projections	
1990	28,598	31,246
1991	28,780	32,913
1992	29,459	35,397
1993	30,092	37,980
1994	30,531	40,441
1995	30,901	—
1996	31,243	—
1997	31,467	—
1998	31,656	—
1999	31,810	—
2000	31,919	—
	High alternative projections	
1990	28,625	31,275
1991	28,956	33,114
1992	29,728	35,721
1993	30,387	38,353
1994	30,898	40,926
1995	31,396	—
1996	31,888	—
1997	32,257	—
1998	32,591	—
1999	32,896	—
2000	33,165	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: National Education Association, annual *Estimates of School Statistics.* (Latest edition 1987–88. Copyright © 1988 by the National Education Association. All rights reserved.) (This table was prepared March 1989.)

Chapter 8

Expenditures of Institutions of Higher Education

The steady growth in higher education expenditures which has marked the 1980s is expected to continue throughout the 1990s. Key assumptions behind these projections are that the economy continues to grow at a steady rate and that inflation rates remain near current levels. Projections based on alternative economic scenarios are discussed below.

The higher education system is examined by both control of institution (public versus private) and by type of institution (4-year versus 2-year). For each of these sectors of higher education, two different types of expenditures, current-fund expenditures, and educational and general expenditures, are examined. All expenditure data have been adjusted for inflation. Since the historical trends and the projections of current-fund expenditures and educational and general expenditures are very similar, emphasis is given to current-fund expenditures.

Past Trends

Following a well-established trend, current-fund expenditures have increased significantly since 1974–75. In real terms,[1] current-fund expenditures increased 32 percent from 1974–75 to 1985–86 [2] and are estimated to increase another 11 percent by 1988–89. The rate of increase in current-fund expenditures during this period has not been consistent. There have been years of rapid growth and slow growth, and even decline. The period from 1974–75 to 1988–89 can be broken up into three time periods. Factors influencing current-fund expenditures during these periods include: (1) the economy; (2) the inflation rate; and (3) enrollments.

The period from 1974–75 to 1976–77 saw increases in current-fund expenditures in constant 1987–88 dollars. During that period, current-fund expenditures increased 7 percent, from $78.4 billion to $84.1 billion. The economy was growing steadily during that time. One measure of the state of the economy, disposable income per capita, rose 4 percent. With the exception of 1974–75, the inflation rate was relatively low. The average for 1975–76 and 1976–77 was 6.5 percent. (The average of the inflation rates during the 1970s was 6.8 percent.)

From 1976–77 to 1981–82, total current-fund expenditures grew only 3 percent. That was a period of low economic growth (disposable income per capita rose a total of only 5 percent) and high inflation (the inflation rate averaged 10 percent for the years 1977–78 to 1981–82).

The period since 1981–82 has been marked by continued economic growth and relatively low inflation. Disposable income rose 11 percent from 1981–82 to 1985–86 and the average of the annual inflation rates from 1982–83 to 1985–86 was 4 percent. Current-fund expenditures continued to increase. Between 1981–82 and 1985–86, current-fund expenditures rose 20 percent, to $103.9 billion.

While current-fund expenditures in both public and private institutions rose, they did not rise at the same rate. From 1974–75 to 1985–86, current-fund expenditures increased 28 percent in public institutions and 41 percent in private institutions. (See table 38 and figure 51.)

For the period under examination, educational and general expenditures have been an almost constant percentage of current-fund expenditures (about 78 percent). Hence, the trend for educational and general expenditures is virtually identical to that for current-fund expenditures. (See table 39 and figure 52.) Total educational and general expenditures in constant dollars increased 32 percent from 1974–75 to 1985–86 and are expected to increase another 11 percent by 1988–89. There was a 27 percent increase in educational and general expenditures in public colleges from 1974–75 to 1985–86 and a 42 percent increase in private colleges.

Since the trends of current-fund expenditures for the different sectors show some differences, the data are examined separately for each sector, except private 2-year institutions. Expenditures are examined

[1] All higher education finance data presented in this chapter have been adjusted for inflation through the use of the Consumer Price Index (CPI) for all urban consumers. There are no forecasts for higher education price indices.

[2] The last year for which there is available data is 1985–86. The National Center for Education Statistics (NCES) has produced a series of early estimates for higher education current-fund expenditures for 1986–87 and 1987–88. The early estimates are not used as they are not directly comparable with other NCES numbers for current-fund expenditures, since Pell grants are not accounted for in comparable fashion.

both as a total and per student in full-time-equivalent (FTE) enrollment.

The trend for private 2-year projections is not shown separately because there have been significant additions to the universe of private 2-year institutions since 1974–75. Private 2-year institutions comprise the smallest of the higher education sectors. In 1985–86, they accounted for only 1.0 percent of total current-fund expenditures and 2.5 percent of FTE enrollment.

Public 4-Year Institutions

The trend for current-fund expenditures in public 4-year institutions is very similar to that for all institutions. The period from 1974–75 to 1976–77 saw a rapid increase, with current-fund expenditures rising 7 percent. This was followed by several years of very slow growth—from 1976–77 to 1981–82 they rose less than 1 percent. The period beginning in 1981–82 has been another period of rapid growth—current-fund expenditures rose 19 percent from 1981–82 to 1985–86 and are expected to increase another 11.2 percent from 1985–86 to 1988–89. (See table 40.)

When current-fund expenditures are examined on a per student basis, a somewhat different pattern emerges. (See table 40.) Current-fund expenditures per student rose only 3 percent from 1974–75 to 1976–77. This was due to the large increases in FTE enrollment from 1974–75 to 1975–76. With the slowing down of the economy, the rise in inflation, and the increase in enrollment, current-fund expenditures per student fell 4 percent from 1976–77 to 1981–82. This period of decline, however, has been followed by a period of growth. From 1981–82 to 1985–86, current-fund expenditures per student rose 18 percent and are expected to increase another 7 percent from 1985–86 to 1988–89.

Public 2-Year Institutions

Public 2-year institutions show a similar trend to public 4-year institutions. (See table 41.) There was a 10 percent increase in current-fund expenditures in public 2-year institutions from 1974–75 to 1976–77. From 1976–77 to 1981–82, current-fund expenditures fell 1 percent. This was followed by a period of rapid growth. Current-fund expenditures rose 14 percent from 1981–82 to 1985–86 and are estimated to increase another 16 percent from 1985–86 to 1988–89.

As with public 4-year current-fund expenditures, a somewhat different pattern emerges when public 2-year current-fund expenditures are placed in per student terms. (See table 41.) Despite the large increase in current-fund expenditures that occurred from 1974–75 to 1976–77, expenditures per FTE decreased by 2 percent, reflecting large increases in enrollment. Current-fund expenditures dropped another 9 percent from 1976–77 to 1981–82, but then began increasing rapidly. Between 1981–82 and 1985–86, current-fund expenditures rose 21 percent. Current-fund expenditures per student are estimated to increase an additional 10 percent between 1985–86 and 1988–89.

Private 4-Year Institutions

From 1974–75 until 1976–77, current-fund expenditures in private 4-year institutions rose 7 percent. Unlike public institutions, expenditures continued to increase (7 percent) from 1976–77 to 1981–82. Like public institutions, however, the next period was one of rapid growth. From 1981–82 to 1985–86, current-fund expenditures rose 23 percent, reaching $35.5 billion. Current-fund expenditures are estimated to increase 10 percent from 1985–86 to 1988–89.

While total current-fund expenditures rose steadily during the late 1970s and early 1980s, FTE enrollment rose even more rapidly for many of those years. From 1974–75 to 1976–77, current-fund expenditures per student grew by only 1 percent. With the increase in the number of students, together with the slowdown in the economy and the rise in inflation, expenditures per student fell 3 percent from 1976–77 to 1981–82. Since then, current-fund expenditures per student has been rising. From 1981–82 until 1985–86, current-fund expenditures per enrollment in FTE rose 22 percent and are estimated to increase another 7 percent from 1985–86 to 1988–89.

Alternative Projections

Projections have been prepared for each of the sectors of higher education. With the exception of the private 2-year sector, these projections have been developed using regression models. In most cases, expenditures per student are seen as being related to the state of the economy (as measured by disposable income per capita), the inflation rate, and enrollments. (For more details, see chapter 16.) Hence, the forecasts for higher education expenditures depend on the forecasts for these three types of inputs. Another important factor is that the relationships which have existed among the variables in the past continue throughout the projection period.

Three sets of projections are presented in this chapter. Each is based on an alternative set of assumptions for the state of the economy, specifically, a different growth path for disposable income per capita. These alternative scenarios for the state of the economy were developed by Data Resources, Inc. (DRI). The middle alterative projections are based on the assumption that the economy continues to grow at a steady rate (disposable income per capita increases each year at a rate between 0.5 and 1.9 percent.) Two alternative sets of projections were developed to dem-

onstrate the impact of various economic scenarios. In the low alternative, the economy grows at a lower rate than in middle alterative set of projections and there is a recession in the early 1990s. The growth rate of disposable income per capita varies between -0.4 and 1.3 percent. In the high alternative, the economy enters a period of rapid growth and disposable income grows at rates between 1.0 and 1.9 percent.

The projections for the inflation rate are also from DRI. For the forecast period, they range from 4.6 percent to 5.7 percent. The projections of the enrollment are those for full-time-equivalent enrollment presented in chapter 2.

Due to the short time series of consistent data, only one projection was produced for private 2-year institutions. This was included in each of the alternative projections. The projection for private 2-year institutions is not examined separately.

All of the alternative projections indicate an increase in current-fund expenditures throughout the remainder of the century. In the middle alternative projection, current-fund expenditures are projected to reach $144 billion in 1999-2000. This is a 39 percent increase from 1985-86, the last year for which there are actual data, and a 25 percent increase over the projected value for 1988-89. In the low alternative projection, current-fund expenditures are projected to increase to $136 billion. In the high alternative projection, the figure for 1999-2000 is $152 billion.

A similar pattern is seen for educational and general expenditures. In the middle alternative projection, educational and general expenditures are projected to be $114 billion in 1988-89, a 41 percent increase from 1985-86. In the low alternative projection, educational and general expenditures are projected to increase to $108 billion. In the high alternative projection, the figure for 1999-2000 is $120 billion.

Public 4-Year Institutions

There are only small differences in the trends among the various sectors of higher education. In public 4-year institutions, current-fund expenditures are projected to reach $74 billion in the middle alternative projection in 1999-2000. (See table 40.) This is a 34 percent increase from 1985-86 to 1999-2000 and a 20 percent increase from the projected value for 1988-89. In the low alternative projection, the value for 1999-2000 is $70 billion and in the high alternative projection, it is $74 billion.

Since full-time-equivalent (FTE) enrollment is projected to increase from the late 1980s to 2000, the rate of increase for expenditures is lower on a per student basis. In the middle alternative projection, a 25 percent increase is projected for the period from 1985-86 to 1999-2000 compared with 19 percent for the low alternative projection and 31 percent for the high alternative projection. Expenditures are projected to rise most rapidly in the period from 1991-92 to 1995-96, when enrollment is projected to fall.

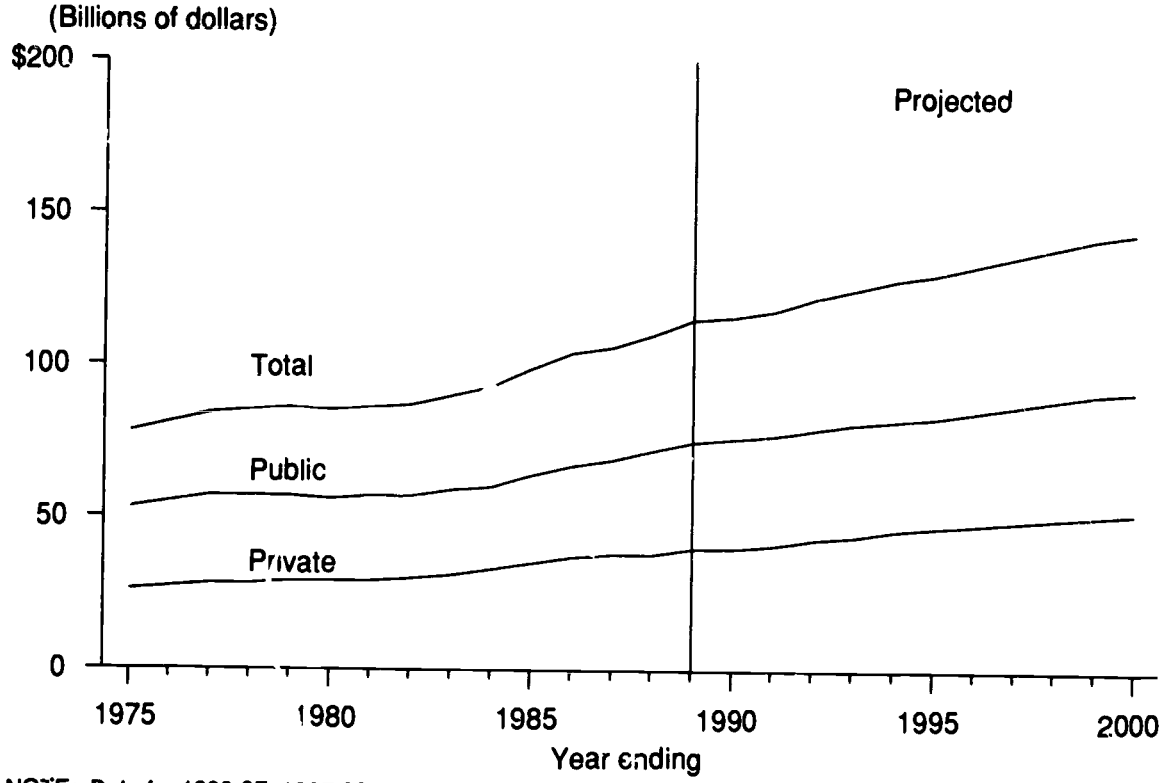
Public 2-Year Institutions

Expenditures are also seen as increasing in public 2-year institutions. For instance, in the middle alternative projection, current-fund expenditures are projected to reach $18 billion in 1999-2000 and expenditures per student are projected to increase to $6,817. When the low alternative projection is used, with its lower growth path of disposable income, lower values for current expenditure are found, and when the high alternative projection is used, higher values are found. Again, the most rapid increases are projected to occur from 1991-92 to 1995-96, when FTE enrollment is projected to decline. (See table 41.)

Private 4-Year Institutions

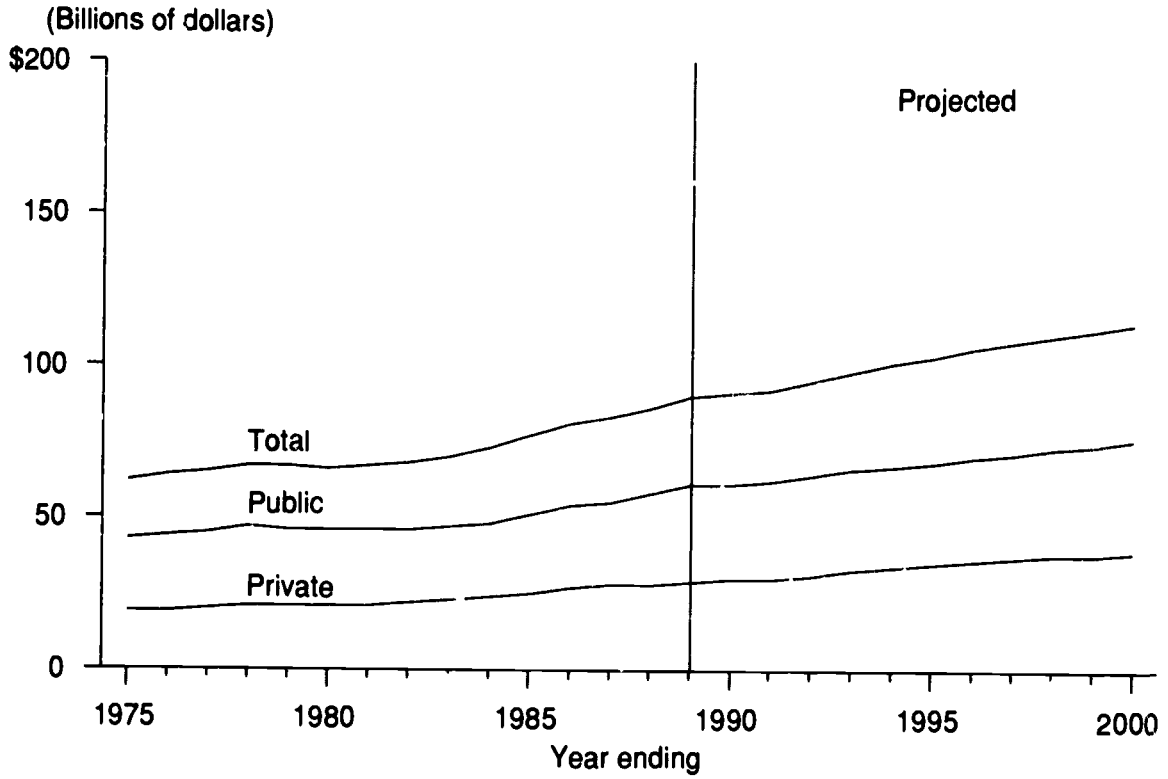
The trends for private 4-year institutions exhibit the same patterns as other types of institutions. Total current-fund expenditures are seen as increasing each year. In the middle alternative projection, from 1985-85 to 1999-2000, they are projected to increase 43 percent. Current-fund expenditures per student are projected to increase 36 percent during the same time. The most rapid growth is again projected to occur during a period of declining enrollments, from 1991-92 to 1995-96.

Figure 52.—Current-fund expenditures (constant 1987–88 dollars) of public and private institutions of higher education, with middle alternative projections: 1974–75 to 1999–2000



NOTE: Data for 1986-87, 1987-88, and 1988-89 are estimated by using past data.

Figure 53.—Educational and general expenditures (constant 1987–88 dollars) of public and private institutions of higher education, with middle alternative projections: 1974–75 to 1999–2000



NOTE: Data for 1986-87, 1987-88, and 1988-89 are estimated by using past data.

Table 38.—Current-fund expenditures of public and private institutions of higher education, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1] (in billions)			Current dollars (in billions)		
	Total	Public	Private	Total	Public	Private
1975	$78.4	$52.5	$25.9	$35.1	$23.5	$11.6
1976	81.3	54.7	26.6	38.9	26.2	12.7
1977	84.1	56.5	27.6	42.6	28.6	14.0
1978	85.0	56.8	28.2	46.0	30.7	15.2
1979	85.8	57.0	28.7	50.7	33.7	17.0
1980	84.9	56.4	28.6	56.9	37.8	19.1
1981	85.7	56.5	29.1	64.1	42.3	21.8
1982	86.6	56.9	29.7	70.3	46.2	24.1
1983	89.6	58.5	31.1	75.9	49.6	26.4
1984	93.3	60.4	32.9	82.0	53.1	28.9
1985	98.5	63.9	34.7	90.0	58.3	31.6
1986	103.9	67.3	36.6	97.5	63.2	34.3
1987 [2]	106.2	68.6	37.6	102.0	65.8	36.1
1988 [2]	109.8	72.0	37.9	109.8	72.0	37.9
1989 [2]	115.5	75.4	40.1	120.6	78.7	41.9
Middle alternative projections						
1990	116.0	75.6	40.5	126.8	82.5	44.2
1991	118.1	76.9	41.2	135.0	87.9	47.1
1992	121.9	79.1	42.8	146.5	95.1	51.4
1993	125.1	80.8	44.4	157.9	101.9	56.0
1994	127.6	81.9	45.7	169.0	108.5	60.5
1995	130.1	83.3	46.8	—	—	—
1996	133.4	85.2	48.1	—	—	—
1997	136.3	87.0	49.3	—	—	—
1998	139.0	88.8	50.2	—	—	—
1999	141.7	90.6	51.1	—	—	—
2000	144.4	92.4	52.0	—	—	—
Low alternative projections						
1990	116.3	75.7	40.6	127.1	82.7	44.3
1991	116.9	76.1	40.8	133.7	87.0	46.6
1992	119.2	77.5	41.8	143.3	93.1	50.2
1993	122.8	79.3	43.5	155.0	100.1	54.9
1994	125.1	80.4	44.7	165.7	106.5	59.3
1995	127.0	81.3	45.6	—	—	—
1996	129.1	82.6	46.5	—	—	—
1997	131.0	83.7	47.3	—	—	—
1998	132.8	84.9	47.9	—	—	—
1999	134.6	86.1	48.5	—	—	—
2000	136.4	87.4	49.0	—	—	—
High alternative projections						
1990	116.6	75.9	40.7	127.4	83.0	44.5
1991	119.1	77.5	41.6	136.2	88.6	47.6
1992	122.6	79.6	43.0	147.4	95.6	51.7
1993	126.5	81.6	44.9	159.6	103.0	56.6
1994	129.6	83.2	46.4	171.6	110.2	61.5
1995	133.0	85.1	47.9	—	—	—
1996	136.8	87.4	49.4	—	—	—
1997	140.5	89.7	50.8	—	—	—
1998	144.1	91.9	52.1	—	—	—
1999	147.7	94.4	53.4	—	—	—
2000	151.5	96.9	54.6	—	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table 39.—Educational and general expenditures of public and private institutions of higher education, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1] (in billions)			Current dollars (in billions)		
	Total	Public	Private	Total	Public	Private
1975	$61.6	$42.7	$18.9	$27.5	$19.1	$8.5
1976	63.9	44.5	19.5	30.6	21.3	9.3
1977	65.4	45.4	20.0	33.2	23.0	10.2
1978	67.1	46.5	20 5	36.3	25.1	11.1
1979	67.4	46.5	20 9	39.8	27.5	12.3
1980	66.5	45 7	20.8	44.5	30.6	13.9
1981	67.0	45.7	21 3	50.1	34.2	15.9
1982	67.5	45.8	21.8	54.8	37.2	17.7
1983	69.5	46 9	22.7	58.9	39.7	19.2
1984	72.6	48.5	24.1	63.7	42.6	21.1
1985	76 8	51.4	25.4	70.1	46.9	23.2
1986	81.1	54.2	26.9	76.1	50.9	25.3
1987 [2]	83.1	55.4	27.7	79.8	53.2	26.6
1988 [2]	86.0	58.2	27.8	86.0	58.2	27.8
1989 [2]	90.1	60.7	29.5	94.1	63.3	30.8
Middle alternative projections						
1990	90 5	60.9	29.6	98.9	66.5	32.4
1991	92.2	62 0	30.2	105.4	70.9	34.5
1992	95.4	64.0	31.4	114.7	76.9	37.8
1993	98.4	65 6	32 8	124.2	82.8	41.4
1994	100.7	66.8	33.9	133.4	88 5	44.9
1995	103.1	68 2	34.9	—	—	—
1996	105.9	69.9	35 9	—	—	—
1997	108.2	71.4	36 8	—	—	—
1998	110.4	72.9	37.5	—	—	—
1999	112.4	74.3	38.1	—	—	—
2000	114.3	75.7	38.7	—	—	—
Low alternative projections						
1990	90.8	61 0	29.7	99.2	66.7	32.5
1991	91.3	61.4	29.9	104.4	70 2	34.2
1992	93.3	62 6	30.7	112.2	75.3	36.9
1993	96.6	64.4	32.2	121 9	81.3	40.6
1994	98.8	65.6	33 2	130.9	86.9	44.0
1995	100.6	66 6	34 0	—	—	—
1996	102.5	67.7	34 8	—	—	—
1997	104.1	68.7	35.4	—	—	—
1998	105.5	69.7	35.8	—	—	—
1999	106.8	70.6	36.2	—	—	—
2000	108 0	71.5	36 5	—	—	—
High alternative projections						
1990	91.0	61 2	29 8	99 5	66 9	32.6
1991	93.0	62.5	30.5	106.4	71 5	34.9
1992	96.0	64.4	31 6	115 4	77 4	38.0
1993	99.4	66 3	33.2	125 5	83 7	41.8
1994	102 3	67.9	34.5	135 6	89 9	45.6
1995	105.3	69.7	35 7	—	—	—
1996	108.6	71.7	36.9	—	—	—
1997	111.5	73.6	37 9	—	—	—
1998	114.3	75.4	38.9	—	—	—
1999	117.1	77.4	39 7	—	—	—
2000	119 9	79.3	40.6	—	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: U S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table 40.—Current-fund expenditures and current-fund expenditures per full-time-equivalent student of public 4-year institutions, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Full-time-equivalent enrollment (in thousands)	Constant 1987–88 dollars [1]		Current dollars	
		Total (in billions)	Per full-time-equivalent student	Total (in billions)	Per full-time-equivalent student
1975	3,848	$43.2	$11,225	$19.3	$5,019
1976	4,057	44.7	11,015	21.4	5,273
1977	3,998	46.2	11,556	23.4	5,855
1978	4,039	46.3	11,453	25.0	6,193
1979	3,996	46.7	11,680	27.6	6,907
1980	4,059	46.2	11,387	31.0	7,632
1981	4,158	46.4	11,152	34.7	8,339
1982	4,209	46.6	11,082	37.9	9,003
1983	4,221	47.9	11,357	40.6	9,623
1984	4,266	49.6	11,633	43.6	10,218
1985	4,238	52.6	12,413	48.0	11,330
1986	4,240	55.6	13,108	52.2	12,309
1987 [2]	4,296	56.2	13,080	54.0	12,560
1988 [2]	4,397	58.8	13,377	58.8	13,377
1989 [2]	4,402	61.8	14,039	64.5	14,661
		Middle alternative projections			
1990	4,479	61.8	13,807	67.6	15,086
1991	4,520	62.9	13,912	71.9	15,910
1992	4,511	64.6	14,312	77.6	17,197
1993	4,461	65.7	14,719	82.9	18,577
1994	4,406	66.3	15,043	87.8	19,925
1995	4,365	67.1	15,380	—	—
1996	4,356	68.5	15,736	—	—
1997	4,375	69.9	15,976	—	—
1998	4,413	71.3	16,154	—	—
1999	4,469	72.8	16,287	—	—
2000	4,533	74.3	16,399	—	—
		Low alternative projections			
1990	4,479	62.0	13,839	67.7	15,120
1991	4,520	62.3	13,783	71.2	15,763
1992	4,511	63.3	14,025	76.0	16,852
1993	4,461	64.5	14,464	81.4	18,255
1994	4,406	65.1	14,772	86.2	19,566
1995	4,365	65.6	15,032	—	—
1996	4,356	66.5	15,259	—	—
1997	4,375	67.3	15,38[illegible]	—	—
1998	4,413	68.3	15,468	—	—
1999	4,469	69 3	15,510	—	—
2000	4,533	70.4	15,540	—	—
		High alternative projections			
1990	4,479	62.1	13,875	67.9	15,160
1991	4,520	63.4	14,022	72.5	16,036
1992	4,511	64 9	14,390	78.0	17,291
1993	4,461	66 3	14,864	83 7	18,760
1994	4,406	67.3	15,266	89.1	20,220
1995	4,365	68.5	15,697	—	—
1996	4,356	70 2	16,123	—	—
1997	4,375	71.9	16,440	—	—
1998	4,413	73.7	16,705	—	—
1999	4,469	75.7	16,938	—	—
2000	4,533	77.8	17,161	—	—

