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ABSTRACT

Projections of key education statistics are provided for a 5-year period to 1993, for public elementary and secondary schools at the state level. The report is designed to provide state-level projections developed with a consistent methodology based on: several statistical models of persistence in education; data from the National Center for Education Statistics for enrollment, graduates, and teachers; and estimates and projections of population from the U.S. Department of Commerce, Bureau of the Census. Appended are state projection methodologies, tables of standard errors of projections, data sources, and a glossary. (SI)

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State Projections to 1993

for Public Elementary and Secondary Enrollment, Graduates, and Teachers

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"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations"—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

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Foreword

The National Center for Education Statistics (NCES) has developed and published *Projections of Education Statistics* since 1964. This series of reports includes projections of enrollment, graduates, instructional staff, and expenditures in elementary and secondary schools and institutions of higher education at the national level. *State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers* is the first comprehensive publication prepared by NCES that provides projections of key education statistics for public elementary and secondary schools at the State level. The report presents 5 years of projections for enrollment, graduates, and teachers in public elementary and secondary schools. It extends the coverage and time period of the enrollment projections shown in *Targeted Forecast*, "State Enrollment in Public Elementary and Secondary Schools" (September 1987).

This report is designed to provide researchers, policy analysts, and other users with State-level projections developed with a consistent methodology. It is not intended to supplant detailed projections prepared in individual States.

The methodology section of this report describes models and assumptions used to develop State projections. The projections are based on several statistical models of persistence in education; on data from NCES for enrollment, graduates, and teachers; and on estimates and projections of population from the U.S. Department of Commerce, Bureau of the Census.

We hope our users find this publication helpful. We invite your comments and suggestions.

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

Acknowledgments

State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers was prepared by the National Center for Education Statistics in the Crosscutting Education Statistics and Analysis Division under the direction of Jeanne E. Griffith, Acting Director, and Thomas D. Snyder, Branch Chief.

The report was prepared by Debra E. Gerald, Paul J. Horn, Thomas D. Snyder, and William C. Sonnenberg of the Compilations, Projections, and Special Studies Branch. Debra E. Gerald developed the enrollment and high school graduate projections. Paul J. Horn developed the teacher projections and produced standard errors of all the projections. Thomas D. Snyder prepared the discussions. William C. Sonnenberg refined the State models developed by Samuel F. Barbette of NCES in 1984 and produced the mean absolute percentage errors (MAPEs) of the projections. Celestine Davis typed portions of the manuscript.

Valuable assistance was provided by the following reviewers: Ramsay Selden, Council of Chief State School Officers; Signe Wetrogan, U.S. Department of Commerce, Bureau of the Census; and Robert Burton, Charles Cowan, Mary Papageorgiou, John Sietsema, and Walter West, National Center for Education Statistics, U.S. Department of Education.

Editing and preparation of the manuscript were managed by Margery Martin of Information Services (IS). This publication was designed by Philip Carr, also of IS.

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Executive Summary

Public elementary and secondary school enrollment (kindergarten through grade 12) is expected to rise steadily between fall 1988 and fall 1993, but these increases will vary widely across the Nation. Enrollment will increase most rapidly in the Western States, where total enrollment is expected to rise 12 percent. Enrollment in the Southern region is projected to rise 6 percent. The Midwestern and Northeastern regions are expected to have smaller increases of 2 and 3 percent, respectively. Most of the rise will occur at the elementary level.

Public school enrollment in kindergarten through grade 8 is expected to grow more than 1 percent annually between fall 1988 and fall 1993, resulting in an increase of about 8 percent for the entire period. All of the regions of the country are expected to show increases, ranging from 13 percent in the Western region to about 3 percent in the Midwestern region. The South is projected to grow by about 8 percent, and the Northeast by 7 percent. Enrollment increases are expected for most States; only 5 States are expected to have significant elementary enrollment decreases between 1988 and 1993.

During the 1988 to 1990 time period, high school enrollment (grades 9 through 12) is expected to show sizeable declines and then begin stabilizing between 1991 and 1993. This reflects the changes in the high school age group that will occur during the late 1980s and early 1990s, rather than shifts in graduation rates.

During the early 1990s, the high school enrollment decreases of the 1980s are expected to reverse as larger numbers of students enter the high school grades, but changes in the regions of the country are expected to differ. High school enrollment in the Northeast is expected to fall by about 5 percent between 1988 and 1993, while the West rises by about 10 percent. Sizeable declines in high school enrollment have been projected for the South and Midwest between 1989 and 1990, but enrollment is expected to begin rising in the early 1990s.

The declines in high school enrollment during the 1980s will cause a corresponding decline in the number of high school graduates. The annual number of high school graduates is expected to decrease 10 percent between 1987–88 and 1992–93. This decrease will be reflected in many States, with 37 States and the District of Columbia showing decreases. Only Utah is projected to have an increase in high school graduates. Each region of the country, except the West, is expected to reflect this widespread decline in the number of high school graduates.

The rise in public school enrollment and the historical trend in declining pupil/teacher ratios is expected to result in an increase in the number of school teachers. The number of teachers in the United States is projected to rise by 155,000 or 7 percent between fall 1988 and fall 1993.

Introduction

This report provides a consistent set of projections of public elementary and secondary school enrollment, high school graduates, and classroom teachers, by State, in a single volume for policy makers involved in educational planning. While most States are engaged in some projection activity, their projections are based on different models and variables. This report presents a uniform set of projections using similar methodologies for the 50 States and the District of Columbia. This facilitates State to State comparisons. The projections are further adjusted to agree with the national projections of public school enrollment, high school graduates, and classroom teachers developed by the National Center for Education Statistics.

This report includes a review of other reports on State projections. In Chapter 1, projections are presented for enrollments in kindergarten through grade 12 , kindergarten through grade 8, and grades 9 through 12 in public schools. Chapter 2 contains projections of the number of public high school graduates. Chapter 3 presents projections of the number of public classroom teachers. Each comparison cited in the chapters is significant at the .01 level as determined by a z-test. The .01 level of significance was chosen because it is one of the approaches used to ensure a relatively high level of accuracy when large numbers of statistical comparisons are made. Appendix A describes the State projection methodologies. Tables of the standard errors of the projections are shown in appendix B. Data sources are shown in appendix C. Appendix D is a glossary of terms.

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. Although alternative State projections were not developed for the public school enrollment, high school graduates, and classroom teachers by State, standard errors were calculated to determine the significance of percent changes in the projections of these statistics. In addition, mean absolute percentage errors (MAPEs) were calculated to measure the accuracy of past projections of public school enrollment and high school graduates.

Other Reports on State Projections

In the past, the Western Interstate Commission on Higher Education (WICHE), National Center for Education Statistics (NCES), and Educational Research Service (ERS) have produced reports on State projections of enrollment and high school graduates in public schools. These reports were limited in scope and covered only one education statistic. Also, many State education agencies develop projections of selected education statistics. But a consistent set of projections for all of the States and the District of Columbia was not available in one source.

In 1979, WICHE published *High School Graduates: Projections for the Fifty States*. The projection technique used was the grade retention method. WICHE published a second report in 1984, *High School Graduates: Projections for the Fifty States (1982–2000)*, using a similar methodology. Again, in 1988, WICHE published a third report of long-term projections of high school graduates. This recent publication, *High School Graduates: Projections by State, 1986 to 2004*, projects graduates to the year 2004 and refines the methodology used in the 1984 edition.

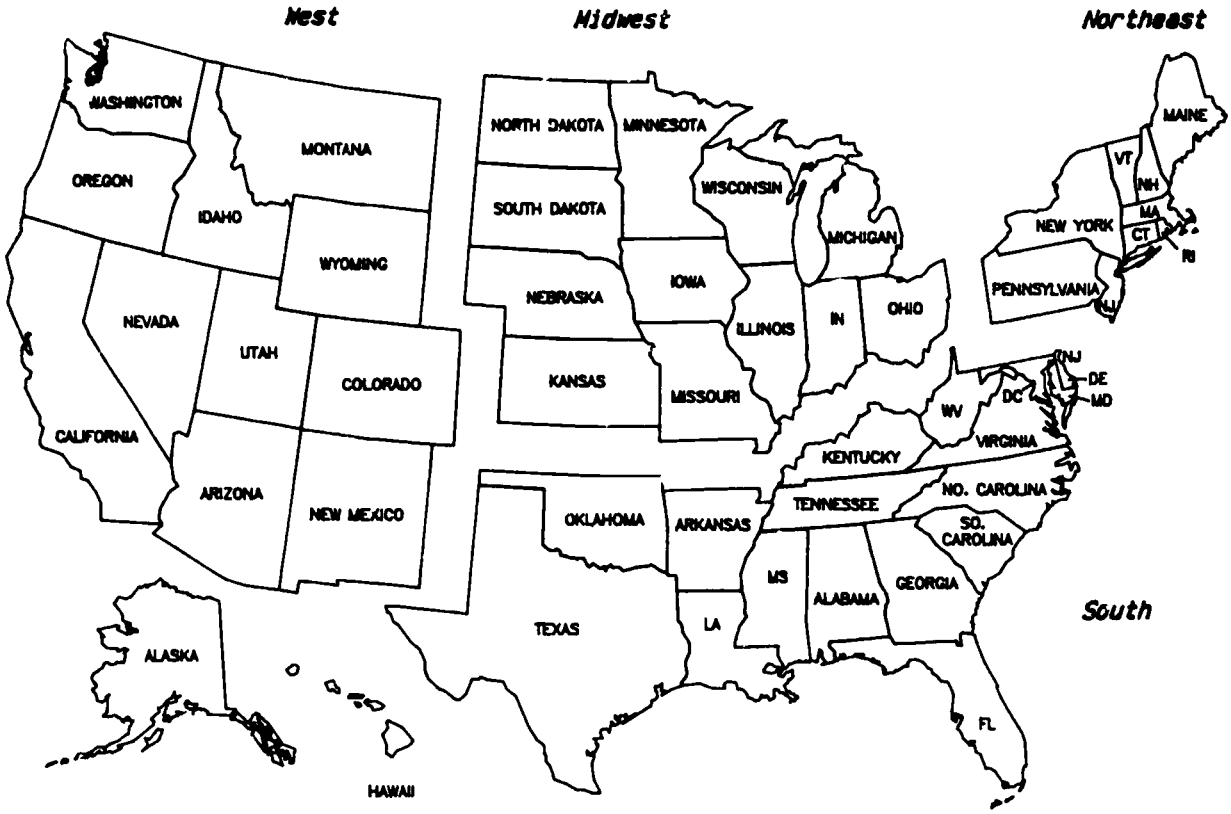
In 1982, a related report, *Cohort Projections of School-Age Populations for States and Regions: 1985 to 2000*, was done by the MIT/Harvard Joint Center for Urban Studies. The report contained projections of populations, by State, for single years of age. This study was initiated by the School Finance Project at the former National Institute of Education, now a part of the Office of Educational Research and Improvement, U.S. Department of Education.

In 1987, NCES conducted a literature search to identify States that project elementary and secondary enrollment and the number of high school graduates and to locate reports that describe the various methodologies used by the States. Thirty-five States plus the District of Columbia, Puerto Rico, and the Virgin Islands responded to the inquiry. Of the 35 States, 13 did not provide any projections.

Twenty-five of the States prepared projections of public elementary and secondary enrollment and 10 prepared projections of public high school graduates. Information on the various projection methodologies was not obtained. Classroom teachers were not included in the inquiry. The study concluded that there was no complete set of information available on State projections. NCES responded to this finding by publishing *Targeted Forecast*, "State Enrollment in Public Elementary and Secondary Schools" in September 1987. This bulletin contained a 1-year-out forecast for each State and the District of Columbia. These forecasts were primarily based on a grade retention method.

Also in 1987, the Educational Research Service in its *ERS Report—Indicators of Future School Enrollment* projected the number of high school graduates for 1995 and 2000. Their model used the ratio of graduates to the number of births 18 years earlier.

Map of the United States, by region



Chapter 1—Public Elementary and Secondary Enrollment

Public elementary and secondary school enrollment is expected to increase between fall 1988 and fall 1993 (figure 1A and table 1). The increase is not expected to be significant in 1989, but growth rates are expected to accelerate to slightly more than 1 percent annually in the early 1990s. These increases will not be equally distributed among the different regions of the country.

Enrollment will increase most rapidly in Western States, where total enrollment is expected to rise 12 percent between fall 1988 and fall 1993, about double the national average of 6 percent (figure 1B and table 2). Enrollment in the Southern region is expected to increase about 6 percent, which is about the same as the national average. Increases of 3 percent for the Northeast and 2 percent for the Midwest are expected.[1]

Many States in the Western region are expected to have relatively large increases in enrollment. Overall, enrollment in the Western States is expected to rise by about 1 million students between fall 1988 and fall 1993. This projected increase of 12 percent follows the 10 percent increase that occurred between 1983 and 1988. Much of this increase will be in California, which will strongly affect the region's trend because of its size (figure 2). Enrollment in California is expected to rise about 650,000 or 14 percent between 1988 and 1993. Large percentage increases are also expected in Arizona, Nevada, and New Mexico. Although sizable enrollment increases are expected in other parts of the region, stable enrollment is expected in Idaho, Montana, Oregon, and Wyoming.

Enrollment increases are projected for many of the Southern States between fall 1988 and fall 1993. This will continue the general pattern of increases in the region during the 1983 to 1988 period. Overall, enrollment is expected to climb about 6 percent or by 806,000 students in the region, but significant contrasts among the States will be noticeable. The projected enrollment changes vary from an increase of 13 percent for Florida to a decrease of 10 percent in West Virginia. Enrollment increases above the National average are anticipated for Delaware, Florida, Georgia, Maryland, Texas, and Virginia. Relatively large enrollment declines have been projected for Arkansas, Kentucky, and West Virginia.

Public school enrollment in the Northeastern region has been declining in recent years. Enrollment fell about 4 percent between 1983 and 1988, but the situation is expected to reverse in the early 1990s. By 1993, a total of about 7.4 million students is anticipated for the region, about 3 percent more than in 1988. Five of the States in the Northeast region are expected to have higher enrollment in 1993 than in 1988, while the other four States are not expected to have significant changes. A particularly large increase of about 17 percent is expected for New Hampshire.

Forecasts of enrollment in the Midwestern region show a pattern similar to that of the Northeastern region. Between 1983 and 1988, enrollment in the Midwest declined by about 2 percent, but that trend is expected to stablize between 1988 and 1990, with small increases in enrollment expected for the early 1990s. Projections for the Midwestern States indicate more moderate changes than in the other regions. The largest increase projected in the region is for Minnesota (6 percent) and the only significant decline is for Iowa (4 percent). In contrast, enrollment in States in the South and West has been increasing since 1983 and is expected to continue through 1993.

Elementary Enrollment

Between fall 1988 and fall 1993, public elementary school enrollment in kindergarten through grade 8 (K–8)[2] is expected to grow at an average rate of more than 1 percent per year, resulting in an increase of about 8 percent for the entire period (figure 3A and tables 3 and 4). Increases in elementary enrollment are expected to occur in most States across the Nation. Only 5 States (Kentucky, Iowa, Montana, North Dakota, and West Virginia) are expected to have decreases between 1988 and 1993 and 13 show no significant change. All of the regions of the country are expected to show increases (figure 3B), ranging from 13 percent in the Western region to

about 3 percent in the Midwestern region. The South is projected to grow about 8 percent and the Northeast by 7 percent.

These expected increases in elementary enrollment are a reflection of immigration and the rising number of births beginning in 1977, rather than changes in the attendance rates of young children. The NCES projections do not account for enrollment increases that may be caused by changing State and local policies about the provision of prekindergarten and kindergarten programs. Expansion of these programs would lead to higher enrollment at the elementary school level.

Elementary enrollment (K–8) in Western States is expected to rise between 1988 and 1993 (figure 4). This 13 percent growth forecast for 1988 to 1993 is almost the same rate (14 percent) that was experienced between 1983 and 1988. Enrollment is projected to increase by an average of about 2 percent a year between 1988 and 1993. This amounts to an increase of about 781,000 students, about two-thirds of which will be in California. Particularly large enrollment increases are anticipated for Arizona (25 percent), Nevada (17 percent), New Mexico (18 percent), and California (15 percent). In contrast to the rest of the region, significant enrollment decreases are anticipated for Montana (figure 4).

A relatively large increase of about 207,000 is expected for the Southern region between 1989 and 1990. Enrollment across the Southern States is expected to rise at a slower pace than the Western States—8 percent between 1988 and 1993. This rate of growth is only slightly faster than that experienced during the 1983 to 1988 period (6 percent). Between 1988 and 1993, the largest increases are expected in Florida (21 percent), Maryland (17 percent), Virginia (12 percent), Georgia (12 percent), and Delaware (11 percent). Declines have been projected for West Virginia and Kentucky.

Elementary enrollment is expected to show an increase of 7 percent in the Northeastern region. This is a significant shift from the enrollment drops that occurred in this region during the 1970s and early 1980s. Increases in elementary enrollment in the Northeastern States are about the same as those in the Southern region, in contrast to enrollment trends at the combined elementary and secondary level. NCES has projected an enrollment increase for the States in the Northeastern region ranging from 22 percent for New Hampshire to 4 percent for New York. This strong elementary enrollment projection for the region presages a period of relatively high levels of public school enrollment through the late 1990s.

A more modest increase in elementary enrollment has been projected for the Midwestern region. Between 1983 and 1988, enrollment in the Midwest rose by about 1 percent. This growth is expected to accelerate and result in an increase of 221,000 or 3 percent between 1988 and 1993. Large increases have been projected for Minnesota (9 percent) and Missouri (6 percent). Elementary enrollment is expected to decline slightly in Iowa and North Dakota.

High School Enrollment

Between fall 1988 and fall 1993, enrollment in public high schools (grades 9 through 12) is expected to decline and then begin stabilizing in the early 1990s (figure 5A and tables 5 and 6). By fall 1993, high school enrollment is expected to reach about the same level as in 1988. However, the forecast through 1993 shows continuing enrollment declines for public high school enrollment in the Northeastern region (figure 5B) and enrollment increases for the West. The shifts for the Midwest and Southern regions mirror the National pattern of declining enrollment in the late 1980s and then stabilizing by 1993. This period of stabilization in the early 1990s represents a significant shift in public high school enrollment. From 1983 to to 1988, high school enrollment dropped about 4 percent because of declines in the 14- to 17-year-old population. This projected reversal reflects a similar shift in elementary enrollment that occurred during the mid-1980s. National projections prepared by NCES suggest that high school enrollment will continue to increase during the mid- to late 1990s.

Despite relatively small changes in high school enrollment across most States over the projection period, the Western region's high school enrollment is expected to rise about 10 percent or 241,000 between 1988 and 1993. Most of the increase is expected to occur during the early 1990s. This marks a significant increase over the 2 percent growth that occurred between 1983 and 1988. Particularly large increases have been projected for Utah (34 percent),

New Mexico (25 percent), Wyoming (17 percent), and Arizona (15 percent) (figure 6). No significant changes have been projected for Idaho, Montana, and Nevada. Oregon and Washington are the only States in the region for which a decline has been projected. However, the declines in Oregon and Washington are expected to occur between 1988 and 1990, and enrollment is expected to rise in the early 1990s reaching a level slightly below the 1988 enrollment.

No significant change has been projected for the Southern States between fall 1988 and 1993. However, NCES anticipates a decline between fall 1988 and 1990 and an increase during the later portion of the projection period. By 1993, Georgia, Louisiana, Oklahoma, and Texas are expected to show increases compared to 1988. Arkansas, Florida, Kentucky, North Carolina, Tennessee, and West Virginia are expected to have declines in high school enrollment.

The Midwestern region is not expected to show a change in high school enrollment between 1988 and 1993. However, the forecast shows a decline of 5 percent between 1988 and 1990, followed by an increase through 1993, bringing enrollment up to the 1988 level. Although no changes are expected for the region as a whole, Illinois, Missouri, North Dakota, and South Dakota are expected to have enrollment increases.

Between 1983 and 1988, high school enrollment in the Northeast declined by 11 percent and further declines are anticipated for the late 1980s. This pattern of decline is expected to stop in the early 1990s, resulting in a decline of 5 percent over the entire fall 1988 to fall 1993 time period. However, most of this drop is expected to occur in the early part of the projection period with enrollment stabilizing during the early 1990s. Forecasts of State changes range from a decrease of 14 percent in Vermont to an increase of 6 percent in New Hampshire. Large decreases are also expected for Massachusetts, Maine, and Pennsylvania.

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[1] All increases and decreases in this report refer to statistically significant changes.

[2] Includes a relatively small number of prekindergarten students.

Figure 1A.—Enrollment in grades K-12 in public schools, with projections: Fall 1983 to fall 1993

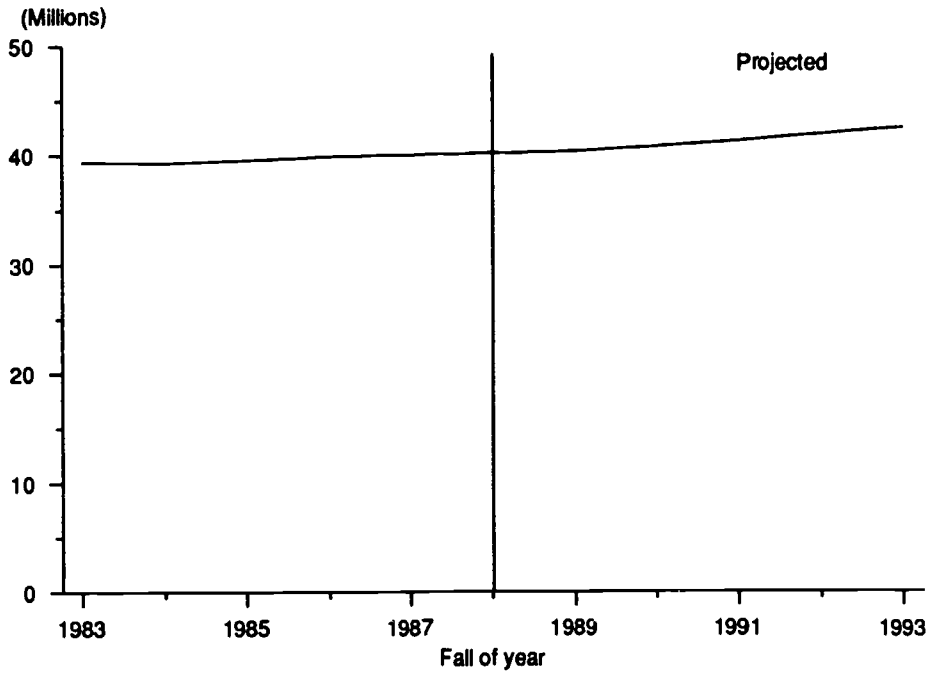
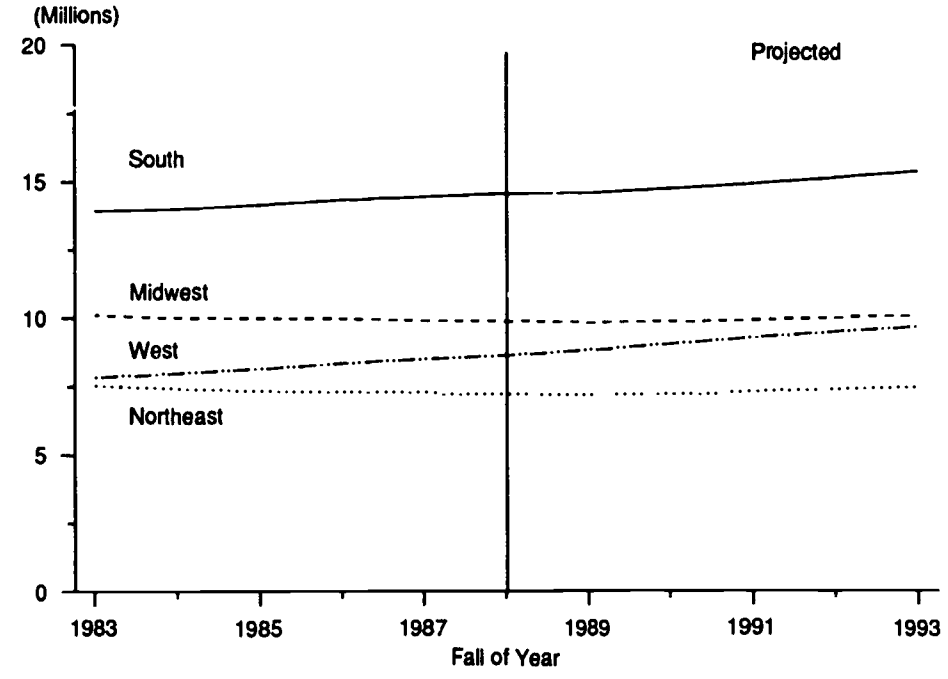
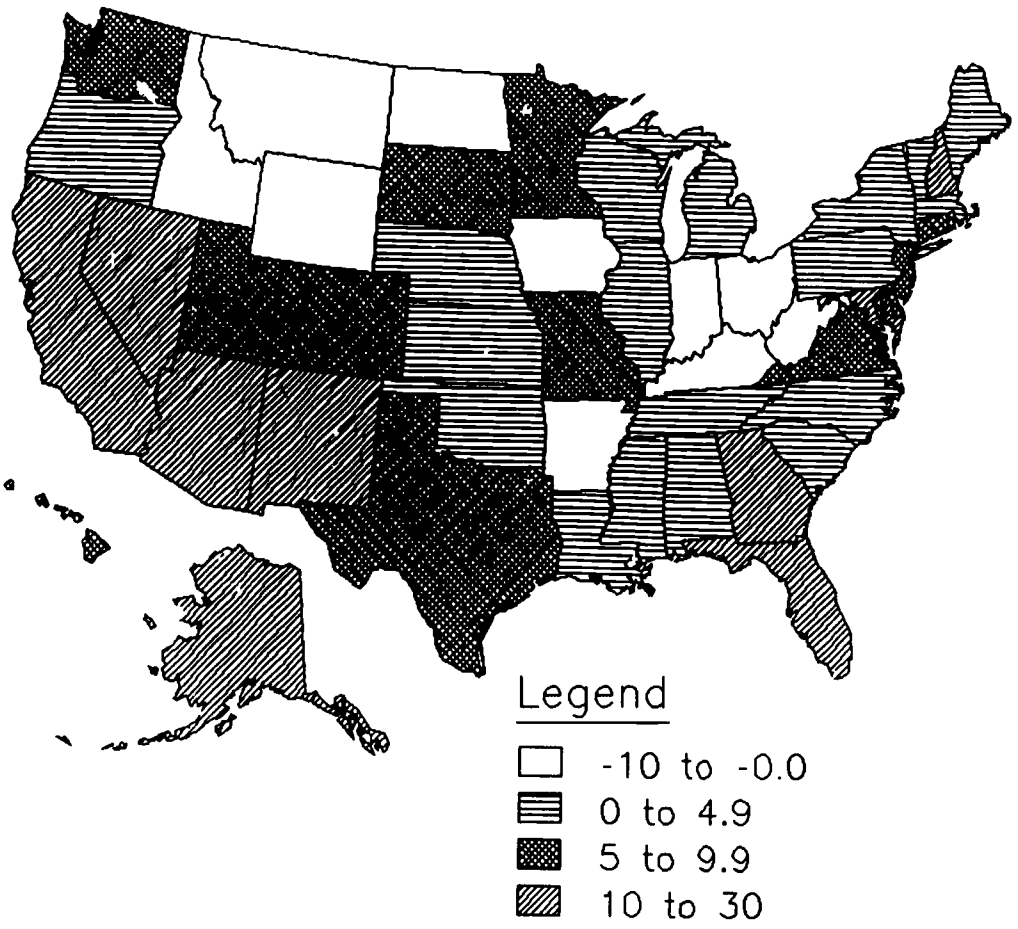


Figure 1B.—Enrollment in grades K-12 in public schools, by region, with projections: Fall 1983 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988-89."

Figure 2.— Percent change in grades K–12 enrollment in public schools, by State: Fall 1988 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988–89."

Figure 3A.—Enrollment in grades K–8 in public schools, with projections: Fall 1983 to fall 1993

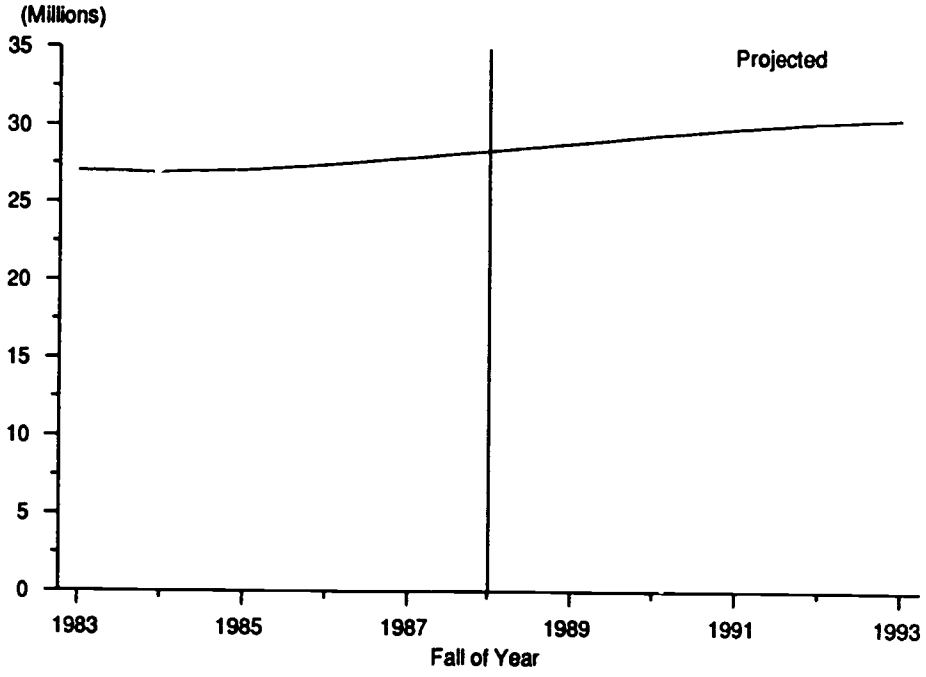
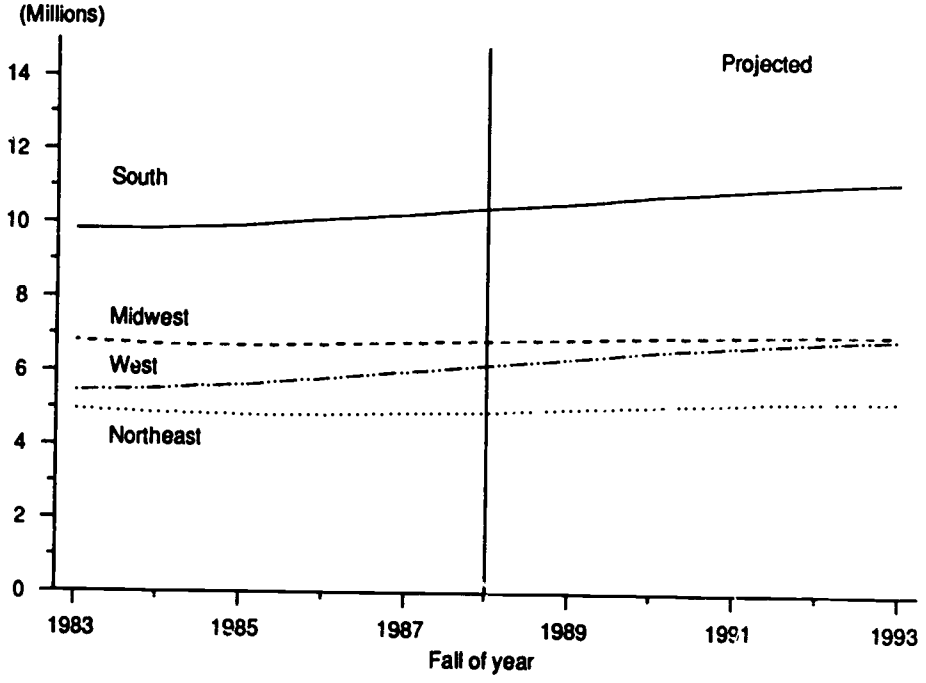
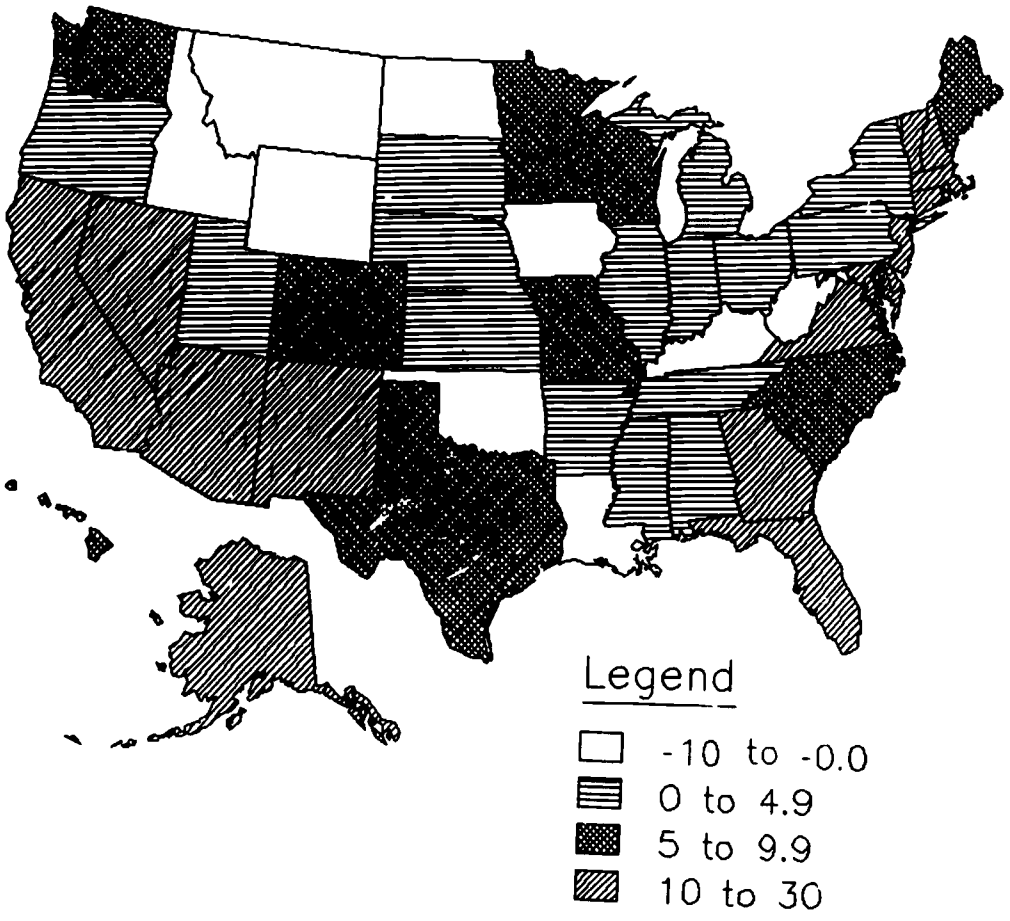


Figure 3B.—Enrollment in grades K–8 in public schools, by region, with projections: Fall 1983 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey, and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988–89."

Figure 4.— Percent change in grades K–8 enrollment in public schools, by State: Fall 1988 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988–89."

Figure 5A.—Enrollment in grades 9–12 in public schools, with projections: Fall 1983 to fall 1993

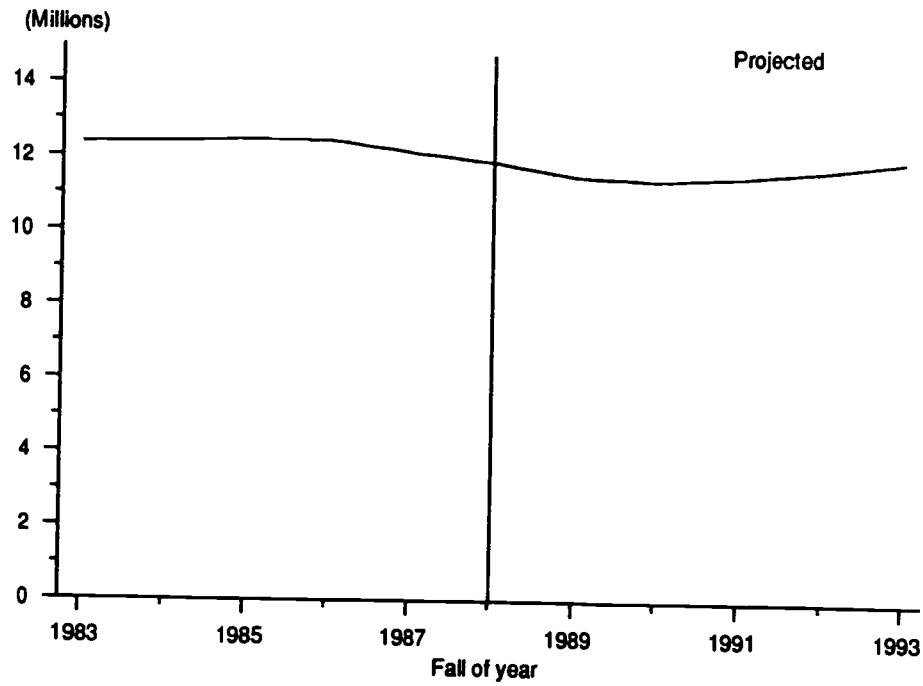
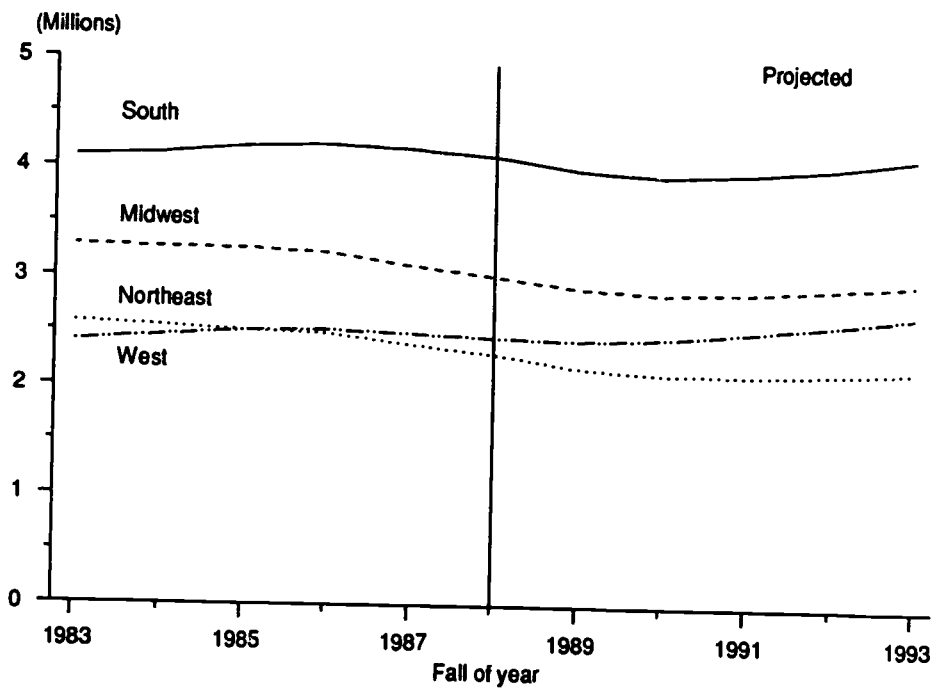
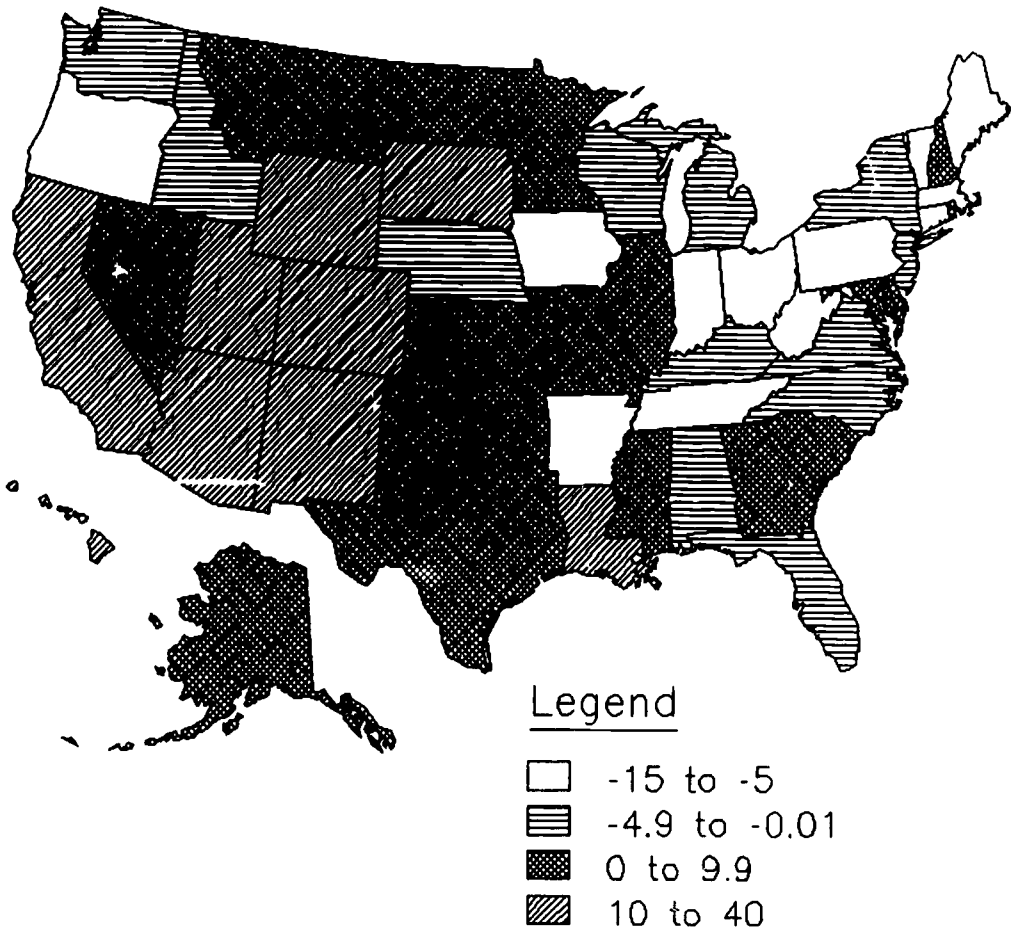


Figure 5B.—Enrollment in grades 9–12 in public schools, by region, with projections: Fall 1983 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988-89."