[1] Based on the consumer price index for all urban consumers of the Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table 41.—Current-fund expenditures and current-fund expenditures per full-time-equivalent student of public 2-year institutions, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Full-time-equivalent enrollment (in thousands)	Constant 1987–88 dollars [1]		Current dollars	
		Total (in billions)	Per full-time-equivalent student	Total (in billions)	Per full-time-equivalent student
1975	2,097	$9.4	$4,459	$4.2	$1,993
1976	2,466	10.0	4,059	4.8	1,943
1977	2,351	10 3	4,385	5.2	2,222
1978	2,357	10.6	4,481	5.7	2,423
1979	2,283	10.4	4,542	6.1	2,686
1980	2,333	10.1	4,342	6.8	2,910
1981	2,484	10.2	4,093	7.6	3,061
1982	2,573	10.3	3,985	8.3	3,238
1983	2,630	10.6	4,019	9.0	3,406
1984	2,616	10.8	4,134	9.5	3,631
1985	2,447	11.3	4,611	10.3	4,209
1986	2,428	11.7	4,829	11.0	4,534
1987 [2]	2,482	12.4	4,988	11.9	4,790
1988 [2]	2,542	13.2	5,176	13.2	5,176
1989 [2]	2,542	13.6	5,335	14.2	5,571
Middle alternative projections					
1990	2,596	13.7	5,281	15.0	5,769
1991	2,617	14.0	5,344	16.0	6,112
1992	2,605	14.6	5,591	17.5	6,718
1993	2,578	15.1	5,859	19.1	7,395
1994	2,562	15.6	6,100	20.7	8,080
1995	2,556	16.2	6,321	—	—
1996	2,557	16.7	6,529	—	—
1997	2,576	17.2	6,658	—	—
1998	2,597	17.5	6,743	—	—
1999	2,627	17.8	6,786	—	—
2000	2,657	18.1	6,817	—	—
Low alternative projections					
1990	2,596	13.7	5,296	15.0	5,786
1991	2,617	13.8	5,280	15.8	6,038
1992	2,605	14.2	5,448	17.1	6,546
1993	2,578	14.8	5,733	18.7	7,236
1994	2,562	15.3	5,965	20.2	7,901
1995	2,556	15.7	6,148	—	—
1996	2,557	16.1	6,292	—	—
1997	2,576	16.4	6,366	—	—
1998	2,597	16.6	6,403	—	—
1999	2,627	16.8	6,400	—	—
2000	2,657	17.0	6,391	—	—
High alternative projections					
1990	2,596	13.8	5,314	15.1	5,806
1991	2,617	14.1	5,399	16.2	6,174
1992	2,605	14.7	5,630	17.6	6,765
1993	2,578	15.3	5,932	19 3	7,486
1994	2,562	15.9	6,211	21.1	8,226
1995	2,556	16.6	6,478	—	—
1996	2,557	17.2	6,721	—	—
1997	2,576	17.7	6,889	—	—
1998	2,597	18.2	7,017	—	—
1999	2,627	18.7	7,109	—	—
2000	2,657	19.1	7,196	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table 42.—Current-fund expenditures and current-fund expenditures per full-time-equivalent student of private 4-year institutions, with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Full-time-equivalent enrollment (in thousands)	Constant 1987–88 dollars [1]		Current dollars	
		Total (in billions)	Per full-time-equivalent student	Total (in billions)	Per full-time-equivalent student
1975	1,759	$25.2	$14,354	$11.3	$6,418
1976	1,844	25.9	14,069	12.4	6,735
1977	1,850	26.9	14,556	13.6	7,375
1978	1,896	27.5	14,520	14.9	7,851
1979	1,936	28.0	14,466	16.6	8,554
1980	1,957	27.9	14,246	18.7	9,547
1981	2,003	28.3	14,128	21.2	10,565
1982	2,041	28.9	14,137	23.4	11,485
1983	2,028	30.2	14,909	25.6	12,633
1984	2,059	32.0	15,529	28.1	13,641
1985	2,055	33.7	16,381	30.7	14,952
1986	2,053	35.5	17,298	33.4	16,244
1987 [2]	2,064	36.6	17,724	35.1	17,019
1988 [2]	2,089	36.9	17,675	36.9	17,675
1989 [2]	2,112	39.1	18,520	40.8	19,340
		Middle alternative projections			
1990	2,148	39.5	18,370	43.1	20,071
1991	2,165	40.2	18,572	46.0	21,239
1992	2,162	41.8	19,324	50.2	23,219
1993	2,138	43.4	20,290	54.8	25,608
1994	2,114	44.7	21,132	59.2	27,991
1995	2,096	45.8	21,872	—	—
1996	2,088	47.2	22,586	—	—
1997	2,095	48.3	23,040	—	—
1998	2,112	49.2	23,317	—	—
1999	2,138	50.1	23,444	—	—
2000	2,165	50.9	23,526	—	—
		Low alternative projections			
1990	2,148	39.6	18,420	43.2	20,125
1991	2,165	39.8	18,366	45.5	21,003
1992	2,162	40.8	18,863	49.0	22,665
1993	2,138	42.5	19,881	53.6	25,092
1994	2,114	43.8	20,698	58.0	27,415
1995	2,096	44.7	21,313	—	—
1996	2,088	45.6	21,820	—	—
1997	2,095	46.3	22,097	—	—
1998	2,112	46.9	22,217	—	—
1999	2,138	47.5	22,198	—	—
2000	2,165	48.0	22,149	—	—
		High alternative projections			
1990	2,148	39.7	18,478	43.4	20,189
1991	2,165	40.6	18,749	46.4	21,442
1992	2,162	42.0	19,449	50.5	23,370
1993	2,138	43.9	20,523	55.4	25,902
1994	2,114	45.4	21,490	60.2	28,465
1995	2,096	46.9	22,380	—	—
1996	2,088	48.5	23,206	—	—
1997	2,095	49.8	23,785	—	—
1998	2,112	51.1	24,201	—	—
1999	2,138	52.4	24,488	—	—
2000	2,165	53.6	24,750	—	—

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] Estimated on the basis of past data.

—Projections in current dollars are not shown after 1994 due to the uncertain behavior of inflation over the long term.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Part 2: Projection Methodology

Chapter 9

General Projection Methodology

The general procedure for *Projections* was to express the variable to be projected as a percent of a "base" variable. These percents were then projected and applied to projections of the "base" variable. For example, the number of 18-year-old college students was expressed as a percent of the 18-year-old population for 1967 through 1987. These percents were then projected through the year 2000 and applied to projections of the 18-year-old population from the Bureau of the Census.

Enrollment projections are based primarily on population projections. Projections of instructional staff, high school graduates, earned degrees conferred, and expenditures are based primarily on enrollment projections.

Single exponential smoothing, double exponential smoothing, and multiple linear regression are the three major projection techniques used in this publication. Single exponential smoothing is used when the historical data have basically a horizontal pattern. On the other hand, double exponential smoothing is used when the time series is expected to change linearly with time. 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 the data, the less their influence on projections. The rate at which the weights of older observations decrease is determined by the smoothing constant selected.

$$P = aX_t + a(1 - a)X_{t-1} + a(1 - a)^2X_{t-2} + a(1 - a)^3X_{t-3} + \ldots.$$

Where:

P = projected constant

a = smoothing constant $(0 < a < 1)$

X_t = observation for time t

This equation illustrates that the projection is a weighted average based on exponentially decreasing weights. For a high smoothing constant, weights for earlier observations decrease rapidly. For a low smoothing constant, decreases are more moderate. Projections of enrollments, public high school graduates, and expenditures of private 2-year institutions are based on a range of smoothing constants (a=0.3 to 0.9).

In general, the projections in this publication are based on fairly high smoothing constants. The further apart the observations are spaced in time, the more likely are changes in the underlying social, political, and economic structure. Since the observations are on an annual basis, major shifts in the underlying process are more likely in the time span of just a few observations than if the observations were available on a monthly or weekly basis. As a result, the underlying process tends to be unstable from one observation to the next. Another reason for using high smoothing constants for some time series is that most of the observations are fairly accurate, since most observations are population values rather than sample estimates. Therefore, large shifts tend to indicate actual changes in the process rather than noise in the data.

Multiple linear regression was also used in making projections, primarily in the areas of teachers, earned degrees, and expenditures. This technique was used when it was believed that a strong causal relationship existed between the variable being projected (dependent variables) and independent causal variables. However, this technique was used only when accurate data and reliable projections of the independent variables were available.

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

$$Y = aX_1^{b_1}X_2^{b_2}$$

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

$$\ln Y = \ln(a) + b_1 \ln X_1 + b_2 \ln X_2$$

The multiplicative model has a number of advantages; it is a reasonable way to represent human behavior. Constant elasticities are assumed; this says that a 1 percent change in ln X will lead to a given percent change in ln Y. This percent change is equal to b_1. And it lends itself easily to "a priori" analysis because the researcher does not have to worry about units of measurement when specifying relationships. In fact,

the multiplicative model is considered the standard in economic problems.*

Caveats

Since projections are subject to errors from many sources, alternative projections are shown for some statistical series. These alternatives are not statistical confidence intervals, but instead represent judgements made by the authors as to reasonable upper and lower levels for each projected series. To measure projection reliability, upper and lower statistical confidence limits are presented for projections of elementary and secondary enrollment; classroom teachers; high school graduates; earned degrees conferred; and expenditures in public elementary and secondary schools, and institutions of higher education.

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. The tables of assumptions in each chapter describe the primary assumptions upon which the projections of time series are based. For each time series, the respective tables and the assumptions used for each alternative projection are shown.

For some projections, low, middle, and high alternatives are shown. These alternatives reveal the level of uncertainty involved in making projections, and they also point out the sensitivity of projections to the assumptions on which they are based.

Many of the projections in this publication are demographically based. Bureau of the Census middle series projections of the various age populations were used. The future fertility rate assumption, which determines projections of the number of births, is the key assumption in making population projections. The middle series population projections assume an ultimate complete cohort fertility rate of 1.8 births per woman by year the 2050. This 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 projection period.

For enrollments in secondary grades and college, the fertility assumption is of no consequence, since all students enrolled at these levels were already born when the population projections were made. For projections of enrollments in elementary schools, only middle series population projections were considered. The fertility assumption used in this series tracked closely to the most recent birth data.

Projections of high school graduates are based on projected graduation rates, the number of high school graduates expressed as a percent of grade 12 enrollment. Projections of associate, bachelor's, master's, doctor's, and first-professional degrees are based on projections of college-age populations and higher education enrollment, by sex, attendance status and level enrolled by student, and by type of institution. Projections of instructional faculty are based on projections of faculty-student ratios. Many of the projections of classroom teachers and expenditures in public elementary and secondary schools and institutions of higher education are based on projections of disposable income per capita. Disposable income per capita projections were from Data Resources, Inc.'s Macroeconomic Model of the U.S. economy. Therefore, the many assumptions made in projecting disposable income per capita also apply to those projections based on projections of disposable income per capita.

Standard Errors of Estimates

Standard errors of the estimates were calculated for projections of elementary and secondary enrollments to compute confidence limits. These standard errors were estimated using procedures described by Bovas Abraham and Johannes Ledolter in *Statistical Methods for Forecasting* (John Wiley and Sons, 1983, pp. 131–132). According to Abraham and Ledolter, "... the observed forecast errors $e_{t-1}(1) = y_t - \hat{y}_{t-1}(1)$ (t = 1, 2, ... n) can be used to estimate the variance of the one-step-ahead forecast errors." The variance is given as

$$\hat{\sigma}_e^2 = \frac{\sum_{t=1}^{n} [y_t - \hat{y}_{t-1}(1)]^2}{n}$$

where

e = forecast error

y_t = observation at time t

$\hat{y}_{t-1}(1)$ = forecast of y_t at time t−1

n = number of observations

Therefore, for single exponential smoothing, the estimated 95 percent prediction interval is

* J. Scott Armstrong, *Long Range Forecasting: From Crystal Ball to Computer*, John Wiley and Sons, Inc.: New York, 1978, pp. 180–181.

$$S_n \pm (1.96)\hat{\sigma}_e\sqrt{L},$$

where

S_n = smoothed statistic

L = lead time

Table B36 presents the standard errors for projections of public school K–12, K–8, 9–12 enrollments. The z-test was used to evaluate the significance of comparisions in the text of the publication. A confidence interval was constructed around the projection to determine if it is significantly different from zero. For example, the standard error for the 1989 projection of public school K–12 enrollment is 139,000. This standard error can be used to construct a confidence interval around the projection. To establish a 95 percent confidence interval, the standard error is multiplied by 1.96 and the resulting value is added to and subtracted from the projection. Therefore, the confidence interval for public school K–12 enrollment in 1989 can be expressed as 40,323,000 ± 272,000. This means that for 1989, it is 95 percent sure that the true enrollment will lie between 40,051,000 and 40,595,000.

Chapter 10

Enrollment—Methodology

Enrollment projections were based on projected enrollment rates, by age and sex, which were applied to population projections by age and sex developed by the Bureau of the Census. These enrollment rates were projected by taking into account the most recent trends, as well as the effects of economic conditions and demographic changes on a person's decision to enter college. The enrollment rates were then used in an interactive forecasting model (IFMOD), which consists of age-specific rates by sex and by enrollment levels (nursery school through college). The model has 5 stages (figure 54).

The first stage of IFMOD is an age-specific enrollment model in which enrollment rates are projected and applied to age-specific population projections. This stage, which is used separately for each sex, includes the following categories: (1) nursery and kindergarten, (2) elementary grades 1–8, (3) secondary grades 9–12, (4) full-time college enrollment, and (5) part-time college enrollment. For each of these enrollment categories, enrollment rates were projected by individual ages 3 through 24 and for the age groups 25 to 29, 30 to 34, and 35 years and over.

Enrollments by age and age groups from the Bureau of the Census were adjusted to NCES totals to compute enrollment rates for 1967 through 1987. Different assumptions were made to produce low, middle, and high alternative projections of past enrollment rates to the year 2000.

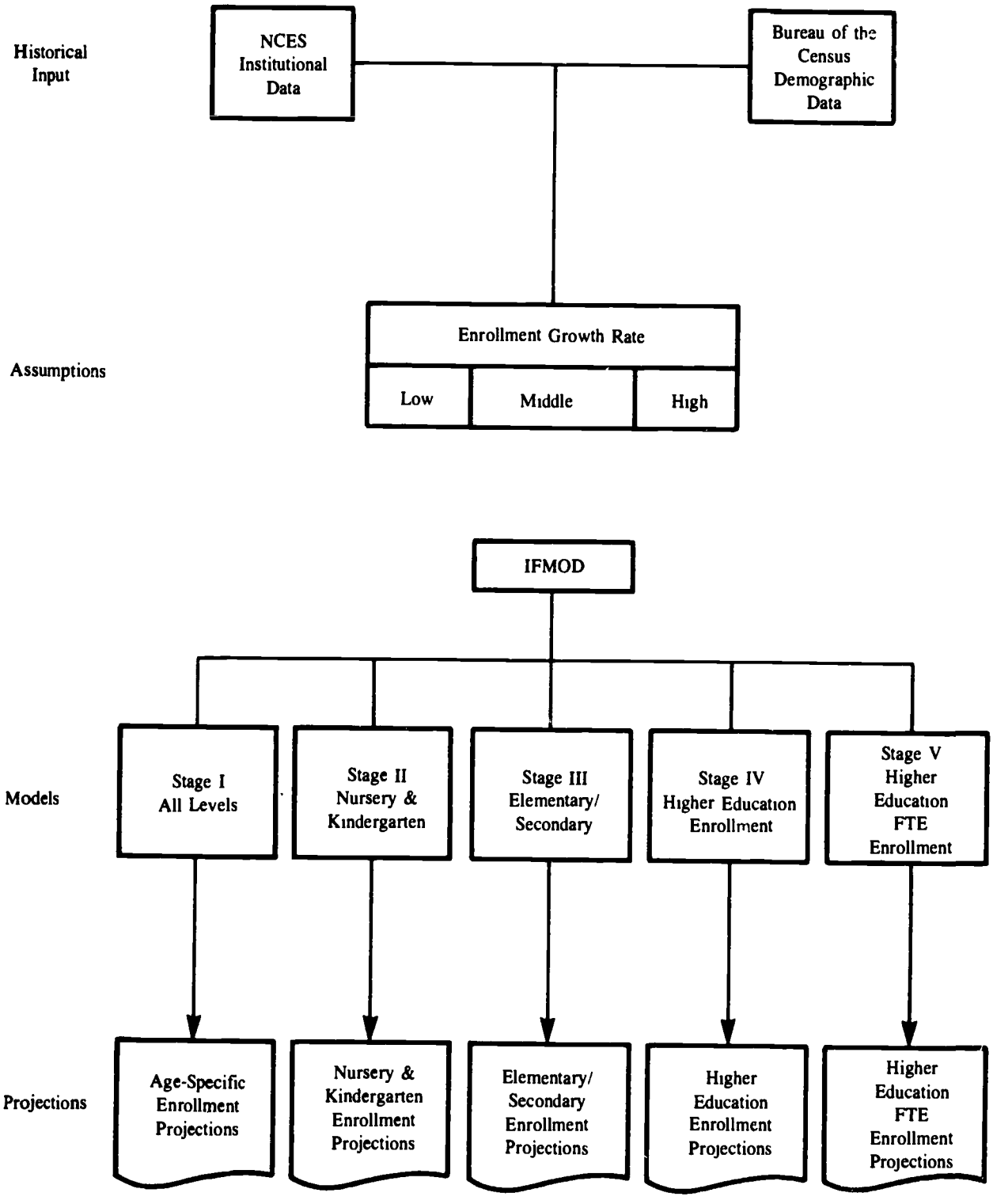
Elementary Grades 1–8

Projections of elementary enrollment rates were considered for ages 5 through 21. Elementary enrollments are negligible for the remaining ages. Since most elementary enrollment rates have been fluctuating at levels close to 100 percent from 1967 to 1987, alternative enrollment rate projections were not computed. The only set of enrollment rate projections computed was based on the assumption that rates will remain constant through the year 2000 (table 43). Several of the rates in table 43 exceed 100 percent. This is due to several factors. The enrollment data by age were prorated to agree with NCES totals. The Bureau of the Census does not revise enrollment estimates by age, but population estimates are revised regularly.

Secondary Grades 9–12

Projections of secondary enrollment rates were considered for ages 12 through 34. Secondary enrollments are negligible for the remaining ages. Secondary enrollment rates have fluctuated within a narrow range through the 1967 to 1987 period. Therefore, alternative enrollment rate projections were not calculated. The only set of projections computed was based on constant enrollment rates (table 44).

Figure 54.—General structure and methodology of the Interactive Forecasting Model (IFMOD)



An analysis of projections errors from the past 14 editions of *Projections of Education Statistics* indicates that the mean absolute percentage errors (MAPEs) for lead times of 1, 2, and 5 years ahead for projections of enrollment in grades K–12 have been less than 1 percent—0.2, 0.4, and 0.8 percent, respectively. For projections of enrollment in grades K–8, the MAPEs for lead times of 1, 2, and 5 years were 0.3, 0.6, and 0.9 percent, respectively, while those for projections of enrollment in grades 9–12 were 0.6, 0.8, and 2.0 percent for the same lead times. For lead times of 6 to 10 years, the MAPEs increased moderately for projections of enrollment in grades K–12, K–8, and 9–12, from 1.1 percent to 7.2 percent for grades K–12, 1.2 percent to 8.8 percent for grades K–8, and 2.5 percent to 5.3 percent for grades 9–12.

College Full-Time and Part-Time Enrollment

Projections of full-time and part-time college enrollments were considered only for ages 16 and over. (College enrollment is negligible for earlier ages.) Three alternative projections were made using various assumptions. Table 45 shows enrollment rates for 1987 and low, middle, and high alternative projected enrollment rates for 1995 and 2000.

Enrollment in Public Elementary and Secondary Schools, by Grade Group and Organizational Level

The third stage of IFMOD projects public enrollment in elementary and secondary schools by grade group and by organizational level. Public enrollments by age were based on enrollment rate projections for nursery and kindergarten, grade 1, elementary ungraded and special, secondary ungraded and special, and postgraduate enrollment. Grade retention rate projections were used for grades 2 through 12. Table 46 shows the public enrollment rates and table 47 shows the public grade-retention rates for 1987 and projections for 1995 and 2000. The projected rates in tables 46 and 47 were used to compute the projections of enrollments in elementary and secondary schools, by grade, shown in table 1.

College Enrollment, by Sex, Attendance Status, and Level Enrolled; and by Type and Control of Institution

The fourth stage of IFMOD projects enrollments in institutions of higher education, by sex, attendance status, and level enrolled by student; and by type and control of institution. For each age group, the percent that enrollment by age, attendance status, level enrolled, and type of institution was of total enrollment was projected. These projections are in tables 48 and 49, along with actual values for 1987. For all projections, it was assumed that there was no enrollment in 2-year institutions at the postbaccalaureate level (graduate and first-professional).

The projected rates in tables 48 and 49 were then adjusted to agree with the projected age-specific enrollment rates in the first stage of IFMOD. The adjusted rates were then applied to the projected enrollments by age group, sex, and attendance status from the first stage of IFMOD to obtain projections by age group, sex, attendance status, level enrolled, and type of institution.

For each enrollment category—sex, attendance status, level enrolled, and type of institution—the percent that public enrollment was of total enrollment was projected. These projections are in table 50, along with actual percent for 1987 and projections for 1995 and 2000. The projected rates shown were then applied to the projected enrollments in each enrollment category to obtain projections by control of institution.

For each enrollment category by sex and enrollment level, and by type and control of institution, the percent that graduate enrollment was of postbaccalaureate enrollment was projected. Actual rates for 1987 and projections for 1995 and 2000 are in table 51. The projected rates in table 51 were then applied to projections of postbaccalaureate enrollment to obtain graduate and first-professional enrollment projections by sex and attendance status, and by type and control of institution.

Full-Time-Equivalent Enrollment, by Type and Control of Institution and by Level Enrolled

The fifth stage of IFMOD projects full-time-equivalent enrollment, by type and control of institution and by level enrolled. For each enrollment category by level enrolled and by type and control of institution, the percent that the full-time-equivalent of part-time enrollment was of part-time enrollment was projected. Actual percents for 1987 and projections for 1995 and 2000 are in table 52.

These projected percents were applied to projections of enrollments by level enrolled and by type and control of institution from the fourth stage. The projections of the full-time-equivalent of part-time enrollment were added to projections of full-time

enrollment (from the previous stage) to obtain projections of full-time-equivalent enrollment.

For projections of enrollment in higher education, an analysis of projection errors based on the past five editions of *Projections of Education Statistics* indicates that the MAPEs for lead times of 1, 2, and 4 years were 0.4, 2.3, and 5.0 percent, respectively. Projections of full-time-equivalent had MAPEs of 0.7, 1.9, and 4.3 percent for the same lead years.

Basic Methodology

The notation and equations that follow describe the basic models used to project public elementary and secondary enrollment.

Public Elementary and Secondary Enrollment

Let:

i = Subscript denoting age

j = Subcript denoting grade

t = Subscript denoting time

K_t = Enrollment at the nursery and kindergarten level

G_{jt} = Enrollment in grade j

G_{1t} = Enrollment in grade 1

E_t = Enrollment in elementary special and ungraded programs

S_t = Enrollment in secondary special and ungraded programs

PG_t = Enrollment in post-graduate programs

P_{it} = Population age i

RK_t = Enrollment rate for nursery and kindergarten

RG_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

RPG_t = Enrollment rate for post-graduate programs

EG_t = Total enrollment in elementary grades (K–8)

SG_t = Total enrollment in secondary grades (9–12)

R_{jt} = Retention rate for grade j: the proportion that enrollment in grade j in year t is of enrollment in grade j–1 in year t–1.

Then:

$$EG_t = K_t + E_t + \sum_{j=1}^{8} G_{jt}$$

$$SG_t = S_t + PG_t + \sum_{j=9}^{12} G_{jt}$$

Where:

$$K_t = RK_t(P_{5t})$$

$$G_{jt} = R_{jt}(G_{j-1,\,t-1})$$

$$E_t = RE_t\left(\sum_{i=5}^{13} P_{it}\right)$$

$$G_{1t} = RG_{1t}(P_{6t})$$

$$S_t = RS_t\left(\sum_{i=14}^{17} P_{it}\right)$$

$$PG_t = RPG_t(P_{18t})$$

Higher Education Enrollment

For institutions of higher education, projections were computed separately by sex and attendance status of student. The notation and equations are:

Let:

i = Subscript denoting age except:

i = 25: ages 25–29

i = 26: ages 30–34

i = 27: ages 35 and over for enrollment (35–44 for population)

t = Subscript denoting year

E_{it} = Enrollment of students age i

P_{it} = Population age i

R_{it} = Enrollment rate for students age i

T_{it} = Total enrollment for particular subset of students: full-time men, full-time women, part-time men, part-time women

Then:

$$T_{it} = \sum_{i=16}^{27} E_{it}$$

Where:

$E_{it} = R_{it}(P_{it})$

Methodological Tables

The tables in this section give the rates used to calculate projections of enrollments, basic assumptions underlying enrollment projections (table 53), and methods used to estimate values for which data are not available (table 54).