Figure 6.— Percent change in grades 9–12 enrollment in public schools, by State: Fall 1988 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988–89."

Table 1.—Enrollment in grades K–12 in public elementary and secondary schools, by region and State, with projections: Fall 1983 to fall 1993

(In thousands)

Region and State	Actual					Estimate	Projected				
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
United States	**39,352**	**39,295**	**39,509**	**39,875**	**40,024**	**40,196**	**40,323**	**40,772**	**41,306**	**41,883**	**42,455**
Northeast	7,512	7,395	7,318	7,294	7,251	7,202	7,176	7,218	7,291	7,361	7,437
Connecticut	478	468	462	469	465	463	465	471	478	484	491
Maine	210	208	206	212	212	211	210	210	212	214	217
Massachusetts	879	859	844	834	825	817	814	820	831	841	853
New Hampshire	159	159	161	164	166	166	171	175	181	188	194
New Jersey	1,148	1,129	1,116	1,107	1,093	1,081	1,085	1,099	1,119	1,142	1,167
New York	2,675	2,646	2,621	2,608	2,594	2,580	2,558	2,569	2,588	2,598	2,610
Pennsylvania	1,738	1,702	1,683	1,674	1,669	1,655	1,646	1,645	1,649	1,657	1,664
Rhode Island	136	134	133	134	134	134	135	136	138	140	142
Vermont	90	90	90	92	93	96	93	94	95	97	99
Midwest	10,086	9,976	9,949	9,956	9,887	9,848	9,804	9,829	9,881	9,969	10,043
Illinois	1,853	1,834	1,826	1,825	1,811	1,788	1,805	1,811	1,822	1,838	1,853
Indiana	984	973	966	967	964	964	950	947	946	951	954
Iowa	497	491	485	481	481	477	464	459	457	457	457
Kansas	405	405	410	416	421	426	425	429	432	438	441
Michigan	1,736	1,697	1,690	1,682	1,606	1,590	1,573	1,578	1,588	1,604	1,621
Minnesota	705	702	705	711	721	724	725	735	747	760	771
Missouri	795	794	795	801	802	807	811	818	827	839	849
Nebraska	267	266	266	267	268	269	266	266	267	269	271
North Dakota	117	119	119	119	119	118	118	118	118	118	118
Ohio	1,827	1,805	1,794	1,794	1,793	1,782	1,769	1,765	1,767	1,774	1,779
South Dakota	123	123	124	125	127	127	128	129	130	132	133
Wisconsin	775	768	768	768	772	775	769	775	781	790	796
South	13,914	13,963	14,117	14,312	14,419	14,528	14,552	14,713	14,897	15,109	15,334
Alabama	722	713	730	734	729	730	723	725	728	734	742
Arkansas	432	433	433	437	437	456	433	433	434	437	440
Delaware	91	92	93	94	96	97	98	100	102	104	106
District of Columbia	89	87	87	86	86	89	86	86	86	84	83
Florida	1,496	1,524	1,562	1,607	1,665	1,729	1,744	1,796	1,851	1,902	1,954
Georgia	1,051	1,062	1,080	1,096	1,111	1,111	1,132	1,156	1,179	1,205	1,233
Kentucky	647	644	644	643	643	638	626	619	615	616	617
Louisiana	800	801	788	795	793	791	797	800	802	806	808
Maryland	683	674	672	676	684	689	701	719	739	756	773
Mississippi	468	466	471	499	506	503	504	505	505	510	513
North Carolina	1,090	1,089	1,086	1,085	1,086	1,081	1,077	1,084	1,095	1,109	1,125
Oklahoma	591	590	592	593	584	585	582	582	583	587	591
South Carolina	605	603	607	612	615	616	617	621	626	632	640
Tennessee	822	817	814	818	824	820	815	814	815	819	823
Texas	2,990	3,040	3,132	3,210	3,237	3,269	3,302	3,352	3,402	3,456	3,514
Virginia	966	965	968	975	979	988	988	1,005	1,025	1,045	1,068
West Virginia	371	363	358	352	344	336	325	317	309	306	304
West	7,839	7,961	8,124	8,314	8,468	8,619	8,791	9,011	9,237	9,445	9,641
Alaska	98	105	107	108	106	104	104	108	111	113	116
Arizona	507	530	548	573	572	577	608	631	657	682	705
California	4,089	4,151	4,256	4,378	4,489	4,611	4,731	4,878	5,023	5,147	5,261
Colorado	542	545	551	558	560	560	570	579	590	601	613
Hawaii	162	164	164	165	166	167	170	174	179	180	182
Idaho	206	208	209	208	212	215	211	211	210	211	212
Montana	154	154	154	153	152	152	150	149	149	149	149
Nevada	150	152	155	161	168	176	179	185	191	196	201
New Mexico	270	272	278	282	287	281	299	307	315	325	336
Oregon	447	447	448	449	456	462	450	452	456	462	467
Utah	378	390	403	416	423	426	435	441	446	457	467
Washington	736	741	750	761	776	790	788	800	814	825	835
Wyoming	99	101	103	101	98	98	96	96	96	97	97

NOTE: Includes most kindergarten and some nursery school enrollment.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey and *Early Estimates*: "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89."
(This table was prepared February 1989.)

Table 2.—Percent change in grades K–12 enrollment in public schools, by region and State: Fall 1983 to fall 1993

Region and State	Percent change, 1983 to 1988	Projected percent change from 1988 to:				
		1989	1990	1991	1992	1993
United States	**2.1**	**0.3**	**1.4 S**	**2.8 S**	**4.2 S**	**5.6 S**
Northeast	-4.1	-0.4	0.2	1.2 S	2.2 S	3.3 S
Connecticut	-3.1	0.5	1.7	3.2	4.6 S	6.0 S
Maine	0.8	-0.8	-0.6	0.1	1.4	2.7
Massachusetts	-7.1	-0.4	0.4	1.7	2.9 S	4.4 S
New Hampshire	4.2	3.1	5.7 S	9.5 S	13.3 S	17.2 S
New Jersey	-5.8	0.4	1.6	3.6 S	5.6 S	8.0 S
New York	-3.5	-0.9	-0.4	0.3	0.7	1.2
Pennsylvania	-4.8	-0.5	-0.6	-0.3	0.1	0.6
Rhode Island	-1.9	0.9	2.0	3.5 S	4.9 S	6.4 S
Vermont	5.9	-3.0	-2.0	-0.8	1.1	2.9
Midwest	-2.4	-0.4	-0.2	0.3	1.2	2.0 S
Illinois	-3.5	0.9	1.3	1.9	2.8	3.6
Indiana	-2.1	-1.4	-1.7 S	-1.9 S	-1.3	-1.0
Iowa	-4.0	-2.8 S	-3.8 S	-4.4 S	-4.2 S	-4.3 S
Kansas	5.2	-0.3	0.5	1.4	2.6 S	3.5 S
Michigan	-8.4	-1.1	-0.8	-0.1	0.9	1.9
Minnesota	2.7	0.2	1.5	3.1 S	4.9 S	6.5 S
Missouri	1.4	0.6	1.4	2.5 S	4.0 S	5.3 S
Nebraska	0.9	-1.1	-1.1	-0.8	-0.1	0.5
North Dakota	0.8	0.1	-0.2	-0.4	-0.4	-0.5
Ohio	-2.5	-0.8	-1.0	-0.9	-0.5	-0.2
South Dakota	2.8	1.0	1.9	3.1 S	4.3 S	5.3 S
Wisconsin	0.0	-0.7	-0.0	0.8	1.9	2.7
South	4.4	0.2	1.3 S	2.5 S	4.0 S	5.5 S
Alabama	1.1	-1.0	-0.7	-0.3	0.6	1.6
Arkansas	5.5	-5.0 S	-4.9 S	-4.7 S	-4.1 S	-3.4 S
Delaware	5.8	1.5	3.5 S	5.3 S	7.5 S	9.3 S
District of Columbia	-0.4	-2.5	-2.4	-2.8	-4.7	-5.7
Florida	15.6	0.9	3.9 S	7.1 S	10.0 S	13.0 S
Georgia	5.8	1.9	4.0 S	6.1 S	8.5 S	10.9 S
Kentucky	-1.4	-1.9	-2.9 S	-3.6 S	-3.4 S	-3.4 S
Louisiana	-1.1	0.7	1.1	1.4	1.8	2.2
Maryland	0.9	1.7 S	4.2 S	7.2 S	9.6 S	12.1 S
Mississippi	7.6	0.1	0.3	0.4	1.3	2.0
North Carolina	-0.8	-0.4	0.3	1.3	2.6 S	4.0 S
Oklahoma	-1.1	-0.6	-0.6	-0.3	0.3	1.1
South Carolina	1.9	0.2	0.8 S	1.6 S	2.7 S	3.9 S
Tennessee	-0.2	-0.6	-0.8	-0.7	-0.2	0.4
Texas	9.3	1.0	2.6 S	4.1 S	5.7 S	7.5 S
Virginia	2.3	0.0	1.7	3.7 S	5.8 S	8.1 S
West Virginia	-9.5	-3.2 S	-5.7 S	-7.9 S	-8.8 S	-9.6 S
West	9.9	2.0 S	4.5 S	7.2 S	9.6 S	11.9 S
Alaska	6.0	0.1	3.3	6.7	9.0	11.7
Arizona	14.0	5.2	9.4 S	13.8 S	18.0 S	22.2 S
California	12.8	2.6 S	5.8 S	8.9 S	11.6 S	14.1 S
Colorado	3.3	1.7	3.4 S	5.3 S	7.3 S	9.4 S
Hawaii	3.1	1.9	4.3 S	7.0 S	7.6 S	8.8 S
Idaho	4.0	-1.7	-1.8	-2.0	-1.6	-1.3
Montana	-1.1	-1.5	-1.7	-1.6	-1.6	-1.6
Nevada	17.3	1.2	4.6 S	8.0 S	11.0 S	13.7 S
New Mexico	4.1	6.6 S	9.4 S	12.4 S	15.9 S	19.6 S
Oregon	3.3	-2.6	-2.1	-1.2	-0.0	1.1
Utah	12.6	2.2	3.6 S	4.8 S	7.3 S	9.7 S
Washington	7.4	-0.3	1.2	2.9 S	4.4 S	5.6 S
Wyoming	-1.5	-1.4	-1.9	-1.9	-1.1	-0.3

NOTE: Percent changes were calculated using unrounded numbers.
S = Significant at the 99 percent confidence level.
SOURCE: Derived from table 1.

Table 3.—Enrollment in grades K–8 in public schools, by region and State, with projections: Fall 1983 to fall 1993

(In thousands)

Region and State	Actual					Estimate	Projected				
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
United States	**26,997**	**26,918**	**27,049**	**27,439**	**27,886**	**28,333**	**28,818**	**29,373**	**29,803**	**30,189**	**30,473**
Northeast	4,941	4,851	4,817	4,810	4,870	4,903	4,997	5,085	5,162	5,215	5,258
Connecticut	329	323	321	322	326	332	339	348	357	362	367
Maine	146	142	140	144	145	145	148	151	153	155	157
Massachusetts	578	566	559	559	565	568	582	596	609	617	625
New Hampshire	106	106	107	110	114	116	122	127	133	137	142
New Jersey	761	747	740	742	747	759	772	792	812	832	850
New York	1,736	1,712	1,703	1,713	1,736	1,740	1,768	1,788	1,804	1,808	1,810
Pennsylvania	1,131	1,103	1,093	1,065	1,078	1,082	1,101	1,115	1,125	1,131	1,132
Rhode Island	90	89	90	91	93	95	97	99	101	102	103
Vermont	63	63	63	63	65	65	67	69	70	71	72
Midwest	6,799	6,716	6,690	6,732	6,783	6,837	6,893	6,961	6,995	7,043	7,058
Illinois	1,272	1,254	1,246	1,249	1,252	1,288	1,279	1,292	1,299	1,311	1,317
Indiana	670	662	654	654	659	650	660	661	660	663	664
Iowa	333	329	324	324	328	321	324	322	317	315	312
Kansas	282	282	286	292	299	301	307	311	312	314	315
Michigan	1,133	1,108	1,104	1,109	1,086	1,101	1,090	1,105	1,116	1,128	1,134
Minnesota	467	464	468	479	497	498	517	527	535	541	544
Missouri	546	545	544	549	557	566	576	585	590	597	601
Nebraska	186	185	184	185	188	188	190	192	192	193	193
North Dakota	82	84	84	84	84	86	85	85	84	84	83
Ohio	1,240	1,220	1,206	1,208	1,220	1,223	1,235	1,243	1,247	1,252	1,250
South Dakota	86	87	88	89	91	92	94	95	95	95	95
Wisconsin	501	497	501	510	522	522	535	543	546	549	549
South	9,818	9,840	9,925	10,097	10,245	10,418	10,560	10,767	10,926	11,079	11,201
Alabama	511	514	517	519	521	519	523	528	530	535	539
Arkansas	305	305	304	307	307	308	308	310	310	312	313
Delaware	61	62	63	65	67	68	71	73	74	75	76
District of Columbia	63	63	62	62	63	67	65	66	65	64	63
Florida	1,044	1,062	1,086	1,121	1,172	1,196	1,260	1,316	1,368	1,410	1,444
Georgia	738	746	757	778	795	807	826	849	869	889	906
Kentucky	455	451	449	447	449	445	447	443	437	435	433
Louisiana	577	579	573	581	583	599	594	598	598	597	595
Maryland	452	446	446	456	473	487	508	528	546	558	568
Mississippi	328	325	330	356	364	366	370	372	370	371	372
North Carolina	761	755	749	748	754	757	765	779	790	801	811
Oklahoma	421	417	414	417	411	427	422	424	425	426	426
South Carolina	423	422	424	428	432	438	443	449	453	457	460
Tennessee	587	581	575	577	582	576	586	590	591	593	594
Texas	2,155	2,189	2,261	2,317	2,351	2,429	2,433	2,487	2,531	2,573	2,609
Virginia	674	667	665	673	685	698	715	736	755	771	785
West Virginia	263	255	249	244	237	232	225	220	214	211	210
West	5,440	5,510	5,617	5,801	5,988	6,174	6,368	6,559	6,720	6,852	6,955
Alaska	70	75	77	78	77	76	77	80	83	84	86
Arizona	354	373	386	407	413	420	451	472	492	509	524
California	2,814	2,846	2,927	3,046	3,172	3,310	3,428	3,554	3,665	3,750	3,820
Colorado	377	376	379	386	392	410	413	424	433	439	445
Hawaii	110	112	112	113	116	119	121	125	128	128	127
Idaho	148	149	149	150	153	151	153	152	150	149	148
Montana	108	109	108	108	108	109	109	108	108	107	106
Nevada	102	105	107	112	119	123	130	135	139	142	144
New Mexico	192	195	187	191	195	203	208	216	224	231	239
Oregon	307	306	305	309	318	312	319	322	323	325	327
Utah	281	289	299	308	314	322	321	322	320	325	328
Washington	504	502	507	521	541	545	566	579	587	591	592
Wyoming	72	73	74	72	70	74	70	70	70	70	70

NOTE: Includes most kindergarten and some nursery school enrollment.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey and *Early Estimates*: "Key Statistics for Public Elementary and Secondary Education: School Year 1988–89."
(This table was prepared February 1989.)

Table 4.—Percent change in grades K–8 enrollment in public schools, by region and State: Fall 1983 to fall 1993

Region and State	Percent change, 1983 to 1988	Projected percent change from 1988 to:				
		1989	1990	1991	1992	1993
United States	**4.9**	**1.7 S**	**3.7 S**	**5.2 S**	**6.6 S**	**7.6 S**
Northeast	-0.8	1.9 S	3.7 S	5.3 S	6.4 S	7.2 S
Connecticut	0.9	2.3 S	5.1 S	7.6 S	9.2 S	10.7 S
Maine	-0.3	2.0	3.7	5 1 S	6.5 S	7.7 S
Massachusetts	-1.7	2.4	4.8 S	7.1 S	8.6 S	10.0 S
New Hampshire	9.6	4.9 S	9.3 S	13.9 S	18.0 S	21.7 S
New Jersey	-0.3	1.7	4.4 S	7.0 S	9.6 S	12.0 S
New York	0.3	1.6	2 7 S	3.7 S	3.9 S	4.0 S
Pennsylvania	-4.3	1.8	3.1 S	3.9 S	4.5 S	4.7 S
Rhode Island	5.2	2.3	4.6	6.3 S	7.7 S	8.7 S
Vermont	3.0	2.8	4.9 S	6.6 S	8.8 S	10.6 S
Midwest	0.6	0.8	1.8 S	2.3 S	3.0 S	3.2 S
Illinois	1.3	-0.7	0.3	0.9	1.8	2.3
Indiana	-3.0	1.4	1.6	1.5	2.0	2.1
Iowa	-3.6	1.0	0.2	-1.2	-1.7	-2.8 S
Kansas	6.7	2.0	3.1 S	3.5 S	4.3 S	4.6 S
Michigan	-2.8	-1.0	0.4	1.4	2.4	3.0
Minnesota	6.7	3.7 S	5.9 S	7.4 S	8.7 S	9.3S
Missouri	3.7	1.7	3.3 S	4.2 S	5.4 S	6.2 S
Nebraska	1.3	1.0	1.7	1.8	2.4 S	2.5 S
North Dakota	4.1	-0.5	-0.7	-1.4	-2.4 S	-3.7 S
Ohio	-1.4	1.0	1.7 S	2.0 S	2.4 S	2.2 S
South Dakota	6.9	1.9	2.7 S	3.0 S	3 4 S	3.3 S
Wisconsin	4.2	2.6	4.2 S	4.7 S	5.3 S	5.3 S
South	6.1	1.4 S	3.3 S	4.9 S	6.3 S	7.5 S
Alabama	1.7	0.8	1.7	2.1	3.0	3.7
Arkansas	0.9	0.1	0.7	0.8	1.4	1.6
Delaware	11.3	3.8	6.7 S	8.5 S	10.2 S	11.3 S
District of Columbia	5.1	-2.2	-1.4	-1.7	-4.2	-5.9
Florida	14.5	5.3 S	10.1 S	14.4 S	17.9 S	20.7 S
Georgia	9.3	2.4	5.2 S	7.7 S	10.2 S	12.3 S
Kentucky	-2.1	0.3	-0.5	-1.9	-2.2 S	-2.8 S
Louisiana	3.8	-0.8	-0.3	-0.3	-0.3	-0.7
Maryland	7.7	4.5 S	8.6 S	12.2 S	14.6 S	16.7 S
Mississippi	11.7	1.2	1.6	1.1	1.6	1.7
North Carolina	-0.6	1 1	2.9 S	4.4 S	5.8 S	7.2 S
Oklahoma	1.5	-1.2	-0.6	-0.5	-0.3	-0.3
South Carolina	3.6	^	2.5 S	3.3 S	4.3 S	5.0 S
Tennessee	-1.9	1.7	2.4 S	2.6 S	3.0 S	3.1 S
Texas	12.7	0.1	2.4	4.2 S	5.9 S	7.4 S
Virginia	3.6	2.4 S	5.4 S	8.1 S	10.4 S	12.4 S
West Virginia	-12.0	-2.8 S	-5.1 S	-7.7 S	-8.7 S	-9.5 S
West	13.5	3.1 S	6.2 S	8.8 S	11.0 S	12.6 S
Alaska	8.3	1.0	5.3	9.1	10.9	12.6
Arizona	18.5	7.4 S	12.5 S	17.1 S	21.2 S	24.8 S
California	17.6	3.6 S	7.4 S	10.7 S	13.3 S	15.4 S
Colorado	8.9	0.8	3.3 S	5.4 S	7.1 S	8.3 S
Hawaii	7.5	2.3	5.1 S	7.8 S	7.6 S	7.4 S
Idaho	1.6	1.4	0.8	-0.4	-0.9	-1.7
Montana	0.5	-0.2	-0.3	-1.0	-1.8	-2.7 S
Nevada	20.5	5.6	9.7 S	12.9 S	15.3 S	16.8 S
New Mexico	5.9	2.5	6.4	10.1 S	13.9 S	17.5 S
Oregon	1.7	2.3	3.0	3.4	4.2 S	4.6 S
Utah	14.7	-0.2	-0.2	-0.7	1.0	1.9
Washington	8.3	3.9 S	6.2 S	7.6 S	8.5 S	8.6 S
Wyoming	2.8	-5.2	-5.5	-6.1	-5.8	-6.0

NOTE: Percent changes were calculated using unrounded numbers.
S = Significant at the 99 percent confidence level.
SOURCE: Derived from table 3.

Table 5.—Enrollment in grades 9–12 in public schools, by region and State, with projections: Fall 1983 to fall 1993

(In thousands)

Region and State	Actual					Estimate	Projected				
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
United States	**14,355**	**12,377**	**12,460**	**12,436**	**12,138**	**11,863**	**11,505**	**11,399**	**11,503**	**11,694**	**11,982**
Northeast	2,572	2,543	2,501	2,484	2,381	2,298	2,179	2,133	2,129	2,146	2,179
Connecticut	149	145	141	147	139	131	126	122	121	122	124
Maine	64	65	66	68	66	66	61	59	59	59	61
Massachusetts	301	293	285	275	260	248	232	224	222	223	227
New Hampshire	53	53	54	54	52	49	49	48	49	50	52
New Jersey	386	382	376	365	346	322	313	306	307	310	317
New York	939	934	918	894	859	840	790	781	783	791	800
Pennsylvania	607	599	591	610	591	573	544	530	525	526	532
Rhode Island	46	45	43	43	41	39	38	37	37	38	39
Vermont	27	27	27	29	28	30	26	25	25	26	26
Midwest	3,287	3,260	3,259	3,224	3,104	3,011	2,912	2,868	2,885	2,926	2,985
Illinois	582	580	580	576	560	500	526	519	522	527	536
Indiana	314	311	312	313	305	313	291	286	285	288	290
Iowa	164	162	161	158	152	156	140	138	139	142	145
Kansas	123	123	125	125	123	125	118	118	120	123	126
Michigan	603	589	586	573	520	489	483	472	472	476	487
Minnesota	239	238	237	232	225	226	209	208	212	218	227
Missouri	249	249	251	251	245	240	235	233	236	242	248
Nebraska	81	81	82	82	80	81	76	75	75	76	78
North Dakota	35	35	35	35	35	32	33	33	33	34	35
Ohio	587	585	588	585	573	560	534	522	520	522	530
South Dakota	37	37	37	36	35	34	34	34	35	37	38
Wisconsin	274	270	267	258	251	253	234	231	235	240	246
South	4,096	4,123	4,192	4,215	4,173	4,109	3,991	3,946	3,971	4,030	4,132
Alabama	211	198	213	215	208	211	200	197	198	199	203
Arkansas	127	128	130	131	130	148	125	123	124	125	127
Delaware	30	30	30	30	29	29	27	27	28	29	30
District of Columbia	26	25	25	23	24	22	21	21	21	21	21
Florida	451	462	476	486	493	533	485	480	484	492	510
Georgia	313	316	323	318	316	305	306	308	310	316	327
Kentucky	192	193	195	196	194	193	179	176	178	181	184
Louisiana	223	222	215	214	210	192	203	202	204	208	213
Maryland	232	228	225	220	211	203	193	190	193	198	205
Mississippi	140	141	142	143	141	138	134	133	135	138	141
North Carolina	329	333	337	337	332	325	312	305	305	308	314
Oklahoma	170	173	178	176	173	158	160	157	158	161	165
South Carolina	182	180	183	184	183	178	174	172	173	175	180
Tennessee	235	236	239	241	241	244	229	224	224	225	230
Texas	835	852	871	892	886	839	870	865	871	883	905
Virginia	292	298	303	302	294	290	274	269	270	275	283
West Virginia	108	108	109	108	107	104	100	97	96	95	94
West	2,400	2,451	2,507	2,513	2,479	2,445	2,423	2,452	2,517	2,593	2,686
Alaska	28	29	30	30	29	28	27	27	28	29	30
Arizona	152	157	162	166	160	157	157	159	165	172	181
California	1,275	1,305	1,329	1,332	1,317	1,301	1,303	1,323	1,359	1,397	1,441
Colorado	165	169	172	172	168	150	156	155	157	162	168
Hawaii	52	52	53	51	50	49	49	50	51	52	54
Idaho	58	59	59	59	59	64	58	59	60	62	64
Montana	45	46	46	46	44	43	41	41	42	43	44
Nevada	48	47	48	49	49	53	48	49	51	54	57
New Mexico	78	78	90	91	92	78	91	91	92	94	97
Oregon	140	141	142	141	138	149	130	130	133	136	140
Utah	97	101	105	108	109	104	114	120	126	132	139
Washington	233	239	243	240	235	245	222	221	227	234	243
Wyoming	27	28	29	29	28	24	26	26	26	27	28

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

Table 6.—Percent change in grades 9–12 enrollment in public schools, by region and State: Fall 1983 to fall 1993

Region and State	Percent change, 1983 to 1988	Projected percent change from 1988 to:				
		1989	1990	1991	1992	1993
United States	**-4.0**	**-3.0 S**	**-3.9 S**	**-3.0 S**	**-1.4 S**	**1.0**
Northeast	-10.6	-5.2 S	-7.2 S	-7.4 S	-6.6 S	-5.2 S
Connecticut	-11.8	-4.0	-6.9	-7.8	-7.2	-5.6
Maine	3.4	-7.0 S	-10.1 S	-10.9 S	-10.0 S	-8.4 S
Massachusetts	-17.3	-6.7 S	-9.8 S	-10.7 S	-10.2 S	-8.5 S
New Hampshire	-6.7	-1.1	-2.6 S	-0.8	2.1 S	6.4 S
New Jersey	-16.7	-2.7 S	-4.8 S	-4.6 S	-3.6 S	-1.5
New York	-10.6	-5.9 S	-7.0 S	-6.7 S	-5.8 S	-4.7 S
Pennsylvania	-5.7	-4.9	-7.5 S	-8.4 S	-8.1 S	-7.1 S
Rhode Island	-15.9	-2.4	-4.2	-3.6	-2.0	0.7
Vermont	12.7	-15.5 S	-16.9 S	-16.7 S	-15.5 S	-13.8 S
Midwest	-8.4	-3.3 S	-4.7 S	-4.2 S	-2.8 S	-0.9
Illinois	-14.1	5.3	3.7	4.5	5.4 S	7.1 S
Indiana	-0.2	-7.2 S	-8.7 S	-8.9 S	-8.2 S	-7.3 S
Iowa	-4.7	-10.5 S	-12.0 S	-10.9 S	-9.2 S	-7.5 S
Kansas	1.7	-5.8 S	-5.6 S	-3.7 S	-1.4	1.1
Michigan	-18.9	-1.3	-3.4	-3.6	-2.6	-0.5
Minnesota	-5.3	-7.6 S	-8.2 S	-6.3 S	-3.3 S	0.2
Missouri	-3.7	-2.1 S	-3.0 S	-1.7 S	0.6	3.3 S
Nebraska	-0.0	-6.2 S	-7.8 S	-7.0 S	-5.8 S	-4.3 S
North Dakota	-7.0	1.6	1.2	2.4 S	4.9 S	7.9 S
Ohio	-4.7	-4.6 S	-6.7 S	-7.2 S	-6.6 S	-5.3 S
South Dakota	-6.9	-1.4 S	-0.1	3.2 S	6.8 S	10.9 S
Wisconsin	-7.5	-7.7 S	-8.7 S	-7.2 S	-5.1 S	-2.7 S
South	0.3	-2.9 S	-4.0 S	-3.4 S	-1.9 S	0.6
Alabama	-0.2	-5.2	-6.6	-6.1	-5.4	-3.7
Arkansas	16.3	-15.6 S	-16.5 S	-16.1 S	-15.5 S	-14.0 S
Delaware	-5.4	-3.8	-4.0	-2.4	1.0	4.7
District of Columbia	-13.9	-3.3	-5.2	-6.3	-6.2	-5.0
Florida	18.0	-9.0 S	-9.9 S	-9.3 S	-7.6 S	-4.2 S
Georgia	-2.5	0.4	0.9	1.8	3.8 S	7.5 S
Kentucky	0.1	-7.0 S	-8.5 S	-7.6 S	-6.0 S	-4.7 S
Louisiana	-13.9	5.5 S	5.2 S	6.5 S	8.5 S	10.9 S
Maryland	-12.5	-5.0 S	-6.2 S	-4.9 S	-2.4 S	1.1
Mississippi	-1.9	-2.9	-3.2	-1.5	0.5	2.8
North Carolina	-1.2	-3.7 S	-5.9 S	-5.9 S	-5.1 S	-3.3 S
Oklahoma	-7.4	1.2	-0.5	0.4	2.0	4.9 S
South Carolina	-2.1	-1.9 S	-3.3 S	-2.7 S	-1.2 S	1.1
Tennessee	3.9	-6.2 S	-8.2 S	-8.4 S	-7.7 S	-6.0 S
Texas	0.5	3.6 S	3.0	3.8 S	5.2 S	7.8 S
Virginia	-0.7	-5.7 S	-7.3 S	-6.9 S	-5.3 S	-2.3
West Virginia	-3.4	-4.0 S	-7.1 S	-8.4 S	-9.0 S	-9.9 S
West	1.9	-0.9	0.3	3.0 S	6.0 S	9.9 S
Alaska	0.0	-2.4	-2.0	0.3	3.9	9.2 S
Arizona	3.4	-0.5	1.0	4.8	9.5 S	15.2 S
California	2.0	0.1	1.7 S	4.4 S	7.3 S	10.7 S
Colorado	-9.4	4.4 S	3.5 S	4.9 S	7.8 S	12.2 S
Hawaii	-6.3	0.9	2.4	4.9 S	7.8 S	12.2 S
Idaho	10.2	-9.2 S	-8.2 S	-5.7 S	-3.3 S	-0.1
Montana	-4.9	-4.7 S	-5.1 S	-3.4 S	-1.3	1.1
Nevada	10.5	-9.1	-7.2	-3.4	1.0	6.3
New Mexico	-0.3	17.2	17.1	18.4	21.2 S	25.1 S
Oregon	6.8	-12.8 S	-12.9 S	-11.0 S	-9.0 S	-6.3 S
Utah	6.4	9.8 S	15.4 S	21.8 S	27.1 S	34.0 S
Washington	5.4	-9.6 S	-9.8 S	-7.5 S	-4.7 S	-1.1 S
Wyoming	-12.8	10.7 S	9.7 S	11.2 S	13.4 S	17.3 S

NOTE: Percent changes were calculated using unrounded numbers.
S = Significant at the 99 percent confidence level.
SOURCE: Derived from table 5.

Chapter 2—Public High School Graduates

The annual number of public high school graduates is expected to decline 10 percent between 1987–88 and 1992–93 (figure 7A and tables 7 and 8). NCES has not developed projections of the number of dropouts, but the effects of dropouts are included implicitly in the high school graduate model through the retention rate methodology. The retention rate method of projecting enrollment and high school graduates accounts for attrition of students by tracking the proportion of students moving through the grades. The forecast of decreasing numbers of high school graduates is based on the declining number of young people in the 17- and 18-year-old age group. Each of the regions of the country, except the West, is expected to reflect this widespread decline in graduates. The number of high school graduates in the West is expected to remain essentially unchanged (figure 7B). Decreases are expected in most of the States, with 37 States and the District of Columbia showing significant decreases (figure 8). Only one State is expected to increase.

No significant change in the number of high school graduates has been projected for the Western region of the country (table 8). This reflects the combined effects of a decline in the number of high school graduates between 1988–89 and 1990–91, followed by an increase during the early 1990s. The decline in the late 1980s contrasts with the 5 percent increase that was experienced between 1983 and 1988. Within the region, sizeable decreases in graduates are expected for Colorado, Hawaii, Idaho, Oregon, Washington, and Wyoming. Utah is the only State in the Nation for which an increase (10 percent) in the number of graduates has been projected.

Declines in the number of high school graduates are expected in the South, although the rate of decline is expected to be slower than the National average. Between 1982–83 and 1987–88, high school graduates declined by about 1 percent in the South. This decline is expected to accelerate, resulting in a decrease of about 8 percent between 1988 and 1993. Overall, the number of graduates is projected to fall from 834,000 in 1987–88 to 764,000 in 1992–93. Twelve of the 17 States in the Southern region are expected to have declines in the number of graduates. No significant changes have been projected for the rest of the States in the region. Decreases that exceed the national average have been projected for the District of Columbia, Maryland, Oklahoma, Virginia, and West Virginia.

The number of high school graduates in the Midwest is expected to fall about 11 percent between 1988 and 1993, about the same as the U.S. average. This decrease is slightly larger than the 9 percent rate of decline that occurred between 1983 and 1988. Overall, the number of high school graduates is expected to fall from 668,000 in 1987–88 to 595,000 in 1992–93, a drop of 73,000. Each of the States in the Midwestern region is expected to have a significant fall in the number of graduates. Declines that exceed the national average are expected for Iowa, Michigan, and Wisconsin, while Kansas, Missouri, and Nebraska are expected to have declines that are smaller than the National average. The largest declines for the Midwestern region are expected for the early portion of the projection period. The number of graduates is expected to stabilize in the early 1990s.

The Northeastern region is expected to have larger declines in the number of graduates than the other regions. A decline of about 19 percent from 505,000 to 410,000 is expected between 1987–88 and 1992–93. This decrease is larger than the 10 percent drop incurred between 1982–83 and 1987–88. Some States are expected to have particularly large declines. Massachusetts has been projected to fall 26 percent and New Jersey by 22 percent during the 1987–88 to 1992–93 period. The declines in these two States are among the largest in the Nation. Most of the States in the region will have decreases that exceed the National average.

Figure 7A.—Number of public high school graduates, with projections: 1982–83 to 1992–93

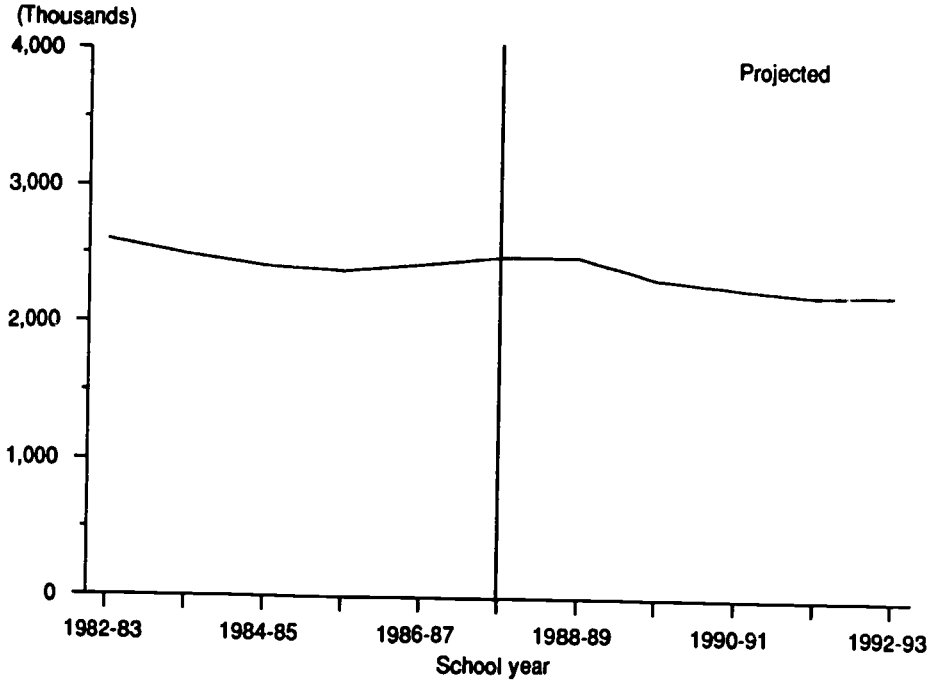
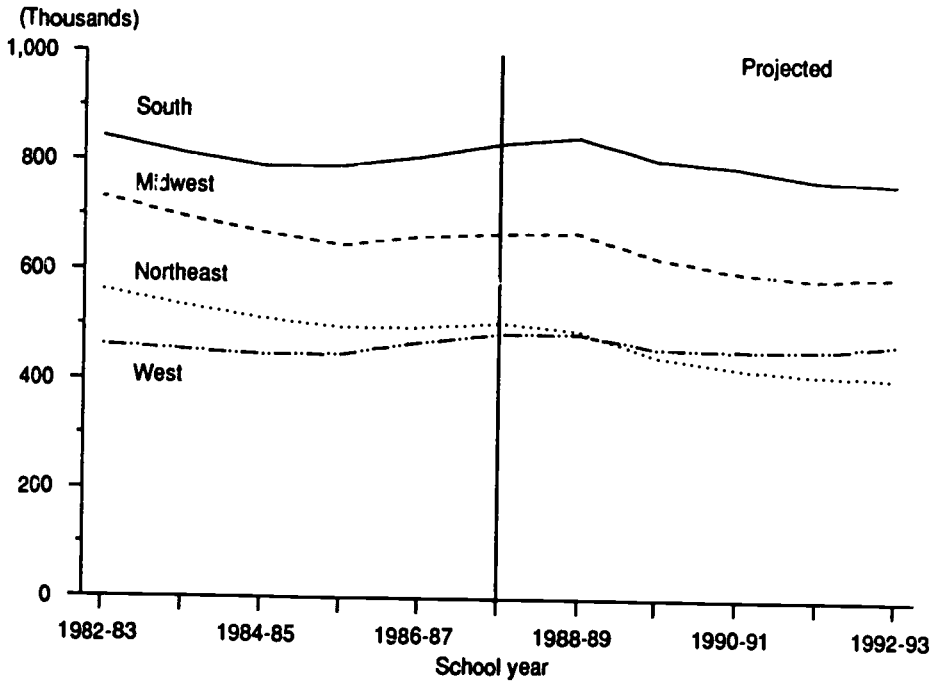
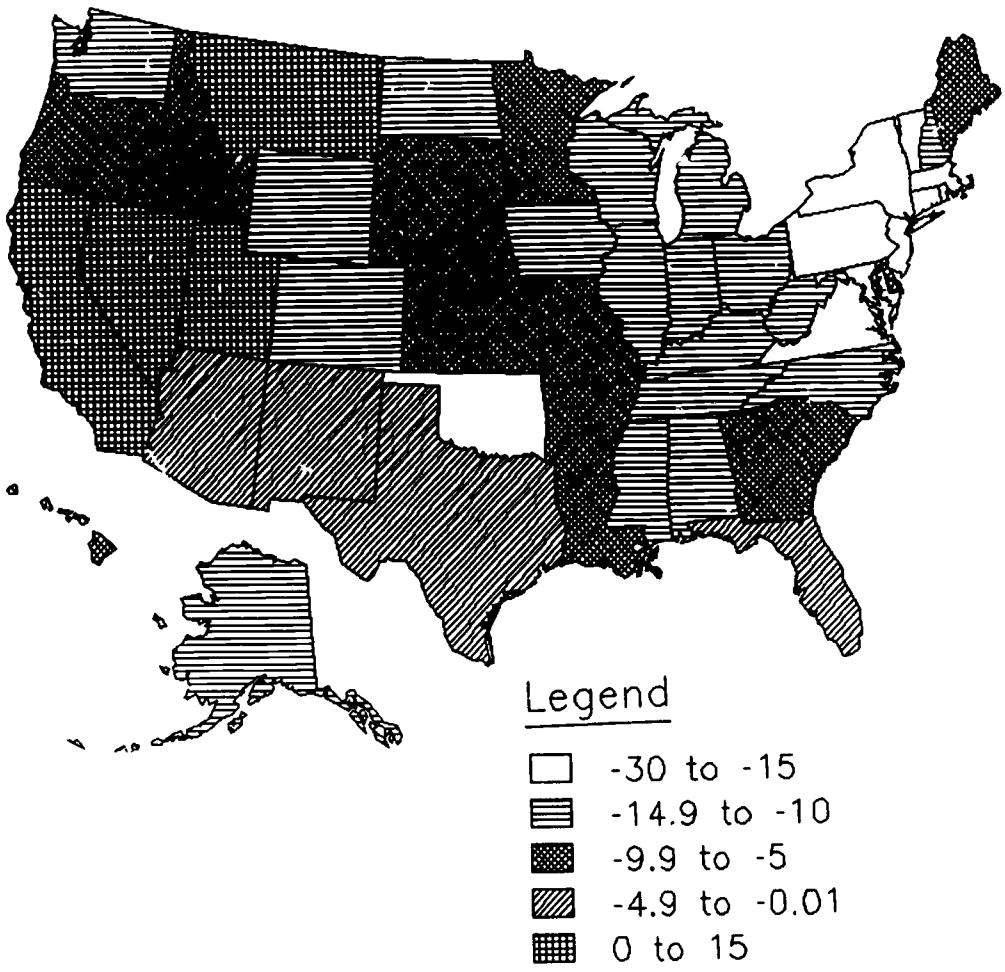


Figure 7B.—Number of public high school graduates, by region, with projections: 1982–83 to 1992–93



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988–89."