Table 43.—Elementary enrollment rates, by age and sex

Age	Boys		Girls	
	1987	1989–2000	1987	1989–2000
5	5.5	5 9	4.5	5.8
6	84.7	85.8	92.0	91.6
7	99.9	100.6	100.3	100 8
8	100.1	101 3	101.3	102.2
9	103.8	102 5	102.8	101.6
10	97.7	98 6	102.0	101.8
11	107.6	104.9	98.2	98.5
12	99.8	100.4	102 2	102.2
13	97.7	95.0	95.6	92.6
14	35.0	32.0	23 6	22.0
15	7 4	6.5	4.0	3.9
16	0.8	0.9	0 7	0.6
17	0.2	0.2	0	0
18	0.1	0	0	0

Table 44.—Secondary enrollment rates, by age and sex

Age	Boys		Girls	
	1987	1989–2000	1987	1989–2000
12	0.3	0 4	0 1	0.1
13	5 4	6.0	9.3	9 0
14	65.8	66.6	77 4	77.3
15	93 7	90.9	94 7	92.1
16	93.7	94.0	91 2	93.2
17	75 4	77.7	78 1	78.8
18	25.2	24.5	16 2	15 6
19	5.9	5 4	2 2	2.4
20	1.5	1.6	1.6	1.6
21	0 5	0 5	1.0	0 8
22	0.4	0.5	0.2	0 4
23	0 1	0.2	0 2	0.3
24	0.4	0.3	0 5	0.5
25–29	0.2	0.2	0.4	0.4
30–34	0.2	0 1	0 3	0.3

Table 45.—College enrollment rates, by age, sex, and attendance status, with alternative projections

Age, sex, and attendance status	1987	Low alternative		Middle alternative		High alternative	
		1995	2000	1995	2000	1995	2000
Men							
Full-time:							
16	0 1	0.2	0.2	0.2	0.2	0.2	0.2
17	3.3	3.5	3.5	3.5	3.5	3.6	3.6
18	32 6	31.8	31.8	36.0	36.0	38.0	38.0
19	31.2	30.7	30.7	33.8	34.0	36.0	36.0
20	30.0	28.1	28.1	31.6	32.0	33.0	33.0
21	23.7	23.0	23.0	22.7	22.6	25.0	25.0
22	15.3	15.2	15.2	15.9	16.3	17.0	17.0
23	10.8	10.8	10.8	10.7	10.7	10.8	10.8
24	6.3	7.2	7.2	7.2	7.2	7.5	7.5
25–29	3.3	3.5	3 5	3.5	3.5	3.6	3.6
30–34	1.4	1.4	1.4	1.4	1.4	1.5	1.5
35–44	0.8	0.8	0.8	0.8	0.9	1.3	1.7
Part-time:							
16	0.3	0.2	0.2	0.4	0.6	0.9	1.3
17	2.1	1.4	1.4	3.0	3.0	4.0	4.0
18	3 9	3.7	3.7	4.0	4.0	4.8	5.0
19	5.4	4.6	4.6	6.0	6.0	7.0	7.0
20	7.0	6.0	6.0	8.0	8.0	9.0	9.0
21	5.0	4.6	4 6	5.4	5.4	6.9	7.0
22	5 0	6.0	6.0	6.0	6.0	6.5	6.5
23	5.1	5 1	5.1	5.1	5.1	5.5	5.5
24	5.9	5.1	5.1	7.0	7.0	8.0	8.0
25–29	5 3	5.4	5.4	5.4	5.4	6.0	6.0
30–34	3 7	3 9	3 9	3.9	3.9	4.0	4.0
35–44	3.3	3.3	3.3	3.3	3.3	3.5	3.5
Women							
Full-time:							
16	0 3	0.3	0.3	0.3	0.3	0.3	0.3
17	3.8	4.4	4.4	4.4	4.4	5.0	5.0
18	35.9	35.0	35.0	38.0	38.0	39.0	39.0
19	35 9	34.7	34.7	40.0	40.0	43.0	43.0
20	30.3	28.0	28.0	35.0	35.0	37.0	37.0
21	23.0	22.2	22.2	25.0	25.0	26.0	26.0
22	12 9	12.6	12.6	15.0	15.0	16.0	16.0
23	8.8	8.6	8.6	10.0	10.0	10.9	10.9
24	5.6	5.9	5 9	5.9	5.9	6.0	6.0
25–29	2.9	2.8	2.8	3.0	3.2	3.3	3.5
30–34	1.4	1.5	1.5	1.5	1.5	1.5	1.5
35–44	1 3	1.3	1.3	1.3	1.3	1.5	1.5
Part-time:							
16	0 3	0.2	0.2	0.2	0.2	0.2	0.2
17	2.5	1 8	1.8	2.5	2.5	3.0	3.0
18	5 7	5.3	5.3	7.0	7.0	7.5	7.5
19	4 6	4.6	4.6	5.0	5.0	5 2	5.2
20	6 6	6.4	6.4	7.5	7.5	8.0	8.0
21	6.8	6.2	6.2	8.0	8.0	8.5	8.5
22	7.0	7.7	7.7	7.7	7.7	8.0	8.0
23	7 8	7.1	7.1	9.0	9 0	10.0	10.0
24	6.2	5.6	5.6	7.0	7.0	7.5	7.5
25–29	5 9	5.9	5.9	5.8	5.8	6.0	6 0
30–34	5 4	5 3	5.3	5.3	5.3	5.4	5.4
35–44	6 2	6.3	6.3	6.3	6.3	6.5	6.5

Table 46.—Enrollment rates in public schools, by grade level

Grade level	Population base age	1987	Projected	
			1995	2000
Kindergarten	5	92.8	90.0	90.0
Grade 1	6	94.3	94.2	94.2
Elementary ungraded and special	5–13	1.5	1.7	1.7
Secondary ungraded and special	14–17	2.4	2.5	2.5
Postgraduate	18	0.3	0.3	0.3

Table 47.—Public school grade retention rates

Grade	1987	Projected	
		1995	2000
1 to 2	94.5	94.5	94.5
2 to 3	99.7	99.7	99.7
3 to 4	100.2	100.1	100.1
4 to 5	100.2	100.1	100.1
5 to 6	101.3	101.1	101.1
6 to 7	103.7	103.8	103.8
7 to 8	97.9	97.9	97.9
8 to 9	109.5	108.6	108.6
9 to 10	92.7	93.6	93.6
10 to 11	91.3	91.2	91.2
11 to 12	90.8	90.8	90.8

Table 48.—Full-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification

Age	Men			Women		
	1987	1995	2000	1987	1995	2000
			Undergraduate, 4-year institutions			
16–17 years old	70.6	68.4	68.4	72.8	69.3	69.3
18–19 years old	69.1	67.3	67.3	69.1	69.8	69.8
20–21 years old	79.5	80.8	80.8	84.0	83.6	83.6
22–24 years old	64.0	63.9	63.9	63.3	62.8	62.8
25–29 years old	37.8	39.6	39.6	40.5	41.0	41.0
30–34 years old	27.3	29.1	29.1	40.0	39.0	39.0
35 years and over	35.1	33.8	33.8	31 8	34.0	34.0
			Undergraduate, 2-year institutions			
16–17 years old	29.4	30.6	30.6	27.2	30.7	30.7
18–19 years old	30.9	32.7	32 7	30.9	30.2	30.2
20–21 years old	20.5	19.2	19.2	16 0	16.4	16.4
22–24 years old	14.4	14 5	14.5	18.9	17.4	17.4
25–29 years old	16.4	16.2	16.2	23.5	26.5	26.5
30–34 years old	20.3	18.9	18.9	32.8	34.1	34.1
35 years and over	19.7	18.5	18.5	34.0	34.7	34.7
			Postbaccalaureate, 4-year institutions			
16–17 years old	—	—	—	—	--	—
18–19 years old	—	—	—	—	—	—
20–21 years old	—	—	—	—	—	—
22–24 years old	21.6	21.6	21.6	17.8	19.9	19.9
25–29 years old	45.8	44.2	44.2	36.0	32.5	32.5
30–34 years old	52.4	52.0	52.0	27.2	27.0	27.0
35 years and over	45.3	47.7	47.7	34.2	31 2	31.2

—Not applicable.

NOTE: Projections shown for 1995 and 2000 were adjusted to add to 100 percent before computing projections shown in chapter 2.

Table 49.—Part-time enrollment, by level enrolled and type of institution, as a percent of total enrollment, for each age and sex classification

Age	Men			Women		
	1987	1995	2000	1987	1995	2000
			Undergraduate, 4-year institutions			
16–17 years old	28.3	42.8	42.8	32 4	27.4	27.4
18–19 years old	2.7	7.2	7.2	15.9	16.3	16.3
20–21 years old	27.8	25.9	25.9	25.7	24.9	24.9
22–24 years old	36.6	35.6	35 6	30.1	30.0	30.0
25–29 years old	31.1	29.2	29.2	30.1	28.8	28.8
30–34 years old	31.9	31.5	31.5	31.0	29.9	29.9
35 years and over	26.0	28 0	28.0	24.1	25.7	25.7
			Undergraduate, 2-year institutions			
16–17 years old	67 6	49.5	49.5	62.8	69.1	69.1
18–19 years old	82.1	81.5	81.5	79.6	78.8	78.8
20–21 years old	66 8	68.6	68.6	69 2	69.7	69.7
22–24 years old	50.6	51.0	51 0	54.8	55.1	55.1
25–29 years old	48.4	50 4	50.4	48.4	50.4	50.4
30–34 years old	48 6	47.0	47.0	49.9	50.8	50.8
35 years and over	46.0	45.4	45 4	55.6	54.2	54.2
			Postbaccalaureate, 4-year institutions			
16–17 years old	4 2	7 6	7 6	4.8	3.6	3.6
18–19 years old	15.2	11.3	11.3	4 5	4.9	4.9
20–21 years old	5.3	5 6	5 6	5 1	5.4	5.4
22–24 years old	12.9	13.4	13 4	15.1	14.9	14 9
25–29 years old	20.5	20.4	20.4	21.4	20.8	20.8
30–34 years old	19.6	21 5	21.5	19.1	19.4	19.4
35 years and over	28.0	26 7	26 7	20.3	20.1	20.1

NOTE: Projections shown for 1995 and 2000 were adjusted to add to 100 percent before computing projections shown in chapter 2.

Table 50.—Public school enrollment as a percent of total enrollment, by attendance status, sex, level enrolled, and by type of institution

Enrollment category	Men			Women		
	1987	1995	2000	1987	1995	2000
Full-time, undergraduate, 4-year institutions	69.6	69.5	69.5	69.0	68.9	68.9
Part-time, undergraduate, 4-year institutions	73.0	72.8	72.8	70.3	69.9	69.9
Full-time, undergraduate, 2-year institutions	90.7	90.4	90.4	88.5	88.2	88.2
Part-time, undergraduate, 2-year institutions	97.8	97.3	97.3	98.4	98.3	98.3
Full-time, postbaccalaureate, 4-year institutions	56.2	56.2	56.2	59.5	59.8	59.8
Part-time, postbaccalaureate, 4-year institutions	59.1	59.1	59.1	68.4	68.5	68.5

Table 51.—Graduate enrollment as a percent of total postbaccalaureate enrollment, by sex and attendance status, and by type and control of institution

Enrollment category	Men			Women		
	1987	1995	2000	1987	1995	2000
Full-time, 4-year, public	73 7	73.4	73 4	79.1	79.2	79.2
Part-time, 4-year, public	99.2	99.0	99.0	99.4	99.4	99.4
Full-time, 4-year, private	55.1	54.4	54.4	63.1	62.8	62 8
Part-time, 4-year, private	91.8	91.9	91.9	95.3	95.3	95.3

Table 52.—Full-time-equivalent of part-time enrollment as a percent of part-time enrollment, by level enrolled and by type and control of institution

Enrollment category	1987	1995	2000
Public, 4-year, undergraduate	40.0	40.1	40.1
Public, 2-year, undergraduate	33.6	33.6	33.6
Private, 4-year, undergraduate	40.0	39.8	39.8
Private, 2-year, undergraduate	40.4	40.2	40.2
Public, 4-year, graduate	36.2	36.2	36.2
Private, 4-year, graduate	38.2	38.2	38.2
Public, 4-year, first-professional	75.0	66.4	66.4
Private, 4-year, first-professional	54.6	55.4	55.4

Table 53.—Enrollment (assumptions)

Variables	Assumptions	Alternatives	Tables
Elementary and Secondary enrollment	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	1, 2
	Public enrollment rates and public grade retention rates will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	1, 2
	The percentage of 7th and 8th grade public students enrolled in school organized as secondary schools will remain constant at levels consistent with the most recent rates.	middle (no alternatives)	2
College full-time and part-time enrollment, by age			
Men	Age-specific enrollment rates will remain constant at levels consistent with most recent rates.	low	3–5 9–16
	Age-specific enrollment rates will increase over the projection period.	middle	3–5 9–16
	Age-specific enrollment rates will either equal the middle alternative or increase, based on past trends.	high	3–5 9–16
Women	Age-specific enrollment rates will remain constant at levels consistent with the most recent rates.	low	3–5 9–16
	Age-specific enrollment rates for the younger age cohorts will increase over the projection period.	middle	3–5 9–16
	Age-specific enrollment rates will either equal the middle alternative or increase, based on past trends.	high	3–5 9–16
College enrollment, by sex, attendance status, and level enrolled by student, and by type of institution.	For each group and for each attendance status separately, enrollment by sex and level enrolled by student, and by type of institution as a percent of total enrollment, will follow past trends through 2000. For each age group and attendance status category, the restriction that the sum of the percentages must equal 100 percent was applied.	high, middle, and low	3–5 9–16
College enrollment, by control of institution	For each enrollment category, by sex, attendance status, and level enrolled by student, and by type of institution, public enrollment as a percent of total enrollment will remain constant at levels consistent with most recent rates.	high, middle, and low	3–5 9–16
Graduate enrollment	For each enrollment category, by sex and attendance status of student, and by type and control of institution, graduate enrollment as a percent of postbaccalaureate enrollment will remain constant at levels consistent with most recent rates.	high, middle, and low	17
Full-time-equivalent of part-time enrollment	For each enrollment category, by type and control of institution and level enrolled by student, the percent that full-time equivalent of part-time enrollment is of part-time enrollment will remain constant at levels consistent with the most recent rates.	high, middle, and low	23–25

Table 54.—Enrollment (estimation methods)

Variables	Years	Estimation method	Tables
Enrollment in private elementary and secondary schools, by level	1988	Grade-by-grade data for private elementary, secondary, and combined schools were aggregated to estimate private school enrollment by grade level.	1 2
Enrollment in institutions of higher education, by age and attendance status	1980, 1985, and 1988	For each sex, enrollment data from the Bureau of the Census by individual ages and by attendance status for 2-year age groups were combined by assuming that within the 2-year age groups, age and attendance status were distributed independently. The resultant enrollment estimates by age and attendance status were then adjusted to NCES enrollment counts by attendance status.	6 7 8

Chapter 11

High School Graduates—Methodology

Projections of public high school graduates are based on projected graduation rates. The number of public high school graduates was expressed as a percent of grade 12 enrollment for 1970 to 1987. This graduation rate was projected using single exponential smoothing and applied to projections of grade 12 enrollment to yield projections of high school graduates in public schools. The graduation rate was assumed to remain constant at levels consistent with the most recent rates. This method assumes that past trends in factors affecting graduation will continue over the projection period.

The confidence limits were calculated using the procedure described in *Statistical Methods for Forecasting* by Abraham and Ledolter on pp 125–132.

Projections of private high school graduates are based on public high school graduate projections. First, the estimate of private high school graduates for the year ending 1988 was expressed as a percent of the public high school graduates for that year. Next, the number of private high school graduates obtained from the Private Elementary and Secondary School Universe survey was expressed as a percent of the public high school graduates for that year (1980). The mean of these two percents was calculated. This rate was multiplied by projections of public high school graduates to obtain the private high school graduate projections.

Sources of Data

The number of public high school graduates used in these forecasts was obtained from the Common Core of Data (CCD) survey conducted by the National Center for Education Statistics. The estimates of the number of public high school graduates for 1987–88 and 1988–89 were obtained from "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates.* The estimates of the number of private high school graduates was obtained from "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates.* The numbers of private high school graduates for earlier years were obtained from *Statistics of Nonpublic Elementary and Secondary Schools,* and unpublished data.

Chapter 12

Earned Degrees Conferred—Methodology

Projections of associate, bachelor's, and master's degrees by level and by sex, and doctor's and first-professional degrees by sex were based on demographic models which relate degree awards to college-age populations and college enrollment by level enrolled and attendance status.

Associate Degrees

Associate degree projections by level and by sex were based on undergraduate enrollment by attendance status in 2-year institutions. Results of the regression analysis used to project associate degrees by level and by sex are in table 55. Tables of statistical confidence limits are in appendix B.

Bachelor's Degrees

Bachelor's degree projections by level and by sex were based on the 18- to 24-year-old population, 25- to 34-year-old population, and undergraduate enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project bachelor's degrees by level and by sex are in table 56. Tables of statistical confidence limits are in appendix B.

Master's Degrees

Master's degree projections by level and by sex were based on the 35- to 44-year-old population and graduate enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project master's degrees by level and by sex are in table 57. Tables of statistical confidence limits are in appendix B.

Doctor's Degrees

Doctor's degree projections by sex were based on the 35- to 44-year-old population, graduate enrollment by attendance status in 4-year institutions, and a time trend variable. Results of the regression analysis used to project master's degrees by sex are in table 58. Tables of statistical confidence limits are in appendix B.

First-professional Degrees

First-professional degree projections by sex were based on first-professional enrollment by attendance status in 4-year institutions. Results of the regression analysis used to project first-professional degrees by sex are in table 59. Tables of statistical confidence limits are in appendix B.

Methodological Tables

These tables describe equations used to calculate projections (tables 55 through 59), and basic assumptions underlying projections (table 60).

Table 55.—Equations for associate degrees (1969–70 to 1987–88)

	Regression equation	R^2 [1]	Durbin-Watson statistic [2]	Regression technique
Total	ASSOC = 12442.6 + 167.8UGFT2 (3.9) + 47.2UGPT2 (3.5)	0.96	1.2	Ordinary least squares
Men	ASSOCM = 12206.9 + 146.4UGFTM2 (3.9) + 50.4UGPTM2 (4.0)	0.84	1.1	Ordinary least squares
Women	ASSOCW = 1500.8 + 276.0UGFTW2 (38.2)	0.99	1.6	Ordinary least squares

[1] R^2 = Coefficient of determination.
[2] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometrics Methods*, New York: McGraw-Hill, 1972, pages 251–252.

Where:

ASSOC = Number of associate degrees
ASSOCM = Number of associate degrees awarded to men
ASSOCW = Number of associate degrees awarded to women
UGFT2 = Full-time undergraduate enrollment in 2-year institutions lagged 1 year
UGPT2 = Part-time undergraduate enrollment in 2-year institutions lagged 1 year
UGFTM2 = Full-time male undergraduate enrollment in 2-year institutions lagged 1 year
UGPTM2 = Part-time male undergraduate enrollment in 2-year institutions lagged 1 year
UGPTW2 = Part-time female undergraduate enrollment in 2-year institutions lagged 2 years

Note: The numbers in parentheses refer to the value of the t statistics.

Table 56.—Equations for bachelor's degrees, (1969–70 to 1987–88)

	Regression equation	R^2 [1]	Durbin-Watson statistic [2]	Regression technique
Total	BACH = 377519.4 − 5.1P1824 (−2.3) + 5.8P2534 (2.4) + 187.6UGFT4 (5.2) − 248.7UGPT4 (−3.2)	0.95	1.2	Ordinary least squares
Men	BACHM = 116450.2 − 4.6P1824M (−1.5) − 3.2P2534M (−2.8) + 243.8UGFT4M (7.4) − 123.2UGPT4M (−1.3)	0.82	1.2	Ordinary least squares
Women	BACHW = 144387 − 11 6P1824W (−7.4) + 8.8P2534W (3 2) − 202.2UGFT4W (−5.5) − 123.2UGPT4W (−1.3)	0.99	1.8	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometrics Methods*, New York: McGraw-Hill, 1972, pages 251–252.

Where:

BACH = Number of bachelor's degrees
BACHM = Number of bachelor's degrees awarded to men
BACHW = Number of bachelor's degrees awarded to women
P1824 = Population of 18- to 24-year-olds
P1824M = Population of 18- to 24-year-old males
P1824W = Population of 18- to 24-year-old females
P2534 = Population of 25- to 34-year-olds
P2534M = Population of 25- to 34-year-old males
P2534W = Population of 25- to 34-year-old females
UGFT4 = Full-time undergraduate enrollment in 4-year institutions lagged 3 years
UGPT4 = Part-time undergraduate enrollment in 4-year institutions lagged 3 years
UGFT4M = Full-time male undergraduate enrollment in 4-year institutions lagged 3 years
UGPT4M = Part-time male undergraduate enrollment in 4-year institutions lagged 3 years
UGFT4W = Full-time female undergraduate enrollment in 4-year institutions lagged 3 years
UGPT4W = Part-time female undergraduate enrollment in 4-year institutions lagged 3 years

NOTE: The numbers in parentheses refer to the value of the t statistics.

Table 57.—Equations for master's degrees, (1969–70 to 1987–88)

	Regression equation	R^2 [1]	Durbin-Watson statistic [2]	Regression technique
Total	MAST = 108948.1 − 4.0P3544 (−5.9) + 354.4GPT (11.8)	0.90	1.3	Ordinary least squares
Men	MASTM = 85766.4 − 3.4P3544M (−4.4) + 283.9GPTM (4.5)	0.64	0.5	Ordinary least squares
Women	MASTW = 66188.0 − 4.6P3544W (−5.5) + 325.7GPTW (15.2)	0.95	0.84	Ordinary least squares

[1] R^2 = Coefficient of determination

[2] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometrics Methods*, New York: McGraw-Hill, 1972, pages 251–252.

Where:

MAST = Number of master's degrees
MASTM = Number of master's degrees awarded to men
MASTW = Number of master's degrees awarded to women
P3544 = Population of 35- to 44-year-olds
P3544M = Population of 35- to 44-year-old males
P3544W = Population of 35- to 44-year-old females
GPT = Part-time graduate enrollment lagged 1 year
GPTM = Part-time male graduate enrollment lagged 2 years
GPTW = Part-time female graduate enrollment lagged 2 years

NOTE: The numbers in parentheses refer to the value of the t statistics.

Table 58.—Equations for doctor's degrees, (1969–70 t› 1987–88)

	Regression equation	R^2 [1]	Durbin-Watson statistic [2]	Regression technique
Men	DOCM = 14082.4 + 0.5P3544M (1.5) + 24.4GPTM (1.5) − 645.6TIME (−4.1)	0 86	0 82	Ordinary least squares
Women	DOCW = 11350.7 − 0.6P3544W (−8.7) − 3.9GPTW (−2.0) + 721.3TIME (−4.1)	0.99	2 1	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson statistic, see J. Johnston *Econometrics Methods*, New York: McGraw-Hill, 1972, pages 251–252.

Where:

DOCM = Number of doctor's degrees awarded to men
DOCW = Number of doctor's degrees awarded to women
P3544M = Population of 35- to 44-year-old males
P3544W = Population of 35- to 44-year-old females
GPTM = Part-time male graduate enrollment
GPTW = Part-time female graduate enrollment
TIME = Time trend, 1969–70 = 1

NOTE The numbers in parentheses refer to the value of the t statistics.

Table 59.—Equations for first-professional degrees, (1969–70 to 1987–88)

	Regression equation	R^2 [1]	Durbin-Watson statistic [2]	Regression technique
Men	FPROM = −22458.7 + 424.1FPFTM (9.4)	0.84	0.68	Ordinary least squares
Women	FPROW = −2637.5 + 264.1FPFTW (8.0) + 469.3FPPTW (1.9)	0.99	1.1	Ordinary least squares

[1] R^2 = Coefficient of determination.

[2] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometrics Methods*, New York: McGraw-Hill, 1972, pages 251–252.

Where:

FPROM = Number of first-professional degrees awarded to men

FPROW = Number of first-professional degrees awarded to women

FPFTM = Full-time male first-professional enrollment lagged 1 year

FPFTW = Full-time female first-professional enrollment lagged 1 year

FPPTW = Part-time female first-professional enrollment lagged 3 years

NOTE: The numbers in parentheses refer to the value of the t statistics.

Table 60.—Earned degrees conferred (assumptions)

Variables	Assumptions	Alternatives	Tables
Associate degrees			
Total	The number of associate degrees is a linear function of full-time and part-time undergraduate enrollment in 2-year institutions lagged 1 year This relationship will continue through 1999–2000.	Middle (no alternatives)	27
Men	The number of associate degrees awarded to men is a linear function of full-time and part-time undergraduate enrollment in 2-year institutions lagged 1 year This relationship will continue through 1999–2000.	Middle (no alternatives)	27
Women	The number of associate degrees awarded to women is a linear function of full-time undergraduate enrollment in 2-year institutions lagged 2 years. This relationship will continue through 1999–2000.	Middle (no alternatives)	27
Bachelor's degrees			
Total	The number of bachelor's degrees is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions lagged 3 years, the 18- and 24-year-old population, and 25- to 34-year-old population. This relationship will continue through 1999–2000.	Middle (no alternatives)	28
Men	The number of bachelor's degrees awarded to men is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions lagged 3 years, the 18- to 24-year-old population, and 25- to 34-year-old population This relationship will continue through 1999–2000.	Middle (no alternatives)	28
Women	The number of bachelor's degrees awarded to women is a linear function of full-time and part-time undergraduate enrollment in 4-year institutions lagged 3 years, the 18- to 24-year-old population, and 25- to 34-year-old population. This relationship will continue through 1999–2000.	Middle (no alternatives)	28
Master's degrees			
Total	The number of master's degrees is a linear function of part-time graduate enrollment lagged 1 year and the 35- to 44-year-old population This relationship will continue through 1999–2000.	Middle (no alternatives)	29
Men	The number of master's degrees awarded to men is a linear function of part-time graduate enrollment lagged 2 years and the 35- to 44-year-old population This relationship will continue through 1999–2000.	Middle (no alternatives)	29
Women	The number of master's degrees awarded to women is a linear function of part-time graduate enrollment lagged 2 years and the 35- to 44-year-old population This relationship will continue through 1999–2000.	Middle (no alternatives)	29
Doctor's degrees			
Men	The number of doctor's degrees awarded to men is a linear function of part-time graduate enrollment, time, and the 35- to 44-year-old population This relationship will continue through 1999–2000	Middle (no alternatives)	30
Women	The number of doctor's degrees awarded to women is a linear function of part-time graduate enrollment, time, and the 35- to 44-year-old population This relationship will continue through 1999–2000	Middle (no alternatives)	30
First-professional degrees			
Men	The number of first-professional degrees awarded to men is a linear function of full-time first-professional enrollment lagged 1 year. This relationship will continue through 1999–2000	Middle (no alternatives)	31
Women	The number of first-professional degrees awarded to women is a linear function of full-time first-professional enrollment lagged 1 year and part-time first-professional enrollment lagged 3 years. This relationship will continue through 1999–2000.	Middle (no alternatives)	31

Chapter 13

Classroom Teachers—Methodology

Public Classroom Teachers

Public elementary and secondary classroom teachers were forecast using the same model as was used in *Projections of Education Statistics to 1997-98,* only the coefficients were re-estimated. The number of public school teachers was forecast separately for the elementary and secondary levels. The elementary teachers were modeled as a function of per capita income (lagged 2 years), local education revenue receipts from State sources per capita, and elementary enrollment. Secondary teachers were modeled as a function of per capita income (lagged 1 year), local education revenue receipts from State sources per capita, and secondary enrollment (lagged 1 year). Both per capita income and local education revenue receipts from State sources were in constant 1988 dollars.

This model is based on suggestions in the National Academy of Sciences report: *Toward Understanding Teacher Supply and Demand, Priorities for Research and Development, Interim Report,* National Academy Press. The equations in this section should be viewed as forecasting rather than structural equations, as the limitations of time and available data precluded the building of a large-scale, structural teacher model. The particular equations shown were selected on the basis of their statistical properties, such as coefficients of determination (R^2's), the t-statistics of the coefficients, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good forecasts only if the relationships that existed among the variables in the past continue throughout the forecast period.The public elementary classroom teacher model is:

$$ELTCH = b_0 + b_1PCI2 + b_2SGRANT + b_3ELENR$$

where:

ELTCH is the number of public elementary classroom teachers.

PCI2 is disposable income per capita in 1988 dollars, lagged 2 years;

SGRANT is local education revenue receipts from State governments per capita in 1988 dollars; and

ELENR is the number of students enrolled in public elementary schools.

Each variable affects the number of teachers in the expected way. As people receive more income, the State spends more money on education, and as enrollment increases, the number of elementary teachers hired increases.

The public secondary classroom teacher model is:

$$SCTCH = b_0 + b_1PCI1 + b_2SGRANT1 + b_3SCENR$$

where:

SCTCH is the number of public secondary classroom teachers;

PCI1 is disposable income per capita in 1988 dollars, lagged 1 year;

SGRANT1 is local education revenue receipts from State governments per capita in 1988 dollars, lagged 1 year, and;

SCENR is the number of students enrolled in public secondary schools.

Each variable affects the number of teachers in the expected way. As people receive more income, the State spends more money on education, and as enrollment increases, the number of secondary teachers hired increases.

Table 61 summarizes the results for the elementary and secondary public teacher models.

Enrollment is by organizational level, not by grade level. Thus, secondary enrollment is not equal to grade 9–12 enrollment. This is because some States count some grade 7 and 8 enrollment as secondary. The distribution of the number of teachers is by organizational level, not by grade span.

Percent changes were calculated using unrounded numbers.

Projections of the demand for new-hiring of classroom teachers were calculated separately for the elementary and secondary levels. These two were then added together to obtain the total demand for new-hiring of elementary and secondary classroom teachers. For each level the demand for new-hiring of

teachers is decomposed into three parts: that due to turnover; that due to enrollment changes; and that due to other factors. The following equations provide the details of the calculations:

$$NH_t = NT_t + NE_t + NO_t$$

$$NT_t = TC_{t-1} * TN$$

$$NE_t = (EN_t - EN_{t-1})/(PT_{t-1})$$

$$NO_t = (TC_t - TC_{t-1}) - NE_t$$

where:

t = Subscript denoting time

EN_t = Enrollment

TC_t = Number of classroom teachers

NH_t = Total demand for new-hiring of teachers

NT_t = Number of new hires needed for turnover

NE_t = Number of new hires needed for enrollment changes

NO_t = Number of new hires needed for other reasons

PT_t = Pupil-teacher ratio

TN = Turnover rate

The data upon which the turnover rates were based were obtained from unpublished tables of the Bureau of Labor Statistics. Using the rates for 1983–84 (4.9 percent for public elementary teachers and 5.6 percent for public secondary teachers) as a basis, three alternatives were calculated (table 62). The middle alternative assumes that the overall turnover rate will increase as fast as the retirement rate. The low alternative assumes that the overall turnover rate will increase half as fast as the retirement rate. The high alternative assumes that the overall turnover rate will increase twice as fast as the retirement rate.

The retirement rates were obtained by assuming that all those aged 50 or over in 1985 would retire at age 65 by the year 2000. It was further assumed that none of those 50 or older would die before retiring, and that those entering teaching from non-teaching status were younger than 50. The 5-year age groups were disaggregated into single-year ages by linear regression. The retirement rates were then calculated using the appropriate years of projected teacher data.

Private Classroom Teachers

Projections of private classroom teachers are based on public classroom teacher projections. First the estimate of private classroom teachers for the year ending 1988 was expressed as a percent of the public classroom teachers for that year. This rate was multiplied by projections of public classroom teachers to obtain the private classroom teacher projections.

The private elementary/secondary split was obtained by using the formulas:

$$E = EEC * EEE/(EEE + EES)$$

$$S = EEC * EES/(EEE + EES)$$

where:

E = number of private elementary teachers used in the model

S = number of private secondary teachers used in the model

EEE = number of private elementary teachers from 1988 *Early Estimate* survey

EES = number of private secondary teachers from 1988 *Early Estimate* survey

EEC = number of private teachers in combined elementary/secondary schools from the 1988 *Early Estimate* survey

Sources of Data

The total number of public school teachers, enrollment by organizational level, and local education revenue receipts from State sources used in these forecasts were from the Common Core of Data (CCD) survey conducted by NCES. The proportion of teachers by organizational level was from the National Education Association and then applied to the total number of teachers from CCD to produce the number of teachers by organizational level. The number of private classroom teachers was obtained from "Key Statistics for Private Elementary and Secondary Education: School Year 1988-89," *Early Estimates.*

Disposable income and population were obtained from the Data Resources, Inc., report "Offline U.S. Economic Service: Long-term Option."

Table 61.—Equations for public elementary and secondary classroom teachers

Dependent variable	Equation [1]	R^2 [2] (adjusted)	Durbin-Watson statistic [3]	Regression technique
Public elementary classroom teachers	ELTCH = −21.137 + 0.037PCI2 (−.28) (5.62) + 1.030SGRANT + 0.019ELENR (5.78) (8.66)	0.996	1 734	Ordinary least squares
Public secondary classroom teachers	SCTCH = −96.673 + 0.256PCI1 (−2.74) (4.07) + 0.677SGRANT + 0.033SCENR1 (3.21) (20.85)	0.998	1.278	Ordinary least squares

[1] The number of observations in each case is 31.
[2] Coefficient of determination adjusted for degrees of freedom.
[3] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251-252.

NOTE: The numbers in parentheses below the equations are the t-statistics.

Table 62.—Alternative turnover rate assumptions, by organizational level: 1989 to 2000

Year	Elementary			Secondary		
	Low	Middle	High	Low	Middle	High
1989	5.3	5 5	5.9	6 7	6.9	7.4
1990	5.4	5 6	6.1	6.7	7.0	7.7
1991	5.4	5 7	6 3	6 8	7 2	7 9
1992	5 5	5 8	6.5	6.8	7 3	8.1
1993	5.5	5 9	6.7	6.9	7.4	8.3
1994	5.5	6.0	6 9	6 9	7.5	8 5
1995	5.6	6.1	7 0	7.0	7.6	8 7
1996	5.6	6.2	7.2	7.0	7.6	8 9
1997	5.7	6.2	7.4	7.1	7.7	9 1
1998	5.7	6.3	7.6	7.1	7.8	9 2
1999	5 8	6.4	7.7	7 2	7 9	9.4
2000	5.8	6.5	7.9	7.2	8 0	9.6

NOTE: This table was prepared May 1989.

Chapter 14

Instructional Faculty—Methodology

Projections of full-time instructional faculty in institutions of higher education are based on alternative projections of full-time enrollment, by type and control of institution (tables 10–13) and constant projections of faculty-student ratios by type and control of institution. Projections of part-time instructional faculty are based on alternative projections of part-time enrollment, by type and control of institution (tables 10–13) and constant projections of faculty-student ratios.

Instructional Faculty

Let:

t = Subscript denoting time

FE_t = Full-time enrollment in institutions of higher education

PE_t = Part-time enrollment in institutions of higher education

FC_t = Full-time instructional faculty

PC_t = Part-time instructional faculty

FEC_t = Ratio of full-time instructional faculty to full-time enrollment (faculty-student ratio)

PEC_t = Ratio of part-time instructional faculty to part-time enrollment (faculty-student ratio)

Then:

$FC_t = FE_t * FEC_t$

$PC_t = PE_t * PEC_t$

Methodological Tables

These tables describe rates used to calculate projections (tables 63), basic assumptions underlying projections (table 64), and methods used to estimate values for which data are not available (table 65).

Table 63.—Faculty-student ratios * used to project full-time and part-time faculty

Type and control of institution	Full-time	Part-time
Public 4-year	65.0	42.0
Public 2-year	52.0	43.0
Private 4-year	77.0	83.0
Private 2-year	36.0	83.0

* Faculty per 1,000 students.

Table 64.—Instructional faculty (assumptions)

Variables	Assumptions	Alternatives	Tables
Full-time instructional faculty	For each type and control institution, the percent that full-time instructional faculty is of full-time enrollment will remain constant at 1983 levels.	High, middle, and low	35
Part-time instructional faculty	For each type and control institution, the percent that part-time instructional faculty is of part-time enrollment will remain constant at 1983 levels.	High, middle, and low	35

Table 65.—Instructional faculty (estimation methods)

Variables	Years	Estimation method	Tables
Full-time instructional faculty	1978, 1979, 1980 1982, and 1984	For each type and control of institution, the percent that full-time instructional faculty was of full-time enrollment was interpolated. This percent was applied to full-time enrollment for each year.	35
Part-time instructional faculty	1978, 1979, 1980 1982, and 1984	For each type and control of institution, the percent that part-time instructional faculty was of part-time enrollment was interpolated. This percent was applied to part-time enrollment for each year.	35

Chapter 15

Expenditures of Public Elementary and Secondary Schools—Methodology

Econometric techniques were used to produce the projections for current expenditures and average teacher salaries. The equations in this chapter should be viewed as forecasting, rather than structural equations. The limitations of time and 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^2's), the t-statistics of the variables, the Durbin-Watson statistic, and residual plots.

The multiple regression technique used yields good forecasting results only if the relationships that existed among the variables in the past continue throughout the projection period.

The Elementary and Secondary School Current Expenditure Model

Economists and other researchers have progressed in developing a model of the demand for elementary and secondary school current expenditures.[1] In most instances, researchers have used cross-sectional data. The Elementary and Secondary School Current Expenditure Model builds on the knowledge gained from these cross-sectional studies and adapts them for use in a time series study.

The Elementary and Secondary School Current Expenditure Model is:

$$\ln(\text{CUREXP}) = b_0 + b_1\ln(\text{PCI}) + b_2\ln(\text{SGRANT}) + b_3\ln(\text{ADAPOP})$$

where:

ln indicates the natural log;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance (ADA) in constant school year 1987–88 dollars;

PCI equals disposable income per capita in constant 1987–88 dollars;

SGRANT equals local governments' education revenue receipts from State governments per capita in constant 1987–88 dollars; and

ADAPOP equals the ratio of average daily attendance to the population.

The model was estimated using the ordinary least squares option of the econometrics package Regression Analysis of Time Series (RATS) using a sample period from 1959–60 to 1987–88. All variables were placed in log form as the test statistics were superior for that form and there is some evidence from the cross-sectional studies that the log form is superior.

The results for the model are on table 66. Each variable affects current expenditures in the direction that would be expected. As people receive more income, either directly (PCI) or from the State government (SGRANT), the level of spending increases. As the number of pupils increases relative to the population (that is, as ADAPOP increases), the level of spending per pupil falls.

From the cross-sectional studies of the demand for education expenditures, we have a rough idea how sensitive current expenditures are to changes in PCI and ADAPOP. We can compare the results from this model to those from the cross-sectional studies. For this model, an increase in disposable income per capita of 1 percent, with SGRANT and ADAPOP held constant, would result in an increase of current expenditures per pupil in ADA of approximately 0.51 percent. Holding PCI and SGRANT constant, an increase of 1 percent in the ratio of average daily attendance to the population would result in a decrease in current expenditures per pupil in ADA of approximately 0.38 percent. Both numbers are well within the range of what has been found in other studies.

The confidence intervals for current expenditures per pupil were produced using the equation (4.48) of D. Montgomery, and Peck, *Introduction to Linear Regression Analysis,* New York: John Wiley and Sons, 1982, page 141. The 95 percent confidence interval

[1] For a review and discussion of this literature, see Inman, R. P. (1979), "The Fiscal Performance of Local Governments: An Interpretive Review," in *Current Issues in Urban Economics,* edited by P. Mieszkowski and M. Straszheim, John Hopkins Press, Baltimore, Maryland.

can be viewed as showing for each year the interval in which it is 95 percent sure that current expenditures will fall within if the assumptions behind the projection occur.

Projections for total current expenditures were made by multiplying the projections for current expenditures per pupil in ADA by projections for the ADA. Current-dollar projections were produced by multiplying the constant-dollar projections by projections for the Consumer Price Index.

Three alternative projections for current expenditures are presented: the middle alternative projection, the low alternative projection, and the high alternative projection. Each alternative projection differs because of varying assumptions about the growth path for disposable income. For the middle alternative projection, disposable income is from Data Resources, Inc.'s (DRI's) trend scenario. The trend scenario shows the economy following a pattern of smooth growth with actual output approximately paralleling the path of potential output. In this scenario, disposable income per capita rises each year from 1989–90 to 1999–2000 at rates between 0.5 percent and 1.9 percent. For the low alternative projection, disposable income is from DRI's pessimistic scenario, and for the high alternative projection, disposable income is from their optimistic scenario. These two alternatives show the economy growing, but at significantly different rates. In DRI's optimistic scenario, the labor force, capital stock, and exogenous technical change grow at a faster rate than in the trend scenario, so there is higher growth and lower inflation. Disposable income per capita rises each year from 1989–90 to 1999–2000 at rates between 1.0 percent and 1.9 percent. In their pessimistic scenario, inflation is higher and growth is lower, with a recession occurring in the early 1990s.[2] The same values for the other two independent variables, revenue receipts and the ratio of ADA to the population, were used for all the alternative projections.

The Elementary and Secondary Teacher Salary Model

As with current expenditures, most studies conducted on teacher salaries have used cross-sectional data. Unlike current expenditures, however, the models from these existing cross-sectional studies cannot be easily reformulated for use with time-series data. One reason is that we have no data on the supply of teachers. Hence, the elementary and secondary salary model contains terms which measure the demand for teachers in the economy.[3]

The Elementary and Secondary Teacher Salary Model is:

$$\begin{aligned} SALARY = {} & b_0 + b_1 CUREXP \\ & + b_2 ADAPOP + b_3 DIFADA1 \\ & + b_4 DIFADA2 \end{aligned}$$

where:

SALARY equals the average annual salary of teachers in public elementary and secondary schools in constant 1987–88 dollars;

CUREXP equals current expenditures of public elementary and secondary schools per pupil in average daily attendance in constant 1987–88 dollars;

ADAPOP equals the ratio of average daily attendance to the population;

DIFADA1 equals the change in average daily attendance lagged 1 period; and

DIFADA2 equals the change in average daily attendance lagged 2 periods.

The model was estimated using the period from 1959–60 to 1987–88 as a sample period. To estimate the Elementary and Secondary Teacher Salary model, a method for correcting for autocorrelation was used.[4] This was done as the test statistics were significantly better than those from the OLS estimations and the Durbin-Watson statistic was in the inconclusive region when the model was estimated using OLS.

The results for this model are also on table 66.

There is no literature for comparing the sizes of the coefficients. However, the direction of the impact each variable has on salaries is as expected: as the level of spending per pupil increases (higher CUREXP), more teachers can be hired, so demand for teachers increases and salaries increase; as the number of students increases (higher ADAPOP, DIFADA1 and DIFADA2), demand for teachers increases, so salaries increase.

As this model was calculated using a different technique than the current expenditures model, a different method for calculating confidence intervals was required. In this case, the confidence limits were calculated using equation (8.3.14) of G. Judge, Griffiths,

[2] The projected value for disposable income per capita is actually greater in the pessimistic scenario than in the trend scenario for 1989–90. Hence, the projection for current expenditures in 1989–90 is greater in the low alternative projection.

[3] Terms that may measure the supply of teachers, such as the adult unemployment rate, were tried but not included in the final model.

[4] Specifically, the maximum likelihood search procedure of the statistical package RATS was used.

Hill, Lutkepohl, and Lee, *The Theory and Practice of Econometrics,* New York: John Wiley and Sons, 1985, page 318.

As with current expenditures, three different scenarios are presented for teacher salaries. The same projections for ADAPOP, DIFADA1, and DIFADA2 are used with each alternative projection; the sole difference comes for the projection for current expenditures. The middle alternative projection for salaries uses the middle alternative projection for current expenditures. The low alternative projection for salaries uses the low alternative projection for current expenditures. The high alternative projection for salaries uses the high alternative projection for current expenditures.

Current expenditures, average teacher salaries, and the number of teachers are interrelated. Hence, two exercises were conducted to see if the projections of these three time series are consistent.

First, for every school year from 1974–75 until 1999–2000 (using the middle alternative projection), the number of teachers was multiplied by the average salary. This was divided by current expenditures. The resulting ratio shows the portion of current expenditures that go towards teacher salaries. The values for the projection period were all within the range of the values for the historical period.

Second, for each year in the projection period, current expenditures were multiplied by the 1986–87 ratio of spending on salaries to all current expenditures. This series represents how much would be spent on teacher salaries if the relationship that existed in 1986–87 were still to hold. Each number in this series was divided by its counterpart in the teacher time series to find a time series for average teacher salaries. This imputed time series was compared with the projected series for teacher salaries. For every year, this imputed series was well within the 95 percent confidence interval.

The results of these exercises indicate that the projections of these three time series are consistent.

Sources of Past and Projected Data

Numbers from different sources were used to produce these projections. In some instances, the time series used were made by either combining numbers from various sources or manipulating the available numbers. The sources and the methods of manipulation are described here.

The time series used for current expenditures was compiled from several different sources. For the school years ending in even numbers from 1959–60 to 1975–76, the numbers for current expenditures were from various issues of the *Statistics of State School Systems* published by the National Center for Education Statistics (NCES). The numbers for the school years ending in odd numbers during the 1960s were from various issues of the National Education Association's (NEA), *Estimates of School Statistics.* For the school years ending in odd numbers during the 1970s up to and including 1976–77, the numbers were from various issues of the *Revenues and Expenditures for Public Elementary and Secondary Education* published by NCES. From 1977–78 until 1986–87, the numbers were from the NCES Common Core of Data survey and unpublished data. The number for 1987–88 is from the NCES early estimates system.

For 1972–73, 1974–75, and 1976–77, expenditures for summer schools were subtracted from the published figure for current expenditures. For 1972–73, there were no published numbers for summer school expenditures, so the average of the values for 1971–72 and 1973–74 from the *Statistics of State School Systems* was used.

Note that while the data from the different sources are similar, they are not entirely consistent. Also, the NCES numbers beginning with 1980–81 are not entirely consistent with the earlier NCES numbers.

With two exceptions, the sources for the past values of average daily attendance (ADA) were identical to the sources for current expenditures. For 1978–79, the number was from the *Revenues and Expenditures for Public Elementary and Secondary Education.* The number for 1987–88 is from the NEA's *Estimates of School Statistics.*

Projections for ADA were made by multiplying the projections for enrollment by the average value of the ratios of the ADA to the enrollment from 1979–80 to 1987–88, approximately 0.92.

For 1959–60 to 1986–87, the sources for revenue receipts from State sources were the two NCES publications, *Statistics of State School Systems* and *Revenues and Expenditures for Public Elementary and Secondary Education,* and the NCES Common Core of Data survey. The value for 1987–88 was determined by taking the values for revenue receipts for 1986–87, and 1987–88 from the NEA, *Estimates of School Statistics,* calculating the growth rate for total revenue receipts in constant 1987–88 dollars, approximately 2.4 percent, and applying that growth rate to NCES's 1986–87 number. Projected values were produced by assuming that total revenue receipts in constant dollars grow at that same rate of approximately 2.4 percent for the entire projection period. This is a reasonable assumption if the factors which affect the level of total revenue receipts from State sources, such as the growth rate of the economy, do not change much from their 1986–87 levels.

The numbers for average teacher salaries were from various issues of NEA's *Estimates of School Statistics.*

Both the past values and the projected values for the population and disposable income per capita were

from Data Resources, Inc.'s "Off-line U.S. Economic Service: Long-term Option." The values for the Consumer Price Index (CPI) for all urban consumers, which was used for adjusting current expenditures, teacher salaries, and revenue receipts from State sources, and the implicit price deflator for personal consumption expenditures, which was used for adjusting disposable income per capita, were also from Data Resources, Inc. The projected values for all the variables, except disposable income, are from DRI's trend scenario. Three different projections for disposable income, from the trend scenario, the pessimistic scenario, and the optimistic scenario, were used.

The values of the four variables from DRI—population, disposable income, the CPI, and the price deflator for personal consumption expenditures—were all placed in school-year terms. In most cases, the data were available in quarterly format so the school-year numbers were calculated by taking the average of the last two quarters of 1 year with the first two of the next year. To calculate the values for disposable income from the pessimistic and optimistic scenarios, 2-year averages of the calendar year values were taken.

Table 66.—Equations for current expenditures per pupil in average daily attendance and average annual salaries of teachers in public elementary and secondary schools

Dependent variable	Equation [1]	$\bar{R}^2$ [2]	Durbin-Watson statistic [3]	Estimation technique	Rho
Current expenditures per pupil	ln(CUREXP) = −1.141 + 0.513ln(PCI) + 0.666ln(SGRANT) − 0.379ln(ADAPOP) (−.78) (1.98) (4.76) (−3.33)	0.996	1.401	OLS [4]	
Average annual salaries	SALARY = −8042 + 4.69CUREXP + 105987ADAPOP + 0.00092DIFADA1 (−4.70) (22.67) (14.81) (6.15) + 0.00047DIFADA2 (3.37)	0.991	1.481	AR1 [5]	0.588 (3.23)

[1] The sample size in each case is 29.
[2] $\bar{R}^2$ equals the coefficient of determination corrected for degrees of freedom.
[3] For an explanation of the Durbin-Watson statistic, see J. Johnston, *Econometric Methods*, New York: McGraw-Hill, 1972, pages 251–252.
[4] OLS equals Ordinary Least Squares.
[5] AR1 is an estimation procedure for correcting the problem of first order autocorrelation. Specifically, the maximum likelihood procedure on the statistical program RATS was used to estimate rho. For a general discussion of the problem of autocorrelation, and the methods to correct it, see Johnston (1972), Chapter 8. For a discussion of the method used to forecast in the presence of autocorrelation, see G. Judge, Hill, Griffiths, Lutkepohl, and Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, pages 315–318.

NOTE: Numbers in parentheses are t-statistics. (This table was prepared March 1989.)

Chapter 16

Expenditures of Institutions of Higher Education—Methodology

A total of eight higher education expenditure models were estimated: one current-fund expenditure model and one educational and general expenditure model for each of the four types of higher education institutions—public 4-year; public 2-year; private 4-year; and private 2-year. For all the sectors, except private 2-year, econometric techniques were used. Due to the lack of a consistent database for private 2-year schools, exponential smoothing, which requires fewer observations, was used.

The higher education econometric models were selected on the basis of their statistical properties, such as the coefficients of determination (R^2), the t-statistics of the variables, the Durbin-Watson statistic, and residual plots. These econometric models will yield good forecasting results only if the relationships that existed among the variables in the past continue throughout the projection period.

The Public 4-Year Institutions Expenditure Models

Similar econometric models were developed for three types of institutions. While there has been significantly less work by economists studying the factors influencing higher education finance data than those influencing elementary and secondary finance data, there has been some valuable studies.[1] This body of work was used in building these models.

In chapter 8, some of factors influencing the level of expenditures were discussed. These were: (1) the state of the economy; (2) the inflation rate; and (3) enrollments. The state of the economy should affect the level of expenditures as it will influence the amount of money available for both tuition and government revenues for higher education institutions. In periods of rapidly changing inflation, officials at institutions of higher education may have a difficult time anticipating the rapid changes in price levels. The increases in enrollments should affect the amount to be available per student with less money for each student.

Each of the models presented here contains variables measuring at least two of the three factors mentioned above. Disposable income per capita was used to measure the state of the economy. A number of measures of the inflation rate were considered: the rate of change in the inflation rate; the rate of change in the inflation rate lagged one period; the change in the inflation rate; and a dummy for year with inflation rates greater than 8 percent. In each equation, two enrollment variables were included. The first was the ratio of enrollment in that particular sector of higher education to the population. The other was the ratio of enrollment in institutions in the other type of control to the population. (For example, in the equation for current-fund expenditures in public 4-year institutions, one of the independent variables was the ratio of enrollment in private institutions to the population.)

For each dependent variable, a number of alternative specifications were examined. In each case, the choice of the final specification was made after considering such factors as the coefficients of determination, the t-statistics of the variables, residual plots, and ex-post mean absolute percent errors. The final specification of each model is in linear form, though log-linear specifications were also examined. Other estimation techniques, such as sets of simultaneous equations, were considered but rejected.

The Public 4-Year Institutions Current-Fund Expenditure Model is:

$$\begin{aligned} PUTCUR4 = {} & b_0 + b_1 PCI + b_2 INRNCR1 \\ & + b_3 DUMMY + b_4 PUFTEPO4 \\ & + b_5 PRFTEPOP \end{aligned}$$

where:

PUTCUR4 is current-fund expenditures per student in full-time-equivalent (FTE) enrollment in public 4-year institutions in constant 1987–88 dollars;

PCI is disposable income per capita in constant 1987–88 dollars;

[1] See, for example, Garms, Walter I. "The Determinants of Public Revenues for Higher and Lower Education. A Thirty-Year Perspective", in *Educational Evaluation and Policy Analysis*, Fall, Vol. 8, No. 3 1986; and U.S. Department of Education, National Center for Education Statistics *Projections of Education Statistics to 1988–89*, 1980.