Figure 8.— Percent change in public high school graduates, by State: 1987–88 to 1992–93



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988-89."

Table 7.—Number of high school graduates in public schools, by region and State, with projections: 1982–83 to 1992–93

Region and State	Actual					Estimate	Projected				
	1982–83	1983–84	1984–85	1985–86	1986–87	1987–88	1988–89	1989–90	1990–91	1991–92	1992–93
United States ..	2,597,744	2,494,885	2,414,020	2,382,457	2,433,018	2,492,791	2,491,325	2,337,111	2,276,290	2,230,752	2,239,688
Northeast	561,601	533,374	511,008	495,945	495,594	505,343	490,919	445,620	425,312	414,658	409,970
Connecticut	36,204	33,679	32,126	33,571	31,141	33,000	33,139	30,544	29,490	28,070	27,925
Maine	14,600	13,935	13,924	13,006	13,692	13,756	14,676	14,041	13,284	12,581	12,580
Massachusetts	71,219	65,885	63,411	60,360	61,010	61,595	56,732	52,454	49,076	47,117	45,849
New Hampshire	11,470	11,478	11,052	10,648	10,796	11,021	11,132	10,508	9,687	9,823	9,541
New Jersey	90,048	85,569	81,547	78,781	79,376	79,959	75,295	68,589	64,492	63,359	62,554
New York	184,022	174,762	166,752	162,165	163,765	165,900	166,263	144,608	139,294	137,928	136,809
Pennsylvania	137,494	132,412	127,226	122,871	121,219	125,200	119,432	111,652	107,352	103,500	102,494
Rhode Island	10,533	9,652	9,201	8,749	8,627	8,694	8,352	7,776	7,419	7,192	7,099
Vermont	6,011	6,002	5,769	5,794	5,968	6,218	5,898	5,448	5,218	5,088	5,119
Midwest	731,556	695,846	668,475	647,462	661,426	667,821	669,415	625,689	600,928	587,837	595,386
Illinois	128,814	122,561	117,027	114,319	116,075	119,090	116,891	109,910	104,148	103,301	104,485
Indiana	70,549	65,710	63,308	59,817	60,364	64,492	63,307	60,557	59,184	56,798	57,941
Iowa	39,569	37,248	36,087	34,279	34,580	34,219	34,350	31,690	29,021	28,645	29,625
Kansas	28,316	26,730	25,983	25,587	26,933	27,148	27,312	25,807	25,186	24,904	25,433
Michigan	112,950	108,926	105,908	101,042	103,282	100,503	103,118	95,747	91,624	89,108	87,664
Minnesota	59,015	55,376	53,352	51,988	53,533	52,126	53,247	48,853	46,385	46,312	47,578
Missouri	56,420	53,388	51,290	49,204	50,840	51,316	52,204	49,718	48,381	47,354	48,165
Nebraska	19,986	18,674	18,036	17,845	18,129	18,560	18,953	17,865	16,650	16,831	17,281
North Dakota	8,886	8,569	8,146	7,610	7,821	8,438	8,001	7,685	7,674	7,424	7,444
Ohio	133,524	127,837	122,281	119,561	124,923	125,085	127,385	117,938	114,900	110,186	111,267
South Dakota	9,206	8,638	8,206	7,870	8,074	8,415	8,260	7,717	7,321	7,296	7,766
Wisconsin	64,321	62,189	58,851	58,340	56,872	58,429	56,387	52,202	50,454	49,678	50,737
South	842,415	812,170	789,445	790,924	807,348	833,749	845,390	805,379	792,132	769,451	763,974
Alabama	44,352	42,021	40,002	39,620	42,463	43,799	41,552	40,030	39,209	38,708	38,032
Arkansas	28,447	27,049	26,342	26,227	27,101	27,664	28,407	26,993	26,268	26,081	25,733
Delaware	6,924	6,410	5,893	5,791	5,895	5,963	6,093	5,679	5,517	5,380	5,586
District of Columbia	4,909	4,073	3,940	3,875	3,842	3,894	4,020	3,528	3,535	3,367	3,241
Florida	86,871	85,908	81,140	83,029	82,184	88,262	91,824	90,729	90,195	89,663	87,879
Georgia	63,293	60,718	58,654	59,082	60,018	61,765	61,937	56,076	59,128	56,706	57,730
Kentucky	40,478	39,645	37,999	37,288	36,948	39,672	40,127	38,365	35,499	33,312	34,499
Louisiana	39,539	39,400	39,742	39,965	39,084	38,763	38,389	38,380	37,412	36,157	36,441
Maryland	52,446	50,684	48,299	46,700	46,107	47,120	45,824	41,651	39,910	38,509	38,681
Mississippi	27,271	26,324	25,315	25,134	26,201	27,896	26,707	25,502	25,208	23,778	24,338
North Carolina	68,783	66,803	67,245	65,865	65,421	68,147	70,415	65,706	63,859	61,774	60,958
Oklahoma	36,799	35,254	34,626	34,452	35,514	36,145	37,102	35,044	33,329	32,417	30,354
South Carolina	37,570	36,800	34,500	34,500	36,000	36,300	37,799	35,873	35,566	34,044	33,557
Tennessee	46,704	44,711	43,293	43,263	44,731	47,904	47,675	45,743	44,547	43,123	42,574
Texas	168,897	161,580	159,234	161,150	168,430	171,318	178,906	172,482	171,952	168,661	168,150
Virginia	65,571	62,177	60,959	63,113	65,008	66,731	65,493	61,506	59,876	57,588	56,594
West Virginia	23,561	22,613	22,262	21,870	22,401	22,406	23,120	22,092	21,122	20,183	19,627
West	462,172	453,495	445,092	448,126	468,650	485,878	485,601	460,423	457,918	458,806	470.358
Alaska	5,622	5,457	5,184	5,464	5,692	5,907	5,803	5,421	5,304	5,216	5,144
Arizona	26,530	28,332	27,877	27,533	29,549	29,777	29,450	28,377	27,994	27,667	28,331
California	236,897	232,199	225,448	229,026	237,414	248,345	250,192	238,714	239,509	241,668	249,268
Colorado	34,875	32,954	32,255	32,621	34,200	35,352	35,340	32,979	31,793	30,484	30,793
Hawaii	10,757	10,454	10,092	9,958	10,371	10,751	10,359	9,632	9,658	9,842	9,746
Idaho	12,126	11,732	12,148	12,059	12,243	13,347	12,858	12,204	12,076	12,412	12,414
Montana	10,689	10,224	10,016	9,761	10,073	8,948	10,304	9,391	8,939	8,845	8,959
Nevada	8,979	8,726	8,572	8,784	9,506	9,397	10,427	9,752	9,597	9,720	10,044
New Mexico	16,530	15,914	15,622	15,468	15,701	15,868	15,522	15,214	15,583	15,321	15,650
Oregon	28,099	27,214	26,870	26,286	27,165	28,058	27,477	25,743	24,823	24,682	25,404
Utah	19,350	19,606	19,890	19,774	20,930	22,226	22,537	21,898	22,870	23,688	24,407
Washington	45,809	44,919	45,431	45,805	49,873	51,754	49,191	45,433	44,334	43,968	44,840
Wyoming	5,909	5,764	5,687	5,587	5,933	6,148	6,141	5,665	5,438	5,293	5,358

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

Table 8.—Percent change in number of public high school graduates, by region and State: 1982–83 to 1992–93

Region and State	Percent change, 1982–83 to 1987–88	Projected percent change from 1987–88 to:				
		1988–89	1989–90	1990–91	1991–92	1992–93
United States	**–4.0**	**–0.1**	**–6.2 S**	**–8.7 S**	**–10.5 S**	**–10.2 S**
Northeast	–10.0	–2.9 S	–11.8 S	–15.8 S	–17.9 S	–18.9 S
Connecticut	–8.8	0.4	–7.4	–10.6	–14.9	–15.4
Maine	–5.8	6.7	2.1	–3.4	–8.5 S	–8.5 S
Massachusetts	–13.5	–7.9 S	–14.8 S	–20.3 S	–23.5 S	–25.6 S
New Hampshire	–3.9	1.0	–4.7	–12.1 S	–10.9 S	–13.4 S
New Jersey	–11.2	–5.8 S	–14.2 S	–19.3 S	–20.8 S	–21.8 S
New York	–9.8	0.2	–12.8 S	–16.0 S	–16.9 S	–17.5 S
Pennsylvania	–8.9	–4.6 S	–10.8 S	–14.3 S	–17.3 S	–18.1 S
Rhode Island	–17.5	–3.9	–10.6 S	–14.7 S	–17.3 S	–18.3 S
Vermont	3.4	–5.1 S	–12.4 S	–16.1 S	–18.2 S	–17.7 S
Midwest	–8.7	0.2	–6.3 S	–10.0 S	–12.0 S	–10.8 S
Illinois	–7.5	–1.8	–7.7 S	–12.5 S	–13.3 S	–12.3 S
Indiana	–8.6	–1.8	–6.1 S	–8.2 S	–11.9 S	–10.2 S
Iowa	–13.5	0.4	–7.4 S	–15.2 S	–16.3 S	–13.4 S
Kansas	–4.1	0.6	–4.9 S	–7.2 S	–8.3 S	–6.3 S
Michigan	–11.0	2.6	–4.7 S	–8.8 S	–11.3 S	–12.8 S
Minnesota	–11.7	2.2	–6.3	–11.0 S	–11.2 S	–8.7 S
Missouri	–9.0	1.7 S	–3.1 S	–5.7 S	–7.7 S	–6.1 S
Nebraska	–7.1	2.1	–3.7 S	–10.3 S	–9.3 S	–6.9 S
North Dakota	–5.0	–5.2 S	–8.9 S	–9.1 S	–12.0 S	–11.8 S
Ohio	–6.3	1.8	–5.7	–8.1 S	–11.9 S	–11.0 S
South Dakota	–8.6	–1.8	–8.3 S	–13.0 S	–13.3 S	–7.7 S
Wisconsin	–9.2	–3.5 S	–10.7 S	–13.6 S	–15.0 S	–13.2 S
South	–1.0	1.4	–3.4 S	–5.0 S	–7.7 S	–8.4 S
Alabama	–1.2	–5.1	–8.6 S	–10.5 S	–11.6 S	–13.2 S
Arkansas	–2.8	2.7	–2.4	–5.0 S	–5.7 S	–7.0 S
Delaware	–13.9	2.2	–4.8	–7.5	–9.8	–6.3
District of Columbia	–20.7	3.2	–9.4	–9.2	–13.5 S	–16.8 S
Florida	1.6	4.0 S	2.8	2.2	1.6	–0.4
Georgia	–2.4	0.3	–9.2 S	–4.3 S	–8.2 S	–6.5 S
Kentucky	–2.0	1.1	–3.3 S	–10.5 S	–16.0 S	–13.0 S
Louisiana	–2.0	–1.0	–1.0	–3.5	–6.7	–6.0
Maryland	–10.2	–2.8	–11.6 S	–15.3 S	–18.3 S	–17.9 S
Mississippi	2.3	–4.3 S	–8.6 S	–9.6 S	–14.8 S	–12.8 S
North Carolina	–0.9	3.3 S	–3.6 S	–6.3 S	–9.4 S	–10.5 S
Oklahoma	–1.8	2.6	–3.0	–7.8 S	–10.3 S	–16.0 S
South Carolina	–3.4	4.1	–1.2	–2.0	–6.2	–7.6
Tennessee	2.6	–0.5	–4.5	–7.0	–10.0 S	–11.1 S
Texas	1.4	4.4	0.7	0.4	–1.6	–1.8
Virginia	1.8	–1.9 S	–7.8 S	–10.3 S	–13.7 S	–15.2 S
West Virginia	–4.9	3.2 S	–1.4	–5.7 S	–9.9 S	–12.4 S
West	5.1	–0.1	–5.2 S	–5.8 S	–5.6 S	–3.2
Alaska	5.1	–1.8	–8.2	–10.2	–11.7	–12.9
Arizona	12.2	–1.1	–4.7	–6.0	–7.1	–4.9
California	4.8	0.7	–3.9	–3.6	–2.7	0.4
Colorado	1.4	–0.0	–6.7 S	–10.1 S	–13.8 S	–12.9 S
Hawaii	–0.1	–3.6	–10.4 S	–10.2 S	–8.5 S	–9.3 S
Idaho	10.1	–3.7 S	–8.6 S	–9.5 S	–7.0 S	–7.0 S
Montana	–16.3	15.2 S	5.0 S	–0.1	–1.2	0.1
Nevada	4.7	11.0 S	3.8	2.1	3.4	6.9
New Mexico	–4.0	–2.2	–4.1 S	–1.8	–3.4 S	–1.4
Oregon	–0.1	–2.1	–8.3 S	–11.5 S	–12.0 S	–9.5 S
Utah	14.9	1.4	–1.5	2.9	6.6 S	9.8 S
Washington	13.0	–5.0	–12.2 S	–14.3 S	–15.0 S	–13.4 S
Wyoming	4.0	–0.1	–7.9 S	–11.5 S	–13.9 S	–12.8 S

NOTE: Percent changes were calculated using unrounded numbers.
S = Significant at the 99 percent confidence level.
SOURCE: Derived from table 7.

Chapter 3—Public Classroom Teachers

About 2.3 million teachers were employed by public elementary and secondary schools in fall 1988 and this number is expected to rise to 2.5 million in fall 1993 (figure 9A and table 9). This anticipated increase in the number of teachers reflects a rise in public school enrollment as well as the historical trend of declining pupil/teacher ratios. In contrast to trends in enrollment, the number of teachers in the Northeast is expected to rise at least as rapidly as other regions of the country.

This projected 12 percent rise in the number of teachers in the Northeast between 1988 and 1993 continues the pattern of increase between 1983 and 1988 (figure 9B and table 10). The number of teachers in the Northeast is expected to be about 57,000 higher in 1993 than in 1988. Sizeable increases are expected for Connecticut, New Jersey, and New York.

A rise of about 8 percent in the number of teachers is expected for the West. This rate of growth is about the same as the national average. Relatively large increases are expected for Arizona and Nevada (figure 10).

An increase of about 6 percent is expected for the South. Maryland's increase of about 15 percent is significantly higher than the national average. Mississippi is projected to have a sizeable decline in the number of teachers.

The number of teachers in the Midwest region is not projected to show a significant change between 1988 and 1993. A decline has been projected for Iowa.

Projections for the number of teachers are, in general, much less reliable than projections of enrollment or high school graduates. Forecasts for enrollment and graduates are driven primarily by demographic characteristics of States, such as the 5- to 17-year-old population. The number of teachers in the future is dependent on enrollment in the States, appropriations of funds for education from State legislatures, local and State tax revenues, and education priorities set by State and local officials. Actions of State and local officials are not predicted in the models designed by NCES. The NCES teacher projections are based on historical and current data about the number of students and pupil/teacher ratios. Additional information on forecasting methodologies appears in appendix A.

Figure 9A.—Number of classroom teachers in public schools, with projections: Fall 1983 to fall 1993

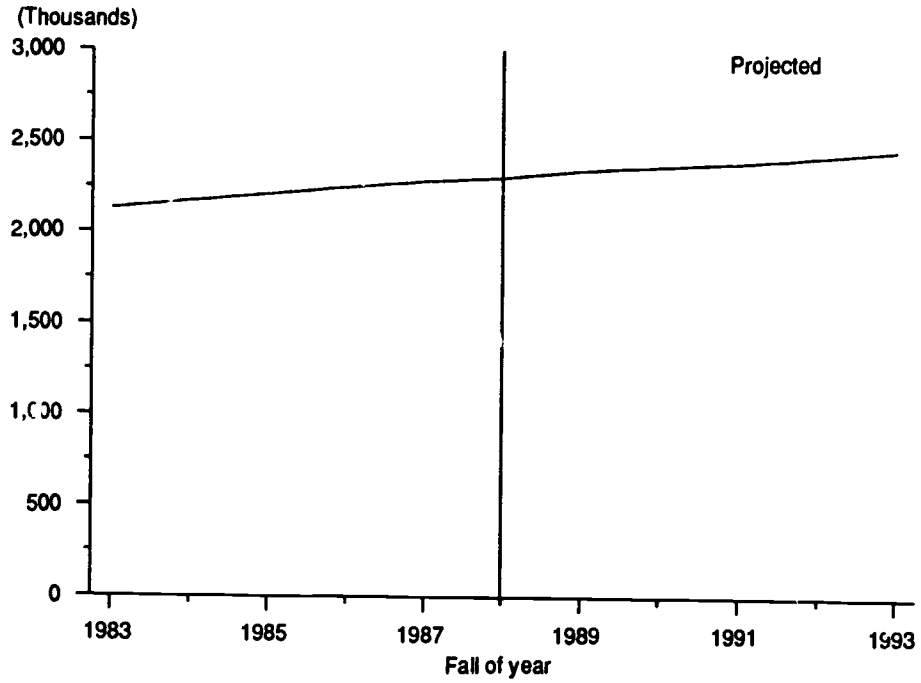
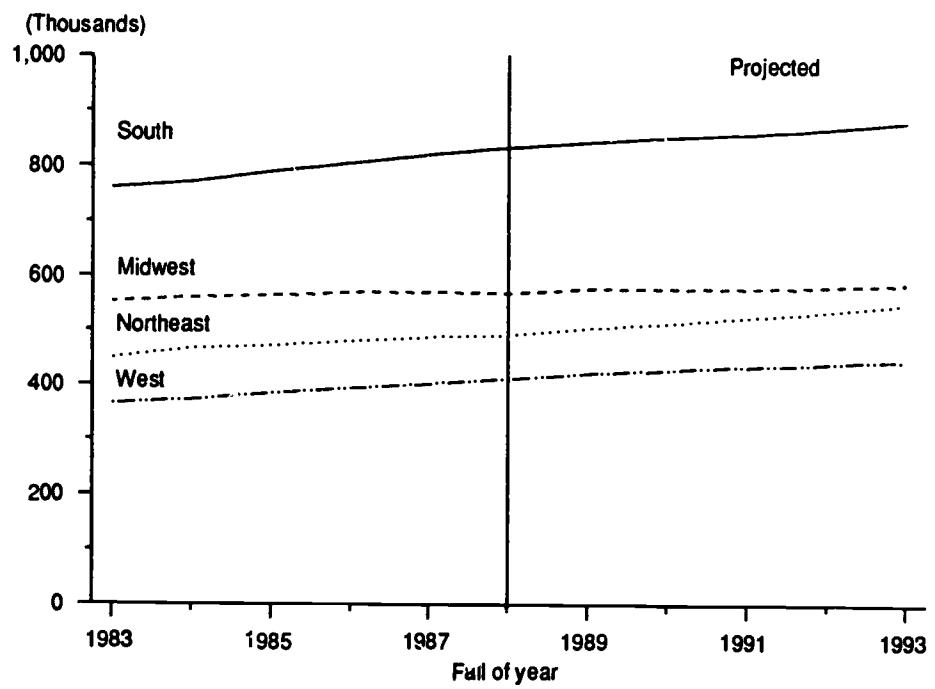
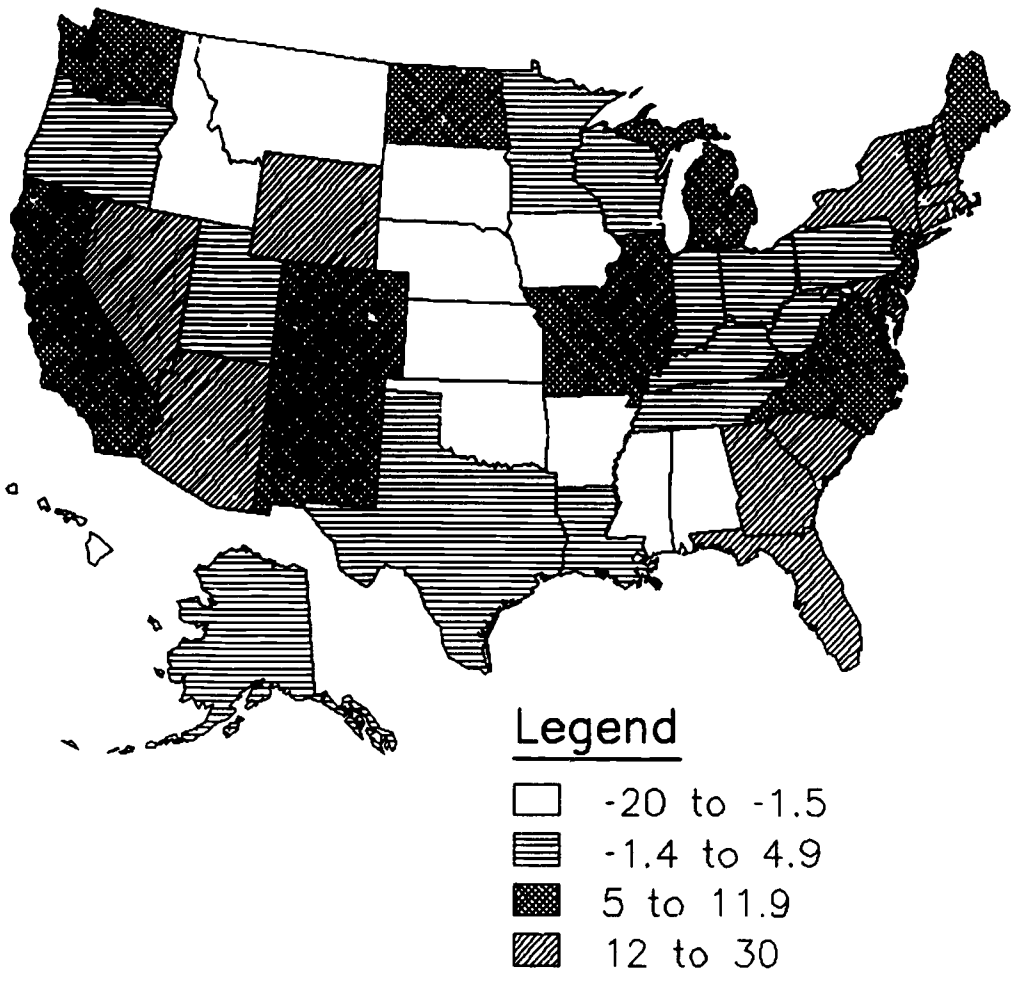


Figure 9B.—Number of classroom teachers in public schools, by region, with projections: Fall 1983 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988-89."