ININCR1 is the rate of change of the inflation rate lagged one period;

DUMMY is a dummy variable equaling 1 when the inflation rate is greater than 8 percent and 0 otherwise;

PUFTEPO4 is the ratio of the FTE enrollment in public 4-year institutions to the population; and

PRFTEPOP is the ratio of the FTE enrollment in private institutions to the population.

This model and the other econometric expenditure models were estimated using ordinary least squares with a sample period from 1968–69 to 1985–86. The confidence intervals for each of these models were produced using a method developed by D. Montgomery, and Peck.[2]

The results for this model are on table 67. Each variable affects current-fund expenditures in a logical fashion. The more income which people have, the greater the expenditures. A high level of inflation has two effects. In a year with high inflation (DUMMY equals 1), current-fund expenditures in constant dollars are lower than they would have been otherwise. In the year following a year of high inflation, current-fund expenditures in constant dollars may be increased to make up for what was lost due to inflation the previous year. The more students in public 4-year institutions and in other higher education institutions, such as private institutions, the less money to be spent per student.

Three projections were produced: the middle alternative projection, the low alternative projection, and the high alternative projection. Each projection is based on a different set of assumptions for the personal income variable. The middle alternative projection for personal income comes from Data Resources, Inc.'s (DRI) trend scenario. The projection for income for the low alternative projection is from DRI's pessimistic scenario, and the projection for the high alterative scenario is from DRI's optimistic scenario. The assumptions behind these scenarios are discussed in chapter 15. These same scenarios are used for each of the six econometrically estimated models.

Projections for total current-fund expenditures were made by multiplying the projections for current-fund expenditures per student in FTE enrollment by projections for FTE enrollment. Current dollar projections were produced by multiplying the constant dollar projections by the projection for the Consumer Price Index. All the higher education total expenditure projections and all the current dollar projections were calculated in similar fashion.

A model for educational and general expenditures of public 4-year institutions was developed using the same variables as the current-fund expenditure model. The model is:

$$PUED4 = b_0 + b_1PCI + b_2ININCR1 + b_3DUMMY + b_4PUFTEPO4 + b_5PRFTEPOP$$

where:

PUED4 is educational and general expenditures per student in FTE enrollment in public 4-year institutions in constant 1987–88 dollars.

As with current-fund expenditures, each variable affects expenditures in the expected way.

The Public 2-Year Institutions Expenditure Models

The Public 2-Year Institutions Current-Fund Expenditure Model has a form similar to the Public 4-Year Institutions Current-Fund Expenditure Model except that the Public 2-Year Institutions Model does not contain any inflation variables. The model is:

$$PUTCUR2 = b_0 + b_1PCI + b_2PUFTEPO2 + b_3PRFTEPOP$$

where:

PUTCUR2 is current-fund expenditures per student in FTE enrollment in public 2-year institutions in constant 1987–88 dollars; and

PUFTEPO2 is the ratio of the FTE enrollment in public 2-year institutions to the population.

The results for this model are on table 67. Again, the income variable has the expected positive effect on expenditures and the two FTE enrollment variables have negative impacts.

The Public 2-Year Institutions Educational and General Expenditure Model is virtually identical to its current-fund expenditures counterpart. It is:

$$PUED2 = b_0 + b_1PCI + b_2PUFTEPO2 + b_3PRFTEPOP$$

[2] See equation (4.48) of D. Montgomery and Peck, *Introduction to Linear Regression Analysis*, New York: John Wiley and Sons, 1982, page 141.

where:

PUED2 is current-fund expenditures per student in FTE enrollment in public 2-year institutions in constant 1987–88 dollars.

The Private 4-Year Institutions Expenditure Models

The Private 4-Year Institutions Current-Fund Expenditure Model is:

$$PRITCUR4 = b_0 + b_1PCI + b_2DIFCPI + b_3PRFTEPO4 + b_4PUFTEPOP$$

where:

PRITCUR4 is current-fund expenditures per student in FTE enrollment in private 4-year institutions in constant 1987–88 dollars;

DIFCPI is the change in the inflation rate;

PRFTEPO4 is the ratio of the FTE enrollment in private 4-year institutions to the population; and

PUFTEPOP is the ratio of the FTE enrollment in public institutions to the population.

The Private 4-Year Institutions Educational and General Expenditure Model is:

$$PRIED4 = b_0 + b_1PCI + b_2DIFCPI + b_3PRFTEPO4 + b_4PUFTEPOP$$

where:

PRIED4 is educational and general expenditures per student in FTE enrollment in private 4-year institutions in constant 1987–88 dollars.

The Private 2-Year Institutions Expenditure Models

Econometric methods were used to project all the other higher education variables. They were not used, however, for either private 2-year current-fund expenditures or private 2-year educational and general expenditures. This was due to a change in the sample universe for private 2-year institutions. The time period for which the private 2-year universe is relatively consistent, from 1982–83 to 1985–86, has only 4 observations. This is too short a time period for econometric techniques, so another means of projecting private 2-year institution expenditures was required. Hence, exponential smoothing, which can operate with only 4 observations, was used.

Both current-fund expenditures per student and educational and general expenditures per student were modeled using single exponential smoothing. In each case, the alpha which minimized the mean square one step ahead forecast error was chosen. In each case, this was 0.92.

The confidence limits were calculated using the procedure developed by Abraham and Ledolter.

The higher education expenditure variables are interrelated. For instance, there is the relationship between current-fund expenditures and educational and general expenditures described in Chapter 8. A number of exercises were conducted to see if the relationships which held during the sample period also hold for the projection period.

First, for each of the four sectors of higher education, public 4-year, public 2-year, private 4-year, and private 2-year, the ratio of educational and general expenditures to total current-fund expenditures was calculated for the sample period (from 1968–69 to 1985–86) and the projection period (from 1986–87 to 1999–2000). The values for the projection period are always within the bounds of those from the sample period. This is an indication that the educational and general expenditure projections are consistent with their current-fund expenditure counterparts.

Second, the ratio of current-fund expenditures in private institutions to current-fund expenditures in all institutions was calculated. The ratios for the projection period were within the upper and lower limits of the sample period indicating that these projections are consistent.

Sources of Data

The current-fund expenditure data and the educational and general expenditure data are from "Financial Statistics of Institutions of Higher Education" surveys of the National Center for Education Statistics (NCES). One manipulation of the educational and general expenditures numbers was required. From 1968–69 to 1973–74, student-aid expenditures were a separate component of current-fund expenditures. From 1974–75 on, scholarships and fellowships have been a component of educational and general expenditures. Hence, for the period 1968–69 to 1973–74, student aid was added to the published numbers for educational and general expenditures.

The full-time-equivalent (FTE) enrollment data are from the "Fall Enrollment in Colleges and Universities" surveys of NCES. The FTE enrollment figures for 1968–69, 1969–70, and 1970–71 were estimated using part-time and full-time enrollment data. Full-time equivalent enrollment was derived by adding

one-third of the part-time students to the number of full-time students.

Both the past values and the projected values for disposable income, and the population, were from Data Resources, Inc.'s "Off-line U.S. Economic Service: Long-term Option." The values for the Consumer Price Index, which were used for adjusting the higher education finance data, and the implicit price deflator for personal consumption expenditures, which was used for adjusting disposable income per capita, were also from Data Resources, Inc. (DRI). All the projected economic variables, except disposable income, are from DRI's trend scenario. Three different DRI projections for disposable income, from the trend scenario, the pessimistic scenario, and the optimistic scenario, were used.

The values of all of the variables from DRI were placed in academic-year terms. In most cases, the data were available in quarterly format so the academic-year numbers were calculated by taking the average of the last 2 quarters of 1 year with the first two of the next year. To calculate the values for disposable income from the pessimistic and optimistic scenarios, averages were calculated based on calendar-year figures.

Table 67.—Equations for current-fund expenditures per student in full-time-equivalent enrollment and educational and general expenditures in full-time-equivalent enrollment in public 4-year institutions, public 2-year institutions, and private 4-year institutions

Dependent variable	Equation [1]	$\bar{R}^2$ [2]	Durbin-Watson statistic [3]
Current-fund expenditures per student in public 4-year institutions	PUTCUR4 = 11477 + 1.02PCI + 265ININCR1 − 330DUMMY (8.78) (13.6) (2.15) (−5.32) − 191440PUFTEPO4 − 926648PRFTEPOP (−3.05) (−5.43)	0.947	2.31
Educational and general expenditures per student in public 4-year institutions	PUED4 = 11631 + .814PCI + 153ININCR1 − 211DUMMY (14.9) (17.9) (2.07) (−3.61) − 171151PUFTEPO4 − 78729PRFTEPOP (−4.57) (−9.40)	0.960	2.15
Current-fund expenditures per student in public 2-year institutions	PUTCUR2 = 8180 + .513PCI − 65031PUFTEPO2 − 996321PRFTEPOP (19.8) (16.3) (−4.71) (−14.2)	0.944	1.85
Educational and general expenditures per student in public 2-year institutions	PUED2 = 7971 + 480PCI − 52232PUFTEPO2 − 976672PRFTEPOP (18.7) (14.7) (−3.65) (−13.5)	0 934	1.70
Current-fund expenditures per student in private 4-year institutions	PRITCUR4 = 30284 + 1.66PCI − 134DIFCPI − 3646678PRFTEPO4 (14 6) (18.7) (−6.50) (−10.2) − 134583PUFTEPOP (4.03)	0.956	2.07
Educational and general expenditures per student in private 4-year institutions	PRIE. 4 = 26918 + 1.02PCI − 114DIFCPI − 3059574PRFTEPO4 (13 5) (14.1) (−5 72) (−8.83) − 146267PUFTEPOP (−4 55)	0 921	1.95

[1] The sample size in each case is 18 Each equation was estimated using ordinary least squares
[2] $\bar{R}^2$ equals the coefficient of determination corrected for degrees of freedom
[3] For an explanation of the Durbin-Watson statistic see J Johnston, *Econometric Methods*. New York McGraw-Hill, 1972, pages 251-252
NOTE: Numbers in parentheses are t-statistics (This table was prepared April 1989)

Part 3: Technical Appendixes

Appendix A

Supplementary Tables

Table A1.—Annual number of births (U.S. Census Projections, Middle Series): 50 States and D.C., 1945 to 2000

(In thousands)

Calendar year	Number of births
1945	2,873
1946	3,426
1947	3,834
1948	3,655
1949	3,667
1950	3,645
1951	3,845
1952	3,933
1953	3,989
1954	4,102
1955	4,128
1956	4,244
1957	4,332
1958	4,279
1959	4,313
1960	4,307
1961	4,317
1962	4,213
1963	4,142
1964	4,070
1965	3,801
1966	3,642
1967	3,555
1968	3,535
1969	3,626
1970	3,739
1971	3,556
1972	3,258
1973	3,137
1974	3,160
1975	3,144
1976	3,168
1977	3,327
1978	3,333
1979	3,494
1980	3,612
1981	3,629
1982	3,681
1983	3,639
1984	3,669
1985	3,761
1986	3,731
1987	3,809
1988*	3,758
Projected	
1989	3,757
1990	3,731
1991	3,690
1992	3,646
1993	3,601
1994	3,558
1995	3,517
1996	3,481
1997	3,449
1998	3,424
1999	3,404
2000	3,389

* Projected.

SOURCE. U S. Department of Commerce, Bureau of the Census, "United States Population Estimates and Components of Change: 1970 to 1987," *Current Population Reports,* Series P-25, No 1023, August 1988, and "Projections of the Population of the United States, by Age, Sex, and Race: 1988 to 2080," *Current Population Reports,* Series P-25, No 1018, January 1989.

Table A2.—Preprimary school-age populations (U.S. Census Projections, Middle Series): 50 States and D.C., 1975 to 2000

(In thousands)

Year (July 1)	3 years old	4 years old	5 years old	3-5 years old
1975	3,277	3,635	3,546	10,458
1976	3,101	3,336	3,634	10,071
1977	3,035	3,155	3,334	9,524
1978	3,117	3,091	3,156	9,364
1979	3,077	3,175	3,092	9,344
1980	3,240	3,129	3,181	9,550
1981	3,270	3,281	3,135	9,686
1982	3,378	3,311	3,285	9,974
1983	3,505	3,419	3,313	10,237
1984	3,562	3,546	3,421	10,529
1985	3,608	3,604	3,548	10,760
1986	3,625	3,650	3,605	10,880
1987	3,560	3,668	3,651	10,879
1988*	3.693	3,604	3,668	10,965
		Projected		
1989	3,677	3,736	3,604	11,017
1990	3,682	3,719	3,736	11,137
1991	3,693	3,725	3,719	11,137
1992	3,704	3,735	3,724	11,163
1993	3,690	3,746	3,734	11,170
1994	3,654	3,731	3,745	11,130
1995	3,610	3,695	3,730	11,036
1996	3,566	3,651	3,694	10,911
1997	3,523	3,607	3,649	10,779
1998	3,481	3,563	3,605	10,649
1999	3,444	3,521	3,561	10,526
2000	3,410	3,483	3,519	10,412

* Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates and Components of Change: 1970 to 1987," *Current Population Reports*, Series P-25, No. 1023, August 1988, and "Projections of the Population of the United States, by Age, Sex, and Race: 1988 to 2080," *Current Population Reports*, Series P-25, No. 1018, January 1989.

Table A3.—School-age populations (U.S. Census Projections, Middle Series), ages 5, 6, 5–13, and 14–17 years: 50 States and D.C., 1975 to 2000

(In thousands)

Year (July 1)	5 years old	6 years old	5–13 years old	14–17 years old
1975	3,546	3,468	33,919	17,128
1976	3,634	3,560	33,516	17,119
1977	3,334	3,644	32,855	17,045
1978	3,156	3,343	32,094	16,946
1979	3,092	3,164	31,431	16,611
1980	3,181	3,112	31,095	16,142
1981	3,135	3,192	30,754	15,599
1982	3,285	3,144	30,614	15,041
1983	3,313	3,293	30,410	14,720
1984	3,421	3,321	30,238	14,704
1985	3,548	3,428	30,110	14,865
1986	3,605	3,555	30,351	14,797
1987	3,651	3,612	30,823	14,467
1988*	3,668	3,657	31,374	13,970
		Projected		
1989	3,604	3,674	31,793	13,476
1990	3,736	3,609	32,393	13,237
1991	3,719	3,741	32,827	13,334
1992	3,724	3,724	33,243	13,538
1993	3,734	3,729	33,549	13,774
1994	3,745	3,739	33,738	14,187
1995	3,730	3,750	33,864	14,510
1996	3,694	3,734	33,898	14,846
1997	3,649	3,698	33,871	15,090
1998	3,605	3,653	33,870	15,141
1999	3,561	3,609	33,690	15,269
2000	3,410	3,483	33,483	15,332

* Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates and Components of Change: 1970 to 1987," *Current Population Reports*, Series P-25, No. 1023, August 1988, and "Projections of the Population of the United States, by Age, Sex, and Race: 1988 to 2080," *Current Population Reports*, Series P-25, No. 1018, January 1989.

Table A4.—College-age populations (U.S. Census Projections, Middle Series), ages 18, 18–24, 25–29, 30–34, and 35–44 years: 50 States and D.C., 1975 to 2000

(In thousands)

Year (July 1)	18 years old	18–24 years old	25–29 years old	30–34 years old	35–44 years old
1975	4,256	28,005	17,280	14,191	22,831
1976	4,266	28,645	18,274	14,485	23,093
1977	4,257	29,174	18,277	15,721	22,563
1978	4,247	29,622	18,683	16,280	24,437
1979	4,316	30,048	19,178	17,025	25,176
1980	4,243	30,350	19,804	17,822	25,868
1981	4,175	30,428	20,306	18,853	26,460
1982	4,115	30,283	20,865	18,876	28,115
1983	3,946	29,943	21,321	19,281	29,369
1984	3,734	29,391	21,661	19,769	30,619
1985	3,634	28,749	21,892	20,346	31,839
1986	3,562	27,967	22,132	20,848	33,144
1987	3,632	27,336	22,107	21,410	34,380
1988*	3,717	26,904	22,001	21,860	35,321
			Projected		
1989	3,791	26,591	21,830	22,194	36,548
1990	3,491	26,140	21,511	22,414	37,897
1991	3,307	25,700	20,910	22,642	39,361
1992	3,230	25,271	20,300	22,613	39,927
1993	3,304	24,992	19,688	22,497	40,764
1994	3,253	24,601	19,204	22,321	41,561
1995	3,400	24,281	18,966	21,996	42,336
1996	3,426	23,915	19,004	21,384	43,036
1997	3,533	23,954	18,836	20,766	43,546
1998	3,657	24,301	18,564	20,147	43,873
1999	3,712	24,783	18,148	19,658	44,022
2000	3,756	25,231	17,736	19,413	43,911

* Projected.

SOURCE: U.S. Department of Commerce, Bureau of the Census, "United States Population Estimates and Components of Change: 1970 to 1987," *Current Population Reports*, Series P-25, No. 1023, August 1988, and "Projections of the Population of the United States, by Age, Sex, and Race: 1988 to 2080," *Current Population Reports*, Series P-25, No. 1018, January 1989.

Table A5.—Average daily attendance in public elementary and secondary schools, the change in average daily attendance, the population, and average daily attendance to the population: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Average daily attendance [1] (in thousands)	Change in average daily attendance	Population (in millions)	Ratio of average daily attendance to the population
1975	41,524	85,946	215.0	0.193
1976	41,270	- 254,280	217.1	0 190
1977	40,832	- 437,720	219.3	0.186
1978	40,080	- 752,410	221 5	0 181
1979	39,076	- 1,003,590	223.9	0.174
1980	38,289	- 787,089	226 5	0.169
1981	37,704	- 585,167	229.1	0.165
1982	37,095	- 609,092	231.5	0.160
1983	36,636	- 458,784	233.8	0.157
1984	36,363	- 272,890	236.0	0 154
1985	36,404	41,283	238.3	0.153
1986	36,523	118,842	240.6	0.152
1987	36,858	335,226	242.9	0.152
1988 [2]	37,118	259,756	245.1	0.151
1989 [2]	37,140	22,304	247.5	0.150
		Projected		
1990	37,258	117,346	249.7	0.149
1991	37,673	414,868	251.8	0.150
1992	38,166	493,407	253 9	0 150
1993	38,699	533,138	255 9	0.151
1994	39,228	528,518	257.9	0.152
1995	39,752	524,822	259.8	0.153
1996	40,150	397,312	261.6	0 153
1997	40,459	309,534	263.3	0.154
1998	40,631	171,861	265.0	0.153
1999	40,652	21,252	266.7	0.152
2000	40,613	- 39,731	268 3	0.151

[1] Projections of average daily attendance were made by multiplying the forecasts for enrollment reported earlier in this publication by the average value of the ratio average daily attendance to enrollment from 1980 to 1988, approximately .92.

[2] Average daily attendance is from the National Education Association.

[3] Projected.

SOURCE: U.S. Department of Education, Natior [1] Center for Education Statistics, *Statistics of State School Systems*; *Revenues and Expenditures for Public Elemcntary and Secondary Education*; and Common Core of Data surveys; Data Resources, Inc., "Offline U.S. Economic Service: Long-term Option," and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1987–88. Copyright © 1988 by the National Education Association. All rights reserved) (This table was prepared March 1989.)

Table A6.—Disposable income per capita (constant 1987–88 dollars[1]), with alternative projections: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Disposable income per capita		
1975	$10,821	—	—
1976	11,042	—	—
1977	11,272	—	—
1978	11,675	—	—
1979	11,982	—	—
1980	11,895	—	—
1981	11,876	—	—
1982	11,884	—	—
1983	11,920	—	—
1984	12,443	—	—
1985	12,860	—	—
1986	13,141	—	—
1987	13,337	—	—
1988	13,602	—	—
1989[2]	13,989	—	—
	Middle alternative projections	Low alternative projections	High alternative projections
1990	14,066	$14,096	$14,131
1991	14,163	14,039	14,270
1992	14,438	14,160	14,514
1993	14,589	14,342	14,730
1994	14,709	14,447	14,925
1995	14,866	14,528	15,173
1996	15,084	14,622	15,459
1997	15,290	14,721	15,739
1998	15,488	14,824	16,021
1999	15,690	14,938	16,320
2000	15,872	15,041	16,611

[1] Based on the price deflator for personal consumption expenditures, Bureau of Labor Statistics, U.S. Department of Labor.
[2] Projected.

SOURCE: Data Resources, Inc., "Off-line U.S. Economic Service Long-term Option." (This table was prepared March 1989.)

Table A7.—Education revenue receipts from State sources per capita (constant 1987–88 dollars[1]), the Consumer Price Index of all urban consumers (base year = 1987–88), the change in the inflation rate using the Consumer Price Index, the rate of change of the inflation rate using the Consumer Price Index, and the price deflator for personal consumption expenditures (base year = 1987–88): 50 States and D.C., 1974–75 to 1999–2000

Year ending	Education revenue receipts per capita from State sources	Consumer Price Index (base year = 1987–88)	Change in the inflation rate using the Consumer Price Index	Rate of change in the inflation rate using the Consumer Price Index	Price deflator for personal consumption expenditures (base year = 1987–88)
1975	$283	0.447	2.165	0.243	0.468
1976	306	0.479	- 4.004	- 0.361	0.500
1977	294	0.507	- 1.247	- 0.176	0.529
1978	292	0.541	0.883	0.151	0.565
1979	303	0.591	2.653	0.395	0.612
1980	299	0.670	3.966	0.423	0.675
1981	293	0.748	- 1.750	- 0.131	0.745
1982	279	0.812	- 2.944	- 0.254	0.800
1983	284	0.847	- 4.337	- 0.502	0.838
1984	291	0.878	- 0.639	- 0.149	0.870
1985	309	0.913	0.256	0.070	0.900
1986	326	0.939	- 1 044	- 0.266	0.927
1987	339	0.960	- 0.616	- 0.214	0.957
1988 [2]	344	1.000	1.885	0.835	1.000
1989 [3]	349	1.044	0.285	0.069	1.046
			Projected		
1990	354	1.093	0.197	0.044	1.096
1991	360	1.144	0.046	0.010	1.148
1992	365	1.202	0 399	0.085	1.206
1993	371	1.262	- 0.032	- 0.006	1.267
1994	377	1.325	- 0.091	- 0.018	1.330
1995	384	1.393	0.210	0.043	1.398
1996	390	1.467	0.160	0.031	1.472
1997	397	1.546	0.069	0.013	1.552
1998	404	1.630	0.040	0.007	1.638
1999	411	1.720	0.123	0.023	1.730
2000	419	1.818	0.149	0.027	1.829

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] The value for revenue receipts was determined by using the growth rates from the values reported by the National Education Association.

[3] Projected values.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems; Revenues and Expenditures for Public Elementary and Secondary Education*; and Common Core of Data surveys; Data Resources, Inc., "Off-line U.S. Economic Service: Long-term Option," and National Education Association, Annual *Estimates of State School Statistics*. (Latest edition 1987–88. Copyright © 1988 by the National Education Association. All rights reserved.) (This table was prepared April 1989.)

Table A8.—Ratio of full-time-equivalent enrollment to the population in public institutions, public 4-year institutions, public 2-year institutions, private institutions, and private 4-year institutions: 50 states and D.C., 1974–75 to 1999–2000

Year ending	Ratio of full-time-equivalent enrollment to the population in public institutions	Ratio of full-time-equivalent enrollment to the population in 4-year public institutions	Ratio of full-time-equivalent enrollment to the population in 2-year public institutions	Ratio of full-time-equivalent enrollment to the population in private institutions	Ratio of full-time-equivalent enrollment to the population in 4-year private institutions
1975	0.0277	0.0179	0.0098	0.0087	0.0082
1976	0.0300	0.0187	0.0114	0.0090	0.0085
1977	0 0290	0 0182	0.0107	0.0090	0.0084
1978	0.0289	0.0182	0.0106	0.0091	0.0086
1979	0 0280	0.0178	0.0102	0.0092	0.0086
1980	0 0282	0.0179	0.0103	0.0092	0.0086
1981	0.0290	0.0182	0.0108	0.0095	0.0087
1982	0.0293	0.0182	0.0111	0.0096	0.0088
1983	0.0293	0 0181	0.0112	0.0096	0.0087
1984	0.0292	0.0181	0.0111	0.0097	0.0087
1985	0.0281	0.0178	0.0103	0.0095	0.0086
1986	0.0277	0 0176	0.0101	0.0095	0.0085
1987 [1]	0.0279	0 0177	0.0102	0.0094	0.0085
1988	0.0283	0 0179	0.0104	0.0093	0.0085
1989 [1]	0.0281	0.0178	0.0103	0.0094	0.0085
			Projected		
1990	0.0283	0.0179	0.0104	0.0095	0.0086
1991	0.0283	0.0180	0.0104	0.0095	0.0086
1992	0.0280	0 0178	0.0103	0.0094	0.0085
1993	0.0275	0 0174	0.0101	0.0092	0.0084
1994	0 0270	0.0171	0.0099	0.0090	0.0082
1995	0.0266	0 0168	0.0098	0.0089	0.0081
1996	0.0264	0 0167	0.0098	0.0088	0.0080
1997	0.0264	0 0166	0 0098	0.0088	0.0080
1998	0 0264	0 0167	0 0098	0.0088	0.0080
1999	0 0266	0.0168	0 0099	0.0088	0.0080
2000	0 0268	0.0169	0 0099	0.0089	0.0081

[1] Estimated on the basis of past data

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment in Colleges and Universities" surveys; and Data Resources, Inc., "Off-line U.S. Economic Service: Long-term Option." (This table was prepared April 1989.)