Figure 10.— Percent change in number of classroom teachers in public schools, by State: Fall 1988 to fall 1993



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey; and *Early Estimates*, "Key Statistics for Public Elementary and Secondary Education, School Year 1988-89."

Table 9.—Number of classroom teachers in public elementary and secondary schools, by region and State, with projections: Fall 1983 to fall 1993

Region and State	Actual					Estimate	Projected				
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
United States	**2,126,427**	**2,168,298**	**2,206,884**	**2,244,445**	**2,278,813**	**2,303,743**	**2,339,998**	**2,367,002**	**2,388,002**	**2,419,999**	**2,459,000**
Northeast	449,040	465,829	470,793	479,107	486,884	491,129	502,399	512,077	521,869	533,662	548,022
Connecticut	32,317	32,618	32,903	34,252	35,050	35,800	36,706	37,719	38,727	39,834	41,150
Maine	13,492	13,261	14,226	13,685	14,204	15,142	15,107	15,430	15,774	16,276	16,867
Massachusetts	56,873	56,504	56,845	58,066	59,517	59,138	61,529	63,061	64,732	66,646	69,016
New Hampshire	9,821	10,065	10,104	10,300	10,363	10,466	11,265	11,620	12,048	12,524	13,050
New Jersey	73,593	73,774	74,236	75,558	78,335	79,785	79,416	81,278	83,360	85,894	88,934
New York	145,647	163,044	165,573	168,940	170,236	172,000	178,380	182,884	187,267	192,005	197,704
Pennsylvania	102,207	101,484	101,665	102,993	103,307	102,450	103,992	103,958	103,744	104,078	104,665
Rhode Island	8,848	8,752	8,844	8,916	8,934	9,232	8,994	9,007	9,001	9,024	9,071
Vermont	6,242	6,327	6,397	6,397	6,938	7,116	7,010	7,120	7,216	7,381	7,565
Midwest	551,857	559,365	563,335	568,007	569,864	567,679	575,471	576,387	575,982	579,668	584,064
Illinois	102,130	102,013	102,657	104,609	105,217	102,701	106,750	107,145	107,299	108,140	109,161
Indiana	50,509	51,308	51,976	52,896	53,749	54,000	54,819	55,049	55,145	55,812	56,560
Iowa	31,779	31,882	31,770	30,558	30,873	31,299	29,506	28,747	28,009	27,584	27,145
Kansas	26,096	26,331	26,686	27,064	27,317	27,659	27,557	27,486	27,288	27,262	27,225
Michigan	79,982	81,185	82,193	83,130	80,065	79,582	80,530	81,064	81,498	82,498	83,781
Minnesota	39,392	40,108	41,314	40,957	42,132	42,540	42,628	42,924	43,127	43,542	43,947
Missouri	46,761	47,366	48,170	48,902	49,632	50,000	51,256	51,718	52,033	52,744	53,519
Nebraska	17,548	17,656	17,687	17,748	17,713	17,899	17,793	17,667	17,510	17,482	17,457
North Dakota	7,067	7,794	7 796	7,779	7,632	6,817	7,620	7,517	7,378	7,279	7,195
Ohio	96,927	98,061	98,254	98,894	99,641	99,026	100,484	100,335	99,937	100,239	100,682
South Dakota	8,355	8,579	8,340	8,031	8,172	8,256	7,973	7,853	7,711	7,605	7,501
Wisconsin	45,311	47,082	46,482	47,039	47,721	47,900	48,555	48,882	49,047	49,481	49,891
South	760,227	770,577	788,965	803,831	819,912	833,148	842,436	851,311	857,307	867,741	881,369
Alabama	35,875	36,647	36,138	36,971	37,716	38,619	37,496	37,452	37,287	37,402	37,666
Arkansas	23,696	23,985	24,767	24,944	25,572	28,493	26,020	26,158	26,218	26,470	26,814
Delaware	5,429	5,577	5,745	5,883	5,951	6,008	6,234	6,347	6,413	6,526	6,636
District of Columbia	5,569	5,889	6,137	5,984	6,232	6,572	6,859	7,113	7,313	7,448	7,696
Florida	85,028	86,264	88,973	91,969	95,857	99,394	101,922	104,640	106,957	109,329	112,066
Georgia	56,555	56,294	57,374	57,881	62,280	60,380	63,871	65,327	66,391	67,868	69,616
Kentucky	32,458	32,850	33,506	34,507	35,239	35,516	35,828	35,898	35,943	36,456	37,024
Louisiana	42,200	42,180	42,609	42,929	42,920	43,350	43,823	43,744	43,434	43,313	43,258
Maryland	37,275	38,030	38,433	39,491	40,093	40,300	42,079	43,181	44,235	45,236	46,358
Mississippi	24,955	25,388	26,102	26,219	26,194	27,215	25,174	24,511	23,746	23,247	22,797
North Carolina	55,126	56,084	57,638	58,103	59,771	60,912	61,834	63,009	64,168	65,733	67,683
Oklahoma	34,999	34,894	35,752	35,041	34,515	34,400	33,955	33,409	32,829	32,438	32,205
South Carolina	32,323	33,764	34,645	35,349	35,701	35,400	37,461	38,021	38,468	39,177	40,044
Tennessee	39,409	39,636	40,023	41,103	42,082	44,000	42,661	42,759	42,739	43,029	43,480
Texas	170,439	172,865	181,051	186,385	187,159	189,974	192,943	194,609	195,245	196,731	198,888
Virginia	56,388	57,498	57,339	58,141	59,928	60,615	61,910	63,128	64,296	65,722	67,441
West Virginia	22,503	22,732	22,733	22,931	22,702	22,000	22,366	22,005	21,625	21,616	21,697
West	365,303	372,527	383,791	393,500	402,153	411,787	419,692	427,227	432,844	438,928	445,545
Alaska	6,259	6,127	6,814	6,448	6,113	6,350	6,314	6,349	6,355	6,314	6,309
Arizona	26,268	26,900	27,935	29,104	30,707	31,911	32,911	34,262	35,529	36,872	38,281
California	174,290	178,310	184,151	190,484	195,864	201,974	206,722	211,342	214,764	217,789	220,911
Colorado	28,421	28,824	29,894	30,704	31,168	31,708	32,375	32,921	33,400	34,021	34,746
Hawaii	7,007	7,078	7,276	7,291	7,684	7,950	7,509	7,588	7,647	7,582	7,571
Idaho	9,847	10,147	10,255	10,234	10,258	10,350	10,206	10,072	9,884	9,783	9,706
Montana	9,479	9,597	9,705	9,818	9,659	9,681	9,540	9,438	9,308	9,211	9,135
Nevada	7,366	7,496	7,751	7,908	8,348	8,068	9,002	9,269	9,480	9,687	9,888
New Mexico	14,532	14,538	14,781	14,876	15,175	15,669	15,707	15,902	16,044	16,296	16,606
Oregon	24,409	24,444	24,605	24,615	24,911	25,148	25,238	25,305	25,339	25,541	25,785
Utah	15,640	16,169	17,126	17,752	17,124	17,892	17,456	17,480	17,368	17,542	17,724
Washington	34,757	35,706	36,202	37,065	38,344	38,625	39,589	40,172	40,601	41,074	41,560
Wyoming	7,028	7,191	7,296	7,201	6,798	6,461	7,123	7,127	7,125	7,216	7,323

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

Table 10.—Percent change in number of classroom teachers in public elementary and secondary schools, by region and State: Fall 1983 to fall 1993

Region and State	Percent change, 1983 to 1988	Projected percent change from 1988 to:				
		1989	1990	1991	1992	1993
United States	**8.3**	**1.6**	**2.7 S**	**3.7 S**	**5.0 S**	**6.7 S**
Northeast	9.4	2.3	4.3	6.3 S	8.7 S	11.6 S
Connecticut	10.8	2.5	5.4	8.2 S	11.3 S	14.9 S
Maine	12.2	-0.2	1.9	4.2	7.5	11.4
Massachusetts	4.0	4.0	6.6	9.5	12.7	16.7
New Hampshire	6.6	7.6	11.0	15.1	19.7	24.7
New Jersey	8.4	-0.5	1.9	4.5	7.7 S	11.5 S
New York	18.1	3.7	6.3	8.9	11.6	14.9 S
Pennsylvania	0.2	1.5	1.5	1.3	1.6	2.2
Rhode Island	4.3	-2.6	-2.4	-2.5	-2.3	-1.7
Vermont	14.0	-1.5	0.1	1.4	3.7	6.3
Midwest	2.9	1.4	1.5	1.5	2.1	2.9
Illinois	0.6	3.9	4.3	4.5	5.3	6.3
Indiana	6.9	1.5	1.9	2.1	3.4	4.7
Iowa	-1.5	-5.7 S	-8.2 S	-10.5 S	-11.9 S	-13.3 S
Kansas	6.0	-0.4	-0.6	-1.3	-1.4	-1.6
Michigan	-0.5	1.2	1.9	2.4	3.7	5.3
Minnesota	8.0	0.2	0.9	1.4	2.4	3.3
Missouri	6.9	2.5	3.4	4.1	5.5	7.0
Nebraska	2.0	-0.6	-1.3	-2.2	-2.3	-2.5
North Dakota	-3.5	11.8 S	10.3	8.2	6.8	5.5
Ohio	2.2	1.5	1.3	0.9	1.2	1.7
South Dakota	-1.2	-3.4	-4.9	-6.6	-7.9	-9.1
Wisconsin	5.7	1.4	2.1	2.4	3.3	4.2
South	9.6	1.1	2.2 S	2.9 S	4.2 S	5.8 S
Alabama	7.6	-2.9	-3.0	-3.4	-3.2	-2.5
Arkansas	20 2	-8.7 S	-8.2 S	-8.0 S	-7 1 S	-5.9 S
Delaware	10.7	3.8	5.6	6.7	8.6 S	10.5 S
District of Columbia	18.0	4.4	8.2	11.3	13 3	17.1 S
Florida	16.9	2.5	5.3	7.6	10 0 S	12.7 S
Georgia	6.8	5.8	8.2		12.4 S	15.3 S
Kentucky	9.4	0.9	1 1		2.6	4.2
Louisiana	2.7	1.1	0.9		-0.1	-0.2
Maryland	8.1	4.4 S	7.1 S	9.8 S	12.2 S	15.0 S
Mississippi	9.1	-7.5 S	-9.9 S	-12.7 S	-14.6 S	-16.2 S
North Carolina	10.5	1.5	3.4 S	5.3 S	7.9 S	11.1 S
Oklahoma	-1.7	-1.3	-2.9	-4.6	-5.7	-6.4
South Carolina	9.5	5.8	7.4	8.7	10.7 S	13.1 S
Tennessee	11.6	-3.0	-2.8	-2.9	-2.2	-1.2
Texas	11.5	1.6	2.4	2.8	3.6	4.7
Virginia	7.5	2.1	4.1	6.1	8.4	11.3 S
West Virginia	-2.2	1.7	0 0	-1.7	-1.7	-1.4
West	12.7	1.9	3.7 S	5.1 S	6.6 S	8.2 S
Alaska	1.5	-0.6	-0.0	0.1	-0.6	-0.6
Arizona	21.5	3.1	7.4 S	11.3 S	15.5 S	20.0 S
California	15.9	2.4	4.6	6 3	7.8	9.4
Colorado	11.6	2.1	3.8	5.3	7.3	9.6 S
Hawaii	13.5	-5.5	-4.6	-3.8	-4.6	-4.8
Idaho	5.1	-1.4	-2.7	-4.5	-5.5	-6.2
Montana	2.1	-1.5	-2.5	-3.9	-4.9	-5.6
Nevada	9.5	11.6 S	14.9 S	17.5 S	20.1 S	22.6 S
New Mexico	7.8	0.2	1.5	2.4	4 0	6.0
Oregon	3.0	0.4	0.6	0.8	1.6	2.5
Utah	14.4	-2.4	-2.3	-2.9	-2 0	-0.9
Washington	11.1	2.5	4.0	5.1 S	6.3 S	7.6 S
Wyoming	-8.1	10.2	10.3	10.3	11.7	13.3

NOTE: Percent changes were calculated using unrounded numbers.
S = Significant at the 99 percent confidence level.
SOURCE: Derived from table 9.

Appendix A—State Projection Methodologies

This report projects trends in State enrollments, high school graduates, and classroom teachers in public schools from 1988 to 1993. A comparison over 5 years was chosen because this horizon is often used by policymakers for planning.

Public school enrollment, graduate, and teacher data from the National Center for Education Statistics' Common Core of Data survey for 1970 to 1987 were used to develop these projections. This survey does not collect data on these items for private schools. In addition, population estimates for 1970 to 1987 and population projections for 1988 to 2000 from the U.S. Department of Commerce, Bureau of the Census were used to develop the projections.

Table A1 describes the number of years, projection methods, and smoothing constants used to project enrollment, high school graduates, and classroom teachers in public schools. Also included in table A1 is the procedure for choosing the different smoothing constants for the time series models.

Enrollment

The grade retention method and the enrollment rate method were used together to project public elementary and secondary school enrollment by State. The grade retention method starts with 6-year-olds entering first grade and then follows their progress through public elementary and secondary schools. The method requires calculating the ratio of the number of children in one year who "survive" the year and enroll in the next grade the following year. The enrollment rate method expresses the enrollment of a particular age group as a percent of the population for the same age group. The projections produced from these two methods were combined to yield a composite projection of enrollment.

First, projections of enrollment in public elementary and secondary schools by State were developed using primarily the grade retention method. Kindergarten and first grade enrollments are based on projected enrollment rates of 5- and 6-year-olds. These projected enrollment rates are applied to population projections of 5- and 6-year-olds developed by the Bureau of the Census. Actual enrollment rates of 5- and 6-year-olds for 1987 and projections for 1990 to 1993 are shown in table A2.

Enrollment in grades 2 through 12 is based on projected grade retention rates. These projected rates are then applied to the current enrollment by grade to yield grade-by-grade projections for future years. Actual retention rates for 1987 and projections for 1990 through 1993 are shown in table A3. Enrollment rates of 5- and 6-year-olds and retention rates are projected using single exponential smoothing. Elementary ungraded and special enrollment, and secondary ungraded and special enrollment are projected to remain constant at their 1987 levels. To obtain projections of total enrollment, projections of enrollment for the individual grades (kindergarten through 12) and ungraded and special classes were summed.

Second, projections of enrollment in public elementary and secondary schools by State were developed using the enrollment rate method. The enrollment in grades K–8 was expressed as a percent of the 5- to 13-year-old population for 1970 to 1987. Similarly, the enrollment in grades 9–12 was expressed as a percent of the 14- to 17-year-old population. These percents were then projected using single exponential smoothing and applied to projections of the 5- to 13-year-old and 14- to 17-year-old populations developed by the Bureau of the Census. Actual enrollment rates of 5- to 13- and 14- to 17-year-olds for 1987 and projections for 1989 through 1993 are shown in table A2.

The enrollment rate and grade retention methods assume that past trends in factors affecting public school enrollment will continue over the projection period. This assumption implies that all factors influencing enrollment will display future patterns consistent with past patterns. Therefore, this method has limitations when applied to States with unusual changes in migration rates. This method implicitly

includes the net effect of such factors as migration, dropouts, deaths, nonpromotion, and transfers to and from private schools.

Graduates

Projections of public high school graduates by State are based on projected graduation rates. The number of public high school graduates was expressed as a percent of grade 12 enrollment in public schools 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 most recent rates. This assumes that past trends in factors affecting public high school graduates will continue over the projection period. The actual U.S. graduation rate for 1987 and projections for 1990 through 1993 ar shown in table A4.

Classroom Teachers

Projections of classroom teachers of public elementary and secondary schools are based on projected enrollment and pupil/teachers ratios. The number of pupils to teachers was calculated for 1970 to 1987. These ratios were projected using double exponential smoothing and applied to enrollment projections to obtain projections of classroom teachers. The pupil/teacher ratios were assumed to continue to increase or decrease, based on past trends. Actual pupil/teacher ratios by State for 1987 and projections for 1990 and 1993 are shown in table A5.

Projection Techniques

Single and double exponential smoothing are the two projection techniques used to project rates. Single exponential smoothing was used to project enrollment, grade retention, and graduation rates. Double exponential smoothing was used to project pupil/teacher ratios. 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. These methods place more weight on recent observations than 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 = projection
a = smoothing constant ($O< a < 1$)
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. The projections in this report are based on various smoothing constants (a = .01 to .90). The procedure for choosing various smoothing constants is presented in table A1. The farther 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. Another reason for using high smoothing constants for some variables is that most observations are universe values rather than sample estimates. Therefore, large shifts tend to indicate actual changes rather than noise in the data.

Combining Enrollment Projections

Projections of public school enrollment are based on the grade retention and enrollment rate methods. Empirical research on national models suggests that the enrollment rate method is superior to the grade retention method as the lead time of the projection increases. For longer lead times, the mean absolute percentage errors of the projections of national public school enrollment based on the enrollment rate method are smaller than those based on the grade retention method. It is reasoned that since the projections based on the enrollment rate method depend on population projections, they reflect long-term shifts in State migration patterns as

projected by the Bureau of the Census. On the other hand, the projections based on the grade retention method reflect the net effects of State in- and out-migration for the short term.

The projections of enrollment developed using the grade retention and enrollment rate methods were combined using a simple linear combination of the projections as follows:

$$E = b\hat{X}_1 + (1-b)\hat{X}_2$$

Where:

E = combined enrollment projection
$\hat{X}_1$ = projection based on the grade retention rate method
$\hat{X}_2$ = projection based on the enrollment rate method
b = weight

The table below presents the weights used to combine the two methods. Here, b is an adaptive parameter that changes in time to give the most weight to longer lead times for the most successful of the two projection methods, the enrollment rate.

Weights used to combine the enrollment projections, by projection method and lead time

	Lead time, in years				
Projection method	1	2	3	4	5
Grade retention	1	8/9	7/9	6/9	5/9
Enrollment rate	0	1/9	2/9	3/9	4/9

The sum of the weights b and 1-b is constrained to sum to one. Empirical evidence suggests that the enrollment rate method is superior to grade retention method for long lead times.

Adjustment to National Projections

The sum of the projections of State enrollments was adjusted to add to the national projections of public school K–12, K–8, and 9–12 enrollments, high school graduates, and classroom teachers developed by the National Center for Education Statistics. For details on the methods used to develop the national projections for these statistics, see *Projections of Education Statistics to 2000*, forthcoming.

Standard Errors of Estimates

Standard errors of the estimates were calculated for projections of public school enrollment, high school graduates, and classroom teachers. These standard errors were used to identify significant changes in the rate of growth or decline in projections from 1 year to 5 years in the future. The standard errors of the projections of public school enrollment, high school graduates, and classroom teachers were estimated using procedures described by Bovas Abraham and Johannes Ledolter in *Statistical Methods for Forecasting* (John Wiley & Sons, 1983, 131–132). According to Abraham and Ledolter,". . .the observed forecast errors $e_{t-1}(1) = y_t - \hat{y}_{t-1}(1)$ $(t = 1, 2, \ldots n)$ 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
$\hat{v}_{t-1}(1)$ = forecast of y_t at time $t-1$
n = number of observations

Therefore, for single exponential smoothing, the estimated 99 percent prediction interval is

$S_n \pm (2.58)\hat{\sigma}_e$, where S_n = smoothed statistic

For double exponential smoothing, the estimated 99 percent prediction interval is

$$\left[\left(\frac{2+aL}{1-a}\right) S_t^{[1]} - \left(\frac{1+aL}{1-a}\right) S_t^{[2]}\right] \pm (2.58)\hat{\sigma}_e$$

where:

a = smoothing constant
L = lead time
$S_t^{[1]}$ = single smoothed statistics
$S_t^{[2]}$ = double smoothed statistics

Tables B1 and B2 in appendix B present the standard errors for projections of public school K–12, K–8, and 9–12 enrollments, high school graduates, and classroom teachers. The significance test used was the z-test. A confidence interval was constructed around

the projection to determine if it is significantly different from zero. For example, the standard error for the 1990 projection of public school K–12 enrollment in Alabama is 14,000. This standard error can be used to construct a confidence interval around the projection. To establish a 99 percent confidence interval, the standard error is multiplied by 2.58 and the resulting value is added to and subtracted from the projection. Therefore, the confidence interval for Alabama's projection of public school enrollment in 1990 can be expressed as 725,000±36,000. This means that for 1990, it is 99 percent sure that the true enrollment will lie between 689,000 and 761,000.

Projection Accuracy

Although the accuracy of past projections does not assure that the forecasts in this bulletin will show similar accuracy, an analysis of forecast errors help determine how much faith users should place in these projections.

The mean absolute percentage error (MAPE) was used to measure forecast accuracy. To compute the MAPEs for public school K–12, K–8, and 9–12 enrollment and public high school graduates for the Nation and each State, an average of the absolute values of the 1-, 2-, 3-, 4-, and 5-year-ahead projection errors was computed for models using data from 1970 to 1986. In calculating the MAPEs, estimates of population values rather than projected values were used in the models to project public school enrollment and graduates. MAPEs for the Nation and individual States are shown in table A6. The resultant MAPEs indicate the likely average percent of deviation between the projection and the actual value for a specific number of years into the future. For example, the MAPEs for projections of public K–12 enrollment in Alabama were 1.2 percent for 1 year out, 1.8 percent for 2 years out, and 2.5 percent for 5 years out. For the 2-year-out prediction, this means that one would expect the projection to be within 1.8 percent of the actual value.

Table A1.— Number of years, projection methods, and smoothing constants used to project State enrollments, graduates, and teachers

Projected State varible	Number of years (1970–1987)	Projection method	Smoothing constant	Choice of smoothing constant
Enrollment rates	18	Single exponential smoothing	0.4	Empirical research
Grade retention rates	18	Single exponential smoothing	0.4	Empirical research
Graduation rates	18	Single exponential smoothing	0.4	Empirical research
Pupil/teacher ratios	18	Double exponential smoothing	.01–.90	Minimum MSE

NOTE: MSE = Mean Square Error.

Table A2.— Enrollment rates in public schools, by age: 1987, 1990, and 1993

Age group		Projected	
	1987	1990	1993
5-year-olds	92.8	90.9	90.9
6-year-olds	94.3	94.2	94.2
5- to 13-year-olds	90.5	90.1	90.1
14- to 17-year-olds	83.9	83.9	83.9

Table A3.— Grade retention rates in public schools: 1987, 1990, and 1993

Grade		Projected	
	1987	1990	1993
1 to 2	94.4	94.5	94.5
2 to 3	99.6	99.6	99.6
3 to 4	100.0	100.1	100.1
4 to 5	100.0	100.1	100.1
5 to 6	101.2	101.0	101.0
6 to 7	103.6	103.8	103.8
7 to 8	97.8	97.9	97.9
8 to 9	109.4	108.5	108.5
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 A4.— Graduation rate in public schools: 1987, 1990, and 1993

Year	Rate
1987	93.5
	Projected
1990	93.5
1993	93.5

Table A5.— Pupil/teacher ratios in public schools, by State: 1987, 1990, and 1993

State	Smoothing constant		Projected	
		1987	1990	1993
Alabama	0 21	19.3	19.4	19.7
Alaska	0 47	17.3	18.0	19.5
Arizona	0.51	18.6	18.4	18.4
Arkansas	0.63	17.3	16 6	16.4
California	0.78	22 9	23.0	23 8
Colorado	0.64	18.0	17.6	17.6
Connecticut	0.51	13.3	12.5	11.9
Delaware	0.54	16.1	15.8	15.9
District of Columbia	0.34	13.9	12.2	10.8
Florida	0 57	17.4	17.2	17.4
Georgia	0.44	17.8	17.7	17.7
Hawaii	0.07	21.6	23.0	24.0
Idaho	0 45	20.7	20.9	21 8
Illinois	0.35	17.2	16.9	17.0
Indiana	0.40	17.9	17.2	16.9
Iowa	0.66	15.6	16.0	16.8
Kansas	0.55	15.4	15.6	16.2
Kentucky	0.59	18.2	17.3	16 7
Louisiana	0.22	18 5	18 3	18 7
Maine	0 28	14.9	13.6	12 9
Maryland	0.64	17.1	16 6	16 7
Massachusetts	0.52	13.9	13.0	12.4
Michigan	0.35	20 1	19 5	19 3
Minnesota	0.70	17 1	17 1	17 5
Mississippi	0.64	19 3	20.6	22 5
Missouri	0.53	16 2	15.8	15 9
Montana	0.66	15 8	15 8	16 4
Nebraska	0.46	15.1	15 1	15 5
Nevada	0.38	20.2	19 9	20 3
New Hampshire	0.26	16.0	15 1	14 9
New Jersey	0.25	14.0	13.5	13 1
New Mexico	0.49	18.9	19.3	20.2
New York	0.35	15 2	14.0	13 2
North Carolina	0.81	18.2	17.2	16 6
North Dakota	0.57	15.6	15.7	16 3
Ohio	0.52	18 0	17.6	17 7
Oklahoma	0.71	16 9	17 4	18 4
Oregon	0.25	18 3	17 9	18.1
Pennsylvania	0.63	16.2	15 8	15.9
Rhode Island	0.90	15.0	15 1	15.7
South Carolina	0.35	17.2	16 3	16 0
South Dakota	0.66	15.5	16 4	17.8
Tennessee	0.56	19.6	19 0	18.9
Texas	0.51	17.3	17.2	17 7
Utah	0.01	24.7	25.2	26.4
Vermont	0.33	13.4	13.2	13.0
Virginia	0.67	16.3	15.9	15.8
Washington	0.47	20.2	19.9	20 1
West Virginia	0.54	15.2	14.4	14 0
Wisconsin	0.42	16 2	15.8	15 9
Wyoming	0.27	14.5	13 5	13 3

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Alabama	1 year out	1.2	1.5	3.3	1.8
	2 year out	1.8	2.5	3.6	3.8
	3 year out	3.1	3.6	1.8	6.2
	4 year out	2.6	4.1	1.1	3.2
	5 year out	2.5	4.3	2.0	7.7
Alaska	1 year out	4.1	4.7	3.0	5.4
	2 year out	6.9	7.6	5.8	6.3
	3 year out	8.8	9.2	7.7	5.4
	4 year out	7.7	7.4	8.4	8.4
	5 year out	1.4	0.9	2.6	4.5
Arizona	1 year out	2.2	2.6	1.5	3.3
	2 year out	3.5	3.9	2.6	3.2
	3 year out	3.9	4.6	3.4	3.0
	4 year out	4.8	5.6	2.7	2.3
	5 year out	2.3	3.0	0.4	6.1
Arkansas	1 year out	0.8	0.8	0.6	1.1
	2 year out	1.4	1.4	1.2	1.2
	3 year out	1.8	1.8	1.7	0.8
	4 year out	2.4	2.3	2.6	2.5
	5 year out	3.0	2.6	3.9	4.9
California	1 year out	0.3	0.3	0.5	2.8
	2 year out	0.7	0.8	0.5	1.1
	3 year out	1.4	1.4	1.4	1.9
	4 year out	2.1	1.9	2.5	1.8
	5 year out	2.4	2.0	3.2	1.1
Colorado	1 year out	0.5	0.7	0.4	1.0
	2 year out	0.7	0.8	0.7	1.0
	3 year out	0.8	1.0	1.1	0.4
	4 year out	1.1	1.2	0.8	2.3
	5 year out	2.2	2.6	1.2	2.1
Connecticut	1 year out	1.0	0.6	2.7	4.9
	2 year out	2.0	1.2	4.8	3.1
	3 year out	2.6	1.9	4.7	2.8
	4 year out	3.4	2.3	6.1	7.6
	5 year out	3.7	2.8	5.8	1.4
Delaware	1 year out	1.1	1.6	2.6	3.5
	2 year out	1.9	3.0	5.4	6.6
	3 year out	2.7	4.9	7.8	9.5
	4 year out	4.6	8.0	8.3	14.6
	5 year out	7.9	12.5	2.7	10.7
District of Columbia	1 year out	1.8	2.5	2.7	2.5
	2 year out	2.6	3.8	2.3	4.2
	3 year out	3.6	4.7	5.1	3.5
	4 year out	1.7	4.9	6.6	3.1
	5 year out	0.1	3.6	9.1	6.6

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time—Continued

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Florida	1 year out	1.2	1.5	0.7	1.0
	2 year out	2.4	3.0	1.0	2.1
	3 year out	3.6	4.5	1.6	2.2
	4 year out	4.8	5.5	3.2	4.2
	5 year out	5.8	6.1	5.1	2.4
Georgia	1 year out	1.0	1.1	0.8	0.7
	2 year out	1.7	2.0	0.9	0.8
	3 year out	2.2	2.9	0.9	1.2
	4 year out	2.9	3.8	0.5	0.5
	5 year out	3.0	4.3	0.3	2.8
Hawaii	1 year out	0.7	0.8	0.6	1.8
	2 year out	1.1	1.1	1.2	2.2
	3 year out	0.9	1.0	1.3	1.9
	4 year out	0.5	0.5	0.8	1.7
	5 year out	0.2	0.6	0.9	3.2
Idaho	1 year out	0.8	0.9	1.0	1.1
	2 year out	1.3	1.5	1.2	1.6
	3 year out	1.5	1.9	0.5	1.6
	4 year out	1.4	1.9	0.8	2.3
	5 year out	0.9	1.7	1.2	2.5
Illinois	1 year out	2.2	2.6	1.4	0.9
	2 year out	4.6	5.1	3.7	1.3
	3 year out	7.4	7.4	7.3	1.1
	4 year out	10.5	9.8	12.0	1.9
	5 year out	13.4	12.1	16.3	10.9
Indiana	1 year out	0.5	1.1	1.1	1.7
	2 year out	1.0	1.9	1.1	2.3
	3 year out	1.4	2.6	1.4	2.9
	4 year out	2.0	3.4	1.1	2.0
	5 year out	2.4	4.7	2.4	0.6
Iowa	1 year out	0.6	0.7	0.6	0.4
	2 year out	0.7	1.1	0.9	0.7
	3 year out	0.8	1.3	1.4	1.2
	4 year out	0.6	1.0	2.1	0.9
	5 year out	1.2	0.1	3.4	0.7
Kansas	1 year out	0.7	0.8	0.5	0.8
	2 year out	1.0	1.5	0.7	1.2
	3 year out	1.6	1.8	1.1	1.3
	4 year out	2.0	2.1	1.8	1.4
	5 year out	2.8	2.5	3.6	3.9
Kentucky	1 year out	0.8	0.8	0.9	1.1
	2 year out	1.3	1.1	1.6	1.7
	3 year out	1.7	1.5	2.1	1.7
	4 year out	2.2	1.8	3.1	1.8
	5 year out	2.9	2.4	4.2	0.4

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time—Continued

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Louisiana	1 year out	1.1	1.2	1.0	3.0
	2 year out	1.3	1.7	0.7	4.1
	3 year out	1.0	1.5	1.8	5.3
	4 year out	0.8	1.6	1.8	7.6
	5 year out	0.7	0.0	2.5	0.5
Maine	1 year out	1.2	1.2	2.0	1.8
	2 year out	2.3	2.1	4.3	1.5
	3 year out	3.0	2.3	5.6	3.3
	4 year out	4.1	2.3	8.0	3.1
	5 year out	4.4	2.5	8.5	4.5
Maryland	1 year out	0.5	0.7	0.4	0.9
	2 year out	0.9	1.2	0.6	1.0
	3 year out	1.3	1.7	0.5	2.2
	4 year out	1.0	1.3	0.9	1.8
	5 year out	0.5	1.8	2.4	1.8
Massachusetts	1 year out	0.9	1.2	0.3	1.2
	2 year out	1.7	2.4	0.4	1.2
	3 year out	2.6	3.6	0.6	0.6
	4 year out	3.4	4.5	1.1	0.7
	5 year out	3.9	5.0	1.4	2.6
Michigan	1 year out	1.4	1.2	2.5	1.6
	2 year out	1.7	1.8	2.7	1.5
	3 year out	1.9	2.8	3.6	2.3
	4 year out	2.4	3.3	4.9	1.1
	5 year out	0.3	2.7	4.6	3.6
Minnesota	1 year out	0.8	1.2	0.3	1.6
	2 year out	1.6	2.3	0.5	2.0
	3 year out	1.9	2.9	0.9	2.9
	4 year out	2.4	3.7	1.1	4.7
	5 year out	2.9	4.2	0.1	7.7
Mississippi	1 year out	2.5	3.1	1.0	1.0
	2 year out	4.0	4.8	1.9	1.5
	3 year out	5.1	6.2	2.3	1.8
	4 year out	7.1	8.7	3.0	1.0
	5 year out	7.8	9.5	3.3	1.9
Missouri	1 year out	0.6	0.7	0.4	0.6
	2 year out	1.1	1.4	0.6	0.7
	3 year out	1.8	2.1	1.1	0.9
	4 year out	2.4	2.6	2.0	0.5
	5 year out	2.8	2.9	2.7	1.2
Montana	1 year out	0.6	0.7	0.8	0.7
	2 year out	1.4	1.6	1.0	1.0
	3 year out	1.8	2.6	1.3	2.1
	4 year out	1.7	3.0	1.5	2.6
	5 year out	1.4	2.9	2.3	3.9

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time—Continued

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Nebraska	1 year out	0.6	0.7	0.4	1.1
	2 year out	1.0	1.2	0.8	0.9
	3 year out	1.6	1.9	1.1	1.9
	4 year out	2.0	2.0	1.8	2.8
	5 year out	2.5	2.3	2.8	3.6
Nevada	1 year out	0.8	2.5	4.3	2.2
	2 year out	1.1	3.1	6.4	2.4
	3 year out	1.1	3.3	7.6	1.2
	4 year out	2.3	6.2	6.7	3.8
	5 year out	3.3	8.7	9.6	6.2
New Hampshire	1 year out	1.3	1.8	0.6	1.4
	2 year out	2.5	3.6	1.0	2.5
	3 year out	3.9	5.2	1.0	3.4
	4 year out	4.2	5.7	0.9	2.0
	5 year out	3.8	5.3	0.4	1.0
New Jersey	1 year out	0.7	0.9	0.5	0.4
	2 year out	1.4	1.9	0.6	1.0
	3 year out	2.1	2.9	0.6	0.8
	4 year out	2.7	3.8	0.6	0.7
	5 year out	3.0	4.2	0.4	2.1
New Mexico	1 year out	0.4	1.5	3.5	0.9
	2 year out	0.4	3.4	8.1	1.5
	3 year out	0.8	6.0	14.9	1.5
	4 year out	0.8	6.1	15.3	0.8
	5 year out	0.9	6.3	16.2	4.3
New York	1 year out	0.7	0.9	0.5	0.9
	2 year out	1.4	1.6	0.9	1.1
	3 year out	2.1	2.3	1.6	1.0
	4 year out	3.0	3.1	2.7	0.9
	5 year out	3.7	3.9	3.5	2.5
North Carolina	1 year out	0.5	0.5	0.6	0.5
	2 year out	0.8	0.9	0.8	1.2
	3 year out	1.0	1.2	0.9	2.2
	4 year out	1.5	1.7	1.0	2.9
	5 year out	1.9	2.1	1.3	2.4
North Dakota	1 year out	0.5	0.5	0.6	0.6
	2 year out	0.5	0.5	0.7	1.4
	3 year out	1.0	1.2	0.6	1.6
	4 year out	1.1	1.0	1.3	1.1
	5 year out	0.9	0.3	2.2	1.1
Ohio	1 year out	0.6	0.6	0.6	2.4
	2 year out	0.9	0.8	1.1	3.2
	3 year out	0.9	0.9	1.5	2.5
	4 year out	1.3	1.0	2.1	2.6
	5 year out	2.5	2.7	2.0	3.1

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time—Continued

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Oklahoma	1 year out	0.8	1.1	0.9	1.4
	2 year out	1.6	1.8	1.4	1.5
	3 year out	2.1	2.0	2.3	1.1
	4 year out	3.2	3.0	3.7	2.9
	5 year out	5.2	5.4	4.8	5.8
Oregon	1 year out	1.0	1.2	0.7	1.2
	2 year out	1.6	1.8	1.2	1.6
	3 year out	2.2	2.4	1.9	2.0
	4 year out	2.9	2.9	2.9	2.0
	5 year out	4.0	3.6	4.8	0.2
Pennsylvania	1 year out	0.5	0.8	1.2	0.8
	2 year out	1.1	0.7	2.9	1.4
	3 year out	1.7	0.9	4.0	1.3
	4 year out	2.2	0.3	6.1	2.0
	5 year out	2.8	0.6	6.7	3.3
Rhode Island	1 year out	0.8	1.6	1.4	1.9
	2 year out	1.8	3.5	1.7	2.0
	3 year out	2.9	5.3	2.3	3.6
	4 year out	3.8	6.6	2.5	4.2
	5 year out	4.6	8.3	5.0	1.5
South Carolina	1 year out	0.2	0.4	0.4	2.2
	2 year out	0.3	0.8	0.7	3.1
	3 year out	0.5	1.1	1.1	3.5
	4 year out	0.5	1.3	1.3	2.3
	5 year out	0.6	1.5	1.4	1.5
South Dakota	1 year out	0.7	1.0	0.4	1.1
	2 year out	1.3	1.6	0.6	1.3
	3 year out	2.0	2.5	1.1	1.3
	4 year out	2.9	3.5	1.5	0.9
	5 year out	4.0	4.4	3.1	1.1
Tennessee	1 year out	0.6	0.7	0.5	3.0
	2 year out	0.8	0.8	0.8	4.1
	3 year out	0.7	0.5	1.1	4.1
	4 year out	1.1	0.8	1.6	2.6
	5 year out	1.6	1.3	2.5	2.2
Texas	1 year out	0.8	0.9	1.1	2.8
	2 year out	0.9	1.5	1.6	0.7
	3 year out	0.9	0.7	2.8	0.5
	4 year out	1.0	0.5	3.1	2.3
	5 year out	2.5	1.8	4.4	2.7
Utah	1 year out	1.1	1.4	0.5	1.4
	2 year out	1.7	2.2	0.4	0.9
	3 year out	2.5	3.3	0.4	1.0
	4 year out	4.0	5.1	0.7	1.6
	5 year out	5.4	6.9	1.2	1.6

Table A6.— Mean absolute percentage errors (MAPEs) of projections for public school enrollment and high school graduates, by State and lead time—Continued

State	Lead time	Enrollment			High school graduates
		K–12	K–8	9–12	
Vermont	1 year out	1.3	1.2	1.5	1.5
	2 year out	2.3	1.8	3.2	2.1
	3 year out	3.2	2.9	3.7	3.3
	4 year out	4.4	3.9	5.5	3.9
	5 year out	5.0	4.7	5.5	4.2
Virginia	1 year out	0.8	0.8	1.0	0.5
	2 year out	1.9	1.8	2.2	0.7
	3 year out	2.9	2.7	3.5	2.1
	4 year out	3.9	3.4	4.9	2.3
	5 year out	4.3	3.7	5.8	6.4
Washington	1 year out	0.8	1.0	0.3	1.8
	2 year out	1.6	1.9	0.9	2.1
	3 year out	2.6	3.0	1.5	3.1
	4 year out	3.4	3.8	2.5	2.7
	5 year out	4.0	4.2	3.6	5.0
West Virginia	1 year out	0.6	0.7	0.5	0.5
	2 year out	1.1	1.5	0.4	1.1
	3 year out	1.7	2.6	0.6	1.1
	4 year out	2.4	3.6	0.2	0.8
	5 year out	2.6	4.2	1.1	0.6
Wisconsin	1 year out	1.0	1.4	0.3	0.6
	2 year out	1.8	2.6	0.4	1.0
	3 year out	2.9	4.1	0.7	0.7
	4 year out	3.9	5.2	1.2	1.5
	5 year out	5.2	6.5	2.4	1.4
Wyoming	1 year out	2.6	3.4	1.4	0.9
	2 year out	4.5	5.6	2.3	1.7
	3 year out	5.5	6.9	2.1	1.7
	4 year out	8.4	10.6	2.8	2.1
	5 year out	13.3	16.2	5.8	7.1
United States	1 year out	0.3	0.4	0.3	0.3
	2 year out	0.6	0.8	0.3	0.7
	3 year out	0.9	1.2	0.3	0.5
	4 year out	1.2	1.5	0.5	0.6
	5 year out	1.3	1.5	0.6	0.6

NOTE: To compute the MAPEs for the Nation and States, an average of the absolute values of the 1-, 2-, 3-, 4-, and 5-year-ahead projections errors was calculated using data from 1970 to 1983. The MAPE indicates the likely average percent of deviation between the projection and actual value for 1 to 5 years into the future.