Appendix B

Tables of Statistical Confidence Limits and Standard Errors for Selected Projections

Table B1.—High school graduates, by control, with 95 percent confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	High school graduates								
	Lower limit	Total	Upper limit	Lower limit	Public	Upper limit	Lower limit	Private	Upper limit
1975		3,133			2,823			310	
1976		3,148			2,837			311	
1977		3,155			2,840			315	
1978		3,127			2,825			302	
1979		3,117			2,817			300	
1980		3,043			2,748			295	
1981		3,020			2,725			295	
1982		2,995			2,705			290	
1983		2,888			2,598			290	
1984		2,767			2,495			272	
1985		2,677			2,414			263	
1986		2,642			2,382			260	
1987		2,698			2,433			265	
1988 *	2,774	2,793	2,812		2,493		281	300	319
1989 *	2,763	2,781	2,799		2,491		273	291	309
					Projected				
1990	2,571	2,603	2,635	2,317	2,337	2,358	247	266	285
1991	2,503	2,535	2,568	2,256	2,276	2,297	240	259	278
1992	2,452	2,485	2,517	2,210	2,231	2,251	235	254	273
1993	2,462	2,495	2,527	2,219	2,240	2,260	236	255	274
1994	2,469	2,501	2,533	2,225	2,245	2,266	237	256	275
1995	2,576	2,608	2,640	2,321	2,341	2,362	248	267	285
1996	2,612	2,644	2,676	2,353	2,374	2,394	251	270	289
1997	2,712	2,744	2,776	2,443	2,463	2,484	262	280	299
1998	2,815	2,848	2,880	2,536	2,557	2,577	272	291	310
1999	2,856	2,889	2,921	2,573	2,593	2,614	276	295	314
2000	2,888	2,920	2,952	2,601	2,622	2,642	280	298	317

* Estimated

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey, "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates* and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P–25. (This table was prepared April 1989.)

Table B2.—Total K-12[1] enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	49,791	—	—
1976	49,484	—	—
1977	48,716	—	—
1978	47,636	—	—
1979	46,645	—	—
1980	46,318	—	—
1981	45,600	—	—
1982	45,252	—	—
1983	45,067	—	—
1984	44,995	—	—
1985	45,066	—	—
1986	45,290	—	—
1987	45,371	—	—
1988[2]	45,438	—	—
		Projected	
1989	45,595	45,263	45,927
1990	46,112	45,642	46,582
1991	46,718	46,143	47,293
1992	47,369	46,705	48,033
1993	48,011	47,269	48,753
1994	48,644	47,831	49,457
1995	49,122	48,244	50,000
1996	49,493	48,554	50,432
1997	49,697	48,701	50,693
1998	49,722	48,672	50,772
1999	49,668	48,567	50,769
2000	49,530	48,380	50,680

[1] Includes most kindergarten and some nursery school enrollment.

[2] Estimate.

— Not applicable.

NOTE: Projections are based on data through 1987

SOURCE U.S. Department of Education, National Center for Education Statistics. *Statistics of Public Elementary and Secondary Schools*, Common Core of Data surveys; "Selected Public and Private Elementary and Secondary Education Statistics," NCES *Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," NCES *Bulletin*, December 1984, 198. Private School Survey; "Key Statistics for Public Elementary and Secondary Education: School Year 1988-89," *Early Estimates*, and "Key Statistics for Private Elementary and and Secondary Education: School Year 1988-89," *Early Estimates* (This table was prepared January 1989.)

Table B3.—Total public K–12[1] enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	44,791	—	—
1976	44,317	—	—
1977	43,577	—	—
1978	42,550	—	—
1979	41,645	—	—
1980	40,987	—	—
1981	40,099	—	—
1982	39,652	—	—
1983	39,352	—	—
1984	39,295	—	—
1985	39,509	—	—
1986	39,837	—	—
1987	40,024	—	—
1988[2]	40,196	—	—
		Projected	
1989	40,323	40,051	40,595
1990	40,772	40,387	41,157
1991	41,306	40,834	41,778
1992	41,883	41,338	42,428
1993	42,455	41,846	43,064
1994	43,023	42,356	43,690
1995	43,453	42,732	44,174
1996	43,788	43,017	44,559
1997	43,974	43,157	44,791
1998	43,997	43,135	44,859
1999	43,954	43,050	44,858
2000	43,835	42,891	44,779

[1] Includes most kindergarten and some nursery school enrollment.
[2] Estimate.
— Not applicable.

NOTE: Projections are based on data through 1987

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table B4.—Total public K–8 [1] enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	30,487	—	—
1976	30,006	—	—
1977	29,336	—	—
1978	28,328	—	—
1979	27,931	—	—
1980	27,674	—	—
1981	27,245	—	—
1982	27,156	—	—
1983	26,997	—	—
1984	26,918	—	—
1985	27,049	—	—
1986	27,404	—	—
1987	27,886	—	—
1988 [2]	28,390	—	—
		Projected	
1989	28,818	28,583	29,053
1990	29,373	29,040	29,706
1991	29,803	29,396	30,210
1992	30,189	29,719	30,659
1993	30,473	29,947	30,999
1994	30,642	30,066	31,218
1995	30,751	30,129	31,373
1996	30,785	30,120	31,450
1997	30,767	30,061	31,473
1998	30,763	30,019	31,507
1999	30,603	29,823	31,383
2000	30,417	29,602	31,232

[1] Includes most kindergarten and some nursery school enrollment.

[2] Estimate

— Not applicable

NOTE: Projections are based on data through 1987

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table B5.—Total public 9–12 enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	14,304	—	—
1976	14,311	—	—
1977	14,240	—	—
1978	14,223	—	—
1979	13,714	—	—
1980	13,313	—	—
1981	12,855	—	—
1982	12,496	—	—
1983	12,355	—	—
1984	12,377	—	—
1985	12,460	—	—
1986	12,434	—	—
1987	12,138	—	—
1988 *	11,806	—	—
		Projected	
1989	11,505	11,411	11,599
1990	11,399	11,266	11,532
1991	11,503	11,340	11,666
1992	11,694	11,506	11,882
1993	11,982	11,772	12,192
1994	12,381	12,151	12,611
1995	12,702	12,453	12,951
1996	13,003	12,737	13,269
1997	13,207	12,925	13,489
1998	13,234	12,936	13,532
1999	13,351	13,039	13,663
2000	13,418	13,092	13,744

* Estimate
—Not applicable

NOTE Projections are based on data through 1987

SOURCE. U S Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*, Common Core of Data surveys; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table B6.—Total private K–12 enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975 [1]	5,000	—	—
1976	5,167	—	—
1977	5,140	—	—
1978	5,086	—	—
1979 [1]	5,000	—	-
1980	5,331	-	—
1981 [1]	5,500	—	—
1982 [1]	5,600	—	—
1983	5,715	—	--
1984 [1]	5,700	—	—
1985	5,557	—	—
1986 [1]	5,452	—	—
1987 [1]	5,347	—	—
1988 [2]	5,241	—	—
		Projected	
1989	5,272	5,078	5,466
1990	5,340	5,090	5,590
1991	5,412	5,207	5,617
1992	5,486	5,276	5,696
1993	5,556	5,340	5,772
1994	5,621	5,406	5,836
1995	5,669	5,450	5,888
1996	5,705	5,475	5,935
1997	5,723	5,489	5,957
1998	5,725	5,488	5,962
1999	5,714	5,475	5,953
2000	5,695	5,454	5,936

[1] Estimated on the basis on past data.
[2] Estimate.
— Not applicable.

NOTE. Projections are based on data for 1988.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Selected Public and Private Elementary and Secondary Education Statistics," NCES *Bulletin*, October 23, 1979; "Private Elementary and Secondary Education, 1983: Enrollment, Teachers, and Schools," NCES *Bulletin*, December 1984; 1985 Private School Survey; and "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table B7.—Total public elementary[1] enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	25,640	—	—
1976	25,430	—	—
1977	24,954	—	—
1978	25,017	—	—
1979	24,543	—	—
1980	24,156	—	—
1981	23,819	—	—
1982	23,875	—	—
1983	24,010	—	—
1984	24,147	—	—
1985	24,290	—	—
1986	24,201	—	—
1987	24,315	—	—
1988[2]	25,206	—	—
		Projected	
1989	25,562	24,945	26,179
1990	26,027	25,154	26,900
1991	26,370	25,301	27,439
1992	26,627	25,392	27,862
1993	26,818	25,437	28,199
1994	26,941	25,429	28,453
1995	27,022	25,389	28,655
1996	27,079	25,333	28,825
1997	27,026	25,174	28,878
1998	26,965	25,013	28,917
1999	26,810	24,762	28,858
2000	26,617	24,478	28,756

[1] Includes most kindergarten and some nursery school enrollment

[2] Estimate

— Not applicable

NOTE Projections are based on data through 1987

SOURCE U S Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*, Common Core of Data surveys; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988-89," *Early Estimates* (This table was prepared January 1989.)

Table B8.—Total public secondary enrollment, with projections and confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	19,151	—	—
1976	18,887	—	—
1977	18,623	—	—
1978	17,534	—	—
1979	17,102	—	—
1980	16,831	—	—
1981	16,280	—	—
1982	15,777	—	—
1983	15,342	—	—
1984	15,148	—	—
1985	15,219	—	—
1986	15,636	—	—
1987	15,709	—	—
1988 *	14,9[illegible]0	—	—
		Projected	
1989	14,761	14,277	15,245
1990	14,745	14,060	15,430
1991	14,936	14,097	15,775
1992	15,256	14,288	16,224
1993	15,637	14,554	16,720
1994	16,082	14,896	17,268
1995	16,431	15,150	17,712
1996	16,709	15,3[illegible]	18,078
1997	16,948	15,496	18,400
1998	17,032	15,501	18,563
1999	17,144	15,538	18,750
2000	17,218	15,541	18,895

* Estimate.
— Not applicable.

NOTE: Projections are based on data through 1987.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools*; Common Core of Data surveys; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*. (This table was prepared January 1989.)

Table B9.—Associate degrees, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	360,171	—	—
1976	391,454	—	—
1977	406,377	—	—
1978	412,246	—	—
1979	402,702	—	—
1980	400,910	—	—
1981	416,377	—	—
1982	434,515	—	—
1983	456,441	—	—
1984	452,416	—	—
1985	454,712	—	—
1986	446,047	—	—
1987	437,137	—	—
1988 [1]	430,000	—	—
1989 [2]	439,000	404,000	474,000
		Projected	
1990	448,000	413,000	483,000
1991	456,000	420,000	491,000
1992	457,000	421,000	493,000
1993	452,000	415,000	489,000
1994	447,000	409,000	484,000
1995	444,000	406,000	481,000
1996	442,000	405,000	480,000
1997	445,000	408,000	481,000
1998	449,000	413,000	485,000
1999	454,000	419,000	490,000
2000	461,000	426,000	496,000

[1] Estimate.
[2] Estimated on the basis of past data
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE U S Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B10.—Associate degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 5 percent confidence limit
1975	191,017	--	—
1976	209,996	—	—
1977	210,842	—	—
1978	204,718	—	—
1979	192,091	—	—
1980	183,737	—	—
1981	188,638	—	—
1982	196,939	—	—
1983	207,141	—	—
1984	202,762	—	—
1985	202,932	—	—
1986	196,166	—	—
1987	191,525	—	—
1988 [1]	188,000	—	—
1989 [2]	192,000	170,000	215,000
		Projected	
1990	195,000	174,000	219,000
1991	196,000	174,000	219,000
1992	194,000	172,000	218,000
1993	192,000	170,000	217,000
1994	191,000	169,000	216,000
1995	191,000	169,000	216,000
1996	192,000	169,000	216,000
1997	194,000	171,000	218,000
1998	195,000	173,000	219,000
1999	198,000	176.000	221,000
2000	201,000	179,000	224,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B11.—Associate degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	169,154	—	—
1976	181,458	—	—
1977	195,535	—	—
1978	207,528	—	—
1979	210,611	—	—
1980	217,173	—	—
1981	227,739	—	—
1982	237,576	—	—
1983	249,300	—	—
1984	249,654	—	—
1985	251,780	—	—
1986	249,8[illegible]	—	—
1987	245,[illegible]	-	—
1988 [1]	242,000	—	—
1989 [2]	247,000	234,000	260,000
		Projected	
1990	253,000	240,000	266,000
1991	260,000	247,000	273,000
1992	263,000	250,000	276,000
1993	260,000	247,000	273,000
1994	255,000	242,000	268,000
1995	252,000	239,000	265,000
1996	251,000	238,000	264,000
1997	251,000	238,000	264,000
1998	253,000	240,000	266,000
1999	256,000	243,000	269,000
2000	261,000	248,000	274,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B12.—Bachelor's degrees, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	922.933	—	—
1976	925,746	—	—
1977	919,549	—	—
1978	921,204	—	—
1979	921,390	—	—
1980	929,417	—	—
1981	935,140	—	—
1982	952,998	—	—
1983	969,510	—	—
1984	974,309	—	—
1985	979,477	—	—
1986	987,823	—	—
1987	991,339	—	—
1988 [1]	989,000	—	—
1989 [2]	994,000	958,000	1,031,000
		Projected	
1990	1,006,000	969,000	1,042,000
1991	995,000	958,000	1,032,000
1992	1,011,000	974,000	1,048,000
1993	1,016,000	979,000	1,054,000
1994	1,006,000	969,000	1,043,000
1995	990,000	953,000	1,028,000
1996	974,000	934,000	1,010,000
1997	962,000	923,000	1,001,000
1998	960,000	922,000	999,000
1999	968,000	931,000	1,005,000
2000	976,000	940,000	1,012,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B13.—Bachelor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	504,841	—	—
1976	504,925	—	—
1977	495,545	—	—
1978	487,347	—	—
1979	477,344	—	—
1980	473,611	—	—
1981	469,883	—	—
1982	473,364	—	—
1983	479,140	—	—
1984	482,319	—	—
1985	482,528	—	—
1986	485,923	—	—
1987	480 954	—	—
1988 [1]	472,000	—	—
1989 [2]	473,000	451,000	495 000
		Projected	
1990	475,000	452,000	499,000
1991	463,000	438 000	488,000
1992	468,000	442,000	494,000
1993	468,000	441,000	496,000
1994	464,000	434,000	493,000
1995	456,000	425,000	487,000
1996	451,000	418,000	483,000
1997	450,000	417,000	482,000
1998	452,000	419,000	484,000
1999	461,000	430,000	491,000
2000	467,000	438,000	497,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B14.—Bachelor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	418,092	—	—
1976	420,821	—	—
1977	424,004	—	—
1978	433,857	—	—
1979	444,046	—	—
1980	455,806	—	—
1981	465,257	—	—
1982	479,634	—	—
1983	490,370	—	—
1984	491,990	—	—
1985	496,949	—	—
1986	501,900	—	—
1987	510,485	—	—
1988 [1]	517,000	—	—
1989 [2]	521,000	512,000	530,000
		Projected	
1990	530,000	519,000	541,000
1991	532,000	520,000	545,000
1992	543,000	526,000	560,000
1993	548,000	527,000	569,000
1994	542,000	519,000	566,000
1995	534,000	511,000	557,000
1996	522,000	499,000	544,000
1997	512,000	489,000	535,000
1998	509,000	484,000	533,000
1999	507,000	480,000	535,000
2000	509,000	478,000	539,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B15.—Master's degrees, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	292,450	—	—
1976	311,771	—	—
1977	317,164	—	—
1978	311,620	—	—
1979	301,079	—	—
1980	298,081	—	—
1981	295,739	—	—
1982	295,546	—	—
1983	289,921	—	—
1984	284,263	—	—
1985	286,25[1]	—	—
1986	288,567	—	—
1987	289,557	—	—
1988 [1]	292,000	—	—
1989 [2]	293,000	271,000	315,000
		Projected	
1990	301,000	280,000	323,000
1991	300,000	278,000	322,000
1992	302,000	279,000	325,000
1993	301,000	278,000	324,000
1994	299,000	275,000	322,000
1995	296,000	272,000	320,000
1996	293,000	268,000	317,000
1997	290,000	265,000	315,000
1998	289,000	263,000	314,000
1999	287,000	262,000	313,000
2000	286,000	261,000	312,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B16.—Master's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	161,570	—	—
1976	167,248	—	—
1977	167,783	—	—
1978	161,212	—	—
1979	153,370	—	—
1980	150,749	—	—
1981	147,043	—	—
1982	145,532	—	—
1983	144,697	—	—
1984	143,595	—	—
1985	143,390	—	—
1986	143,508	—	—
1987	141,363	—	—
1988 [1]	142,000	—	—
1989 [2]	137,000	121,000	154,000
		Projected	
1990	143,000	126,000	160,000
1991	142,000	125,000	160,000
1992	143,000	125,000	161,000
1993	143,000	124,000	161,000
1994	142,000	123,000	161,000
1995	140,000	121,000	160,000
1996	139,000	120,000	159,000
1997	138,000	118,000	158,000
1998	138,000	118,000	158,000
1999	137,000	117,000	157,000
2000	137,000	117,000	157,000

[1] Estimate.
[2] Estimated on the b. . of past data
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE: U S Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B17.—Master's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	130,880	—	—
1976	144,523	—	—
1977	149,381	—	—
1978	150,408	—	—
1979	147,709	—	—
1980	147,332	—	—
1981	148,696	—	—
1982	150,014	—	—
1983	145,224	—	—
1984	140,668	—	—
1985	142,861	—	—
1986	145,059	—	—
1987	148,194	—	—
1988 [1]	150,000	—	—
1989 [2]	156,000	141,000	166,000
		Projected	
1990	158,000	146,000	171,000
1991	158,000	144,000	171,000
1992	159,000	145,000	171,000
1993	158,000	145,000	172,000
1994	157,000	143,000	171,000
1995	155,000	141,000	170,000
1996	153,000	139,000	168,000
1997	152,000	137,000	167,000
1998	151,000	135,000	166,000
1999	150,000	134,000	165,000
2000	150,000	134,000	165,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B18.—Doctor's degrees, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	34,083	—	—
1976	34,064	—	—
1977	33,232	—	—
1978	32,131	—	—
1979	32,730	—	—
1980	32,615	—	—
1981	32,958	—	—
1982	32,707	—	—
1983	32,775	—	—
1984	33,209	—	—
1985	32,943	—	—
1986	33,653	—	—
1987	34,120	—	—
1988 [1]	34,000	—	—
1989 [2]	34,200	31,300	37,100
		Projected	
1990	34,400	31,300	37,500
1991	34,500	31,100	37,900
1992	34,600	31,300	38,000
1993	34,700	31,300	38,100
1994	34,800	31,400	38,200
1995	34,900	31,400	38,300
1996	34,900	31,500	38,400
1997	35,000	31,600	38,400
1998	35,000	31,700	38,400
1999	35,100	31,800	38,300
2000	35,100	31,900	38,300

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE U.S Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988 (This table was prepared April 1989.)

Table B19.—Doctor's degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	26,817	—	—
1976	26,267	—	—
1977	25,142	—	—
1978	23,658	—	—
1979	23,541	—	—
1980	22,943	—	—
1981	22,711	—	—
1982	22,224	—	—
1983	21,902	—	—
1984	22,064	—	—
1985	21,700	—	—
1986	21,819	—	—
1987	22,099	—	—
1988 [1]	22,000	—	—
1989 [2]	21,600	18,700	24,500
		Projected	
1990	21,500	18,400	24,600
1991	21,300	18,000	24,700
1992	20,900	17,600	24,200
1993	20,500	17,100	23,900
1994	20,100	16,700	23,500
1995	19,700	16,200	23,100
1996	19,200	15,800	22,600
1997	18,700	15,300	22,100
1998	18,100	14,800	21,400
1999	17,400	14,200	20,600
2000	16,700	13,600	19,800

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B20.—Doctor's degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	7,266	—	—
1976	7,797	—	—
1977	8,090	—	—
1978	8,473	—	—
1979	9,189	—	—
1980	9,672	—	—
1981	10,247	—	—
1982	10,483	—	—
1983	10,873	—	—
1984	11,145	—	—
1985	11,243	—	—
1986	11,834	—	—
1987	12,021	—	—
1988 [1]	12,000	—	—
1989 [2]	12,600	12,200	13,000
		Projected	
1990	12,900	12,500	13,300
1991	13,200	12,700	13,600
1992	13,700	13,300	14,200
1993	14,200	13,800	14,700
1994	14,700	14,200	15,200
1995	15,200	14,700	15,700
1996	15,700	15,300	16,200
1997	16,300	15,800	16,800
1998	17,000	16,400	17,500
1999	17,600	17,000	18,200
2000	18,400	17,700	19,100

[1] Estimate.
[2] Estimated on the basis of past data
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE U S Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988 (This table was prepared April 1989)

Table B21.—First-professional degrees, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	55,916	—	—
1976	62,649	—	—
1977	64,359	—	—
1978	66,581	—	—
1979	68,848	—	—
1980	70,131	—	—
1981	71,956	—	—
1982	72,032	—	—
1983	73,136	—	—
1984	74,407	—	—
1985	75,063	—	—
1986	73,910	—	—
1987	72,750	—	—
1988 [1]	72,000	—	—
1989 [2]	72,200	66,600	77,900
		Projected	
1990	72,400	66,700	78,100
1991	72,200	66,600	78,000
1992	72,100	66,400	77,800
1993	72,700	67,000	78,400
1994	72,200	66,500	78,000
1995	70,500	64,800	76,300
1996	69,200	63,400	75,100
1997	68,300	62,400	74,100
1998	67,700	61,900	73,600
1999	67,600	61,700	73,500
2000	67,100	61,300	73,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B22.—First-professional degrees awarded to men, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	48,956	—	—
1976	52,892	—	—
1977	52,374	—	—
1978	52,270	—	—
1979	52,652	—	—
1980	52,716	—	—
1981	52 792	—	—
1982	52,223	—	—
1983	51,310	—	—
1984	51,334	—	—
1985	50,455	—	—
1986	49,261	—	—
1987	47,460	—	—
1988 [1]	46,000	—	—
1989 [2]	46,400	41,100	51,700
		Projected	
1990	46,000	40,700	51,300
1991	45,700	40,400	51,000
1992	45,500	40,200	50,800
1993	45,600	40,300	50,900
1994	44,400	39,100	49,700
1995	43,000	37,600	48,300
1996	42,200	36,800	47,600
1997	41,500	36,100	46,900
1998	41,000	35,500	46,400
1999	40,800	35,400	46,300
2000	40,400	34,900	45,800

[1]Estimate.
[2]Estimated on the basis of past data
— Not applicable

NOTE: Because of rounding, details may not add to totals

SOURCE. U.S. Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989.)

Table B23.—First-professional degrees awarded to women, with projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

(In thousands)

Year ending	Total	Lower 95 percent confidence limit	Upper 95 percent confidence limit
1975	6,960	—	—
1976	9,757	—	—
1977	11,985	—	—
1978	14,311	—	—
1979	16,196	—	—
1980	17,415	—	—
1981	19,164	—	—
1982	19,809	—	—
1983	21,826	—	—
1984	23,073	—	—
1985	24,608	—	—
1986	24,649	—	—
1987	25,290	—	—
1988 [1]	25,000	—	—
1989 [2]	25,800	23,800	27,800
		Projected	
1990	26,400	24,400	28,400
1991	26,600	24,600	28,600
1992	26,600	24,600	28,600
1993	27,100	25,100	29,100
1994	27,800	25,700	29,900
1995	27,600	25,400	29,700
1996	27,000	24,800	29,200
1997	26,800	24,600	29,000
1998	26,800	24,600	29,000
1999	26,800	24,600	29,000
2000	26,800	24,600	29,000

[1] Estimate.
[2] Estimated on the basis of past data.
— Not applicable.

NOTE: Because of rounding, details may not add to totals

SOURCE: U S Department of Education, National Center for Education Statistics, "Degrees and Other Formal Awards Conferred" survey, Integrated Postsecondary Education Data System (IPEDS), and Early National Estimates survey, 1987 and 1988. (This table was prepared April 1989)

Table B24.—Classroom teachers in public and private elementary and secondary schools, with confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year ending	Elementary and Secondary			Elementary			Secondary		
	Number	Lower 95% limit	Upper 95% limit	Number	Lower 95% limit	Upper 95% limit	Number	Lower 95% limit	Upper 95% limit
1975	2,451	—	—	1,352	—	—	1,099	—	—
1976	2,454	—	—	1,349	—	—	1,105	—	—
1977	2,488	—	—	1,375	—	—	1,113	—	—
1978	2,478	—	—	1,375	—	—	1,103	—	—
1979	2,459	—	—	1,378	—	—	1,081	—	—
1980	2,485	—	—	1,401	—	—	1,084	—	—
1981	2,438	—	—	1,380	—	—	1,057	—	—
1982	2,446	—	—	1,402	—	—	1,044	—	—
1983	2,463	—	—	1,418	—	—	1,045	—	—
1984	2,508	—	—	1,448	—	—	1,060	—	—
1985	2,550	—	—	1,483	—	—	1,067	—	—
1986	2,592	—	—	1,517	—	—	1,075	—	—
1987	2,627	—	—	1,551	—	—	1,076	—	—
1988 *	2,641	2,625	2,656	1,563	1,549	1,577	1,078	1,073	1,083
					Projected				
1989	2,691	2,643	2,740	1,592	1,564	1,620	1,099	1,076	1,122
1990	2,724	2,673	2,775	1,627	1,596	1,657	1,097	1,074	1,120
1991	2,748	2,696	2,800	1,645	1,614	1,675	1,103	1,080	1,127
1992	2,785	2,733	2,837	1,662	1,631	1,693	1,123	1,099	1,146
1993	2,829	2,776	2,883	1,686	1,654	1,718	1,143	1,119	1,167
1994	2,868	2,815	2,922	1,703	1,671	1,736	1,165	1,142	1,189
1995	2,909	2,856	2,963	1,719	1,686	1,751	1,191	1,167	1,214
1996	2,950	2,896	3,003	1,735	1,702	1,768	1,215	1,191	1,238
1997	2,988	2,934	3,042	1,752	1,719	1,785	1,236	1,212	1,259
1998	3,024	2,970	3,078	1,769	1,736	1,802	1,256	1,232	1,279
1999	3,053	2,999	3,107	1,783	1,750	1,816	1,270	1,246	1,294
2000	3,082	3,028	3,136	1,797	1,764	1,830	1,285	1,260	1,309

* Estimated.
— Not applicable.

SOURCE: U.S. Department of Education, Common Core of Data survey, "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*, "Key Statistics for Private Elementary and Secondary Education: School Year 1988–89," *Early Estimates*, and National Education Association, *Estimates of School Statistics*. (This table was prepared May 1989.)