Appendix B—Tables of Standard Errors of Projections

Table B1.— Standard errors of projections of public school enrollments and high school graduates: 1989 to 1993

State	1989 to 1993			
	Public K–12 enrollment	Public K–8 enrollment	Public 9–12 enrollment	Public high school graduates
United States	**139,195**	**120,190**	**47,787**	**7,944**
Alabama	13,684	8,351	8,872	939
Alaska	4,779	3,876	964	362
Arizona	14,473	11,548	3,722	1,020
Arkansas	3,790	2,951	1,022	348
California	14,640	11,607	7,621	8,343
Colorado	3,927	3,466	708	350
Connecticut	6,549	2,024	5,828	2,114
Delaware	1,204	1,552	896	289
District of Columbia	2,059	1,977	681	150
Florida	19,126	17,907	3,804	1,069
Georgia	11,054	8,705	2,815	413
Hawaii	1,313	1,091	464	293
Idaho	2,213	1,735	659	153
Illinois	48,048	38,074	10,336	1,114
Indiana	5,861	9,280	5,149	1,165
Iowa	3,948	3,283	1,293	167
Kansas	2,982	2,593	721	264
Kentucky	5,365	3,822	1,869	481
Louisiana	10,993	9,429	2,667	1,657
Maine	3,599	2,243	1,728	383
Maryland	3,91[illegible]	3,822	1,070	527
Massachusetts	7,620	6,895	767	954
Michigan	27,757	14,451	18,901	1,824
Minnesota	6,774	6,516	870	1,339
Mississippi	16,422	14,676	1,788	257
Missouri	5,113	4,430	1,027	335
Montana	1,273	960	462	83
Nebraska	1,631	1,484	414	228
Nevada	1,934	3,342	2,997	251
New Hampshire	2,313	2,179	336	202
New Jersey	8,970	7,312	2,089	449
New Mexico	1,224	5,032	5,733	174
New York	19,688	15,426	6,593	1,606
North Carolina	6,555	4,291	2,663	398
North Dakota	651	499	238	59
Ohio	11,402	7,507	4,154	3,460
Oklahoma	5,956	5,555	1,792	603
Oregon	5,596	4,647	1,107	345
Pennsylvania	9,225	11,530	14,759	1,127
Rhode Island	1,304	1,820	976	218
South Carolina	1,716	2,019	839	1,263
South Dakota	994	923	174	112
Tennessee	6,298	4,775	1,611	1,538
Texas	27,341	25,587	10,139	5,292
Utah	5,725	5,655	595	288
Vermont	1,263	863	801	104
Virginia	8,721	5,580	3,191	326
Washington	7,057	6,208	940	1,170
West Virginia	2,549	2,506	634	136
Wisconsin	8,117	7,358	1,028	483
Wyoming	3,278	2,941	450	60

NOTE: For a given State, the standard error shown is for all projected years 1989 to 1993. To construct a 99 percent confidence interval around a projection, multiply the standard error by 2.58. The resulting value is added to and subtracted from the projection. For a 95 percent confidence interval, use 1.96.
SOURCE: Derived from public enrollment projection model and public high school graduates projection model.

Table B2.— Standard errors of projections of classroom teachers in public schools: Fall 1989 to fall 1993

State	1989	1990	1991	1992	1993
United States	**22,171**	**23,682**	**23,995**	**24,056**	**24,761**
Alabama	2,347	2,395	2,443	2,489	2,535
Alaska	291	317	342	365	386
Arizona	884	977	1,062	1,141	1,215
Arkansas	411	473	527	576	622
California	5,363	6,482	7,435	8,279	9,044
Colorado	792	914	1,022	1,119	1,209
Connecticut	759	840	913	980	1,044
Delaware	154	171	188	202	216
District of Columbia	355	373	390	407	423
Florida	2,817	3,176	3,498	3,793	4,067
Georgia	2,208	2,388	2,555	2,712	2,860
Hawaii	189	190	190	191	191
Idaho	229	249	267	283	299
Illinois	3,472	3,660	3,838	4,008	4,171
Indiana	1,341	1,434	1,520	1,602	1,680
Iowa	575	668	749	822	890
Kansas	852	955	1,047	1,132	1,211
Kentucky	485	548	605	657	706
Louisiana	2,191	2,240	2,289	2,336	2,382
Maine	904	936	967	997	1,027
Maryland	686	792	885	969	1,046
Massachusetts	3,600	3,992	4,350	4,680	4,988
Michigan	2,580	2,719	2,852	2,978	3,100
Minnesota	1,038	1,222	1,381	1,524	1,655
Mississippi	780	900	1,006	1,102	1,190
Missouri	1,615	1,797	1,962	2,115	2,257
Montana	196	228	256	281	304
Nebraska	549	598	643	684	724
Nevada	198	210	222	233	244
New Hampshire	982	1,012	1,042	1,071	1,098
New Jersey	2,104	2,165	2,224	2,281	2,337
New Mexico	355	390	422	452	480
New York	7,346	7,742	8,119	8,479	8,825
North Carolina	802	978	1,128	1,259	1,379
North Dakota	288	325	358	388	416
Ohio	2,324	2,577	2,808	3,021	3,220
Oklahoma	684	808	916	1,012	1,099
Oregon	917	943	969	994	1,019
Pennsylvania	2,286	2,630	2,933	3,208	3,461
Rhode Island	152	191	223	251	276
South Carolina	1,241	1,307	1,371	1,432	1,490
South Dakota	251	292	327	360	389
Tennessee	1,232	1,384	1,521	1,647	1,764
Texas	3,476	3,843	4,177	4,487	4,777
Utah	594	594	594	594	594
Vermont	198	207	216	225	234
Virginia	1,553	1,810	2,035	2,237	2,423
Washington	601	656	706	754	798
West Virginia	570	636	696	751	802
Wisconsin	1,998	2,148	2,288	2,420	2,545
Wyoming	338	349	360	371	381

NOTE: For a given State, the standard error shown is for all projected years 1989 to 1993. To construct a 99 percent confidence interval around a projection, multiply the standard error by 2.58. The resulting value is added to and subtracted from the projection. For 95 percent confidence interval, use 1.96.
SOURCE: Derived from public classroom teacher projection model.

Appendix C—Data Sources

Sources and Comparability of Data

The information in this report is from Federal and State agencies. The data were collected by many methods, including surveys of a universe (such as all public schools) or of a sample, and compilations of administrative records. 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.

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 report is frequently unknown, idiosyncrasies that have been identified are noted on the appropriate tables.

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 this report 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:

Suzanne Triplett
Elementary and Secondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue NW
Washington, DC 20208–5651

Early Estimates System

The 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 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 year 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 20208–5651

Bureau of the Census

Total Population Estimates

The population estimates contained in this report for the 1980s were developed by averaging the results of two methods, both of which use current data to estimate population change since April 1980. The Census Bureau's Composite Method uses vital statistics and school enrollment to estimate the population 0 to 14 years of age by a variation of Component Method II. For the household population 15 to 64 years of age, the method employs a Ratio-Correlation technique in which a multiple

correlation estimating equation is applied to the changes in three independent variables (Federal income tax returns, school enrollment, and housing units) to estimate changes in the population.

In the second method (the Administrative Records Method), net internal migration is estimated using individual Federal income tax returns, immigration from abroad is developed from immigration reports, and reported vital statistics are used to account for natural increase. These two methods are averaged to estimate the household population under 65 years of age. The population under 65 years old in group quarters and the population 65 years old and over are added to the household population to obtain an estimate of the population total for each State.

Estimates of the group quarters population were obtained by adding to the 1980 census count of nonbarracks group quarters population the latest survey data on military barracks population plus an allowance for change in the population in major Job Corps centers. The population 65 years old and over was obtained by adding the estimated change in the number of people enrolled under Medicare between April 1, 1980, and the estimate date to the 1980 census population 65 years old and over. Civilian population estimates were created by subtracting the Armed Forces population from the resident State population estimate. The Armed Forces data were obtained directly from reports of the Department of the Defense and Transportation showing the number of military personnel assigned to each installation, adjusted where necessary to reflect place of residence.

The procedures used to develop the all-ages estimates have been tested and modified through comparisons with the results of several decennial censuses. The mean difference of the average of the estimates produced by the Composite Method and the Administrative Records Method for April 1, 1980, from the 1980 census counts was 1.1 percent, with the greatest deviation being 10.1 percent in the District of Columbia. A more detailed description of the population estimates methodology and an indication of their accuracy may be found in *Current Population Reports*, Series P–25, No. 957 published by the U.S. Department of Commerce, Bureau of the Census.

Population Estimates by Age

The methodology used to develop the age estimates is a variation of Component Method II, one of the methods formerly used to estimate the total population of States. This method involves using the 1980 census data as a base for each of the age groups by State and taking into account changes in the population attributed to births, deaths, and net migration from April 1, 1980, to the estimate date.

The migration component was derived by using changes in the school enrollment data for each State to estimate a school-age migration rate, which was then converted to a rate for other age groups under 65.

The natural change component makes use of the number of registered births and deaths by State of residence for the calendar years provided by State health departments, adjusted to cover the periods from April 1 to July 1 and adjusted to independent national controls.

As in the all-ages procedure, estimates for the population 65 years old and over were developed using the change measured in Medicare records for each State.

As a final step, the estimates of the age groups for each State were adjusted to sum to the independently estimated resident population total for the State. In addition, the State estimates for each age group were adjusted to be consistent with an independent national population estimate for that age group.

Questions concerning the population estimates may be directed to:

State and Local Estimates Branch
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

State Population Projections

These projections are available in *Current Population Reports, Projections of the Population of States, by Age, Sex, and Race: 1988 to 2010*, Series P–25, No. 1017, published by the Bureau of the Census. They were prepared using a cohort component method whereby each component of population change—births, deaths, domestic

inmigration, domestic outmigration, international inmigration, and international outmigration—is projected separately for each birth cohort by sex and race. Although this basic framework is the same as in past projections, these projections represent a major advance in State population projections methodology. The major innovations include:

1. The projection of annual population by single years of age instead of the projections by 5-year age groups for every fifth year.
2. The use of State-to-State migration flows rather than net migration, or gross inmigration and outmigration.
3. The tying of migration projections to the administration data used in the State current population estimates program to provide more recent information as well as the possibility of updating the migration data during the intercensal period.
4. A time series analysis of recent annual trends in migration streams to add a dynamic element to migration projections, rather than the past practice of holding migration rates constant.
5. The use of State differentials in survival rates based on the 1980 decennial life tables.
6. The use of State differentials in the timing patterns of fertility based on 1980 birth and population data.

where:

The cohort-component method is based on the traditional demographic accounting system: $P_1 = P_o + B - D + DIM - DOM + IIM - IOM$

P_1 = population at the end of the period
P_o = population at the beginning of the period
B = births during the period
D = deaths during the period
DIM = domestic inmigration during the period
DOM = domestic outmigration during the period
IIM = international inmigration during the period
IOM = international outmigration during the period

In order to generate population projections with this model, one needs separate data for each of these components. In general, the assumptions concerning the future levels of fertility, mortality, and international immigration are consistent with the assumptions developed for the national population projections published in *Current Population Reports*, Series P–25, No. 1018.

Once the data for each of the components have been developed, it is a relatively straightforward process to apply the cohort-component method and produce the projections. For each projection year, the base population for each State is disaggregated into the three racial categories (white, black, other races), by sex and single years of age (age 0 to 85 and over). The next step is to survive each age-sex-race group forward 1 year using the pertinent survival rate. The internal redistribution of the population is accomplished by applying the appropriate State-to-State migration rates to the survived population in each State. The projected outmigrants are subtracted from the State of origin and added to the State of destination (as inmigrants). The appropriate number of immigrants from abroad is then added to each group. The population under age 1 is created by applying the appropriate age-specific birth rates to the females of childbearing age. The number of births by sex and race are survived forward and exposed to the appropriate migration rates to yield the population under age 1. As a last step, the final results of the projection process are adjusted to be consistent with the national population projections by single years of age, sex, and race.

Questions concerning the State population projections may be directed to:

Population Projections Branch
Bureau of the Census
U.S. Department of Commerce
Washington, D.C. 20233

Appendix D—Glossary

Data Terms

Classroom teacher: A staff member assigned the professional activities of instructing pupils in self-contained classes or courses, or in classroom situations. Usually expressed in full-time-equivalents.

Cohort: A group of individuals that have a statistical factor in common, for example, year of birth.

Enrollment: The number of students registered in a given school unit at a given time, generally in the fall of a year.

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.

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.

Statistical Terms

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.

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.

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-post forecast: The forecasting of known values.

Forecasting: Assessing the magnitude which a quantity will assume at some future point of time, as distinct from "estimation" which attempts to assess the magnitude of an already existent quantity.

Forecast horizon (lead time): The number of time periods into the future which are forecasted. Forecasts for next year are said to have a 1-year forecast horizon.

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.

Parameter: An arbitrary constant whose value characterizes a member of a system. A quantity that describes a statistical population.

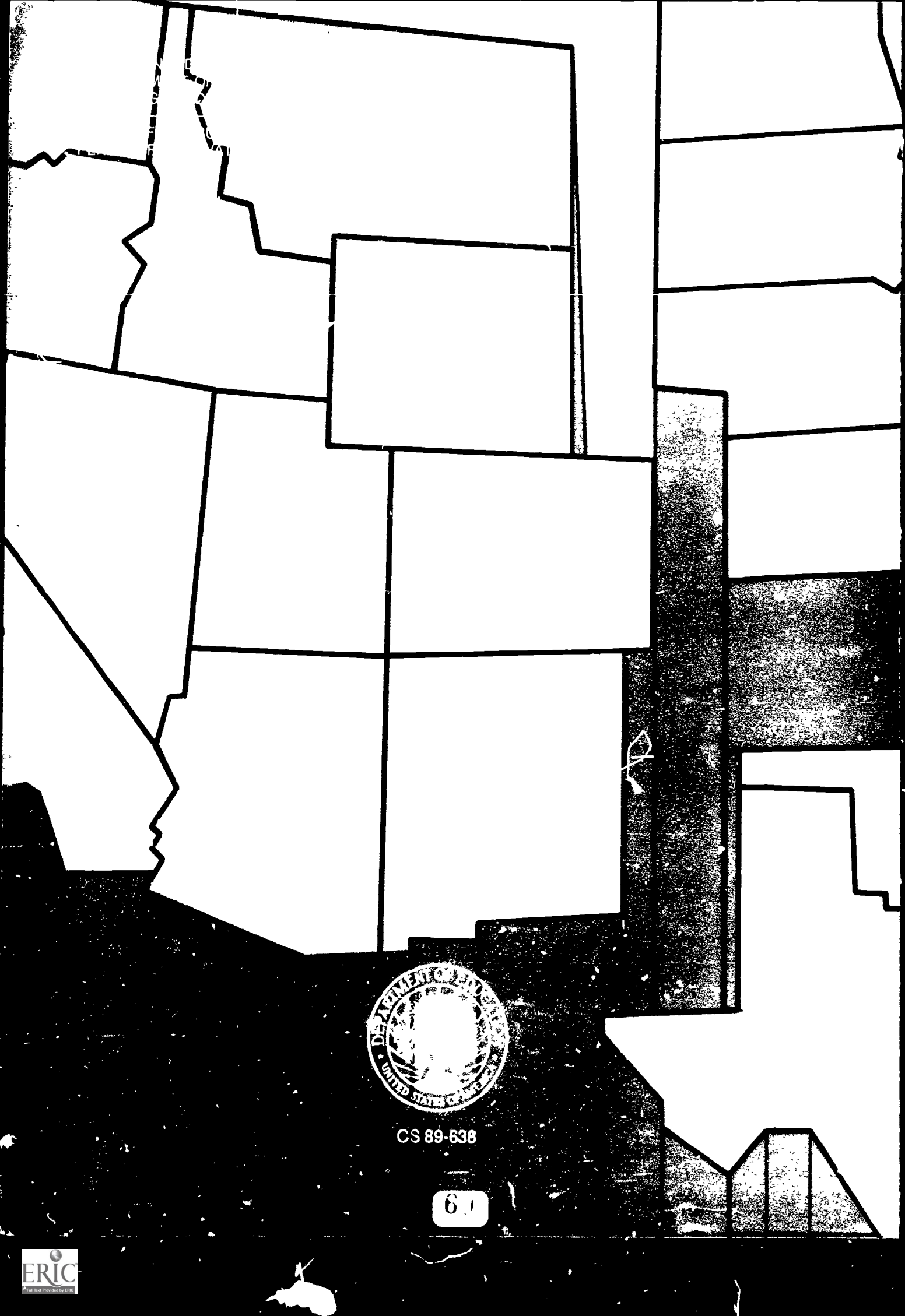
Projection: In relation to a time series, an estimate of future values based on a current trend.

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 time series is a set of ordered observations on a quantitative characteristic of an individual or collective phenomenon taken at different point of 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.



CS 89-638

NATIONAL CENTER FOR EDUCATION STATISTICS

Announcement

September 1989

State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers

Contact:
Debra E. Gerald
(202) 357–6581

Policymakers involved in educational planning can now find a consistent set of projections of public school enrollment, high school graduates, and classroom teachers, by State, in a single volume entitled *State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers.*

While most States make some individual projections, they are all based on different models and variables. This report presents a uniform set of projections using similar methodologies for the 50 States and the District of Columbia to facilitate State-to-State comparisons.

The report, published by the National Center for Education Statistics of the U.S. Department of Education's Office of Educational Research and Improvement, projects that:

- Public elementary school enrollment will rise while secondary school enrollment will decline steadily between fall 1988 and fall 1993, but these increases will vary widely across the Nation. Enrollment will increase most rapidly in Western States, where total enrollment is expected to rise 12 percent between fall 1988 and fall 1993, about double the national average of 6 percent. Enrollment is expected to increase about 6 percent in the Southern regions, 3 percent in the Northeast, and 2 percent in the Midwest.
- The rise in public school enrollment and the historical trend in declining pupil-teacher ratios is expected to result in an increase in the number of school teachers by almost 7 percent during this time period.
- Public school enrollment in grades K–8 will grow more than 1 percent annually between fall 1988 and fall 1993, resulting in an increase of about 8 percent for the entire period.
- During the 1988 to 1990 time period, high school enrollment (grades 9 to 12) will decline and then begin stabilizing between 1991 and 1993. Nationally, by fall 1993, high school enrollment is expected to reach about the same level it did in 1988.
- However, the forecast through 1993 varies considerably across the Nation, with enrollment declining in the Northeast and increasing in the West. The shifts for the Midwest and South mirror the national pattern of declining enrollment in the late 1980's and stabilization by 1993.

Copies of *State Projections to 1993 for Public Elementary and Secondary Enrollment, Graduates, and Teachers* are available for $3.25 each from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Ask for stock number 065–000–00380–5. You may pay by check or money order (payable to the Superintendent of Documents), Visa, or MasterCard. For your convenience, an order form is printed on the back of this announcement.

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