Table B25.—Classroom teachers in public elementary and secondary schools, with confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year ending	Elementary and Secondary			Elementary			Secondary		
	Number	Lower confidence limit	Upper confidence limit	Number	Lower confidence limit	Upper confidence limit	Number	Lower confidence limit	Upper confidence limit
1975	2,196	—	—	1,180	—	—	1,016	—	—
1976	2,186	—	—	1,166	—	—	1,020	—	—
1977	2,209	—	—	1,185	—	—	1,024	—	—
1978	2,206	—	—	1,190	—	—	1,016	—	—
1979	2,183	—	—	1,190	—	—	993	—	—
1980	2,184	—	—	1,189	—	—	995	—	—
1981	2,125	—	—	1,159	—	—	965	—	—
1982	2,121	—	—	1,171	—	—	950	—	—
1983	2,126	—	—	1,178	—	—	948	—	—
1984	2,168	—	—	1,205	—	—	963	—	—
1985	2,207	—	—	1,237	—	—	970	—	—
1986	2,244	—	—	1,267	—	—	977	—	—
1987	2,279	—	—	1,297	—	—	982	—	—
1988*	2,296	—	—	1,312	—	—	984	—	—
					Projected				
1989	2,340	2,295	2,385	1,336	1,313	1,360	1,003	981	1,026
1990	2,367	2,318	2,415	1,365	1,339	1,391	1,001	979	1,024
1991	2,388	2,339	2,437	1,381	1,354	1,407	1,007	984	1,030
1992	2,420	2,371	2,469	1,395	1,369	1,422	1,025	1,002	1,048
1993	2,459	2,408	2,509	1,415	1,387	1,443	1,043	1,020	1,066
1994	2,493	2,442	2,544	1,430	1,402	1,458	1,064	1,041	1,086
1995	2,529	2,479	2,580	1,443	1,414	1,471	1,087	1,064	1,110
1996	2,565	2,515	2,616	1,456	1,428	1,485	1,109	1,086	1,132
1997	2,599	2,548	2,650	1,471	1,442	1,499	1,128	1,105	1,151
1998	2,631	2,580	2,682	1,485	1,456	1,513	1,146	1,123	1,169
1999	2,656	2,605	2,707	1,497	1,469	1,525	1,159	1,136	1,182
2000	2,681	2,630	2,732	1,508	1,481	1,536	1,173	1,149	1,196

* Estimated.
— Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and National Education Association, Estimates of School Statistics. (This table was prepared May 1989.)

Table B26.—Classroom teachers in private elementary and secondary schools, with confidence limits: 50 States and D.C., fall 1975 to fall 2000

(In thousands)

Year ending	Elementary and Secondary			Elementary			Secondary		
	Number	Lower confidence limit	Upper confidence limit	Number	Lower confidence limit	Upper confidence limit	Number	Lower confidence limit	Upper confidence limit
1975	255	—	—	172			83		
1976	268	—	—	183			85		—
1977	279	—	—	190			89		
1978	272	—	—	185			87		
1979	276			188			88		
1980	301	—	—	212			89		
1981	313			221			92		
1982	325	—	—	231			94		—
1983	337	—	—	240			97		—
1984	340	—	—	243			97		—
1985	343	—	—	246			97		—
1986	348	—	—	250			98		
1987	348	—	—	254	—		94		—
1988 *	345	329	360	251	238	264	94	90	98
				Projected					
1989	352	336	367	256	241	270	96	91	101
1990	357	341	373	261	246	276	96	91	101
1991	360	344	377	264	249	279	96	91	101
1992	365	348	381	267	252	282	98	93	103
1993	370	353	387	271	255	286	100	95	105
1994	375	358	392	274	258	289	102	96	107
1995	380	363	397	276	260	292	104	99	109
1996	385	367	402	279	263	294	106	101	111
1997	389	372	407	281	265	297	108	102	113
1998	394	376	411	284	268	300	109	104	115
1999	397	379	415	286	270	303	111	105	116
2000	401	383	419	289	272	305	112	106	118

*Estimated
— Not applicable

SOURCE U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey and "Key Statistics for Private Elementary and Secondary Education School Year 1988-89," *Early Estimates*, and National Education Association *Estimates of School Statistics*. (This table was prepared May 1989.)

Table B27.—Pupil-teacher ratios in elementary and secondary schools, with projections and confidence limits, by control: 50 States and D.C., fall 197[illegible] to fall 2000

(In thousands)

Year	Public						Private					
	Lower 95% confidence limit	Elementary	Upper 95% confidence limit	Lower 95% confidence limit	Secondary	Upper 95% confidence limit	Lower 95% confidence limit	Elementary	Upper 95% confidence limit	Lower 95% confidence limit	Secondary	Upper 95% confidence limit
1975	—	21.7	—	—	18.6	—	—	21.5	—	—	15.7	—
1976	—	21.8	—	—	18.5	—	—	20.9	—	—	15.8	—
1977	—	21.1	—	—	18.2	—	—	20.0	—	—	15.1	—
1978	—	21.0	—	—	17.3	—	—	20.2	—	—	15.6	—
1979	—	20.6	—	—	17.2	—	—	19.7	—	—	14.8	—
1980	—	20.3	—	—	16.9	—	—	18.8	—	—	15.0	—
1981	—	20.5	—	—	16.9	—	—	18.6	—	—	15.2	—
1982	—	20.4	—	—	16.6	—	—	18.2	—	—	14.9	—
1983	—	20.4	—	—	16.2	—	—	18.0	—	—	14.4	—
1984	—	20.0	—	—	15.7	—	—	17.7	—	—	14.4	—
1985	—	19.6	—	—	15.7	—	—	17.1	—	—	14.0	—
1986	—	19.1	—	—	16.0	—	—	16.5	—	—	13.6	—
1987	—	18.7	—	—	16.0	—	—	16.2	—	—	13.1	—
1988	—	19.2	—	—	15.2	—	15.4	16.1	16.7	12.4	12.8	13.3
1989	—	19.1	—	—	14.[illegible]	—	15.2	16.0	16.8	11.7	12.3	12.8
						Projected						
1990	18.7	19.1	19.4	14.4	14.[illegible]	15.0	15.2	16.0	16.8	11.6	12.2	12.7
1991	18.8	19.1	19.4	14.5	14.8	15.1	15.2	16.0	16.9	11.6	12.2	12.8
1992	18.7	19.1	19.4	14.6	14.9	15.2	15.2	16.1	16.9	11.6	12.2	12.8
1993	18.6	18.9	19.3	14.7	15.0	15.3	15.1	16.0	16.9	11.7	12.3	12.9
1994	18.5	18.8	19.2	14.8	15.1	15.4	15.0	15.9	6.8	11.8	12.5	13.1
1995	18.4	18.7	19.1	14.8	15.1	15.4	14.9	15.8	16.8	11.8	12.5	13.2
1996	18.2	18.6	19.0	14.8	15.1	15.4	14.8	15.7	16.6	11.9	12.5	13.2
1997	18.0	18.4	18.7	14.7	15.0	15.3	14.6	15.5	16.5	11.8	12.5	13.2
1998	17.8	18.2	18.5	14.6	14.9	15.2	14.5	15.4	16.3	11.6	12.3	13.1
1999	17.5	17.9	18.3	14.5	14.8	15.1	14.3	15.2	16.1	11.6	12.[illegible]	13.0
2000	17.3	17.6	18.0	14.4	14.7	15.0	14.0	15.0	15.9	11.5	12.2	13.0

— Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of Public Elementary and Secondary Schools.* "Key Statistics for Public Elementary and Secondary Education: School Year 1988-89," *Early Estimates.* and "Key Statistics for Private Elementary and Secondary Education School Year 1988-89," *Early Estimates* and Common Core of Data survey. National Education Association, *Estimates of School Statistics.* (This table was prepared May 1989.)

Table B28.—Current expenditures per pupil in average daily attendance (constant 1987–88 dollars) of public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per pupil in average daily attendance	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$3,088	—	—
1976	3,141	—	—
1977	3,232	—	—
1978	3,371	—	—
1979	3,417	—	—
1980	3,390	—	—
1981	3,345	—	—
1982	3,355	—	—
1983	3,488	—	—
1984	3,613	—	—
1985	3,802	—	—
1986	3,999	—	—
1987	4,142	—	—
1988 [2]	4,217	—	—
1989 [3]	4,348	$4,138	$4,568
		Middle alternative projections	
1990	4,414	4,203	4,635
1991	4,471	4,257	4,695
1992	4,554	4,329	4,791
1993	4,617	4,386	4,861
1994	4,677	4,441	4,925
1995	4,744	4,501	5,000
1996	4,828	4,573	5,097
1997	4,916	4,651	5,197
1998	5,011	4,736	5,301
1999	5,115	4,833	5,414
2000	5,221	4,933	5,526
		Low alternative projections	
1990	4,418	4,206	4,641
1991	4,450	4,241	4,670
1992	4,509	4,296	4,732
1993	4,577	4,359	4,806
1994	4,634	4,413	4,866
1995	4,688	4,465	4,923
1996	4,752	4,526	4,989
1997	4,821	4,593	5,061
1998	4,900	4,668	5,143
1999	4,988	4,752	5,235
2000	5,079	4,839	5,331
		High alternative projections	
1990	4,424	4,210	4,649
1991	4,488	4,270	4,717
1992	4,566	4,337	4,808
1993	4,640	4,398	4,895
1994	4,712	4,459	4,979
1995	4,794	4,524	5,080
1996	4,889	4,598	5,199
1997	4,990	4,677	5,323
1998	5,099	4,766	5,455
1999	5,220	4,866	5,599
2000	5,345	4,971	5,746

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U S. Department of Labor

[2] Early Estimate

[3] Estimated on the basis of past data

— Not applicable

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Statistics of State School Systems, Revenues and Expenditures for Public Elementary and Secondary Education*, Common Core of Data survey; and "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89," *Early Estimates*; and National Education Association, annual *Estimates of State School Statistics*. (Latest edition 1987–88 Copyright © 1988 by the National Education Association All rights reserved) (This table was prepared March 1989)

Table B29.—Average annual salaries of classroom teachers (constant 1987–88 dollars) in public elementary and secondary schools, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Average annual salary	Lower limit, 95 percent confidence interval [2]	Upper limit, 95 percent confidence interval [2]
1975	$26,146	—	—
1976	26,318	—	—
1977	26,356	—	—
1978	26,259	—	—
1979	25,420	—	—
1980	23,829	—	—
1981	23,594	—	—
1982	23,725	—	—
1983	24,423	—	—
1984	24,956	—	—
1985	25,847	—	—
1986	26,834	—	—
1987	27,633	—	—
1988	28,031	—	—
1989 [3]	28,584	$28,012	$29,156
		Middle alternative projections	
1990	28,576	27,878	29,273
1991	28,875	28,118	29,631
1992	29,671	28,827	30,515
1993	30,281	29,368	31,194
1994	30.733	29,780	31,686
1995	31,161	30,179	32,144
1996	31,601	30,592	32,611
1997	31,911	30,891	32,932
1998	32,179	31,154	33,203
1999	32,407	31,378	33,435
2000	32,586	31,560	33,613
		Low alternative projections	
1990	28,598	27,900	29,297
1991	28,780	28,027	29,533
1992	29,459	28,625	30,292
1993	30,092	29,189	30,995
1994	30,531	29,590	31,473
1995	30,901	29,934	31,868
1996	31,243	30,255	32,230
1997	31,467	30,474	32,459
1998	31,656	30,665	32,647
1999	31,810	30,819	32,800
2000	31,919	30,935	32,904
		High alternative projections	
1990	28,625	27,926	29,324
1991	28,956	28,196	29,716
1992	29,728	28,882	30,575
1993	30,387	29,469	31,306
1994	30,898	29,935	31,860
1995	31,396	30,399	32,392
1996	31,888	30,861	32,916
1997	32,257	31,214	33,299
1998	32,591	31,540	33,641
1999	32,896	31,836	33,957
2000	33,165	32,100	34,229

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor.

[2] These confidence limits were calculated by using an equation for computing the asymptotic mean square error when AR1 has been used to correct for first order autocorrelation. This equation is equation (8.3.14) of G Judge, Griffiths, Hill, Lutkepohl, and Lee, *The Theory and Practice of Econometrics*, New York: John Wiley and Sons, 1985, page 318.

[3] Estimated on the basis of past data.

— Not applicable.

SOURCE: National Education Association, annual *Estimates of School Statistics*. (Latest edition 1987–88. Copyright © 1988 by the National Education Association. All rights reserved.) (This table was prepared March 1989.)

Table B30.—Current-fund expenditures per full-time-equivalent student in public 4-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987-88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$11,225	—	—
1976	11,015	—	—
1977	11,556	—	—
1978	11,453	—	—
1979	11,680	—	—
1980	11,387	—	—
1981	11,152	—	—
1982	11,082	—	—
1983	11,357	—	—
1984	11,633	—	—
1985	12,413	—	—
1986	13,108	—	—
1987 [2]	13,080	$12,658	$13,502
1988 [2]	13,377	12,928	13,826
1988 [2]	14,039	13,473	14,606
Middle alternative projections			
1990	13,807	13,322	14,293
1991	13,912	13,415	14,409
1992	14,312	13,759	14,865
1993	14,719	14,091	15,346
1994	15,043	14,343	15,743
1995	15,380	14,608	16,152
1996	15,736	14,898	16,574
1997	15,976	15,098	16,853
1998	16,154	15,253	17,055
1999	16,287	15,376	17,197
2000	16,399	15,484	17,314
Low alternative projections			
1990	13,839	13,350	14,327
1991	13,783	13,300	14,266
1992	14,025	13,506	14,543
1993	14,464	13,870	15,058
1994	14,772	14,109	15,434
1995	15,032	14,309	15,755
1996	15,259	14,490	16,028
1997	15,388	14,595	16,180
1998	15,468	14,666	16,269
1999	15,510	14,713	16,307
2000	15,540	14,750	16,329
High alternative projections			
1990	13,875	13,382	14,368
1991	14,022	13,513	14,532
1992	14,390	13,828	14,953
1993	14,864	14,217	15,511
1994	15,266	14,534	15,997
1995	15,697	14,879	16,515
1996	16,123	15,228	17,017
1997	16,440	15,493	17,386
1998	16,705	15,722	17,688
1999	16,938	15,930	17,945
2000	17,161	16,132	18,190

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor

[2] Estimated on the basis of past data

— Not applicable

SOURCE: U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table B31.—Educational and general expenditures per full-time-equivalent student in public 4-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$8,819	—	—
1976	8,647	—	—
1977	8,933	—	—
1978	9,061	—	—
1979	9,200	—	—
1980	8,930	—	—
1981	8,712	—	—
1982	8,599	—	—
1983	8,773	—	—
1984	9,013	—	—
1985	9,641	—	—
1986	10,202	—	—
1987 [2]	10,211	$9,959	$10,463
1988 [2]	10,453	10,184	10,721
1989 [2]	10,907	10,569	11,246
		Middle alternative projections	
1990	10,743	10,453	11,033
1991	10,830	10,533	11,127
1992	11,175	10,845	11,506
1993	11,543	11,168	11,918
1994	11,853	11,434	12,271
1995	12,158	11,697	12,620
1996	12,462	11,961	12,962
1997	12,658	12,133	13,182
1998	12,795	12,256	13,333
1999	12,883	12,339	13,427
2000	12,953	12,406	13,500
		Low alternative projections	
1990	10,768	10,476	11,060
1991	10,728	10,440	11,017
1992	10,949	10,639	11,258
1993	11,342	10,987	11,697
1994	11,639	11,243	12,035
1995	11,884	11,452	12,316
1996	12,085	11,626	12,545
1997	12,194	11,721	12,668
1998	12,254	11,775	12,733
1999	12,271	11,795	12,747
2000	12,276	11,804	12,748
		High alternative projections	
1990	10,796	10,502	11,091
1991	10,917	10,613	11,221
1992	11,237	10,900	11,573
1993	11,657	11,271	12,044
1994	12,028	11,591	12,465
1995	12,408	11,919	12,897
1996	12,766	12,232	13,301
1997	13,023	12,458	13,589
1998	13,229	12,641	13,816
1999	13,396	12,794	13,998
2000	13,554	12,939	14,169

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U S Department of Labor

[2] Estimated on the basis of past data

— Not applicable

SOURCE U S Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys (This table was prepared April 1989)

Table B32.—Current-fund expenditures per full-time-equivalent student in public 2-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$4,459	—	—
1976	4,059	—	—
1977	4,385	—	—
1978	4,481	—	—
1979	4,542	—	—
1980	4,342	—	—
1981	4,093	—	—
1982	3,985	—	—
1983	4,019	—	—
1984	4,134	—	—
1985	4,611	—	—
1986	4,829	—	—
1987 [2]	4,988	—	—
1988 [2]	5,176	$4,824	$5,152
1989 [2]	5,335	5,000	5,353
		5,142	5,527
	Middle alternative projections		
1990	5,281	5,090	5,471
1991	5,344	5,149	5,540
1992	5,591	5,374	5,808
1993	5,859	5,619	6,100
1994	6,100	5,837	6,363
1995	6,321	6,035	6,607
1996	6,529	6,220	6,838
1997	6,658	6,335	6,982
1998	6,743	6,409	7,077
1999	6,786	6,446	7,126
2000	6,817	6,472	7,163
	Low alternative projections		
1990	5,296	5,105	5,488
1991	5,280	5,091	5,470
1992	5,448	5,246	5,651
1993	5,733	5,506	5,960
1994	5,965	5,717	6,214
1995	6,148	5,881	6,414
1996	6,292	6,011	6,573
1997	6,366	6,077	6,656
1998	6,403	6,109	6,696
1999	6,400	6,106	6,694
2000	6,391	6,097	6,685
	High alternative projections		
1990	5,314	5,121	5,507
1991	5,399	5,198	5,600
1992	5,630	5,409	5,851
1993	5,932	5,683	6,180
1994	6,211	5,935	6,487
1995	6,478	6,174	6,782
1996	6,721	6,389	7,053
1997	6,889	6,537	7,240
1998	7,017	6,650	7,384
1999	7,109	6,729	7,488
2000	7,196	6,805	7,588

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor

[2] Estimated on the basis of past data.

— Not applicable.

SOURCE U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table B33.—Educational and general expenditures per full-time-equivalent student in public 2-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$4,182	—	—
1976	3,803	—	—
1977	4,113	—	—
1978	4,205	—	—
1979	4,260	—	—
1980	4,051	—	—
1981	3,813	—	—
1982	3,718	—	—
1983	3,739	—	—
1984	3,839	—	—
1985	4,289	—	—
1986	4,499	—	—
1987 [2]	4,652	$4,482	$4,821
1988 [2]	4,832	4,649	5,014
1989 [2]	4,977	4,777	5,176
Middle alternative projections			
1990	4,923	4,726	5,120
1991	4,983	4,781	5,186
1992	5,217	4,993	5,442
1993	5,475	5,226	5,724
1994	5,706	5,433	5,979
1995	5,918	5,622	6,214
1996	6,116	5,796	6,436
1997	6,238	5,903	6,574
1998	6,317	5,971	6,664
1999	6,355	6,002	6,707
2000	6,382	6,025	6,740
Low alternative projections			
1990	4,938	4,739	5,136
1991	4,923	4,727	5,120
1992	5,084	4,874	5,294
1993	5,356	5,122	5,591
1994	5,580	5,323	5,838
1995	5,756	5,480	6,032
1996	5,895	5,603	6,186
1997	5,965	5,665	6,265
1998	5,999	5,694	6,303
1999	5,994	5,689	6,299
2000	5,984	5,679	6,288
High alternative projections			
1990	4,955	4,754	5,155
1991	5,035	4,826	3,243
1992	5,254	5,025	5,482
1993	5,542	5,285	5,800
1994	5,810	5,524	6,096
1995	6,065	5,750	6,380
1996	6,296	5,952	6,639
1997	6,454	6,090	6,818
1998	6,573	6,193	6,954
1999	6,657	6,264	7,050
2000	6,737	6,331	7,142

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U S Department of Labor.

[2] Estimated on the basis of past data

— Not applicable.

SOURCE: U.S Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys. (This table was prepared April 1989.)

Table B34.—Current-fund expenditures per full-time-equivalent student in private 4-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$14,354	—	—
1976	14,069	—	—
1977	14,556	—	—
1978	14,520	—	—
1979	14,466	—	—
1980	14,246	—	—
1981	14,128	—	—
1982	14,137	—	—
1983	14,909	—	—
1984	15,529	—	—
1985	16,381	—	—
1986	17,298	—	—
1987 [2]	17,724	$17,190	$18,259
1988 [2]	17,675	17,138	18,212
1989 [2]	18,520	17,924	19,115
		Middle alternative projections	
1990	18,370	17,788	18,952
1991	18,572	17,974	19,170
1992	19,324	18,658	19,990
1993	20,290	19,523	21,057
1994	21,132	20,265	22,000
1995	21,872	20,912	22,832
1996	22,586	21,539	23,633
1997	23,040	21,941	24,139
1998	23,317	22,191	24,443
1999	23,444	22,312	24,576
2000	23,526	22,393	24,660
		Low alternative projections	
1990	18,420	17,834	19,006
1991	18,366	17,784	18,947
1992	18,863	18,238	19,488
1993	19,881	19,153	20,609
1994	20,698	19,873	21,522
1995	21,313	20,410	22,216
1996	21,820	20,852	22,789
1997	22,097	21,095	23,099
1998	22,217	21,205	23,229
1999	22,198	21,196	23,200
2000	22,149	21,159	23,138
		High alternative projections	
1990	18,478	17,888	19,069
1991	18,749	18,137	19,362
1992	19,449	18,772	20,126
1993	20,523	19,733	21,313
1994	21,490	20,586	22,394
1995	22,380	21,368	23,392
1996	23,206	22,095	24,318
1997	23,785	22,608	24,962
1998	24,201	22,982	25,421
1999	24,488	23,245	25,731
2000	24,750	23,486	26,014

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S. Department of Labor

[2] Estimated on the basis of past data

— Not applicable

SOURCE U.S. Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys (This table was prepared April 1989.)

Table B35.—Educational and general expenditures per full-time-equivalent student in private 4-year institutions, with alternative projections and confidence limits: 50 States and D.C., 1974–75 to 1999–2000

Year ending	Constant 1987–88 dollars [1]		
	Per full-time-equivalent student	Lower limit, 95 percent confidence interval	Upper limit, 95 percent confidence interval
1975	$10,464	—	—
1976	10,274	—	—
1977	10,549	—	—
1978	10,542	—	—
1979	10,469	—	—
1980	10,316	—	—
1981	10,264	—	—
1982	10,306	—	—
1983	10,814	—	—
1984	11,299	—	—
1985	11,938	—	—
1986	12,644	—	—
1987 [2]	12,994	$12,479	$13,509
1988 [2]	12,887	12,369	13,405
1989 [2]	13,534	12,960	14,108
	Middle alternative projections		
1990	13,385	12,825	13,946
1991	13,537	12,961	14,114
1992	14,127	13,485	14,769
1993	14,928	14,189	15,668
1994	15,629	14,793	16,465
1995	16,233	15,308	17,158
1996	16,799	15,789	17,808
1997	17,143	16,084	18,203
1998	17,338	16,252	18,423
1999	17,401	16,310	18,493
2000	17,431	16,338	18,523
	Low alternative projections		
1990	13,422	12,857	13,987
1991	13,387	12,827	13,947
1992	13,792	13,189	14,394
1993	14,631	13,929	15,332
1994	15,313	14,518	16,107
1995	15,826	14,955	16,697
1996	16,242	15,308	17,175
1997	16,457	15,491	17,423
1998	16,537	15,561	17,512
1999	16,495	15,528	17,461
2000	16,428	15,474	17,382
	High alternative projections		
1990	13,464	12,895	14,034
1991	13,666	13,075	14,257
1992	14,218	13,566	14,871
1993	15,098	14,336	15,859
1994	15,889	15,018	16,761
1995	16,603	15,627	17,578
1996	17,250	16,179	18,322
1997	17,685	16,550	18,820
1998	17,981	16,805	19,157
1999	18,161	16,963	19,360
2000	18,321	17,103	19,540

[1] Based on the Consumer Price Index for all urban consumers, Bureau of Labor Statistics, U.S Department of Labor

[2] Estimated on the basis of past data

— Not applicable.

SOURCE U S Department of Education, National Center for Education Statistics, "Financial Statistics of Institutions of Higher Education," and "Fall Enrollment in Colleges and Universities" surveys (This table was prepared April 1989)

Table B36.—Standard errors of projections of public school enrollment, by grade level: Fall 1989 to fall 2000

(In thousands)

Year	K–12	K–8	9–12
1989	139	121	48
1990	197	171	68
1991	241	210	83
1992	278	242	96
1993	311	271	107
1994	340	296	118
1995	368	320	127
1996	393	342	136
1997	417	363	144
1998	440	383	152
1999	461	401	159
2000	482	419	166

NOTE To construct a 95 percent confidence interval around a projection, multiply the standard error by 1 96

SOURCE Derived from the public enrollment projection model

Appendix C

Data Sources

Sources and Comparability of Data

The information in this report is 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. Use care 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

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, all surveys, both universe and sample, are subject to errors of design, reporting, 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 sampling variability. It provides a specific range—with a stated confidence—within which a given estimate would lie if a complete census had been conducted. The chances that a complete census would differ from the sample by less than the standard error are about 68 out of 100. The chances that the difference would be less than 1.65 times the standard error are about 90 out of 100; that the difference would be less than 1.96 times the standard error, about 95 out of 100; and that it would be less than 2.58 times as large, about 99 out of 100.

Standard error can help assess how valid a comparison between two estimates might be. The standard error of a difference between two sample estimates which are uncorrelated is approximately equal to the square root of the sum of the squared standard errors of the estimates. The standard error (se) of the difference between sample estimate "a" and sample estimate "b" is:

$$se_{a-b} = \sqrt{se_a^2 + se_b^2}$$

Note that most of the standard errors in subsequent sections and 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. Since 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. An adjustment made for either type of nonresponse is often referred to as as an imputation, that is, substitution of the "average" questionnaire response for the nonresponse. Imputations are usually made separately within various groups of sample members which 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 that are similar to those of the nonrespondent.

Although the magnitude of nonsampling error in the data collected in this *Projections* 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) survey to acquire and maintain statistical data on the 50 States, the District of Columbia, and the outlying areas from the universe of State-level education agencies. Information about staff and students is collected annually at the school, LEA (local education agency or school district), and State levels. Information about revenues and expenditures is also collected at the State level.

Data are collected for a particular school year (July 1 through June 30) by survey instruments sent to the States by October 15 of the subsequent school year. States have 2 years in which to modify the data originally submitted.

Since the CCD is a universe survey, the CCD information in *Projections* is not subject to sampling error. However, nonsampling error could come from two sources—nonreturn and inaccurate reporting. Almost all of the States submit the six CCD survey instruments each year, but there are many delays in submitting data and the submissions are sometimes incomplete.

Understandably, when 57 education agencies compile and submit data for over 85,000 public schools and approximately 15,800 local school districts, misreporting can occur. Typically, this results from varying interpretation of NCES definitions and differing recordkeeping systems. NCES attempts to minimize these errors by working closely with the Council of Chief State School Officers (CCSSO) and its Committee on Evaluation and Information Systems (CEIS).

The State education agencies report data to NCES from data collected and edited in the regular reporting cycles for which NCES reimburses them. NCES encourages the agencies to incorporate into their own survey systems the NCES items they do not collect so those 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 education agencies to a comprehensive edit. Where data are determined to be inconsistent, missing, or out of range, NCES asks the education agencies for verification. NCES-prepared State summary forms are returned to the State education agencies for verification. States are also given an opportunity to revise their State-level aggregates from the previous survey cycle.

Questions concerning the Common Core of Data can be directed to:

Lee Hoffman
Elementary and Secondary Education
Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Public School Early Estimates System. The Public School Early Estimates System is designed to allow NCES to report selected key statistics early in the school year. Statistics include the number of students in membership, teachers, and high school graduates, and total revenues and expenditures. These estimates are either preliminary actual counts for individual States, estimates derived by the States for NCES, or imputed values developed by NCES using a combination of State-specific and national data.

Forty-nine States and the District of Columbia participated in the survey. Estimates reported here were provided to NCES by State education agencies and represent the best information available to States at this early stage of the school year. They are, however, subject to revision.

Early in November of each year, a survey form is sent to each State education agency requesting their cooperation and specifying when NCES would collect data by telephone. States are contacted during the first week in November and State estimates are received through the third week in December. Data collected by telephone are checked for reasonableness against prior years' data.

Questions concerning the Early Estimates System can be directed to:

Frank Johnson
Elementary and Secondary Education
Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Private School Early Estimate System. The private school Early Estimates are the first reporting component of the Private School Universe data collection system. In subsequent years, the statistical information will be collected from all private schools in the NCES universe, and the Early Estimates will be based on a subsample of that universe.

Early in October 1988, questionnaires were mailed to a national probability sample of 1,167 private elementary and secondary schools from a universe of approximately 30,000 private schools. Telephone followup of nonrespondents was initiated in late October, and data collection was completed in late November. The overall response rate was 94 percent: 978 of the 1,035 eligible schools. Some 132 of the original 1,167 schools in the sample were determined to be out-of-scope. While this survey was not designed specifically to yield an estimate of the number of private schools, the number of out-of-scope schools identified in this survey resulted in a weighted estimate of approximately 26,300 private schools.

The sampling frame used for the survey is comprised of two non-overlapping frames: the NCES list frame of approximately 24,000 eligible schools, and an area frame developed by the Census Bureau for 75 Primary Sampling Units (PSUs). The area frame yielded a sample size of 523 schools for the Schools and Staffing Survey (SASS). The private school early estimates area sample was drawn from the SASS area sample. The sample from the area frame was sorted by level of school, by religious orientation class within school level, then by PSU within religious orientation class, and finally by student membership within PSU.

The sample from the list frame was stratified by level of school (elementary, secondary, combined, and other) and religious orientation (Catholic, other religious, and nonsectarian), and within strata, schools were further sorted by Office of Education regions, and by student membership size within region. Each school in the sorted frame was assigned a sampling measure of size equal to the square root of student membership, and samples were selected with probabilities proportionate to size from each orientation/level stratum.

The survey data were weighted to reflect the sampling rates (probability of selection) and were adjusted for nonresponse. Numbers in the tables and text have been rounded. Ratios have been calculated on the actual estimates rather than the rounded values.

Estimates of standard errors were computed using a variance estimation procedure for complex sample survey data known as jackknife. The standard errors for private school early estimates for school years 1987-88 and 1988-89 are shown in the table below.

Students (1988–89)	Teachers (1988–89)	Graduates (1987–88)
96,779 9	7,624 7	9,605 4

Nonsampling errors may include such things as differences in the respondents' interpretation of the meaning to the questions, differences related to the particular time the survey was conducted, or errors in data preparation. During the design of the survey and survey pretest, an effort was made to check for consistency of interpretation of questions and to eliminate ambiguous items. The questionnaire was pretested with respondents like those who completed the survey, and the questionnaire and instructions were extensively reviewed by NCES and representatives of private school associations attending the NCES private school data users meeting. Manual and machine editing of the questionnaires was conducted to check the data for accuracy and consistency. Extensive telephone followup was conducted for missing or inconsistent items; data were keyed with 100 percent verification.

Undercoverage in the list and area frames is another possible source of nonsampling error. The area frame was used to complement the list frame through the identification of schools missing from the list frame. As the Early Estimates System and the Private School Universe data collection system develop, efforts will be directed towards updating the universe list and identifying and minimizing sources of undercoverage in both the list and area frames.

Questions concerning the Private School Early Estimates can be directed to:

Marilyn M. McMillen
Elementary and Secondary Education
Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Higher Education General Information Survey

The Higher Education General Information Survey (HEGIS) was a coordinated effort administered by NCES to acquire and maintain statistical data on the characteristics and operations of institutions of higher

education. Developed in 1966, HEGIS was an annual universe survey of institutions listed in the NCES *Education Directory, Colleges and Universities.*

The information presented in this report draws on HEGIS surveys which solicited information concerning institutional characteristics, faculty salaries, finances, enrollment, and degrees. Since these surveys cover all institutions in the universe, the data are not subject to sampling error. However, they are subject to nonsampling error, the sources of which vary with the survey instrument. Each survey will therefore be discussed separately. Information concerning the nonsampling error of the enrollment and degrees surveys is drawn extensively from the HEGIS Post-Survey Validation Study conducted in 1979.

Institutional Characteristics of Colleges and Universities. This survey provides the basis for the universe of institutions in the *Education Directory, Colleges and Universities,* and it is used in all other HEGIS data collection activities. The universe comprises institutions that offer at least a 1-year program of college-level studies leading toward a degree and that meet certain accreditation criteria. In the fall, institutions included in the *Directory* the previous year receive a computer printout of their information to update. Institutions not previously included and that applied for *Directory* listing are sent a questionnaire. All institutions reported are certified as eligible to be listed by the Division of Eligibility and Agency Evaluation, U.S. Department of Education.

Opening Fall Enrollment in Colleges and Universities. This survey has been part of the HEGIS series since its development. The enrollment survey does not appear to suffer significantly from problems associated with nonresponse: The 1985 response rate was 92 percent. Major sources of nonsampling error for this survey are classification problems, the unavailability of needed data, interpretation of definitions, the survey due date, and operational errors. Of these, the classification of students appears to be the main source of error. Institutions have problems in correctly classifying first-time freshmen, other first-time students, and unclassified students for both full-time and part-time categories. These problems occur most often at 2-year institutions (both private and public) and private 4-year institutions. In 1977–78, the classification problem led to an estimated overcount of 11,000 full-time students and an undercount of 19,000 part-time students. Although the ratio of error to the grand total was small (less than 1 percent), the percentage of errors was as high as 5 percent for detailed student levels and even higher at certain aggregation levels.

Beginning with fall 1986, the survey system was redesigned with the introduction of the Integrated Postsecondary Education Data System (IPEDS). The new survey system comprises all postsecondary institutions, but also maintains comparability with earlier surveys by allowing HEGIS institutions to be tabulated separately. The new system also provides for preliminary and revised data releases. This allows the Center flexibility to release early data sets while still maintaining a more accurate final database. For example, the fall 1986 IPEDS enrollment data in this report exclude 16,000 students whose level and enrollment status could not be determined in time for the preliminary release. In the final release, this undercount and other items will be revised.

Earned Degrees Conferred. This survey has been part of the HEGIS series since its development. However, the degree classification taxonomy was revised in 1970–71 and 1982–83. Though information from survey years 1970–71 through 1981–82 is directly comparable, care must be taken if information before or after that period is included in any comparison. Degrees-conferred trend tables arranged by the 1982–83 classification have been added to the *Digest of Education Statistics* to provide consistent data from 1970–71 to 1983–84. Data in this edition on associate and other formal awards below the baccalaureate are not directly comparable with figures for earlier years. The nonresponse rate does not appear to be a significant source of nonsampling error for this survey. The return rate over the years has been extremely high, with the response rate for the 1983–84 survey at 95 percent. Because of the high return rate, nonsampling error caused by imputation would also be minimal.

The major sources of nonsampling error for this survey are differences between the HEGIS program taxonomy and taxonomies used by the colleges, classification of double majors and double degrees, operational problems, and survey timing. In the 1979 validation study, these sources of nonsampling error were found to contribute to an error rate of 0.3 percent overreporting of bachelor's degrees and 1.3 percent overreporting of master's degrees. The differences, however, varied greatly among fields. Over 50 percent of the fields selected for the validation study had no errors identified. Categories of fields that had large differences were business and management, education, engineering, letters, and psychology. It is also shown that differences in proportion to the published figures were less than 1 percent for most of the selected fields that had some errors. Exceptions to these were: master's and doctoral programs in labor and industrial relations (20 percent and 8 percent); bachelors's and master's programs in art education (3 percent and 4 percent); bachelor's and doctoral programs in business and commerce, and in distributive education (5 percent and 9 percent); master's programs in philosophy (8 percent); and doctoral programs in psychology (11 percent).

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Financial Statistics of Institutions of Higher Education. This survey has been part of the HEGIS series since its development. A number of changes were made in the financial survey instruments in 1975. In 1982 another change was made to include Pell Grants in Federal restricted grants and contracts revenues and restricted scholarships and fellowships expenditures. While these changes were significant, only comparable information on trends is presented in this report, except where noted. Finance tables for this publication have been adjusted by subtracting the Pell Grant amounts from the later data to maintain comparability with pre-1982 data.

Other possible sources of nonsampling error in the financial statistics are nonresponse, imputation, and misclassification. The response rate has been over 90 percent for most of the years reported. The response rate for the latest (fiscal year 1985) survey was 87.6 percent.

Two general methods of imputation have been used. If the prior year's data were available for a nonresponding institution, these data were inflated using the Higher Education Price Index and adjusted according to changes in enrollments. If no previous year's data were available, current data were used from peer institutions selected for location (State or region), control, level, and enrollment size of institution. For the most recent years reported, the imputation method did not include the adjustment for changes in enrollments, and new institutions which never reported to HEGIS surveys were not imputed. For the fiscal year 1985 survey, survey forms were mailed to 3,379 institutions. Reports were received from 2,959 institutions, and data for 370 institutions were estimated based on their fiscal year 1984 reports inflated by the Higher Education Price Index. The remaining 50 institutions were not imputed because they had never responded to HEGIS surveys. It should be noted that the imputed current-fund expenditures of the nonrespondents have generally been less than 3 percent of the aggregate U.S. total.

To reduce reporting error, NCES uses national standards for reporting finance statistics. These standards are contained in *Colleges and University Business Administration: Administrative Services (1974 Edition),* published by the National Association of College and University Business Officers; *Audits of Colleges and Universities* (as amended August 31, 1974), by the American Institute of Certified Public Accountants; and *HEGIS Financial Reporting Guide (1980),* by NCES. Wherever possible, definitions and formats in the survey form are consistent with those in these three accounting texts.

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Integrated Postsecondary Education Data System

Beginning with surveys for the 1986-87 school year, the Center expanded its collection of postsecondary data. The Integrated Postsecondary Education Data System (IPEDS) surveys all postsecondary institutions, including universities and colleges, as well as institutions offering technical and vocational education beyond the high school level. This survey will enable, for the first time, a comprehensive coverage of education data for all postsecondary institutions. The higher education portion of this survey is a census of all education institutions similar to HEGIS; however, data from the other technical and vocational institutions will be collected through a sample survey. Thus, some portions of the data will be subject to sampling and nonsampling errors, while some portions will be subject only to nonsampling errors. The data on institutional characteristics used for enrollment projections are based on lists of all institutions and are not subject to sampling errors.

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Higher Education Early National Estimates System. The 1988 data are based on responses from the 651 institutions on the Higher Education Early National Estimates Panel (a stratified random sample representative of the universe of 3,587 institutions of higher education in the United States in the 1988 academic year). Selected data items from the Integrated Postsecondary Education Data System (IPEDS) survey forms were requested by telephone from the Early National Estimates Representative of each sample institution between mid-October and mid-November 1988. The data were edited in light of previous years' responses (where available) and were resolved for questionable data.

The overall response rate for the 1988 Early National Estimates data collection was 97 percent. Weighted response rates for each type of data collected were: enrollment—97 percent, completions—97 percent, and finance—90 percent. The sample weights were adjusted to account for nonresponse. The sample data were then weighted to national estimates using ratio estimation which uses previous years' data for the universe of institutions.

The Early National Estimates data are subject to both sampling and nonsampling error. While it is difficult to measure nonsampling error, the magnitude of sampling error can be indicated by the confidence interval for an estimate. For this sample at the 95 percent confidence level, total estimates are within 1 to 2 percent of what would have been obtained from a survey of all institutions of higher education.

Questions concerning the Early National Estimates System can be directed to:

Michael P. Cohen
P. Elaine Kroe
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208

Bureau of the Census

Current Population Survey

Estimates of school enrollment, as well as social and economic characteristics of students, are based on data collected in the Census Bureau's monthly survey of about 60,000 households. The monthly Current Population Survey (CPS) sample is of 614 areas comprising 1,113 counties, independent cities, and minor civil divisions throughout the 50 States and the District of Columbia. The sample was initially selected from the 1970 census files and is 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, supplemental questions are asked about the education of all eligible members of the household. The October 1982 survey obtained information about highest grade completed, level of current enrollment, attendance status, number and types of courses, degree or certificate objective, and type of organization offering instruction. Information on enrollment status by grade is gathered each October.

The estimation procedure used for the 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 in the *Current Population Reports*. The data are subject to both nonsampling and sampling errors.

More information is available in the *Current Population Reports*, Series P-20, or by contacting:

Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

School Enrollment. Each October, the Current Population Survey (CPS) includes supplemental questions on the enrollment status of the populations 3 years old and over. The main sources of nonsampling variability in the responses to the supplement are those inherent in the survey instrument. The question concerning educational attainment may be sensitive for some respondents, who may not want to acknowledge the lack of a high school diploma. 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.

Questions concerning the CPS "School Enrollment" survey may be directed to:

Education and Social Stratification Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Other Sources

National Education Association

Estimates of School Statistics

The National Education Association (NEA) reports revenues and expenditure data in its annual publication, *Estimates of School Statistics*. Each year, NEA prepares regression-based estimates of financial and other education statistics and submits them to the States for verification. Generally, about 30 States

adjust these estimates based on their own data. These preliminary data are published by NEA along with revised data from previous years. States are asked to revise previously submitted data as final figures become available. The most recent publication contains all changes reported to the NEA.

Some expenditure projections use revised estimates of financial data prepared by NEA because it was the most current source. Since expenditure data reported to NCES must be certified for use in Department of Education formula grant programs (such as Chapter I of the Education Consolidation and Improvement Act), NCES data are not available as soon as NEA estimates.

Further information on NEA surveys can be obtained from:

National Education Association—Research
1201 16th Street NW
Washington, DC 20036

Data Resources, Inc.

Data Resources, Inc. (DRI) provides an information system that includes more than 125 databases; simulation and planning models; regular publications and special studies; data retrieval and managements systems; and access to experts on economic, financial, industrial, and market activities. One service is the DRI U.S. Annual Model Forecast Data Bank, which contains annual projections of the U.S. economic and financial conditions, including forecasts for the Federal Government, incomes, population, prices and wages, and State and local government, over a long-term (10- to 25-year) forecast period.

Additional information is available from:

Data Resources, Inc.
24 Hartwell Avenue
Lexington, MA 02173

Appendix D

Glossary

Data Terms

Associate degree: A degree granted for the successful completion of a sub-baccalaureate program of studies, usually requiring at least 2 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

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 average daily membership for groups of schools having varying lengths of terms is the average of the average daily memberships obtained for the individual schools.

Bachelor's degree: A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

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.

Class size: The membership of a class at a given date.

Cohort: A group of individuals that have a statistical factor in common, for example, year of birth.

College: A postsecondary school which offers general or liberal arts education, usually leading to an associate, 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 excluding capital outlay and interest on school debt. 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: Current expenditures for the regular school term divided by the average daily attendance of full-time pupils (or full-time equivalency of pupils) during the term. See also current expenditures and average daily attendance.

Current-fund expenditures (higher education): Money spent to meet current operating costs, including salaries, wages, utilities, student services, auxiliary enterprises, hospitals, and independent operations. Excludes loans, capital expenditures, and investments.

Current Population Survey: See Data Sources.

Disposable personal 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: An earned degree carrying the title of doctor. The Doctor of Philosophy degree (Ph.D.) is the highest academic degree and requires mastery within a field of knowledge and demonstrated ability to perform scholarly research. Other doctorates are awarded for fulfilling specialized requirements in

professional fields, such as education (Ed.D.) musical arts (D.M.A.), business administration (D.B.A.), and engineering (D.Eng. or D.E.S.). Many doctor's degrees in both academic and professional fields require an earned master's degree as a prerequisite. First-professional degrees, such as M.D. and D.D.S., are not included under this heading.

Educational and general expenditures: The sum of current funds expenditures on instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, and awards from restricted and unrestricted funds.

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.

Elementary/secondary school: As reported in this publication, includes only regular school, i.e., schools that are part of State and local school systems, and also most not-for-profit private elementary/secondary schools, both religiously affiliated and nonsectarian. Schools not reported include subcollegiate departments of institutions of higher education, residential schools for exceptional children, Federal schools for American Indians, and Federal schools on military posts and other Federal installations.

Enrollment: The number of students registered in a given school unit at a given time, generally in the fall of a year.

Expenditures: Charges incurred, whether paid or unpaid, which are presumed to benefit the current fiscal year. For elementary/secondary schools, these include all charges for current outlays plus capital outlays and interest on school debt. For institutions of higher education, 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, extension of credit, or as agency transaction. 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 among the governments.

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.

First-professional degree: A degree 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. This degree usually is based on a program requiring at least 2 academic years of work before entrance and a total of at least 6 academic years of work to complete the degree program, including both prior-required college work and the professional program itself. By NCES definition, first-professional degrees are awarded in the fields of dentistry (D.D.S or D.M.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Phar.), podiatric medicine (D.P.M.), veterinary medicine (D.V.M.), chiropractic (D.C. or D.C.M.), law (LL.B. or J.D.), and theological professions (M.Div. or M.H.L.).

First-professional enrollment: The number of students enrolled in a professional school or program which requires at least 2 years of academic college work for entrance and a total of at least 6 years for a degree. By NCES definition, first-professional enrollment includes only students in certain programs. (See first-professional degree for a list of programs.)

Full-time enrollment: The number of students enrolled in higher education courses with total credit load equal to at least 75 percent of the normal full-time course load.

Full-time-equivalent (FTE) enrollment: For institutions of higher education, enrollment of full-time students, plus the full-time equivalent of part-time students as reported by institutions. In the absence of an equivalent reported by an institution, the FTE enrollment is estimated by adding one-third of part-time enrollment to full-time enrollment.

Full-time instructional faculty: Those members of the instruction/research staff who are employed full time as defined by the institution, including faculty with released time for research and faculty on sabbatical leave. Full-time counts exclude faculty who are employed to teach less than two semesters, three quarters, two trimesters, or two 4-month sessions; replacements for faculty on sabbatical leave or those on leave without pay; faculty for preclinical and clinical medicine; faculty who are donating their services; faculty who are members of military organizations and paid on a different pay scale from civilian employees; academic officers, whose primary duties are administrative; and graduate students who assist in the instruction of courses.

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.

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. At some institutions, graduate enrollment also includes students who are in postbaccalaureate classes but not in degree programs. In specified tables, graduate enrollment includes all students in regular graduate programs and all students in postbaccalaureate classes but not in degree programs (unclassified postbaccalaureate students).

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate, baccalaureate, or higher degree.

Higher education institutions (traditional classification):

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. In some tables, a further division between universities and other 4-year institutions is made. A "university" is a post-secondary institution which typically comprises one or more graduate professional schools (also see university). For purposes of trend comparisons in this volume, the selection of universities has been held constant for all tabulations after 1982. "Other 4-year institutions" would include the rest of the nonuniversity 4-year institutions.

2-year institution: An institution legally authorized to offer and offering at least a 2-year program of college-level studies which terminates in an associate degree or is principally creditable toward a baccalaureate.

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).

Instructional staff: Full-time-equivalent number of positions, not the number of different individuals occupying the positions during the school year. In local schools it includes all public elementary and secondary (junior and senior high) day-school positions that are in the nature of teaching or the improvement of the teaching-learning situation. Includes consultants or supervisors of instruction, principals, teachers, guidance personnel, librarians, psychological personnel, and other instructional staff. Excludes administrative staff, attendance personnel, clerical personnel, and junior college staff.

Master's degree: A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree. One type of master's degree, including the Master of Arts degree, or M.A., and the Master of Science degree, or M.S., is awarded in the liberal arts and sciences for advanced scholarship in a subject field or discipline and demonstrated ability to perform scholarly research. A second type of master's degree is awarded for the completion of a professionally oriented program; for example, an M.Ed. in education, an M.B.A. in business administration, an M.F.A. in fine arts, an M.M. in music, an M.S.W. in social work, and an M.P.A. in public administration. A third type of master's degree is awarded in professional fields for study beyond the first-professional degree, for example, the Master of Laws (LL.M.) and Master of Science in various medical specializations.

Newly qualified teacher: Persons who (1) first became eligible for a teaching license during the period of the study referenced or who were teaching at the time of survey but were not certified or eligible for a teaching license and (2) had never held full-time, regular teaching positions (as opposed to substitute) before completing the requirements for the degree that brought them into the survey.

Part-time enrollment: The number of students enrolled in higher education courses with a total credit load less the 75 percent of the normal full-time credit load.

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, etc., but excludes transfers among persons.

Postbaccalaureate enrollment: The number of graduate and first-professional students working towards advanced degrees and of students enrolled in grad-

uate-level classes but not enrolled in degree programs. See also graduate enrollment and first-professional enrollment.

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, which is usually supported primarily by other than public funds, and the operation of whose program rests with other than publicly elected or appointed officials.

Property tax: The sum of money collected from a tax levied against the value of property.

Proprietary institution: An educational institution that is under private control but whose profits derive from revenues subject to taxation.

Public school or institution: A school or institution controlled and operated by publicly elected or appointed officials and 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.

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, and nonroutine sale of property.

Revenues 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.

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 instructionprovided 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 comprising any span of grades beginning with the next grade following an 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.

Student: An individual for whom instruction is provided in an educational program under the jurisdiction of a school, school system, or other education institution. No distinction is made between the terms "student" and "pupil," though "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 television, radio, telephone, and correspondence.

Tax base: The collective value of objects, assets, and income components against which a tax is levied.

Total expenditure per pupil in average daily attendance: Includes all expenditures allocable to per pupil costs divided by average daily attendance. These allocable expenditures include current expenditures for regular school programs, interest on school debt, and capital outlay. Beginning in 1980–81, expenditures for State administration are excluded and expenditures for other programs (summer schools, community colleges, and private schools) are included.

Unclassified students: Students who are not candidates for a degree or other formal award, although they are taking higher education courses for credit in regular classes with other students.

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 degree.

Statistical Terms

Auto-Correlation: When the error terms from different observations of the same variable are correlated. Also called serial correlation.

Confidence Interval: A group of continuous or discrete statistics used to estimate a parameter and that tends to include the true value of the parameter a predetermined proportion of the time if the process of finding the group of values is repeated a number of times. Let (t_1, t_2) be the 95 percent confidence interval for the parameter b_1, then upon repeated calculation of t_1 and t_2 (using different samples), the interval (t_1, t_2) will contain b_1 95 percent of the time.

Confidence limits: The values t_1 and t_2 which form the upper and lower limits of the confidence interval.

Degrees of Freedom: The number of free or linearly independent sample observations used in the calculation of a statistic.

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, $x_1, x_2, \ldots$, plus a stochastic term, the y is known as the "dependent variable."

Double Exponential Smoothing: A method that takes a single smoothed average component of demand and smooths it a second time so as 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 which 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.

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 which 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.

Exogenous Variable: Variables for which the values are determined outside the model but which influence the model.

Exponential Smoothing: A method used in time series 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.

Ex-Ante Forecast: The forecasting of unknown values.

Ex-Post Forecast: The forecasting of known values.

First-Order Serial Correlation: When errors in one time period are correlated directly with errors in the ensuing time period. Also called auto-correlation.

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 which 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.

Forecast Horizon: The number of time periods into the future which are forecasted. Forecasts for next year are said to have a 1-year forecast horizon.

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.

Independent Variable: In regression analysis, when a random variable, y, is expressed as a function of variables, $x_1, x_2, \ldots$, plus a stochastic term, the x's are known as "independent variables."

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.

Maximum Likelihood Estimation: A method of estimating a parameter or parameters of a population by that value (or values) which maximizes (or maximize) the likelihood of a sample.

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 it, to predict it, and to control it.

Ordinary Least Squares (OLS): The estimator which minimizes the sum of squared residuals.

Parameter: An arbitrary constant whose value characterizes a member of a system. A quantity that describes a statistical population.

Projection: In relation to a time series, an estimate of future values based on a current trend.

R^2: The coefficient of determination; the square of the correlation coefficient between the dependent variable and its OLS estimate.

$\bar{R}^2$ (also called the adjusted R^2): The coefficient of determination adjusted for the degrees of freedom.

Regression Analysis: Regression analysis is a statistical technique for investigating and modeling the relationship between variables.

Rho: A measure of the correlation coefficient between errors in time period t and time period $t - 1$.

Serial Correlation: When the error terms from different observations are correlated. 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.

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 where data for one variable are examined for patterns of trend, seasonality, and cycle.

Variable: A quantity that may assume any one of a set of values.

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